A Report by a Panel of the

NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

for the U.S. Congress and the U.S. Patent and Trademark Office

US Patent and Trademark Office: Transforming To Meet the Challenges of the 21st Century

August 2005

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U.S. PATENT AND TRADEMARK OFFICE: TRANSFORMING TO MEET THE CHALLENGES OF THE 21ST CENTURY

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First published August 2005

Printed in the United States of America

ISBN 1-57744-117-6

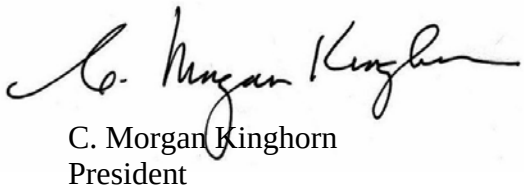
Academy Project Number: 2041-000

FOREWORD

The U.S. Patent and Trademark Office (USPTO) is a fee-supported, performance-based organization within the U.S. Department of Commerce that is at the center of the U.S. intellectual property system. Its patent process affects innovation in the nation as well as the domestic and global economies. Over the past decade, an increase in the volume of patent applications and technological advancement have created additional challenges for the agency, resulting in added time to process patent applications and concerns about the quality of issued patents.

To help ensure that USPTO is on a path to effectively achieve modernization and meet its challenges, the House Appropriations Subcommittee on Science, State, Commerce, and Justice asked the Academy to review the agency's structure and business processes and to provide insights on whether and how agency efforts have helped to increase patent quality and decrease patent pendency. Congress also requested that the Academy examine the extent to which USPTO has a suitable employee allocation and skill mix. The Panel's recommendations will enable USPTO to better meet the needs of the nation and the individual inventor. It is essential that USPTO have a governance structure that gives it the flexibility to make sound decisions based on revenue and expenditure projections.

I want to thank Thomas Stanton, who chaired the Panel overseeing this study, for his leadership, and the other Panel members who contributed substantially to the project. I also commend the project staff for their research and thoughtful analysis in support of the Panel's findings and recommendations. Finally, I would like to express my appreciation to Congress, the Department of Commerce, USPTO, its stakeholders, and its Trilateral partners in Europe and Japan for sharing their insights with the Academy. We hope that the Panel's findings and recommendations have practical application and help USPTO meet the challenges that lie ahead.



C. Morgan Kinghorn
President

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LIST OF ACRONYMS

ABA	American Bar Association
ACEPO	Administrative Council of the European Patent Organization
AFGE	American Federation of Government Employees
AIPA	American Inventors Protection Act
AIPLA	American Intellectual Property Law Association
AIPN	Advanced Intellectual Property Network
AIPPI	International Association for the Protection of Intellectual Property
BEA	Budget Enforcement Act
BEST	Bringing Examination and Search Together
BPAI	Board of Patent Appeals and Interferences
CAFC	Court of Appeals for the Federal Circuit
CAO	Chief Administrative Officer
CEO	Chief Executive Officer
CBI	Critical Behavior Interview
CBO	Congressional Budget Office
CCC	Commodity Credit Corporation
CFO	Chief Financial Officer
CHCO	Chief Human Capital Officer
CIO	Chief Information Officer
CIPA	Chartered Institute of Patent Agents
CLE	Continuing Legal Education
COBRA	Consolidated Omnibus Budget Reconciliation Act
COO	Chief Operating Officer
CSRS	Civil Service Retirement System
CY	Calendar Year
DAC	Deputy Associate Commissioner
DG	Directorate General
DHS	U.S. Department of Homeland Security
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOJ	U.S. Department of Justice
DOL	U.S. Department of Labor
DOT	U.S. Department of Transportation
EAST	Examiner Assisted Search Tool
EESR	Extended European Search Report
EIP	Environmental Intern Program
EPA	Environmental Protection Agency
EPC	European Patent Convention
EPI	European Patent Institute
EPO	European Patent Office
ESOP	Employee Stock Ownership Plans
FACA	Federal Advisory Communications Act
FAOM	First Action on the Merits
FCC	Federal Communications Commission

FCRA	Federal Credit Reform Act
FDIC	Federal Deposit Insurance Corporation
FERC	Federal Energy Regulatory Commission
FERS	Federal Employees Retirement System
FFB	Federal Financing Bank
FFRDC	Federally Funded Research and Development Center
FLRA	Federal Labor Relations Authority
FPI	Federal Prison Industries
FTC	Federal Trade Commission
FTE	Full-Time Equivalent
FY	Fiscal Year
GAO	Government Accountability Office
GOCO	Government-Owned Contractor Operated
GCCA	Government Corporation Control Act
GNMA	Government National Mortgage Association
GS	General Schedule
GSA	General Services Administration
GSE	Government-Sponsored Enterprises
HHS	U.S. Department of Health and Human Services
HRM	Human Resources Management
IFW	Image File Wrapper
IFP	Increased Flexitime Program
IPI	International Patent Institute
IG	Inspector General
IPC	International Patent Classification
IPCC	Industrial Property Cooperation Center
IPO	Intellectual Property Owners
ISR	International Search Report
IT	Information Technology
IP	Intellectual Property
IPO	Intellectual Property Owners
JIPA	Japanese Intellectual Property Association
JPAA	Japanese Patent Attorneys' Association
JPO	Japan Patent Office
KSA	Knowledge, Skills, Abilities
LES	Licensing Executives Society
LDRC	Legal Document Review Clerk
LIE	Legal Instrument Examiner
MBA	Master of Business Administration
MOU	Memoranda of Understanding
MPEP	Manual of Patent Examination Policy
NAPP	National Association of Patent Practitioners
NAS	National Academy of Sciences
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NOA	Notice of Allowance

NRC	Nuclear Regulatory Commission
NSF	National Science Foundation
NTEU	National Treasury Employees Union
OBRA	Omnibus Budget Reconciliation Act
OCC	Office of the Comptroller of the Currency
OCP	Office of Corporate Planning
OFHEO	Office of Federal Housing Enterprise Oversight
OGC	Office of General Counsel
OHR	Office of Human Resources
OIG	Office of Inspector General
OIPE	Office of Initial Patent Examination
OMB	Office of Management and Budget
OPFM	Office of Patent Financial Management
OPM	Office of Personnel Management
OPQA	Office of Patent Quality and Assurance
PAIR	Patent Application Information Retrieval
PAP	Performance Appraisal Plan
PBGC	Pension Benefit Guaranty Corporation
PBO	Performance-based Organization
PCT	Patent Cooperation Treaty
PE	Patent Examiner
PGO	Post Grant Opposition
PLT	Patent Law Treaty
POPA	Patent Office Professional Association
P-PAC	Patent Public Advisory Committee
PPM	Patent Production Model
PTDL	Patent and Trademark Depository Libraries
PTO	Patent and Trademark Office
PTOEA	Patent and Trademark Office Efficiency Act
RCE	Request for Continuing Examination
RFP	Request for Proposal
SCP	Standing Committee on the Law of Patents
SFA	Student Financial Assistance
SEC	Securities and Exchange Commission
SES	Senior Executive Service
SL	Senior Level
SME	Small and Medium Sized Enterprises
SPE	Supervisory Patent Examiner
SSA	Social Security Administration
TC	Technology Center
TLO	Technology Licensed Organization
T-PAC	Trademark Public Advisory Committee
TWS	Trilateral Web Site
ULP	Unfair Labor Practice
UPR	Utility, Plant, Reissue (Patents)
USC	U.S. Code

USPC	U.S. Patent Classification
USPS	U.S. Postal Service
USPTC	U.S. Patent and Trademark Corporation
USPTO	U.S. Patent and Trademark Office
USRA	U.S. Railway Association
VPN	Virtual Private Network
WEST	Web-based Examiner Search Tool
WIPO	World Intellectual Property Organization

EXECUTIVE SUMMARY

The U.S. Patent and Trademark Office (USPTO) is a complex "knowledge worker" agency and the fulcrum of the U.S. intellectual property system. Its mission—grounded in the U.S. Constitution—is to ensure that the intellectual property system contributes to a strong domestic and global economy, encourages investment in innovation, and fosters an entrepreneurial spirit.

Under the close scrutiny of its stakeholders, academia, its counterparts around the world, Congress, and the courts, USPTO must accommodate a burgeoning interest in securing property rights and changing legal interpretations of patent law. It must also deal with substantial external volatility—particularly the U.S. economy and funding levels. With all of these variables and pressure points, USPTO attempts to balance the tradeoffs between enhancing quality and maximizing production and does so within the context of the federal workplace and its myriad requirements.

With a $1.7 billion proposed fiscal year (FY) 2006 budget, derived from fees for services provided, USPTO needs the flexibility to operate with the incentives and acumen of a private business—with full accountability to Congress and its users. In 1999, to provide USPTO with added management flexibilities to achieve its mission, Congress designated it as one of only two federal "performance-based organizations." This designation provided additional flexibilities in budgeting, human resources, procurement, and other administrative areas, but not those needed for making long-term business decisions. In 2003, USPTO issued a modified *21st Century Strategic Plan*, which described its vision to create a quality-focused, productive, responsive organization supporting a market-driven intellectual property system. It seeks to transform itself over the next five years guided by three strategic themes—(1) agility, (2) capability, and (3) productivity, with quality embedded in each theme.

To help ensure that USPTO is making progress in implementing its strategic plan and is on the right path to transformation, the Chairman of the House Appropriations Subcommittee on Science, State, Commerce, and Justice asked the National Academy of Public Administration (Academy) to examine USPTO's organization structure and its work processes. The Academy Panel has reviewed and assessed organizational and human capital structures, the timeliness and quality challenges USPTO faces in processing patent applications, and whether it has the appropriate skills needed within its staff.

CORPORATE STRUCTURE AND CULTURE

As a performance-based organization, USPTO has more flexibility than a traditional federal agency, but it still does not have the flexibility to make long-term business decisions, the borrowing authority to help meet multi-year capital needs, or access to all of its user fee revenues. While organizational form does not guarantee efficient operations, one that does not permit a business-type agency to apply its resources to meet changes in market demand (for USPTO, the changing volume of patent applications) can create inefficiencies and disincentives.

The Panel believes that USPTO's structure has created such inefficiencies. The demand for patents is closely tied to the U.S. economy and its fluctuations. A corporate structure would enable USPTO to respond more quickly and effectively to workload, yet remain accountable to Congress, the President, and stakeholders.

> **Accordingly, the Panel recommends that Congress create the U.S. Patent and Trademark Corporation (USPTC) as a wholly owned government corporation under the policy direction of the Secretary of Commerce, with the appropriate authority to borrow, set fees (within parameters Congress would set), and issue its own regulations.**

Past Academy reports have tended to recommend a Chief Executive Officer but not a governing board for government corporations. There are no stockholders for a board to represent. Also, some government corporations have not been well-served by large boards. Therefore, the Academy Panel believes an Advisory Board or Advisory Committee would better serve USPTO rather than a formal governing board of directors and believes such an advisory body could provide guidance in terms of stakeholder interests.

A key feature of USPTO's culture is that its work is far more geared to measurable production than most federal agencies with a highly educated workforce, and the patent workforce is also highly unionized. The consequence is that nearly all aspects of work process and workforce management are negotiated. Given that management and its largest union have been at impasse for decades, proposed reforms may not be accepted with alacrity even if they make sense, because they require negotiation. This is not a healthy organizational culture.

> **The Panel recommends that USPTO develop strategies to make theirs a more positive, collaborative organizational culture.**

These efforts should start with an assessment of the current culture, probably by an external group, and should involve employees and managers. Top management should continually reinforce that USPTO is a good employer; its employees receive excellent benefits and enjoy a very flexible work schedules, and work in state-of-the-art facilities.

It is essential that an organization's culture support its mission, and a culture cannot be changed overnight. Cultural change has costs, such as time away from production for focus groups or training, consultant fees, purchasing materials and allowing staff time to read them, or producing a video on how the organization plans to institute change. The Panel believes the long-term benefits will far outweigh the costs.

HUMAN CAPITAL MANAGEMENT SYSTEM

With only 45 percent of the workforce having five years or more of service, USPTO lacks adequate numbers of seasoned examiners to meet its mission challenges. The current human capital system will become an increasing liability to USPTO as even larger portions of the

federal workforce (the Departments of Homeland Security and Defense) implement their new personnel systems and demonstrate the benefits of human capital agility in the federal framework. Those agencies with more constraints will likely be less competitive in the recruitment marketplace.

The Panel believes that the General Schedule pay system impedes USPTO's ability to attract and retain employees. With a personnel system tailored to its needs, USPTO could adopt a pay scale or performance-based pay system that could improve recruitment and reduce attrition, thus keeping more experienced employees rather than training them for several years before they leave to oin law firms or other entities as patent attorneys or agents. A performance-based pay system could also expedite the collective bargaining process.

The new DHS personnel system, with a labor-market based pay structure and performance-based pay increases, is in place. While unions have raised issues about the framework for the labor-management relationship, the independent Homeland Security Labor Relations Board provides a valuable vehicle for the quick resolution of all bargaining matters and disputes and ensures continued focus on agency mission. Aspects of this system could be a model for a tailored USPTO personnel system. The Panel believes that if, and only if, USPTO receives congressional authority to develop a more flexible personnel system, it should not be reluctant to pay rates that are substantially above General Schedule levels. It would be far more efficient, for the agency and patent applicants, to retain patent examiners rather than to lose half the number hired within a short period of time, as is the case in most fiscal years.

> **The Panel therefore recommends that USPTO work with Congress and OPM to develop an impasse resolution system that permits prompt renegotiation of work processes and pay rates.**

TIMELINESS AND WORK PROCESSES

High performing organizations constantly struggle with using their limited resources efficiently while at the same time ensuring the delivery of high quality work. USPTO's strategic plan acknowledges the importance of issuing high-quality patents in a timely manner. It is a substantial challenge particularly due to funding volatility and the backlog of patent applications.

Pendency is the key measure that USPTO uses to assess the timeliness of processing patent applications. First-action pendency is defined as the time (measured in months) from when an applicant files an application and USPTO makes a preliminary decision about whether to issue a patent. Although first-action pendency averages 20.2 months (up from 7.6 months in FY 1993 and 13.6 months in FY 2000), examiners spend only about 20 hours on average reviewing a patent application. First-action pendency includes time an examiner is not reviewing an application—primarily time in the queue. Pendency varies by the subject area of the application. For example, in FY 2004, it was 31.4 months for the communications area, and 15.2 months for the mechanical engineering, manufacturing, and products area.

In part, conditions beyond USPTO's control—the volatility of the U.S. economy, the concomitant but sometime unexpected increase in applications, and the consequences of not having access to all patent application fees—have created today's massive backlog of patent applications (more than 830,000, up from 244,646 in 1993). Between FYs 1992-2004, USPTO did not have access to $741 million of the fees it collected, the preponderance of which ($573 million) came from patent fees. This $741 million represents between 6 and 7 percent of the total funding available to USPTO during this period. The inherent nature of the appropriations process prevents some fees from reaching USPTO in unanticipated high-volume years because USPTO's budget is set months prior to the start of the fiscal year.

Simulations using USPTO's patent resource model, which the Academy Panel independently evaluated before using, show that if USPTO had been given access to these fees and applied all or most of them to patent staffing, it would have had the ability to consistently hire staff and FAOM pendency could have remained at an average of 11.4 to 12.6 months. USPTO's FY 2005 appropriation permits access to most of the patent fees collected, as does the President's FY 2006 budget request.

> **The Panel believes this recent action to allow fuller access to patent fees is a step in the right direction. To provide more funding certainty, the Panel recommends that Congress take steps to ensure that all fees USPTO collects during future fiscal years are available for its use without fiscal year limitation.**

To help USPTO achieve efficiencies in patent processing and possibly reduce pendency, USPTO initiated, at the direction of Congress, a pilot program to test outsourcing the "search" function of the patent prosecution process. The search function involves reviewing patent or non-patent literature for historical references to inventions that are similar to those in a patent application. USPTO estimates that about 20 percent of the total patent prosecution time would be saved if another entity conducted the search. The Panel recognizes that pendency cannot be quickly reduced by hiring new patent examiners. However, it has reservations about outsourcing, in part because the European Patent Office (EPO) previously had the search and examination functions done by different staff members and now has combined these functional responsibilities to achieve greater efficiency. The Japan Patent Office (JPO) began, in the mid-1980s, to outsource some searches because statutes did not permit them to hire more staff. JPO examiners work directly with searchers, most of whom are in a quasi-governmental entity, and the only searches outsourced are those that can be done in patent literature.

Questions remain about whether private search firms will be attracted to this type of work given the conflict-of-interest requirements or whether they can perform work at the same level of quality as USPTO staff. A thorough evaluation of the pilot program will be critical because the results will have an impact on USPTO's future business vision, which calls for leveraging search results from others—foreign patent offices, the patent applicant, and private contractors. Congress has required such an evaluation.

The Panel recommends, as part of the evaluation of the pilot, that USPTO examine the potential to outsource the search function to a federally funded research and development center that would work exclusively for USPTO.

Such centers—which have more flexible hiring authorities—can secure the skills the agency needs, do not have a proprietary interest in the work, and have little incentive to breach the principles of confidentiality.

Eliminating unnecessary rework offers another opportunity to increase efficiency in patent processing. In 2004, 25 percent of examiners' work could be described as rework. Patent law allows a form of rework known as "continuations," which allow an applicant to request another review of the same invention that was included in a prior application—even if USPTO rejected the patent. Continuations provide an applicant a substantial benefit, because this second review skips the queue and receives the same priority for processing as the original application. This means other applicants wait longer for USPTO to review their applications. There are valid uses for continuations, but there are also indications that some applicants use them to "game the system." There are varied proposals to limit the use of continuations, either through congressional action or USPTO rule-making.

The Panel recommends that:

USPTO use every means possible to work with stakeholders to provide Congress with the necessary information to assist it in identifying the appropriate number of continuations that should be allowed.

Congress amend patent law by establishing a specific maximum number of continuations that will be allowed for any patent application.

Finally, worksharing (relying on aspects of the examination process that foreign patent offices have completed) also has potential to increase efficiencies in processing patent applications and reducing workload. Currently, USPTO, EPO, and JPO (the Trilateral Offices) annually receive almost 200,000 applications in common (more than half USPTO's annual volume of new filings). To achieve the goal of worksharing, the Trilateral Offices need to better understand each other's work methods, and each country needs to amend certain provisions of its patent law to accommodate worksharing. The need for greater collaboration is under discussion and, to some extent, is the driving force behind current patent law reform efforts. A 2004 National Academy of Sciences (NAS) report concluded that the United States, Europe, and Japan should further harmonize patent examination procedures and standards to reduce redundancy in the search and examination functions and eventually achieve mutual recognition of results.

The Panel strongly supports harmonization and recommends that USPTO work closely with Congress to provide it with the necessary information to amend patent laws to achieve harmonization.

QUALITY

Patent quality is important because USPTO's decision on a patent application has economic spillover effects to other businesses and, more broadly, to competition and innovation. Thus, it is important for USPTO to conduct quality reviews during application processing and "get it right the first time" to prevent issuance of inappropriate patents, with their attendant litigation costs and adverse technological impacts. For the last 25 years, USPTO has assessed quality by determining whether the claims in a patent clearly meet the statutory criteria. To make this assessment, USPTO reviews between two to three percent of approved applications. The error rate from FYs 2000-2004 varied from a high 6.6 to a low of 4.2 percent. Although the error rate has remained fairly stable, several studies, congressional hearings, and scholarly articles report perceptions that patent quality has declined, particularly in areas of technology in which patents have only recently been granted, such as computer software and business methods. However, these concerns have not been quantified.

To respond to concerns that patent quality has declined, USPTO implemented several initiatives to ensure appropriate patentability determinations and improve the knowledge, skills, and abilities of examiners. The Panel believes many of these are consistent with sound management practices and acknowledges that additional quality reviews affect timeliness of application processing.

> **The Panel recommends that USPTO monitor the results of these reviews to (1) ensure that their implementation does not result in denying or seriously delaying patents to deserving inventors, and (2) identify the appropriate number of reviews needed to sustain quality without adversely affecting pendency.**

In addition to raising concerns about quality, others—the Federal Trade Commission, NAS, and scholarly articles—recommended various regulatory or legislative reforms to improve quality. USPTO's strategic plan includes one such reform—developing a new post-grant review process—which would reduce the volume of litigation by providing a new administrative opportunity to rule on patent validity. Though many stakeholders agree on the need for a new process, they differ on certain design elements. The Panel reviewed four major proposals for establishing a post-grant review process, including proposed legislation.

> **The Panel agrees with the provisions of the four proposals for post-grant review that provide for (1) administrative patent judges conducting the process and (2) an appeals option to the Court of Appeals of the Federal Circuit.**
>
> **The Panel recommends the following with regard to the other elements of a post-grant review process:**
>
> - **The grounds for a challenge be limited to patentability and not enforceability.**

- **Discovery be limited to cross examination on matters relevant to the grounds for review.**

- **Estoppel from further litigation be limited to those issues raised and resolved in the proceeding.**

- **The patent owner be permitted a single narrowing of any claims, with the addition of dependent claims on good cause shown.**

If a post-grant review system is adopted, the Panel recommends that USPTO compile data on the costs and benefits of post-grant review and *inter partes* reexamination, including the impact on patent quality. These data should help inform Congress about whether both systems should be maintained.

WORKFORCE AVAILABILITY AND SKILLS

USPTO places highly skilled knowledge workers—its patent examiners—in a production environment and measures their performance primarily in quantitative terms. Those who can work in this environment can receive substantial bonus pay, but the production system may be a contributing factor to high attrition rates.

In 10 out of 13 years, from FY 1992-2004, for every ten patent examiners hired, five left; many within the first three years. Because examiners become fully productive only after several years of USPTO work experience, it is essential to retain staff. USPTO does not systematically use exit interviews to determine why examiners leave, but senior USPTO staff attribute high attrition to:

- Pay in relation to the Washington, DC cost of living

- The lack of a real-world understanding about the job on the part of recent graduates

- The difference between the often-isolating and repetitive desk work of USPTO patent examination duties and those of research or bench science, for which many USPTO employees have trained

- The up-front career plans of many new employees, who use this USPTO experience as a stepping stone to law school, or, if already a lawyer, to a more lucrative private practice or employment opportunity in intellectual property

The Panel believes that USPTO is on the right track with:

- Bringing in new human resources management leadership so that USPTO can apply additional and improved techniques in recruiting and retaining staff

- Developing videos and better recruitment literature to more clearly explain the work to potential recruits and requiring personal interviews for all applicants to assess their overall competence and communication skills

- Using information gleaned from quality reviews of patent examiner work to help individual examiners improve their work

However, USPTO needs to do more, and the Panel recommends that it:

- **Systematically determine why patent examiners are likely to leave within their first three years with the office and determine if it can make accommodations to retain them**

- **Develop competitive recruitment programs (a "patent scholars program") to raise USPTO visibility on campuses and attract more of the best graduates**

- **Use more of the hiring flexibilities now permitted under its status as a performance-based organization and general federal personnel regulations**

While USPTO cannot hire its way out of its pendency problems in the short term, unchecked attrition of recent hires is at historical levels and will likely exacerbate the pendency problem and reduce the quality and consistency of patent determinations. An organization that so significantly affects innovation in the U.S. and around the globe needs to have and use the flexibility to deal with these challenges to optimize its performance. The Panel offers several recommendations to help USPTO deal with the problems of staff erosion, improve morale, and enhance the retention of experienced and technology-savvy examiners upon whom the system relies.

CHAPTER 1
BACKGROUND

While innovation has been respected throughout much of history, it is especially valued in a free-enterprise system. An economy that rewards innovation welcomes new ideas and technologies, seeing them as ways to enhance productivity and competitiveness and increase the standard of living.

The nation's founders believed so strongly in the power of innovation that they provided, in the Constitution itself, an incentive to inventors in the form of patent protection. "Congress shall have power . . . to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."[1]

This chapter provides information on the mission of the U.S. Patent and Trademark Office (USPTO), its strategic plan, and organization structure; the agency's budget, human resources and organization culture**;** the patent system and work processes involved in assessing patent applications; and trends in workload over time and the information systems used in patent work.

The chapter next examines some of the common themes in studies of the patent system; aspects of the external environment, such as changes to the federal court structure and what can be patented, and some of the legislative changes; and USPTO's work with other nations and international organizations.

Finally, the chapter describes why the National Academy of Public Administration (Academy) is doing this work, presents the role of the Academy Panel, and describes the scope and methodology of the work and the contents of the report.

USPTO MISSION, STRATEGIC PLAN, AND ORGANIZATION STRUCTURE

USPTO's mission is to ensure that the intellectual property (IP) system contributes to a strong global economy, encourages investment in innovation, and fosters entrepreneurial spirit. Its vision is to create a quality-focused, highly productive, responsive organization supporting a market-driven IP system for the 21st century.[2]

To more fully reflect its mission in work methods, in June 2002, USPTO issued *The 21st Century Strategic Plan* and modified it in February 2003 to reflect user community input. Under the plan, the agency would transform itself over the next five years guided by three strategic themes: (1) agility, (2) capability, and (3) productivity. Quality is an overarching theme in all areas. To implement the three themes, USPTO plans to create a more flexible organization with

[1] Article 1, Section 8 of the U.S. Constitution. The first patent law was enacted in 1790. The patent laws underwent a general revision, which was enacted July 19, 1952, and took effect January 1, 1953. It is codified in Title 35, United States Code. On November 29, 1999, Congress enacted the American Inventors Protection Act of 1999, which further revised the patent laws. See Public Law 106-113, 113 Stat. 1501 (1999).
[2] USPTO, Performance and Accountability Report, Fiscal Year 2004, Section 4.1, p. 1.

streamlined work processes that will be more responsive to market expectations and the growing volume and complexity of work. To this end, among the actions it plans to take are:

- Make a transition to market-driven examination options (intended to permit applicants to have a private sector organization do the search for prior art or permit USPTO to contract with private firms for the same purpose)

- Increase flexibility through greater reliance on the private sector or other intellectual property offices

- Share search results with other intellectual property offices

- Implement an accelerated examination path option

- Enhance workforce capabilities by certifying competencies

- Make improvements in patent and trademark quality assurance techniques

- Make process improvements that contribute to enhanced quality through legislative/rule changes

- Expand work-at-home opportunities

Specific goals include:

- Reducing patent pendency

- Providing, on average, each initial U.S.-filed, non-provisional patent application with a first action on the merits (FAOM) at or before the 18 month publication deadline[3]

- Implementing e-government in trademarks by November 2, 2003 (in tandem with implementing the Madrid Protocol[4]), and in patents by October 1, 2004

- Expanding bilateral and multilateral agreements to achieve global convergence of patent standards and greater certainty and enforcement of intellectual property rights (which could also permit USPTO to share search results with other countries and reduce the level of USPTO effort needed for some applications)

For each item in the plan, USPTO has mapped what needs to take place to implement the action and has developed a system to track status. While some portions of the plan have been

[3] An FAOM is the first communication to an applicant on whether USPTO believes a patent should or should not be allowed; the inventor can provide additional information if the FAOM does not allow the patent.

[4] The "Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks" (Madrid Protocol) is an international treaty that allows a trademark owner to seek registration in any of the countries that have joined the Madrid Protocol by filling a single application, called an "international application."

implemented, others were held in abeyance pending possible congressional action on fee modernization. (See later discussion in this chapter.)

Organization Structure

The Patent Office as a distinct bureau dates from 1802 when an official in the Department of State, who became known as "Superintendent of Patents," was placed in charge of patents. The revision of patent laws, enacted in 1836, reorganized the Patent Office and designated the official in charge as Commissioner of Patents. The Patent Office remained in the Department of State until 1849, when it was transferred to the Department of Interior. In 1925 it was transferred to the Department of Commerce, where it is today. The name of the Patent Office was changed to the Patent and Trademark Office in 1975. In 1982, the position of the Commissioner of Patents and Trademarks was upgraded to that of Assistant Secretary of Commerce.

Prior to 1999 legislation, USPTO was the PTO and was a bureau within the department. The American Inventor's Protection Act (AIPA)[5] established USPTO as "an agency of the United States within the Department of Commerce" and became effective in March 2000. This was part of USPTO's conversion to the second federal performance-based organization (PBO).

As a PBO, USPTO has "independent control of its budget allocations and expenditures, personnel decisions and processes, procurements, and other administrative and management functions..."[6] This does not mean USPTO operates outside all traditional federal agency management requirements, but means that USPTO interacts directly with the Office of Management and Budget (OMB), the Office of Personnel Management (OPM), and congressional appropriators. For example, prior to becoming a PBO, USPTO would have submitted its proposed annual budget through the Department of Commerce, which would have interacted with OMB and congressional appropriators on behalf of USPTO. (Chapter 7 discusses USPTO as a PBO.)

Among the organizational changes that took place as a result of the 1999 legislation were:

- The formal name of the organization changed from the Patent and Trademark Office to the U.S. Patent and Trademark Office

- The title of Assistant Secretary of Commerce and Commissioner for Patents and Trademarks changed to Under Secretary of Commerce for Intellectual Property and Director of the USPTO.

- The Assistant Commissioner for Patents became the Commissioner for Patents, and the Assistant Commissioner for Trademarks became the Commissioner of Trademarks.

- The patent and trademark operations were separated.

[5] The Patent and Trademark Office Efficiency Act (PTOEA) was part of the AIPA, which was enacted November 29, 1999, as Public Law 106-113 and amended by the Intellectual Property and High Technology Technical Amendments Act of 2002 (Public Law 107-273), enacted November 2, 2002.
[6] Excerpted from PTOEA, effective March 29, 2000.

- Two nine-member advisory committees were put in place—one for patents and one for trademarks—to review policies, goals, performance, budget, and fees.

The organization chart (Figure 1-1) shows a relatively flat structure, but what it cannot show is the predominance of the patent function over all others; 76 percent of all staff are in patent work.

Major units under the Commissioner for Patents are deputy commissioners for patent operations, patent examination policy, and patent resources and planning. Most patent staff is in the eight Technology Centers (TCs), which have jurisdiction over specified fields of technology. They are:

- **Technology Center 1600**—biotechnology and organic fields
- **Technology Center 1700**—chemical and materials engineering fields
- **Technology Center 2100**—computer architecture software and information security
- **Technology Center 2600**—communications
- **Technology Center 2800**—semiconductors, electrical and optical systems and components
- **Technology Center 2900**—designs
- **Technology Center 3600**—transportation, electronic commerce, construction, agriculture, licensing and review
- **Technology Center 3700**—mechanical engineering, manufacturing and products

There are groups of staff (called art units[7]) under a Technology Center grouping.

BUDGET, HUMAN RESOURCES AND CULTURE

Under the Omnibus Budget Reconciliation Act (OBRA) of 1990, USPTO became a fee-funded agency, but Congress still required that USPTO receive annual appropriations. Table 1-1 shows new obligations for USPTO from Fiscal Year (FY) 2000-2006. It shows that USPTO's overall budget has increased more between 2004 and 2006 than in the years preceding them.

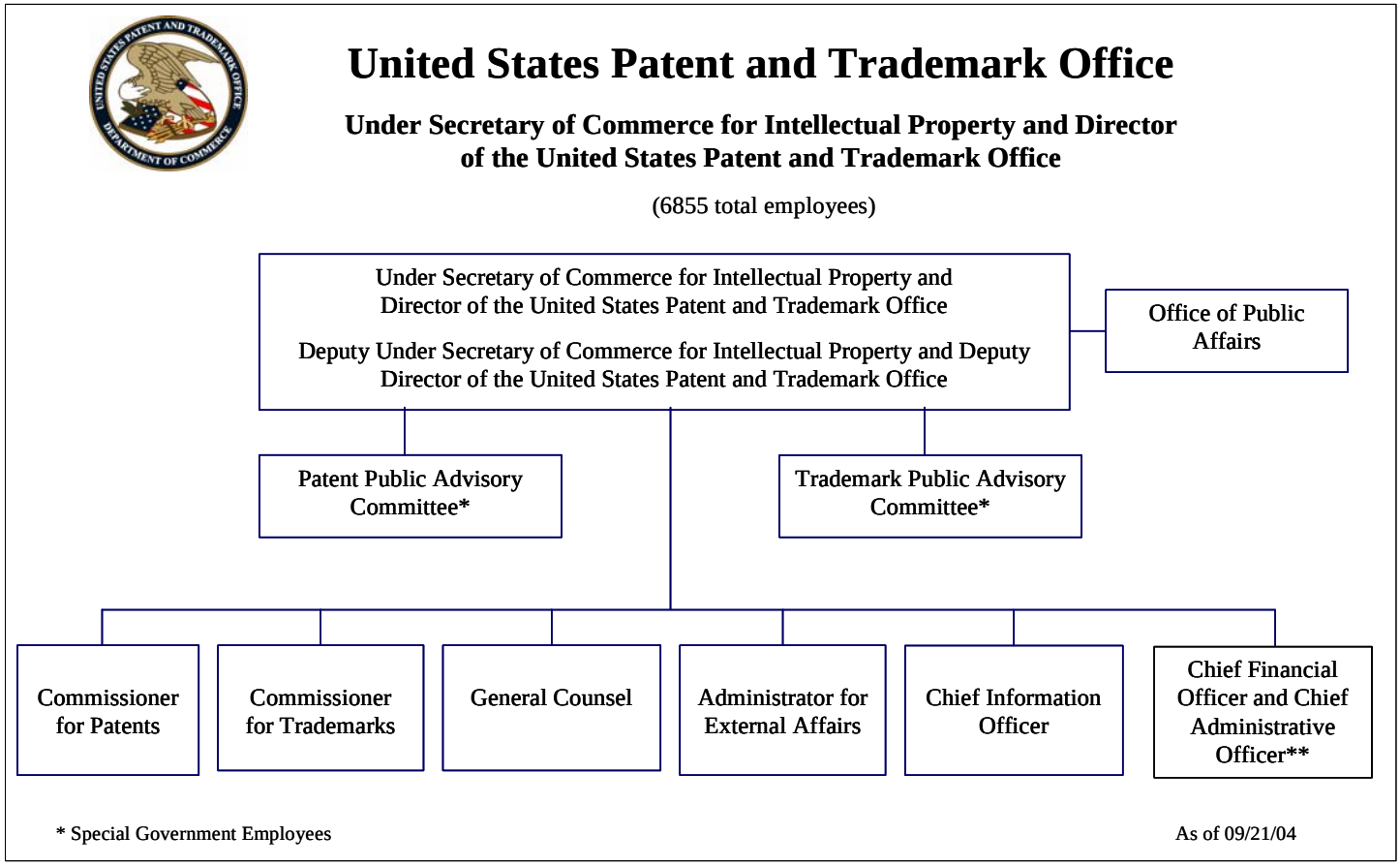
[7] Patent examiners determine the uniqueness of an application by searching previously granted U.S. and foreign patents and relevant non-patent literature, such as technical journals or papers presented at symposia. Collectively, these sources are referred to as prior art, and the USPTO examiners are grouped by subject area into "art units."

Table 1-1
Annual New Obligations
FYs 2000-2006

Fiscal Year	New Obligations
2000	$ 895,000,000
2001	1,065,000,000
2002	1,144,000,000
2003	1,191,000,000
2004	1,233,000,000
2005	1,571,000,000
2006	1,703,000,000

Source: Budget of the United States. 2005 is the enacted level and 2006 is the amount in the President's budget request.

Figure 1-1
USPTO Organization Chart



** In May 2005, USPTO separated the position of Chief Financial Officer/Chief Administrative Officer into two positions. This is discussed in Chapter 6.

As of September 2004, USPTO employed 6,855 full-time staff, all in the Washington, DC area (largely in northern Virginia). The breakdown by major office is:

Office of the Under Secretary	10
Office of Public Affairs	8
Commissioner for Patents	5,235
Commissioner for Trademarks	542
General Counsel	239
Administrator for External Affairs	42
Chief Information Officer	499
Chief Financial Officer (CFO) and Chief Administrative Officer (CAO)	263
Patent Public Advisory Committee	8
Trademark Public Advisory Committee	9

The FY 2005 enacted budget calls for 7,198 full-time equivalent (FTE) positions for all of USPTO. In addition to federal employees, USPTO uses contractors for a number of functions. The 3,600 contract employees constitute 35 percent of USPTO's total workforce.[8] Many (about 2,600) support patent work, such as office support services and data capture for electronic processing. About 700 work in the Office of the Chief Information Officer (CIO), providing such things as desktop computer support and systems development and maintenance.

Table 1-2 shows patent staffing budget authority and FTE for FYs 2003-2006. These numbers reflect the FY 2005 funds for USPTO to hire 709[9] new patent examiners.

Table 1-2
Patent Staffing Budget Authority and FTE
FYs 2003-2006

Fiscal Year	Budget Authority	FTE
2003	5,990	5,552
2004	6,060	5,899
2005	6,775	6,396
2006	7,273	6,996

Source: President's FY 2005 and 2006 Budget Requests for USPTO. Patent positions on this table are for examiners, technical support staff, and administrative and management positions under the Commissioner of Patents.

Table 1-3 shows changes in the amounts allocated within patent operations, which have risen to reflect workload changes and receipt of all patent application fees for FY 2005.

[8] USPTO Budget Request for FY 2006, p. 19.
[9] The USPTO FY 2005 hiring goal includes not only these 709 new positions, but also backfilling those vacated by attrition; the total recruitment goal for FY 2005 is 900.

Table 1-3
USPTO Spending and Budget Requests: Patent Operations
FY 2004-06

Patents	FY 2004 Actual	FY 2005 Available	FY 2006 Request
Initial examination (makes sure an application is complete)	29,532	30,837	32,657
Examination (includes search)	549,821	601,246	672,740
Scientific, technical and classification services	32,304	40,958	43,927
Pre-grant publication and patent issuance	78,742	88,514	98,255
Patent appeals and Interferences	14,580	15,163	15,525
Operations (including system maintenance & automation)	51,941	58,262	60,735
Strategic initiatives (direct)	25,211	106,494	106,727
Total Resources for Operations	**$782,122**	**$941,474**	**$1,030,566**
Other contributing resources (cost-share of support functions, space, misc. general expenses)	316,314	454,162	486,248
Total Resources	**$1,098,436**	**$1,395,636**	**$1,516,814**

Source: USPTO FY 2006 President's Budget Request

The largest proportion of growth between FY 2004 and FY 2005 is in the area of strategic initiatives. These include work on the *21st Century Strategic Plan* goals of improving the quality of patent products and services, optimizing patent processing time, and improving patent e-government. Some of this money will fund contract efforts to get PEs back to their core work. For example, USPTO will rely on commercial entities for classification and competitively source the Patent Cooperation Treaty (PCT[10]) search function. In addition to hiring more examiners, the agency also plans on funding a new competitive compensation package for Supervisory Patent Examiners (SPEs) and managers, expanding patent reviews, completing the establishment of automated Continuing Legal Education (CLE) training courses, and continuing re-certification of all primary examiners on a three-year cycle. In the area of patent e-government, during FYs 2005-2006, USPTO plans to accomplish a major reengineering of the Image File Wrapper (IFW) system components to provide the functionality to capture and process application text data as well as image data and reduce the manual steps required to index and scan application papers.

In Trademarks, USPTO predominantly hires attorneys. Patent examiners, however, typically have backgrounds in biology, chemistry, physics, chemical engineering, electrical engineering, mechanical engineering, computer engineering, or computer science. Often there are myriad skill sets within the same TC. While a number of patent examiners have law degrees, it is not a prerequisite, and a proportion of those who earn law degrees while they are with USPTO leave to become patent attorneys. Similarly, some PEs without legal degrees leave the agency to pursue careers as patent agents.

[10] The Patent Cooperation Treaty provides a mechanism by which an applicant can file a single application that, when certain requirements have been fulfilled, is equivalent to a regular national filing in each designated Contracting State.

USPTO had an overall attrition rate of 7 percent between FYs 1992-2004, which is not far above the average federal rate of 6 percent. However, for most fiscal years during this period, for every 10 patent examiners hired, five left. Reasons vary, and include such things as competition (from the public and private sectors) for some of the same high-demand skills, the production-oriented nature of patent examination work, and the fact that USPTO sometimes had to hire large numbers of staff quickly, resulting in some possibly questionable selections. (Chapter 2 looks at this in more depth.)

Strong Organizational Culture

As an organization with a clear mission and distinct functions in support of it (specifically, examining patent and trademark applications), USPTO is in what some agencies would consider the enviable position of being able to communicate to staff what they are supposed to do and why their work is important. Consider the diverse missions of large federal departments, or even the many functions within some of their subagencies. There can be staff in one unit who are not even aware of the purpose of many of the other units.

Virtually all of the USPTO senior staff involved in direct mission work has grown up in the organization, and a number of staff in general management or administrative positions have experience as patent examiners (PE). The clear sense of mission may be one reason that there is a strong "can-do" attitude among the staff. They have seen many changes to the broad environment for patents as a key component of innovation and the related advances in a broad range of technologies and have devised ways to adapt to such changes. On the other hand, the attitude of self assuredness has led USPTO to place staff with no administrative experience in key non-patent administrative positions, apparently believing that if an individual is competent in one important area this will translate to a very different arena.

USPTO has brought in some individuals from other agencies, such as the Chief Financial Officer (CFO), Chief Information Officer (CIO), the Director of Human Resources and Chief Administrative Officer (CAO). The CFO was appointed to this position in 2003 and had previous USPTO administrative experience; the other three positions were filled from outside in 2005, with the CAO being a new position. (It was formerly combined with the CFO.) Bringing in individuals has sometimes worked well; for example, the CFO had broad experience in federal building acquisition and management, and USPTO is in the middle of the largest move of civilian federal employees in U.S. history. Other times, the senior individual has not had enough of a shared perspective to bring issues and people together to address a challenge in the most effective manner.

Three unions represent USPTO employees:

- Patent Office Professional Association (POPA)

- National Treasury Employees Union (NTEU) chapter 245, representing trademark examining attorneys and interlocutory attorneys at the Trademark Trial and Appeals Board

- NTEU Chapter 243, representing non-professional employees (the term used in the NTEU contract) including the technical support staff, computer specialists, and interpreters

It takes considerable time—three to five years, depending on the technology—to become a proficient PE, and a great deal of workplace socialization takes place during that time. It appears that much of the inculcation is provided by one of USPTO's powerful unions that negotiates not just work environment, but also work procedures.

INPUT FROM STAKEHOLDERS

All aspects of USPTO's work exist in an environment with intense stakeholder interest and participation in the broad patent community. In 1999, Congress created the Patent Public Advisory Committee (P-PAC) and Trademark Public Advisory Committee (T-PAC)[11] to advise on "policies, goals, performance, budget and user fees of the USPTO with respect to patents and trademarks and advise the USPTO Director on these matters." Each has nine voting members who represent the diverse communities of USPTO users. Each also has three nonvoting members who represent the three labor organizations that serve USPTO employees. T-PAC and P-PAC meet separately several times each year and, within 60 days after the end of each fiscal year, they each prepare an annual report.

P-PAC has repeatedly stressed that USPTO cannot function as a PBO without more autonomy. "There must be a clear mission and bottom line objectives. To drive the mission of the USPTO, there must be managerial discretion and flexibility, including personnel flexibility that would allow the leaders [of the Office] to strategically allocate resources, including personnel and financial resources, to the critical objectives." In its FY 2004 annual report, P-PAC commended the administration and Congress for appropriating what is anticipated to be all fees collected in FY 2005, but warned that there is not a permanent mechanism to ensure USPTO receives all applicant fees collected, which P-PAC believes has severely hampered USPTO's ability to "address the critical problems of patent quality and increasing pendency."[12]

Outside the formal advisory committee process is a mix of organizations with an interest in patents, and they include:

- grass-roots groups of individual inventors, which are in many cities across the country (such as the Inventors Network of the National Capital Area or the Tennessee Inventors Association)

- organizations that represent individual inventors (such as the National Congress of Inventor Organizations or the National Society of Inventors)

[11] American Inventors Protection Act of l999 (AIPA); 35 U.S.C. Section 5(d).

[12] P-PAC 2004 *Annual Report*, November 26, 2004, pp. 7-8 and 11. USPTO will receive all fees up to the amount of its FY 2005 appropriation. If workload increases above the level on which this appropriation was based, the fees for the additional work will not go to USPTO.

- professional groups that represent patent attorneys (such as the National Association of Patent Practitioners or the Section on Intellectual Property Law of the American Bar Association)

- larger trade groups that represent intellectual property owners (generally firms) or focus on legal issues (such as the Intellectual Property Owners (IPO) or AIPLA

- organizations that are concerned with IP in specific industries or technologies

The organizations geared to individual inventors generally focus on how to get a patent and the myriad of challenges in taking an invention through the patent process. While these groups may be more loosely organized than a Washington, DC trade association, the inventors they represent are vocal in providing input to Congress. For example, a number of individuals interviewed for this Academy project made the point that the U.S. has not previously gone to a first-to-file priority system because "individual inventors oppose it."[13]

The U.S. patent system places high value on the individual inventor, who has brought to the world electricity, the telephone, laser technology, and a host of other discoveries. In many other nations, industry funds a larger proportion of innovation; in the U.S. approximately 17 percent of patents were granted to individual inventors in calendar year 2003. The number was consistently about 15% in the early to mid-1990s, dropped toward the end of the decade, and jumped to 21.8 percent (a 27 percent increase in one year) in 1999, and has fallen since then. USPTO stopped collecting data in the same format after 2003, so it is no longer possible to note the proportion of individual inventors who receive patents, only the difference between large and small entities (independent inventors, nonprofit institutions, and businesses with 500 or fewer employees).

Most components of the complex relationships with stakeholders tend to be very positive—experienced outside individuals are willing to address USPTO training classes, professional organizations conduct seminars for inventors and members of the patent community (which USPTO staff may attend), and many entities and individuals lobby Congress to encourage it to provide USPTO with all of the fees inventors provide to process and maintain applications. At the same time, many individuals and organizations are ready to criticize USPTO if, for example, they do not like a draft USPTO strategic plan, believe patent quality is declining, or simply don't like the fact that their patent application was not approved.

Deserved criticism is essential and is generally given constructively and professionally. What differentiates USPTO's stakeholders from those of many other federal organizations is that nearly all of the "players" know one another and speak the technically complex common language of IP law. They work together to present an (almost) unified front. Where external opinions can diverge is between organizations that represent individual inventors and those that represent larger entities.

[13] All nations except the U.S. award patents to the first individual who files an application. The U.S. uses a first-to-invent system, which awards the patent to the individual who can prove they were the first to create the invention.

PATENT SYSTEM AND WORK PROCESS

A patent confers "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States or "importing" the invention into the United States. It is essentially the grant of a property right to the inventor.[14] Once a patent is allowed (the term for granting a patent to an inventor), the patentee must enforce the patent without USPTO's aid. In exchange for the valuable rights the patent confers, the inventor must provide a complete disclosure of the invention, which promotes additional innovation and discourages duplication of research. Thus, the rights of individual inventors are balanced against the rights of the public.

Generally, the term of a new patent is 20 years. The term begins on the date the patent is granted and ends 20 years from the date the application was filed in the United States. U.S. patents are effective only within the United States and U.S. territories and possessions.

An inventor secures a patent by filing an application that includes a detailed description of the invention, drawings (if applicable), a declaration that the inventor believes he/she is the first and original inventor of the item, and a fee. After USPTO determines that the application is complete, it sends it to the appropriate art unit, where a patent examiner conducts a search of prior art and then determines whether the invention is truly new, not obvious, and useful.

Basic steps in the patent prosecution process (the basic steps in evaluating an invention and determining whether or not to allow a patent) are shown in Table 1-4 and are described in more detail in Chapter 2.

Table 1-4
The Patent Prosecution Process

Search	Examination	Amendments Review*	Post Examination
• Check for signature • Read application to determine search field • Review patent literature and search commercial and in-house databases ("prior art") for historical references to invention. • Analyze search results	• Compare application's invention to search results and information the applicant has submitted. • Prepare FAOM to allow or deny patent • Submit FAOM to supervisor to review or (if examiner has signatory authority) to support staff to process • Option: application may be selected for "second-pair-of eyes" or in-process quality review during examination phase	• Review amendments applicant submits • Conduct additional search and exam if needed • Prepare subsequent action—final rejection or allowance * Only if applicant submits an amendment to a non-final rejection	• Option 1: If application is allowed, it is forwarded to the publication division • Option 2: If patent applicant is rejected, applicant can submit amendments as many times as she/he likes • Option 3: Whether patent is allowed or rejected, applicant can submit continuations as many times as she/he likes

Source: Portions adapted from September 2004 report of the Department of Commerce Office of Inspector General.

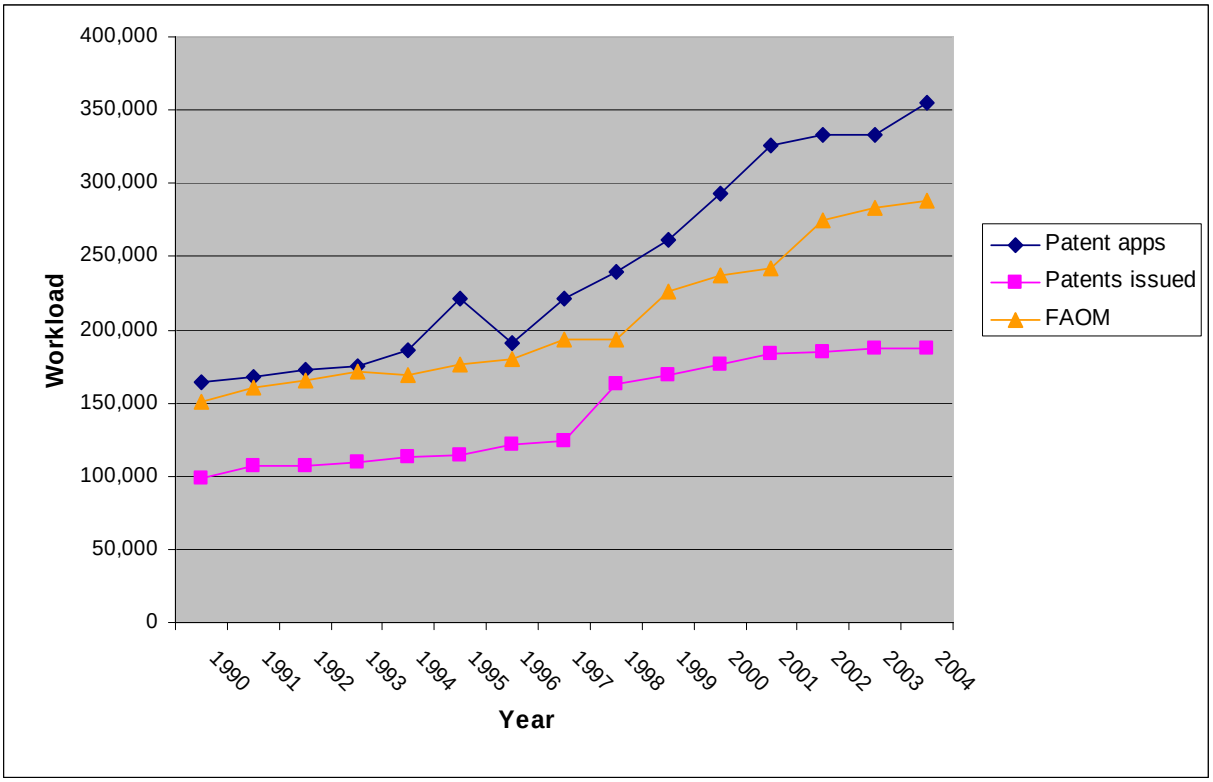
[14] The specific statutory language as to what is patentable is discussed in Chapter 2, but that most familiar to lay readers would be that the innovation must represent a non-obvious advance over the existing state of that technology (35 U.S.C. Sections 102 and 103).

CHANGES IN PATENT WORKLOAD OVER TIME

Annual patent applications increased from 163,571 to 355,527 (117 percent) between 1990 and 2004. While Figure 1-2 shows this growth, it also shows that the number of FAOMs rose from 150,403 to 288,316 (92 percent), and the gap between applications and FAOMs is widening. It was at its low in 1992 (2,745), rose to 84,311 in FY 2001, then dropped to 50,340 in FY 2003 and rose again to 67,211 in 2004.

As this divergence between applications and FAOMs grows, more time will elapse between application filing to the FAOM—which is one of the two measures of pendency, which can be thought of as time in the queue.[15] The time it takes to issue an FAOM rose from 7.6 months in 1993 to 14.4 months in 2001 to 20.2 months in 2004. It is expected to increase to 21.2 months by 2008. Overall pending applications rose from 223,101 in 1983 to 244,646 in 1993, a relatively small increase. However, total pending applications rose to 837,858 in 2004.[16]

Figure 1-2
Calendar Year Trends in Patent Applications, Allowances, and First Actions on the Merits



[15] Time to FAOM is when USPTO can be most in control of the timeframe (assuming the queue is not too long). Once USPTO issues the FAOM, the applicant can request additional actions, so there is no uniform basis for time comparison.

[16] Pending patent applications are noted in Table 5 of USPTO annual statistics, available at http://www.uspto.gov/web/offices/com/annual/2004/060405_table5.html

One reason for the gap between applications received and FAOMs issued is that staffing levels for examiners did not keep pace with application growth. For example, examiners increased from 1,681 in 1990 to 2,905 in 2002 (73 percent, at a time that applications rose 79 percent), and from 3,538 to 3,681 from 2002 to 2004 (4 percent, when applications grew 7 percent). While examiner numbers grew in total during this period, there was high attrition and the growth in staff was often not in tandem with application growth. (These issues are discussed in Chapters 2 and 4.)

At this juncture, the recent increase in the number of USPTO staff cannot quickly influence pendency, since new examining staff go through intense classroom and on-the-job training before they can be fully productive. Over time, additional resources will make a difference in FAOM pendency, but in the short term, new examiners require that more experienced staff take time away from production to train them.

As applications have increased, the number of claims accompanying the applications (which describe how the invention differs from prior art) have increased, as has the volume of material submitted with them (information on prior art, which the applicant believes may be relevant to patentability). This increases the complexity of the application and can increase the time it takes to search prior art and examine the application properly.

INFORMATION TECHNOLOGY TO SUPPORT PATENT OPERATIONS

To respond to the growth in work and adapt to advances in information technology, Congress authorized funds[17] for USPTO to create databases to search prior art in patent and non-patent literature, provide information to the public on issued patents and applications, and create an electronic application filing system. USPTO has one of the largest enterprise storage systems for e-government[18] in the nation. However, it has had little success in creating an e-filing system for patents that stakeholders are willing to use; Trademark applicants filed electronically 73 percent of the time in FY 2004, while patent applicants did so only 1.5 percent of the time. Stakeholders say this is because the system is complicated to use and unique to USPTO.

USPTO developed an image-based application processing system (IFW), completed in August 2004, through which contractors scan all applications and then examiners review them on a

[17] In 1980 (in P.L. 96-517) Congress directed the Commissioner of Patents and Trademarks to report to Congress within two years on a plan to identify and develop computerized data and retrieval systems to be applied to all aspects of PTO operations. This was after USPTO had spent tens of millions to develop a series of internal information systems that did not get past the development stage. The then-PTO set a goal to have fully electronic patent searching by 1987, and did not achieve this until 2000, after spending hundreds of millions more than anticipated. While some other system development has gone more smoothly, Congress has become wary of USPTO IT system projections.

[18] A storage architecture in which data items can be retained in separate files but linked together to allow greater flexibility in organizing, comparing and rapidly retrieving information. For USPTO—which has massive amounts of data that relate to topics as diverse as patent statistics, content of issued patents or published applications, and the patent classification system—it is essential that staff and the public be able to interrelate the information quickly with a minimum set of complex and saved queries.

computer screen rather than paper. This IFW represents a major change in work method and continues to be enhanced.

USPTO's efforts to develop fully electronic patent prosecution—from applicant filing through issuance—have not been successful. Opinions vary as to why this has happened; representatives of stakeholder organizations believe USPTO developed too complex a system. Even now, when examiners use IFW for electronic review of applications, nearly all communication with applicants is still via paper. While communicating with applicants electronically is part of USPTO's overall Patent e-Government strategy, it has not progressed sufficiently to begin to work on the electronic communications requirement. The 2004 legislation that set patent and trademark fees reduced filing fees for electronic applications,[19] but USPTO currently scans these into the IFW system rather than process them electronically.

Since November 2004, USPTO has reinvigorated its e-filing initiatives and is more actively working with its stakeholders to create a system that they are willing to use. The agency will internally test an image-based e-filing capability, along with limited text access, in November 2005, and then beta test with its users in December 2005.

Other electronic systems support the patent process and provide information to the public and other patent offices. USPTO's web site gives access to the Patent Application and Information Retrieval system (Public PAIR), which contains patents, applications published after 18 months, and public provisional applications.[20]

The EAST (Examiner Assisted Search Tool) and WEST (Web-based Examiner Search Tool) search systems permit electronic searching of patent literature. Prior to their development in the early 1990s, patent examiners had to search most prior art by hand, though three of the 15 Technology Centers used another electronic search system. Reference copies of prior patents and some other literature were kept in boxes that were a similar size to shoe boxes, and examiners went through this material for every search—termed "flipping the shoes." Given the increase in patents over the past decade, if examiners had to search on paper, USPTO would need a massive amount of additional space to store the reference materials.

INSPECTOR GENERAL EXAMINES MANAGEMENT SYSTEMS

The Commerce Inspector General (IG) has conducted several recent studies on patent operations and human resources management (HRM). In 2001, the IG reviewed development of the automated systems patent examiners use to search for prior art (EAST and WEST), which are on the examiners' desktop computers. The IG report made several recommendations about providing more information to key decision makers, better specifying system requirements,

[19] Public Law 108-447, the Omnibus Appropriations Act for FY 2005, Sec 801. 118 Stat. 2927.

[20] Patent Application Information Retrieval (PAIR) is an electronic portal to PDF viewing, downloading and printing information and documents for patent applications not covered by confidentiality laws. As new applications become eligible for publication 18 months after the earliest effective filing date, they will be added to the database. USPTO projects it will add about 300,000 applications per year. There is also Private PAIR, which gives similar access to applicants (for their inventions only) before 18 months and, for those who will not file a foreign application, after this time.

strengthening testing procedures, communicating with end users (in this case, patent examiners) in development, and conducting more training before systems become operational.[21] USPTO generally agreed with the recommendations and began implementing them.

In a June 2004 report, the IG criticized the process used to hire a director of the Office of Human Resources (OHR), and made a number of recommendations designed to correct deficiencies in systemic weaknesses in OHR operations.[22] USPTO suspended its initial search for a director and began to work with the U.S. Office of Personnel Management to recruit and hire a director. The IG also criticized USPTO for not developing its own personnel management policies after it became a PBO, as it was to do under provisions of 1999 Patent and Trademark Office Efficiency Act. USPTO hired an OHR director in February 2005 (after having several directors since the mid-1990s and long periods of interim directors) and is developing its own procedures rather than continuing to rely on those of the Department of Commerce.

The IG report that generated the most discussion during this Academy Panel's study was completed in September 2004 and said that USPTO should reassess how patent examiner goals, performance appraisal plans, and the related award system are used to stimulate and reward examiner production.[23] The gist of the message was that: examiner production goals have not changed since 1976; 95 percent of art units process applications in less time than allotted goals; goals are not linked to supervisor and USPTO goals; examiners who received outstanding ratings in FYs 2001 and 2002 increased by 6 percent while production goal achievement declined; and overall production award recipients decreased from 72 percent in 1999 to 61 percent in 2003.[24] More details on the report and reactions to it are in Chapter 4.

In response to the September 2004 IG report, the Under Secretary of Commerce for Intellectual Property committed USPTO to reassess the current patent examiner goals, performance appraisal plans, and award system, and their effectiveness in stimulating and rewarding examiner production, as well as their effectiveness in achieving the objectives of the *21st Century Strategic Plan.*[25] (This is discussed more in Chapter 4.)

IMPACT OF THE CHANGING EXTERNAL ENVIRONMENT

USPTO's activities are greatly affected by changes in technology and the health of the U.S. economy, court decisions, and even shifts in college students' career choices. For example, with the explosion of dot.com companies in the mid to late 1990s, USPTO began receiving patent

[21] U.S. Department of Commerce, Office of Inspector General, *USPTO: Search System Problems Being Addressed, but Improvements Needed for Future Systems*, OSE-12679, March 2001, p. ii.
[22] U.S. Department of Commerce, Office of Inspector General, *USPTO Needs Strong Office of Human Resources Management Capable of Addressing Current and Future Challenges*, BTD-16432-4-0001, June 2004, pp. 2 and 7.
[23] U.S. Department of Commerce, Office of Inspector General, *USPTO Should Reassess How Examiner Goals, Performance Appraisal Plans, and the Award System Stimulate and Reward Examiner Production*, IPE-15722 September 2004.
[24] Ibid, p. ii.
[25] Memorandum from Johnnie E. Frazier to Jon W. Dudas, September 30, 2004, *Subject: Final Report, USPTO Should Reassess How Examiner Goals, Performance Appraisal Plans, and the Award System Stimulate and Reward Examiner Production* (IPE-15722).

applications in new fields and had to hire staff in new disciplines. Concurrently, it was hard to recruit in some Information Technology (IT) fields because competition was fierce for recent graduates and highly skilled professionals. Conversely, when the dot.com industry took a nose dive in 1999 and 2000, patent applications in these areas decreased somewhat, and it became much easier for USPTO to hire examiners in related fields.

Impact of Federal Court Structure

One of the key changes in the larger environment was the 1982 creation of the Court of Appeals for the Federal Circuit (CAFC)[26] and the perceived impact that has had on patent litigation and even patent quality. Prior to CAFC, appeals of patent cases that had been litigated in federal district courts went to one of the twelve circuit courts of appeals. The circuit courts varied in how they interpreted the obviousness standard and other factors that could substantially influence a case. Litigators would file cases in certain district courts because they wanted the circuit court for that district to hear an appeal rather than another appeals court.

While some variation among circuits could be accounted for by the technology that was more common in their geographic areas, this could not account for all differences. For example, between 1953 and 1977, patents litigated in the Eighth Circuit (Great Plains states) were seven times less likely to be valid than those in the Tenth Circuit (Rocky Mountains) and four times less likely than those in the Seventh Circuit (IL, IN, and WI).

After Congress created CAFC, patent holders grew far more likely to win appeals. Prior to the CAFC's 1982 creation, the patent owner lost 75 percent of patent cases litigated. From 1982 to 2000, the CAFC upheld approximately 70 percent of all patents litigated through it.[27]

The proportion of cases upheld is now lower, but some believe this does not reflect a change in the court's philosophy. In the widely discussed book, *Innovation and its Discontents*, authors Jaffe and Lerner believe that the increased ability to win in court has encouraged some holders of dubious patents to file cases to enforce them. Even though the CAFC is seen as more pro-patent, these weaker cases are less likely to prevail than some others, so the percentage of cases that patent holders win is likely to go down. The authors believe that patent holders are—in sheer numbers—winning as many or more cases as they did before, even though increasingly marginal patents are being asserted. They conclude that the CAFC did not merely standardize patent practice; it shifted patent practice to be more pro-patent than it had been in the previous decades.[28] Jaffe and Lerner are not alone in this perspective.[29]

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[26] Federal Courts Improvement Act of 1982, P.L. 97-164, 96 Stat. 25, 28 U.S.C. §1295 (April 2, 1982).

[27] Karen McDaniel, "The Big Business of Patents: The Role of the CAFC in Establishing Value of Intellectual Property," 2001, available at www.alteralaw.com/articles/IPmanagement.htm.

[28] Jaffe, Adam B. and Joshua Lerner, *Innovation and Its Discontents: How Our Broken Patent System Is Endangering Innovation and Progress, and What to Do about It*, Princeton University Press, 2004, pp. 105-06.

[29] Others that agree include Karl F. Jorda, (April 21, 2003 speech given to the Inventor's Network of the Capital Area available at www.dcinventors.org), and Karen McDaniel (article entitled "The Big Business of Patents: The Role of the CAFC in Establishing Value of Intellectual Property." Available at www.alteralaw.com/articles/IPmanagement.htm.

In April 2004, the National Research Council released a study, *A Patent System for the 21st Century*, which was prepared by the Board on Science, Technology, and Economic Policy of the National Academy of Sciences (NAS). The Board said that the CAFC has been "a vast improvement over adjudication in the circuit courts of appeals. It reduced forum shopping, focused attention on neglected issues of patent law, produced innovations at the trial court level, and in general yielded greater consistency."[30] One NAS recommendation, designed to encourage broader exposure to all areas of innovation law, was that the CAFC should encourage submission of more friend-of-the-court briefs, as these tend to raise broader issues and cite a wider range of literature than do the briefs of the parties in the case.[31]

In academic journal articles on the patent system, authors argue that when it became evident that more patents were being upheld, more people and firms filed more applications. Because no controlled evaluations of patent filing behavior exist, this theory would be difficult to prove, but it was mentioned as a trend numerous times in Academy staff interviews. It has also grown more common for inventors to apply for patents that revolve around existing ones, creating what are called patent thickets. A simple example would be one inventor creates a screwdriver with a smooth handle. Another develops one with a textured handle that is easier to grip, and someone else develops a shorter screw driver.

Overall interest in the IP discipline and legal representation has grown—in part because businesses have realized the enormous revenue that can be generated through licensing. The global technology transfer market is estimated to be worth some $100 billion annually. [32] The number of patent lawsuits settled in or disposed by federal district courts doubled between 1988 and 2001, from 1,200 to nearly 2,400. The number of practitioners specializing in intellectual property law and affiliating with ABA IP Law section increased 39 percent between 1996 and 2002, while overall ABA membership grew 6 percent over the same period.[33] The more lawsuits filed (in district court between private sector companies and as appeals to the CAFC) the more time USPTO needs to respond to them, especially within its Office of General Counsel, but also in terms of examiner time when it is one of their decisions that is being contested.

Changes in What Could be Patented

As the appeals system changed, so did questions of what could be patented. For example, in 1980, the Supreme Court ruled that an inventor could patent a living organism *(Diamond v. Chakrabarty, 447 U.S. 303).*

Much focus has been on patenting computer software, and in 1972, the U.S. Supreme Court ruled that software was not patentable subject matter by equating pure software to a mathematical algorithm. *(Gottschalk v. Benson, 409 U.S. 63).* The software industry thus protected its IP through copyrights and trade secrets instead of patents. However, courts began

[30]Stephen A. Merrill, Richard C. Levin, and Mark B. Myers, Editors, National Research Council (National Academy of Sciences), A *Patent System for the 21st Century*, the National Academies Press, p. 86.
[31] *A Patent System for the 21st Century*, pp. 86-87
[32] Hemlock, Adam and Wu, Jennifer, "U.S. Antitrust Implications of Patent Licensing," *The Federal Lawyer*, June 2005, p. 39.
[33] *A Patent System for the 21st Century*, p. 32.

to erode this principle, beginning with a 1981 Supreme Court decision *(Diamond v. Diehr, 450 U.S. 17*5). Because the PTO (as it was still called at that time) was not involved in the software industry from its inception and because case law evolved over approximately 15 years, the office had relatively little expertise in this area and an incomplete library of prior art.

Also evolving was patentability of what are termed business method patents.[34] The most well-known patent may be the Amazon one-click patent, though the case which brought business method patents patent legitimacy was *State Street Bank and Trust v. Signature Financial Group.* In 1998, the CAFC ruled that this software program, used to fix closing prices of mutual funds for reporting purposes, had been deserving of its patent. While business method patents are permitted in the U.S., they are not patentable in Europe, Japan, or Canada, or most other countries.

USPTO must constantly absorb changes in case law and technology, which entails hiring individuals with new skills and continually retraining staff. The newer the technology, the longer it takes to get a patent and the more likely errors will occur, in part because prior art is not readily available in patent literature. Examiners must search journal or trade articles, conference proceedings or other sources that are not necessarily well-indexed for patent search purposes.

THEMES IN EXTERNAL STUDIES OF THE PATENT SYSTEM

Concern about aspects of the patent system have persisted over time. One commentator writing in the *Yale Law Journal*, outlined the three major defects of the U.S patent system: first, that there is little reliance to be placed on the patent itself; second, that the time which it takes to carry on a suit to enforce any patent rights is great; and third, that the expense of such litigation is enormous." This was in 1894.[35]

Given the high value the nation places on innovation (and its potential to create wealth), there have been a number of important studies of the patent system. Because of the increase in pendency and of discussions of the quality of some patents issued in the U.S., it is not surprising that these reviews appear to be increasing. Some of their findings are discussed here, and they are noted throughout the report. Table 1-5 compares recommendations in several of the reports. The issues most often discussed are:

- Aligning aspects of U.S. patent law with those of other nations, including changing to a first-to-file priority system

- Changing the term of U.S. patents to comply with those of other nations (which Congress did)

[34] There is no standard definition for business method patents, though this general term is often use for internet/e-commerce patents for such things as online ordering and reservation processes, auctions, financial and banking services. Many other types of business methods are software implemented, but they do not have to be.

[35] D.J. Brewer, "The Patent System," 3 *Yale Law Journal* 149, 157 1894. As quoted in "Patent Abolitionism" by Mark D. Janis, Berkeley *Technology Law Journal*, spring 2002, p. 3.

- Creating a better administrative mechanism to protest or oppose an allowed patent

The President's Commission on the Patent System (1966)[36] provided President Johnson with a series of recommendations to improve patent quality and timeliness and thus ensure that the patent system could keep up with technological advances. Among its recommendations were that the U.S. recognize the importance of public disclosure of new technology and publish patent applications before they are granted, extend patent terms from 17 to 20 years, and streamline patent procedures by moving to a "first-to-file" priority system. To accommodate the small inventor, the Commission suggested permitting a preliminary application that could be filed before an idea had been tested.

Almost 30 years later (1992) the Advisory Commission of Patent Law Reform[37] repeated these three 1966 recommendations and also recommended (though somewhat differently) reform in the opposition process.[38] The report to the Secretary of Commerce also recommended that, "if a successful harmonization treaty is concluded, the U.S. patents and published U.S. applications be applicable as prior art references for novelty as of their earlier effective filing date (foreign priority date), and for both novelty and obviousness as of their U.S. filing date."[39]

As a result of some of these earlier studies, the U.S. has changed the patent term from 17 years from the date of grant to 20 years from the date of filing in the U.S., and publishes most patent applications at 18 months; they are easily researched on the USPTO web page. (Applicants who will file only in the U.S. can opt not to have their applications published.)

The U.S. retains the first-to-invent standard,[40] and it now permits provisional applications[41] (essentially place-holders for 12 months, while the applicant further develops the invention). The U.S. also has the Hilmer Doctrine,[42] which does not recognize non-U.S. filing dates for prior art purposes, and is again considering ways to reform the protest and opposition proceedings.
Studies, congressional hearings, and scholarly articles about the patent system have accelerated, fueled in large part by the increasing time between filing an application and having it allowed or denied. Inventors and industries are most concerned with the time from filing an application to

[36] Report of the President's Commission on the Patent System, *To Promote The Progress of Useful Arts in an Age of Exploding Technology*, December 1966, U.S. Government Printing Office. The commission was established by Executive Order 11215 of April 8, 1965.
[37] Report of the Advisory Commission on Patent Law Reform, presented to the Secretary of Commerce, August 1992.
[38] In the U.S., the primary method to challenge (oppose) a patent has become litigation, which is lengthy and expensive and can be started at any time. An administrative opposition process that a patent office runs would be less expensive and have a limited timeframe, such as opposition proceedings would have to begin within 9 months. EPO has such a system, and there are proposals (discussed in this chapter and Chapter 3) that the U.S. set up a post-grant opposition system.
[39] 1992 report, p. 9.
[40] The first inventor can file suit against the person who received the patent for an invention even if there is no publicly available prior art that documents the earlier invention.
[41] A provisional application (for utility or plant patents only) gets an early effective filing date and allows the term "Patent Pending" to be applied. It will not be published or examined until a corresponding non-provisional application is filed. This must occur during the next 12 months or the provisional application is considered abandoned. The information omitted from a provisional application—a formal patent claim, an oath or declaration, or any information disclosure (typically prior art) statement—must be present in the non-provisional application.
[42] In re Hilmer, 359 F.2d 859, 878, 149 USPQ 480, 496 (CCPA 1966) (Rich J.).

FAOM. There has been increasing concern about the quality of patents issued in the U.S. and rising interest in sharing the workload among foreign offices, which annually process about 200,000 nearly identical applications.

Federal Trade Commission Examines Competition and Innovation

The Federal Trade Commission's (FTC's) 2003 report[43] focused on balancing the need for the nation's economy to be competitive with the rights of patent owners. It drew from a series of hearings that FTC and the Department of Justice held over a 24-day period in 2002. The report concluded that patents and competition contribute to innovation, consumer welfare, and prosperity. However, it also stated that "more patents in more industries and with greater breadth are not always the best ways to maximize consumer welfare. A questionable patent can raise costs and prevent competition and innovation that otherwise would benefit competition."[44]

Recognizing that the most effective way to challenge a questionable patent is through litigation, which can be expensive and time consuming, FTC recommended that Congress enact legislation to create an administrative procedure to allow post-grant review of and opposition to patents. The report also recommended that Congress specify that challenges to the validity of a patent be based on "preponderance of the evidence" standard rather than the more difficult "clear and convincing evidence" standard.[45] Other recommendations addressed tightening legal standards used to evaluate whether a patent is "obvious," requiring that all applications be published after 18 months, and providing adequate funding for USPTO. The FTC recommended considering all costs and benefits in extending patent protection to new subject matter and that the standard for willful patent infringement be changed, which would require legislative action.[46]

[43] Federal Trade Commission, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, October 28, 2003.
[44] FTC. p. 18.
[45] FTC, p. 8.
[46] FTC, pp. 16-17. Willful infringement is conduct that constitutes an illegal use of another's patented invention where the infringer has no reasonable basis for believing that its actions are legal. A finding of willful infringement is a basis for increasing damages up to treble the actual amount and/or the award of attorney's fees to the prevailing party. Good-faith reliance on the advice of counsel can be relevant to the issue of whether an infringement was willful. It has gotten to the point that some firms or individuals do not even read about their competitors' patents because of concern for treble damage liability.

Table 1-5
Principal Recommendations of Panels and Institutions Studying the Patent System

USPTO	1966 Commission on the Patent System	1992 Advisory Committee on Patent Law Reform	2003 Federal Trade Commission	2004 National Academy of Sciences
Fees, resources, and personnel	Budget adequate for first class staffing and equipment	Budget sufficient to achieve 18-month average pendency	Adequate (more) funding	Additional resources needed to hire and train examiners and to fully implement electronic processing; create strong analytical unit
Evaluation	Improved evaluation process and annual quality ratings			Conduct reliable, consistent quality reviews that address all staff performance
Subject matter	Computer programs not patentable	Computer programs patentable	Consider all costs and benefits in extending to new subject matter	System should remain open to new technologies
Priority	First-to-file with preliminary applications	First-to-file with provisional applications		First-inventor-to-file system
Application publication	Publish application	Publish applications	Eliminate exception so all applications are published	Abandon rule of publication after 18 months for applicants not intending to patent abroad.
Prior Art	Recognize foreign art; revise criteria for prior art		Applicant to state relevance of prior art	Remove limitation on non-published prior art and the rule that foreign patents and patent applications may not be recognized as prior art as of their filing dates.
Standards	Applicant to have the burden of persuading USPTO		Tighten non-obviousness standard; second review in selected areas	Strengthen non-obvious standard; another method employed in selected areas; further harmonize patent examination and procedures and standards
Opposition	*Ex parte* pre-and post-grant	Revise reexamination to encourage third party participation	Post-grant opposition	Open review procedure
Patent Term	20-year term	20-year term		

Source: The information on the 1966, 1992, and 2003 reports was published in the National Research Council's *A Patent System for the 21st Century*, National Academy of Science, 2004. The summary of the NAS report was prepared by staff of this Academy.

National Academy of Sciences Recommends Reforms

A 2004 report of the NAS Board on Science, Technology, and Economic Policy recognized that, with the growing importance of technology to the nation's well-being, patents play an even more prominent role in the economy than in the past. With patents more actively sought and vigorously enforced, the NAS committee proposed a series of recommendations in seven areas.[47]

Some of the NAS recommendations repeat those of the 1966 and 1992 commission reports—the NAS Board advocated first-to-file and endorsed accepting prior art when these applications were first filed in other countries. It also recommended eliminating the "best mode requirement" (35 U.S.C. Section 112)—which is not used by the European Patent Office (EPO) or the Japan Patent Office (JPO) and mandates that an application state the best manner of using the invention as known to the inventor on the date of filing the patent application.[48]

The NAS Board focused more than other reports on the resources USPTO needs to fulfill its mission and steps needed if the U.S., Japanese, and European patent examination systems are to be harmonized. The NAS report said that to improve its performance USPTO needs additional resources to hire and train more examiners and fully implement a robust electronic processing capability.[49] Further, NAS said that USPTO should create a strong multidisciplinary analytical capability to assess management practices and proposed changes, provide an early warning of new technologies being proposed for patenting, and conduct reliable, consistent, reputable quality reviews that address office-wide and individual examiner performance.

The NAS Board identified other differences between U.S., Japanese, and European patent systems that it believes need reconciliation, including application priority ("first-to-invent" versus "first-inventor to-file"), the grace period[50] for filing an application after publication, and the U.S. exception to the rule of publication of patent applications after 18 months. This objective should continue to be pursued on a trilateral or even bilateral basis if multilateral negotiations are not progressing.[51]

Continuing Visibility for NAS and FTC Reports

The FTC, AIPLA, NAS' Board on Science, Technology, and Economic Policy conducted a series of "Town Meetings on Patent Reform" in the first half of 2005. The hundreds of participants at the four meetings discussed the FTC and NAS reports as well as academic articles (provided at the meetings but well-known to most before then) on post-grant opposition,

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[47] National Research Council, *A Patent System for the 21st Century*, National Academy of Science, 2004.
[48] *A Patent System for the 21st Century*, pp. 120-121.
[49] *A Patent System for the 21st Century*, pp. 103-104.
[50] U.S. patent statutes (as expressed in 35 U.S.C. Sec 102(b)) permit an inventor to file an application within one year of having disclosed the invention (at, for example, a professional meeting or in an article) without having the disclosure considered prior art that would preclude a patent grant. The U.S. considers this a way to encourage early disclosure and believes it especially benefits academic research result dissemination that could have commercial application. EPO and JPO do not have grace periods.
[51] *A Patent System for the 21st Century*, pp. 8 and 123-129.

continuations (discussed in Chapter 3), and patent quality. USPTO participated in all meetings, including providing senior leaders as speakers.

The two reports were also prominent parts of the discussion at a session the American Enterprise Institute held at a conference on "The Patent System and the New Economy" in March 2005, featuring speakers primarily from major corporations that use the patent system. Citing a number of the issues raised in the NAS and FTC reports, they endorsed many aspects of harmonization and the need for a post-grant review system. Speakers saw a number of other opportunities for changes to the current system, and many spoke of the need to reduce litigation.

Scholarly and Media Articles

"Patent reform" has become a prominent topic in magazines[52] and newspaper[53] articles, industry publications,[54] and, as noted, academic publications. It is featured in some 2005 legislative proposals as well. The opinions in articles and on web pages are not uniform. For example, one article suggests that—because relatively few patents are the subject of licensing or litigation—a sparing review would be the optimal level of examination for all patent applications. The implication is that USPTO patent quality does not matter since such issues get resolved through litigation.[55] After reading this, several authors argued that quality matters a great deal in the initial application prosecution because one invalid patent can cause a host of problems.[56] While litigation is the most obvious result of an improperly issued patent, it may also thwart innovation; for example, an overly broad patent may cover a legitimate invention someone else has underway.

Researchers recognize the difficulty USPTO has in deciding how to interpret standards for new technologies—the areas in which USPTO has been subject to most criticism. On one hand, the applicant will press for the most generous interpretation; on the other, the courts are the ultimate arbiters of what is permissible. USPTO must anticipate the outcome of litigation or of a challenge, such as reexamination, and where there is no clear law, make policy, as in the 2001 *Utility Examination Guidelines"* USPTO issued for genetic sequences.[57]

The media has reported some examples of questionable patents, such as the patent for "one-click" Internet purchasing. That patent describes an online purchasing system that stores a customer's credit card number and address information so that, when the customer returns to the website for a subsequent purchase, he/she uses a single mouse-click to input billing information. Critics believe this technology to be obvious, and therefore not patentable.

[52] "The Cost of Ideas," *The Economist*, November 11, 2004.
[53] Jonathan Krim, "Evaluating a Patent System Gone Awry," *Washington Post*, May 5, 2005.
[54] Lawrence D. Maloney, "Patent Office Faces Backlog Crisis," *Design News*, January 10, 2005
[55] Mark A. Lemley, "Rational Ignorance in the Patent Office," Public Law and Legal Theory Working Paper No. 46, School of Law, University of California at Berkeley, 2001.
[56] One of many rebuttals to Mr. Lemley was in John R. Thomas, "The Responsibility of the Rulemaker: Comparative Approaches to Patent Administrative Reform," 2002.
[57] Suzanne Scotchmer, *Patent Quality, Patent Design, and Patent Politics*, December 10, 2004, p. 2.

LEGISLATIVE ISSUES

The December 2004 Omnibus Appropriations Act[58] included a new fee structure, effective for two years, and an outsourcing proposal.

The Act:

- increases the fees for patent and trademark examinations
- creates incentives for applicants to submit shorter patent applications (by charging higher fees if an application has more than 100 sheets of paper)
- creates incentives for applicants to reduce the number of claims in a patent application by charging higher fees if there are more than three independent claims or more than 20 combined independent or dependent claims
- creates incentives for those who do not want to continue to pursue a patent application to withdraw it (by providing, through regulation, a refund if the patent application is abandoned)
- creates incentives for electronic filing by reducing filing fees for some applications by 75 percent
- permits individuals to do their own searches and thus get a reduced patent fee if their searches meet conditions the commissioner of patents has set
- sets up a process through which the USPTO director can conduct an 18-month pilot program through which commercial entities conduct searches
- requires that the USPTO director (the Under Secretary) submit a report on the pilot program to the P-PAC
- requires that the P-PAC review and analyze the director's report on the pilot program and submit a separate P-PAC report, to the director and Congress, that is an independent evaluation of the effect of pilot program search

Through its use of contractors, USPTO has outsourced a number of activities, many of them directly related to the patent process, and will soon outsource at least part of the classification function (through which a reviewer determines the category in which an application falls, and thus the technology center that will handle it), and post-grant publication (through which it publishes all patent applications either when the patent issues or 18 months after the inventor files the application, whichever comes first).

[58] Omnibus Appropriations Act for FY 2005, P. L. 108-447, Title VIII, Sec 801. 118 Stat. 2924-2928.

The patent prosecution process (search and examination) has remained with USPTO staff, specifically the patent examiners and their supervisors. The pilot program will, for the first time, separate the search for prior art from the decision as to whether to allow (issue) a patent or reject an application. USPTO issued a request for proposal in late April 2005.[59] It plans to outsource the PCT applications.

Bills Proposed in 2005

The key provision of the 2004 House bill (H.R. 1561) not incorporated in the Omnibus legislation was the provision to permanently eliminate withholding a portion of the patent and trademark fees. It would have done this by establishing in the Department of Treasury a Patent and Trademark Fee Reserve Fund. If USPTO fee collections for a fiscal year exceeded the amount appropriated to the USPTO for that year, fees collected in excess of the appropriated amount were to be deposited in the reserve fund. After the end of each fiscal year, the USPTO director was to make a finding as to whether the fees collected for that fiscal year exceeded the amount appropriated to USPTO, and if the amount collected exceeded the amount appropriated, the director was to refund some of the money to those who paid patent or trademark fees during that fiscal year.[60]

Patent applicants and the stakeholder organizations that represent them have been vocal about fees increasing several times in the past ten years (including in 2004), yet not all fees are provided to USPTO. (This is discussed more in Chapter 2.) The FY 2005 appropriation was designed to provide USPTO with all fee revenue (based on an estimate of anticipated revenue), and in FY 2006, the President proposed a USPTO budget that allows USPTO to have access to all of its fees.

On May 12, 2005, S. 1020[61] was introduced to allow USPTO to collect only the amount of fees that it may spend in that fiscal year. If Congress does not appropriate the full amount of estimated user fee collections for USPTO's use in a fiscal year, the USPTO director would be required to reduce fees for the remainder of that year to make estimated fee collections equal to the appropriation.

In addition, in April and June 2005 the House and Senate IP subcommittees held hearings on potential patent reform legislation in which participants discussed a committee print that addressed a host of issues. Some suggested changes would better align the U.S. patent system with the systems of other nations; advocates of other reforms believe changes are needed to prevent "gaming the system." Still others advocate changing varied aspects of patent litigation. As summarized by its sponsors,[62] HR 2795:

[59]The Request for Proposal (RFP) is located at http://www.uspto.gov/web/offices/ac/comp/proc/pctsearch/pctsearchhom.html.
[60] H.R. 1561, 108th Congress, Sec. 5, which would have amended 35 U.S.C. 42(c).
[61] The COMPETE Act of 2005, Title III of S. 1020 is U.S. Patent and Trademark Fee Modernization
[62] Sponsors are the chair and ranking minority member of the House Intellectual Property Subcommittee. The bill has broad bipartisan support.

- provides that the right to a patent will be awarded to the first inventor-to-file for a patent who provides an adequate disclosure for a claimed invention

- simplifies the process by which an applicant takes an oath governing the particulars of an invention and the identity of the rightful inventor

- deletes the "best mode" requirement from Sec. 112 of the Patent Act, which lists certain "specifications" that an inventor must set forth in an application[63]

- codifies the law related to inequitable conduct in connection with patent proceedings before USPTO[64]

- clarifies the rights of an inventor to damages for patent infringement[65]

- authorizes courts with jurisdiction over patent cases to grant injunctions in accordance with the principles of equity to prevent the violation of patent rights

- authorizes USPTO to limit by regulation the circumstances in which patent applicants may file a continuation and still be entitled to the priority date of the parent application[66]

- expands the 18-month publication feature to all applications[67]

- creates a new post-grant opposition system

- allows third-party submission of prior art within six months after the date of publication of the patent application

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[63] U.S. patent law requires that an applicant "set forth the best mode contemplated by the inventor of carrying out his invention." If the best way of using the invention is not adequately disclosed (whether accidentally or on purpose) one or more claims in the application may be disallowed. If intent to deceive is shown, that proof could be used to establish inequitable conduct, and the entire patent may be unenforceable.

[64] If the patent applicant (directly or because of an attorney's actions) is determined to have deliberately misled USPTO during patent prosecution, a court can declare the patent unenforceable. Actions that can be considered inequitable conduct include failing to disclose prior art or burying a material reference within a lot of irrelevant information.

[65] This would limit somewhat the grounds for proving willful infringement. Infringement (using a patent without the owner's approval) is willful when it is done deliberately and intentionally, and with knowledge of the patent. Copying an invention, if it continues after the existence of the patent is made known, is evidence of willfulness. However, infringement or active inducement of infringement is not willful if it is done with a good faith belief that the patent is either invalid or not infringed. The burden is on the patent owner to show willfulness by clear and convincing evidence. Among H.R. 2795's provisions is that a court would not find willful infringement if an infringer had "an informed good faith belief" that the patent was invalid or unenforceable.

[66] A continuation is filed before the original prior application is abandoned or patented. The continuation application receives the benefit of the earlier filing date of the application on which it is based.

[67] Currently, about 10% of applications are not published unless allowed as patents because the applicant states that he/she will not file an application for the same invention in another country. Some individuals believe this protects the inventor; others believe that lack of knowledge about the proposed invention means others may expend effort on something similar when (if they were aware of the application as prior art), they would not do so.

Later chapters address continuations (Chapter 2) and the proposed post-grant review system (Chapter 3) and some of the reform issues as they relate to patent harmonization (Chapter 8 and Appendix M).

Those who favor first-inventor-to-file believe that the first-to-invent priority system leads to increased litigation and prevents the U.S. from harmonizing its patent system with those of other countries. Harmonization, if achieved, could simplify the process for filing for patent rights across borders. A number of independent inventors have traditionally opposed changing to a first-to-file system because they believe it provides larger firms an advantage as they can more quickly finish research and get the application to USPTO. H.R. 2795 attempts to address one of these concerns by requiring that the law be changed to first-*inventor*-to-file. The premise is that this would prevent someone from simply stealing another person's idea and filing an application.

Former USPTO Commissioner Gerald Mossinghoff reviewed the extent to which small entities won patent interference hearings. Such hearings address whether a patent owner was actually the first person to invent the subject of the patent; under a first-to-file system, this would be a moot issue, as the filing date would determine the inventor. Mossinghoff's research showed that of the 2.5 million patents and 3,000 interference decisions issued between 1983 and 2004, 286 small entities won interference proceedings even though they had been the second to file their patent application; 289 small entities lost, even though they were the first to file. He concludes that the first-to-invent priority system does not particularly advantage or disadvantage small entities.[68]

WORK WITH OTHER NATIONS AND INTERNATIONAL ORGANIZATIONS

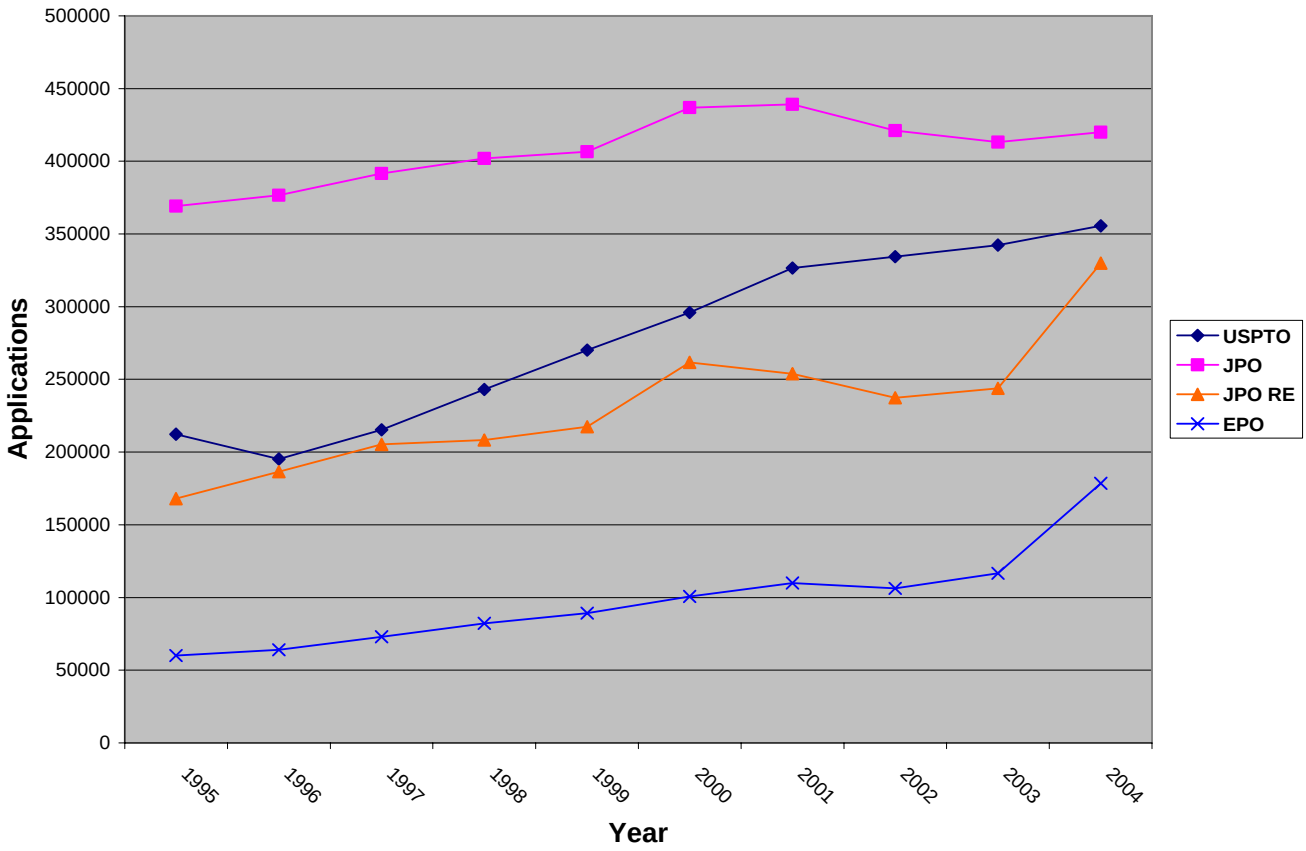
USPTO is not alone in growth of applications, as Figure 1-3 shows. Between 1995 and 2004, applications grew by 67 percent in the U.S., 198 percent in EPO, and 14 percent in JPO. However, in Japan (which has more applications than the other two offices), the number that best reflects workload is the request for examinations (RE), because not all applications in Japan go through the examination process.[69] The REs grew 97 percent between 1995 and 2004.

The number of REs in Japan and applications in EPO grew steadily but moderately from 1995-2003 and then substantially between 2003-2004. (This is discussed in the section on worksharing in Chapter 8.) In addition, USPTO issues its FAOMs faster than either EPO or JPO. In 2003, FAOM for JPO was 25 months and it was 20.8 months for EPO. With an increase in the number of examiners through 2010, USPTO hopes to reduce FAOM pendency to 18 months by that time.

[68] Data presented by the Honorable Gerald Mossinghoff at "Town Hall Meetings" in 2005, and soon to be published in the *Journal of the Patent and Trademark Society*.

[69] With its system of deferred examination, applicants in Japan file and then have up to three years to request the examination (which includes the search). Until they do, JPO does not begin work on the application. Many applicants do not request an exam; thus, the request for an examination is the better indicator of work the JPO staff will undertake.

Figure 1-3
Applications in USPTO, JPO, and EPO, 1995-2004
and
Requests for Examination in JPO, 1995-2004



Patent and trademark applicants are likely to apply for inventor rights in other countries as well as the U.S., and this has led to the need for intense cooperation among granting nations. Some of this interaction is done through formal treaties or bilateral/trilateral agreements. The PCT simplifies obtaining international patent protection in multiple countries and facilitates public access to a wealth of technical information relating to inventions. By filing one international patent application under the PCT, an inventor can simultaneously seek protection for an invention in more than one hundred countries. The U.S. is signatory to the treaty. (There is more on the PCT in Appendix M.)

Other interaction is less formal. Since 1983, USPTO, EPO and JPO have undertaken Trilateral Cooperation to gain mutual benefits in patent administration. One of the principal activities of the trilateral cooperation is to exchange views and information regarding patent documentation and classification, automation programs and patent examination practices, and general patent administration. The interchange of examiners between the offices has facilitated this activity.

In November 1997, the Trilateral Offices recognized that the globalization of trade and industry would create the need for a world-wide system for the grant of patents. The advantage of such a system for users of the patent system would be:

- Improved patent quality
- Reduced costs
- Reduced processing time in the patent granting procedure
- Improved patent information dissemination[70]

With these objectives in mind, USPTO, EPO and JPO identified the following for implementation:

- Trilateral website[71]
- Trilateral patent network
- Trilateral concurrent search and examination

Chapter 8 discusses cooperative activities now underway.

SCOPE AND METHODOLOGY

In support of USPTO's *21st Century Strategic Plan* and to help ensure that USPTO is on a path to effectively achieve modernization, the House Appropriations Committee, through the Science, State, Justice and Commerce Subcommittee, asked the Academy and the Government Accountability Office (GAO) to work cooperatively to examine:

- The progress USPTO has made in achieving its 21st Century Strategic Plan milestones.

- The challenges USPTO faces in meeting these milestones—specifically those related to improving the quality and timeliness of patent examinations, greater reliance on electronic information and processing systems, and attracting and retaining a quality workforce.

- The extent to which the organization's structure and patent review process are appropriate to:

    - fulfill the strategic plan goals
    - increase patent quality
    - decrease the rate of patent pendency

- The extent to which USPTO has a suitable allocation and skill mix of employees.

[70] Trilateral web site, various sections of which are maintained by the three patent offices, is located at www.european-patent-office.org/tws/gen-1.htm.
[71] Each office hosts different parts of the site. See http://www.uspto.gov/web/tws/twsindex.htm.

In June 2005, GAO issued its reports[72] examining progress and challenges related to the strategic plan, a range of information technology issues, and the USPTO personnel system and some related human capital issues. The Academy's portion of the study was to review organization structure, business processes and the extent to which they contribute to the timeliness of patent examinations, as well as a number of stakeholder-related questions.

Academy Fellows and specialists knowledgeable in patent and trademark processes, federal government management, and information technology comprised the Panel that directed this project and guided staff that conducted the research. (Panel members, staff, and their biographies are listed in Appendix A.) The Panel held six meetings to develop the project work plan, meet senior USPTO managers and stakeholders, review USPTO work processes, and develop recommendations. The Panel and staff provided periodic status reports on the study's progress to USPTO and congressional staff.

Project staff developed and organized the information and analysis provided in this report, and the Panel used it to develop findings, conclusions, and recommendations.

The approach to this study entailed:

- Interviewing USPTO staff to understand work processes and quality review mechanisms, the organization's culture, and how USPTO works with other nations' or regions' patent organizations

- Reviewing past studies and current academic literature, especially that related to patent quality

- Analyzing trends in patent applications and pendency

- Meeting with stakeholder organizations (including an all-day meeting with the Academy Panel) to discuss the communication between their organizations and USPTO, options for process changes, and harmonization

- Visiting EPO and JPO officials and professional associations in their countries to learn about the similarities and differences in the patent systems and the potential for work sharing

- Assessing the patent resource model that USPTO uses to project staffing needs

- Running simulations, using the patent resource model, to determine the impact additional staffing levels would have had on patent pendency

[72] Government Accountability Office, GAO-05-720, *Intellectual Property: USPTO Has Made Progress in Hiring Examiners, but Challenges to Retention Remain,* June 2005; and GAO-05-336, *Intellectual Property: Key Processes for Managing Patent Automation Strategy Need Strengthening,* June 2005.

- Examining the extent to which selected federal agencies and federal government corporations retain all user fees they collect

- Attending relevant meetings of professional organizations, including:

    - ABA Section of Administrative Law and Regulatory Practice session on "Administrative Reform and the Role of Expertise in the Patent System"
    - Trilateral Users Conference, sponsored by AIPLA;
    - "The Patent System and the New Economy," sponsored by the American Enterprise Institute
    - Boston "Town Hall Meeting," sponsored by FTC, NAS, and AIPLA
    - Washington, DC summary "Town Hall Meeting"

A list of those interviewed is in Appendix B and the bibliography of materials is at Appendix C.

ROAD MAP TO THE REPORT

Pendency and Resources

Chapter 2 looks at pendency and its potential causes and the options for reducing it, including the need to substantially reduce or eliminate the practice of using USPTO fees for non-USPTO purposes.

Quality

Chapter 3 describes the quality concerns that have come to light and are often discussed by USPTO stakeholders, and describes actions USPTO has underway to improve quality. It then offers recommendations that USPTO could undertake on its own and some that would require congressional action.

Workforce

Chapter 4 addresses a range of workforce issues such as hiring and attrition, managing and developing the workforce, the rewards system.

Human Capital System

Chapter 5 identifies human capital flexibilities found most effective for federal other agencies and describes USPTO's follow through on its strategic plan for workforce restructuring. It describes recent legislative changes, examines USPTO's use of flexibilities, and discusses the impact of USPTO labor management relations on the agency's ability to manage its human capital programs. The chapter then explores alternative human capital management approaches that might better support USPTO's mission.

Management Issues

Chapter 6 discusses the varied levels of success USPTO has had in management, and presents characteristics of well managed organizations. It then makes recommendations in several of the areas, including planning, organization culture, and strategic assessment of organization operations.

Structure of the Organization

Chapter 7 looks at USPTO's current structure as a performance-based organization and proposes changing the structure of USPTO to a government corporation and establishing it as the U.S. Patent and Trademark Corporation.

Other Patent Offices

Chapter 8 describes USPTO's efforts to work with JPO and EPO to develop ways to share work, especially patent classification and searching. It recognizes that full work sharing will not be possible without congressional action, and describes actions USPTO could undertake without legislative changes.

Summary Conclusions

Chapter 9 provides the Panel's concluding observations.

Recommendations

Appendix N provides a compilation of the Panel's recommendations.

CHAPTER 2
PATENT PENDENCY AND THE POTENTIAL TO REDUCE IT

Congress directed USPTO to accelerate patent processing time and improve patent quality through workforce and process improvements, and USPTO's *21st Century Strategic Plan* addresses these issues. Achieving a balance between timeliness and quality to meet congressional expectations is challenging for the following reasons: (1) a dramatic rise in the total number of patent applications, some of which are becoming increasingly complex, (2) the inability to fund consistent increases in examiner staff to meet the increased workload, and (3) an increasing number of applicants submitting additional applications for an invention that was claimed in their prior application, a practice called continuations.[73]

Before discussing pendency and how it varies among TCs, it is important to explain the basic steps in the patent prosecution process. This chapter then presents trends in workload and pendency (the key measure USPTO uses to assess the timeliness of patent prosecution), how pendency varies among TCs, and fee availability and its impact on pendency. The chapter also discusses factors other than resource levels that affect pendency. It concludes with information on JPO's and EPO's experiences with the search and the examination functions of patent prosecution and the status of USPTO's pilot project to outsource the search function.

STEPS IN THE PATENT PROSECUTION PROCESS

The content of applications varies, but the basic patent process is consistent for all TCs**.** Patent prosecution begins when an application arrives in the Office of Initial Patent Examination (OIPE) and receives a serial number. All applications (even those submitted through USPTO's electronic system) are scanned to include in the electronic IFW system.[74] Technical support staff do a formalities review to ensure the application has all the required elements. If the application is not complete, it does not receive a filing date and the applicant is notified of the deficiencies.

After the formalities review, the application is assigned a classification from the patent classification table according to the subject matter of the invention. If the application is considered complete, the applicant is sent a receipt including the application filing date. OIPE then notifies the appropriate TC that an application is ready for review.

The SPEs or their designees in the TCs review the application to determine whether it has been assigned to the appropriate center. Applications are retained in a docket specific to a particular "art" unit in the center. For example, the work group that handles chemical and materials

[73] A continuation is filed before the original prior application is abandoned or patented. The continuation application is given the benefit of the earlier filing date of the application on which it is based. Applicants can also pay a fee to make a request for continued examination (RCE) after USPTO completes the patent prosecution process. A new application is not submitted for a RCE.

[74] The IFW is an electronic version of a patent application, including image and/or text versions of the bibliographic information, all papers as filed, and all office actions and correspondence related to that application.

engineering has eight art units (such as one for synthetic resins and another for chemical products and processes, solar cells, and sputtering apparatuses).

The SPEs assign applications to examiners on a first-in, first-out basis, based on examiner availability. Using criteria for patentability as specified in 35 U.S.C. Sec. 101-103, and discussed in Chapter 3, examiners review applications to determine whether USPTO should issue a patent.

Common steps in the patent prosecution process are (1) search, (2) examination, (3) amendments review, and (4) post examination.

Search

- Examine the specification, in which the inventor specifies, describes, illustrates, and discloses the invention in detail.

- Examine the claim or claims defining the scope of protection the applicant believes should be allowed. (Claims deal with apparatus, methods, products, and compositions of matter and new and useful improvements. Each claim is treated separately to determine patentability.)

- Determine whether to request a restriction, in which an examiner concludes that an applicant claims two or more independent and distinct inventions. The examiner would instruct the applicant to pursue one group of claims in an application and file additional applications for the other inventions.[75]

- Conduct a search of commercial and in-house databases for references to the invention or similar inventions.

Examination

- Review search results and apply criteria for patentability.

- Complete the initial examination and issue an FAOM, which either:

    - Provides a Notice of Allowance (NOA), telling applicants that they are entitled to a patent under the law and requesting payment of an issue fee within three months (non-extendable) from the mailing date of the notice; or

    - Provides an initial rejection, including (if possible) suggestions to correct the deficiencies.

[75] The new application(s) are called divisional applications, and they are entitled to a priority or filing date based on the application from which they have been divided.

Amendments review

- Receive the applicant's response, which can take up to three months after the first action, and can be extended by three months if the applicant pays an additional fee. If the applicant does not respond, the patent application is considered abandoned.[76]

- Issue the second examiner action recommending an allowance or issuing a rejection.

- Repeat these two steps until the examiner issues a final rejection or an allowance.[77]

Post examination

- Participate in the appeals process by preparing a position paper in response to an applicant's appeal brief for the USPTO three-person Board of Patent Appeals and Interferences (BPAI), should the applicant not agree with a final rejection.

PENDENCY AND WORKLOAD

Pendency is measured from the time an application is filed to after the examiner (1) completes an initial examination and issues a preliminary assessment of patentability (FAOM) and (2) makes a final disposition of the application either through an allowance or a rejection, or because the applicant has abandoned the application. Congress established timeframes for various actions during the patent prosecution process that, if not met, trigger the extension of the patent term. The pendency timeframes are 14 months and 36 months after filing for FAOM and patent issuance, respectively. On average, USPTO has issued patents within 36 months. But, since FY 2001, on average, USPTO has exceeded the 14-month timeframe for issuing FAOMs. However, there are wide variations in FAOM pendency among the TCs.

A patent term is 20 years. The term begins on the date the patent is granted and ends 20 years from the date the patent application was filed. If USPTO does not complete its various actions within the statutory timeframes, the term of the patent is extended by the number of days USPTO exceeds the timeframes.[78] As of May 31, 2005, USPTO had extended terms for 50,384 patents, with an average extension of 226 days. It made most of these extensions because of the inability to meet FAOM timeframes. While the provision for extending the patent term could be viewed as sufficient recompense for delay, from an applicant's perspective each day of delay in issuance is a day the applicant may not be able to engage in activities such as raising capital to bring an invention to market. From a competitor's perspective, adding several months to a patent term is

[76] The applicant may respond by submitting (1) an amendment to meet the examiner's objection, (2) a disagreement with the examiner's objection called a traversal, or (3) a request for continuing examination.
[77] MPEP706.07(a).
[78] The 1999 American Inventors Protection Act provides a guarantee that would ensure that diligent applicants maximize their patents' terms. The patent term will be extended a day for each day of delay if USPTO fails to: (a) issue a first office action within 14 months filing, (b) respond to an applicant's reply to a rejection or to an appeal brief within 4 months, (c) act on an application within 4 months of a decision of the Board of Patent Appeals and Interferences or a decision of the federal courts, (d) issue a patent within 4 months of payment of issue fee, or (e) issue a patent within 36 months of filing.

time the competitor cannot take advantage of in refining their own product. From a consumer's perspective, a longer patent term may have negative consequences such as a drug maintaining its initial manufacturer's higher price rather than being available in a lower-priced generic form.

Variations in Pendency and Workload among TCs

USPTO has regularly stated its goal of issuing patents as fast as possible and, on average, it issued FAOMs within the 14-month timeframe through FY 2000. However, since FY 2000, on average, FAOM pendency has steadily increased, rising to 20.2 months in FY 2004. The FY 2005 estimate for FAOM pendency is 20.7 months.

A substantial portion of the time associated with FAOM pendency stems from waiting for an examiner to be able to work on the application--time spent in the queue. The number of patent applications increased by 117 percent from 1990-2004 and USPTO anticipates the 2005 level will be 5.5 percent above 2004. The increase in applications, coupled with the growing backlog, led to 837,858 pending patent applications as of April 2005. But pendency and workload vary significantly among the TCs.

Table 2-1 shows the pendency for FAOM and the total pendency by TC from 2001-2004. Variations in numbers of applications and pendency are substantial. Some of the variations are:

- FAOM pendency was the highest and grew the most in communications (TC 2600, growth of 8.9 months) and computer architecture software and information security (TC 2100, growth of 9 months), both areas where technology is rapidly evolving.

- Applications for chemical and materials engineering patents (TC 1700) were relatively steady from 2001-2004, ranging from 49,122 to 49,334. The number of FAOMs has almost kept pace with the number of applications—with FAOMs fluctuating between 6,600 and 9,250 less than the number of applications. FAOM pendency increased 3.7 months from FYs 2001-2004.

- Applications for computer architecture software and information security (TC 2100) were 10,000 higher in 2001 than 2002 and the number of first actions doubled between 2001-2004. There were 3,735 more applications than FAOMs in 2004. Pendency increased from 24.3 to 33.3 months from FYs 2001-2004.

- Variations in numbers of applications in biotechnology and organic fields (TC 1600) stabilized recently, but the gap in 2004 between applications and FAOMs (11,654) is second only to the gap of 15,720 in semiconductors, electrical and optical systems (TC 2800) and components where the number of applications steadily grew. However, FAOM pendency for this area increased by only .8 months from FYs 2001-2004, while it increased 7.6 months in biotechnology and organic fields.

Table 2-1. Status of Utility, Plant, and Reissue (UPR) Applications by Technology Center[79]

TC and Information on Status	FY 2001	FY 2002	FY 2003	FY 2004
1600—biotechnology & organic fields				
• Utility, Plant, and Reissue (UPR) applications filed	36,590	41,641	38,613	38,164
• First actions	30,348	29,727	27,875	26,510
• FAOM pendency (months)	11.6	13.2	15.8	19.2
• Disposals	28,197	31,582	31,905	27,624
• Total pendency (months)	26.0	25.5	27.8	29.9
1700—chemical and materials engineering				
• UPR applications filed	49,122	49,636	49,585	49,334
• First actions	39,876	43,043	42,556	41,323
• FAOM pendency (months)	14.2	15.6	16.7	17.9
• Disposals	40,661	42,041	44,083	41,804
• Total pendency (months)	25.8	25.5	26.6	27.6
2100—computer architecture software & information security				
• UPR applications filed	39,352	29,475	29,388	34,653
• First actions	15,128	19,430	22,685	30,918
• FAOM pendency (months)	24.3	28.8	31.6	33.3
• Disposals	15,441	14,861	18,190	22,581
• Total pendency (months)	32.0	36.3	38.0	41.1
2600—communications				
• UPR applications filed	42,920	42,144	41,528	48,210
• First actions	24,415	30,473	34,806	39,264
• FAOM pendency (months)	22.5	27.7	29.6	31.4
• Disposals	24,735	26,174	30,465	33,564
• Total pendency (months)	32.2	34.9	39.0	40.5
2800—semiconductors, electrical & optical system components				
• UPR applications filed	72,203	74,012	75,437	81,144
• First actions	59,098	68,932	70,102	65,424
• FAOM pendency (months)	13.2	13.4	13.6	14.0
• Disposals	55,919	62,076	70,629	70,543
• Total pendency (months)	23.3	23.2	23.9	23.9
3600—transportation, electronic commerce, construction, agriculture, licensing & review				
• UPR applications filed	34,944	44,641	45,306	47,489
• First actions	31,896	38,407	40,404	39,533
• FAOM pendency (months)	13.2	14.8	15.4	15.6
• Disposals	30,409	34,093	40,065	37,408
• Total pendency (months)	22.1	22.1	23.5	24.1
3700—mechanical engineering, manufacturing and products				
• UPR applications filed	50,950	52,139	53,595	56,533
• First actions	41,010	45,042	44,681	45,344
• FAOM pendency (months)	12.0	14.6	15.0	15.2
• Disposals	41,952	41,368	46,074	41,186
• Total pendency (months)	21.1	21.8	23.7	24.1

Source: USPTO annual reports

[79] This table presents information for applications for utility and plant patents and reissued applications. Utility patents are for inventions that perform useful functions. Plant patents are for new strains of asexually reproducing plans. A reissue patent corrects an error in an unexpired patent. Most applications are for utility patents.

What the numbers alone cannot show is the reason for variations. The dot-com bust accounted for some decline in computer architecture software and information security between 2001-2002, and the recovery in these industries precipitated the growth between 2003-2004. While surges in applications in biotechnology have not been as substantial as in other areas, FAOM pendency has increased more because of difficulties in recruiting, training, and retaining staff in these competitive fields.

USPTO routinely responds to changes in application volume by moving staff from one art area to another within a TC. In FY 2001, TCs for computers and information security and communications were formed. In FY 2002, business method patents—many of which are computer software-related—moved to a different TC. However, these adjustments do not affect total workload.

Table 2-2 shows FY 2005 pendency as of April 1, 2005. Pendency has increased since FY 2004 in six of the seven TCs. For example, in TC 1600, from FYs 2004-2005, FAOM pendency rose from 19.2 to 21.6 months, while in TC 2100 it grew less, but remains high at 34 months.

Table 2-2. FY 2005 Pendency as of April 1, 2005

TC	Number of months
1600—biotechnology & organic fields	
• FAOM pendency	21.6
• Total pendency	30.4
1700—chemical and materials engineering	
• FAOM pendency	19.2
• Total pendency	28.4
2100—computer architecture software & information security	
• FAOM pendency	34.0
• Total pendency	41.9
2600—communications	
• FAOM pendency	31.0
• Total pendency	41.2
2800—semiconductors, electrical & optical system components	
• FAOM pendency	14.6
• Total pendency	24.3
3600—transportation, electronic commerce, construction, agriculture, licensing & review	
• FAOM pendency	17.1
• Total pendency	25.6
3700—mechanical engineering, manufacturing& products	
• FAOM pendency	16.3
• Total pendency	24.7

Source: USPTO

Increased Complexity in Patent Applications

Individual applications have become more complex because of increases in the (1) number of claims in each application and (2) the amount of prior art cited. This increased complexity could explain why pendency rates for some TCs increased although the total number of applications

may have declined or increased slightly. In addition, USPTO is receiving more applications for inventions in complex technologies, which also increases the complexity of examiners' work.

- The average number of claims per patent application from 1998-2002 increased from 18.4 to 23.5,[80] and to 23.6 in 2004. TC and art unit directors believed that the increase in the number of claims posed the most significant challenge they faced in processing patent applications. One study of the patent process concluded once the number of claims in an application exceeds 12.5, each additional claim adds 1.67 days to the processing time.[81] Some of the increase in claims may be attributed to the Supreme Court's decision in the *Festo* case,[82] which encouraged inventors to include a larger number of claims in the applications with the goal of having at least some of the claims survive the examination process without an amendment.

- Seven percent of all applications represent about 25 percent of the patent claims. USPTO believes that complexity of analysis is directly related to the number of claims presented and that large numbers of claims affect examiners' ability to conduct the high-quality of examinations that [inventors] should expect from the patent system.[83]

- The amount of prior art has increased but the increase has not been quantified. Some of this is a function of a society in which people invent more (as shown in the overall increase in applications) and write more (as reflected in the number of books being published and web pages constructed). Patent examiners must go beyond patent literature to sources such as papers presented at conferences, news articles, and web pages, whether the latter are formal sites for corporations or blogs. The amount of prior art to review does not necessarily correlate with the length of the application. A 20-page application could have 15 pages of detailed references that the examiner must review.

The December 2004 Omnibus Appropriations Act authorized additional fees if applicants submit applications that have more than 100 pages, more than three independent claims, or more than 20 combined independent and dependent claims. These additional fees could reduce the complexity of applications in the long term.

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[80] U.S. Department of Commerce, Office of Inspector General, *USPTO Should Reassess How Examiner Goals Performance Appraisal Plans, and The Award System Stimulate and Reward Examiner Productivity*, IPE-15722, September 2004, pg. 17.

[81] Mark A. Lemley and Kimberly A. Moore, *Ending Abuse of Patent Continuations*, UC Berkeley, Public Law and Legal Theory Research Paper Series (No. 140), and George Mason Law and Economic Research Paper (No. 03-52), pp. 74-75.

[82] *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiski Co.* (2002) The Supreme Court ruled that when a patent owner submits an amendment to a patent application that narrows the original claim, the patent applicant **may** be barred from suing for infringement, but not absolutely barred from suing for infringement. The Court ruled that patent owner should have the opportunity to overcome a presumption of being barred from suing by demonstrating that at the time of the amendment a person skilled in the art could not have reasonably been expected to draft a claim that literally covered the invention of the accused.

[83] Under Secretary of Commerce's April 21, 2005 testimony before the Senate Committee on the Judiciary, Subcommittee on Intellectual Property, pg. 10.

FEE AVAILABILITY AND ITS IMPACT ON STAFFING LEVELS AND PENDENCY

Congress converted USPTO to a fee-funded agency in 1991 but still required that USPTO receive annual appropriations before it could spend any of its fee revenue. Because the administration presents agency budgets to Congress almost eight months prior to the beginning of a fiscal year and Congress must enact an appropriations bill (or a continuing resolution for appropriations) prior to the start of the fiscal year, inherent challenges arise in adjusting USPTO's annual appropriation to its volatile and varying workload. While the administration does occasionally request and Congress does provide supplemental appropriations for major unexpected spending needs—prime examples include responses to natural disasters or emergency national security needs—normal federal agency workload changes (even those in an area that affects innovation and, ultimately, the economy) are not usually considered unexpected emergencies warranting supplemental funding. Thus, changes in USPTO workload throughout the year, even though they may be more unpredictable than some other federal agency workload changes, would not rise to this level of attention.

Between FY 1992 and 2004, Congress appropriated $10.1 billion for USPTO operations. However, beginning in FY 1992, Congress limited USPTO access to all of the patent and trademark fees collected during the year. A review of USPTO's appropriations and fee collections between FYs 1992-2004 indicated initial appropriations were $742.7 million less than total fee collections. However, Congress later released some of these initially unappropriated funds, and also permitted USPTO to carry over some of the remaining fee revenues not spent in one fiscal year to the next. Between FYs 1992-2004, the net amount of fee revenue not available for USPTO to spend was $741 million. This was 6.7 percent of the total USPTO spending over that period. (Of the $741 million, $573 was patent funding and $168 was trademark funding.)

While the overall percentage of fees not initially released from FYs 1992-2004 was 6.7 percent, in some years it was substantially above or below that level. For example, from FYs 1992-96 funds initially unavailable ranged from 2-4 percent. In FYs 1999-2000 the proportion was 12 percent. While not all fees were appropriated to USPTO, until FY 2005 USPTO did not pay for the full accruing costs of its employees' retirement, health, and life insurance benefits. In FY 2005, this was $40 million.[84]

To some degree, administration and congressional decisions about the amount of funds to release to USPTO related to concern as to whether USPTO would be able to spend all of the fees collected, or whether, given some of the problems associated with developing new information systems, USPTO had the capacity to manage the additional funds. This is in contrast with the perspective of many stakeholders that inventors, who expect the funds to be used to prosecute their applications. The lack of USPTO access to all fees was especially vexing to those who

[84] This is part of a broader federal effort to accrue retirement costs by requiring increased payments from government agencies to the government's retirement accounts or trust funds. Previously, agencies did not recognize in their annual budgets any of the accrual costs of such expenses as postretirement health benefits.

were aware that in some years Congress permitted USPTO to charge a surcharge to fund patent operations, and then did not provide USPTO with all of these funds.[85]

Simulating the Impact of Fee Availability on Achieving Pendency Targets

To better understand the impact of these fee availability limits on USPTO's staffing levels and pendency rates, the Panel analyzed historical patterns in funding, staffing, and pendency using the resource model, the Patent Production Model (PPM), which is maintained by the Office of Financial Management under the Commissioner for Patents.[86] The Panel evaluated the model's reliability and then used it to estimate how different funding levels affected the number of examiner staff and the effect on pendency. PPM is a computer model developed in the 1980s to link staffing, productivity, workload, and production, and forecast expected pendency. It has been continuously modified and updated, and in the Panel's opinion is a useful management tool for projecting staffing needs relative to projected workloads and measuring program impacts.

To determine the impact on staffing and pendency, the Panel requested that USPTO simulate the programmatic impact if additional funds had been available for staffing.[87] The Panel asked for three simulation. For each, the Panel wanted to know the impact on pendency if additional resources been available for examiner staffing, and what level of staffing would have been needed to achieve given levels of pendency. The three simulations were;

- What amount of spending would have enabled USPTO to maintain 1996 levels of patent pendency?

- What difference would an amount close to $573 million (the funds Patents did not receive) have made?

- What difference would a lesser amount of spending ($503 million) have made?

The first two simulations assume that any additional funding would be efficiently used to expand patent examiner staffing to meet annual workloads. Moreover, the additional funding would have been provided throughout the period rather than in one or two large lumps. This allowed the model to avoid or minimize the development of any workload backlogs. The third simulation

[85] The surcharges not available are part of the overall $741 million in unavailable fees. The surcharge was in effect from FYs 1992-98 and totaled $749 million. In FY 1998, the surcharge was $119 million, and $92 million was initially withheld.

[86] The PPM is a very detailed representation of PTO's personnel changes, workflow, and the interaction between the two. The model projects anticipated staffing levels for patent examiners, their production, and the impact of their production on the workload of patent applications. It produces estimates of the work force, costs, and patent pendency to first action and to patent issue or abandonment. The panel used an expert to assess the model. The expert spent substantial time reviewing the model and deemed it a sophisticated tool that could be used as the Panel requested.

[87] For this simulation, the number of hires was the only variable that changed to reach or exceed a specific pendency goal. The model accounted for all attrition, promotions, and productivity. Hiring was not increased beyond the level that could be funded from the fees.

assumed that USPTO might have chosen not to use the entire $573 million on examiner staffing.[88] (Full details on the simulation results are discussed in Appendix D.)

Simulation Number One: Resources Needed to Maintain 1996 Pendency Levels

The assumptions for the first simulation were:

- USPTO would have had no limitations on total fees available for additional staffing.
- USPTO had no fiscal year limitations on its use of funds.
- USPTO would have hired staff to reduce first action (FA)[89] and total pendency to the maximum extent possible consistent with a sustainable work force (no layoffs, fully employed and factoring in actual attrition).
- USPTO would have made full allowance for all associated hiring costs (space, equipment, training, supervision, overhead, etc.).

Using these assumptions, the Panel requested the historical information[90] and simulations for:

- FA and total pendency rates
- GS level, and average grade of the work force
- salary and benefit costs of examiner hires and
- total costs.

The first simulation showed that USPTO would have needed about $680 million of its unavailable fees to ensure that FAOM and total pendency would never have exceeded the FY 1996 levels of 8.5 months and 20.8 months, respectively. In FY 2004, pendency would have declined to 7.8 and 18.2 months respectively, compared to the actual 20.2 and 27.6 months. (See Figure 2-1 for number of months to FAOM.) To achieve this, USPTO would have needed 7,237 work years above historical levels over the period FY 1989 - 2004. (See Figure 2-2.) With the additional work years, USPTO could have prosecuted 562,676 additional applications. Total patent examiner staff on board at the end of FY 2004 would have been 4,308 instead of 3,681.

[88] The $503 million chosen for the third simulation was an arbitrary number, used to demonstrate a simulation with an amount less than the $573 total patent fees unavailable.

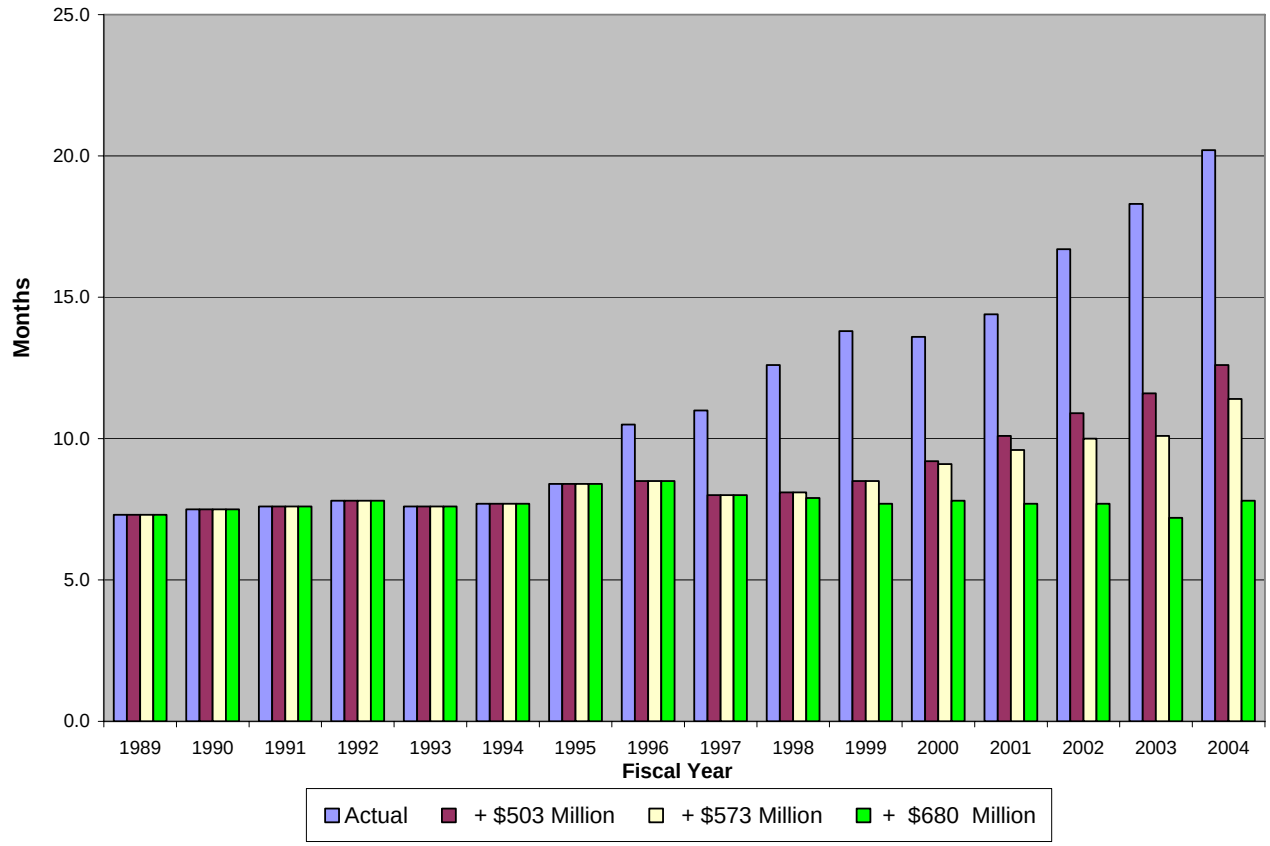
[89] This report usually discusses FAOM pendency, which represents the first communication with the applicant that deals with patentability -- whether USPTO believes an invention can or cannot receive a patent. First action (FA) pendency also includes some other data, such as an examiner's decision that an application covers more than one invention and must be resubmitted as separate applications (termed a restriction).

[90] The Panel requested the results by TC; however, TCs were not established until 1998 and USPTO could not compile the pre-1998 data for the subject areas to correspond to the current TCs.

Simulation Number Two: Impact on Pendency Levels with $573 Additional Resources

All of the assumptions for the second simulation were the same as for the first, but the total funds stipulated as available for staffing were limited to a number close to the $573 million that Patents did not receive between FY 1992-2004.[91] Assuming USPTO had these additional funds during this time period, FY 2004 FA pendency would have averaged 11.4 months (compared to the actual 20.2), and total pendency would have averaged 21.2 months (compared to actual 27.6). This information is also reflected on Figure 2-1.

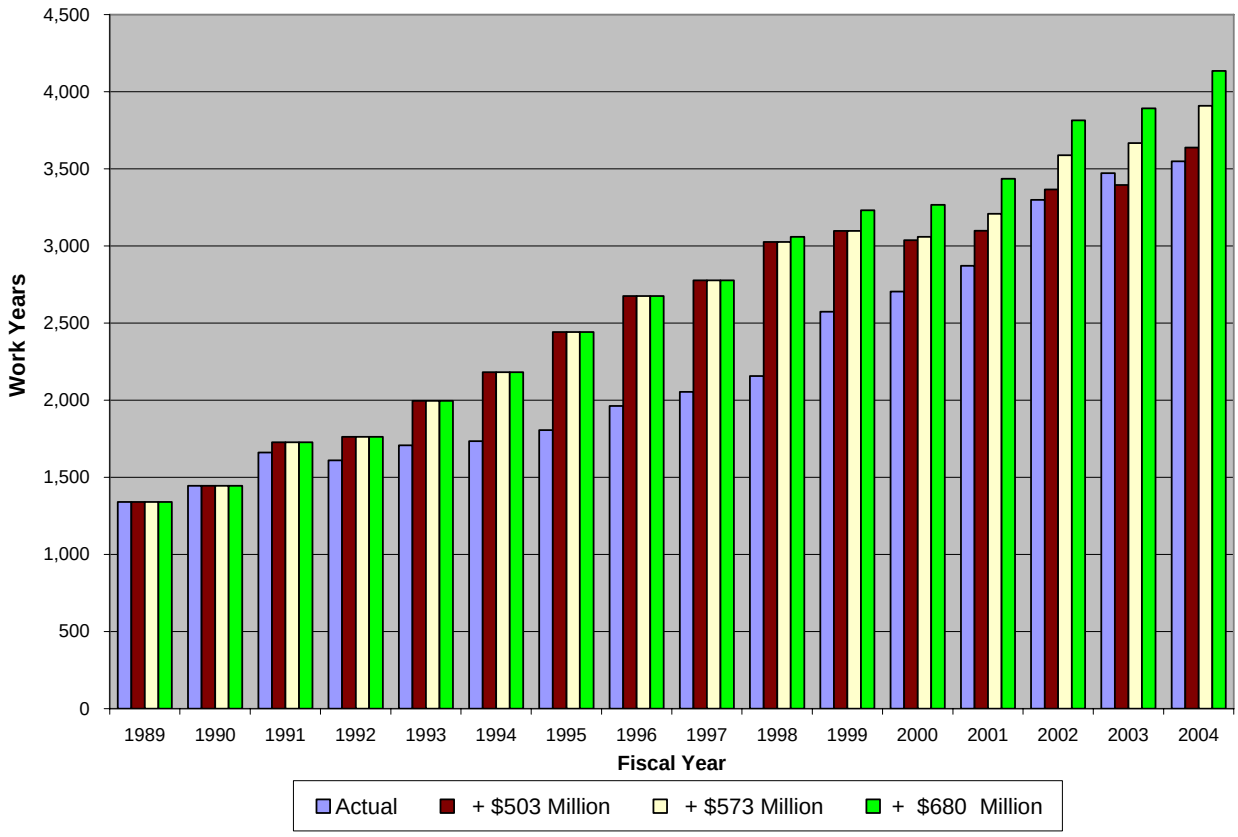
Figure 2-1. Historical and Simulated Impacts of Additional Staffing Resources on First Action Pendency



Source: Patent Production Model

[91] The $680 million simulation would not have reflected how USPTO would have applied additional revenue, since only $573 million of the unavailable funds was from Patents; the rest were unavailable Trademark fees.

Figure 2-2. Historical and Simulated Impacts of Additional Staffing Resources on Examiner Work Years



Source: Patent Production Model

To achieve these pendency levels, USPTO would have needed 5,954 additional work years between FY 1992-2004, and would have had 4,081 staff in FY 2004 instead of 3,681. USPTO would have prosecuted an additional 478,079 applications between FY 1992-2004.

Simulation Number Three: Impact on Pendency Levels with $503 Million Additional Resources

During any 12-year period, it is unlikely that an organization would use all additional resources on staffing; some would go to information systems, customer service, quality enhancements, etc. Thus, the Panel looked at the impact of some number less than the full $573 million, and chose $503 million. Using a number only $70 million less than $573 million assumes that most added resources would have gone to staffing so as to keep pendency within a reasonable timeframe

With an additional $503 million devoted to examiner staffing, USPTO would have had:

- FA pendency of 12.6 months
- Issuance pendency of 22.6 months

- 416,203 more patent application disposals.

To achieve these levels of pendency and patent application disposals, USPTO would have used 5,059 more work years between FY 1992-2004 and had 3,811 examiner staff on board at the end of FY 2004 instead of 3,681.

Consistent Hiring is the Key to Reducing Pendency and Maintaining Desirable Pendency

Although USPTO hired several hundred staff each year in the early to mid-1990s, this hiring did not result in long-term staff growth because of high attrition rates. As shown in Table 2-3, USPTO hired 283 staff in FY 1995, but 161 staff had left the previous year. Therefore, some of the new hires were simply filling attrition vacancies from the previous year and did not contribute to a steady growth in the number of examiner staff.

Under the hiring approach envisioned by the two simulations, USPTO would have consistently hired between 350-500 new staff during the 14-year period. Hiring at the 350-500 level would have accounted for attrition and increased USPTO capacity to process more applications. Why USPTO had such high attrition levels (and how to reduce them) is addressed in Chapter 4. Table 2-3 shows that large numbers of staff left in the two years after it hired at its highest levels, which raises the question of whether USPTO can effectively absorb such large increases in staff.

Intermittent "emergency" hiring—hiring a large number of staff in selected years (i.e., FYs 1998, 1999, 2002)—is not as efficient or effective as consistent hiring, for several reasons. First, an influx of a large number of new staff reduces the productivity of the experienced patent examiners who must spend time providing on-the-job training to new examiners. Second, emergency hiring does not provide for sustained, steady growth in the number of experienced patent examiners because it takes anywhere from three to five years for a new hire to become fully productive. The three to five-year learning curve, coupled with high attrition rates among staff with less than three years of service, reinforces the potential benefits of consistent hiring over time. In FY 2004, USPTO hired 443 staff but 336 examiners left. Slightly more than 50 percent of those who left (174) had less than five years of service. Finally, during emergency hiring, USPTO may not have the luxury of selecting the highest quality candidates given the large number it has to hire. As a result, USPTO may hire at least some staff of lower quality simply to get staff on board when the money is available.

Table 2-3. Model's Estimates of Hires Needed to Achieve First Action Pendency, Actual Hiring, and Attrition

Fiscal year	1st simulation's estimate of hires ($680 million)	2nd simulation's estimate of hires ($573 million)	3rd simulation's estimate of hires ($503 million)	Actual hires	Actual attrition
1989	283	283	283	283	219
1990	503	503	503	503	247
1991	350	350	350	227	210
1992	350	350	350	227	166
1993	400	400	400	210	131
1994	400	400	400	216	161
1995	400	400	400	283	162
1996	400	400	400	380	190
1997	400	400	400	204	239
1998	500	400	400	728	259
1999	500	400	400	799	375
2000	500	470	400	375	437
2001	500	500	400	414	263
2002	500	500	400	769	250
2003	500	500	500	308	241
2004	500	500	500	443	336
Total	**6,986**	**6,756**	**6,486**	**6,369**	**3,886**

Source: USPTO's Patent Production Model

Generally, USPTO hires PEs at the GS 5-11 levels. Table 2-4 shows examiner productivity data, by TC. It shows that less productive staff are those lower-graded staff who also have the least training and experience. The variations in hours per unit for those at the same grade level but who work in different TCs reflect the time it takes to prosecute applications in different fields.

Table 2-4. Examiner Productivity by Grade and TC
Examiner Hours per Production Unit*

Grade	1600	1700	2100	2600	2800	3600	3700	Corps
15	15.7	12.1	21.1	19.7	11.8	11.8	11.2	13.0
14	16.9	15.0	22.1	19.0	14.6	14.4	13.5	14.5
13	20.4	17.8	25.7	24.2	17.5	18.0	16.3	18.9
12	25.2	21.0	29.1	28.6	20.4	23.1	19.6	21.9
11	37.5	23.9	33.1	30.2	23.0	22.3	21.4	26.3
9	38.2	26.6	41.0	37.1	27.0	25.2	24.6	33.4
7	66.5	52.6	59.6	51.8	36.5	50.5	41.7	52.7
5	0.0	0.0	71.0	61.8	76.1	128.5	48.0	64.7

Source: USPTO, *Special Examining Production Report*, PALM3180-PR3, 10/06/2004

Note:

1600 Biotechnology and Organic Chemistry
1700 Chemical and Materials Engineering
2100 Computer Architecture, Software & Information Security
2600 Communications
2800 Semiconductor, Electrical, Optical Systems & Components

3600 Transportation, Construction, Agriculture & Electronic Commerce
3700 Mechanical Engineering, Manufacturing, Products & Design

* A production unit is defined as a first action plus a subsequent disposal divided by two, but not necessarily for the same application.

Fee Availability in the Context of Federal Budgeting

The Academy Panel recognizes that all agencies that receive appropriated funds face challenges associated with continuing resolutions and across-the-board cuts. What is different about USPTO's situation is that it is a PBO which should operate similar to a business. As such, it should have the capability to fund operations to handle a growing caseload of patent applications. In addition, patent applicants provide fees specifically to process the applications that correspond to their inventions, and applicants anticipate that their fees will be used to efficiently review their materials.

To ensure that the Panel's review of USPTO patent fees was not undertaken out of context, the Panel also reviewed user fees other agencies and government corporations collected. (Appendix E includes additional information about this review.)

The 1990 Budget Enforcement Act (BEA)[92] introduced several new spending control processes for restraining federal spending and reducing the federal deficit. It contained distinct control mechanisms for discretionary and mandatory spending.[93] For discretionary spending, the Act established specific annual caps for total appropriated budget authority (BA) and the estimated outlays. Failure to remain under the annual spending cap could result in an across-the-board cut sufficient to achieve the cap.[94]

In essence, an increase in discretionary spending in one part of an appropriations bill was to be offset by a decrease in another area. Thus, all appropriations subcommittees receive their allocations of discretionary budget authority and outlays for a given fiscal year and have to contain spending programs within that ceiling. User fees (such as USPTO's) are not included in that ceiling and could be viewed as a funding source for other programs that are within the jurisdiction of an appropriations subcommittee.

The Panel reviewed the extent to which user fees were applied for their stated purpose in other federal agencies. This review showed it is unusual for an agency that is fully fee funded to have its fee revenue exceed its allowed spending level for a number of years, but it is not unique to USPTO. (See Appendix E.) Five agencies the Panel reviewed had their fee revenues exceed their spending levels in at least one fiscal year—USPTO, the Securities and Exchange Commission (SEC), the Office of Thrift Supervision, the Office of the Comptroller of the

[92] Title XIII of the 1990 Omnibus Budget Reconciliation Act, PL 101-508.
[93] Discretionary spending is provided through annual appropriations acts. Mandatory spending is established in statute and is often termed "uncontrollable," since only a change in the authorizing statute will alter that spending.
[94] To establish financial discipline and promote orderly budget development, the House and Senate Appropriations Committees would distribute the aggregate discretionary spending cap to each of their (then) 13 subcommittees through the so-called "602-b" allocation process. This process was part of the annual congressional budget reconciliation procedure that was expected to be completed early in the fiscal year prior to the development of individual appropriations bills.

Currency, and the Office of Federal Housing Enterprise Oversight. USPTO and the SEC are the two agencies whose fee revenues have consistently exceeded the amounts they received in appropriations over the last decade.

Conclusions and Recommendations:
Impact of Fee Availability on Staffing Levels and Production

At USPTO, when applications increase by thousands per year, the office can attempt to increase staff efficiency by enhancing automated resources (thus making the search more efficient) or varying how bonus pay is calculated, which could encourage staff to process more applications in less time. However, efforts such as automating the search can only work at the margins, and adjustments to bonus pay must be negotiated with the union. Patent applications require an extensive search of prior art and the judgment of one experienced in assessing it. To improve its performance in processing an increasing workload, USPTO needs the capability to acquire and retain an adequate level of staff resources.

USPTO is fortunate that when it receives more applications, it receives more fee monies. Simulations using USPTO's resource model showed that if USPTO had used the patent fees that it collected to hire additional staff, it could have greatly reduced the pendency problem that exists today. Even had it not applied all of its unavailable funds to patent examiner staff, pendency would have been substantially reduced. The key question is, does government support for innovation translate into USPTO receipt of all user fees the inventors pay?

The Academy Panel recognizes that Congress has the authority to use any federal revenue, even user fees geared to specific activities, for any public purpose. However, the most obvious consequence of not making all fees available to USPTO is clear—it experiences delays in issuing quality patents. Even if funds are later available to address the backlog, the problem is that the additional resources needed are so far beyond those required to meet current workloads that it is difficult to absorb the increased funds.

In addition to the obvious delay in prosecuting patents, the lack of availability of patent fees to USPTO means that patent applicants subsidize, to some extent, other federal programs. The Panel does not know how the outcomes of the other programs compare to the delays in patent prosecution that resulted from directing about $573 million in patent fees from USPTO to the other programs. Finally, the delay in issuing patents means that the public may experience adverse consequences, for example higher prices on products whose patent terms were extended due to patent prosecution delays.

The FY 2005 appropriation permits USPTO to retain all of the fees collected to process patent applications. Also, in May 2005, a bill was introduced in the Senate (S. 1020) that includes a provision to require that all fees be made available to USPTO. The Panel believes avoiding funding volatility is key to improving USPTO's performance in patent prosecution in the long term. Accordingly, the Panel believes this new bill is an important step toward that end.

Therefore, the Panel recommends that:

- **Congress ensure that all the fees that USPTO collects during a fiscal year be available for its use without fiscal year limitation. The fees should be deposited in a revolving fund maintained by the Department of the Treasury.**

- **USPTO avoid intermittent "emergency" hiring—done to reduce accumulated build-ups of applications—and adopt a more consistent hiring strategy based on input about anticipated workload and attrition from each of the TCs.**

PENDENCY AND NON-RESOURCE ISSUES

Two non-resource areas that also affect pendency are delays in reclassification efforts and reworking the same application, especially through continuations. In the absence of appropriately defined classification areas, examiners may search more areas than would otherwise be necessary. Also, some patent applicants attempt to use continuations to enlarge the claims in their original applications to discourage competitors' efforts to develop or market related products. Each of these areas is discussed below.

Reclassification

Reclassification is an important function; if an application is classified incorrectly, it will not get to the appropriate art unit, which may delay prosecution. USPTO staff report that they may spend more time on a search in areas if classifications have not been updated. In the past, senior examiners received temporary reclassification assignments, which provided them the opportunity to learn more about their art area. However, such opportunities are not as prevalent now as in the past.

Recurring reclassification efforts provide for routine updating. For example, a classification for screwdrivers may have originally included only slotted and Phillips types. Over time, variations by type of handle, electric vs. manual, size, and material used to make the screwdriver may have developed. Soon, each time a PE had an application for screwdrivers the PE was searching an increasingly large amount of prior art. Reclassification could separate slotted and Phillips screwdrivers, meaning the examiner would only have half as much art to review.

While the screwdriver example is simple, most reclassifications are not. An example of the level of difficulty reclassification entails is the current USPTO effort to develop a new class for nanotechnology. This relatively new field covers dozens of disciplines—mechanical, electrical, biotechnology, and chemical. USPTO is working, with stakeholder input, to: (1) define the scope of what is considered a nanotechnology-related examination; (2) identify published U.S. patents and pre-grant publications that include nanotechnology; and (3) consolidate identified nanotechnology-related publications into a single U.S. patent classification cross-referenced art collection. This painstaking process will lead to a new class, which will mean that examiners will have cross-references to prior art in all disciplines rather than having to search, for example, through all biotechnology art for references to nanotechnology

Reclassification has not been as vigorous in all art areas because USPTO plans to outsource the function and because USPTO, JPO, and EPO are negotiating development of a joint classification system. Finally, when USPTO does outsource classification, some PEs may become available to prosecute applications. However, some highly skilled PEs will still be needed to oversee contractor activities and results. USPTO staff said the impact of outsourcing classification on pendency will probably be minimal because some examiner staff will be diverted to oversee contractor activities.

Continuations

A continuation is a second application for the same invention claimed in a prior, nonprovisional application and filed before the first application becomes abandoned or patented. Although continuations have a legitimate role in the patent prosecution process, increasingly they are the subject of debate because of their growing volume, their effect on pendency, and the opportunistic use of them. Academic papers, USPTO officials, and the 2003 FTC report have suggested that the opportunistic use of continuations should be remedied.

The prosecution process for each application provides at least two, and generally more, opportunities for the applicant to justify the patentability of the claims to an invention. These come either through the existing amendment process or in response to an initial rejection and or a final rejection. However, even if an applicant has received an initial or final rejection, patent law (35 U.S.C. Sec. 120, Sec. 132b) allows applicants to continue the prosecution process for the same invention claimed in a prior application through the use of continuations. The continuation process has many purposes, including ensuring that the PE understands the application or sees the best prior art. Several patent attorneys with whom the Academy Panel spoke believed some examiners did not fully understand the invention in the initial application and thus inappropriately issued initial rejections even after the applicant provided extensive explanation and documentation.

In FY 2004, 72,544 continuations were filed for the same invention that was submitted in an earlier application. The associated FY 2004 workloads and definitions for two types of continuations are:

- Request for continued examination (RCE)—44,438 requests to continue the examination process for the same invention that was claimed in a prior application. The applicant submits this request after the examination of the prior application has been completed. The applicant pays a fee but is not required to submit a new application.

- Continuation—28,106 new applications for the same invention claimed in a prior application that was filed before the earlier application was abandoned or patented.

By using continuations, the applicant receives a significant benefit because the second application (or RCE) skips the queue and receives the same priority for processing as the original application. Therefore, although the percent of continuations has been fairly constant over the last few years, as the absolute number has increased and those "skip the queue," other applications in the backlog age even further. However, despite the benefit of receiving the same

priority as the initial application, one study reported that it took USPTO an average of 4.16 years to issue a patent for applications with at least one continuation compared to an average of 1.96 years for applications without continuations.[95] In addition, this same study noted that the highest percentage of continuations occurs in the biotechnology and chemical areas.

Academic papers and congressional testimony maintain that continuations are used to "wear down" examiners until the applicant obtains a patent, or so that the applicant can include claims in the new application that cover a competitor's product that has come on the market since the original application was filed.[96] A continuation is not allowed to claim more than was disclosed in the original application. If an applicant were to try to broaden a claim to encompass more than what was in the original disclosure, an issued patent could later be invalidated. Given the many times this issue was raised during the course of the Academy study, the idea that applicants substantially broaden their applications through the continuation process is either a common misperception or there are those willing to take this risk.

USPTO has described continuations as a form of rework. In testimony before the Subcommittee on Intellectual Property, Committee on the Judiciary, USPTO's Under Secretary stated that continuations are a form of rework and that "this rework is a significant challenge for reaching new applications because so-called continuations represent additional work on subject matter that has been reviewed." Further, he stated "given the ever-increasing workloads we face, it is necessary and appropriate for all to consider whether some restrictions should be placed on the continuation process."

USPTO attempted to preclude applicants from filing more than three continuations in any one prosecution. However, in *In re Henriksen*, (1968) the Court of Customs and Patent Appeals struck down USPTO's action, stating that existing law did not allow USPTO to establish an absolute limit on the number of continuations and setting such a limit would require congressional action.[97] However, USPTO officials believe that a ruling in a subsequent court case[98] suggests that USPTO has regulatory authority to limit continuations, and USPTO officials are examining options for doing so.

FTC's 2003 report recognized that any proposed remedy to guard against the opportunistic use of continuations should not interfere with their legitimate use, for example when an applicant must clarify or explain complex scientific issues related to the invention. Several participants in a December 2002 joint FTC and Department of Justice hearing on the patent system noted that "some applicants keep continuing applications pending for extended periods of time, monitor developments in the relevant market, and then modify their claims to ensnare competitor's products after those competitors have sunk significant costs in their products."[99] The FTC recommended that patent law be amended to apply a principle of "intervening or prior use

[95] *Ending Abuse in Patent Continuations*, pg. 65

[96] Lemley and Moore, p. 10. Statement of Richard J. Lutton, Jr., Chief Patent Counsel, Apple, on behalf of Business Software Alliance before the Subcommittee on Courts, the Internet and Intellectual Property of the House Judiciary Committee, April 20, 2005.

[97] *In re Henriksen* the court discussed the genesis of Sec. 120 and stated that the imposition of new limits on the continuation practice is for Congress to decide.

[98] In Re Borgese, 64 USPQ 1448

[99] FTC, pg. 16.

rights" to protect third parties who had acted in good faith from being sued for infringement if they had developed or are using a product or process prior to the filing of a continuation.[100] FTC states that this provision would shelter inventors and users that infringe a patent as a result of an amendment to a claim as a result of a continuation, provided that the sheltered products are developed or used before the amendment is published. Representatives of the biotechnology industry oppose this recommendation because they believe current law provides multiple mechanisms by which prior use can insulate an accused infringer from patent liability.[101]

On June 8, 2005, the Chairman of the Subcommittee on Courts, the Internet, and Intellectual Property, House Committee on the Judiciary, introduced H.R. 2795 (The Patent Reform Act of 2005). The bill includes a provision that authorizes USPTO to establish regulations to limit the circumstances in which an applicant may file a continuation.

Conclusions and Recommendations: Pendency and Non-resource Issues

Most actions USPTO takes other than acquiring additional resources (through on-board staff or outsourcing) will have relatively little impact on the queue, which is the primary reason for growth in pendency. Even if USPTO were to get to fully electronic patent prosecution, it is unclear how much time would be saved per application considering that many aspects of the process have already been automated. Outsourcing work, such as reclassification, may save some time, but the Panel also believes that USPTO's plans to oversee contractor work are prudent, particularly in light of contractor performance problems at agencies such as the National Aeronautics and Space Administration (NASA).

Worksharing with other trilateral offices has potential to reduce pendency, though it could require changes in practice in all offices and possibly some legislative action. Sharing search results among the offices would leverage the experience of thousands of examiners on the 200,000 applications the three patent offices have in common each year. Chapter 8 discusses worksharing in greater detail.

Limiting continuations is one area that could have a significant impact on examiner productivity. FTC's recommendation focuses on creating prior use rights to avoid the negative consequences that continuations have on competition. The Panel supports this recommendation as a near-term remedy. However, the FTC recommendation does not address continuations as a form of rework. In the long term, the Panel believes the number of continuations should be limited to reduce rework, thereby making examiners more productive.

USPTO officials believe that USPTO may have an opportunity to limit the use of continuations through its regulatory authority. Even if USPTO already has or is provided more explicit regulatory authority to limit the circumstances for granting continuations, patent applicants likely will challenge whatever criteria USPTO establishes. Therefore, it is appropriate for Congress to intervene to avoid contentious litigation that may take several years to resolve. The availability of continuations without any appropriate limits encourages applicants to keep going back "for

[100] FTC, p. 16.
[101] Response of Biotechnology Industry Organization to The Federal Trade Commission's Patent System Reform Recommendations.

another bite at the apple." Time spent repeatedly reviewing information on the same subject matter increases the time that another inventor's original application stays in the queue. The Panel recognizes that some patent applicants believe continuations are needed to help examiners better understand the invention in the original application, but also notes that the examination process includes multiple opportunities to explain and document the applicant's contentions in detail.

The Panel recommends:

- **Congress amend patent law by applying the prior or intervening use rule FTC recommended to protect good-faith inventors from being sued for patent infringement.**

- **USPTO use every means possible to work with stakeholders to provide Congress with the necessary information to assist it in identifying the appropriate number of continuations.**

- **Congress amend patent law by establishing a maximum number of continuations that will be allowed for any patent application.**

The Panel's recommendations are not intended to preclude USPTO from examining regulatory options for limiting continuations. USPTO's efforts may result in developing useful information for Congress to consider in amending patent law to establish a maximum number of continuations that should be allowed.

OUTSOURCING THE SEARCH

Outsourcing the search function is another strategy that has been proposed to help reduce pendency. At the direction of Congress, USPTO initiated a pilot to test the concept. USPTO faces many challenges in designing an outsourcing system to ensure that it will receive quality searches. Japan's and Europe's experiences with having different entities perform the search function may provide some useful information for designing the features of an outsourcing system.

The *21st Century Strategic Plan* includes several initiatives targeted at the search function, including (1) outsourcing to external search firms, (2) accepting searches done by some other nations' patent offices, and (3) encouraging inventors to submit searches as part of an application in exchange for a reduced fee. The chief initial proponent of outsourcing was former Under Secretary James Rogan, who believed that, "By outsourcing the search function, we can ensure that the patent examiners of tomorrow will be like the quality review examiners of yesterday in that they will begin with a more complete search and set of information as their starting point."[102]

[102] Testimony of Undersecretary James Rogan before the House Subcommittee on Courts, the Internet and Intellectual Property, Committee on the Judiciary, April 3, 2003

The draft strategic plan, proposed in 2002, included an option to require inventors to submit searches from certified search firms. The feedback from stakeholders and POPA was overwhelmingly negative; therefore, it was dropped from the February 2003 plan in favor of USPTO contracting with firms to do a search at USPTO's request. However, the 2004 legislation also says the director may, by regulation, provide a refund to any applicant who provides a search report that meets the conditions the director prescribes.

In background information prepared in concert with the 2003 strategic plan, USPTO said, "Given the current workload crisis, obtaining prior art searches from certified search firms would have major benefits for USPTO. A substantial saving in examiner resources should result from our examiners concentrating on patentability determinations rather than spending a significant amount of time searching. The quality of searches should also improve, particularly in emerging technologies, where certified searching authorities will be able to devote more resources to discovering non-patent literature sources of prior art. Thus, the quality of both search and examination should improve."

Search and Examination in JPO and EPO

JPO began contracting out the search of prior art in 1985 on a trial basis because the Japanese Diet placed a cap on the total number of government employees. In 1989, JPO made permanent arrangements with the Industrial Property Cooperation Center (IPCC), a quasi-governmental organization, to perform certain types of searches. Searches that are outsourced are those that involve only patent literature and can be searched using JPO's F-term classification system.[103] Generally, the areas that are outsourced do not include newer technologies because most of the prior art is not in previously published patents or patent publications. IPCC employs more than 1,000 staff, and its work is done under annual contracts with JPO. Fifty of the IPCC searchers are prior JPO employees who serve as trainers and supervisors.

Employment arrangements at IPCC are unusual by U.S. standards, but work well for JPO. IPCC recruits in the private sector for individuals who have strong technical backgrounds and are close to retirement (the average age of an IPCC searcher is 55 years old). IPCC posts an advertisement on its web site, and private firms view the information; if they would like to "second"[104] one or more of their employees, they contact IPCC. Approximately 200 companies loan employees to IPCC at one time or another, based on IPCC's skill needs.

What makes this situation very different than the U.S. approach is that the loaned individuals remain on the payroll of their parent organization and IPCC reimburses the firms for an established amount. In the United States, patent applicants would be very wary of this arrangement, because searchers might be receiving their salary from a competitor. JPO and IPCC staff report that, in Japan, this is not a concern.

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[103] F-terms are technical classification codes that JPO developed to handle the significant increase in the number of documents that were submitted as prior art with patent applications. In effect, this system provides for multiple, narrower classification areas. International Patent Classifications uses a single technical area for classification.

[104] "Seconding" (pronounced se kun' ding) is the term used in many other countries for lending staff from one organization to another. This lending arrangement is similar to that provided for in the Intergovernmental Personnel Act in the United States. The gaining organization (in this case IPCC) will reimburse the loaning organization for all or part of the cost of the seconded staff member.

Examiners provide guidance for each search and IPCC staff report their results to JPO examiners in person. Searchers explain how they conducted the searches, the extent of the search field, and prior art found. If additional information is needed, examiners give searchers instructions. JPO believes the face-to-face presentation (a relatively recent initiative) is efficient because examiners make use of the technical knowledge of searchers, and searchers obtain information from examiners.

The Japanese Diet passed legislation in October 2004 that would permit private sector firms to become registered search organizations. They must meet a rigorous set of requirements in terms of past experience and numbers of qualified searchers. As of March 11, 2005, one private sector firm and one non-profit organization other than IPCC are registered search organizations. In addition, the Diet also provided funds for JPO to hire approximately 100 additional examiners per year for the next five years. They would serve 10-year term appointments rather than become permanent employees. This was done in direct response to rising pendency levels.

EPO's experience with search and examination is different from JPO's. EPO recently merged its search and examination functions. Before EPO was established, searching for all patent literature for EPC member states was done at the International Patent Institute in The Hague. In 1978, 31 years after the process began, the Institute was integrated into EPO. Because the Institute was perceived to have world-renowned searching capability, its searchers and new EPO searchers remained in The Hague. In 1999, EPO began BEST—Bringing Exam and Search Together—because it has concluded that it is more efficient to have the same person do the search and examination. Searchers in The Hague began to examine and in 2001 examiners in Munich began to search. All BEST examiners conduct the search and substantive examination, and the program is close to being fully implemented. Some staff (about 10 percent) still perform only searches because they are close to retirement and it would be inefficient to retrain them.

In addition to believing that BEST is more efficient, senior EPO officials stated that other reasons for merging the two functions include:

- Lack of ability to attract qualified people to perform searching only
- The search-only job was perceived as being mundane and not interesting enough, and potential employees could not fathom a career in it
- Before BEST, some searchers did not understand the nature of the invention
- BEST allows EPO to shift capacity from search to examination and vice versa, depending on backlog
- Quality of the patent depends on the search.

Stakeholders that Academy staff interviewed said that EPO's searches have been of high quality.

USPTO's Outsourcing Pilot

Congress determined that the search function was not inherently governmental and in 2004 enacted legislation directing USPTO to conduct an outsourcing pilot program.[105] Under the pilot, USPTO will contract with qualified search firms to perform searches of the prior art according to guidelines in the PCT[106] and augmented by USPTO's guidelines for non-patent literature searching. The legislation also requires that searches be conducted by U.S. citizens. USPTO will monitor a contractor's work product to ensure that the searches meet these requirements and are of sufficient quality. USPTO has divided its request for proposal into eight subject matter areas because it anticipates that no single firm could do search work in eight areas. However, a firm can apply to search in more than one area.

On April 29, 2005, USPTO issued a statement of work[107] for outsourcing the search function and requested that proposals be submitted by June 10, 2005. In late August or early September, USPTO expects to award the contract and begin contractor training. Contractor work is expected to begin in late October. Each written search report will be evaluated as it comes in, and USPTO anticipates reviewing initial contractor performance (to determine contract continuation) in late April 2006. The contracts will be awarded for six-months with two six-month options.

Without evaluating the statement of work (which is beyond the scope of this project), it appears that a firm selected to do searches would have to provide a rigorous search and clearly document the search results. In addition, the contractor would assign the U.S. classification and International Patent Classification (IPC).

As it prepared the description of search firm duties, USPTO concurrently developed guidance for avoiding conflicts of interest and protecting confidential information. The Subcommittee on Outsourcing of the P-PAC reviewed the draft "Conflicts of Interest and Protection of Confidential Information." This subcommittee made several recommendations and stressed that the user community "simply will not accept a system where there were insufficient safeguards against conflicts of interest and the protection of confidential information." The final request for proposal contains several restrictions on the search firm and any subcontractors to avoid improper conflicts of interests and to protect confidential information. For example:

- The search firm cannot have any ownership interest in U.S. patents, applications pending before USPTO, or applications in process

- An employee of a search firm who conducts prior art searches in a particular field may not own or have a financial interest in that field. However, the restrictions do not apply to publicly traded securities valued at $25,000 or less

[105] Consolidated Appropriations Act for 2005, P.L. 108-447, Division B, Sec. 801.

[106] WIPO guidelines are available at: http://www.wipo.int/pct/en/texts/pdf/ispe.pdf**.** They are also incorporated into USPTO's MPEP.

[107] http://www.uspto.gov/web/offices/ac/comp/proc/pctsearch/pctsearchrfp.pdf

- The search firm cannot conduct searches in art areas or technologies in which 20 percent or more of its revenue was derived in the previous fiscal year.[108]

The USPTO examiner is to receive a written search report that would identify, on a claim-by-claim basis, the most relevant references and explain the relevant section of references. USPTO official said that all results will be in written form only. USPTO has prepared an extensive checklist to evaluate individual search results and initially expects to inspect 100 percent of the searches. USPTO officials said they will use one of the following inspection methods:

- Perform a separate search or a thorough search review, including analyzing the search recordation, prior art cited, and scope of the claimed invention

- Compare the contractor search to a previously prepared examiner search of the same claimed subject matter.

USPTO officials said that once they have confidence in the quality of the searches, they anticipate reducing the number of inspections and using random, statistically valid sampling methods.

Because this is a pilot project, USPTO must evaluate each search firm's performance. During the pilot, USPTO will be tracking the timeliness and quality of the search. The contractor will have a maximum of 30 days to prepare required documents. Quality will be assessed using several different quality indicators. The contractor will be expected to achieve an error rate of 5.49 percent or less. USPTO officials said the overall evaluation plan for the pilot was to be completed in mid-June 2005.

The 2004 legislation requires that:

- USPTO's director submit a report on the pilot program to P-PAC

- P-PAC review and analyze the director's report on the pilot program and submit a separate P-PAC report to the director and Congress, that is an independent evaluation of the effect of pilot program search

Views of USPTO, Stakeholders, JPO

In discussions with the Academy Panel, USPTO senior managers said they expected that it would take an examiner 20 percent less time per application if the examiner started with a completed search. No senior manager has said or implied that outsourcing the search will not work. However, some managers said that the costs for private-sector searches could be higher than examiner searches depending on the pay rates established for private firms. These senior managers view outsourcing as a necessary step to help reduce pendency. Academy staff have discussed outsourcing with USPTO staff at the working level, and most do not favor it. They believe that as they conduct a search they mentally organize their strategy for assessing the

[108] Section H--Special Contract Requirements, Request for Proposal, April 29, 2005, p 27.

patent application. In addition, they believe it is through continually reviewing prior art during the search process that they become proficient examiners. In other words, the synergies that result from having the same person conduct the search and examination functions make the examiners more efficient. A number of individuals who represented stakeholder organizations also made these points.

While stakeholders did not favor outsourcing the search, all stated that USPTO does not have sufficient staff resources to handle its workload. One stakeholder organization head said that his group "will support it if the pilot works," but saw inherent inefficiencies in the process. However, this person noted that some search firms could specialize in different art areas and do enough search work that could reduce pendency. Several acknowledged that law firms currently contract with search firms on behalf of their clients. Several people thought outsourcing may be more appropriate for some art areas than others, with newer technologies perhaps requiring direct USPTO involvement. Having USPTO examiners do the searches for newer or more complex technologies would help USPTO develop needed expertise.

JPO staff indicated that JPO initiated outsourcing because there was no other option; the Diet's ceiling on additional government staff applies to all agencies. However, they have developed work processes that give examiners confidence in the IPCC searches.

Conclusions and Recommendations: Outsourcing the Search

USPTO faces many challenges in implementing and evaluating the outsourcing pilot. A thorough evaluation will be critical because the results will have an impact on USPTO's future business vision, which calls for leveraging search results from others—foreign patent offices, the patent applicant, and private contractors. The Academy Panel believes that outsourcing the search function may work in some art areas, but it is not a solution that will quickly reduce pendency. It will take USPTO resources to manage the process and review each outsourced search. In fact, depending on the pay rates for private searches, it may ultimately be more expensive to outsource some searches than to have USPTO examiners perform the search and examination for the same application. That does not mean that USPTO should not pursue outsourcing; it could be an appropriate tradeoff in some instances. If it can be used in certain fields, it may free up USPTO resources to work in other areas.

However, questions remain about whether private search firms (1) can retain staff any longer than USPTO, (2) can perform work at the same level of quality as USPTO staff, and (3) will be attracted to this type work given the conflict-of-interest requirements. In addition, since the statute required search firms to use U.S. citizens, it is not clear if that will have a negative impact on USPTO's ability to recruit and retain staff or adversely affect the ability of firms to respond to the request for proposals. Therefore, in evaluating the pilot, the Panel encourages USPTO to think broadly about how to structure outsourcing. If USPTO concludes that outsourcing to private firms is ineffective or unwieldy, or few firms bid on the proposal, JPO's approach of using a quasi-governmental agency could be an option for USPTO.

Federal agencies create federally funded research and development centers (FFRDCs) to enable them to use private sector resources to accomplish tasks that are integral to an agency's mission.

For example, the Department of Defense and the NASA have chartered FFRDCs to work in sensitive areas and have access to sensitive and proprietary data. A primary benefit of using an FFRDC for patent searches is that the FFRDC would not have a proprietary interest in its work and thus would not encounter conflict-of-interest issues. Using an FFRDC may also provide opportunities for informal exchanges on search issues between staff doing the searches and patent examiners.

The Panel recommends that USPTO:

- **As part of the evaluation of the pilot, examine the potential to outsource the search function to an FFRDC.**

- **Consider incorporating JPO's practice of examiners providing instructions to the searcher and receiving the results in face-to-face meetings if an FFRDC approach is implemented.**

CHAPTER 3
INITIATIVES TO IMPROVE PATENT QUALITY

Congress grew sufficiently concerned over statements that the quality of patents USPTO issued had declined that it held hearings on this topic in July 2003.[109] Examples of poor quality or "questionable" patents are generally anecdotal and the extent to which USPTO is allowing such patents has not been quantified. The most vocal concerns regarding patent quality focus on patent decisions in certain art areas—such as computer software, business methods, and biotechnology—only recently subject to patenting.

This chapter discusses the statutory criteria that USPTO uses for issuing patents and summarizes concerns about patent quality. It then provides USPTO's quality data and describes USPTO's strategic plan initiatives for improving patent quality and the Panel's assessment of these initiatives. Many of the reforms suggested to address the perceived decline in patent quality are outside of the control of USPTO and the scope of this project. However, USPTO's strategic plan includes an initiative for amending patent law to provide for a new post-grant review process. Because Congress is considering implementing some form of administrative post-grant review, the last section of the chapter provides the Panel's views and recommendations for various design elements.

STATUTORY CRITERIA FOR ISSUING PATENTS

The statutory criteria for issuing a patent are:

- **Patentable**: Is the subject matter patentable and useful as specified in 35 U.S.C. Sect. 101? Patent law specifies the general field of subject matter. Over time, court decisions interpreting patent law have defined the scope of the subject matter that may be patented.

- **Novelty:** Is the invention new as specified in 35 U.S.C. Sec. 102?

- **Obviousness:** Is the invention obvious as specified in 35 U.S.C. Sec. 103? Specifically, section 103 provides that a patent may not be obtained "though the invention is not identically disclosed or described [in the prior art] if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art."

- **Usefulness:** Is the invention minimally operable toward some practical purpose as specified in 35 U.S.C. Sec. 101?

[109] Hearings before the House Judiciary Committee, Subcommittee on Courts, the Internet, and Intellectual Property, July 24, 2003.

CONCERNS ABOUT PATENT QUALITY

During the July 24, 2003 congressional hearing on patent quality, participants suggested that a quality patent is one that can be enforced in court and (1) consistently survive validity challenges, (2) be dependably employed as a technology transfer tool, (3) fortify private rights by making proprietary uses, and therefore value, more predictable, (4) clarify the extent to which others may approach the protected invention without infringing.[110] Poor quality patents were those that would invite legal challenges or have "far-reaching negative ramifications for the individuals involved as well as for the economy."[111]

Similar definitions of poor quality or "questionable" patents were included in the 2003 FTC[112] and 2004 NAS[113] reports on the patent system. The media and patent reform literature also have reported some examples of questionable patents, such as the patent for "one-click" purchasing. That patent describes an online purchasing system that stores a customer's credit card number and address information so that when the customer returns to the website for a subsequent purchase he/she uses a single mouse-click to input billing information. By the time this patent was issued, (which may have been a year or more after the application was submitted), critics believed this technology was obvious, and therefore should not have been patentable.

As one paper noted, concerns about quality stem from the ambiguity in applying the statutory criteria in subject areas that have only recently been patented, such as computer software and business methods.[114] According to the paper, issues of quality arise when statutory criteria are applied to new areas. When this occurs, USPTO has to anticipate the outcome of potential legal challenges and decide whether to issue a patent. In certain areas, such as computer software and business methods, USPTO made these decisions on the basis of examiners' knowledge of industry practice. However, the examiners' knowledge may not be comparable to those staff in companies submitting patent applications in emerging technologies. These companies may have invested millions of dollars in product development—including hiring some of the best minds in a field—and USPTO may not have been able to develop similar expertise or (especially in cutting-edge technology fields) may not be able to pay a competitive salary.

USPTO officials believe that discussions regarding patent quality should focus on whether a particular patent meets the statutory criteria. They stated that patent examiners focus only on whether the application's claims are patentable according to law. USPTO does not believe that legal challenges to patents are always appropriate indicators of USPTO patent quality. Some challenges may represent a party's (especially competitor's) attempt to compete in the marketplace.

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[110] Statement by John R. Thomas, Professor of Law, Georgetown University Statement before House Judiciary Committee, Subcommittee on Courts, the internet, and Intellectual Property, July 24, 2003.

[111] Ranking Minority Member Opening Statement before House Judiciary Committee, Subcommittee on Courts, the Internet, and Intellectual Property, July 24, 2003.

[112] Federal Trade Commission, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, October 28, 2003.

[113] National Research Council, *A Patent System for the 21st Century*, National Academy of Sciences, 2004.

[114] Susan Scotchmer, *Patent Quality, Patent Design, and Patent Politics*, Remarks prepared as a member of the Economic Advisory Group, European Patent Office, Munich, December 10, 2004.

Some stakeholders and customers recognize that USPTO faces significant challenges and that patent applicants and interested third parties also have a role in ensuring quality patents. A representative from a stakeholder organization said that "complaints about USPTO are not about the rank and file, and senior people in corporations and law firms recognize that USPTO could, if properly funded and managed, do a good job." Two senior corporate officials representing stakeholder organizations said patent quality would be enhanced if there was a process through which those who are interested in a published application could submit prior art, possibly using an electronic tool.[115]

Periodically, some TCs convene meetings with their customers to discuss mutual areas of interest or controversial topics.[116] In one such meeting, two customers[117] noted that applicants should consider ways to reduce stress on examiners, such as limiting the number of claims in an application and submitting narrower issues for review. Similarly, during April 2002 joint Federal Trade Commission/Department of Justice hearings on patent quality, a law firm representative noted that more of the examination burden needs to be shifted to the applicant, such as helping the examiner understand the invention quickly so he/she can conduct a quality search. In a recent meeting on patent reform, former Commissioner Q. Todd Dickinson reminded attendees that "the Patent Office does not write applications. People who do so need to ensure that they manage the quality of what comes into the system."[118]

As the Panel noted in Chapter 1, concerns about the patent system and patent quality have persisted over time. Quality by its nature is difficult to measure and similar data may be subject to differing interpretations.

The next section discusses how USPTO measures quality and then how it is implementing initiatives to assess quality during the examination process rather than after a patent is issued.

USPTO'S QUALITY DATA

For the last 25 years, USPTO's patent quality measurement program focused on assessing whether the claims allowed in a patent meet the statutory criteria. This assessment occurs after USPTO notifies the applicant that it will allow their patent, but before the patent is published. Under this program, a reviewer determines whether an examiner made an error in at least one

[115] This submission could occur when the application is published but before USPTO makes a final decision about allowing or rejecting a patent. Individuals and private firms would offer what they believe are examples of prior art that could affect decisions about patentability. Generally, patent attorneys the Academy staff spoke with did not favor this approach.

[116] May 4, 2005 Business Methods TC Customer Partnership Meeting.

[117] Carlos Villamar, Nixon Peabody LLP and Bijan Tadayon, ContentGuard, Inc.

[118] Remarks made at the June 9, 2005 Conference on Patent Reform held at the National Academy of Sciences, in Washington, DC.

claim that was allowed in a patent. In addition, the reviewer determines whether the application met the disclosure requirements specified in 35 U.S.C. Sec. 112.[119]

USPTO does annual quality reviews on about 2-3 percent of patents that it allows. The error rate over the five-year period from FY 2000-2004 has varied from a high of 6.6 percent in FY 2000 to a low of 4.2 percent in FY 2002, rising again to 5.3 percent in FY 2004. If a reviewer determines that an examiner made an error, USPTO "reopens" the application (the term for starting the prosecution process again). From FY 2000-2004, the number of applications reopened varied from 302 to 401.[120] Table 3-1 shows error-rate data as well as data for other quality indicators that USPTO tracks.

Table 3-1. USPTO's Quality Data

Type of Indicator	1999	2000	2001	2002	2003	2004
Rates						
Error rate	5.5	6.6	5.4	4.2	4.4	5.3
Allowance rate[a]	70.7	70.9	68.4	66.6	65.4	61.3
Board of Appeals[b] Affirmances	31.5	39.5	39.1	39.2	47.5	48.1
Number of Applications						
Reopened	225	302	271	177	276	401
Referred to Board of Appeals	4,040	2,982	3,854	3,125	2,721	2,555

Source: Department of Commerce Inspector General Report, September 2004, p. 14 and updated with USPTO data for FY 2004.

[a] The total number of applications allowed divided by the total number of applications disposed.

[b] If an applicant wants to appeal USPTO's rejection of a patent application, he/she can appeal to the three-person Board of Appeals**.**

USPTO's quality data have been subject to mixed interpretations. The overall error rate is fairly constant, but it varies greatly among the TCs. Although the FY 2004 overall error rate was 5.3 percent, it ranged from 2.5 to 9 percent in the TCs. Every stakeholder interviewed believed that patent quality has dropped over the past decade. Some argue that the relatively high allowance rate is an indicator that USPTO allows some poor quality patents, especially considering that patent applications have become more complex. However, the allowance rate has dropped by 9.4 percent over the past five years. Now some individuals question whether the increased USPTO quality review of applications is leading to rejections of applications that should be allowed; no data support this perspective.

[119] The disclosure requirement calls for the application to (1) completely describe the invention so that skilled artisans are enabled to practice it without undue experimentation; (2) provide a description sufficient to ensure that the inventor actually has invented what the patent application claims; and (3) contain distinct, definite claims that set out the proprietary interest asserted by the inventor.

[120] If an application is reopened and USPTO has already issued a notice of allowance (which notifies the applicant that a patent will be granted), USPTO advises the applicant that the notice is vacated. An applicant who has paid a fee may request a refund or credit or may wait until the application is either allowed or abandoned.

Academic and trade literature and some USPTO officials suggest that the incentives examiners have to approve applications may cause the relatively high allowance rate. These include:

- Emphasis on production goals that are included in the examiner's performance appraisal and reward system. (Chapter 4 provides more information on the performance management system.)

- Ability of applicants to extend the examination process by submitting amendments and requesting continuations that, over time, may wear down the examiner so that he/she eventually approves the application.

As discussed in Chapter 2, continuations and amendments have legitimate uses in the prosecution process. Proponents of restrictions on the use of continuations believe that some patent applicants use them to broaden claims in their original application in anticipation of a competitor's actions or even after a competitor has brought a product to market. As the Panel noted in Chapter 2, on June 8, 2005, the Chairman of the Subcommittee on Courts, the Internet, and Intellectual Property, House Committee on the Judiciary, introduced H.R. 2795 (The Patent Reform Act of 2005). The bill includes a provision that authorizes USPTO to establish regulations to limit the circumstances in which an applicant may use continuations.

While patent quality will always be a concern for applicants, their competitors, litigators, the economy in general and USPTO, there are some indications that quality is improving. The September 2004 IG report noted examples of improvements in quality in several areas since 2002, such as examiner error rates, applications reopened, applications referred to the Board of Patent Appeals and Interferences, and examiner allowance rate.[121] Judge Rader of the CAFC pointed out that the decisions the Federal Circuit is handing down do not support the proposition that USPTO is issuing a large number of patents of questionable quality.[122] In 2004, the CAFC supported USPTO's position in most of the 53 appeal cases[123] (as to whether the applications should be allowed or rejected) in all cases.

21ST CENTURY STRATEGIC PLAN PATENT QUALITY INITIATIVES

The *21st Century Strategic Plan* states that "there has been no significant quality improvement" since USPTO's quality improvement program was established 25 years ago.[124] USPTO has made some significant changes to its longstanding quality improvement program to respond to continuing concerns about a decline in patent quality. *The 21st Century Strategic Plan* includes:

- A vision statement recognizing the importance of quality and asserting that "quality is the principal focus of everything we do"

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[121] Inspector General, September 2004, p. 13.
[122] American Intellectual Property Law Association, October 2004 Roundtable.
[123] For 42 *ex parte* reexamination cases, CAFC affirmed 24, remanded 6, dismissed 10, transferred 1, and denied one writ of mandamus. For 11 *inter partes* reexamination cases, CAFC affirmed 5, remanded 1, and transferred 1. The two types of reexamination are defined on p. 3-12.
[124] USPTO, Action Paper for Quality Initiative (1) pg. 1, *The 21st Century Strategic Plan*, February 3, 2003.

- Numerous quality initiatives designed to institutionalize quality in the examination process and improve the knowledge, skills, and abilities of patent examiners.

USPTO's quality initiatives reflect a shift from checking quality at the end of the examination process to (1) measuring it during the process, (2) using the results of quality reviews to improve the performance of individual examiners, and (3) providing a feedback loop for incorporating results of quality reviews into training programs. (See Table 3-2.)

Table 3-2. Patent-related Quality Initiatives in The 21st Century Strategic Plan

Initiative	Objective	Implementation status as of 4/30/05
Integrate reviews to cover all stages of examination	Implement initiatives a-f below.	See below.
a. Expand reviews of primary examiners work	Increase the number of reviews of examiners' work to ascertain whether current patent law, practice, and procedures are being applied	These reviews are done in support of another initiative that calls for recertifying Primary Examiners. Some 1/3 of Primary Examiners are recertified each year and expanded reviews are part of the process. First 1/3 completed in FY 2004.
b. Expand second-pair-of-eyes review	Incorporate universal review of all allowances for art areas that have unacceptably high reopening rates to identify issues that need further consideration by the examiner and his/her supervisor	This was begun in the business methods areas in March 2000 and has been expanded to other areas on a trial basis to determine best practices.
c. Evaluate search quality	Incorporate an evaluation of the quality of the examiner's search during the in-process reviews	This is part of the in-process review effort and entails assessing the strategy for the search as well as results.
d. Survey practitioners on specific applications	Measure customer satisfaction immediately after a transaction, focusing on one or two important issues for a particular technology center at a specific point in time	USPTO is waiting for OMB approval before it can proceed. (All surveys the federal government sends to citizens require OMB approval.)
e. Enhance the reviewable record	Provide additional information in the reviewable record, including more details regarding the interviews with the applicant and explanation for actions taken during prosecution	USPTO has revised the examiner manual and related forms to provide for this additional information, including the applicant's comments on the examiner's interview write-ups.
f. Certification of searching authorities	Contract with qualified search firms to perform a search of the prior art according to the criteria set out in the enhanced Patent Cooperation Treaty guidelines augmented by USPTO's guidelines for non-patent literature searches	This initiative, which was subsumed under the outsourcing pilot, is in the early stages of pilot implementation. USPTO expects to complete its evaluation plan in mid-June 2005.

Source: Action papers for Quality Initiatives, *The 21st Century Strategic Plan;* implementation status from USPTO officials.

To provide the human resources infrastructure for implementing these initiatives, USPTO established the following new positions:

- a director for the Office of Patent Quality and Assurance (OPQA) under the Deputy Commissioner for Patent Operations and three lead quality assurance managers[125]

- review quality assurance specialists who conduct quality reviews and report directly to lead quality assurance managers in the Office of Patent Quality and Assurance

- 22 training quality assurance specialists resident in the TCs who conduct in-process quality reviews and identify examiner training needs and report directly to the TC Directors.

Review and training quality assurance specialists[126] performed 11,300 reviews in FY 2004. The four different types of quality reviews are:

- Quality reviews done after USPTO sends an allowance notice to the applicant (USPTO uses the results of these reviews to develop its official error rate statistics that are part of its longstanding quality measurement program). These reviews are done by OPQA staff.

- Second pair-of-eyes reviews done after an allowance decision but before USPTO sends a notice of allowance to the applicant. These reviews are done by training quality assurance specialists in the TCs.

- Random, in-process reviews of the examiner's work done after the FAOM is completed and prior to allowance; these reviews assess the accuracy and completeness of the examiner's search process and the reasonableness of examiner's decision regarding patentability. These reviews are done by review and training quality assurance staff.

- Focused, in-process reviews in response to requests from individual examiners or TC directors, largely done by training quality assurance specialists.

Reviewers use detailed checklists for in-process reviews to identify any examiner errors in applying the statutory criteria.[127] If they identify errors, they do additional reviews to determine the scope, such as whether the errors are examiner-specific or occurring across the TC. If the reviewers identify recurring issues, they prepare a training module or workshop and offer it to all staff within the TC. One TC director said that supervisors also use the results of in-process reviews to provide on-the-job training for their staff.

[125] This function has existed in USPTO in various forms, sometimes under the Commissioner for Patents, sometimes under what is now the Under Secretary.

[126] Supervisory PEs also conduct second-pair-of-eyes reviews and both types of in-process reviews.

[127] For example, in assessing whether all rejections associated with 35 U.S.C. Sect. 102 were reasonable, the reviewer identifies the reasons for a "no" response including (1) claimed features were not found in the reference, (2) the wrong section of Sect. 120 was used in making the rejection, (3) an incorrect date was used for a reference, and (4) improper official notice.

TC directors had positive comments regarding the addition of the quality specialists. Some of the TC directors and supervisory PEs indicated that the second-pair-of-eyes reviews had been very helpful in improving the patent quality. For example, some art unit directors credited the reviews with reducing their error rates by half during the last two quarters of FY 2004. But many acknowledged that reviewing all allowances reduced productivity. As a result, their TCs had reduced their use of the reviews, using them to address specific issues or on a random basis.

Stakeholders recognized the tradeoffs between conducting the kinds of quality reviews that could result in near-total confidence in patent quality and reducing pendency. Some were aware that the EPO and JPO application review processes entailed more supervisory review, something they believe improved quality. However, they noted that pendency is shorter in the United States. A member from one stakeholder organization said some members "have expressed a growing concern that the product produced by the USPTO is not of high quality, and there is failure to receive FAOMs within 14 months of the filing date." He noted that if a quality review results in a high quality patent but FAOM occurs within 24 months that would be acceptable. However, others do not want to increase pendency for quality reviews. As one said, USPTO cannot scrutinize every application to the same degree that litigants do, for example, in an infringement case. A patent court case could cost millions of dollars, and patent applications cannot be examined to that degree.

EPO and JPO officials stressed the importance of quality reviews. They believe that quality reviews enhance quality and can lead to fewer questionable patents and, over time can reduce challenges to allowed patents. EPO conducts a second-pair-of-eyes formalities check and a third pair of eyes makes the final decision to allow or reject the patent. Pendency rates in Europe and Japan for a final decision on patent applications, though, are substantially higher than in the United States. In FY 2004, the total pendency rates for Europe and the United States were 43.5 months and 27.6 months, respectively. In FY 2003, first-action pendency (which gives the applicant an important indicator of the viability of their innovation) in Japan, Europe, and the United States were 25 months, 20.8 months, and 18.3 months, respectively.

In addition to the quality initiatives discussed above, *The 21st Century Strategic Plan* includes several initiatives that focus on improving the knowledge, skills, and abilities of patent examiners. (See Table 3-3.)

Table 3-3. Knowledge, Skills, and Abilities-Related Initiatives in The 21st Century Strategic Plan

Initiative	Implementation status as of 4/30/05
Certification of Knowledge, Skills, and Abilities (KSAs) (see a-c below)	
a. Certification of KSAs Before Examiners Are Promoted to GS-13	Course on law and evidence under development; legal competency exam under development; work product reviews of each GS-12 examiner have been implemented throughout the examiner corps. (Chapter 4 provides more information on this initiative.)
b. Re-Certification of KSAs For Primary Examiners, Including Legal and Automation Training for Primary Examiners	Recertification program implemented in FY 2004 requiring that primary examiners be re-certified once every three years. Reviews of work products for one-third of primary examiners began during FY 2004. First-line supervisors were trained to increase the effectiveness of work product reviews.[128]
c. Interim Implementation of Examiner Pre-Employment Testing	Interim procedures were developed for incorporating and testing for English language proficiency as a formal pre-requisite for employment. USPTO is working with OPM to develop a revised pre-employment test for the long-term.

Source: Action papers for Transformation Initiatives, *The 21st Century Strategic Plan;* implementation status from USPTO officials.

Conclusions and Recommendations on Strategic Plan Quality Initiatives

High-performing organizations constantly struggle with how to use their limited resources efficiently while concurrently enhancing quality. Focusing on patent quality in the long term is important because a decision on a patent application has economic spillover effects to other businesses and, more broadly, to competition and innovation. The Panel believes that allocating resources to the TCs to perform quality reviews and retaining a centralized core group with a quality focus is a wise approach. By spending more time to ensure quality, USPTO may reduce inappropriate patents and the attendant litigation costs. However, the Panel recognizes that diverting resources from the examination function to quality reviews reduces the productivity of supervisory PEs. These examiners are required to (1) train new staff on the basics of the examination function, (2) monitor the work of experienced examiners, and (3) train and coach new and experienced staff on the results of quality reviews. Monitoring the impacts of quality reviews will be important in achieving an appropriate balance between quality and productivity in the long term.

The Panel also recognizes that the burden of quality does not rest with USPTO alone. Informed debate should continue in the patent community on the nature of the responsibilities and burden that individual patent applicants should accept. Patent applications that are hundred of pages long, encompassing dozens or even hundreds of claims, are an impediment to accurate and efficient examination, and

[128] *USPTO Performance and Accountability Report: Fiscal Year 2004.* pg. 17.

multiple filings of continuing applications do not necessarily support timely USPTO action or final resolution of patent rights.

The Panel generally supports USPTO's quality initiatives. The Panel has additional comments and specific recommendations for certain initiatives as follows:

Reviews of primary examiners work/recertifying primary examiners

The Panel believes this is a sound approach to ensuring that the most experienced and productive examiners do not unintentionally begin to do more cursory searches or examinations after spending several years working in a particular area. This initiative is linked with another strategic plan initiative for recertifying primary examiners every 3 years. The Panel recognizes these reviews may result in reductions in productivity.

> **The Panel recommends that after the initial recertifications are completed, USPTO examine opportunities for reducing the number of reviews and lengthening the three-year recertification cycle.**

Second-pair-of-eyes review

The Panel believes this is a valuable tool for use in art units that experience higher levels of reopened cases. Incorporating the results of these reviews into training programs will help institutionalize quality in the patent process. However, the Panel recognizes the concerns regarding the effects on reduced productivity.

> **The Panel recommends USPTO monitor the results of these reviews to (1) ensure their implementation does not result in denying patents to deserving inventors and (2) identify the appropriate number of reviews that is needed to sustain quality without adversely affecting pendency**.

Evaluate search quality as part of the reviews

The key to issuing a quality patent is ensuring that the patent examiner's review of prior art was reasonable and complete. The Panel believes that assessing search quality as part of the expanded reviews is important.

Survey practitioners on specific applications

This initiative has not been implemented because USPTO is waiting for OMB approval. This survey could be a useful tool for identifying examiner and USPTO strengths and weaknesses and deficiencies in practitioner information and understanding.

Enhance the reviewable record

The Panel believes this initiative could improve the transparency of the patent prosecution process not only for individual patent applicants seeking information about their application but for third parties who use the Public and Private PAIR system. In addition, adding the applicant's comments on the interview write-ups should provide a more complete record of the issues and agreements the applicant reaches with the examiner; this will be helpful in the subsequent stages of patent prosecution, particularly if the application is reviewed by someone other than the original examiner.

Certification of searching authorities/outsourcing

In Chapter 2, the Panel stated USPTO needs to address the many challenges it faces in designing and evaluating a pilot. These same challenges also apply to applicant-provided searches that Congress authorized (at a reduced application fee). The Panel assumes USPTO will use the same criteria in establishing guidelines for searches submitted from individual applicants that it will use for those done by any firm with which it contracts for searches.

The challenges under either system include defining the attributes of a quality search, assessing the quality of the search, developing procedures to guard against potential conflicts of interests either from a search firm or patent applicant, and providing adequate protections for information confidentiality.

USPTO PROPOSES A NEW POST-GRANT REVIEW PROCESS

In addition to raising concerns about quality, academic literature, the FTC and the NAS recommended various regulatory or legislative reforms to improve patent quality. USPTO's strategic plan includes one such reform—developing a new post-grant review process. USPTO believes a post-grant review process will enhance the patent system as a whole by strengthening those patents that survive the review and eliminating those patents that contain unpatentable subject matter.

USPTO and stakeholders believe that a new post-grant review process would provide an alternative forum to district court litigation for resolving patent validity issues. USPTO also believes that it will "enhance the integrity of the intellectual property system" by helping ensure that those potentially affected by the economic burdens of patents with invalid claims can obtain prompt redress.[129] Some stakeholders noted that an opposition process with a shorter timeframe than litigation would speed the certainty about an invention that received a patent or was rejected. However, they said a post-grant review system should not replace a commitment to "do it right the first time."

Patent-related trade associations such as the American Intellectual Property Law Association (AIPLA) and IPO also support establishing a new post grant review process and have developed their own proposals. Also, in October 2004, Representative Berman introduced legislation (H.R.

[129] USPTO, *The 21st Century Strategic Plan*, February 3, 2003.

5299) that would amend patent law to provide for a new post-grant review process.[130] On June 8, 2005, the Chairman of the Subcommittee on Courts, the Internet, and Intellectual Property, House Committee on the Judiciary, introduced a bill (H.R. 2795) to provide for several changes in the patent system, including a new post-grant review process.

The current reexamination procedure limits the extent to which a third party can challenge patentability and does not include the elements of adversarial procedures. As instituted at USPTO, reexamination takes place after the patent is granted and entails presentation before an examiner other than the original examiner. Characterizing the reexamination process as "having only a limited role in reconsidering patentability decisions," USPTO's General Counsel said current law provides for reexamination of a patent when:

- A patentee files an application to reissue a patent to correct at least one error
- An applicant and a patentee claim the same invention and an interference is declared, and the applicant seeks judgment based on the unpatentability of patent claims
- A patent owner or third party requests reexamination of a patent[131]

A third party can request either an *ex parte* or *inter partes* reexamination. *Ex parte* reexamination limits the third party's participation to filing one reply to a patent owner's pre-examination statement (if one was filed). *Inter partes* examination, created in 1999 under the American Inventors Protection Act, differs from *ex parte* examination in that the third party may participate in the proceeding and has the right to appeal decisions to the CAFC. Under *inter partes* reexamination, challenges can be raised at any time during the patent term, but the scope of the challenge is limited to patentability issues related to patents and publications. From its inception in 1999 through April 2005, USPTO received 85 requests for *inter partes* reexamination. As of March 31, 2005, USPTO had made decisions on only two requests, finding in favor of the third party and thereby canceling all claims of each patent. The remaining requests are in USPTO's pipeline for processing.

If third parties use the *inter partes* reexamination to challenge patentability, they are bound by the results by way of estoppel—a legal principle that prevents a person from asserting or denying something in court that contradicts what has already been established as the truth. As it relates to reexamination, a third party would give up the right in court to make not only any argument made during the reexamination, but any argument that could have been made but was not. The estoppel provision, coupled with the lack of adversarial features in the reexamination process—such as discovery and cross examinations—has effectively closed this avenue to third parties desiring to challenge patentability decisions. According to USPTO, third parties who believe they are adversely affected by patentability decisions do not generally use *inter partes* reexamination. Table 3-4 shows the key design elements for the four proposals for establishing a post-grant review process.

[130] H.R. 5299 was referred to the Subcommittee on Courts, the Internet, and Intellectual Property, House Committee on the Judiciary on 11/5/2004.

[131] Statement of James A. Toupin, General Counsel, USPTO, before the House Committee on the Judiciary, Subcommittee on Courts, the Internet, and Intellectual Property, June 24, 2004.

Table 3-4. Comparison of Different Proposals for a Post-Grant Review Process

Design elements	H.R. 2795	USPTO	IPO	AIPLA
Timing of review	No later than nine months after patent grant or than six months after notice alleging patent infringement	No later than one year after patent grant or four months after notice alleging patent infringement	No later than nine months after patent grant	No later than nine months after patent grant
Length of the proceeding	One year time limit but may be extended to 18 months	No specific time recommended	Within one-year of the expiration of the -month post grant request period	One year time limit, start to finish, but may be extended to no more than 18 months in appropriate cases
Grounds for review	Double patenting and any of the requirements included for patentability	Any and all grounds that may be brought in district court to challenge patentabilty, but not enforceability	Any grounds of patentability with the exception of best mode and derivation;[b] no issues of priority invention or enforceability	Double patenting and grounds of patentability with the exception of best mode[a]
Nature of discovery	Limited cross examination	Limited cross examination, but extended for good cause shown	Limited cross examination	Right to cross examine each person submitting an affidavit or declaration; additional discovery if required in the interest of justice
Amendment rights of patent owner	Permit amendment to any claims that are the subject of the proceeding, including the addition of new claims	Permit a single, narrowing amendment of any claim at issue with additional amendments for good cause; additional dependent claims allowed	Permit in response to the initial request and after any new prior art is presented by opponent	Permit at least one; further requests for amendment of claims only upon good cause
Responsible organization	Administrative patent judges	Administrative patent judges	Administrative patent judges	Administrative patent judges
Effect on reexamination	Opponent is prohibited from concurrent *inter partes* reexamination concurrent with a post-grant review initiated nine months after a patent is granted; *Ex parte* examination or *inter partes* reexamination made after the nine-month period, and *ex parte* examination by the patent owner at any time, shall be stayed when a post-grant review process is pending	Eliminate *inter partes* reexamination and third party requested reexamination	Opponent may file a concurrent or subsequent proceeding in USPTO	Opponent is prohibited from any later reexamination;[c] any request for reexamination during the nine-month period shall be considered a request to oppose; a request for reexamination after the nine-month period shall be stayed until the opposition terminates
Standard of proof for determining unpatentability	Preponderance of the evidence	Preponderance of the evidence	Clear and convincing	Preponderance of the evidence

Design elements	H.R. 2795	USPTO	IPO	AIPLA
Estoppel	Opponent is prohibited from challenging any issue of fact or law that was actually decided, but with exceptions for issues based on later availability of material evidence regarding a legal or factual issue	**N/A**	Opponent is prohibited from challenging validity of the claim on the basis of evidence or prior art presented	Opponent prohibited from challenging validity issues actually decided, but with exceptions for additional factual evidence material to a decided issue of fact that could not have reasonably been discovered by the opponent
Judicial review	Appeals before CAFC	Appeals before CAFC	Appeals before CAFC	Appeals before CAFC

[a] A requirement for the patent applicant to describe the best way of practicing the invention. (35 U.S.C. Sec. 112)
[b] Derivation refers to whether the applicant derived an invention from another party. (35 U.S.C. Sec. 102 f)
[c] This prohibition applies to any opponent. Other third parties are not precluded from requesting reexamination.

Source: Proposals by the organizations noted, with extensive editing by National Academy staff.

Three of the four proposals provide for initiating the post-grant review within nine months and USPTO's proposal recommends 12 months. IPO favors nine months because it views the process as an additional review of the examination process and provides an opportunity for third parties to submit information and present arguments that may not have been available to USPTO. USPTO favors 12 months because it believes it strikes the most appropriate balance between security and predictability for the patent owner. Further, the 12-month period is consistent with the time period provided for one type of *inter partes* reexamination known as interferences. Also, USPTO believes that nine months may not provide a sufficient amount of time for some third parties to identify all the issues that would be needed to justify a post-grant review.

As shown in Table 3-4, the proposals vary with respect to the effect of post-grant review on existing reexamination processes. Under USPTO's proposal, *inter partes* reexamination is eliminated. According to USPTO, it favors eliminating *inter partes* reexamination because (1) of its limited use and (2) post-grant review allows third parties to challenge a patent not only on every ground available under inter partes reexamination but additional grounds not available in reexamination.[132] H.R. 2795 allows third parties to request *inter partes* reexamination but prohibits its use concurrently with a post-grant review initiated within nine months of the date a patent is granted. Also, the bill states that a request for either *ex parte* examination or *inter partes* reexamination made after the nine-month period, and a request for *ex parte* examination by the patent owner at any time, shall be stayed when a post-grant review process is pending. IPO favors retaining *inter partes* reexamination because it believes that it will serve as a useful complement to post-grant review by providing a relatively simple and inexpensive proceeding to challenge a patent at any time during the term on limited grounds—documentary prior art—in which USPTO has the most experience. AIPLA, on the other hand, would eliminate *inter partes*

[132] Action paper for Post-Grant Review, *The 21st Century Strategic Plan.*

reexamination for any third party involved in the post-grant review proceeding because AIPLA believes the patent owners need protection from harassment.

Since 1996, JPO used two types of post grant review processes—an opposition process and an invalidation appeal. With the exception of who could initiate the process, the opposition process was more restrictive than the invalidation process. An opposition process could be requested by anyone but only within six months of publishing the patent. Appeal rights were limited to the patentee. On the other hand, a request for invalidation appeal could be initiated only by an interested party but could be filed anytime after the establishment of the patent rights. The challenger was also included in the invalidation process and was provided appeal rights. In 2003, to help streamline the patent system, JPO abolished the opposition process and merged it with the invalidation appeal. This merged system has many of the same features of the former opposition process.

Conclusions and Recommendations: Post-Grant Review

Because of the many inherent disincentives with the existing reexamination process, few third parties have used *inter partes* reexamination as a vehicle for challenging patentability decisions. A post-grant review process that incorporates adversarial aspects and addresses concerns about the existing estoppel standard could provide a relatively low-cost option for third parties who want to challenge patentability decisions. Through its use, it could provide more information on issues related to patentability than is available through the current system, thereby helping improve patent quality in the long term.

The Academy Panel believes that some method of post-grant review will permit an administrative process to resolve many issues that now go to litigation. Litigation can cost from $100,000 to $3 million or significantly more (not including any awards a court might make). The shorter timeframe and reduced costs of a post-grant review system should benefit patent holders and challengers.

If a post grant review system is adopted, its impact on the volume of requests for *inter partes* reexamination is uncertain. The Panel acknowledges that third parties could use some of the same grounds to challenge a patent in reexamination as in post-grant review. However, post-grant review, unlike reexamination, limits the time period for initiating challenges. While the Panel acknowledges that maintaining two systems does have the potential to create an administrative burden, it believes this is a small burden compared to the benefits that may result for the larger patent process. In the Panel's view, if a post-grant review system is adopted, and *inter partes* reexamination requests do not substantially increase, USPTO could concurrently handle *inter partes* requests—at least in the short term.

Provisions of the current bill provide for retaining *inter partes* and *ex parte* reexamination with restrictions to address the most egregious form of administrative burden—concurrent post-grant review and *inter partes* reexamination proceedings. Collecting data on the respective costs and benefits of both systems will be important to help inform future decisions on the need for both systems in the long term.

The Panel is not making a recommendation with respect to the time period for initiating post-grant review. It believes the rationales used to support the nine-month and 12-month time periods have merit. Informed debate within the patent community may surface additional information that may be helpful to decision makers in establishing an appropriate time period.

The Panel agrees with the provisions of the four proposals for post-grant review that provide for (1) administrative patent judges conducting the process and (2) an appeals option to CAFC.

The Panel recommends the following with regard to the other elements of a post-grant review process:

- **The grounds for a challenge be limited to patentability and not enforceability.**

- **Discovery be limited to cross examination on matters relevant to the grounds for review.**

- **Estoppel from further litigation be limited to those issues raised and resolved in the proceeding.**

- **The patent owner be permitted a single narrowing of any claims, with the addition of dependent claims on good cause shown.**

If a post-grant review system is adopted, the Panel recommends:

- **USPTO compile data on the costs and benefits of post-grant review and *inter partes* reexamination, including the impact on patent quality. These data should help inform Congress about whether both systems should be maintained.**

The Panel believes using administrative patent judges[133] increases the likelihood of a more reliable determination of patentability and removes one level of review within USPTO that should ensure a more expeditious disposition of the post-grant proceeding. The option of direct appeal to the CAFC means that the post-grant review essentially substitutes for litigation at the District Court level. Therefore, using the process will not lengthen the time spent in the post-grant process, which would be the case if those dissatisfied with an administrative patent judge's ruling had to go through District Court before appealing to the CAFC.

The estoppel provision needs to strike an appropriate balance between protecting patent owners from harassment and allowing third parties to raise legitimate patentability questions. The "could have been raised" standard is controversial but has merits for protecting patent owners against harassment, particularly when the third party has knowledge of additional prior art at the

[133] Patent judges are administrative law judges with a specialty in patents. These judges serve as appeals judges and also adjudicate certain *inter partes* reexamination cases. These cases involve an applicant and a patentee claiming the same invention—commonly known as an interference.

time a request is filed. However, third parties may have incentives for not surfacing all prior art during review proceedings. For example, applicants whose inventions focus on complex subject areas may want to limit the information provided to USPTO for ease of understanding. While the Panel recognizes some of the benefits of the current estoppel provision, it believes that limiting its scope to issues raised during the proceeding is appropriate. This change will likely have a substantial impact on increasing the number of third-party challenges to patentability. The "could have been raised" standard has discouraged third parties from using *inter partes* reexamination and led potential challengers to seek redress in the courts rather than an administrative proceeding.

A post-grant review procedure will not be cost neutral within USPTO. Congress would likely establish a fee for this service and this may offset some, if not all, costs. About 5 percent of Europe's patents undergo a post-grant review. If a similar percentage holds in the United States, that would be about 8,500 post-grant reviews per year. However, the United States has a more litigious culture and the number of reviews could be higher. Another factor affecting the number would be the various design elements that are ultimately adopted. If the number of reviews is comparable to or higher than Europe's workload, USPTO would face a significant challenge in the foreseeable future.

The review workload could possibly be absorbed by some of the administrative patent judges who currently serve in the Board of Patent Appeals and Interferences. During FY 2004, the inventory of pending appeals and interferences cases was reduced by 50 percent and 29 percent, respectively. While the service of some of these patent judges is a possibility, USPTO would need to gauge the workload after several months to determine if it would need to hire additional patent judges.

CHAPTER 4
FINDING AND RETAINING THE BEST WORKFORCE

The caliber and stability of the USPTO workforce have a strong impact on patent quality and pendency. USPTO faces challenges similar to other federal agencies that must recruit a large number of technical staff in a competitive market within the constrictions of fluctuating federal appropriations. The inherent difficulties in doing so have been exacerbated by a dramatic increase in patent applications over the last decade, extensive attrition among newly hired patent examiners, and a pattern of starting and stopping potentially ameliorative management initiatives before the agency has a chance to assess their impact.

This chapter discusses whether USPTO's workforce will have the skills needed in the future. It begins by examining staffing levels over the past 15 years, how attrition has affected growth, and how USPTO develops and manages its workforce. The chapter next looks at the USPTO awards system and employee relations. Throughout the chapter, comparisons to EPO and JPO are made since there are no U.S. peer groups to USPTO.

STAFFING GROWTH ERODED BY ATTRITION

The patent corps (the term used to describe the body of USPTO non-supervisory patent examiners) has more than doubled since 1991 (from 1,704 in 1991 to 3,681 in 2004), but the rate of growth is more than 600 short of the level of 4,319 it had forecast (in 2001) that it would need for FY 2004.

Why has the agency not achieved the staffing level for which it had planned? The reasons include budget shortfalls, the delayed appropriation cycle that limits the time period to make commitments, a lack, until 2004, of a year-round recruitment effort, and significant attrition. Given future budget uncertainties, USPTO has typically attempted to staff up quickly while the fiscal year funds were still available and the Congressional authorization to hire was still in force. As the performance data indicate, this “rush to hire” sometimes resulted in hiring less competitive candidates, the wrong people, or at least the wrong people for this knowledge worker agency. When faced with choices between hiring examiners and other initiatives, the agency has, however, typically chosen hiring—with the recent exception of the decision of former Under Secretary James Rogan, who chose to limit hiring to make immediate investments in quality initiatives and IFW implementation.

A mounting influx of applications awaits the new examiners. From FY 1999-2005, the agency increased the number of non-supervisory examiners by 23 percent, but this did not keep pace with a 35 percent increase in the number of patent applications filed. The balance of the patent work force has remained relatively stable since 1999 at the 1,400+ range.[134] This lower number

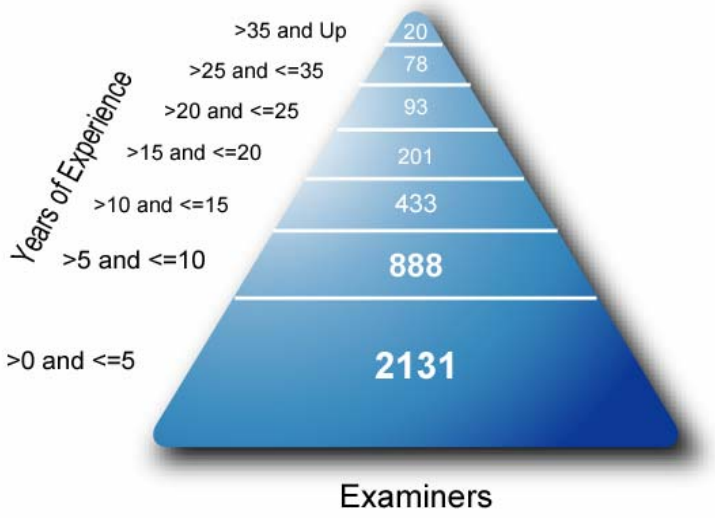
[134] Variations in the size of this group are from a current low of 1,417 to a high of 1,510 in 1999. The non-examiner portion of the patent work force includes supervisory patent examiners, non-examiner professional staff assigned to a TC, technical support staff in TC's, and patent support staff not in a TC.

reflects an increased reliance on automation and the concomitant USPTO decision in 1995 to freeze hiring of some groups of patent technical support staff.

Whatever progress USPTO has made in patent examiner hiring has, however, been eroded by attrition. A *Government Executive* article reported that, among government occupations, as of 2001, only pilots and radiological technicians had higher turnover rates than patent examiners.[135] In 10 out of 13 years, from FY 1992 through FY 2004, for every 10 examiners hired, five left. In two years, 1997 and 2000, more patent examiners left USPTO than were hired. Only when the agency hired 700 plus new examiners—FY 1998, 1999, and 2002—did USPTO get attrition below the 50 percent rate for new hires (See Chapter 2 for further discussion on the impacts on pendency.) Had USPTO's patent examiner turnover rate held to the typical federal government average of 6 percent,[136] the 13-year losses would have been 1,992 rather than the USPTO actual rate of 3,210. Had it matched attrition for USPTO as whole (7 percent) or that of the Environmental Protection Agency (EPA) (roughly 7.5 percent), patent examiners would have experienced the more typical 7 percent loss. As a point of comparison, the National Institute of Standards and Technology, a sister agency in the Department of Commerce, had, in FY 2004, an 8.8 percent rate of attrition for its roughly 1500 scientists and engineers.[137]

What impact has this early attrition had on the composition and expertise of the PE workforce? Most patent professionals say the steep learning curve means that it takes three to five years to attain proficiency. As Figure 4-1 shows, 55 percent of the PE workforce onboard as of April 2005 had five years or less USPTO service. This leaves 45 percent of the workforce, with more than five years of service.

Figure 4-1. Years of Service for Utility/Design Examiners Onboard as of 4/30/05

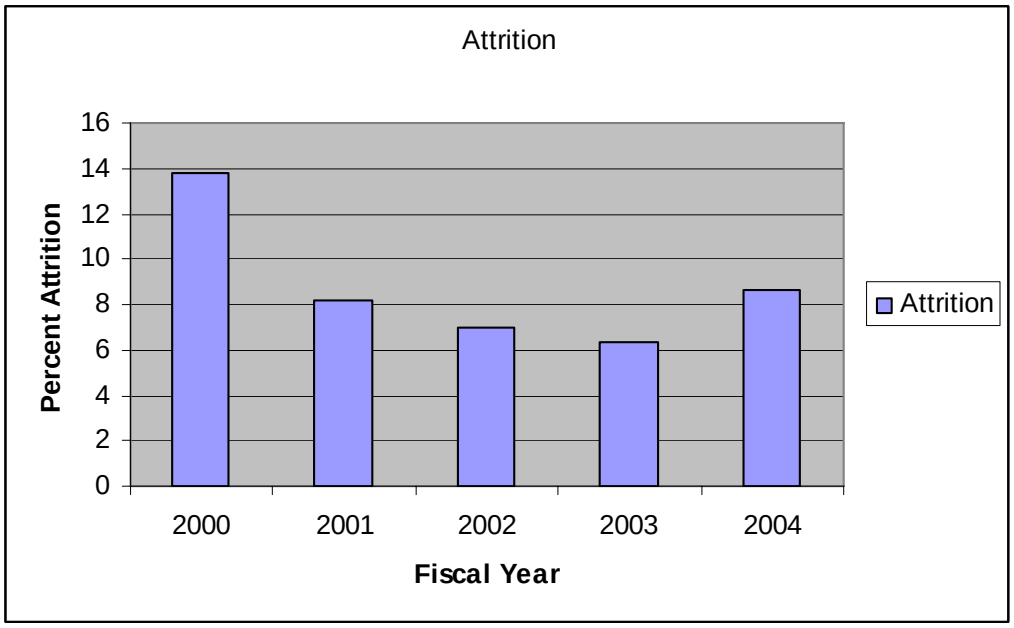


[135] Friel, Brian, "Government's Staying Power," *Government Executive*, October 2001.
[136] Friel, Brian, "Government's Staying Power," *Government Executive*, October 1, 2001, p.2.
[137] NIST rates of attrition were, for FY 2000, 11.3 percent; for FY 2001, 8.6 percent; for FY 2002, 7.2 percent; and for FY 2003, 6.0 percent. NIST has pay banding and hires most of its engineering and scientific employees at the equivalent of the GS-11 or GS-12 level, as the new hires are primarily individuals completing post-doctoral education.

This continuing cycle of growth and decline is not of recent vintage. From FY 1990-2000, the attrition rate for patent examiners averaged 10.5 percent.[138] Attrition rates were at 14.7 percent in 1990, fell to a low of 6.76 percent in FY 1993, and then began steadily rising, along with the economy, over the next seven years. Rates always vary substantially by technology center and industry. (See Appendix F for more detailed information on attrition.) During the dot.com boom, from June 1999 through October 2000, USPTO experienced an attrition rate of 46 percent for examiners with training in electrical engineering, computer engineering, and computer science—the very specific skills it was seeking to acquire to respond to increased demand for patents in this sector.[139]

Figure 4-2 shows the aggregate attrition from FY 2000-2004.

Figure 4-2
USPTO Patent Attrition Rates: FY 2000-04



Attrition is expensive. The resources spent on hiring (including recruitment, pre-employment interview travel, review of applications, orientation, security background checks, move costs, training) are ineffective if the new hires do not stay with the agency. For example, in FY 2000, when 308 patent examiners with less than three years of service left USPTO (out of 1902 hired in FYs 1998-2000), the agency spent almost $22 million to train junior examiners.[140]

[138] "Restructuring the Patent and Trademark Office," National Academy of Public Administration, February 2003, p. 4.
[139] Ibid.
[140] These costs include $8,708,980 for SPE time spent training junior examiners, $3,455,275 for time spent by primary examiners, and $9,646,010 for junior examiner training classes. (Source: USPTO draft memo from Kimberly Walter to Donald Winstead, OPM, January 24, 2001.)

Retirements have had less impact than the exit of early careerists, with 128 from FY 2000 through FY 2004. However, the number of retirements (54) in 2004 more than doubled the number in each of the preceding four fiscal years and may presage a trend as "baby-boomers" approach retirement eligibility. Attrition for employees with more than 15 years of service has, over the last five fiscal years, represented from 5 percent in FY 2000 to not quite 15 percent of total attrition in FY 2004.

Reasons for Entry-Level Attrition

The number of examiners with less than three years service who left in FY 2004 represented 39 percent of those hired during that fiscal year. Data for the period from 1990 to 2003 and anecdotal information from USPTO employees back to the mid-1960s show that this level of attrition for entry-level employees is not new. Factors that senior USPTO staff said have long contributed to this attrition include:

- Recent graduates' lack of real-world understanding about the world of work
- The difference between the often-isolating and repetitive desk work of USPTO patent examination duties and those of research or bench science, for which many USPTO employees have trained
- Existing career plans of many recruits, who use USPTO experience as a stepping stone to law school, or, if already a lawyer, to a more lucrative private IP practice following USPTO employment
- Pay in relation to the Washington, DC area cost of living.

In addition, changes in the government's retirement system, implemented in the mid-1980s, are likely to affect attrition rates and send them even higher. Employees hired into the government under the Federal Employees Retirement System (FERS) have a more portable retirement program than workers hired under the older Civil Service Retirement System (CSRS).

In the spring of 2005, USPTO formed a high level working group—slated to meet every three weeks—to look at hiring and retention in a more sophisticated and analytical framework. USPTO has also tried to combat potential recruits' lack of information about the nature of the work by using videos and more pre-employment, in-person contact (detailed in USPTO Strategic Workforce/Restructuring Plan of 2001 and in the *21st Century Strategic Plan*). Senior staff, however, said that some recruits only fully understand the work by doing it and then find it is not for them.

USPTO Actions to Improve Hiring and Reduce Attrition

The FY 2005 recruitment budget is $817,000, with expenditures of $309,029, as of April 7, 2005. Since FY 2001 this number has fluctuated substantially, with no money allocated for recruiting in FY 2004. Expenditures have typically ranged from $380,000 to $450,000. This fluctuation is typical of USPTO expenditures for management initiatives, which are often among

the first to be cut in budget shortfalls. Responding to this high level of attrition among new hires, in February 2000, USPTO established a training agreement to permit one-time accelerated promotions for patent examiners hired at the GS-5/7/9 levels after six months. This modified a previous agreement, which had limited accelerated promotions to the GS-5 and GS-7 levels and applied to only some PE disciplines and specializations. USPTO officials say that the agreement has been used extensively and effectively since its inception, but that data on the number of promotions resulting from the agreement are unavailable. Attrition among employees with less than one year of service—those most likely to have benefited from this accelerated promotion option—has nonetheless accounted for 32 to 47 percent of overall USPTO attrition from FY 2000 (when this option became available) through FY 2003. In FY 2004, attrition for this group of employees dropped to just under 25 percent.

As a result of an internal August 2000 study, a work group recommended that USPTO management primarily target improved compensation to stymie attrition.[141] The recommendations included:

- Creating a special salary rate for examiners
- Expanding the use of recruitment bonuses.

USPTO has had a special salary rate in effect since June 1, 2001; it provides a varying percentage increase (from a high of 20 percent to a low of 4 percent over the General Schedule locality rate) for PEs, patent administrators, patent classifiers, and patent attorneys. USPTO officials have suggested that examiners, aware of the possibility of a pay raise 6 months prior to its eventual effective date, remained at the agency to see the outcome of the request.[142] PE attrition, which declined in FY 2001 and FY 2002, reflects this.

Table 4-1 shows that USPTO did follow through on the recruitment bonus recommendation. (See Chapter 5 for a discussion of retention bonus options, not exercised by USPTO.) In addition, it authorized, in 2001, a 12 percent recruitment bonus for electrical/computer engineers and computer science PEs and a 2 percent bonus for all other PE disciplines. The use peaked in 2002, only to almost disappear in 2003. According to USPTO management, use of recruitment bonuses is now on hold because of budget limitations. While the agency spent $5.76 million in this period of six fiscal years, the use, which was not thoroughly evaluated for its impact, was erratic because of insufficient funding.

[141] "Patent Examiner Attrition/Retention Study," Executive Summary, August 2000.
[142] U.S. Department of Commerce, Office of Inspector General Final Report BTD-14432-2-001, "Patent Examiner Hiring Process Should Be Improved," March 2002, p. 3.

Table 4-1. Recruitment Bonuses for Patent Examiners FY 1998-2003

Fiscal Year	Bonuses	Total PEs Hired
1998	$1,097,893	728
1999	$1,099,294	799
2000	$531,434	375
2001	$871,023	414
2002	$3,250,883	769
2003	$15,317	308

Other recommendations and their status were:

- Paying moving costs for new examiners—no plan being considered
- Enlisting and training new examiner recruits to help surface more qualified USPTO employment candidates—no referral bonuses paid to current employees
- Training recruiters and SPEs in interview techniques—initiated in 2004 as an annual event
- Establishing a USPTO relocation coordinator for new hires—has not happened; OHR still putting together a relocation assistance package mentioned in 2002 employee handbook.
- Creating a TC new-hire coordinator—one was established for each TC, as an adjunct position.
- Implementing time-off benefits and additional awards programs—following the September 2004 IG report, the agency has committed to reviewing the production goals and related bonus process.
- Implementing a work-at-home or telecommuting program—USPTO created and expanded this program, which is primarily for primary PEs at the GS-14 level and above.
- Providing clear information about what the job entails—USPTO has developed new recruiting literature and video material.
- Improving techniques to match new hires' previous work experiences and education background to art areas—USPTO is working with OPM to develop a pre-employment testing program that can be integrated with the on-line application process known as JARS; tentative implementation is slated for January 2006.
- Revising the hiring process, including interviews for all recruits and testing for English language writing and oral presentation skills, training recruiters, conducting mandatory

reference checks and pre-employment checks—USPTO is now including these previously neglected steps in their hiring process.

- Developing a year-round recruiting program[143]—for the first time, in the fall of 2004, USPTO sustained recruitment efforts during the first quarter of the fiscal year and made job offers to PEs based on projected attrition. OHR is establishing summer USPTO office tours to enhance the summer hiring program.

- Extending the probationary period—not implemented.

- Hiring at a more realistic pace to allow sufficient time and attention to the new examiners—not implemented, and to a degree, difficult to implement because funds for hiring are not provided at an even pace.

- Adjusting production goals to improve the retention of high performers—not implemented. (See discussion in section on USPTO Awards System)

The FY 2005 appropriation set a floor for hiring [144] 900 examiners to increase the size of the patent corps to deal with increased workload. USPTO began developing a plan for this large influx of employees in FY 2004. Such massive hiring will make several of the ideas on the previous list more difficult to implement.

In February 2005, a new OHR director began, among other initiatives, recruitment team training. Prior to his arrival, USPTO, in 2003, completed an assessment of interim screening processes that could be used to eliminate candidates who would likely be ill-suited to the PE occupation. The FY 2004 enacted budget had no funds to implement this. In FY 2005, $239,750 was provided for IT support to this project.

USPTO is currently working with OPM on structured behavioral interview materials. These materials, known as the Critical Behavior Interview (CBI), to be piloted by TC 2100, will be used in pre-employment suitability testing. CBI is expected to be running by January 2006. The agency has also put increased emphasis on improving its recruitment marketing of quality-of-life offerings, such as flexitime, flexiplace, and the transit subsidy. The agency has not included in its recommendations the utilization of exit interviews as a source of data. Although USPTO has, at times, used exit interviews to collect objective data about why PEs leave, the agency has used this tool inconsistently. It has discussed, but not implemented mandatory anonymous electronic exit surveys as part of employee check out. Responses to exit surveys have therefore reflected only a percentage of those leaving. For example, in FY 2002, when 250 PEs left the agency, only 59 patent employees responded to an exit survey. During this same year, when the agency hired

[143] The Patent Corps FY 2005 Recruitment Hiring Action Plan targets the following ten schools: University of Pennsylvania (Penn State), University of Maryland, Florida International University, North Carolina State, University of Florida, Virginia Tech, University of Wisconsin-Madison, North Carolina A & T, University of Virginia, and University of Puerto-Rico-Mayaguez.

[144] Public Law 108-447, December 8, 2004, specifies that "not less than 5,057 full-time equivalents, 5,139 positions and $759,021,000 shall be for the examination and searching of patent applications." The statute also specifies a minimum number of positions for the examination of trademark applications and a maximum number of positions for the Office of General Counsel.

769 PEs, it conducted entrance surveys as part of orientation; 402 of those new hires responded.[145] The agency has at times used SPE focus groups to get perceptual data as to why they believe their employees left. This data was used to supplement the objective data gathered intermittently from the direct sources—the departing employees.

What Other Organizations Do to Recruit and Retain Top Quality People

USPTO is in a small minority of federal agencies, with their workforce almost entirely in the Washington, DC metropolitan area. It does not adhere to the more typical scheme, with employees in at least some of the ten federal regional headquarters.[146] Other small executive branch entities, such as the Office of Government Ethics, the Federal Election Commission, and the Pension Benefit Guaranty Corporation, are DC-centered. None, however, is the size of USPTO, none is growing to the extent of USPTO, and none has the world-wide attention that is focused on USPTO as a center of innovation for the nation and a key player in worldwide intellectual property rights. [147]

An essential element in acquiring, developing, and retaining high quality employees is the effective use of available human capital flexibilities. These flexibilities represent the policies and practices that an agency has the authority to implement in managing its workforce. Former U.S OPM Director Kay Cole James criticized her federal colleagues for failing to fully use available flexibilities. While OPM improved their web site, created a flexibilities handbook, and included the topic as part of senior manager training on the President's Management Initiatives,[148] a June 2004 survey showed that chief human capital officers across government blamed OPM for putting too many restrictions on the various tools and for failing to explain clearly how to use them.[149] (For a more detailed discussion of flexibilities available to federal agencies, see Chapter 5.)

In addition to flexibilities available government-wide, some federal agencies have tailored programs to meet specific agency needs. Others have used grants and cooperative agreements to provide summer internships, mission-oriented lecture series, and shared resource materials to partner university programs with which the agencies have established recruitment ties. While the federal government has, since 1977, had a competitive Presidential Management Intern program, now called the Presidential Management Fellows program, and USPTO has the option of hiring management, legal, and public policy types from among the successful candidates, such non-technically oriented programs are not likely to meet the majority of the demands of an organization such as USPTO. Other federal agencies have had positive results marketing developmental "intern" programs targeted to outstanding candidates in their mission fields and offering pay rates beyond the General Schedule. Four specific models developed by others in the federal sector may have particular applicability to USPTO needs:

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[145] USPTO Entrance & Post Exit Surveys, Fiscal Year 2002 Report, pp. 13 and 18.

[146] The ten regional city headquarters are typically: Boston, New York, Philadelphia, Atlanta, Chicago, Dallas, Kansas City, Denver, San Francisco, and Seattle.

[147] An August 1999 internal study of attrition stated that of the patent examiners hired to work in the DC area, two percent ended up leaving in their first year of USPTO employment because they disliked the Washington, DC area.

[148] Letter from Comptroller General David Walker, to Daniel Akaka and George Voinovich, "Post Hearing Questions Related to Federal Human Capital Issues," May 10, 2002.

[149] "Symptoms of a broken hiring system: Fixes fail to fill ranks," *The Federal Times,* August 3, 2004.

- The Department of Justice's (DOJ's) Attorney General's Honors Program—a competitive and prestigious program and the only way DOJ hires new entry-level attorneys

- The Department of Labor (DOL) program—a comprehensive, entry-level employment and career development program designed to recruit the next generation of DOL leaders

- EPA's Intern Program—a career development program that also focuses on recruitment for the next generation of leadership and, through focused marketing, generates thousands of applications annually for some 20-30 GS-7 and GS-9 openings in 10 primary disciplines

- Special salary rate and benefit programs at SEC and the Office of Comptroller of the Currency (OCC)—authorized because of strong competition from the private sector for the financial management skills these agencies need.

(See Appendix G for a more detailed description of these programs.)

Comparisons to EPO and JPO

In Japan and Europe, the job of PE is a prestigious one. Neither JPO nor EPO has an attrition problem. Among some key differences likely to have an impact on recruitment and retention are the following:

- The work culture in Japan has traditionally entailed staying with one firm. While this may be changing, this is still the predominant pattern

- JPO and EPO recruits go through more rigorous testing and multi-stage interview processes, with more senior management involvement than at USPTO

- Neither JPO nor EPO have problems with attrition; patent examiners generally stay with the patent office for extended careers

- JPO and EPO[150] pay rates are more generous—relative to their local economies —than those of USPTO. EPO's tax-free pay and benefits are similar to those at the North Atlantic Treaty Organization (NATO) and are more generous than national patent offices in Europe. (See Appendix H for more detailed information on JPO pay and EPO pay and benefits.)

- EPO's salaries and benefits are those of an international organization, which include allowances for expatriation, education of children, dependents, rent, and relocation as well as eight extra days off every two years for a paid trip home

[150] According to a British occupation profile for patent examiners, the starting salary for EPO examiners in 2003 was 40,000 Euros, the equivalent of $51,336; in 2003, associate patent examiners in the United Kingdom started at $37,920, with the highest 2003 salary for an examiner $105,860. (Source: www.prospects.ac.uk/links/occupations**)**

- JPO hires fixed-term examiners to supplement their permanent work force

- JPO staff have many opportunities to take part in a wide variety of training courses, including foreign language training, and academic conferences in Japan and abroad, and to go on exchanges to foreign patent offices as well as rotations within JPO

- EPO tends to hire examiners who have at least five years of experience and typically hires very few people each year. They must reach competency in all three EPO official languages before the end of their probation period

- The three trilateral offices spend very different percentages of their budgets on personnel expenditures: JPO, 25 to 26 percent; USPTO, 55 to 59 percent; EPO, 75 to 77 percent[151]

- EPO examiners, on average, get more time per application than do USPTO or JPO examiners and examine roughly 25 percent fewer applications than do their counterparts

Conclusions: Staff Growth Eroded by Attrition

It is paramount that USPTO's work force becomes more stable and that the agency has a steadier stream of funding to pursue longer-term management initiatives, including those affecting recruitment and retention. If USPTO had control of its fees, it could better manage its hiring - - rather than hiring 300 examiners one year and 900 the next.

Given that PEs require three to five years of training to be fully productive, the 45 percent of the workforce with more than five years of USPTO service bears a disproportionate burden for production, quality, pendency reduction, and the training of the remaining 55 percent with five years or less. Volatility in staffing therefore results in higher costs and lower production. This translates into increased pendency. While attrition is relatively low for those who stay beyond three years, and high attrition for new hires is localized in a few TCs, overall turnover for patent examiners is among the worst in federal government occupations. Geographic centralization of USTPO's office in one location may also give USPTO somewhat less flexibility in recruiting.

What has been tried to deal with this problem has not worked. The agency has studied its problems, sought out recommendations for current and anticipated problems, but has not made consistent changes or evaluated the impact of those implemented. If USPTO continues in this pattern, attrition will further erode mission and leadership capacity. If USPTO is going to meet its goal of decreasing pendency, senior management must find a way to hire, develop, and retain employees who will become the critical cadre of seasoned workers. To get to this state, USPTO must have a stronger focus on quality hiring and retention. It must make more balanced choices, provide consistent funding for employee support systems, use and test flexibilities, commit to trying innovative ideas and demonstration projects, and create increased analytic capacity to

[151] JPO outsources much of their search function using contract dollars; and their personnel costs are therefore lower.

evaluate the cost and program effectiveness of change. (See Chapter 6 for a more detailed discussion of the need for increased USPTO analytic capability).

While management reports indicate a full awareness of the issues in recruitment and retention and statistics on attrition are readily available, USPTO has not proactively met the challenges. It has access to numerous tools, but it has yet to embrace them fully. If the agency needs to hire experts from higher-paying occupations, critical pay and numerous hiring authorities, to date unutilized, are available. If it needs specific discipline expertise available from university faculty or state or local government leaders, the Intergovernmental Personnel Act is an easily accessible vehicle for such exchanges. If it needs to recruit outstanding scholars to bolster its workforce and supplement the important internal staff development efforts, it could offer recruitment bonuses, loan repayment, and moving cost reimbursement and will need to establish and market a tailored, developmental intern program, as have many other federal agencies. If USPTO wants to establish a pipeline for future USPTO leaders, it needs to build and sustain bridges to universities willing to partner in patent curriculum development and to refer their best students to USPTO hiring officials. If USPTO is committed to building a global IP program that can respond to marketplace trends, then it needs to start thinking bigger than temporary solutions and start looking at bolder, longer-term fixes, such as the larger pay and benefit packages at the SEC and OCC.

Recommendations: Staff Growth Eroded by Attrition

The Academy Panel recommends that USPTO:

- **Increase compensation for all patent professionals to be in line with bank regulator levels, but only if management gains more flexibility. (See Chapter 5).**

- **Use the OPM-authorized flexibilities, particularly those for critical pay and relocation, recruitment, and retention bonuses, and followup with evaluation of the return on investment for each tool to inform future strategy.**

- **Use a broader array of hiring mechanisms—including expert/consultant employment, term employment, Intergovernmental Personnel Act assignments, and re-employed annuitants—to bring just-in-time competency to areas of increased workload and complexity, particularly to supplement non-PE functions such as training development/delivery and technology updates.**

- **Collect exit interview data as part of the agency "check out" process, and mine that data to anticipate trends and forestall further attrition.**

- **Use a competitive grant or cooperative agreement to spur development of a patent examination-centered curriculum at one or more partner universities—creating a natural pipeline of informed future employees.**

- **Offer individual recruitment bonuses to job candidates who have already passed the patent bar to decrease the on-the-job training time required to reach full productivity and provide incentives to individuals who are so motivated.**

- **Explore expanding patent work locations on a pilot basis beyond the Washington, DC area, near patent depository libraries, universities, or where a suitable work force can be found.**

(See Appendix I for additional information on satellite work place options.)

- **Establish and maintain a competitive recruitment and developmental intern program for patent scholars—focusing, like EPA and other federal agencies, on bringing in a class of outstanding new patent examiners and giving stature and opportunities to members of the group commensurate with the rigor of the process.**

While targeted recruitment and related developmental programs are critical elements in agency succession planning, USPTO needs to continue to provide meaningful opportunities for growth and advancement of current employees. Agencies that establish "special programs" run the risk of creating internal jealousies or charges of elitism that could be organizationally unhealthy. Given the number of long-standing, successful federal intern programs, USPTO can benefit from the experience of other federal agencies that have struck the appropriate balance in their marketing and implementation.

DEVELOPING AND MANAGING THE WORKFORCE

An additional attribute of a "robust organization," as defined by Paul Light, is that a high-performing organization is able to respond quickly to signs of change and is able to quickly move people and money where needed.[152] In assessing the "robustness" of USPTO, Academy staff looked at several areas to see how the organization had developed and used its workforce for changing methods, amounts of work, and technologies. The Academy staff focused specifically on staff development, utilization of executive talent, challenges in the supervisory ranks, and USPTO progress toward relevant goals set forth in agency strategic planning documents.

Staff Development

Knowledge management at USPTO has, according to a 2003 Human Capital Assessment and Accountability Framework, been mainly focused in the individual business units, as opposed to across business units, and provides outcome-based training to improve individual and organizational performance. USPTO faces significant constraints in redeploying staff from one complex technology to another and will not likely be able to retrain and move an examiner from

[152] Federal Diary, "The Four Factors That Distinguish 'Robust' Organizations," *The Washington Post*, March 30, 2005, p. B2.

the art unit dealing with "food art" to the art unit examining applications relating to nano-technology. Nonetheless, when faced with workload imbalances caused by surges of applications or new technologies, USPTO has reassigned and retrained examination staff where educational barriers could be overcome.

The agency has and will continue to face other staff redeployment and retraining challenges as well. A 1998 Academy report noted that changes to the USPTO structures and systems brought on by reengineering would have significant impact on the work performed by agency employees and that electronic processing would make obsolete the work of Legal Instrument Examiners (LIEs) and Legal Document Review Clerks (LDRCs).[153] With the introduction of IFW, these employees have seen their work processes and methods change from paper-orientation to technology-driven and their performance requirements modified. With more patent e-filing possible in the near future, the problem of transitioning unneeded technical support staff looms again. While the agency, in 1995, froze employment in some of these affected occupational categories, 374 of the original 484 LIEs and LDRCs and technical support supervisors remain in the TCs as of October 2004.[154] A 2005 draft agency report anticipates that e-filing will affect a substantial number of technical support staff USPTO-wide[155]—the same category of employees identified publicly in 1998, only with a shorter productive employment horizon. While the agency has done preparatory work for such a transition, it has yet to identify the realistic, probable pool of jobs to which staff could go, assess current staff, establish relationships with other agencies who might hire these individuals, put in place development and career planning resources, or develop a communication plan for the transition.

Under the Enterprise Training Strategy initiative (cited in March 2003 agency framework documents), USPTO was to begin to focus on agency-wide knowledge management to ensure consistent training policies and practices; establish a link between training and performance management results; encourage best practice sharing across technologies and functions; and eliminate redundancy and duplication of effort. These efforts—had they been effectively implemented—would have helped USPTO to position itself for increased worker flexibility and redeployment of staff.

A June 2004 contractor's report concluded, however, "That the Enterprise Training function is seriously broken and needs to be re-engineered." Citing staff deficiencies in subject matter expertise sufficient to meet agency training needs, the report specifically recommended a review of the business process, that HR generalists take responsibility for general information about training and employee development, and that a small training office be the repository for in-depth training knowledge and point of contact for contractor development and delivery of training.[156] The report also recommended that HR staff lacking formal HR credentials enroll in either a professional certification program or university curriculum.[157]

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[153] 'HRM Systems in the U.S. Patent and Trademark Office, NAPA, January 1998 p. 9.
[154] At the end of FY 1995, there were a total of 484 technical support employees in the TCs: 142 LIEs, 285 LDRCs, and 57 supervisory technical support personnel.
[155]"'Enterprise Training Initiatives- Draft Action Plan," undated, p. 7
[156] Memorandum from C.W. Hines and Associates to Jo-Anne Barnard, "Response to Task 2," dated June 23, 2004, p .5.
[157] Memo from C.W. Hines and Associates to Jo-Anne Barnard, p. 3.

USPTO has begun anew with a draft action plan for enterprise training initiatives, including a plan to establish a USPTO Development Center, pilot an enterprise-wide E-Learning/Blended Learning Project, and transition the technical support staff. The agency will likely contract out much of the center's work, if implemented.

Among USPTO's other efforts to help staff develop and update their skills:

- Creating a certification program for PEs seeking promotion to the GS-13 level
- Creating a recertification program for primary examiners with signatory authority
- Provided in-depth, work-related training to the PEs through its Patent Academy
- Developing KSAs for eight critical job groups, including that of PE, SPE, and quality assurance specialist—to better identify what is needed to perform each job and to follow on with training to help employees so develop
- Expanding and promoting an Examiner Education Trip Program (site visits for PEs to industry). While a sought-after opportunity, USPTO has restricted this program in recent years due to funding; because trips are granted by seniority, less senior PEs, who might benefit more, are less likely to get the opportunity
- Providing additional training in high technology and one-on-one training to examiners as needed. Done at the TC level as part of the IFW implementation and as a follow-on by internal quality assurance personnel determining specific needs, the training is limited in scope by the number of available SPEs and other senior staff with time and interest
- Using quality assurance specialists to identify training needs, based on commonality of errors, lack of full understanding of a new technology or technological application, new case law, or new procedural requirement
- Using industry representatives to train staff on new technologies
- In some TCs holding brown-bag lunch sessions for patent examination staff to increase sharing of information
- Piloting open space work settings to promote cross-office learning, particularly for new hires.
- Establishing, in 1994, the USPTO University to address the changing needs of the workforce and its business units. This after-hours college offered courses that supported the agency mission and focused on improving employee skills. Former Under Secretary Rogan commended the program as carrying on the “agency's rich tradition of honoring

creativity and education, exemplifying government at its very best."[158] USPTO-U was suspended due to FY 2003 budget limitations.

- Reimbursing law school tuition for approved USPTO staff taking legal coursework—although suspended, due to the budget, for a period of time until reinstatement in FY 2005.

Executive Talent

Beyond the staff level, USPTO has a small, but critical cadre of leaders upon whom the organization's success hinges. It has 51 career Senior Executive Service (SES) positions (of which 29 are under the Commissioner for Patents), one non-career SES position (Chief Administrative Officer or CAO established in May 2005), and 15 Senior Level positions. USPTO has developed a management succession plan. As a result of becoming a PBO, USPTO is no longer subject to OPM allocation of these executive resources and has independence from the Department of Commerce in designing and filling executive positions.

While a December 2001 report stated that, "USPTO representatives feel that this flexibility provides them with significant opportunities to determine their own configuration of executive resources," the report went on to say that USPTO had not used the authority "to fill specific positions with specific recruits."[159] Distribution of career SES slots appears to be historically fixed. Some key administrative/management leadership positions that are typically classified as SES in other comparably-sized agencies remain at the GS-15 level at the mission-focused USPTO. While costs for SES positions are not significantly higher than those at the GS-15 level, USPTO has cited budget constraints as a key reason for not establishing more career SES positions.

Allocation of additional career SES resources in the management and administrative areas requires that senior management commit to strengthening this aspect of agency leadership. In May 2005, the Director of USPTO took a step in this direction and announced a reorganization and split of the CFO/CAO career SES position into two—the first career, the second non-career SES. The reorganization is "designed to better support policy matters related to human capital, workforce development, and enterprise training" and "enhance the office's ability to meet the requirements of the President's Management Agenda; achieve the aggressive hiring and space acquisition goals of the USPTO's *21st Century Strategic Plan*; and fully meet the requirements of the Chief Human Capital Officers Act of 2002."[160] Just as the CFO Act requires CFOs have expertise in their field, so too should the CAO. While the first person to hold this new CAO position clearly has the appropriate background for this leadership position, that individual is likely the exception as a non-careerist. Other key SES positions, such as the CIO (vacant from

[158] "USPTO Promotes Highly-Skilled Workforce," June 12, 2002, http://www.uspto.gov/web/offices/com/speeches/02-46.htm

[159] "A Weapon in the War for Talent: Using Special Authorities to Recruit Crucial Personnel," Hal G. Rainey, School of Public and International Affairs, The University of Georgia, December 2001, p. 4.

[160] "CFO/CAO Operations Split," week of May 2 -May 6, 2005, http://ptoweb.uspto.gov/ptointranet/uspto_weekly/issue/story_01.htm

September 2004 to February 2005) and Deputy CIO (currently unfilled and vacant since June 2004) have been vacant for overlapping periods of time.

As of fall 2004, of the 51 established, career SES positions, there was still a high vacancy rate of 19.6 percent or ten positions. In the intervening period between November 2004 and April 2005, the agency filled two of these vacancies, one by announcement and the other through reassignment, dropping to a 15.6 percent vacancy rate. Of the 15 Senior Level positions, three or 20 percent were vacant. In the company of most other federal agencies, USPTO has not used the Critical Pay Authority to attract talented individuals who would not otherwise accept government jobs at traditional pay rates. Again, budget constraints have played a role in USPTO reluctance.

The agency created—and subsequently updated in June 2004—an Executive Succession Management Plan for senior executives. The plan defines mission critical positions and the competencies required for them, and projects retirement eligibility for SES managers. According to the report, as of June 2004, all but 11 of the 27 patent SES employees would be eligible to retire on or before 2006. The plan addresses the development of more junior SES employees and looks briefly at historical use of details and existing government programs through which USPTO GS-15s (some now in the SES) have successfully rotated.

USPTO also uses rotations and reassignments for its senior management—moving its TC directors to put high-performing managers into rapid growth areas. TC directors use matrix management, with two to three senior executives sharing the responsibility for the general management of the center as a whole. While each executive has certain art units as their primary responsibility, they also work together across the center to manage workload, training, quality, recruitment, and the larger issues. In addition, many of the executives lead major patent corps-wide initiatives over extended periods of time. For example, one of the directors also co-managed the Patent Academy. Another had the lead role for looking at search outsourcing options.

On average, USPTO, which reorganized on October 1, 2000, employs slightly more staff (92 percent) in front line positions than the government-wide average (89 percent) for federal civilian agencies. USPTO supervisors oversee approximately ten employees, while the government-wide ratio is approximately one supervisor to every eight subordinates.

Challenges in the Supervisory Ranks

The General Schedule supervisory employees are, as a group, far more stable than their non-supervisory cohort. The vast majority promoted to GS-15 positions come from the ranks of long-time employees and very rarely (and less successfully) from outside USPTO. A 1998 Academy study revealed upper management concerns that many of these new managers had not demonstrated the skills necessary to be leaders and that managers selected from the ranks retained an "anti-management mindset"[161] developed as non-supervisory PEs and POPA bargaining-unit members. The job requires the combination of strong technical skills as well as

[161] "HRM Systems in the U.S. Patent and Trademark Office," National Academy of Public Administration, January 1998, p. 10.

strong inter-personal and management acumen, and not all technical experts develop into good managers or mentors.

USPTO has its own set of challenges in staffing and retaining its SPEs. Applications for advertised SPE vacancies, classified at the GS-15-level, often do not draw the number of internal candidates that might be expected—with a recent series of advertisements for four open positions drawing roughly 16 applicants from among the 1,475 likely eligibles of non-supervisory 14 and 15 level patent examiners. The 1998 Academy study attributed this lack of interest in management positions to a climate of distrust, while others have postulated that SPEs get tired of the pressure and of continually training new people with limited opportunity to develop their own skills and abilities.

Among the issues facing USPTO relative to SPEs are the following:

- SPEs, who do receive the special pay rate OPM authorized, are not eligible for consideration to receive the formula-driven bonuses for which the non-supervisory, POPA-bargaining unit members they manage are eligible. SPEs, as members of management, have been eligible for special act and other types of cash awards. These awards are based on a point system related to their art unit's quality record, processing times, their TC's production goal record, as well as leadership activities and initiatives, and depend on budget availability.

- Some non-supervisory PEs may make as much or more in terms of base salary than supervisors; in 2004, 62 non-supervisory patent examiners were classified and paid at the same GS-15 level as SPEs and they may, based on their time-in-grade, earn more. This issue is a government-wide phenomenon and morale problem. It can even occur at the GS-14 level, with a GS-14 step 7 making more in salary than a GS-15 step 1—all under the special rate.

- The federal pay system reinforces the need to be a supervisor to attain the GS-15 pay level, but it provides for a limited number of non-supervisory GS-15s based on an elaborate scheme of what are known as "grade controlling elements." These grade controlling elements, along with extra credit items, are specifically defined and numerically valued in terms of the patent examination job series, and look at three factors:

    - Nature and extent of examining functions—six levels, with points ranging from 5 to 45

    - Contact and commitment authority—four levels, with points ranging from 0 to 15

    - Technological complexity of art, four levels, with points also ranging from 0 to 15

    USPTO must consider that if it only promotes to GS-15 supervisory positions, it may lose people with almost irreplaceable technical skills because some individuals do not want to

supervise to become a GS-15. There may also be those with strong technical skills who may not have strong managerial potential.[162] USPTO must also look at the issue from the perspective of the SPE, who bears the stresses of the subordinate workforce and who is accountable for broader mission accomplishment to the senior levels of management, including the political level. As of 2004, there were 287 SPEs and 62 non-supervisory PEs at the same pay level, with only the non-supervisory 62 eligible for POPA-negotiated bonuses.

- PEs may elect to move to non-examination positions within USPTO to escape the pressure of production goals or move because non-examination occupations are believed to have more career status. Others have countered that PE positions become routine and that some seek SPE work as more interesting—looking at the issues presented to their 20 subordinates rather than the narrow issues of a single examiner. There are roughly 80, mostly non-supervisory, GS-15 positions (classified as patent administrators, patent examiners, patent classifiers, and patent attorneys) outside of patent operations.[163]

In spring 2005, USPTO management—cognizant of the SPE perception of inequitable compensation—announced a new SPE bonus plan for quality, with two additional elements also drafted to reward timeliness and the combination of leadership/pendency reduction. Only one component—quality—is ready for implementation.

Conclusions: Developing and Managing the Workforce

Staff development, in general, has not been a priority for USPTO, with several programs curtailed or suspended when budget shortfalls limit management options, and the choice becomes mission accomplishment today versus staff development for tomorrow. Management has limited flexibility in the use of its funds; whether or not there are budget shortfalls, it must pay bonuses to those in the POPA bargaining unit who meet predetermined, quantified goals. Additional flexibility would ameliorate this situation.

USPTO's workforce management and development reflect an individual business center approach, rather than an organization or enterprise wide approach. This segmentation—to a great extent dictated by its mission—has left its mark on the organization and contributed to its slow progress in implementing change for workforce initiatives.

Likewise, USPTO has not used to its advantage the PBO-granted flexibility in filling SES jobs, and their delay in allocating their own SES slots and filling the positions has left leadership vacuums in key management areas. The human resources staff, with their newly hired director, will need enhanced abilities, particularly in enterprise training and consultative strategy, to become a full partner with senior management in elevating workforce management. In today's

[162] USPTO routinely appoints new SPEs using term appointments, which may become permanent. If selectees do not show an aptitude for supervisory work, they return to their pre-SPE position. This has been the practice for the past six to seven years.

[163] The Academy looked at the possible redeployment of these GS-15 employees to patent operations, but it concluded that their work outside of patent operations was mission-focused, primarily in support of PCT applications, the Office of the Solicitor, and the Office of Patent Legal Administration.

climate of looming personnel system change, OHR will need administrative expertise as well as leadership and communications skills if it is to serve as management change agent. USPTO's recent establishment of a separate CAO, to whom the OHR director reports, has the potential to improve management focus and follow-through.

USPTO has effectively used matrix management and leverages their existing SES talent. They have not, however, systematically developed a pipeline for supervisory positions or created a climate or compensation/awards system that encourage senior non-supervisory staff to join the ranks of management. As in many organizations, the mission is paramount, and the development of management skills takes a back seat.

USPTO has leveraged the talent of TC directors for the common good of the entire corps and helped them to broaden their management portfolios while maintaining a relatively flat hierarchy. It is more difficult, however, to leverage executive talent when there is a high vacancy rate in these critical positions. To some extent, this practice of asking TC directors to take on management/administrative initiatives is a reflection of lack of depth on the management side of the house and, as in many technical organizations, a sense that any intelligent technical manager can handle the management initiatives, regardless of experience or training. It may also be that management has made a conscious decision to take the lead on these matters and has not historically seen OHR as a strategic partner or valued consultant when contemplating management change. USPTO's recent hiring of a new Director and Deputy Director of OHR, with broad federal experience, should give the agency added depth in this area.

Recommendations: Developing and Managing the Workforce

USPTO has some actions underway which the Academy Panel believes are generally consistent with sound management practices:

- **The Executive Succession Management Plan for senior executives, updated in June 2004, is a start in looking top-down at the future of agency leadership.**

- **The Enterprise Training Initiatives-Draft Action Plan, while not implemented, recognizes the merit of the recommendations in the 2004 contractor report that identified enterprise training as a troubled function in need of reengineering.**

In addition, the Panel recommends that USPTO:

- **Use those flexibilities derived from its status as a PBO that allow it to establish SES positions without regard to OPM ceilings.**

- **Fill critical management leadership positions and reduce the SES vacancy rate.**

- **Enhance supervisory and management training for new supervisors.**

- **Compensate SPEs in a manner more equitable vis a vis non-supervisory PEs.**

- **Increase senior management attention on appropriate deployment of the work force, including transitions necessitated by technological or other work process enhancements, and assign accountability to senior managers to address issues raised in evaluations and studies.**

- **Establish a focal point for ongoing analysis of evolving mission needs vis a vis staffing, and make organizational shifts and realignments to meet those needs.**

- **Utilize retired USPTO employees—whether as contractors, consultants, or re-employed part-time or intermittent annuitants—to serve as trainers and/or mentors, particularly for new hires and those aspiring to gain signatory authority (the ability to independently take action to grant or reject a patent).**

- **Establish a formal rotational program for examiners who aspire to careers in management at USPTO.**

USPTO will need to find the optimal timing and subject matter for rotations, given that new PEs are initially brought on for their art unit expertise and rotating them too quickly outside of the art unit may work at cross purposes with gaining patent examiner expertise. Some USPTO officials have recommended rotations after two years.

Likewise, if USPTO needs more mentors, trainers, or expert staff to deal with high volume areas, the "baby boom generation" may, as they retire, present a labor pool opportunity. USPTO can reach out to retired PEs for part-time or intermittent work, perhaps even offering waivers of dual compensation to attract them. OPM has a process set up to approve such agency requests to retain particular individuals with unique qualifications and allow them to keep their full annuity and earned federal income. Utilizing retired PEs would keep experienced staff on line and help to reduce pendency.

USPTO AWARDS SYSTEM

In the *21st Century Strategic Plan*, USPTO identified the goal of being an agile, nimble, flexible organization able to respond to change. While the plan identified workforce improvements and workplace enhancements, it did not address the long-standing awards system for patent production. The issue is: does USTPO tailor rewards to foster innovation and mesh with agency priorities? A September 2004 IG report, which is discussed in further detail below, provides specifics as to recommended changes.

Basic Incentive Structure for Patent Examiners

The basic awards structure for patent examiners has been in place since 1976. A production expectancy goal is set for each examiner and is based on the technology class and subclass they examine and the grade level of the examiner. Factors have been established by grade level to determine hours to complete an application. For example, applying the factors would give a GS-12 27.5 hours, a GS-7 39.3 hours, or a GS-14 20.4 hours to examine the same application. (This includes the search time.) The goals are subject to collective bargaining between USPTO management and POPA.

An examiner is given credit, called a count, at two different times in the examination process, when an application is first examined and when an application is disposed of by an allowance, abandonment, or examiner's answer. The credit is posted towards the examiner's productivity goal. Two counts equal one production unit. Production units are tracked and reported to the examiners on biweekly production reports showing biweekly, quarterly and fiscal year production achievement.

Expected annual productivity for an examiner is calculated by assuming 80 percent of the 2,080 hours in a 52 work-week year of 40 hours per week will be spent examining applications. For example,

- An examiner with a goal of 31.6 hours per application would need to complete 53 applications or 106 counts

- An examiner with a goal of 14.3 hours per applications would need to complete 116 applications or 232 counts.

Awards

USPTO offers examiners three incentive awards, each of which is tied to their specific production levels: (1) an annual gain-sharing award (1-6 percent of base pay)—for examiner production at 110 percent averaged over the fiscal year; (2) a special achievement award (3 percent of base pay)—for examiner production at 110 percent averaged over four consecutive quarters; and (3) a pendency reduction award (up to 1 percent of base pay)—for examiner workflow management averaged over two consecutive quarters.

From FY 1999 through FY 2003, 60 to 73 percent of all patent examiners earned gain-sharing awards; 63 to 77 percent received special achievement awards, and 28 to 44 percent received pendency reduction awards.[164] Statistics from FY 2003 reflect, however, a downward trend in the percentage of patent examiners earning awards in all three categories. SPEs indicated this trend was a reflection of increased emphasis on quality.

[164] Department of Commerce IG Report, Report No. IPE-15722, September 2004, p. 24.

Need for Change—Consultants, Task Forces, and IG Reports

As with workforce management, USPTO has, over the last ten years, hired consultants and established internal task forces to look at their incentive systems.

- In 1995, USPTO hired Booz-Allen Hamilton to do an assessment of their performance measurements and reward system. The contractor recommended that the agency revise its performance appraisal and award systems and that management make a clear link between employees' performance and USPTO goals. According to GAO, this finding reflects a long-standing deficiency common to many federal agencies. (GAO issued guidance in March 2002 on how to effectively tie unit/individual performance to organizational goals via performance agreements and appraisal plans.[165]) USPTO did not implement the contractor's recommendations, citing that such changes would have to be negotiated with the union.

- In 1998, an Academy Panel looked at the production system—relatively unchanged today. The Panel noted that focus group attendees believed the system had these advantages:

  - measured production objectively
  - provided for requirements understood by all employees
  - provided for employee accountability
  - enabled employees to be in control
  - provided for healthy competition
  - led to non-subjective promotion and bonuses
  - met management needs and is ingrained in USPTO culture, so employees are familiar with it
  - met union preference to have objective goals

  The Academy Panel report also noted, as disadvantages, that the system:

  - did not foster creativity and flexibility
  - caused more errors due to emphasis on speed
  - might not be demanding enough for others
  - caused customer service to suffer
  - measured in number of units per hour
  - resulted in employee and organizational goals not being aligned
  - caused tension between support staff and examiners[166]

- In 1999, a USPTO task force also recommended that it align employee performance requirements among the different employee groups with USPTO's performance requirements and business goals.[167]

[165] HRM Systems in the U.S. Patent and Trademark Office, NAPA, January 1998, pp. 21-22.
[166] "HRM Systems in the U.S. Patent and Trademark Office," NAPA, January 1998, p. 11.
[167] As reported in U.S. Department of Commerce, IG Final Report No. IPE-15722/ September 2004, p. 21.

- A FY 2002 Post-Exit Survey Report recommended that the agency do a cost-benefit analysis of the workload/production system to determine whether the system produced productivity gains that outweighed the attrition attributed to the system and its perceived negative impact on work quality. USPTO has not done a follow-up study.

In September 2004, the Department of Commerce Inspector General issued a report on production goals and found that internal change in patent examiner production goals, in place since the 1970's, had been slow. Specifically, the IG stated that:

- Production goals have not been re-evaluated to reflect efficiencies in work processes and improved technology since 1976.

- Examiners told the IG that they "could do more work, but that there is no additional incentive."[168] (POPA has voiced their disagreement on this issue and stated that many patent examiners work voluntary, unpaid overtime to meet their goals and that these unreported hours are not factored in to the IG assessment. Some SPEs with whom Academy staff spoke concur that voluntary overtime is common.)

- Most examiner production goals may be too easily obtainable, because approximately 95 percent of the art units processed applications in less time than their allotted goals.[169]

- The agency had a well-defined awards program that was well understood by supervisors[170] and examiners.

In response to the IG report, the Under Secretary of Commerce for Intellectual Property—given, via the AIPA, the authority to review personnel and labor management issues—committed USPTO to reassess the current patent examiner goals, performance appraisal plans, and award system, and their effectiveness in stimulating and rewarding examiner production, as well as their effectiveness in achieving the objectives of USPTO's *21st Century Strategic Plan*.[171]

As a point of comparison, the EPO sets performance targets for each examiner each year, based on years of experience and examining specialty, as well as backlog, expected inputs, and changing conditions.

Outside Critics

Others have also examined the USPTO incentive system and made recommendations, such as:

[168] U.S. Department of Commerce, Office of the Inspector General, Final Report No. IPE-15722/September 2004, p. ii.
[169] U.S. Department of Commerce, Office of Inspector General, Final Report IPE-15722, September 2004, p. ii.
[170] U.S. Department of Commerce, Office of the Inspector General, Final Report No. IPE-15722/September 2004, p. 24.
[171] Memorandum from Johnnie E. Frazier to Jon W. Dudas, September 30, 2004, Subject: Final Report, USPTO Should Reassess How Examiner Goals, Performance Appraisal Plans, and the Award System Stimulate and Reward Examiner Production (IPE-15722).

- Bringing to bear the large volume of literature on "personnel economics" on the design of a compensation system to advance the goal of a minimum acceptable error rate

- Paying bonus compensation to groups and examiners whose error rates are lower than the office average or reach a predetermined level of acceptability[172]

- Instituting a tracking system to determine the error rate for examining groups and individual examiners, by assessing the percentage of patents issued by the group or examiner that are determined to be invalid in later court proceedings or reexaminations on the basis of prior art that the examiner could have discovered[173]

- Changing to a credit system so that examiners are rewarded for the work they actually do, rather than merely for the number of patents they allow.[174] Since the current system provides no incentive to spend more time on harder cases and PEs have heavy caseloads, examiners would seek the 'counts' for initial response to a patent application and for finally disposing of a case, rather than focusing on the quality or the complexity of the work.[175]

- Creating an objective composite or algorithm based on the number of claims and prior art citations

Employee Perspective

USPTO was ranked in a 2004 Partnership for Public Service Survey of the Best Places to Work in the Federal Government, as tied for 22nd best sub-agency in more than 100 in the category of performance-based rewards and advancement.

One patent examiner shared with Academy staff his assessment that the short-term pressures of production are highly biased toward early allowances. He said that the current system[176] eventually awards two counts for each application, one for a first action, and a second at disposal (for either an allowance, abandonment, examiner's answer, or interference, an application going to the appeal's board), but gives the examiner:

- two counts for an office action which grants an allowance on the initial or first office action (known as "first action allowance")

[172] "Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform," Robert P. Merges, p. 609.
[173] While this could be enlightening, by the time a court decision is issued the people in an art unit would have changed substantially. The results could be useful for training purposes more than for individual performance measurement. USPTO has noted that a very small percentage of issued patents become the subject of litigation; the agency therefore believes such a tracking system would not be useful.
[174] "The Ninth Circuit, recognizing that some cases are harder than others, rates the complexity of cases on a scale of 1 to 10 and assigns fewer cases to judges who must handle the most complex cases." Source: Allison, John R. and Lemley, Mark A., "Valuable Patents, Social Science Research Network Electronic Paper Collection, p. 39.
[175] Ibid., p. 37.
[176] As explained in MPEP, Section 1705.

- one count for an office action which initially rejects a patent application
- one count for a second (or third, etc.) office action which allows the application
- zero counts for a second office action that maintains the rejection or provides a new rejection based on an applicant amendment
- one count for either abandonment of a rejected application, an RCE, or appeal of the examiner's decisions necessitating an examiner's answer, or the initiation of interference proceedings—any one of which may take up to six months after the final rejection.

Based on the amount of work required for each step and the theory that examiners should be impartial as to allowance or rejection and not influenced in their patentability opinions because of compensation, the PE recommended that USPTO award:

- only one count for first action allowances and not two, as is currently the case
- only one-half count for second action allowances or rejections
- one-half count for a second action final rejection
- one-half count on a subsequent abandonment or examiner's answer.

Management Perspective

According to the IG report, SPEs, who are responsible for motivating their examiners to meet the production goals, have two elements in their own Performance Appraisal Plans (PAPs) that attempt to drive examiner production: "reach" (the composite production unit goal that is higher than the individual examiner PAP levels combined) and "new case date goals." From a management perspective, there is therefore a gap between examiner goals and SPE and agency production and pendency goals, which change yearly to reflect changes in application filings, the backlog, and examiner staffing levels.[177] The IG concluded that since examiner PAPs had not been materially revised to meet USPTO's changing production requirements since 1987, the examiners were not rated on achievement of PTO's goals. USPTO management cited lengthy union negotiations for not trying to link examiner and goals through updated PAPs.[178]

Senior-level managers and SPEs also commented on the disconnect between the examiner awards, which range from 1 percent up to 10 percent of base pay annually,[179] and cash awards for SPEs, which, until 2005 and the initiation of a new SPE awards program, have been subject both to budget availability and the discretion of agency senior management. The agency budgets non-SES cash awards for not more than 4 percent of overall compensation (compared to EPA's non-

[177] US Department of Commerce IG Report, IPE-15722, September 2004, p. 20.
[178] Ibid.
[179] The majority of examiners get 2 percent gain-sharing awards, commensurate with 110 percent production and commendable quality. An examiner is eligible to receive 1 to 5 percent of base pay for production, 1 per cent for quality, 3 percent as a special achievement award, and up to 1 percent for pendency reduction - -for a possible total of 10 percent.

SES award pool of 1.5 percent of payroll); USPTO's average individual cash award is also in excess of the 2003 federal average of $858.[180]

TC directors also noted, usually ironically, that for an organization focused on innovation, there is relatively little innovation at USPTO. It has no competitive innovation fund that institutionalizes creative pilots by providing seed money, as has become the norm throughout much of the federal sector. (See Appendix J for a sample federal program at EPA.)

Rewarding Quality

While USPTO measures patent corps productivity to a far greater extent than do most federal entities, some TC directors stated that quality may not be sufficiently factored into the equation and that, as a result of a formula that is productivity-driven, certain unwanted behaviors may actually be encouraged. Specifically, the gain-sharing program, via which patent examiners are eligible to receive annual lump sum bonuses, allows for a 1 percent bonus with a Fully Successful Quality rating for 110 percent production. If the rating is Commendable in all elements, including quality, that bonus could rise to 2 percent for the same level of productivity. However, the patent examiner who achieves 100 percent of production goal and has outstanding quality would not be eligible for a lump sum bonus of any kind—as a minimum 110 percent of production is required. Because these PAPs are negotiable with the union, this is not solely within management control.

USPTO proposed in March 2005 to negotiate with POPA on awards, including a proposal to grant a quality award of 3 percent for a zero patentability error rate during a fiscal year.[181]

Rewarding Production and Pendency Reduction

The September 2004 IG report characterized the award system as "not well structured," and found that the gain-sharing formula offered examiners no incentive to produce more than 110 percent of their assigned production goal (the minimum needed to qualify for two types of awards). The IG noted, as did some TC directors, that the absence of a goal and commensurate award for 115 percent production, or some other intermediate level between 110 percent and 120 percent, may contribute to this decreased interest in production after reaching the first award level.

The IG also noted that over a five-year period relatively few examiners (from a high of 44 percent in FY 2000 to a low of 28 percent in FY 2003) qualified for the pendency reduction award—an award clearly linked to a USPTO priority—and that the pendency reduction award lacks the criteria to reduce patent pendency and the financial reward to attract examiner participation.[182] The pendency award criteria—of which there are 17—are described in a two-page, multi-columned document and include some requirements now obsolete because of technological impacts on steps in the work flow processes. The award, for those who meet the

[180] Source: Center for Pay and Performance Policy, Incentives Awards Program databases.
[181] "Management's POPA Term Contract Proposals," March 3, 2005, p. 43.
[182] Dept. of Commerce IG Report, Sept 2004, p. 24 and p. 27.

requirements, ranges from .5 percent to 1 percent of base pay—as compared to 1 percent to 6 percent for production.

In addition to the newly proposed quality award, noted above, management proposed in March 2005 to negotiate with POPA these other major changes in the awards system:

- an increase in the percentage bonus possible to 16 percent (combining 13 percent possible annually for production and 3 percent for quality)

- availability of the award every six months, rather than annually, to avoid year-end work loading

- production goal achievement levels at 105 percent (a new, lower level), 110 percent, 115 percent and so on in integers of 5 up to 140 percent of production, rather than up to the current 130 percent

- larger awards to top producers and less to lower producers

- a new award for PEs who assist SPEs in training new hires

There is no mention of a pendency award in the 2005 management proposal.

Group Awards

Scholars looking at what makes an organization successful have found that where "workers are focused and held accountable to help each other improve, the performance curve narrows" and shifts to what is termed the "zone of improvement." An "unwillingness to contribute to each other's success ultimately erodes both quality and productivity."[183] In a culture of success, the reward system supplements individual awards with group awards and builds in incentives for high achievers to help others.

The USPTO organizational culture has not, however, embraced group production incentive awards or "goal-sharing," through which an art unit or TC might be rewarded for overall improvements in reducing group pendency or meeting some other pre-defined broader organizational commitment. The agency awards manual does include mention of group honor awards, such as Bronze Medals, and after-the-fact monetary awards, such as special act awards, available throughout the federal sector and offering individual and group achievement recognition. POPA, which has expressed disinterest in establishing group awards for its bargaining unit, is silent in its awards agreement on group awards, as is the March 2005 management proposal for new incentive awards. The proposal does encourage recognition of PE assistance in training new hires.

[183] Dygert, Charles B and Jacobs, Richard A., *Creating a Culture of Success,* Moo Press Business Books, 2004, pp-. 94-100.

Other organizations, and particularly those who use gain-sharing, have successfully used group awards to foster collaboration, mentoring, group cohesiveness, knowledge sharing, and commitment to common goals, particularly to counteract a work environment that encourages solitary enterprise and is populated by "production loners." For example:

- In 1995, the General Services Administration (GSA) Realty Services Division established an award program that balanced individual and team recognition and provided feedback to employees on individual, team, and organizational performance. The program has two categories of award money (70 percent for gain-sharing, 30 percent for extraordinary effort/accomplishment) and is evaluated annually by a committee of employees representing labor, managers, and the personnel office.

- The Veterans Administration Healthcare Network for Upstate New York has a goal-sharing program that rewards teams of employees for accomplishment of goals in support of their facility, the network, or overall organizational goals. The program includes "bonus" or optional goals to which the entire facility might contribute, gap goals to lessen or eliminate a gap between performance and existing standards, strategic goals which are the priority of the director or network, and stretch goals, which reward performance above baseline performance.

On the pay front, USPTO has also shied away from group retention allowances. (See Chapter 5 for a discussion of the use of this and other flexibilities.) They have not initiated such allowances since the 1990s, when biotechnology patent examiners received this group incentive. According to a TC director, this special pay rate contributed significantly to retention, but was phased out and eliminated as an option by management when OPM granted the patent examiner corps a pay differential. Some managers said that it took too long to gather meaningful data required to support the OPM request for group retention allowances and, in a booming economy, it was therefore difficult to get approval in sufficient time to ward off the raids from the private sector.

Conclusions: USPTO Awards System

USPTO is an organization in which innovation is integral, agility a stated goal, and data analysis is part and parcel of the core work. Yet, a rigid awards system, bound in history and insusceptible to change, exists. While its manifold elements are thoroughly understood and in some ways appreciated by its detail-oriented and technically educated workforce used to dealing with specifications and formulae, the system itself is not based on the most current information available and is in many ways not consistent with organizational priorities or goals. Critics inside the agency and in the scholarly and consulting communities have been telling agency management this for years, but little has changed—in part because all changes require negotiation.

It is essential that a rewards program reinforce goals the agency wants to attain—such as shared information among examiners, retention of high-quality workers, innovation in the patent prosecution process, and reduced pendency. The March 2005 management proposal, Article 19 on Performance Awards, is responsive to the IG report criticisms and proposes real change,

particularly in measuring performance in two-quarter award periods and establishing additional intervals for production awards, higher possible awards for top performers, and separate awards for quality and for assisting SPEs with training. Consistent with Paul Light's definition of the "robust" organization,[184] USPTO needs to follow through with its vision, uses its money where it is consistent with changing mission needs and priorities, and set clear goals for high performance.

As a management entity, USPTO has not done what many other federal organizations have done to spur innovation through, for example, competition for pilot program seed money or recognition of innovation from outside parties, such as the 18-year old Innovation in American Government Award, sponsored by Harvard University.

Recommendations: USPTO Awards System

The Academy Panel recommends that USPTO:

- **Update the production and quality standards and awards.**

- **Examine historical data on production and quality to ensure new proposals, to be negotiated with POPA, mesh with agency priorities and reflect current best practices.**

- **Create a group award to spur innovation in work processes and overcome the "production loner" concept.**

- **Establish a competitive innovation fund to provide seed money for organizational elements seeking to pilot work process simplification, ways to reduce pendency, or improve quality.**

- **Tie special act awards and SES bonuses to effective innovation.**

If USPTO is to develop a "culture of success," its award system needs to be consistent across the staffing spectrum, flexible, and reflective of shared agency priorities. While not subject to collective bargaining, incentives for SES managers need to be aligned with those of the patent workforce. Recognizing executives and employees who have contributed to USPTO as successful change agents sends the signal that change is welcome and expected.

USPTO EMPLOYEE RELATIONS

If an organization's ability to move people and respond to changing mission needs is important in attaining a "robust" state of health, then its relationships with individual employees and the organizations that represent them are an important barometer (See Chapter 5 for further discussion of USPTO labor-management relations). For USPTO, this is particularly true when

[184] Light, Paul, C., The Four Pillars of High Performance, McGraw- Hill, 2005, P. 130.

labor-management relations limit the organization's ability to adapt; when individual performance and conduct-related actions directly or indirectly lead to the departure of the employee or decrease their productivity—potentially adding to USPTO pendency; or when the organization expends an increasing or disproportionate amount of resources to resolve employee problems.

While USPTO has grown dramatically over the past several decades and it is logical to expect a proportional multiplier effect in the number of employee relations cases, for the most part the increase has exceeded the rate of population growth. Until FY 1983, the agency had less than 100 employee relations cases per year. The rate spiked in the mid-1990s, reaching a new high of over 500 cases, dropped down for three years and then spiked again to over 500 in FY 2000. Since then, the rate has continued to climb, with the number of cases now at an all-time high of 928 in FY 2005. These recent increases are not proportional to the agency's growth. In FY 2002, the population grew about 5.5 percent, but the employee relations cases grew by 20 percent. In FY 2003 and 2004, the population varied by less than 1 percent, but the agency employee relations cases increased by 12 percent and 14.5 percent respectively.

Employee Performance

Data for FYs 1999 through 2004 show that, in addition to increased attrition, the agency has taken an increased number of performance-based actions against its employees, and it is this class of employee relations cases that have contributed most to the overall increasing caseload. Some management officials have linked this rise in actions to the onset in 2000 of liberalized time scheduling, known to many in the federal sector as maxiflex, but known in USPTO as Increased Flexitime Program (IFP). IFP gave PEs wide latitude to schedule their work over a seven-day week, with no specific schedule required and no advance notice to supervisors. The labor contract management proposed in March 2005 contains a proposal to require advance notice to the supervisor of a specific schedule for the coming week.

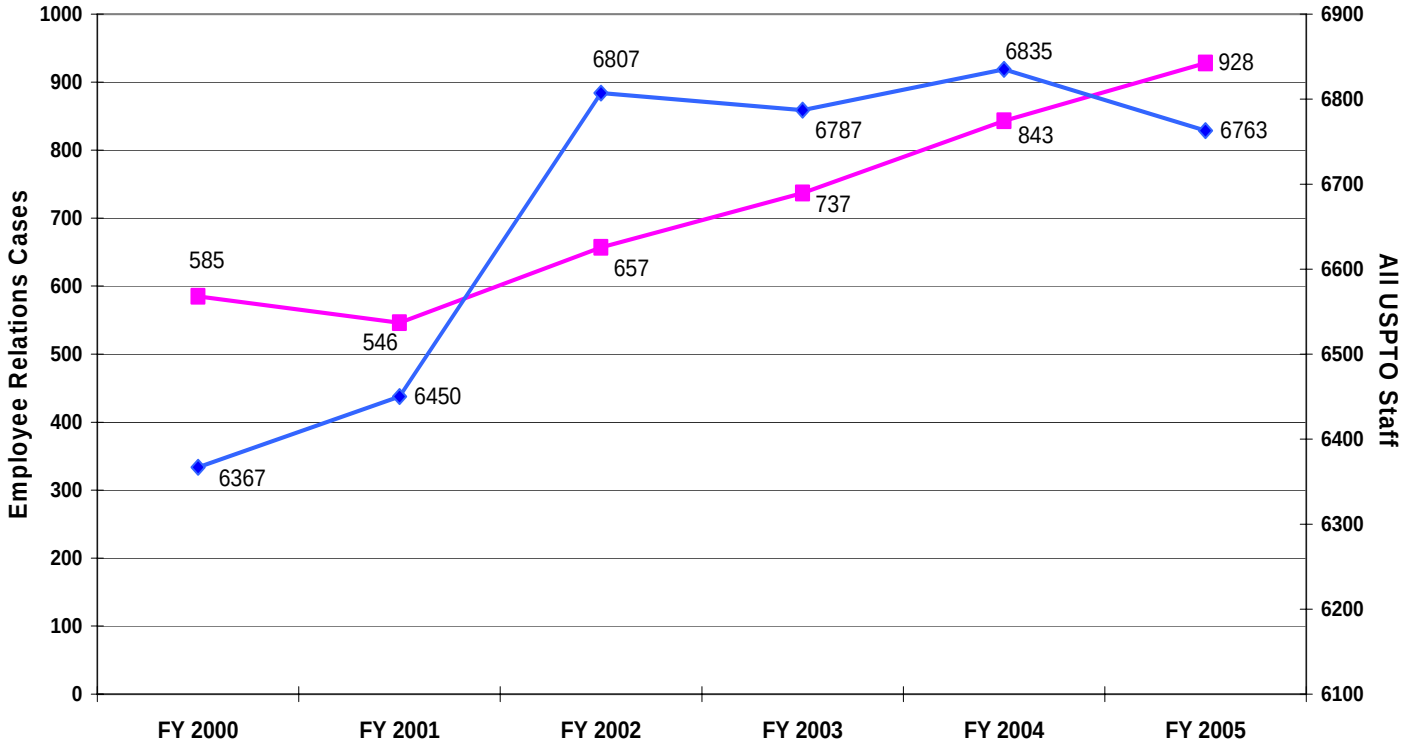
As a result of past practice, USPTO is required to give its employees an oral warning prior to a written warning. This is not required by federal regulations for most other civil servants, who receive a written warning before management proceeds to removal or other adverse action. USPTO patent examiners who fail their production goals for a quarter therefore have an additional quarter during which they can correct their performance before an adverse action proceeds.

An employee might therefore receive a confirmed oral warning that they had not met production goals for the period January through March, continue to fail in quarter two, April through June, receive a written warning in July, then improve in quarter three and thereby avoid adverse action. USPTO could therefore see decreased production for three months longer than other federal entities.

USPTO informed POPA, in March 2005 that, as part of their contract proposal, the agency is proposing to eliminate this additional oral warning. This management proposal—along with the rest of the term contract—will be subject to negotiation and, given the history of labor management relations, is not likely to be implemented for at least a few years.

Figure 4-3 shows growth in the USPTO workforce between FYs 2000 and 2005 (from 6,367 to 6,763) and the concurrent increase in employee relations actions (from 585 to 928). For the most part, the increase in the number of cases exceeded the population growth. For example, the population grew about 5.5 percent in FY 2002, but employee relations cases grew by 20 percent. In FY 2003 and FY 2004, the population changed by less than 1 percent, yet the cases increased by 12 percent and 14.5 percent respectively. Most cases are in patents, which is where most of USPTO's workforce is.

Figure 4-3
Growth in USPTO Workforce and Employee Relations Actions
FYs 2000-2005



To summarize some of the PE employee relations issues facing agency management:

- Oral warnings for the patent corps have jumped to 329 in FY 2004, up from 70 in FY 1999, 101 in 2000, 132 in 2001, 171 in 2002, and 252 in 2003. In FY 2005, as of February 2005, USPTO gave 163 warnings.

- Written warnings—the second stage—have increased as well, with 48 in FY 2004, up from 36 in 2003, 41 in 2002, 35 in 2001, 19 in 2000. In FY 2005, as of February 2005, there were 31 written warnings.

- Probationary discharges within the first year of employment have remained more stable, with 22 in 2004, 36 in 2003, 31 in 2002, 24 in 2001, and 27 in 2000. In FY 2005, as of February 2005, there were 5 probationary discharges.

- Removals—the most procedurally demanding process—were 17 in 2004, 24 in 2003, 10 in 2002, 18 in 2001, and 12 in 2000. In FY 2005, as of February 2005, there have been 6 removals.

- Denials of within-grade—the federal longevity increase—also rose in number with 56 in 2004, 51 in 2003, 22 in 2002, 36 in 2001, and 11 in 2000. In FY 2005, as of February 2005, there were 21 denials of WIGs.

The probationary discharge number is a critical one in that removing a probationary employee is easier for management and less costly than if the person is removed after they have served in excess of one year, when the employee has redress they do not have prior to the one-year mark. From FY 1999 through the start of FY 2005, USPTO had 183 probationary discharges or 5.7 percent of its 3,216 POPA bargaining unit hires. By contrast, OPM conducted a study of new hires in FY 2001 and FY 2002 and found that of the government's 145,000 new hires, just over 3 percent (fewer than 5,000) were terminated during probation.

Removal rates for POPA bargaining unit members have ranged from a low of .27 percent in FY 2002 to a high of .65 percent in FY 2003. As a point of comparison, the entire Centers for Disease Control, including their non-professional population, had a removal rate for FY 2002 of .09 percent. A Cato Institute study of removal for performance across non-defense federal agencies showed that in 2001 the government fired only 210 workers or .02 percent (1 in 5000). The State Department has fired only six employees for poor performance from 1984 through 2001.[185] JPO rarely removes an employee for performance.

The distribution of employee relations cases across USPTO is skewed for performance-based cases, the vast majority of which are related to production failure. While the POPA workforce

[185] "Federal Government Should Increase Firing Rate," Cato Institute Tax & Budget Bulletin, No. 10, November 2002, p. 1.

comprises 58 percent of the total USPTO population, the bargaining unit has, since 2001 through 2005, accounted for almost 90 percent of the agency's performance cases. [186]

Employee Conduct

Conduct- related cases are much more proportional, with 52 percent of the cases in October - February 2005 attributable to POPA bargaining unit members.

Conduct cases[187] have, however, also been rising in the patent corps:

- 140 in 2001
- 175 in 2002
- 173 in 2003
- 200 in 2004

In FY 2005, as of February, there have been 40 conduct-related cases.

Conclusions: USPTO Employee Relations

USPTO management follow-through on employee relations cases shows a commitment to reducing pendency through production and is the logical, if negative, corollary to an incentive system based on quantifiable measures. As a PBO, the agency is, by design, focused on measuring performance, and within this new organizational construct, management may be more inclined to take action with respect to performance issues. USPTO has been able to take these sustainable performance-based actions against some patent corps employees because the employees are subject to PAPs that contain specific and quantifiable production goals. Performance accountability outside of patent operations is substantially less quantifiable.[188]

The Panel understands that the liberalization of workday flexibilities in 2000 contributed to the volume of employee relations cases and that the agency has taken steps in its March 2005 contract proposals to try to impose additional workplace structure. This added flexibility, is not, however, the root cause of the increase in employee relations cases as much as a symptom. Added workforce flexibility should not necessarily translate into workforce problems.

The fact that the number of patent corps employee relations cases has been spiraling should cause UPSTO management to question whether there is something wrong in their recruitment

[186] Performance-based actions can be based on failure to meet one or more elements of a PAP; for a patent examiner typical critical elements are production, workflow, patentability, patent examining functions, and action taken. The most common cause for a performance-based action is failure to meet production criteria.

[187] Some examples of conduct violations are the wide-ranging "conduct unbecoming a federal official," to the more specific, such as making false statements, sleeping on the job, criminal activity (theft, assault, forgery, destruction of evidence, misappropriation of funds), misuse of government equipment, violent behavior, misuse of position (such as for personal financial gain or for the gain of a related individual), or other violations of the agency's published standards of conduct. Agencies typically publish a table of offenses and a range of possible disciplinary measures appropriate for each offense.

[188] Employees outside of Patent Operations considered here are the employees of the Chief Financial Officer, the Chief Information Officer, the Office of the Under Secretary, and the Office of General Counsel.

plan or in the workplace. While the work force understands the system and finds it reassuring to know the requirements up front, USPTO's relationship with its primary union has limited the organization's ability to change even these quantifiable standards to reflect the evolving nature of the work and the impacts of technology on work processes. An organization that is frozen in time is not an agile organization and not likely an employer of choice for the most highly productive. An organization locked into performance requirements is not likely to be a model of "continuous improvement." When an organization expends an increasing or disproportionate amount of resources to resolve employee problems, as has USPTO over the last several years, the lost resources—dollars and people and organizational energy—are going to unproductive ends and contributing to decreased efficiency and increased pendency.

Lastly, given the SPE workload and the ever-increasing number of new hires they must train, USPTO needs to institutionalize the way it brings new hires into the agency and into the "world of work." Mentors outside the supervisory chain can help guide the new hires, give them career advancement tips, work process advice to speed their production and increase their quality, and perhaps most importantly, listen to their concerns and give them feedback outside the official loop. Employees who have multiple sources of feedback and a seasoned confidante are more productive contributors.

Recommendations: USPTO Employee Relations

USPTO has some actions underway that the Academy Panel believes to be consistent with sound management practices:

- **The certification and recertification programs for patent staff**
- **Systems to measure casework and the automated tracking system to follow up with those who fail to meet quarterly production goals**
- **Management's March 2005 proposals to negotiate requirements for more workday structure**

In addition, the Panel recommends that USPTO:

- **Analyze data from mandatory exit surveys to understand recruiting pitfalls that result in hiring individuals not well-suited to patent examination work.**
- **Provide resources to managers who make hiring decisions, such as:**
    - **recruiting sources that have historically produced accepted job offers and provided successful employees**
    - **points to consider when hiring to ensure a good match between employee and USPTO**
    - **examples of pitfalls and best practices so as to learn from others' experiences.**

- **Establish a mentor program, with a requirement that all new hires have a mentor outside their supervisory chain.**

A strong OHR can resurrect this program, match new hires with available mentors, provide training to mentors and those mentored, supply tools, such as Individual Development Plan guides and training resources, and monitor pair progress. While a mentoring program is yet one more initiative competing for scarce USPTO resources, such coordination and consultation would be a logical fit should the agency implement its draft enterprise training initiative, which is slated to include a USPTO Development Center and e-learning project.

Many federal agencies use formal mentoring programs to develop and maintain a well-trained and versatile workforce. For example, the Department of Energy (DOE) has a structured mentoring program that began with a 1995 pilot program and is now supported by an Internet-based *Mentoring Program Guide.* Recognizing that mentoring can divert time and money from other job training programs and that some agencies lack sufficient top-level mentors for the "face-to-face" variety, OPM began, in January 2004, to offer online "e-mentoring," available through OPM's multi-agency Web portal, GoLearn.gov. Portal users—numbering about 20,000 annually—find experts in their fields in minutes.

A survey conducted in 2004 shows that senior-level executives recognize the value of mentors. Although 60 percent of women and 72 percent of men did not have a mentor, more than half of the respondents said a mentor helped them succeed.[189] While a mentor cannot and should not replace supervisory guidance or technology specific orientation, a mentor can help a new employee feel more connected to the larger organization, provide longer term and broader perspective on day-to-day challenges, and provide the employee with a sounding board and additional source of feedback. Orientation to the program, including written guidance and a defined set of boundaries, should ensure that all parties involved understand the parameters of the program and maximize its usefulness to the agency and employee. Establishment of such a program also sends a signal to employees that they are valued for more than today's production; an agency that is willing to invest in its employees typically gets a return-on-investment, particularly improved retention and improved morale as employees look beyond this week's paycheck and focus on their personal development and a lifetime career.

[189] Lisagor, Megan, "E-mentoring: A tool for federal workers," January 24, 2005, http://www.few.com/fcw/articles/2005/0124/mgt-mentor-01-24-05.asp.

CHAPTER 5
THE HUMAN CAPITAL PROGRAM

Federal government agencies, including USPTO, confront a range of human capital challenges to enhance performance, ensure accountability, and position their workforces for the future. They will need the most effective human capital systems to address these challenges and succeed in their transformation efforts during a period of likely sustained budget constraints. An essential element in acquiring, developing, and retaining high quality employees is an agency's effective use of human capital flexibilities. These flexibilities represent the policies and practices that an agency has the authority to implement in managing its workforce.

This chapter will identify key practices for the effective use of such flexibilities, the flexibilities most effective in the federal workforce, and USPTO's follow through on its strategic plan for workforce restructuring. The chapter will next explain recent legislative changes, examine USPTO's use of flexibilities as it strives to become an agile organization, and discuss the impact of USPTO labor management relations on the agency's ability to manage its human capital programs. Finally, the chapter will assess the current human capital system and explore alternative human capital management approaches that might better support USPTO's mission—so critical to the nation's economy and global innovation.

FLEXIBILITIES

Key Practices in Using Flexibilities

In a 2002 report to the Senate Committee on Governmental Affairs, GAO identified six key practices for effective use of human capital flexibilities:[190]

- Planning strategically and making targeted investments, including:
    - Obtaining agency leadership commitment
    - Determining agency workforce needs using fact-based analysis
    - Developing strategies that employ appropriate flexibilities to meet workforce needs
    - Making appropriate funding available
- Ensuring stakeholder input in developing policies and procedures, including:
    - Engaging agency managers and supervisors
    - Involving employees and unions to avoid misunderstandings and resolve problems that might occur
    - Using input to establish clear, documented, and transparent policies and procedures that are uncomplicated

[190]GAO Report -03-02, "Human Capital: Effective Use of Flexibilities Can Assist Agencies in Managing Their Workforces," December 6, 2002, p. 5.

- Educating managers and employees on the availability and use of flexibilities, including:
    - Training human capital staff
    - Educating agency managers and supervisors on the existence and use of flexibilities
    - Informing employees of procedures and rights
- Streamlining administrative processes, including:
    - Ascertaining the source of existing requirements
    - Reevaluating administrative approval processes for greater efficiency
    - Replicating proven successes of others
- Building transparency and accountability into the system, including:
    - Delegating authority to appropriate levels
    - Holding managers and supervisors directly accountable
    - Applying policies and procedures consistently
- Changing the organizational culture, including
    - Ensuring involvement of senior human capital managers in key decision-making processes.
    - Encouraging greater acceptance of prudent risk taking and organizational change
    - Recognizing differences in individual job performance and competencies

Most Effective Flexibilities

According to the GAO study,[191] existing federal flexibilities that are most effective in managing the workforce are:

- Work-life programs
- Alternative work schedules
- Child care assistance
- Transit subsidies
- Monetary recruitment and retention incentives, such as recruitment bonuses and retention allowances
- Special hiring authorities, such as student employment and scholar programs

[191] Ibid, pp. 3-4.

- Incentive awards for notable job performance and contributions, such as cash and time-off awards

Human Capital Assessments and Plans

Over the last decade, USPTO has hired an array of external consultants to do a variety of human capital assessments and make recommendations for change. In March 2003, USPTO also produced its own "Human Capital and Accountability Framework" as part of its strategic alignment effort. USPTO thus complied with OPM recommendations to small agencies and partially fulfilled requirements set forth in the President's Management Agenda. However, as of April 2005, the agency started a process to develop a human capital plan and secure internal funding for this task, but it has not gone beyond the planning stages.

While becoming a PBO was a major event for USPTO, OHR still functions as a traditional bureau-level organization and does not use all potential flexibilities. The new director (appointed in February 2005) has developed an action plan to address problems identified in OIG reports and is trying to increase the quality of traditional human resource activities. His focus is on helping USPTO achieve the goals identified in the *21st Century Strategic Plan.*

Among the relevant findings and recommendations made by external parties:

- A 1998 Academy study collected information on perceived levels of trust in the organization and management's preferences regarding flexibility versus uniformity, delegated versus centralized human resources authority, and timeliness versus avoidance of error. The Academy Panel said that USPTO was not ready for major change and should pursue a strategy of incremental versus radical change.[192] The study also noted that, if USPTO wanted to build a high-performance organization, it would need to shift from an administrative support human resources function to an OHR that functioned as a strategic partner.

- A June 2004 contractor's report concluded "that the OHR staff does not currently possess the capabilities and potential to meet the agency's commitment," "that a high percentage of this staff needs significant improvement" and, as noted previously, "that the Enterprise Training function is seriously broken and needs to be re-engineered."[193]

Department of Commerce IG reports in 2000 and 2004 identified deficiencies in OHR internal controls, hiring and retention, and incomplete agency administrative orders and other standard operating procedures that provide the basis for management actions.

[192] National Academy of Public Administration, *HRM Systems in the U.S. Patent and Trademark Office*, January 1998, p. x.
[193] Memorandum from C.W. Hines and Associates, Inc. to Jo-Anne Barnard, "Response to Task 2," dated June 23, 2004, pp. 1 and 5.

The most relevant points from these reports are:

- The September 2000 report[194] identified the need for improved internal controls over hiring actions—noting lack of documentation for background investigations, unfiled personnel actions, and official personnel folders that could not be located. The 2005 CIO Business Plan identified (in its Operational Information Technology Plan) USPTO investment in an automated agency tracking system to correct these problems and ensure effective material records management.[195]

- The June 2004 report[196] found that USPTO did not have policies and procedures in place, including agency administrative orders and organizational descriptions, had allowed its direct hire authority to lapse from the time it became a PBO in 1999, and had not adhered to merit system principles in appointing an interim head for OHR.

Status of Recommendations in the Strategic Workforce Restructuring Plan

With the goal of outlining a human capital management strategy supportive of the agency's FY 2003-07 business plan, USPTO contracted for the development of a plan in 2002. The plan identified 31 activities, focused on restructuring, recruiting and hiring, retention, staffing, and electronic government, and delineated a timetable for implementation of each of these activities from 2002 through 2006. USPTO has not followed through on the majority of these planned activities. The long-term absence of a permanent OHR director may have contributed to lack of focus on these activities, especially coming just after USPTO became a PBO and at a time when the patent backlog was continuing to mount and pressure to hire new examiners intensified.

In addition to the recruitment and retention initiatives discussed in Chapter 4, the following initiatives were also not pursued or were dropped:

- Competitive compensation for SPEs—although approved in April 2003, changes to compensation have not been implemented because of funding; action is pending[197]

- A mentoring pilot for technical support staff established in 1999

- A commitment to explore reducing the development cycle for full-performance patent examiners (typically defined as three to five years)

- Alternative pay strategies to offer more competitive salaries, which have not gone beyond the special pay rate OPM granted in 2001

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[194] U.S. Department of Commerce Inspector General Report, *Improved Internal Controls Needed for Office of Human Resources*, No. BTD-12830, September 2000.
[195] *USPTO CIO Business Plan for FY 2005*, October 2004, p. 102.
[196] U.S. Department of Commerce Inspector General Report, USPTO *Needs Strong Office of Human Resources Management Capable of Addressing Current and Future Challenges*, No. BTD-16432-4-001, June 2004.
[197] While base compensation for SPEs remains unchanged, USPTO did unveil a portion of a new three-part SPE bonus plan in the spring of 2005.

- A dual compensation waiver and elimination of pension offset
- Demonstration projects mentioned throughout the report
- Thrift Savings Plan enhancements
- Student loan repayment to use as a recruitment device
- Systematic exit interviews
- On-site family or "elder care" center, to complement the childcare facility

OPM Flexibilities

Two new pieces of legislation recently modified the flexibilities landscape for federal employers. One expanded federal expectations for flexiplace or telecommuting. The other amended options to make the government more competitive with the private sector and more agile in pursuing and retaining its critical work force.

The federal government has long been a leader in providing family-oriented leave policies, authority for subsidized childcare, alternative work schedules, and telecommuting arrangements to support a positive work culture and environment. The December 2004 legislation[198] requires that each agency designate a "telework" coordinator and provide a quarterly report to Congress, including the number of employees eligible for and participating in telecommuting programs. This legislation came on the heels of 2000 legislation that escalated agency participation in flexiplace. Under this legislation, 100 percent of the work force was to be considered for flexiplace "to the maximum extent possible without diminished employee performance" by the end of 2004. Most agencies have not met these requirements.[199]

On October 20, 2004, the President signed into law the Federal Workforce Flexibility Act of 2004.[200] In November 2004, OPM announced implementation of increased flexibility relating to pay and leave administration, benefits and other human resources policies, including provision for:

- Critical Pay Authority—Primary responsibility shifted from OMB to OPM to facilitate increased application of this underutilized flexibility, which dates to 1991. This provision is designed to attract talented individuals who would not otherwise accept or stay in government jobs at lower rates of pay. OPM may grant authority to fix the rate of basic pay for one or more critical positions in an agency up to the rate for level I of the Executive Schedule ($180,100 in 2005) for positions requiring a very high level of expertise in a scientific, technical, professional, or administrative field. The President may establish a higher rate of pay. As of December 2004,

[198] Section 622 of Public Law 108-447, Consolidated Appropriations Act, 2005.
[199] Section 359 of Public Law 106-346 was part of the Department of Transportation appropriation for FY 2001, which passed October 23, 2000.
[200] Public Law 108-411.

Federal agencies reported current critical pay authorizations for only seven individuals.[201]

- Annual Leave Enhancements—a newly appointed employee's prior non-federal work experience may be creditable in determining the amount of annual leave the employee will earn each pay period. Qualified non-federal work experience must have been performed in a position with related duties. This provision is directed particularly at recruitment of mid-career hires.

- Recruitment, Relocation, and Retention Bonuses (Effective May 1, 2005)[202]—enhanced authorities provide flexibility to use such bonuses in more strategic ways to help the federal government improve its competitiveness in recruiting and maintaining a high-quality workforce. For example, the Act includes the authority to:

    - Pay larger recruitment and relocation bonuses based on the length of an agreed-upon service period, capped at 25 percent of the employee's annual salary multiplied by the number of years the employee agrees to serve in the position (up to a maximum of 4 years)

    - Waive the normal cap on recruitment and relocation bonuses because of a critical agency need in order to pay higher amounts over shorter periods of time (not to exceed a total of 100 percent of the employee's starting salary)

    - Pay a recruitment bonus to a current federal employee who accepts a new position (in the same or different agency)[203]

    - Pay retention bonuses to employees who are likely to leave for other federal positions

    - Pay recruitment, relocation, and retention bonuses in alternative ways, such as in installments or in a lump sum at the end of a service period

    - Request that OPM waive the limitation on an individual retention bonus (25 percent of salary) or a group retention bonus (10 percent of salary) to allow retention bonus payments of up to 50 percent of salary based on a critical agency need

[201] According to OPM, agencies reported seven employees receiving pay under the critical pay authority as of December 2004: there are three at DOD under its own authority, and one each at DOE, HHS, NASA, and the National Transportation Safety Administration.

[202] In FY 2004, the government utilized 5,855 recruitment bonuses (.32% of workforce), and 1,268 relocation bonuses (.07% of workforce). As of December 2004, there were 16,414 employees (.89% of workforce) receiving retention bonuses. Source: US OPM.

[203] As of May 10, 2005, OPM is delaying implementation of recruitment and retention incentives for current federal employees in possible interagency movements; OPM is soliciting further comment as to whether these incentives might be counterproductive competition. Comments are due by July 12, 2005.

- Corrections Relating to Pay Administration (Effective May 1, 2005)-relate to anomalies of special pay rates (such as that for PEs), locality rates, and retained rates. These corrections should restore logic and fairness in individual pay determinations and improve the effectiveness of the special salary rate program as a recruitment and retention tool.[204] The maximum special salary rate will be increased from level V to level IV of the Executive Schedule—$140,300 —the same cap that applies to locality rates for General Schedule employees.

Areas Where USPTO Has Used These or Other Flexibilities

USPTO, as a whole, has been a leader in the federal government in utilizing particular kinds of flexibilities—special pay rates, the intermittent use of recruitment bonuses, and family friendly benefits, such as alternative work scheduling and telecommuting. The agency has resisted using flexibilities in other areas, such as retention bonuses, relocation allowances for new hires, and repayment of student loans. A 2002 entrance survey of 433 new hires (402 from patents) offers a snapshot. The survey showed that younger recruits had little interest in the family/personal life programs emphasized in recruitment literature. Overall, ten percent of respondents were attracted to the agency most by its flexible work schedule, seven percent by its compensation, four percent by its benefits, and .7 percent by its family/personal life programs. Thus, while new hires may weigh flexible work scheduling and other work life benefits in their decision to accept USPTO's job offer, new recruits consider most the characteristics of the job itself, with 36 percent citing the job as having the most impact on the decision.[205] This is not a surprising result.

A 2003 Partnership for Federal Service survey of the Best Places to Work in the Federal Government (with more than 100,000 responses) provides further insight. In this survey, USPTO tied for 46 among 113 sub-agencies in the family-friendly category. Survey rankings in other categories—relating to utilization and/or effectiveness of other flexibilities--paint a disparate picture: 63 overall among 115 rated sub-agencies. USPTO tied for 133 out of 140 for pay and benefits, and tied for 56 for training/development. It was unrated for work/life balance, with 126 sub-agencies coming in ahead of USPTO.

USPTO has specifically used flexibilities in the following areas:

- The increased flexi-time program, begun in October 2000, gives employees significant flexibility in structuring their work days. It offers mid-day flex, days off during the week, credit hours, and compensatory time on Sundays so employees can balance work and personal responsibilities. Among the most liberal of such programs in the federal government, employees, who are required to come to the office one "core hour" a week, can work a regular schedule any time from 5:30 a.m. to as late as 10 p.m. Managers and employees have commented that this degree of flexibility makes consultation more difficult.

[204] These provisions will correct a series of anomalies resulting from the interaction of special rates, locality pay, and retained rates, and the current application of complex pay administration rules. These changes will allow OPM to treat special rates and locality rates in similar ways for the purpose of promotions, pay retention, and movements between pay systems and schedules.
[205] Entrance and Post-Exit Surveys, Fiscal Year 2002 Report, Chapter 1, p. 4.

- The option for GS-14 primary PEs (with signatory authority) to telecommute from home one day per week, although they can only work on paper because IT security issues have not been resolved. (The Trademark part of USPTO has far more extensive telecommuting and helped the agency win recognition as a leader in federal telecommuting.)

- Special salary rates for PEs, patent administrators, patent classifiers, and patent attorneys—in effect since 2001 and providing from four to 20 percent over the General Schedule locality rate. During the 1990s, USPTO used special rates for biotech PEs and considered, but did not authorize them, for computer PEs. When USPTO instituted across-the-board increases, it phased out other special pay rates for sub-groups.

- Recruitment bonuses,[206] for which USPTO spent $5.76 million over six fiscal years, are now on hold; they were used only on an irregular basis because of funding constraints, budget cuts, and changes in the economy. Use peaked in 2002 and was primarily targeted at electrical/computer engineers and computer scientist PEs, who received a 12 percent incentive, while other PEs received two percent.

- USPTO's childcare center at the new Carlyle complex is the largest civilian federal center and is designed to aid in recruitment. Although federal agencies are authorized to use appropriated funds (from salaries and expenses) to assist lower-income employees with the costs of child care, USPTO does not have a subsidy policy.[207]

USPTO LABOR-MANAGEMENT RELATIONSHIP

Labor unions in the federal sector can play a constructive role. For example, in a healthy organization, unions provide important feedback to management, protect the interests of workers by providing input to the management decision-making process, and, in exercising their freedom of speech, air criticism of government action in the public forum. Union advocates say their efforts to improve working conditions also contribute to attracting talented people to government.[208]

According to many observers, the labor-management relationship at USPTO has historically been less constructive than at many federal agencies. This relationship now plays a major role in limiting the ability of USPTO to make changes in work processes in response to its changing workload and the need to adopt new technologies. The 1998 Academy study of human resources systems concluded, based on interviews and focus groups, that there is a perception that the

[206] According to OPM, in FY 2004, the top three occupational categories receiving federal recruitment bonuses were medical (nurse, practical nurse, and medical officer). Electronic engineers received 284, mechanical engineers received 242, nuclear engineers received 105, general engineers received 102, aerospace engineers received 102, and general health scientists received 100. Total number granted in FY 2004 was 5,855.
[207] The child care center board of directors is developing a tuition assistance program, as yet undefined. The board is holding fundraising events to pay for such a program.
[208] Zeller, Shawn, "Hard Labor," *Government Executive,"* June 15, 2005, p. 30.

relationship was not operating effectively in support of the organization's vision and goals.[209] The report cited, as examples, POPA's opposition to PBO legislation and support for increasing patent application cycle time in spite of a primary agency goal to reduce the time.[210] Labor relations training for supervisors or managers at USPTO has been limited.

While there are multiple unions at USPTO,[211] the one most integral to the patent process is POPA. It has exclusive bargaining rights to represent the non-supervisory, non-managerial professional employees engaged in the patent function—essentially all patent examiners, patent classifiers, computer scientists, librarians, and others. While the other two union chapters at USPTO are affiliated with a national union, NTEU, POPA is an independent union, which collects dues of almost $200,000 annually from roughly 45 percent of the almost 4,000 eligibles in the bargaining unit. Because of its independent status, unlike most other federal unions, it retains control of all dues received and has 100 percent of the money available to it for representation of its constituents—rather than sending a specified portion of the dues to a national umbrella organization.

Collective Bargaining

The last undisputed collective bargaining agreement between the agency and POPA was in 1972, prior to passage of the Civil Service Reform Act. In the two decades that followed, the parties tried to negotiate new agreements, but the result was impasse. An interest arbitrator with the Federal Services Impasses Panel dictated an agreement to the parties—commonly referred to as the Johnson Award. The agreement went, as required by law, to the agency head for review to determine if the contract was legally consistent with agency requirements. It failed the agency head review, and, according to law, if the agreement fails in any one part, the contract is invalid, and the parties must instead proceed according to past practices.

In 2004, there was a major arbitration, in which the arbitrator said there was a tacit agreement—equivalent to past practice—between POPA and USPTO. On April 22, 2005, the Federal Labor Relations Authority (FLRA) upheld the arbitrator's decision[212] that the two parties have a contract consisting of those items previously approved in agency head review. POPA and the agency disagree as to the impact of this recent FLRA decision on the timing of negotiations and are in litigation. At present, the agency is operating under a loosely formulated set of practices and memoranda of understanding.

In February 2005, USPTO gave notice that it wanted to negotiate a new contract with POPA, and, on March 3, 2005, sent contract proposals as well as a proposal for a revised signatory authority program. Management stated in their transmittal memorandum that they were taking this action "(W)ithout continuing any debate regarding our respective positions on the status of

[209] National Academy of Public Administration, *HRM Systems in the U.S. Patent and Trademark Office*, January 1998, p. 13.
[210] Ibid, p. 14.
[211] In addition to POPA, there are two chapters of the National Treasury Employees Union at USPTO; Chapter 245 represents trademark examining attorneys and interlocutory attorneys at the Trademark Trial and Appeals Board; NTEU Chapter 243 represents all non-professional employees, including the technical support staff, computer specialists, and interpreters, among others.
[212] 60FLRA No. 161.

the Johnson Award." The March 2005 POPA newsletter provided to its members a two-page summary of what they saw as the components of the 93-page proposal most likely to change employee work life and cautioned members to "be wary of agency promises." The newsletter went on to say: "Well, the agency has shown its true colors with its proposals for a new contract with POPA, and the details are indeed devilish." On April 21, 2005, USPTO filed two Unfair Labor Practices (ULPs) against POPA. One was based on the union not allowing bargaining on groundrules; the second was for not allowing bargaining on substantive proposals. Both ULPs are pending with the FLRA.

The POPA newsletter also stated that POPA believes the agency had reneged, in part, on a pay provision included in the negotiated agreement known as the Millennium Agreement, signed on January 4, 2001.[213] The agency has stated that they see the overall agreement as a sign of "improved collaboration between employees, unions, and management." A cornerstone of the agreement was that the agency secured OPM approval for a special pay rate for the patent professionals in exchange for POPA agreeing to increased use of automated search tools and phasing out the U.S. patent paper search file. As part of this agreement, labor and management also agreed to add customer service standards.[214]

POPA Leadership, Structure, and Focus

While USPTO management officials and senior labor relations advisors have come and gone, the current president of POPA has been in office for approximately 30 years. POPA operates with volunteer[215] professionals elected every two years from among those they represent. The volunteers represent those in the bargaining unit in workplace grievances, contract negotiations, negotiations on working conditions and procedures, matters of pay, federal employee benefits, litigation, and in testimony on proposed legislation affecting patent professionals. There are five officers, including the president, and chemical, electrical, and mechanical delegates, as well as those representing design patents and the employees of the chief information office and others.

On its website (www.popa.org)—which is replete with information, historical documents, and current pay charts—POPA notes it is directly responsible for such USPTO employee benefits as superior achievement awards, gain sharing awards, compensatory time, family and medical leave, objective criteria for promotions, the signatory authority program, promotion to grade GS-15 examiner, flexible and compressed work schedules, and part-time positions.

Several managers at USPTO stated that POPA does a better job than the agency in providing useful, up-to-date information and, from day one, does a better job of orientation for new hires than does the agency. (See Chapter 6 for further discussion of USPTO orientation.) POPA has, in this manner, somewhat ironically established itself an authoritative source of information about issues of importance to USPTO employees. Emblematic of this reversed role is the fact

[213] USPTO and POPA negotiated this agreement following the 1999 authority to the USPTO Director to review personnel and labor-management issues, which was part of the American Inventors Protection Act.
[214] *USPTO Strategic Workforce/ Restructuring Plan*, p. 8.
[215] POPA officials are USPTO bargaining unit employees who volunteer to serve; by agreement with the agency, a certain number of union officials are granted official time to serve in this capacity and are paid their USPTO salary for the hours spent on official POPA business. The number of officers granted official time and the number of hours granted in sum to the union are negotiable.

that the POPA website has up-to-date special pay charts, while the USPTO employee manual has, on-line, outdated pay charts dating back to 2002.

POPA filed 70 grievances during the period from January 2002 through January 2004. It also filed 11 Unfair Labor Practice (ULP) charges relating to patents with the FLRA during FY 2003, and four in FY 2004. One of the FY 2003 charges dealt with the implementation of the IFW. As a point of comparison, during this two-year period, the agency filed one ULP against the union, and NTEU Chapter 243, representing the patent non-professionals, filed one ULP against the agency. Thus, as managers stated during the course of the 1998 Academy study, the union-management relationship eats up a huge amount of time on issues, many of which they believe are not major, and, while the union cannot shut USPTO down, it nonetheless has the power to "create barriers."[216]

The House Subcommittee on Courts, the Internet, and Intellectual Property has called upon POPA officials to testify before it on many topics, including fee diversion in 2003 and office operations and funding in 2001. In its 2001 testimony, POPA thanked the members of the subcommittee for including employee organizations, such as POPA, on USPTO's Patent Public Advisory Committee (P-PAC) and thanked USPTO senior management for implementing programs that enhance employee satisfaction. The POPA president went on to criticize the agency for putting funding for automation above funding for adequate patent examiner staffing, saying that, "Currently the aggregate salary of all the examiners and classifiers that my organization represents in the technology centers is about $220 million, including the most recent pay raise. On the other hand, the budget of the Chief Information Officer is $239 million in the current year. The trade-offs between staffing levels and particular automation projects need to be made public so that there can be an informed discussion of what is most valuable to the country."[217] This dialogue reflects the broad range of targets subject to POPA critique.

Conclusions: Managing Today's Human Capital Program

In meeting its human capital challenges, USPTO has run into numerous and substantial barriers. Prime among those is the current federal framework in which USPTO must operate. While USPTO has flexibilities as a PBO, it cannot, for example, set its own pay or probationary period and is subject to all labor relations laws applicable to federal employees. This, combined with the volatility of the appropriations process, means it cannot hire whom it needs, when it needs them, at a rate that ensures it can routinely hire the best and brightest in the broad array of technologies its mission requires. In a perpetual state of impasse and without a PE-based labor contract for over a quarter of a century, the Panel believes the agency is stuck in time, with the management framework of an era gone by.

While most other federal agencies also face appropriation and regulatory restrictions (and USPTO has not used all of its flexibilities, in part because of funding shortages), USPTO is a revenue-producing, global competitor running a knowledge-worker agency, with negotiable

[216] National Academy of Public Administration, *HRM Systems in the U.S. Patent and Trademark Office*, January 1998, p. 14.
[217] Testimony of Ronald Stern before the Subcommittee on Courts, the Internet, and Intellectual Property, June 7, 2001, pp. 34-35.

production quotas, long-standing attrition and recruitment problems, and a mounting backlog. USPTO is thus hampered to a far greater extent than most federal counterparts. The Panel believes that the nation's IP efforts and the U.S. economy are ultimately shortchanged, with pendency rising and patent quality and validity sometimes called into question.

On the labor relations front, POPA has been most effective in representing its constituency and serving as a critic of USPTO operations. The current management proposals and ensuing negotiations have the potential to bring clarity and currency to procedures and policies for all parties. Given the history of USPTO labor-management relations, the questions that loom are: "Will that potential be realized, will it come in a timely enough fashion, and will it be sufficient to ameliorate the pendency problem?"

In assessing strengths and weaknesses in human capital management, the Panel believes that USPTO has been "paper-compliant" with government-wide requirements to assess its human capital framework. However, the agency has been slow to take action to change historical organization patterns and practices when faced with either external or internal recommendations. Also, in the absence of a continuing management analysis capability, it is unclear to what extent the benefits granted to employees have affected long-term recruitment, retention, or management effectiveness.

While the agency commits to explore various options that would enhance human capital management, it is hard to trace USPTO ownership of the projected activities, and when budget cuts come, these activities are generally among the first to go. USPTO officials frequently invoke labor-management challenges as their reason for not pursuing change. There are challenges in labor-management relations, but, the Panel believes that the fits and starts of the human capital programs have been detrimental to accomplishing the patent mission and have contributed to increased patent pendency.

In this latter connection, USPTO managers would greatly benefit from in-depth labor relations training so that they would be better schooled in of sound labor management relations practices and avoid new manager pitfalls.

Recommendations: Managing Today's Human Capital Program

USPTO has some actions underway that the Academy Panel believes to be generally consistent with sound human resources management practices:

- **Management's March 2005 initiative to develop a 42-article proposed labor contract, to be negotiated with POPA. The proposal covers a wide variety of important agency issues and management rights relating to them.**

The Academy Panel recommends that, within the current system, USPTO:

- **Take the following leadership actions with regard to overall human capital management:**

- **Internalize (rather than relying on contractors) the responsibility for human capital management decision making as a critical part of managing USPTO work for the nation.**

- **Set priorities for human capital initiatives and clearly delineate funding for each.**

- **Follow through on the Strategic Workforce/Restructuring Plan and other human resource initiatives outlined in the *21st Century Strategic Plan,* with assignment of clear ownership to OHR and management accountability for effective and continued implementation of the prioritized efforts.**

- **Update the 2003 "Human Capital and Accountability Framework" to reflect the current state of human capital affairs at USPTO and develop realistic alternatives for implementation.**

- **Develop a communication strategy, including pre-decisional input from labor unions as well as individual employees, and explain priorities, costs, and impacts of human capital choices.**

- **Conduct in-depth labor relations training for new supervisors.**

- **Develop and implement a group retention allowance for SPEs or others with expertise needed to deal with increased application volume.**

Use of retention allowances is critical for an agency with attrition problems of the magnitude of USPTO. Implementation of group retention allowances sends the signal that management understands and appreciates the pressure points of the patent process. Relying on a small cadre of seasoned SPEs to bring along its new hires and help develop staff, USPTO needs to compensate these managers equitably vis a vis the non-supervisory PEs. The agency can also use retention allowances for those in high-demand specialties and PEs in art units with increased application volume and work pressures. If USPTO is to retain these employees and successfully battle pendency, it must reward those most needed with higher pay.

Other federal entities with urgent demands have tried a different route and embarked upon a "new wave" of personnel reform. While the Panel cannot be sure how these reforms will affect federal employment, two huge federal departments have invested heavily in this effort to enhance management capacity and move federal management of critical missions into the 21st century. The last portion of this chapter examines this federal human capital framework of the future in more detail.

A HUMAN CAPITAL SYSTEM FOR TOMORROW

This section examines whether the framework of the current human capital system will enable USPTO to meet its mission effectively. The Panel believes that USPTO needs the capacity to:

- Hire the skills it needs when it needs them.
- Retain its workforce if it is to benefit from the expertise they will acquire as patent examiners.
- Consult regularly (other than in formal negotiations) with employees about how to improve work processes.
- Develop a more positive culture.

USPTO has asked for and received some flexibilities other federal entities do not have, such as the special pay rate for patent examiners and the ability to ask OPM for annual increases. When OPM reapproves it, USPTO will also have direct hire authority. It could use more of the tools in the Title 5 environment, such as buyouts for skills it no longer needs (as GSA did in restructuring its workforce) or retention bonuses for hard-to-fill positions (as the Department of State has).

What USPTO cannot do is set its own pay rates or probationary period, and it is subject to all labor relations laws. Looking beyond pay rates, USPTO cannot change its pay system to one that promotes innovation, attracts the best and the brightest, and encourages retention. USPTO assesses the future of innovation in medicine, agriculture, technology—any field one can name. It needs people who can assess the work of the best minds in the world. As more and larger federal agencies are granted flexible personnel systems, they will be able to offer the salaries to get the skills essential to fulfill its mission. USPTO will be at an even greater disadvantage.

Background on the Federal Civil Service System

The Pendleton Act of 1883, as revised by the Civil Service Reform Act of 1978, established the concept that civil servants should be given appointments, promotions and retention only on the basis of merit as measured by experience, examinations, interviews, etc. Appointments or other personnel actions involving career civil servants cannot be based only on the recommendations of political officials or other non-merit considerations.

As with the Classification Act of 1923 (which is now part of Title 5), the laws and regulations governing the merit system have come under criticism in recent years for rigidity, delays in completing personnel actions, and lack of responsiveness to agency needs. The result has been the widespread exemption of some agencies from some or all of the requirements of portions of Title 5 relating to appointing, promoting, or removing civil servants.

The exemptions from specific civil service statutes do not, in most cases, entail abandoning merit principles. The intent is usually to give executive agencies more flexibility or to expedite various personnel actions. In a recent study of agencies exempt from parts or all of Title 5, OPM

estimates that (including the United States Postal Service (USPS) about one-half of federal civil servants are in agencies wholly or partially outside the civil service provisions of Title 5.

Government corporations have often been among the government entities authorized to design their own merit systems or be excluded from some civil service laws and regulations. Examples include Tennessee Valley Authority, USPS, and the Presidio Trust Corporation.

Corporations are not the only government entities to obtain flexible personnel systems. From GAO in 1980 to the Securities and Exchange Commission in 2001 to the Departments of Defense and Homeland Security in 2005, more federal agencies are being given permission to establish their own systems.

OPM itself has judged the federal white-collar pay system (the General Schedule) to be failing in a number of respects. It believes the GS system:

- Does not reflect market pay levels
- Has minimal ability to encourage and reward achievement and results (more than 75 percent of the increase in federal pay bears no relationship to individual achievement or competence)
- Is structured to suit the workforce of the 1950s (when 75 percent of federal workers were in grade GS-7 and below), not today's knowledge workers
- Has prescribed procedures and practices that effectively preclude agencies from tailoring pay programs to their specific missions and labor markets
- Is disintegrating as a number of agencies (through special authorities) have moved toward more modern systems.[218]

In June of 2005, the Deputy Director of OMB announced that the administration expected to send a "civil service modernization" bill to Congress within a few weeks. The legislative proposal, which may change based on the interagency review process, would extend policy changes approved for DHS to the rest of the workforce. It would also abolish the decades-old General Schedule pay system by 2010 and replace it with a compensation system based on occupations, labor market conditions, and more rigorous criteria for evaluating job performance. According to the draft bill, OPM would define at least four pay bands: entry/developmental, full performance, senior expert, and supervisory. It would also create a Federal Pay Council to advise OPM and OMB on pay levels and locality adjustments.[219]

[218] Kay Cole James, *A White Paper: A Fresh Start for Federal Pay: The Case for Modernization*, OPM, April 2002, p. vi.
[219] Barr, Stephen, "Federal Diary: Bush Administration Bill Would Take Pay System Changes Government-Wide," *The Washington Post*, June 7, 2005, B2.

More Flexible Systems within Title 5

Federal Banking and Securities Agencies

Banking regulatory agencies, such as the Federal Deposit Insurance Corporation (FDIC) and the Office of Thrift Supervision, have had special pay authorities or been exempt from portions of Title 5 for a number of years. For example, FDIC is partially exempt from OPM rules governing pay rates and systems and fully exempt from the federal classification and performance systems. The Federal Deposit Insurance Act permits it to appoint and fix the compensation of its employees.

SEC sought similar authority because it believed many of its recruitment and retention problems were the result of the discrepancy among SEC salaries, those of other federal banking agencies, and those of private sector organizations with which it had to compete. This occurred even though SEC received, in 1992, authority from OPM to pay staff attorneys and accountants with two years of securities industry experience special rates at about 10 percent above base pay. SEC believed the 1994 introduction of locality pay eroded the effectiveness of its special pay authority.[220]

As of 2002, the Securities and Exchange Commission may "appoint and fix the compensation of such officers, attorneys, economists, examiners, and other employees as may be necessary for carrying out its functions."[221] It was granted this authority to maintain comparability with other financial regulatory agencies.

As it set up the new system, SEC's implementation goals were to:

- Provide comparability with other federal financial regulatory agencies
- Reduce supervisory pay compression
- Account for differences among certain specialized occupations
- Increase the agency's reliance on merit and performance-based management principles.

As of 2005, SEC's flexibilities continue to operate under demonstration project status.[222] However, it does not anticipate Congress will remove this latitude, and its budget estimates reflect the flexibilities. SEC salaries for an experienced accountant range from $91,000-136,000. It can also hire non-supervisory experienced accountants in a range of $121,000-155,000. Supervisors can make between $109,000-165,000.

In comparison, a GS-11 patent examiner (with roughly two years of experience) would earn from $57,454-$74,690, and a GS-13 from $78,018-101,421. A SPE (GS-15) would earn from $108,446 -140,300.[223] However, all of these figures are without the potential of a bonus, which non-supervisory examiners can obtain based on production.

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[220] Securities and Exchange Commission, *Pay Parity Implementation Plan and Report*, p. 8, available at www.sec.gov/news/studies/payparity.htm.
[221] P.L. 107-123, January 16, 2002, Chapter 48, Section 4802(a), 115 Stat. 2398.
[222] U.S. General Accounting Office, *Human Capital Authorities*, April 21, 2005, GA)-05-398R, p. 24.
[223] Special Salary Rate Table Number 0576, effective first pay period on or after May 1, 2005.

Department of Homeland Security

In 2002, Congress established an HRM system for DHS, requiring that it be flexible, contemporary, not waive merit principles or equal employment laws, ensure that employees could organize and bargain, and permit use of a category rating system to evaluate applicants for positions in the competitive service.[224] DHS issued final regulations in February 2005 for "Maximum Human Resources" (MAXHR), its new system.

Features of the new DHS compensation system are:

- Performance replaces longevity as basis for individual pay increases
- Employees rated less than fully successful do not receive pay increases
- Pay ranges are to be based on labor market (national and local), budget, etc.
- A Compensation Committee (including union representatives) advises the Secretary.

Features of the new DHS performance system are:

- Individual expectations aligned with organizational goals
- Ratings reflect meaningful distinctions in employee performance
- System designed to improve organizational accountability
- Less emphasis on paper and more attention to manager-employee interaction.

What does not change under the DHS system are:

- Equal pay for work of equal value with
    - appropriate consideration for national and local rates
    - appropriate incentives and recognition for excellence in performance
- Current Pay/Benefits: No reduction as result of transition
- Performance expectations (especially those that may affect retention) will be clearly communicated
- Employees may grieve ratings and appeal unacceptable performance ratings that result in adverse action

[224] P.L. 107-296, Homeland Security Act of 2002, November 25, 2002, Sec. 841, Chapter 97, 116 Stat 2230.

National Security Personnel System

In November 2003, Congress granted the Department of Defense (DOD) authority to establish, in partnership with OPM, a new civilian HRM system to better support its critical national security mission.[225] Broad parameters called for the system to:

- Permit waiver or modification of classification, pay, performance management, labor relations, adverse actions, and appeals provisions of Title 5
- Preserve merit principles, prohibited personnel practices, veterans' preference, due process, and whistleblower protections
- Provide for participation of, and collaboration with, employee representatives in development, and implementation of a new human resources system

Some of the highlights of DOD's National Security Personnel System include the following features:

- Simplified pay banding structure, allowing flexibility in assigning work
- Pay increases based on performance, rather than longevity
- A performance management system that requires supervisors to set clear expectations (linked to DOD's goals and objectives) and employees to be accountable
- Streamlined and more responsive hiring processes
- More efficient, faster procedures for addressing disciplinary and performance problems, while protecting employee due process rights
- A labor relations system that recognizes DOD's national security mission and the need to act swiftly to execute that mission, while preserving collective bargaining rights of employees

What does not change under the DOD system are:

- Merit system principles
- Whistle-blower protections
- Rule against prohibited personnel practices
- Veterans preference principles

[225] Authority for the new DOD civilian personnel system is in P.L. 108-136, Title XI. DOD published proposed regulations in February 2005.

- Anti-discrimination laws
- Benefits (retirement, health, and life insurance, etc.)
- Allowances and travel/subsistence expenses
- Training
- Leave and work schedules

Features of the new classification system are:

- Simplified structure to replace the General Schedule system
- Occupational clusters based on similarity of work, qualifications, marketplace and competencies
- Pay bands based on level of work within each cluster
- Pay ranges set by occupational cluster, band
    - Similar jobs will be grouped into a limited number of broad occupational clusters
    - Bands will have wider pay ranges than the General Schedule, with annual adjustments based on national/local labor market rates, budget, etc.
    - Band adjustments will likely differ from one occupational cluster to another even within specific cities—reflecting the labor market
    - Individual adjustments for unusually difficult assignments, special skills, or to address recruiting/retention difficulties

Labor-Management Relations Provisions in DOD and DHS Personnel Systems

One of the most discussed aspects of the DOD and DHS systems is labor relations. Employees and their union representatives want the new systems to ensure overall equity, and they want a voice in their future. Management in both organizations wants to be able to move expeditiously to fulfill their missions. While the two positions may not be mutually exclusive, many points put management and unions on opposite sides of the table.

DOD stated its "organizational imperative for flexibility and responsiveness," noting that the new system will permit managers to assign and deploy employees and to introduce the latest security technologies without delay. Unions are concerned that this could include assignments to

war zones.[226] DOD management believes that the new system will permit expeditious bargaining, and unions are concerned that the scope of collective bargaining has been scaled back. The American Federation of Government Employees (AFGE) president proposes allowing labor-management disputes to be settled by a board independent of DOD management.

In developing the DHS personnel system, AFGE testified that five proposals appeared in various options that accommodated labor concerns and preserved collective bargaining.

1. After a fairly short, clearly defined period of bargaining, any matter over which the parties are at an impasse can be sent to the impasse resolution body.

2. Impasses would have to be resolved within a specific short time limit after having been referred to the impasse resolution body.

3. Information disputes related to bargaining would be decided by the impasse resolution body, rather than through a separate "unfair labor practice" complaint procedure.

4. Disputes over the scope of bargaining would be decided by the impasse resolution body, rather than through a separate "negotiability appeals" procedure.

5. Management would be able to implement changes on its own schedule, as long as there is a credible opportunity for swift, effective, post-implementation bargaining.

AFGE did not endorse specific language relative to these elements, noting significant differences between many of the elements on any particular subject. But because these elements addressed essential subjects, AFGE said it had "concentrated [its] efforts on finding particular formulations that best serve our members, and the purposes of the Homeland Security Act."[227]

DHS believes final regulations ensure its ability to act by precluding negotiations over:

- Numbers, types, and grades of employees or positions

- Introduction of new technology

- Implementing directives and other DHS-wide personnel policies

- Procedures the agency will follow in exercising "operational" rights

DHS management must confer with unions over procedures, with these provisions:

- Confer for up to 30 days, but no agreement required

[226] Statement of John Gage, AFGE president, representing unions that comprise the Defense Workers Coalition, before the Senate Armed Services Committee, April 14, 2005.
[227] John Gage, AFGE President, testifying before the House Government Reform Subcommittee on Civil Service Agency Reform and Organization, October 29, 2003.

- Not collective bargaining—not subject to impasse procedures
- Management retains authority to establish or deviate from procedures
- Employees may grieve alleged violations of procedures

DHS's final regulations, issued jointly with OPM, established a Homeland Security Labor Relations Board. The Board is to resolve issues between management and employee representatives, including the scope of bargaining, duty to bargain in good faith, negotiation impasses, and exceptions to arbitration awards involving exercise of management rights. Board decisions are final and binding and it is the single entity to resolve labor management disputes. The Board is to be composed of at least three members, appointed by the Secretary, with expertise in labor relations, law enforcement, or national/homeland security or other related security matters. Labor unions will be asked to provide nominees for the Secretary's consideration.

The National Treasury Employees Union filed suit to block implementation of the final regulations, believing that the new system would lead to a system that would fail to ensure employees' right to bargain collectively, as required by the Homeland Security Act. The U.S. District Court for the District of Columbia agreed and struck down the regulations on August 12th, and as of mid-August, DHS was considering whether to appeal the decision or revise the regulations.[228] The court case does not affect the pay-for-performance components of DHS' new system.

Conclusions and Recommendations: A Human Capital System for Tomorrow

A federal corporation head, who presumably would be an experienced manager, could help USPTO use its existing flexibilities under Title 5 more effectively, but greatly enhanced flexibilities would give the agency far more capacity to hire and retain best-qualified workers. The Panel recognizes that USPTO's past actions in HR may not generate full confidence in granting the agency management more flexibilities, but notes that USPTO has hired and appears to be supporting strong new managers in this function. The Panel believes that past practice should not preclude future enhancements. The agency mission and global competition make a strong business case for UPSTO enhanced management flexibility and capacity; USPTO needs this new framework to deal with its burgeoning workload and remain in the global IP forefront.

With a personnel system tailored to its needs, USPTO could adopt a pay scale or performance-based pay system that could improve recruitment and reduce attrition, thus keeping more experienced employees rather than training them for several years and having so many of them join law firms or other entities as patent attorneys or agents. It could also expedite the collective

[228] NTEU, et al., v. Michael Chertoff, Secretary, DHS, et al., Civil Action No. 05-201 (RMC). Judge Rosemary M. Collyer stated that when Congress created DHS, it required the agency to ensure collective bargaining rights, and the agency violated that requirement by not providing for a binding contract. The regulations DHS proposed would have provided officials with a substantial caveat in all bargaining agreements: the right to issue a directive at any time that negates a prior agreement.

bargaining process. Given the extreme "us vs. them" mentality that has been prevalent between union and management at USPTO for decades, the situation needs rebalancing. A new personnel system could provide the framework for this. The Panel believes that such a system should encourage consultation, information sharing, and collaboration with unions and preserve the rights of labor to organize and bargain collectively.

The Panel recognizes there are many issues to be resolved in DHS and DOD, the most obvious being the court challenge to aspects of the labor provisions. Its recommendations for USPTO assume that any regulations would comply with relevant government policies regarding the rights of federal employees.

The Academy Panel recommends that USPTO work with Congress and OPM to:

- **Create an independent personnel system for USPTO that ensures equity for employees, increases management flexibility, and puts USPTO in a position to be an employer of choice for the knowledge workers it needs.**

- **Develop an impasse resolution system that permits prompt renegotiation of work processes and pay rates.**

- **Establish a USPTO Labor Relations Board to provide a meaningful, continuing role for labor and to resolve issues between management and employee representatives.**

Further, if USPTO moves to a DHS-like personnel system that provides additional flexibilities to USPTO management, the Panel recommends that USPTO:

- **Raise the pay of patent examiners to a level similar to those of the bank regulation agencies, so that the organization can compete with other public and private organizations that require the same skills.**

The Panel would not recommend such a pay increase unless USPTO also received greater management flexibility because a pay increase alone will not solve the management and personnel issues facing the agency.

DHS and DOD's legislation also called for them to develop their new systems in concert with OPM. The two agencies spent considerable time in system design (with OPM), which included meeting with key stakeholders including employees, supervisors, managers, union representatives, senior leaders, and public interest groups.

OPM would also bring the expertise to work with USPTO on technical aspects of a new system and to ensure fairness. This would not preclude USPTO from working with contractors on technical aspects of the new system, especially if that would speed proposal development or implementation.

The DHS system is in place. While the unions have raised issues about the framework for the labor management relationship, the independent Homeland Security Labor Relations Board provides a vehicle for the quick resolution of all bargaining matters and disputes and ensures continued focus on agency mission. USPTO may want to confer with DHS officials as it considers whether to request a tailored personnel system.

CHAPTER 6
VARIED LEVELS OF MANAGEMENT SUCCESS

USPTO needs to be managed well to fully achieve its mission. Organizations that are well-managed possess a broad range of characteristics. The Panel highlights those below and acknowledges that there can be many other criteria for success.

- Goals, priorities, and performance indicators are tied to mission
- Resources are allocated to meet top priorities
- Results are measured
- Human capital system supports the mission
- Technology meets mission needs and is regularly updated
- Culture of the organization supports the agency's mission
- There is sufficient agility to react to a changing environment
- Workspace is designed to promote efficiency and permit ease of customer access
- There are regular assessments of mission and management activities
- Management functions are coordinated by a senior leader
- Administrative and mission history are well documented
- Stakeholder communication is informative and two-way

The scope of the Panel's work did not include an assessment of USPTO's performance on all these criteria, in part because GAO examined some of these areas in its companion study. In Chapter 5, the Panel stated why it believes USPTO needs a more flexible human capital system. In this chapter, the Panel has made several observations related to some critical success factors—goals and results, culture, technology systems and mission needs, organizational agility, work space, internal assessments, and coordination—in the course of analyzing USPTO's work processes. Accordingly, this chapter discusses these areas and includes recommendations related to culture, management assessments, and coordination—in part based on experience of other federal agencies. Of all these critical success factors, organizational culture is clearly a dominant factor that affects USPTO's operations and the willingness of its managers to take a leadership role in tackling the significant challenges it faces.

Having observed USPTO for the past eight months, the Panel believes that mission (program) leadership and management are stronger than leadership and implementation in the general

management area. This skill balance could be due to a number of factors, but particularly reflects a long-term culture that has not emphasized administration. For example, USPTO sometimes moved mission experts into administrative management rather than bringing in individuals with specialized administrative expertise. Likewise, resources devoted to IT have historically detracted from monies that could be spent on other areas of administrative management, and budget shortfalls have in many years required that the agency choose between direct mission accomplishment and longer-range management investment.

GOALS AND RESULTS

A key issue before USPTO today is whether its goals, priorities, and performance indicators are tied to mission and whether they are measured. Under USPTO's *21st Century Strategic Plan*, the agency planned to transform itself over the five-year period beginning in 2003 to become an agile, capable, and productive organization. The plan called for an approach to creating an "organization fully worthy of the unique leadership role the intellectual property system plays in the American and the global economies." The plan was developed without broad participation, but most employees have been impacted by its implementation.

For each item in the plan, USPTO mapped out what needed to take place to implement the action, and it developed a tracking system to measure progress. USPTO provided Academy staff with the spreadsheets that track progress on a regular basis. While actions to implement some portions of the plan began immediately, others (which required more extensive funding) did not begin until after October 2004, when Congress passed legislation that raised USPTO fees and provided more funds to the agency than in prior years.

The plan's three supporting performance goals are:

1. Improve the quality of patent products and services and optimize patent processing time

2. Improve the quality of trademark products and services and optimize trademark processing time

3. Create a more flexible organization through transitioning patent and trademark operations to an e-government environment and participating in IP development worldwide

The goals are tracked through 13 measures, each of which has annual targets. The annual performance reports display targets and achievements in areas such as trademark or patent applications filed electronically, trademark and patent pendency, and quality. The reports also provide USPTO resource obligations by performance goal. The goals and indicators link directly to USPTO's mission.

The FY 2006 Presidential budget request[229] was the first that presented USPTO's spending and budget requests in terms of the three broad goals as well as by type of activity, such as type of patent, trademark applications, or appeals proceedings. On the patent side, it breaks down

[229] USPTO, *FY 2006 President's Budget Request*, February 2005, p. i.

expenditures and requests by initial examination, examination, classification services, pre-grant publication and patent issuance, patent appeals and interferences, operations (including system maintenance and automation support), strategic initiatives, and other contributing resources (including space rent, utilities, recruitment, procurement of goods and services). These breakdowns within major operations are more informative than what some other agency budget requests are able to present. To be fair, USPTO's mission is very specific, which makes it easier to present resource requests and spending this way. It is a level of detail that provides the administration and Congress with an informative picture of resource use.

The *21st Century Strategic Plan* and related reports describe such topics as patent and trademark automation activities and enhanced skills needed by patent examiners, but it does not directly address the human capital system or management operations, such as enhancing procurement and contracting systems. (These are presented as examples, not as systems known to need improvement.) Other agencies' strategic plans, such as that of the Department of Transportation (DOT), cover cross-cutting management issues. For example, DOT has overall organizational excellence goals and devotes considerable planning to management of human capital (especially workforce planning) and competitive sourcing. As discussed in Chapter 7, the Student Financial Assistance's (SFA) strategic plans and related reports address management issues extensively.

Conclusions and Recommendations: Goals and Results

Chapters 4 and 5 discussed workforce issues and alternative flexibilities in detail. Regardless of the decisions USPTO makes in these areas, it needs to better link human capital management to overall strategic planning. USPTO's major asset is the expertise of its staff, and when the systems that recruit and develop them are better associated with direct mission work, planning in both areas will be enhanced. In short, USPTO should have a specific human capital plan to implement strategic decisions.

The Panel recommends that USPTO:

- **Ensure that the vision and goals in its Strategic Plan are integrated into its human capital planning.**

- **Raise the commitment to and visibility of human capital improvement efforts by incorporating some aspects of this work into the broader Strategic Plan.**

ORGANIZATIONAL CULTURE

An organization's culture includes the values that determine the norms, attitudes and behaviors that are long-lasting in an organization and socialized into new hires.[230] Culture also involves the mindsets of an organization's members and the mental models they have, which determine how they see themselves and their organization and how they interpret events. It also defines the context in which the relations among people develop and operate and sets the basis for the

[230] Michael Maccoby, "The Many Cultures of Government," in *Meeting the Challenge of 9-11: Blueprints for More Effective Government,* Thomas H. Stanton, editor, to be published by M.E. Sharpe in 2005.

implicit contracts that guide and shape decisions; it operates as a social motivation and control system.[231]

In common terms, organization culture means "the way we do things around here." A review of organizational culture literature makes it clear that (1) a supportive culture is essential for successful organizational change and maximizing the value of human capital, (2) culture management should become a critical management competency, and (3) while the right culture may be a necessary condition for organizational success, it is not the only one. An important challenge for managers is to determine what the most effective culture is for their organization and, when necessary, how to change the organizational culture effectively.[232]

A key feature of USPTO's culture is that its work is far more geared to measurable production than most federal agencies with a highly educated workforce. When USPTO hires a patent examiner or a trademark attorney, it wants someone who can not only think, but think fast. The production requirements are a source of friction between management and POPA, which steadfastly argues that PEs need more time to do their work. POPA noted that, "The USPTO culture has evolved since 1976 when the production "stretch" goals were set. Now, the agency expects examiners to reach 110 percent of goal to achieve supervisory approval. The significant number of examiners who rate fully successful at 96 to 100 percent understand that they are on the edge of being pushed out of the agency."[233] Management believes that PEs have more tools, such as automated search capabilities and personal computers, that have reduced the time it takes to do searches of comparable complexity. A 2004 IG report stated that 256 of 269 art units (95 percent) processed applications in less time than their allotted goals. However, the same report noted that POPA personnel believed this is at least partially because staff undertake voluntary overtime, which is not recorded.[234]

USPTO staff and managers have been through several years of intense change in their workplace (given the recent move of all staff to a new campus) and work methods (as continually more aspects of work are automated). New work space and more efficient work methods can be substantial improvements over prior conditions, but they still represent change, and change takes time to absorb. In addition, there have been frustrations at times as new technology systems came on line before all the bugs had been ironed out. This is hardly unique to USPTO, but it is stressful nonetheless.

There are routine stresses associated with working in any large organization, whether public or private. The Panel members were struck, however, by the "us versus them" environment that seems to exist between USPTO management and its largest union, POPA. Managers believe that they recruit patent examiners and then "turn them over" to POPA to be socialized, and that socialization focuses on what is wrong with the agency and how it takes advantage of employees.

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[231] Roberts, John, *The Modern Firm*, Oxford University Press, 2004, p. 18.

[232] Kathryn A. Baker, "Organizational Culture," a chapter in a web book on management benchmarking, prepared for The Department of Energy's Office of Policy and Analysis, 2002. Available at www.sc.doe.gov/.

[233] "USPTO Culture Sacrifices Quality," *Radio Free PTO*, (the POPA newsletter), December 2004/January 2005, Vol. 5, No. 1, p. 5. Available at www.popa.org.

[234] U.S. Department of Commerce, Office of Inspector General, *USPTO Should Reassess How Examiner Goals, Performance Appraisal Plans, and the Award System Stimulate and Reward Examiner Production*, IPE-15722 September 2004, pp. 12-13.

However, management provides little USPTO-wide socialization. New employees are given a brief orientation session,[235] which largely deals with administrative issues, and then several weeks of technical training in examination policies and specific search techniques related to the art unit.

In a recent issue of the POPA newsletter, the organization expressed its dislike of an employee requirement to swipe an electronic card when entering and leaving a building (a common practice in federal agencies, but new to USPTO); the newsletter depicted employees wearing t-shirts with prison bars and a reference to the "Carlyle Correctional Institution." (Carlyle is the name of the new complex of USPTO buildings in Alexandria, VA.) Several former senior USPTO managers mentioned that every new commissioner or undersecretary comes to USPTO expecting to be able to forge a strong relationship with the organization's bargaining groups, but eventually finds most of the relationships to be very problematic.

During its 2002-03 USPTO study, Academy Fellows discussed the need for additional management flexibilities, and USPTO senior staff said they didn't want them because they would just have to bargain over them with labor. Thus, proposed reforms may not be accepted with alacrity, even if they make sense, because they require negotiation. This is not a healthy organizational culture.

The complex agency timecard has dozens of activity categories to which employees can charge time. There is an incentive to charge all non-production time (which generally must be authorized) to an authorized category (such as training) so that one's production goals for a given pay period are adjusted accordingly. In this sense, it is a very fair system; an employee who has been "off line" for part of the period is not expected to produce as much toward award goals as one who has had no interruptions. The production system, and related bonus criteria, are part of what some in the organization culture field would see as a system that fosters competition, which they would count as a negative—based on the premise that the organization suffers when one employee has to "lose" for another to "gain." However, USPTO's system requires individuals to compete with themselves rather than one another for the reward bonus.

Recent studies show a changing social character in the workplace, resulting from historical changes in family structure and the formation of personality in childhood. In contrast to the bureaucratic-hierarchical personality that fits the traditional government workplace, a new generation with a more interactive-democratic personality bridles against the traditional bureaucracy. These employees are motivated by opportunities to develop their skills and work with clients and colleagues to solve problems. They want to participate in decisions about how they will carry out organizational strategy. Their personality fits the needs of organizations that use knowledge to customize solutions.[236]

[235] In June 2005, USPTO's Enterprise Training Division of OHR began implementation of short-term changes to its orientation program, which it expects to be complete by September 30, 2005. Changes include adding a video welcome from the Under Secretary. Longer-term plans for moving to an "acculturation" emphasis are slated for completion over the following fiscal year.

[236] Maccoby, p. 8.

USPTO's culture does not fit this changing social character, and because of the nature of its work, it will never be able to fully do so. It is bound not only by the rules expressed in policy manuals, but also by constantly changing court decisions. These prescribed conventions are necessary for an equitable process for issuing patents and trademarks. The agency has tried to be flexible with some work rules, by instituting flexible work schedules and permitting (to a greater extent on the trademark than patent side) work at home. As in any organization, USPTO makes decisions about the location of work based on the needs of the agency. However, even if the work itself did not require strict adherence to requirements or statutes, the collective bargaining process at USPTO does. Top management does not believe it can discuss most proposed changes with employees outside of the bargaining process.

Conclusions and Recommendations: Organizational Culture

When interacting with USPTO managers and employees, the overall impression is, at least on the patent side, that there is, as an inherent aspect of the culture, less ongoing communication among management and employees than in other federal agencies. This is to some extent attributable to the need to negotiate on so many issues. This does not contribute to a healthy organizational culture.

USPTO is also different in that it cannot create an environment in which employees are allowed to make mistakes as they learn new skills, which is an often-stated characteristic of a positive organizational culture. USPTO builds in additional supervisory review so that errors are noted before an application is allowed or rejected, but—more so than in other organizations—employees' errors are called to their attention.

It is essential that an organization's culture support its mission, and a culture cannot evolve overnight. Change can only occur when top leadership is involved and the rewards system is tied to the behaviors the organization is trying to build. At USPTO, the rewards system (as discussed in Chapter 4) has been tied almost solely to individual production since the mid-1970s. The Panel recognizes that even if USPTO creates new awards that recognize team contributions as much as individual performance, USPTO will also still likely want to—and should—reward individual production, at least as long as pendency is so large.

The Academy Panel recommends that USPTO:

- **Develop strategies to make its organizational culture more positive and collaborative. These efforts should start with an assessment of the current culture, probably by an external group, and should involve employees and managers.**

- **Develop a process for initial employee orientation that stresses the positive work environment and many benefits of working for USPTO.**

- **Reinforce the initial positive presentation of USPTO's environment with periodic informal opportunities to interact with senior management in a**

social setting, such as "coffee with a commissioner" at lunchtime several times each year.

- **Continually encourage individual employees to submit ideas for internal innovation and vigorously acknowledge as the ideas are accepted and implemented.**

Academy Panels try to avoid suggesting additional studies, since organizations come to the Academy for advice. However, the organizational culture at USPTO needs careful assessment to effect maximum change, and there are experts who can guide USPTO through this process.

Cultural change has costs. USPTO is very aware that any time away from production is "costly" as time not spent to reduce pendency. If it wants to create a more positive organizational culture, it will cost money for such things as taking staff away from work for focus groups or training, bringing in consultants, purchasing materials and allowing staff time to read them, or producing a video on how the organization plans to institute change. The Panel believes the benefits will far outweigh the costs.

The Panel calls to USPTO's attention an EPA strategy designed to foster innovation in the agency.[237] One of its elements is to "make EPA's culture and management systems more 'innovation friendly.'" EPA's Innovation Action Council focuses on creating a culture that enables and rewards environmental problem-solving. A similar effort at USPTO could tie together its mission of innovation and a goal to enhance its organization culture.

Change to organization culture is only part of a broader organizational change effort that USPTO needs to undertake. Its leaders need to take charge of workforce relationships between managers and staff in as forceful a manner as they make decisions about methods for researching patent applications or ensuring their quality. There have been strong political leaders at USPTO through the years, but—as is the case throughout Washington—they change often. Thus, political leaders need to rely on career managers to help create a more positive environment.

Leadership turnover makes it difficult to establish trust and, as organizational expert Warren Bennis notes, trust is the glue that maintains organizational integrity. It implies accountability, predictability, and reliability.[238] The level of trust at USPTO between some union staff and top management is not high. Given the need to adhere to explicit standards and conform to changing court cases, there are challenges to creating the kind of collegial work environment that can exist in an organization with high trust levels. These challenges need to be overcome. The reward could be substantial in terms of retaining skilled employees.

The Federal Executive Institute has designed a course, "Strategic Leadership: Leading Culture Change." It is based on the premise that a leader can design effective systems and structures, but high performance requires the leader to create an environment where the people doing the work

[237] www.epa.gov/opei/strategy/.
[238] Warren Bennis and Burt Nanus, *Leadership: Strategies for Taking Charge*, HarperCollins Publishers, New York, 2003, p. 41.

are driving the change and committed to high performance. Participants assess their current culture, understand the leadership role in the change process, and develop skills to lead their organization to high performance. The course appears to be tailor-made for USPTO, and Panel members urge that a number of senior organization managers attend either this course or other similar sessions. This could be an important first step in helping all in USPTO to operate as a cohesive team.

TECHNOLOGY SYSTEMS AND MISSION NEEDS

Information system development is the management issue that has most frustrated members of Congress, USPTO employees, and stakeholders. While the Panel did not assess if technology systems meet mission needs, its members and staff have heard the perspectives of stakeholders, senior managers, and supervisory staff.

USPTO focus is on using technology to achieve its mission. However, making IT an effective partner in attaining USPTO goals is complex. IT systems at USPTO do more than accept, process, and store data in standard formats. USPTO has systems that scan and process applications,[239] create and search complex databases, and permit public access to and search of patent information (and preclude it for the 10 percent of applicants who do not want their applications published). Its patent image database (which is the basis for viewing patent information on line) is one of the largest databases in the world. On top of all of that, many of the system platforms must be able to communicate with those of the trilateral organizations.

USPTO initially had a number of problems and cost-overruns in automating its patent systems. Its initial ambitious goal was for complete electronic searching by 1987, but this was delayed and costs rose from the initially projected $289 million to $448 million to, ultimately, $1 billion. These costs, however, were not just for search systems. They also included the hardware for individual examiners. One article summarizes congressional investigators' conclusion that blame could be shared by the Department of Commerce (which let the cost-plus contract), USPTO (which did not assign staff to the contractor's office, as it could have), and the contractor (who appeared not to follow good management practices or standard accounting rules).[240]

While such conditions are not unique to USPTO, they have led Congress and stakeholders to mistrust USPTO's estimates. Research has explored major federal IT system acquisition and the extent to which some agencies (such as the Federal Bureau of Investigation (FBI)[241] and Internal Revenue Service) have continued to pursue major new systems even given indications that the systems would be too flawed to use. Dr. Mark Nelson has studied IT system development failures in federal agencies and concluded that large-scale IT projects in a public sector context are at a significantly higher risk of failure and continuation beyond the point at which it becomes clear that failure is probable. He believes this is in part because of an increase in organizational rigidity when projects are less successful, and as rigidity increases, likelihood of success

[239] On the trademark side, most applications come in electronically. While patent applications can be received electronically, only 1.5 percent were in 2004. Thus, its applications are scanned into an image system for processing.
[240] Jaffee and Lerner, p. 140-141.
[241] Dan Eggen, "FBI Pushed Ahead With Troubled Software," *Washington Post*, June 6, 2005, p. A01

decreases. Government organizations are more susceptible to rigidity conditions, which helps explain why certain failure patterns emerge–and where organizational learning must occur to decrease risk of failure.[242]

During this Academy study, criticism of USPTO's performance in the IT area focused most on the difficulty in using its patent electronic filing system, which law firms (the primary users) find cumbersome and far from user-friendly. They were generally not willing to train staff to use it. Given that law firms routinely file court briefs and other documents electronically, this is an indication of how difficult the system is to use. Representatives of one organization (not a law firm) with whom the Panel spoke said they had filed applications electronically, but they found the system difficult to use.

In response to lack of use of patent application electronic filing (1.5 percent in patents, though 73 percent in trademarks), USPTO began a series of meetings ("E-Filing Forums") with users to define the requirements they believed a replacement system should meet. Attendees clearly stated that they want to be able to submit image or text-based documents[243] rather than work through USPTO-specific software, and a number are willing to participate in beta-testing. There will be many challenges to overcome, but several stakeholders with whom the Academy Panel spoke believe that in working with the user community USPTO has begun a process to develop a system with benefits for itself and patent applicants. The key, all of them said, is ease of use.

As the Panel and staff conducted this review, USPTO's web site and the access it permits (through Public PAIR) to patents, applications published after 18 months, and public provisional applications received consistent praise.[244] In FY 2004, USPTO deployed the E-Patent Reference system that gives applicants electronic access via Private PAIR[245] to U.S. references referred to in examiners' office actions. This enables USPTO to eliminate mailing paper copies of U.S. patent and published application references to applicants.

The image-based file for all applications (the IFW) was the IT system that stakeholders most highly touted. It was fully operational in August 2004. The Carlyle space design was developed with the anticipation that, at some future date, much of the space originally designed for application files and 'shoecases' would eventually be converted into examiner offices, as the IFW system became a reality.[246] USPTO senior managers have told Academy staff that, as applications increased and they had to plan for more staff, it was essential that IFW be

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[242] Mark R. Nelson, "Understanding Large-Scale IT Project Failure: Escalating and De-escalating Commitment," *Handbook of Public Information Systems*, 2nd edition, edited by David Garson, CRC Press of the Taylor and Francis Group Publishers, March 2005.

[243] This would permit applicants to use over-the-counter word processing software or image software, such as Adobe's portable document file format.

[244] Patent Application and Information Retrieval (PAIR) is an electronic portal to PDF viewing, downloading and printing information and documents for patent applications not covered by confidentiality laws. As new applications become eligible for publication 18 months after the earliest effective filing date, they will be added to the database. USPTO projects it will add about 300,000 applications per year.

[245] Private PAIR is accessed essentially through a password provided to an applicant. The applicant can access information about their applications, including most of those not yet published.

[246] Shoecase is the common term for the shoebox-size containers that hold prior art. In the USPTO buildings in Arlington (which Academy staff visited many times before the move to Carlyle), stacks of them were visible throughout.

operational in 2004 because, if they had to move to Carlyle all the paper associated with each application, there would simply not be enough space.

The IFW implementation was more difficult for some examiners who had used paper for decades, less difficult for others who were more used to computers. USPTO and its unions continue to work on issues such as ergonomics of the work station and potential eye strain because staff look at a screen all day.

ORGANIZATIONAL AGILITY

In its *21st Century Strategic* Plan, USPTO defined an agile organization as one that "responds quickly and efficiently to changes in the economy, the marketplace, and the nature and size of workloads." It made the agency's first priority electronic end-to-end processing of patents and trademarks and made this priority the centerpiece of the business model. The plan vowed to create a nimble, flexible enterprise that responds rapidly to changing market conditions; to make USPTO a premier place to work; to rely on a smaller cadre of highly trained and skilled employees; and to place greater reliance on the private sector, including drawing on the strengths of the information industry. USTPO said it would enhance the quality of work life for its employees by exploring expansion of work-at-home opportunities and moving to the new Carlyle campus facility.

Agile organizations are able to:

- Create an environment that embraces inevitable change
- Predict and prepare for likely change
- Communicate broadly, directly, and in a timely fashion with internal and external audiences to maximize understanding and appreciation for the agency mission and challenges and provide clarity
- Work effectively with partners to find common ground that will advance mission accomplishment
- Encourage knowledge expansion and institutional knowledge management

The Panel and staff saw examples of organization agility in the way USPTO moved staff in TCs across art units to accommodate variation in application flow, hired staff to meet changing skill needs, and adjusted its quality review processes. Conversely, the organization did not respond to a number of suggestions in consultant reports—especially in the human capital area—and it certainly has not been agile in revising its performance bonus system.

USPTO does encourage its employees to stay abreast of changes in their discipline through tuition reimbursements (budget permitting). The agency goes so far as to reimburse law school

tuition, even knowing that some of those employees will leave the agency when they pass the patent bar exam.

Many of the issues related to agility flow from an organization's culture. Change seems accepted, if not always welcomed, when it relates directly to USPTO mission activities. The culture does not encourage change for non-mission (management system) reasons. It is human nature to resist anything new or innovative, even when the current situation is very difficult. Two authors who discuss how to create a culture of success believe that is why so many opt for the status quo even when the current situation is intolerable.[247]

Panel members believe that, as USPTO addresses its organizational culture, agility issues will be featured in these discussions.

NEW WORKSPACE DESIGNED TO MEET MULTIPLE NEEDS

For a number of years, USPTO and its public search facilities have been housed in 18 buildings, with 33 leases, spread across Crystal City, in Arlington, VA. After several years of legal challenges (largely from the prior landlord), in June 2000, GSA signed a lease with an Alexandria, VA firm to begin creating a consolidated campus for USPTO.

USPTO is near completion of one of the largest moves of civilian federal employees in history to occupy the largest federal leased facility ever acquired (a $1.3 billion contract for 2.3 million square feet). The USPTO web site keeps users apprised of progress in the relocation, which includes moving the hardware for USPTO's massive interactive databases.

GSA has cited USPTO as one of its most informed, decisive, major consolidation clients and has asked the CFO, who led the effort, to speak at events about how agencies can work with GSA to deliver better facility projects. Among the efforts USPTO undertook to achieve the greatest cost savings were to order the same carpeting for all five buildings and use standardized workstations. After the procurement was awarded, GAO confirmed the potential cost savings from the project would likely be in excess of $98 million. GSA is now using the USPTO solicitation for space as a model for large lease procurements. Because of the delay caused by legal challenges, USPTO had to renegotiate the lease, which led to a facility that housed 900 more people. The 10-year renewal rate for the facility is a rate so advantageous that the per square foot rate in 2024 is equivalent to the market rate for space in buildings in the area in 2004.[248]

In planning and executing its move, USPTO has a model for marshaling resources across the organization on something other than patent or trademark examinations. As the organization assesses its move, lessons learned may apply to other management areas.

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[247] Charles B. Dygert and Richard A. Jacobs, *Creating a Culture of Success: Fine-Tuning the Heart and Soul of Your Organization*, Moo Press Business Books, Warwick, NY, 2004, p. 19.

[248] USPTO nomination for Presidential Rank Award of Meritorious Executive for USPTO's project leader.

NEED FOR STRATEGIC INTERNAL ASSESSMENT CAPABILITY

Prior to the mid-1980s, most federal agencies had an Office of Management Analysis at the department level, and some at levels below that. These were groups of individuals with analytical or evaluation skills who, usually at the direction of top agency leadership, reviewed activities throughout the organization. Some work focused on program management, other on management systems.

Continuing budget cuts led to the demise of these offices, with some mistakenly believing that OIGs were a suitable replacement. However, OIGs are not meant to be a resource to management; they are independent organizations that report directly to Congress, with copies of all reports provided to agency heads. There are examples of IGs and agency heads consulting on work to be done, and there are infamous examples of the two unit heads quarreling very publicly.

Agencies tend to commission external studies or use ad hoc groups of employees to do analyses, as USPTO did for reviews of the information organization and human resources restructuring. External studies are appropriate when the skills required are very technical or the study would command substantial internal resources. Few internal reviews of agency management came to the attention of Academy staff during this study, and teams for those studies appeared to be largely patent staff. An extensive reengineering project occurred in the mid-1990s, but the Office of Business Process Reengineering that managed that effort no longer exists. There was a review of attrition in 2000 (referred to in Chapter 4), but no indication that a particular office was responsible for implementing its recommendations.

In 1997, USPTO had an Office of Planning and Evaluation under a Deputy Associate Commissioner (DAC). This DAC was under the Associate Commissioner/CFO, who also oversaw the Office of Budget. When USPTO became a PBO, it established an Office of Corporate Planning (OCP), which housed the budget and strategic planning functions. There was no longer an Office of Planning and Evaluation, but the OCP prepares the annual performance reports. However, most USPTO strategic planning functions operate under a deputy CFO rather than in OCP, though OCP prepares the performance reports.

USPTO maintains assessment capabilities within its programs areas. For example, the Office of Patent Resource Administration manages patent-specific resources as allocated at the corporate level and establishes patent program activity targets and evaluates performance against patent program objectives. It provides patent program-specific budget and finance management support to the patent program areas; compiles operational, financial, and resource-specific reports to monitor day-to-day goals and responsibilities; establishes patent program evaluation plans; and develops, maintains, and disseminates statistical data related to patent business objectives.

The 2004 NAS report concluded that USPTO "needs a robust multidisciplinary analytical capability with economic, statistical, management, and program evaluation expertise." NAS acknowledged that USPTO does some technology forecasting (to get a sense of where it may

need to enhance its workforce), but that the tasks required "are much more substantial and the expertise needed more diverse."[249]

Conclusions and Recommendations: Strategic Internal Assessment Capability

No internal organization can have all the expertise required to study agency systems and advise management. However, in abolishing the management analysis function—which had the goal of program improvement, not just problem reporting—agencies lost a method for objective review of administrative and mission activities. External reports are not only easier to ignore, they may or may not reflect thorough knowledge of the agency's organizational relationships or problems.

USPTO is not a large organization compared to the Department of Health and Human Services (HHS) or DHS, but it still needs a more systematic approach to review cross-agency systems or conduct program reviews. This is not work that should be done on an ad hoc basis by staff untrained in analytical techniques. Mission staff may be appropriate members of some review teams, but their skills are greatest in the subject area for which USPTO hired them to work.

> **The Academy Panel recommends that USPTO establish an Office of Management Analysis (by whatever name it chooses to call it) to review agency systems and conduct program reviews. This office should report to the Undersecretary.**

Among the issues such an office could review, at management's request, are:

- Production standards and the need for analytical tools to help determine what new measures should be and when they should be changed
- Areas where it makes sense to realign resources
- Which recruiting tools are working, why patent examiners are leaving, and to whom to give recruitment or retention bonuses
- Potential process reengineering, particularly in areas that cross functional lines

In essence, this office would help management understand what needs to be done to reposition the organization and its resources for changing times. When the only people called upon to make such suggestions are those in the various organizational components, the "winners" in resource reallocation will likely be those groups that already are the most powerful. A management analysis capability can supply leaders with the impartial expertise to effect change.

Finally, USPTO has a museum, but does not have a good repository of information on what has gone on within the organization. Annual reports have some administrative information in them, but are not designed to capture more than the broadest overview of management issues—and those tend to be presented in the positive light common for all annual reports. Academy staff

[249] NAS, National Research Council, 2004, p. 105-106. NAS offers a fulsome discussion of the kinds of activities such an office could undertake.

struggled to find materials on past activities, eventually finding individual contacts who had retained materials and shared them. Because Commerce has no history function (unlike agencies such as DOT, GAO, EPA, and the Social Security Administration (SSA), USPTO has probably not thought to capture its mission and organization history.

Many other federal agencies have recorded their history so future employees and stakeholders can learn about accomplishments and challenges. Some federal agencies—such as EPA, DOT, GAO, and SSA—have published a series of historical pamphlets documenting their origins, the accomplishments of significant historical periods, and administrative history. They have also captured oral interviews of former leaders and placed a great deal of history on their respective web sites.[250]

An Office of Management Analysis could retain and organize administrative history. The National Archives has resources on federal agency administrative histories, and there are historians USPTO could consult in other agencies. USPTO is an important organization and needs to record its mission-related and internal activities

COORDINATING MANAGEMENT ACTIVITIES

In May 2005 USPTO separated its position of CFO/CAO into two positions. The Undersecretary created the new position to better support policy matters related to human capital (including meeting the requirements of the Chief Human Capital Officers Act of 2002), workforce development, and enterprise training. The CAO will oversee the Human Resources and Civil Rights Offices and a new Office of Corporate Services, which will combine the functions of the Office of Administrative Services and Space Acquisition. USPTO believes that separating the CFO and CAO functions will also enable it to better meet the requirements of the President's Management Agenda and achieve its aggressive hiring and space acquisition goals.

From 1949 to 1969, a career assistant secretary for administration provided each department secretary with a single official responsible for every aspect of internal organization or management.[251] These were career positions until the mid-1970s and provided a great deal of expertise and institutional memory, as those in the posts often had long tenures. As political positions, a great deal of this value was lost.

Recent history of federal management organization has evolved to stovepiping management functions under separate positions that generally report directly to the agency head. In fact, legislation that established the CFO and CIO posts in departments and agencies requires that they report directly to the head (except for some smaller agencies).[252] The 2002 Chief Human Capital

[250] See especially www.ssa.gov/history/history.html and www.gao.gov/about/history/splash.htm.
[251] Alan L. Dean, "The Organization and Management of Federal Executive Departments," *Making Government Manageable: Executive Organization and Management in the Twenty-First Century*, Johns Hopkins University Press, Baltimore, p. 161. President Truman established these positions upon the recommendation of the first Hoover Commission.
[252] The Chief Financial Officers Act of 1990 (P.L. 101-576) and the Clinger-Cohen Act of 1996, which was part of the 1996 National Defense Authorization Act, P.L. 104-106.

Officer (CHCO) Act established the position of CHCO, generally in agencies that have CFOs.[253] CHCOs do not have to report to the agency head, though some do.

Potential to Integrate Management

Attendees at a 2002 GAO roundtable discussed the advantages and disadvantages of the concept of a Chief Operating Officer (COO) position. GAO hosted the session because its work had shown that federal departments and agencies were in a period of profound transition that could include setting new priorities, reengineering how they do business and, in some areas, rethinking who would do the government's business. All this would take place in the face of some systemic federal governance and management challenges.

Attendees thought three broad areas formed a framework for a course of action. They believed leadership and decisions needed to come from the President, Congress, and top political and career leaders in departments and agencies. The three areas were:

- **Elevate attention on management issues and transformational change.** The nature and scope of changes needed in many agencies require sustained and inspired commitment of the top political and career leadership

- **Integrate various key management and transformation efforts.** While officials with management responsibilities often have successfully worked together, there needs to be a single point within agencies with the perspective and responsibility—as well as authority—to ensure the successful implementation of functional management and, if appropriate, transformational change efforts

- **Institutionalize responsibility for addressing management issues and leading transformational change.** The management weaknesses in some agencies are deeply entrenched and long-standing and will take years of sustained attention and continuity to resolve. In addition, making fundamental changes in agencies' cultures will require a long-term effort. In the federal government, the frequent turnover of the political leadership has often made it difficult to obtain the sustained and inspired attention required to make needed changes.[254]

The Panel believes that these three areas apply to USPTO. As noted in a recent work on the organization and management of federal departments, a department may have a coherent major purpose and sound internal organization, yet—as with USPTO—face major management challenges. "A well functioning department also needs systems to enhance its capacity to make

[253] Enacted as Title XIII of the Homeland Security Act of 2002, Public Law 107-296.

[254] U.S. General Accounting Office, *Highlights of a GAO Roundtable: The Chief Operating Officer Concept: A Potential Strategy to Address Federal Governance Issues*, GAO-03-192SP, October 2002. Attendees were current and former senior federal leaders whose roles encompassed top-level agency management.

sound decisions, to use resources skillfully, to provide a competent and motivated staff, and to generate responsiveness to public needs." [255]

HHS had an undersecretary for management for a brief time, but the position was not in place for very long and not filled on a permanent basis during the time it existed. HHS now has an assistant secretary for administration and management and another assistant secretary for budget, technology and finance.

DHS has an undersecretary for management who is responsible for the budget, appropriations, expenditure of funds, accounting and finance, procurement, information technology systems, facilities, property, equipment, other material resources, and the identification and tracking of performance measurements. However, the undersecretary does not handle human resources.

The Federal Communications Commission (FCC) has an Office of Managing Director whose responsibilities include:

- Develop and manage budget and financial programs
- Develop and oversee personnel management process and policy
- Design and install agency telecommunications and computer services
- Administer the fee program
- Develop and implement agency-wide management systems
- Oversee physical space and security, provide support services, and manage contracts and purchasing.

Conclusions and Recommendations: Coordinating Management Activities

The Panel believes that USPTO would benefit from having an integrated approach to agency management. If there are trade-offs to be made between, for example, resources for a new IT system versus developing a more effective recruiting program, the Under Secretary would be able to turn to an experienced manager for advice rather than have to face the competing positions presented by a CIO and CAO (since the CHCO reports through the CAO). Worse, with no one to provide an integrated perspective, the Under Secretary may now only hear the position of one organizational head and not even be aware of the tradeoffs.

> **The Panel recommends that USPTO establish a Vice-President for Management (in the corporate structure) or an Associate Commissioner for Management (in an agency structure) to coordinate planning,**

[255] Dean, Alan L, "Organization and Management of Federal Departments," Making *Government Manageable*: *Executive Organization and Management in the Twenty-First Century*, edited by Stanton, Thomas H. and Ginsberg, Benjamin, 2004, p. 166.

administration, finance, human resources, information technology, and management analysis.

The Panel recognizes that its position would require statutory change, since the CIO and CFO must now report directly to the Undersecretary. This is yet another reason to structure USPTO as a government corporation, in which the head could decide on the most effective structure for internal management.

STAKEHOLDER COMMUNICATION

As the only organization that provides U.S. patents and trademarks, USPTO has a captive user audience and a well-informed group of stakeholders that include individual inventors, professional organizations, academic institutions, law firms and corporations that regularly seek patents.

This mix of organizations with an interest in patents include:

- grass-roots groups of individual inventors, which are in many cities across the country (such as the Inventors Network of the National Capital Area or the Tennessee Inventors Association)

- organizations that represent individual inventors (such as the National Congress of Inventor Organizations or the National Society of Inventors)

- professional groups that represent patent attorneys (such as the National Association of Patent Practitioners (NAPP) or ABA's Section on IP Law)

- larger trade groups that represent intellectual property owners (generally firms) or focus on legal issues (such as IPO or AIPLA)

- organizations that are concerned with IP in specific industries or technologies

The organizations geared to individual inventors generally focus on how to get a patent and the myriad of challenges in taking an invention through the patent process. While these groups may be more loosely organized than a Washington, DC trade association, the inventors they represent are vocal in providing input to Congress.

There are many reasons to communicate with stakeholders—obtain formal input on new rules; seek advice on technology changes; provide information on new procedures or processes that do not entail formal rulemaking; or simply keep them informed of activities at the agency. USPTO received high marks on such things as the availability of information and relative ease of use of it on its web page, and its current involvement with stakeholders in designing a new e-filing system for patents.

Some stakeholder representatives gave examples of times in the past decade when their organizations were surprised by a USPTO proposal that directly affected them, but they believed the environment at the agency may now be more willing to include their views at earlier stages. Several interviewees said that the business partnership meetings that some TCs sponsor are a good way to get information, exchange views, and resolve issues that are specific to a TC. USPTO has also been participating in a series of "Town Hall Meetings on Patent Reform" (sponsored by AIPLA and FTC) that are taking place in three cities in the U.S. in 2005.

The Panel has developed criteria for effective stakeholder communication, based on input from USPTO's stakeholders and a survey of literature. These include the need to:

- Clearly state the type of interaction stakeholders can have with USPTO and when input can be most useful to USPTO decision making

- Ensure that stakeholders have equal access, so that independent inventor groups can provide their views with the same relative ease as professional organizations with representation in the Washington, DC are

- Interact on an ongoing basis, not simply when USPTO needs input

- Establish an organizational culture that welcomes input from those outside USPTO

- Involve stakeholders in all organization-wide planning

- Provide feedback so that stakeholders understand how their input was considered, even if it could not be adopted.

Having said this, the Panel also recognizes that USPTO is at times in the position of opposing the perspectives of stakeholder groups, however well-intentioned their position may be. By their very nature, stakeholder organizations represent special interests and USPTO's role is to represent the public as it works to foster innovation. There has to be room in the stakeholder communication and interaction milieu for USPTO to disagree, even to the point of recommending that Congress take action that some, or all, stakeholders may oppose.

Most federal agencies face more diverse stakeholder opinions than does USPTO. Even so, there are clear distinctions between independent inventors and organizations that represent large corporations or patent attorneys. With the substantial discussion on patent reform underway in Congress, USPTO could play an important role in bringing together those with diverse opinions to help them understand each other's viewpoints and give Congress the information it needs to reach a decision that promotes innovation and facilitates work processes at USPTO.

CHAPTER 7
THE GOVERNANCE STRUCTURE

As a PBO, USPTO has more flexibility than a traditional federal agency, but it does not have the flexibility to make long-term business decisions, the borrowing authority to help meet multi-year capital needs, or the ability to access all of its user fee revenues. As an organization with an FY 2006 $1.7 billion annual budget that affects innovation in the U.S. and around the globe, USPTO needs to operate with the incentives and acumen of a private business—with full accountability to Congress and its users.

While organizational form does not guarantee efficient operations, one that does not permit a business-type agency to apply its resources to meet changes in market demand (for USPTO, the changing volume of patent applications) can create inefficiencies and disincentives. The Panel believes that is the case at USPTO. When an organization is structured appropriately, it is more likely to attract top leaders and be better positioned to function effectively.

This chapter discusses USPTO's current structure, provides background on the traditional federal agency versus corporate structures, and presents legislative issues to consider in establishing USPTO as a wholly owned government corporation. In evaluating USPTO as a potential government corporation, Congress would need to examine issues such as legal status, corporate governance, and appointment timeframes.

USPTO'S CURRENT ORGANIZATIONAL STRUCTURE

Since 1991—under OBRA—USPTO has been fully fee-funded, initially as a bureau within the Department of Commerce.[256] In 1999, Congress passed legislation[257] making USPTO the second federal PBO as "an agency of the United States within the Department of Commerce." The PBO concept was a product of the National Performance Review. It recognized that most aspects of government are not like a business and cannot be measured by those standards, but that some functions can be—including processing patent applications. PBOs are designed to focus on:

- A clear mission, measurable services, and performance measurement
- External customers
- Lines of accountability to an agency head with policy responsibility
- Funding levels that correspond to the business operation[258]

[256] As discussed in Chapter 2, operating funds are provided through the normal appropriations process and not all fees come to USPTO.

[257] PTOEA was part of The American Inventors Protection Act, which was enacted November 29, 1999, as Public Law 106-113 and amended by the Intellectual Property and High Technology Technical Amendments Act of 2002 (Public Law 107-273), enacted November 2, 2002.

[258] National Performance Review, *Performance-Based Organizations*: *A Conversion Guide*, November 1977, second draft edition, p. 1. The guide was a collaborative effort among OMB, GAO, OPM, GSA, NPR, and the Office of Federal Procurement Policy.

The PBO concept also envisioned that policy leadership would be provided by a political appointee and that there would be a COO hired for a fixed term, based on a demonstrated track record of effective management, as distinguished from policy expertise. The latter concept works somewhat differently at USPTO than at the Office of (SFA), the only other PBO. At SFA, the head of the organization is the COO with a fixed term, while at USPTO, the head of the organization is the Under Secretary, a political appointee, and the Commissioners of Patents and Trademarks have fixed terms.

As a PBO, USPTO has "independent control of its budget allocations and expenditures, personnel decisions and processes, procurements, and other administrative and management functions..." This does not mean USPTO operations are outside of all traditional federal agency management laws, regulations, policies, and requirements, but it does mean that the agency interacts directly with OMB, OPM, and congressional appropriations committees.

In a PBO, the staff are given incentives for high performance and requirements to account for results. To accomplish this, the PTOEA allows USPTO more flexibility in managing and administering its organization to promote innovation and increase efficiency. Specifically, USPTO has:

- total exemption from explicit federal personnel ceilings
- broad authorization to acquire, construct, operate, or renovate real and personal property
- broad exemption from federal procurement and contracting regulations.

Previously, the Department of Commerce monitored or controlled these functions. In addition, the 1999 law provided USPTO with some additional flexibility to set its own fees, principally new publication and reexamination fees. With these added responsibilities, USPTO has expanded management capabilities; it created the OCP, which prepares the budget documents that now go directly to OMB, and added an associate general counsel for general law to handle matters such as labor relations or contract disputes.

The AIPA requires that an annual performance agreement be established between the two Commissioners and the Secretary of Commerce. The agreements outline measurable organizational goals and objectives for USPTO. The Commissioners may be given bonuses, based upon an evaluation of their performance as defined in the agreement, of up to 50 percent of their base salaries.

One visible change resulting from PBO status is the transition from a traditional federal agency annual report to a Performance and Accountability Report, which presents USPTO's goals and the extent to which it achieves them. While some of the same information (such as patents or trademarks allowed or applications received) was in the prior report format, information is now arrayed in terms of the relationship to its expectations.

A 2003 Academy study[259] compared USPTO's current authorities and status as a PBO with that of a federal corporation, examined its current user fee structure, and reviewed its major functions in the context of currently inherently governmental policies.

The Academy report said that:

> While USPTO has made progress in achieving some of the capacity and flexibility that Congress intended in enacting the PBO legislation, challenges remain. The number of patent and trademark applications will continue to grow. There is a growing need to coordinate intellectual property protection across national boundaries. And stakeholders are demanding that USPTO work more effectively and efficiently by, for example, reducing processing time and overall pendency rates while enhancing quality.
>
> While the PBO legislation was a step in the right direction, the remaining restrictions on USPTO's ability to adjust operations diminish its capability to respond to continued growth and change in customer service demands. A critical concern is the limitation on its ability to set fees and use the revenues to respond to these workload changes. As such, a government corporation is a more suitable organizational form that would enhance USPTO's capacity, economy, and effectiveness.[260]

The Other PBO

The first PBO was the Office of SFA, which Congress established within the Department of Education in 1998. In FY 2004, SFA oversaw the $69 billion federal student aid programs that assisted more than 10 million students. SFA is headed by a chief operating officer, who is appointed by the Secretary of Education. Its legislation requires that the CO have "demonstrated ability in management and experience in information technology or financial services." Its annual administrative budget is $621 million, of which $27.7 million came from a congressional appropriation in FY 2004.[261]

SFA is governed by complex legislation, operates within the confines of a myriad of rules and regulations, and must deal with complicated contractor relationships and computer systems. When it became a PBO, SFA's financial management systems did not provide managers with timely and accurate information, were not interoperable, and had complicated reporting functions. Eight separate contractors managed a host of computer systems developed over 30 years, and information had to be duplicated on various systems.[262] When it became a PBO, FSA was on the GAO high-risk list.[263]

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[260] National Academy of Public Administration, *Restructuring the Patent and Trademark Office*, February 2003, p. 14.

[261] This is an increase from $25.1 million in FY 2003.

[262] Brian Friel, "Great Expectations," *Government Executive*, March 1, 2000.

[263] Each year, GAO publishes a report that designates certain federal programs high-risk due to their greater vulnerabilities to fraud, waste, abuse, and mismanagement. SFA was put on that list in 1990 and removed in 2005. See GAO's *High Risk Series: An Update*, January 2005, GAO-05-207, p. 8.

The first COO developed a simple mission—"We Help Put America Through School"—and worked with employees to integrate information systems and prepare bottom-line financial reports. He brought in senior managers with extensive experience in information systems and state education systems. His successor, the current COO, has told managers that they—not contractors—are responsible for decisions and is focusing on implementing a multi-year plan for system and business process integration, developing an integrated financial system ("One Financial"), and integrating data from all partners (schools, lenders, guaranty agencies, and loan servicers).

In the *2004 Annual Performance Report*, the six objectives for which measures are shown are:

- Integrate SFA systems and provide new technology solutions
- Improve program integrity
- Reduce program administration costs
- Improve human capital management
- Improve products and services to provide better customer service
- Deliver student aid effectively and actively

GAO has recognized SFA's progress in improving the systems that support its $69 billion in aid and removed it from the high-risk list in 2005. FSA's PBO status is up for renewal in 2005. It hopes to get additional human capital authority, since FSA's 1998 PBO legislation did not provide full authority for HR operations.

CORPORATE STRUCTURE IN THE FEDERAL GOVERNMENT

After the enactment of the Government Corporation Control Act (GCCA),[264] President Harry Truman, in his 1948 budget message, prescribed criteria for using the corporate form of organization for a government entity. He said that a government corporation was indicated for those programs that:

1) were predominantly of a business nature
2) were revenue-producing and potentially self-sustaining
3) involved a large number of business-type transactions with the public
4) required greater flexibility than the customary type of appropriations budget ordinarily permits

These criteria were reaffirmed by the First Hoover Commission in 1949 and the Academy's 1981 *Report on Government Corporations*.[265] In the latter, the Academy defined a government corporation as:

[264] 31 U.S.C., Chapter 91.
[265] National Academy of Public Administration, *Report on Government Corporations*, 1981.

> A government entity created as a separate legal person by, or pursuant to, legislation. It can sue and be sued, use and reuse revenues, and own assets; its liability is distinct from that of its officers and directors. Each government corporation is created by an act of Congress setting forth its legal powers, obligations, and mission.

The Academy noted, in 1989, that USPTO meets these criteria.[266] More recent perspectives are consistent with Academy research. GAO studied 22 federal corporations in 1995 and described their attributes and variations.[267] GAO noted that Congress sometimes exempts government corporations from several key management laws to provide them with greater flexibility than federal government departments and agencies typically have in hiring employees, paying them competitive salaries/benefits, disclosing information publicly, and procuring goods and services.[268] GAO's study looked at 15 federal statutes and the extent to which they covered federal corporations. This varied from the Federal Housing Administration having to adhere to 14 of the 15 statutes to Amtrak requiring full adherence to only two.

DOD's Defense Reform Initiative Office asked RAND to examine alternative ways that government could carry out its business, and RAND issued a short report that looked at PBOs, corporations, FFRDCs, and some other options.[269] The report noted that, in many instances, the real concern is accountability—the ability of an agency to hold the service provider accountable for the timeliness, quality, and cost of the product. However, this can be accomplished to a greater or lesser degree in almost every governance structure, including the government corporation, by putting into place appropriate incentives and performance goals.[270]

PRIOR EFFORTS TO ESTABLISH USPTO AS A CORPORATION

The 1989 Academy report concluded that USPTO meets the criteria to convert to a wholly-owned federal corporation in that:

- Fees [then] provided 56 percent of the cost of operating the patent and trademark program, and it [was] expected that under present law fee income will constitute approximately 85 percent of needed funding by 1995.[271]

- A USPTO corporation could be placed on a fully self-sustaining basis within a reasonable period after its activation by adjustments in fees for those seeking patents or trademarks.

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[266] National Academy of Public Administration, *Considerations in Establishing the Patent and Trademark Office as a Government* Corporation, 1989, p. 22.
[267] U.S. General Accounting Office, *Profiles of Existing Government Corporations*, December 1995, GAO/GGD-96-14.
[268] Ibid., p. 2.
[269] Michael Haynes, Sheila Nataraj Kirby, Jennifer Sloan, *Casebook of Alternative Governance Structures and Organizational Forms*, RAND Corporation, 2000.
[270] Haynes et. al., p. 10.
[271] USPTO fees now cover all operations.

- The organization charged with carrying out patent and trademark functions should have the capacity to respond quickly and efficiently to changes in the volume or character of the workload arising out of user needs. Such responsiveness is best achieved by a corporation authorized to function in a businesslike manner utilizing its own revenues.[272]

In 2003, an Academy study team examined whether USPTO's current organizational structure would assist or impede its planned transformation to become a more strategic organization by implementing the *21st Century Strategic Plan*. When it was established as a PBO in 1999, USPTO received some enhanced authorities and greater flexibility relative to other federal agencies. However, the report concluded that several elements of the current statutory framework limit USPTO's ability to redesign processes and make investments to achieve greater performance and productivity. The study noted that a corporate USPTO should have the ability to:

- Set and revise fees for its services based on costs
- Borrow for needed capital investments
- Access all corporate revenues without annual appropriations.

Numerous congressional committee hearings have discussed establishing USPTO as a corporation, and several bills to bring about the restructuring have been introduced and debated. One such bill[273] passed the House by voice vote in April 1997. Supporting the corporation proposal were AIPLA, the National Association of Manufacturers, the Biotechnology Industry Organization, ABA's Section on IP Law, and the Pharmaceutical Research and Manufacturers Association of America—among others. However, other voices opposed this proposal, although they primarily addressed other issues, such as pre-grant publication, and the 20-year patent term. One member of the Senate characterized the corporate proposal as "creating an outside board to govern the patent office," with only one space for independent inventors and no spaces for small businesses.[274] However, the board did not govern, but was to "review the policies, goals, performance, budget, and user fees of the United States Patent Office, and advise the Commissioner on these matters" and prepare an annual report. On this and other issues, the senator's comments reflect the opposition of independent and small inventors. USPTO's unions were concerned that a government corporation could reduce labor's bargaining rights or affect employees in other ways. Congress did not enact the 1997 Senate bill into law, and within two years the Clinton administration pushed to establish USPTO as a PBO instead.

KEY LEGISLATIVE ISSUES IN ESTABLISHING USPTO AS A GOVERNMENT CORPORATION

The enabling legislation for each government corporation differs in significant respects. To ensure sound organizational structure, any legislation to incorporate USPTO should address a

[272] National Academy of Public Administration *Considerations in Establishing the Patent and Trademark Office as a Government* Corporation, 1989, p. 22.
[273] H.R. 400, 105th Congress.
[274] Letter from Senator Christopher S. Bond to all members of the Senate, dated June 5, 1997.

range of issues highlighted in Appendix K.[275] These include making USPTO subject to the GCCA. USPTO already has some abilities that other sub-units of federal departments do not have, such as authority to issue its own regulations, so long as they are compatible with the policies of the Secretary of Commerce. Enabling legislation would ensure it retains this power.

A statute would also need to address broad issues of governance, such as the leadership structure and the role of any boards or advisory committees. Decisions on these issues influence the effectiveness of a corporation's operations.

Governance and Management

Governance. The governance features of each government corporation are specified in its charter. Consequently, single administrators head some, while part-time or full-time boards govern others. Those who advocate boards often reflect the view that if private corporations are headed by boards so should federal corporations. A number of Academy studies have concluded that this view unnecessarily extends to a federal corporation the special need in private enterprises for stockholder control and representation. Stockholder and management interests and objectives are not necessarily the same in private corporations. However, these differences in objectives and interests appear less pertinent for a governmental entity such as the U.S. Patent and Trademark Corporation, which would have no stockholders. In most cases, advisory boards can provide the necessary diversity of viewpoints needed to ensure that the public policy decisions of the government corporation are fully informed.

Appointment and Terms of Heads of Government Corporation. The President usually appoints a single chief executive for a government corporation to serve at the President's pleasure. The President also usually appoints board members for fixed terms. In a few cases, some or all the members may be ex officio[276] (e.g., the Pension Benefit Guaranty Corporation (PBGC) and the former United States Railway Association [USRA]).

A number of past Academy reports have advocated presidential appointment of a single executive, subject to Senate confirmation, as the preferred structure, since this retains executive branch control while affording legislative review. This is the current situation with USPTO as a PBO. A fixed term for the single executive is often used for independent regulatory agencies (e.g. FDIC and SEC) where continuity across administrations is important. A fixed term is often not desirable when cabinet agency oversight is desired because the corporate head is accountable to political leaders, and there may be a change in political party.

Other Statutory Officials. A corporate charter can provide for any number of statutory officials and prescribe their manner of appointment. Usually the number of such positions is small, often confined to the chief executive officer in enterprises headed by a single executive. Examples include St. Laurence Seaway Development Corporation and the Government National Mortgage Association (Ginnie Mae).

[275] Much of the appendix on legal structure of government is taken from prior Academy reports that have advocated a corporate structure for such organizations as the Bonneville Power Administration and USPTO itself.
[276] An ex-officio member does not have a vote but generally has all other rights and privileges of board members.

Stakeholder Input through Advisory Committees. Academy reports have, in a number of instances, recommended that corporation charters provide for an advisory committee.[277] The President or the departmental secretary concerned with the policies of the corporation appoints such committees. Advisory committees may also help assuage the concerns of those who would prefer governance by a board of directors.

The legislation establishing the corporation can include prerequisites for advisory committee members so that those appointed have experience in the field. Without such requirements, there is a danger that an advisory board could be populated with individuals not having the qualifications to carry out their responsibilities. A charter provision can also be used to exempt an advisory committee from the requirements of the Federal Advisory Committee Act (FACA). The Act is intended to promote transparency for traditional government operations; a corporate board may deal with issues that are proprietary to the corporation. To ensure public input, the corporate statute could call for a specified number of public meetings each year.

USPTO currently has two statutory advisory committees, one for patents and one for trademarks.[278] They are both exempt from FACA. The Secretary of Commerce appoints the members of these committees for staggered three-year terms, which could be continued by the corporation statute.

CONCLUSIONS AND RECOMMENDATIONS: GOVERNANCE STRUCTURE

Then-PTO (now USPTO) was perhaps a logical choice to become a PBO, but the Panel believes that this status does not provide sufficient flexibility for USPTO to operate in as business-like a manner as it could. It does not prevent the stop-and-go hiring cycles that have been so detrimental to expeditious processing of patent applications or permit USPTO to establish a pay system that will help the agency attract and retain the diverse skills it needs.

USPTO has not used its flexibilities to the fullest extent—especially in human resources—and has not been well-managed in some administrative areas. Even so, simply being a PBO is not sufficient for successful USPTO operations. The Panel believes that the corporate structure is the best form of organization to provide USPTO with the most effective use of its fees and the ability to make efficient long-term decisions. A corporation is not affected by the inherent stop-and-go nature of the annual appropriations process, which has been detrimental to USPTO operations. Appropriations are designed to allocate scarce resources among competing demands, but, as with the government corporation model generally, USPTO is self-funding and needs greater certainty in its use of funds.[279]

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[277] See, for example, the 1989 Academy study recommending the incorporation of USPTO. *Considerations in Establishing the Patent and Trademark Office as a Government Corporation.*

[278] The Patent Public Advisory Committee (P-PAC) and the Trademark Public Advisory Committee (T-PAC).

[279] This is also an equity issue, as discussed in Chapter Two. The increased funds come from applicants who expect their work to be processed in a timely manner, and withholding those funds does not permit this.

When a private sector business (profit or nonprofit) takes in revenue to provide a service to its customers (in USPTO's case, patent and trademark applicants), customers expect good service or they take their business elsewhere. However, no other entity can grant a U.S. patent or trademark, so customers must continue to file with USPTO, even if does not have the capacity to meet the increased demand for services. A corporate structure would lessen the dichotomy that now exists between fees paid (even increased) and long timeframes for service because—operating with more control over its resources and the ability to make long-term decisions—USPTO would be able to respond to changing levels of service demand as needs change rather than after pendency has risen to unacceptable levels. Also, the Panel reinforces that corporations are accountable and their employees' rights are protected.

- **A U.S. Patent and Trademark Corporation (USPTC) will remain accountable to Congress as a federal agency.** Government corporations submit budgets for congressional approval and are subject to congressional oversight; appropriators can enact limits on a corporation's spending or revenue use, though there is traditionally less likelihood that a corporation's revenue is used for non-corporate purposes. A corporation's financial statements must meet government accounting standards, so it is clear how it uses its funds. In addition, the visible financial bottom line makes government corporations potentially more accountable than a traditional federal agency.

- **OMB and the Department of Commerce will have oversight of corporate spending and operations.** While the corporation would be within the Department of Commerce, its budget submissions can go directly to OMB (as USPTO's do now, since it is a PBO) or Congress, and Congress will continue to hold oversight hearings. Given the business nature of USPTC's operations, the corporate budget would be more informative since it will show overhead expenditures.

- **Employees' rights will be protected.** When Congress creates a corporation's charter, it provides for the same fundamental protections (equal pay, equal opportunity, a merit system). Depending how the corporation's enabling law addresses these issues, these protections may or may not be within the purview of particular provisions of Title 5 of the U.S. Code. Employees of many corporations belong to unions. Whether or not to structure USPTO as a government corporation is an issue that is completely separate from the question of the nature of the personnel laws that the Congress wishes to apply to the organization.

- **Even as a government corporation, the USPTC would not be able to unilaterally make changes to its mission or major operations.** Government corporations operate under the charter that Congress creates and cannot vary from it. Unless they are granted a specific exemption, government corporations—just as any other federal agencies—must publish their proposed major process changes in the *Federal Register*.

- **There will be ample opportunity for stakeholder input.** Because at least some government corporation leaders have private sector experience, there is generally a strong focus on receiving input from customers—in USPTC's case individual inventors and the many professional and trade organizations with a strong interest in prompt issuance of

quality patents. This, combined with USPTO's tradition of working with stakeholders on such issues as patent reform proposals should—if anything—broaden outreach.

Having said this, the Panel is under the impression that some opposition to a corporate structure stems from fear that as USPTC would become more independent, it could face possible control from powerful stakeholders. The Panel first would point out that USPTO stakeholders display a wide array of views on many issues. Second, and more importantly, it is the Panel's view that the corporate structure, with a single head rather than a governing board, would enable USPTC to be more responsive to those who seek and pay for its services, to Congress, and to the President. It would also be better able to adapt to changing market conditions more quickly than with the cumbersome appropriations process, which is not geared to innovation or changing business operations. This will be an important benefit in stakeholders' eyes.

RECOMMENDATIONS: GOVERNANCE STRUCTURE

A public organization's design should fit its purpose, reinforce transparency, guarantee fair treatment to all to whom it provides service, and ensure accountability to Congress and the public. The Panel believes the government corporation is the best structure to achieve these objectives and respond to market demands for service. The demand for patents and trademarks is closely tied to the U.S. economy—its high and low points—and the corporate structure would enable the agency to respond more forcefully and effectively to fluctuations in workload volume and changes in technology.

Therefore, the Academy Panel recommends that the U.S. Patent and Trademark Office be established as a wholly owned government corporation under the policy direction of the Secretary of Commerce and subject to policy control of the department Secretary. This would entail creating the U.S. Patent and Trademark Corporation (USPTC) and making it subject to the Government Corporation Control Act (31 U.S.C. Chapter 91). The corporation should be permitted to:

- **Sue or be sued in its own name and be represented by its own attorneys in all administrative and judicial proceedings, including, with the prior approval of the Attorney General, appeals from decisions of federal courts**
- **Issue regulations as long as they are compatible with broad polices of the Secretary of Commerce**
- **Set its fees within parameters set by Congress**
- **Borrow money for capital or other multi-year expenditures other than operating costs.**

While government corporations vary as to the extent that they have some of these attributes, the above are consistent with the mission of the USPTO. As a PBO, USPTO can already issue its own regulations. Traditional federal agencies are generally required to use Department of Justice

attorneys for judicial and administrative proceeding, and having the ability to do this itself could expedite proceedings. Attorney General approval of appeals ensures consistency among U.S. government legal positions.

The fee-setting and borrowing capabilities would be especially important for a USPTC. As a corporation, USPTC would function more closely as part of the market economy. Under guidance Congress sets, USPTC would only raise fees if, for example, costs or delays of processing patents or trademarks were to increase because of the need to hire substantially more staff in a shortage field. Borrowing authority would permit the corporation, for example, to fund a new information system that could not be paid for from current-year fees alone.

Other factors to address in establishing USPTC, and the Academy Panel's perspective on these, are:

- **Corporate Leadership and Terms of Appointment.** Most corporate heads serve at the pleasure of the President. It might be beneficial to propose that the USPTC have a presidentially appointed head who would serve renewable five-year terms. If patents and trademarks are important to innovation and the overall economy, the nation arguably would be better served by more stable leadership.

- **Leadership Qualifications.** A corporation with the breadth of responsibility and complexity of operations of USPTC would generally want at its helm someone with substantial experience in its industry or as leader of a similar-sized organization. Congress should include qualifications for the CEO in the legislation. For example, Congress could require that the USPTC head should have skills such as substantial corporate management experience, leadership experience in an organization with a certain number of employees, or strong knowledge of issues facing the intellectual property industry.

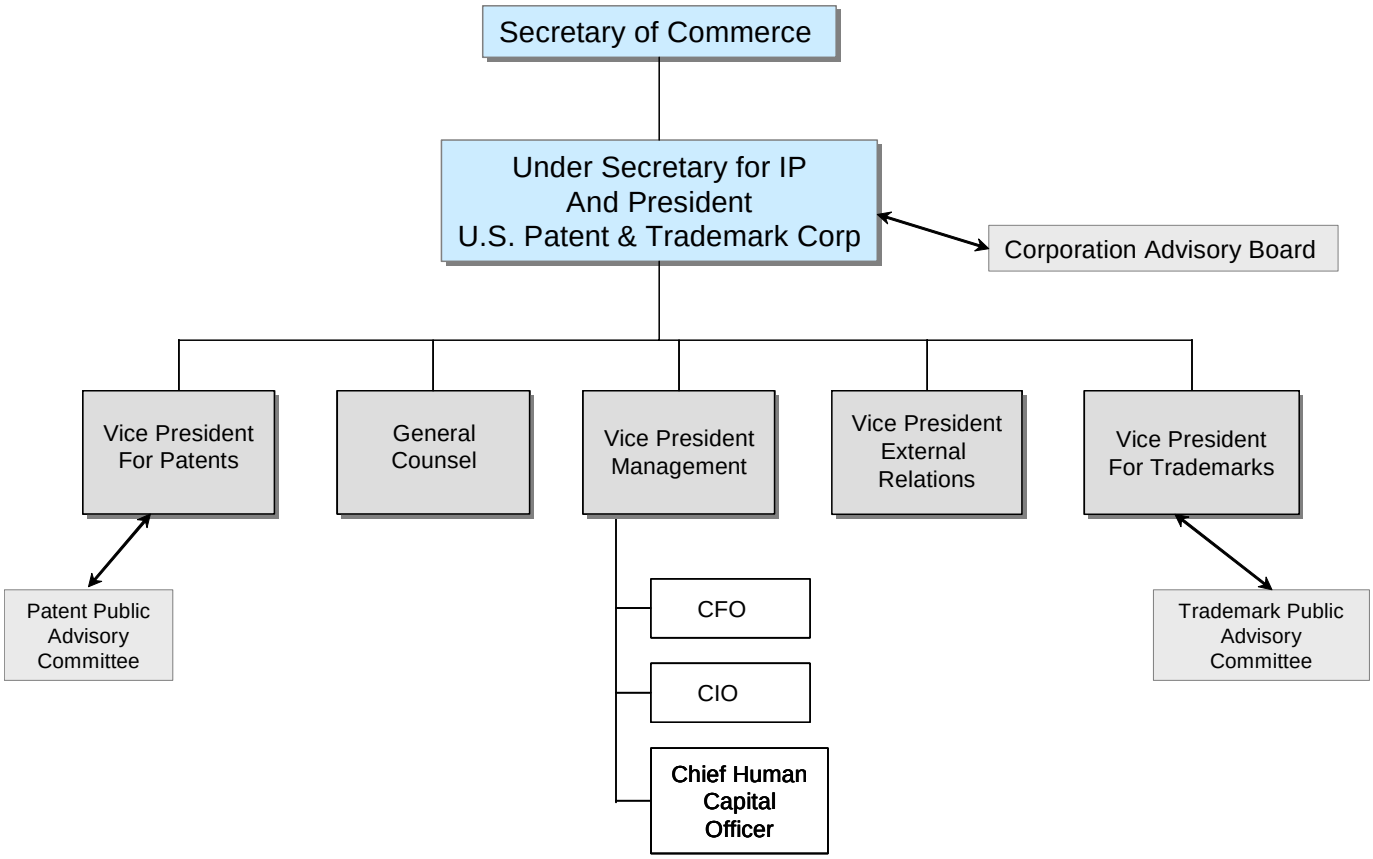
- **Corporate Board or Advisory Committee.** Past Academy reports have tended to recommend a CEO, but not a governing board, noting there are no stockholders for a board to represent and some government corporations have not been well-served by large boards (such as the USPS, with its ten-member Board of Governors). The Academy Panel believes an Advisory Board or Committee would better serve USPTC than a formal Board of Directors and could provide guidance in terms of stakeholder interests.

  The attached organization chart refers to a "Corporation Advisory Board" that would report to the USPTC head (whom the Panel will refer to as president). This group could deal with broad issues such as the corporate strategic plan and whether resources are aligned with priorities. The Panel suggests leaving in place the two subject-area advisory committees—P-PAC and T-PAC. They would continue to provide direct discipline-specific expertise to the vice-presidents who head the respective mission areas.

Organization Configuration. The USPTC president needs to focus on enhancing innovation in the economy and the patent and trademark systems that facilitate this. While the leader of any organization is concerned with its people and the management systems that support its work, the

president should not have to take a personal role in developing the most appropriate systems. Just as there would be vice-presidents for patent and trademark operations, there should be a vice-president for management who would oversee all activities in human resources, information technology, and financial systems. (This is discussed more in Chapter 6.) Only with an integrated approach, which comes through unified leadership, can such systems operate to fully support the mission.

Figure 7-1
U. S. Patent and Trademark Corporation



CHAPTER 8
WORKING IN AN INTERNATIONAL ENVIRONMENT

The trilateral offices (USPTO, EPO, and JPO) receive approximately 80 percent of the world's patent applications each year, and about 200,000 of these are filed concurrently with each office. Because of constrained resources, the three offices would like to share workload rather than duplicate it and are exploring ways to do so. While they can take some actions by themselves, standardized practices (termed harmonization) cannot be fully achieved without legislative change in the U.S., Japan, and Europe.[280]

This chapter describes the mechanisms through which the three offices work, specifies what they can resolve among themselves, describes the extent of cooperation to achieve this, and raises the issues that would need to be resolved through legislative changes if the trilateral offices are to be able to fully use (termed exploit) one another's work. The Panel makes recommendations to facilitate work sharing that do not entail legislative change.

TRILATERAL COOPERATION AS THE WORKING MECHANISM

It was because of the redundancy among applications that former USPTO Commissioner Gerald Mossinghoff took the lead in establishing the Trilateral Cooperation in the Field of Industrial Property, sometimes called the "trilateral offices," in 1983. Today, USPTO receives approximately 60,000 applications from Japan and 50,000 from Europe; JPO receives 22,000 applications that originate in the U.S., and EPO receives 32,000. Broadly the percentages of applications are as follows:

- 50-55% of USPTO's applications originate in the U.S., and half of these applications are also filed elsewhere.
- 25% of applications are filed in the U.S. and not filed elsewhere.
- 75% of applications either originate in the U.S. and are filed elsewhere or are filed elsewhere and then come to the U.S.

Activities of the Trilateral offices are largely carried out through two annual plenary meetings, including an annual conference, and various working groups as well as by information means. The working group meetings are based on need and the location (country) is decided by the office that would like to host; the location of the semi-annual conferences rotates among the parties. Through these sessions, and less formal communication, the three offices exchange views and information regarding patent documentation and classification, automation programs, patent examination practices, and general patent administration. The three offices have also participated in examiner exchanges and shared search results on a pilot level. Other trilateral projects have focused on efficiencies that might be achieved through electronic priority

[280] The Academy staff and Panel chair participated in visits to EPO and JPO. Summaries of the information obtained can be found in Appendix H.

document exchange, comparative studies in emerging technologies, standards for data exchange, and sharing of resources/information for biotechnology.

At the November 1997 conference, the trilateral offices recognized that the globalization of trade and industry would create the need for a world-wide system to grant patents. The advantages for patent applicants are:

- Improved granted patents' quality
- Reduced costs
- Reduced processing time
- Improved patent information dissemination.[281]

With these objectives in mind, USPTO, EPO, and JPO decided to pursue implementation of a trilateral web site, patent network, and concurrent search and examination process.

In part because of networks established through the trilateral offices, private sector groups regularly hold conferences and seminars where issues related to harmonization are discussed. The most recent conference – held in Alexandria, VA in November 2004 – was sponsored by AIPLA. The goal of the seminar was to facilitate dialogue among users, including intellectual property associations, private law firms, and staff from the trilateral offices.

WHAT THE OFFICES CAN RESOLVE AMONG THEMSELVES

Trilateral Web Site

In November 1997, the three offices agreed to implement the Trilateral Web Site (TWS) to make patent information available to users around the world via the internet.[282] Examples of information include: trilateral conference reports and associated memoranda of understanding (MOUs), announcements and press releases, annual statistical reports, and current projects. The TWS also provides links to USPTO, EPO, and JPO homepages and to the pages of each of the offices' patent searching services. Each office maintains a portion of the web site.

Trilateral Patent Network

The Trilateral Patent Network provides on-line access to USPTO, EPO and JPO patent databases that contain published patent applications. The access is provided by the Trilateral Network (TriNet)283 and is used for examiner access to foreign search systems. This system is not

[281] www.european-patent-office.org/tws/gen-1.htm.
[282] www.european-patent-office.org/tws/gen-tws.htm.
[283] TriNet is a global secure network using virtual private network (VPN) technology that was initially set up among the Trilateral Offices as directed by the Kyoto Action Plan of November 1997. The VPN is a private network established over public networks by the use of end-to-end encryption technology to protect sensitive information. In the case of TriNet, the public network is the Internet. Data sent over TriNet is encrypted/decrypted by encryption hardware devices at the network access points in the trilateral offices.

available for public use because the search patterns/strategies used by examiners during the prosecution of cases is proprietary to the applicant.

The USPTO dossier, called Public PAIR, contains all the information in the IFW—applications, office actions, IDS, notice of allowance, search strategies and outcomes, and all correspondence related to application prosecution.

The EPO dossier interface contains the application and associated documents the applicant has filed, search report, content of the abstract as drawn up by EPO's search division, and internal search notes, if any. It also contains copies of documents cited in the search report, two copies of publication documents, and all relevant examiner correspondence.

JPO's dossier, Advanced Intellectual Property Network (AIPN), contains the application, process information, cited documents, information related to claims, and patent family information. AIPN is available in English through a machine translation system.

JPO examiners find Public PAIR beneficial because USPTO examines applications well ahead of JPO (this is because of JPO's system of deferred examination[284] and is discussed in Appendix H). However, JPO is encouraging their applicants to request examination 18 months after filing or use the PCT route (see Appendix L for information on PCT), which provides an early search and preliminary opinion report. In February 2004, the Japan Intellectual Property Association sent letters to about 50 firms that submit a large number of applications to USPTO. While this may not sound like a substantial effort to encourage early requests for examination, it can make a difference in Japan. For example, when asked why electronic filing had increased substantially, JPO staff said that this had resulted from a governmental request, not from a requirement.

The trilateral offices are also evaluating the possibility of developing a software package that would provide electronic support for administrative procedures in patent and trademark offices (the "Patent and Trademark Office Integrated Toolbox"). This package will be made available to patent offices beyond the trilateral participants for publication and post-grant activities and application administration.

In addition, to promote the goal of "author file-once anywhere" in an operational electronic filing environment, the trilateral offices planned to develop an interoperability issue paper for e-filing data compatibility that sets priorities for the issues and proposes initial targets for best practices. Each office will produce a resource and implementation schedule.

Shared Search Information

In 2004, the three offices completed the first phase of the pilot search result exchange program, which was designed to lessen the duplication of effort by giving full faith and credit to the searches of one another's offices.

[284] USPTO has a deferred examination system, but applicants rarely utilize it because of the associated up-front costs. Under 37 CFR 1.103(d), applicants may request a deferral of examination for up to three years. Once the deferral of examination has been granted, the application will not be taken from the queue by the examiner until the suspension period expires.

USPTO, EPO and JPO reviewed the outcome from approximately 500 sets of search results they have exchanged and have assessed how administrative procedures and communications among the offices could best be adapted to prevailing practice. Results of the pilot were discussed at the trilateral meeting in November 2004. They indicated that, while sharing search results has shown potential benefit to avoid duplication of effort, reducing workload and improving quality, additional pilots are needed.

JPO's *Examination Procedures and Examination Guidelines* states that "Where prior art documents were shown in the search report by a searching authority (including a foreign patent office), the content of these documents should be examined." In other words, JPO examiners are expected to exploit other patent offices' search results. JPO does not track the precise number of search results it utilizes from EPO or USPTO. However, JPO stated that they generally tend to utilize EPO search results more frequently than USPTO for the following reasons:

- JPO and EPO have exchanged more than 100 examiners, which has resulted in mutual understanding of the search process of the respective offices. Results have also shown the usefulness of EPO's searches to JPO examiners

- Many aspects of JPO and EPO laws are harmonized

- JPO and EPO classification systems are closely aligned and based on the International Patent Classification system (discussed later in the chapter).

Overall, JPO finds EPO search results to be very competent, contributing to high quality examination and reduced JPO workload. However, some search results do not cover Japanese language documents, so JPO examiners search additional art.

JPO does not exploit USPTO results as much as EPO's for the following reasons:

- USPTO's IFW only became available in August 2004. In addition, the documents that are stored in the IFW are recently filed applications, and the documents that correspond to the application under examination at JPO have not been electronically stored

- USPTO and JPO have not exchanged many examiners so mutual understanding of search practices is not at the same level as that of JPO and EPO

- There are differences in laws concerning patentability

- There are differences in classification systems.

JPO intends to use USPTO search results more in the future; however, JPO believes a deeper mutual understanding of search rationale/work processes through examiner exchange is needed to gain maximum exploitation of search results.

Officials at EPO said that their examiners find USPTO search results to be helpful, and they typically use them as a starting point. EPO examiners will perform a supplementary search for the following reasons:

- EPO and USPTO have not exchanged many examiners so there is not a mutual understanding of search practices.
- EPO's classification system and databases can search more foreign documents.
- EPO examiners search in three languages, whereas USPTO examiners search in one.
- There are differences in laws regarding patentability, most notably obviousness/ inventive step, and novelty.

EPO does not find JPO search results to be helpful because JPO examiners and IPCC[285] searchers search primarily in Japanese.

For USPTO examiners, EPO search results are helpful, but they are generally seen as a starting point because EPO does not publish certain aspects of search histories, such as queries used, because EPO examiners regard search strategies as personal tools and prefer not to share them. Thus, a USPTO examiner does not know why an EPO examiner searched a particular document, or the search strategy used, and cannot give full faith and credit to the results. EPO also adheres to the international standard regarding disclosure of the scope of prior art search, which is the same information international search reports[286] provide in PCT applications. Search strategies are included in USPTO's search report, making them more comprehensive than international search reports, and EPO and JPO staff exploit them.

For the most part, USPTO does not exploit JPO searches because examiners search primarily in Japanese. Also, because of the deferred examination system in Japan, if an applicant files concurrently in the U.S. and Japan (as is often the case), USPTO will begin its work before JPO. In addition, JPO uses the international standard for disclosing the scope of prior art, but unlike EPO, which does this for all of its searches, JPO only uses this method for 20 percent of patent applications. JPO contracts out the search report for the remaining 80 percent to IPCC, and these search reports contain the records of the retrieval queries searchers use. Examiners in foreign IP offices can browse this search history through JPO's AIPN system, and USPTO can browse it through the intellectual property digital library.

The November 2004 trilateral meeting addressed the exploitation of search results. Among other initiatives, the leaders of the three patent offices:

[285] IPCC is a quasi-governmental organization designed in December 1985 to assist JPO in its efforts to expedite examination of patent applications. IPCC's main duties include searching prior art and assigning F-terms and IPCs (discussed later in the chapter).

[286] These reports give an early indication of the prior art found and a preliminary opinion on patentability. While this is a benefit for applications in these systems, USPTO is still more likely to issue a full FAOM in a shorter time period than the early indication of prior art in the international search report.

- Reaffirmed their expectations that exploiting other trilateral offices' search results has the potential to reduce workload and contribute to improved examination quality

- Recognized that the search/examination results of the trilateral office of first filing need to be provided in a timely manner if they are to be used by the trilateral office of second filing

- Recognized there are gaps between each office's search results. To narrow the gaps, the trilateral offices will promote programs, such as examiner exchanges, patent law harmonization, automated system development, classification harmonization, and the exchange of search strategy information.[287]

POTENTIAL TO ACCELERATE WORK SHARING

Congressional staff have cautioned USPTO that it cannot just "hire its way out of the problem" of lengthy patent pendency. EPO and JPO also face challenges with growing pendencies, and in recent years both offices have received a large increase in patent applications (see Chapter 1, Figure 1-2 for statistics). One way the trilateral offices could expand their examination resources without additional hires would be to accelerate work sharing. The 22nd MOU on Trilateral Cooperation identifies the following for accelerating work sharing in the short term:

- Introduce, where necessary, possible modifications to the legal system, the technical infrastructure and/or measures influencing applicant behavior to allow timely access to the office of first filing search information

- Provide technical solutions to make the office of first filing search history available to the office of second filing in readily accessible form

- Improve the acceptance of the office of first filing search results to office of second filing by doing more examiner exchange programs and identifying additional ways to accomplish this acceptance

- Continue to improve current machine translations and work towards a comprehensive machine translation infrastructure[288]

USPTO and EPO are also considering the "Patent Prosecution Highway Project," JPO's proposal to address timing of work issues and maximize exploiting other offices' search results. Broadly, the plan would offer applicants an incentive to obtain search and examination results from the office of first filing at an earlier time in order to gain examination and search results from the office of second filing at an earlier time. For example, if JPO were acting as the office of first filing and an applicant requested accelerated examination, his or her application (Application A) would be taken out of the queue and examined immediately by a JPO examiner. After the patent

[287] *22nd Memorandum of Understanding on Trilateral Cooperation in the Field of Industrial Property*, Alexandria, VA, November 2004, pp. 1-2.
[288] Ibid., p. 2.

is granted, the applicant would submit his or her application for the same patent (Application B) to the office of second filing, amending Application B's claims in order to make them "practically the same" as Application A's granted claims, and provide the office of second filing with a copy of all office actions made by the JPO examiner for Application A. The applicant would also have to request accelerated examination and pay the requisite fees to the office of second filing.

If USPTO were acting as the office of second filing, the examiner would take Application B out of the queue, accept the applicant's copy of JPO's office actions of Application A and amended claims in lieu of issuing an office action, and examine Application B immediately.[289]

USPTO studied the proposal to assess any potential impacts on patent processes and gave comments to JPO at the March 2005 working group meeting. USPTO expressed concern that the proposal does not assign a time limit for applicants to request examination or accelerated examination.[290] Because JPO operates under the deferred examination system, and applicants have up to three years after they file to request examination, in effect, the applicant has up to three years from filing to participate in the patent prosecution highway. Such a late request for examination would not provide any benefits to the office of second filing because USPTO would have picked up the case before JPO (acting as the office of first filing) could provide their search results.

The second concern is USPTO's "Advancement of Examination." Through this system, a new application (one which has not received any examination) may be granted accelerated examination provided that the applicant complies with the following:

(a) Submits a petition and pays the fees required

(b) Present all claims in a single invention

(c) Submits a statement(s) that a pre-examination search was made, listing the field of search by class and subclass, publication, chemical abstracts, foreign patents, etc.

(d) Submits one copy of each of the references deemed most closely related to the subject matter encompassed by the claims if said references are not already of record; and

(e) Submits a detailed discussion of the references, which points out how the claimed subject matter is patentable over the references.[291]

JPO proposes that USPTO simplify section 'e' of the MPEP so that instead of submitting "a detailed discussion of the references," the applicant can amend the claims to be "practically the same" as those of a foreign granted patent, and submit a copy of all office action(s) from the

[289] Patent Examination Policy Planning Office, JPO. "Patent Prosecution Highway Solution to Timing of Work and Maximization of Benefits of Exploitation of other Offices' Search Results." Agenda Item F_2. November 2004.
[290] JPO introduced accelerated examination as an option for applicants in 1986; these applications are taken out of queue and examined immediately.
[291] MPEP 708.02VIII.

office of first filing with a copy of the claims of the foreign granted patent. However, USPTO believes that this would be difficult to do because of the proposal language requirement that the claims in an application to the office of second filing "be practically the same" as they were in the office of first filing. Such language would be very difficult to define because of the differences in claim interpretation and patent law among the three offices. A more in-depth discussion on the proposal was taken up in the May 2005 trilateral conference in The Hague.

For the long term, the trilateral offices affirm their commitment to work on law changes and work procedures that would facilitate work sharing benefits. They will also focus on timing of work so that work exchange provides gains to the office of second filing to the greatest extent possible.[292]

Classification Harmonization

A classification system organizes references to patent documents to enable an effective search and retrieval of these documents so that a patent examiner (or any user) can establish the novelty and evaluate the inventive step (including the assessment of technical advance and useful results or utility) of patent applications.[293] In essence, the systems facilitate search and retrieval of prior art. A patent document (such as an application or published patent) may contain several technical aspects of an invention and will thus have several classification symbols.

Patent classification systems can also be used in combination with other online search terms, which allow users to precisely restrict searches to relevant subject areas. Non-patent databases can substitute for patent classification systems since up to 80 percent of patent information is not disclosed or published elsewhere.[294]

USPTO's system is called the U.S Patent Classification (USPC) system; EPO's system is ECLA and JPO adopted F-Terms (File Forming Terms, referred to as FI). JPO and EPO classifications are based on the International Patent Classification (IPC) system, and their systems have similar structures. The IPC system is a single classification system that is used by approximately 80 countries and operates under the auspices of the World Intellectual Property Organization (WIPO). USPTO gives its patents a secondary classification using the IPC codes. The USPC-to-IPC Concordance (which USPTO publishes) relates individual classes and subclasses in the USPC to the most closely corresponding classifications of the IPC, but USPTO cautions that the concordances should not be relied upon as authoritative. They are meant to provide an entry point into IPC for those who are familiar with USPC.

For years, EPO and JPO have worked together to harmonize their systems, and bilateral examiner exchanges have facilitated this effort. Today, their systems are closely synchronized, and they believe this has enhanced the quality of searching patent literature (including foreign)

[292] *22nd Memorandum of Understanding on Trilateral Cooperation in the Field of Industrial Property,* Alexandria, VA, November 2004, pp. 2.
[293] Adapted from the WIPO definition of a patent classification system, which can be viewed at http://www.wipo.int/classifications/fulltext/new_ipc/index.htm.
[294] From the web page of Patex, a patent search firm. www.patex.ca/about_patents.html.

and made the process more efficient. USPTO's classification system is also a powerful tool, but examiners cannot access foreign patent literature and have to use a separate system do so.

As technologies become more complex, the number of patent documents increase and the need to continually reclassify information becomes more important, USPTO, JPO, and EPO have partnered to create identical classification schedules in areas where they believe it is helpful and feasible. Through this project, called "Harmony," the trilateral offices "strive to improve the quality and efficiency of the document retrieval process by joining their efforts in establishing a well-structured documentation together."[295]

The three offices have agreed on two potential methods to implement the proposal; they are:

- One (or two) of the three offices accept(s) the classification of the other office. This method is being applied on a test basis by USPTO in the field of semiconductors.

- All offices revise their classification schemes at the same time and create a common scheme with the cooperation of examiners working in the same field at the three offices. Each office keeps its own symbols (ECLA, FI, USPC), but the group titles and the hierarchical structure are identical.[296]

Some concrete results have already been achieved. For example, JPO and EPO have agreed on identical schemes to classify hybrid vehicles in FI and ECLA, and in the semi-conductor field; USPTO has introduced a new classification structure based on ECLA.

USPTO, EPO, and JPO further discussed the Harmony Project at the May 2005 trilateral conference. USPTO's ultimate goal is to align USPC with ECLA and FI. The concern, however, is the lack of a standardized procedure or set of rules as to how information would be classified. For example, in the U.S., a gas and a liquid are considered to be two different terms, whereas in Europe they are grouped as one.

In addition to partnering on a trilateral level to address their own classifications systems, USPTO, EPO, and JPO have joined together with other countries to work with WIPO in its effort to reform the IPC, which was initiated in 1999. USPTOs' international liaison staff joined other international experts at a meeting held in Geneva in February 2005 to discuss this. The system has the following characteristics:

- The IPC has been divided into two levels-- a core and advanced level -- to better satisfy the differing needs of small and large offices. Smaller offices will use the relatively simple and stable core level and larger offices will use the more complex and dynamic advanced level

[295] EPO, JPO, and USPTO. "Trilateral Classification Harmonization: Guidelines for examiners involved in the Harmony project." nd, p. 2.
[296] Ibid.

- An internet version of IPC has been enhanced to facilitate classification and search. This will include definitions of classifications, structured chemical formulae and other images, and definitions of technical terms.

- The revision of the core level will be done every three years and the advanced level will follow an accelerated procedure to permit the rapid introduction of changes from technological developments.

- The most up-to-date version will be available for patent searches as all patent collections will be reclassified on the basis of the changes introduced into that version.

- Access to the worldwide collection of patent documents will be available through the master classification database, which is being created using EPO databases. The documents included in this database will be classified according to the current version of the IPC and will be periodically reclassified in line with future revisions.

The system allows users of the advanced level to use the system in conjunction with their existing classifications systems. Old and new IPC codes will be in the files and the reclassification of all patent databases using the new IPC codes will be maintained.

The parties involved agreed that new system would be effective January 1, 2006.

Examiner Exchange

The examiner exchange program permits examiners from one of the trilateral offices to go to another to learn about the other office's work processes, search methods, and electronic tools in the context of reducing the need for an examiner to conduct a supplementary search when work sharing. The three offices generally choose examiners with many years of experience and the amount of time these examiners spend at one office is typically two weeks.

Since 1998, EPO and JPO have dispatched examiners on a bilateral level in three different batches per year. Table 8-1 shows that the number of participants has grown steadily.

Table 8-1
EPO and JPO Exchanges

Fiscal Year	JPO → EPO	EPO → JPO
1998	2	2
1999	3	3
2000	30	11
2001	32	31
2002	27	30
2003	32	28
2004	33	19
Total	**159**	**124**

JPO officials believe that the program has been a success because it contributes to a greater degree of confidence in EPO's search results and facilitates effective exchange of work results. In addition, the program allowed EPO and JPO to better harmonize their classification schedules.

In April 2004, USPTO, EPO and JPO began the Trilateral Exchange Program in which four examiners from each office would participate in three different exchanges. During the same month, USPTO hosted EPO and JPO examiners for the first phase. The focus was:

- Share search information for selected applications with common filings
- Discuss similarities and differences in searches done
- Discuss differences in national practice and other areas causing search differences among the three offices
- Talk about classification harmonization projects

The offices considered the first phase a success in that examiners from the three offices were better able to understand the similarities and differences among search tools and respective national practices with regard to searching and applying prior art. One major search difference is that JPO's and EPO's recordation of search results is not as transparent as USPTO's. This concerns USPTO because its examiners believe the difference hampers the ability to give full faith and credit to the other offices' searches.

In October 2004, EPO hosted USPTO and JPO examiners, and in April 2005, JPO hosted USPTO and EPO examiners. At the November 2004 trilateral conference, the three offices agreed that they would better ascertain program objectives and evaluate the three exchanges before deciding to renew the program. The three offices also recognize that they need to identify and communicate the nature of the results to be gained.

Conclusions: Potential to Accelerate Work Sharing

To a large extent, examiners have access to the same patent and non-patent literature and to fully duplicate search and classification efforts is a luxury they cannot afford. The Panel believes that an accelerated program to expedite work sharing could lead to more shared search results and common classification and, over time, reduced time devoted to those applications that USPTO picks up after another office has done a search. However, the Panel recognizes that--for a variety of reasons -- all searches are not equal. U.S. examiners do not speak the languages of their EPO counterparts (where they are required to be proficient in three languages), and very few speak Japanese. Given that more applicants file in multiple countries and talent in many fields is expensive to acquire, the Academy Panel believes it would be efficient to exploit one another's work and share classification to the greatest extent possible. Current activities to harmonize classification systems can be an example of a methodology to develop a system to share search results. At the very least, utilization of EPO and JPO's searches should be a starting point. An investment in increased examiner exchanges could result in a large productivity gain.

Recommendations: Potential to Accelerate Work sharing

The Panel recommends that USPTO:

> **Devote additional resources to examiner exchanges so as to learn more about the search strategies and work methods of the European Patent Office and Japan Patent Office.**
>
> **Volunteer to lead negotiation discussions with EPO and JPO concerning the transparency of search histories.**
>
> **Document the results of the exchanges so that staff throughout USPTO understand the other offices' search methods.**
>
> **Conduct a cost-benefit analysis, using the Management Analysis Unit described in Chapter 6, in order to estimate the amount of resources that should be devoted to future trilateral exchanges.**

Panel members recognize that USPTO is focused on enhancing quality of its work and reducing pendency and that it does not have the resources to do all that it wants even in these two areas. The Panel is also aware that USPTO is one of three parties and certain discussions and negotiations must take place before work sharing can be fully realized. However, an investment in examiner exchanges, or any other method the three offices believe might lead to improved understanding of work, will cut pendency in the long run. It is also possible that examiners - - during the course of the exchanges - - might learn methods that can improve USPTO practices to enhance quality, but that would be a secondary purpose.

The Panel also recognizes that USPTO sends its "best and brightest" to participate in examiner exchanges, and USPTO has to decide where it most needs these individuals' talents. Therefore, it would not be appropriate for the Panel to specify an exact number of USPTO examiners to participate in exchanges. However, the Panel suggests that USPTO continue to participate on at least the same level it has since the trilateral exchanges began a year ago—four examiners participating each time. The idea would be to devote a modest amount of examiner time on an incremental level each year as the patent corps continues to grow, and then determine whether the benefits outweigh the costs of examiner resources.

HARMONIZATION ISSUES REQUIRING LEGISLATIVE INTERVENTION

Because the United States has a first-to-invent system and EPO and JPO use the first-to-file system, there are limitations to the impact that work sharing can have on workload reduction at USPTO. To harmonize the U.S., Japanese and European systems so that an applicant could file in one office and have the patent recognized by the others (a long-term goal of harmonization) requires a host of legislative changes. The scope of this Academy Panel's work did not encompass an extensive review of these changes or legislative options to accomplish them. However, they are noted here because there has been intense discussion in the patent community

and academia, and because, in June 2005, Congressman Lamar Smith (R-TX) introduced the Patent Reform Act of 2005 (H.R. 2795). The proposed legislation includes comprehensive reforms to fundamental aspects of U.S. patent law, including changing to a first-inventor-to-file system.

The National Academy of Sciences Report summed up the key issues in its seventh recommendation:

> ***Reduce redundancies and inconsistencies among national patent systems.*** The United States, Europe, and Japan should further harmonize patent examination procedures and standards to reduce redundancy in search and examination and eventually achieve mutual recognition of results. Differences that need reconciling include application priority ("first-to-invent" versus "first-inventor-to-file"), the grace period for filing an application after publication, the "best mode" requirement of U.S. law, and the U.S. exception to the rule of publication of patent applications after 18 months. This objective should continue to be pursued on a trilateral or even bilateral basis if multilateral negotiations are not progressing.[297]

Most of these issues arose in discussions Academy staff had with trilateral organization representatives or industry groups in their countries. Most discussed issues were:

- Changing to first-to-file
- Publication of all patent applications
- Agreeing on a grace period, or dropping it in the U.S.
- Best mode requirement
- Changing 35 U.S.C. section 102(e) to eliminate U.S. language preference
- Adding deferred examination in the U.S., or encouraging the Japanese to drop the practice

Appendix M summarizes these issues.

Conclusions: Harmonization Issues Requiring Legislative Intervention

The Panel is pleased that USPTO is working with its trilateral partners to advance the cause of harmonization. The three major patent offices face the challenges of increased interest in property rights and increased workloads, as well as practical resource limitations that lead to increased pendency. Each with its own complex patent system, the various offices are building inefficiency into the global patent system. Harmonization - - although requiring difficult and

[297] National Research Council, *A Patent System for the 21st Century*, National Academies Press, 2004, p. 8.

balanced compromises – has the potential to make the world's patent protections more accessible to inventors and to reward innovation.

With the introduction of recent patent reform legislation, Congress is acting consistently with these global interests – particularly in the inclusion of a new first-inventor-to-file system. The future of innovation lies in the ability of the major offices to compromise on key elements.

Recommendations: Harmonization

While recognizing the practical obstacles, the Panel recommends that USPTO:

> **Emphasize improved harmonization as a source of efficiency across the trilateral offices.**
>
> **Work closely with Congress to provide historical data to support well thought out compromises that will reduce redundancy and remove inconsistencies, while protecting that which is important to U.S. innovation.**

CHAPTER 9
CONCLUDING PANEL OBSERVATIONS

USPTO is a complex "knowledge worker" agency and the fulcrum of the U.S. intellectual property system. Its impact on the domestic and global economies is substantial.

As an organization, USPTO is highly professional, dedicated to its mission, and accustomed to continual programmatic accommodations required by changes in patent law and other external variables. Its workload depends on a range of factors outside of agency control, most importantly the U.S. economy, a burgeoning global interest in securing intellectual property rights, and an era of significant technological advancement. USPTO's workforce can adapt to this increase in workload only within the parameters of its funding levels and the constraints of the U.S. civil service regulatory framework. These limits have impaired USPTO's ability to succeed.

With more than ample external volatility, such as the dot-com boom and bust, USPTO would benefit from the removal of barriers that impede its ability to adapt to change, such as the constraints of the appropriations process (which, by its nature, cannot respond quickly to USPTO's workload variations), lack of access to fees of approximately $741 million—six to seven percent of its total funding available, with fluctuating proportions from year to year, including $573 million in patent fees collected during the past 13 years—and staffing restrictions. The agency has had to hire in fits and starts, and the costs to the nation are substantial, in terms of lower patent quality and longer-term pendency.

The Panel recognizes that USPTO has not used all the flexibilities available as a PBO, especially in human resources. However, the Panel believes that a promising way for USPTO to improve quality and reduce pendency is to enable it to apply resources to meet demand for services. One way would be for Congress to convert USPTO to a wholly owned government corporation under the policy direction of the Secretary of Commerce. While an organization's structure does not guarantee success, an inappropriate structure can impede optimal performance. Outside organizations have recommended and endorsed a corporate structure for USPTO for more than 20 years. It is time to make this change.

Some policy-makers are concerned that, as a government corporation, USPTO would be less accountable to the Secretary and Congress and more susceptible to special interests. This is not the case. Congress sets the parameters for government corporation operations through the charter it uses to establish the organization. Because a corporation's financial statements have a "bottom line" that appropriated funds agencies do not, a government corporation affords Congress and the administration a clearer view of the entity's financial condition.

The Academy Panel recommends that the corporation be headed by a presidentially appointed CEO with strong business experience rather than be governed by a board of directors. Government corporations have no stockholders, so a board is not only unnecessary but can—as corporations that have them sometimes demonstrate—become a vehicle for political plum

appointments or excessive special interest input. The Panel does recommend an advisory board so that stakeholders will have input to the corporation.

In any structure, USPTO needs to better balance its technical expertise with increased management expertise and focus. Establishing a Vice President for Management (in the corporate structure) or an Associate Commissioner for Management (in an agency structure) would create a much-needed focal point that will help USPTO manage its resources more effectively and thus provide the best service to its customers. Without this investment, USPTO is likely to repeat past mistakes. The Panel also recommends an enhanced analytic capability so that USPTO will be able to analyze its challenges, options for workforce enhancement, and work processes, and thus base actions on sound business case evaluation.

The Panel was struck by the tension between USPTO management and its largest union. A certain amount is inevitable, and it may be that this union has a less cooperative nature than some others. However, USPTO management has used the problematic aspects of the relationship to avoid critical issues, such as redefining the patent examiner bonus system. Top leaders must take charge of this situation and demonstrate a willingness to cooperate with union officials, but also recognize that they must use all the tools available in federal labor relations law.

USPTO is working to leverage its resources by working with other patent offices and outsourcing PCT national searches. With the level of electronic information sharing available, both are possible, but the Panel offers some cautions. At this point, other nations can benefit far more from U.S. searches, in part because of timing—USPTO generally issues patents more promptly than EPO or JPO—and because the U.S. is willing to share more information on its search strategies. U.S. information provision, through Public PAIR, is excellent. The Panel believes that doing more examiner exchanges will help USPTO better understand and build on the other trilateral offices' work. However, if over time other offices are not willing to be fully forthcoming with information that will help U.S. searches, the Panel believes the U.S. should minimize the resources it devotes to this effort.

To a great extent, USPTO's ability to leverage work by relying on other patent offices' results is limited by the lack of harmony in global patent laws. The Panel encourages USPTO to present to Congress solid data on the various aspects of harmonization to help it make decisions, as the NAS report recommended. While practical obstacles exist, the Panel sees harmonization as a source of increased efficiency across the trilateral offices and a sound way to reduce pendency.

The Panel has reservations about the efficacy of outsourcing the search. USPTO may find it will work well in some disciplines—perhaps, as in Japan, for searches that only cover patent literature. However, if USPTO finds, through the pilot program, that the quality of work does not meet its standards or the cost is substantially more than internal searching, it would be important not to continue. This will not constitute failure, but would simply mean the laboratory results were not what were anticipated, and it is time to take what was learned and move on. There may be other mechanisms to try, such as a federally funded research and development center, which would create a relationship similar to that which JPO has with the Industrial Property Cooperation Center.

Stakeholder organizations have supported USPTO in securing adequate resources, provided staff for examiner training classes, and encouraged Congress to relocate USPTO to its new facilities. These groups—through professional organization meetings and articles—have also raised issues (especially pertaining to quality) that USPTO needs to address in constructive terms. The Panel also recognizes that USPTO at times differs with the perspectives of stakeholder groups. By their very nature, stakeholder organizations represent special interests and USPTO's role is to represent the public as it works to foster innovation. There has to be room in the stakeholder communication and interaction milieu for USPTO to disagree, even to the point of recommending that Congress take action that some stakeholders may oppose. For example, the Panel believes that limiting the number of continuations—although unpopular with some—is one such action either Congress or USPTO should take. Failure to impose such a limit has exacerbated the pendency problem and made the overall process less equitable among applicants.

Finally, the Panel urges the Undersecretary to work with USPTO management and staff at all levels to create a culture of innovation and trust within the organization. There are many talented individuals in USPTO, and the organization has taken steps to make the agency an attractive place to work—the new Carlyle facility, with its large childcare center and professional workspace, is the most evident. A more positive culture will lead to new ideas and the kinds of positive working relationships that will make USPTO a continually better employer. This will benefit those who apply for patents and trademarks and, ultimately, the nation.

The Panel is asking USPTO to transform its organization structure and culture and its human capital system. Such efforts are a necessary corollary to USPTO's enhanced focus on patent quality. It is essential that USPTO retain talented patent staff, and management should have the flexibility to devise a compensation system and work processes that encourage experienced staff to stay with the agency. This will only be possible when the fees that innovators pay to protect their intellectual property rights remain with the agency charged with that mission.

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SIMULATIONS USING THE PATENT PRODUCTION MODEL

The Office of Patent Financial Management, with is under the Commissioner for Patents, uses its Patent Production Model (hereafter referred to as the model), which it developed during the 1980s, to link staffing, productivity, workload and production, and forecast expected pendency. Despite its age and primitive format, an Academy staff review determined that the model is a solid analytic effort. It is USPTO's primary vehicle for making staffing and program impact projections.

Per the Panel's guidance and the Academy staff's request, USPTO used the model to simulate the impact on pendency if USPTO had access to all or a portion of the funds that USPTO collected from FYs 1991–2004. The amount that Congress did not make available to USPTO during this period had been estimated at $742 million. Because Congress can choose to provide some of the initially unavailable funds to USPTO, ultimately the collected fees that were unavailable to USPTO were $741 million.[1]

Additional analysis showed that, of the $741 million, $573 million comprised unavailable patent fees and $168 million unavailable trademark fees. To determine the impact on staffing and pendency, the Panel requested that USPTO simulate the programmatic impact if additional funds had been available for staffing.[2] The Panel had USPTO do three simulations. For each, the Panel wanted to know the impact on pendency if additional resources been available for examiner staffing, and what level of staffing would have been needed to achieve given levels of pendency. The three simulations were:

- What amount of spending would have enabled USPTO to maintain 1996 levels of patent pendency?
- What difference would an amount close to $573 million (the funds Patents did not receive) have made?
- What difference would a lesser amount of spending ($503 million) have made?

The first two simulations assume that any additional funding would be efficiently used to expand patent examiner staffing to meet annual workloads. Moreover, the additional funding would have been provided throughout the period rather than in one or two large lumps. This allowed the model to avoid or minimize the development of any workload backlogs. The third simulation assumed that USPTO might have chosen not to use the entire $573 million on examiner staffing.[3]

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[1] Essentially, Congress made a certain dollar amount of fees unavailable for USPTO use each year and then, in differing amounts over the years, allowed the agency to use some, but not all prior year money for patent and trademark functions. This made tracking the fee diversions somewhat challenging. The agency used three criteria to determine the allocation of these carryover funds: (1) requested funding level for each of the program components; (2) estimate of fees for each program for the current year; and (3) if allowed by Congress, amount of carryover money available.

[2] For this simulation, the number of hires was the only variable that changed to reach or exceed a specific pendency goal. The model accounted for all attrition, promotions, and productivity. Hiring was not increased beyond the level that could be funded from the fees.

[3] The $503 million chosen for the third simulation was an arbitrary number ($70 million less than total unavailable patent fees), used to demonstrate a simulation with an amount less than the $573 total patent fees unavailable.

This appendix presents the results of the three simulations on pendency in terms of months to achieve the first action (FA), months to final pendency, and additional applications processed as of 2004. It also examines patent staff productivity based on years of experience with USPTO.

FIRST SIMULATION RESULTS: ACCESS TO SUFFICIENT ADDITIONAL FEES TO REACH FY 1996 PENDENCY LEVELS

The assumptions for the first simulation were:

- USPTO would have had no limitations on total fees available for additional staffing.
- USPTO would have had no fiscal year limitations on its use of funds.
- USPTO would have hired staff to reduce FA and total pendency to the maximum extent possible consistent with a sustainable work force (no layoffs, fully employed and factoring in actual attrition).
- USPTO would have made full allowance for all associated hiring costs (space, equipment, training, supervision, overhead, etc.).

Using these assumptions, the Panel requested the historical information and simulations for:

- FA and total pendency rates
- level, and average grade of the work force
- salary and benefit costs of examiner hires and
- total costs

The methodology was relatively straightforward. The number of hires was the only variable that changed in the model. The number of hires was increased each year. The model accounted for actual attrition, promotions, and productivity. Hiring was adjusted in a series of approximations to produce a pattern of staffing that kept pendency at its FY 1996 level or better.

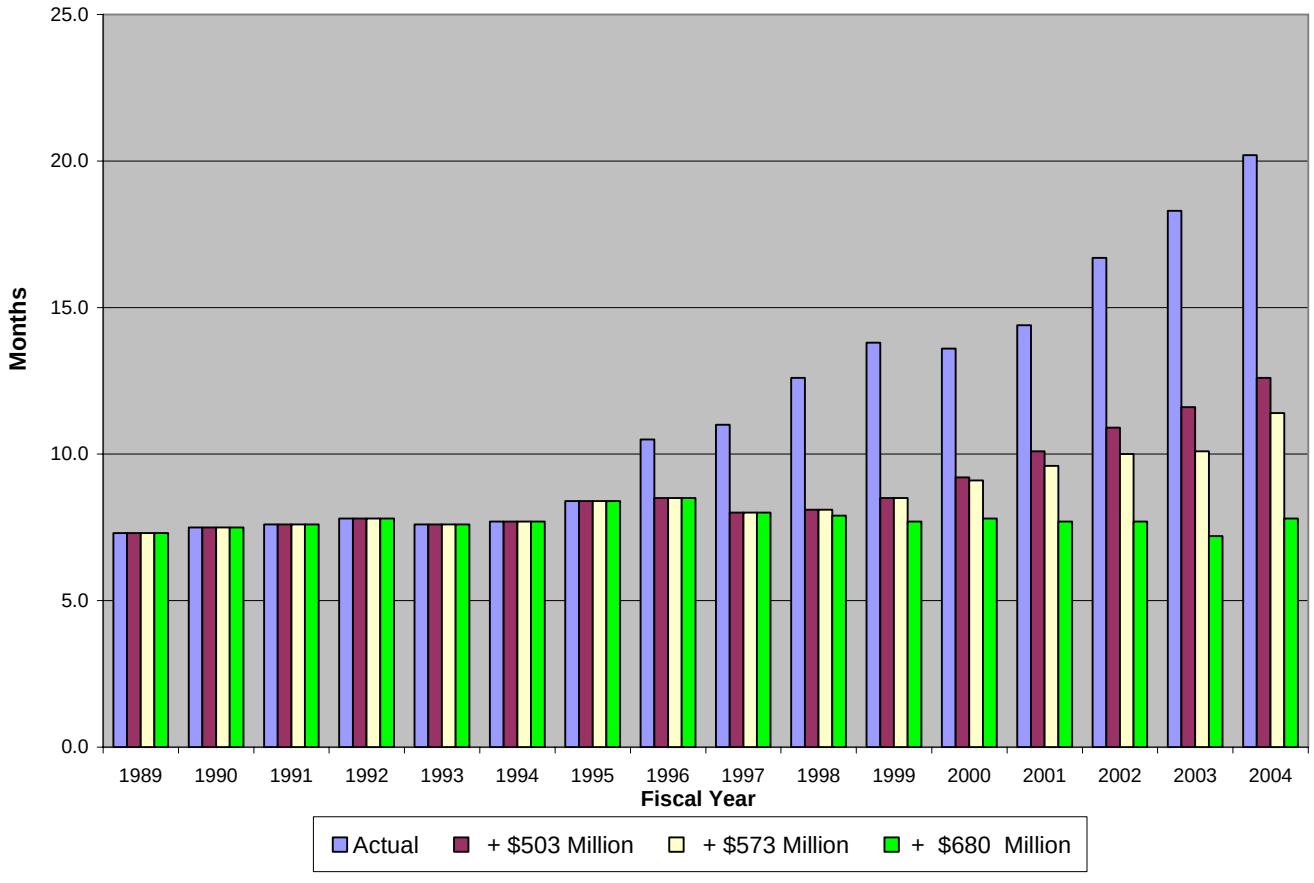
Because the Panel was aware that worker productivity and pendency vary by technology, sometimes substantially, the Panel requested the historical data and simulations for each TC. Patent officials said they could not provide data by TCs before 1998 because the TCs did not exist. They indicated they could not compile the pre-1998 data to correspond to the subject areas of the current TCs. Academy staff obtained productivity information by TC from another source, and these data are presented later in this appendix (Table D-1).

Analysis of the First Simulation

The first simulation showed that USPTO would have needed about $680 million of its unavailable fees to ensure that FA and total pendency would never have exceeded the FY 1996 levels. Figure D-1 shows how these additional staff reduce FA pendency to 8.5 months beginning in FY 1996. Subsequently, historical pendency generally increases, (with the exception of FY 2000), while the pendency associated with increased hiring in the model begins a steady decline. By FY 2004, actual FA pendency was 20.2 months, while FA pendency using the simulation's hiring approach is only 7.8 months--61.4% percent below the historical level.

Figure D-1 shows historical FA pendency rates and pendency rates calculated by the three simulations using the model.

Figure D-1
Historical and Simulated Impacts of Additional Staffing Resources on FA Pendency

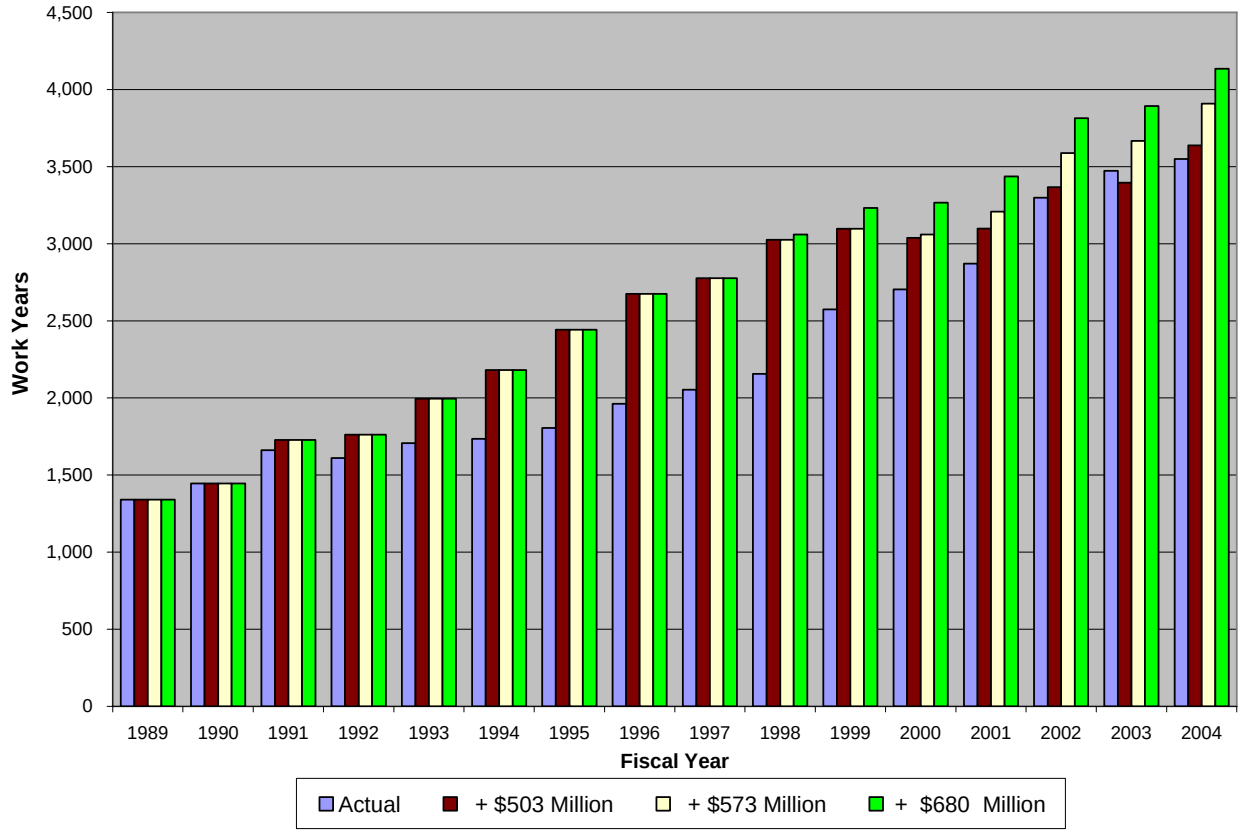


Source: USPTO's PPM

The additional $680 million would also have meant that total pendency would never have exceeded the FY 1996 level of 20.8 months. In FY 2004, total pendency would have declined to 18.2 months compared to the actual 27.6 months.

To have maintained the FY 1996 pendency levels, USPTO would have needed 7,237 work years above historical levels over the period FY 1989-2004. With the additional work years, USPTO could have prosecuted 562,676 additional applications. Figure D-2 shows that, beginning in 1991, additional staff are added in steady increments. Using this hiring approach, at the end of FY 2004, USPTO would have had 4,308 patent staff instead of 3,681 staff. With the FY 2005 appropriation, USPTO will reach approximately the same level of staffing, but has no chance of reaching the equivalent pendency levels. Additional staff added in FY 2005 are primarily intended to prevent the problem from getting worse.

Figure D-2
Historical and Simulated Impacts of Additional Staffing Resources on Examiner Work Years



Source: USPTO's PPM

The Cost of the First Simulation's Hiring Approach

The Academy staff asked USPTO to provide an estimate of the costs of increased staffing each model year. To do this, Patent's Office of Financial Management incorporated the 2005 pay schedule into the model and applied it to each year's staffing by grade. Thus, all of the simulation estimates are expressed in 2005 dollars. Academy staff converted this estimate into a series of estimates each year expressed in then-current dollars for that year.

To make these conversions, Academy staff obtained the annual federal pay raise adjustments, including locality pay adjustments from the Office of Personnel Management web site. Academy staff converted these pay raise adjustments to an annual index with FY 2005 = 1.0000 and multiplied this by the values calculated by the model.

The increased cost depends both on increased staff, as shown in Figure 1, and the annual federal pay raises. The total increase amounted to $680 million (which included costs of space for new hires, training, equipment, and overhead).

With the first simulation, USPTO would have had to use some of the $168 million that was not available to Trademarks to have attained the FY 1996 pendency levels in 2004. Since this could not have occurred, the second simulation uses the actual amount of funds that was unavailable to patent operations.

SECOND SIMULATION: ACCESS TO $573 MILLION ADDITIONAL FEES

All of the assumptions for the second simulation were the same as for the first, but the total funds stipulated as available for staffing were limited to a number close to the $573 million that Patents did not receive between FY 1992-2004. Assuming USPTO had these additional funds during this time period, FY 2004 FA pendency would have averaged 11.4 months (compared to the actual 20.2), and total pendency would have averaged 21.2 months (compared to actual 27.6). This information is also reflected on Figure D-1.

To achieve these pendency levels, USPTO would have needed 5,954 additional work years between FY 1992-2004 (see Figure D-2), and would have had on board 4,081 staff in FY 2004 instead of 3,681. USPTO would have prosecuted an additional 478,079 applications between FY 1992-2004.

THIRD SIMULATION: ACCESS TO $503 MILLION IN ADDITIONAL FEES

During any 12-year period, it is unlikely that an organization would use all additional resources on staffing; some would go to information systems, customer service, quality enhancements, etc. Thus, the Panel looked at the impact of some number less than the full $573 million and chose $503 million. Using a number only $70 million less than $573 million assumes that most added resources would have gone to staffing so as to keep pendency within a reasonable timeframe

With an additional $503 million devoted to examiner staffing, USPTO would have had:

- FA of 12.6 months
- Issuance pendency of 22.6 months
- 416,203 more patent application disposals

To achieve these levels of pendency and patent application disposals, USPTO would have used 5,059 more work years between FY 1992-2004 and had 3,811 examiner staff on board at the end of FY 2004 instead of 3,681.

STAFF HIRING LEVELS AND PRODUCTIVITY

Table D-1 shows how a consistent flow of additional funds would have affected hiring in each of the three simulations, and then shows the actual number of hires and attritions. The most noticeable difference is that hiring patterns fluctuate substantially in the actual hiring column.

Table D-1
Simulations' Estimates of Hires Needed to
Achieve First Action Pendency, Actual Hiring, and Attrition

Fiscal year	1st simulation's estimate of hires ($680 million)	2nd simulation's estimate of hires ($573 million)	3rd simulation's estimate of hires ($503 million)	Actual hires	Actual attrition
1989	283	283	283	283	219
1990	503	503	503	503	247
1991	350	350	350	227	210
1992	350	350	350	227	166
1993	400	400	400	210	131
1994	400	400	400	216	161
1995	400	400	400	283	162
1996	400	400	400	380	190
1997	400	400	400	204	239
1998	500	400	400	728	259
1999	500	400	400	799	375
2000	500	470	400	375	437
2001	500	500	400	414	263
2002	500	500	400	769	250
2003	500	500	500	308	241
2004	500	500	500	443	336
Total	**6,986**	**6,756**	**6,486**	**6,369**	**3,886**

Source: USPTO's Patent Production Model

Table D-2 shows patent examiner productivity by grade and TC, expressed as hours per production unit. A production unit is defined as a first action plus a subsequent disposal (not necessarily for the same application) divided by two. Since a period of months separates first and final actions on a single application, the actions in this measure do not refer to the same application.

While on average, it takes about 20 hours to examine a patent application, productivity varies by TC. Part of variation may stem from differences in application complexity. Typically, the most senior examiners are at least three times as productive as the most junior, according to USPTO standards.

Table D-2
Examiner Hours per Production Unit by Grade and TC*

Grade	1600	1700	2100	2600	2800	3600	3700	Corps
15	15.7	12.1	21.1	19.7	11.8	11.8	11.2	13.0
14	16.9	15.0	22.1	19.0	14.6	14.4	13.5	14.5
13	20.4	17.8	25.7	24.2	17.5	18.0	16.3	18.9
12	25.2	21.0	29.1	28.6	20.4	23.1	19.6	21.9
11	37.5	23.9	33.1	30.2	23.0	22.3	21.4	26.3
9	38.2	26.6	41.0	37.1	27.0	25.2	24.6	33.4
7	66.5	52.6	59.6	51.8	36.5	50.5	41.7	52.7
5	N/A	N/A	71.0	61.8	76.1	128.5	48.0	64.7

Source: USPTO, *Special Examining Production Report,* PALM3180-PR3, 10/06/2004

* USPTO hires very few staff at the GS-5 or GS-7 levels, so production unit hours for these grade levels represent a small number of PEs.

Note:

1600 Biotechnology and Organic Chemistry
1700 Chemical and Materials Engineering
2100 Computer Architecture, Software & Information Security
2600 Communications
2800 Semiconductor, Electrical, Optical Systems & Components
3600 Transportation, Construction, Agriculture & Electronic Commerce
3700 Mechanical Engineering, Manufacturing, Products & Design

The wide variability in examiner productivity and the uniformly low productivity of junior examiners suggest that volatility in staffing is likely to result in high costs and low production in comparison to a steadily growing work force. In 2004, a GS-15/1 examiner was paid 3.6 times as much as a GS-5/1 entry level examiner, not including overtime and bonuses, but was 5 times as productive. A GS-12 made 2.2 times as much and was 2.8 times more productive. In general, it pays to retain workers, if only from a narrow productivity perspective. This argument is strengthened when one considers the costs of recruitment, hiring, and training, and the fact that attrition is highest in the entry level grades.

USPTO USER FEE EXPERIENCE RELATIVE TO OTHER FEDERAL AGENCIES AND GOVERNMENT CORPORATIONS

This appendix provides information on (1) user fee policies, (2) user fee growth and the associated reasons, (3) USPTO's and other federal agencies' experience with retaining their fees, and (4) funding sources for government corporations. Information on funding for government corporations is included because a number of previous Academy reports have recommended that USPTO be established as a federal corporation.

USER FEE DEFINITION AND POLICIES

The federal budget defines a user fee as "fees, charges, and assessments levied on groups or individuals directly benefiting from, or subject to regulation by, a government program or activity, and to be utilized solely to support the program or activity."[1] Two broad types of user fees are in place—business-type or market-oriented user fees and regulatory or licensing user fees. The business or market-oriented fees include charges for sales of publicly produced goods or services (e.g. postage stamps, electricity from Tennessee Valley Authority and Bonneville Power, and national park recreation activities), premium payments for federal insurance (Medicare, veteran's life insurance, etc.), and federal asset sales (e.g. timber, oil, and spectrum). Regulatory fees include charges for regulating insured banks, food inspection, nuclear energy activities, and licensing fees (e.g. passports, immigration, and patents and trademarks).

The federal budget also describes user fees as "offsetting collections" or "offsetting receipts" rather than as taxes or other governmental receipts that accrue on the revenue side of the budget. The amount of user fees collected offsets spending, i.e., they are subtracted from gross outlays and are often considered "negative outlays."[2] The reason for this budget accounting treatment of user fees "is to produce budget totals for receipts, outlays, and budget authority in terms of the amount of resources allocated governmentally, through collective political choice, rather than through the market."[3]

For many federal agencies, their underlying authorizing statutes establish the level, structure, and general objectives for their user fees. The level of specificity varies from the highly detailed fees established by statute for the USPTO to more general user fee authorizations, such as the general authority for the Office of Thrift Supervision to establish examination fees for the thrift institutions it regulates. Other federal agencies rely on the general user fee authority established in the Independent Offices Appropriations Act of 1952 (31 U.S.C. Sect. 9701). More recently, Congress created new user fees through budget reconciliation acts [e.g. the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA), the OBRAS of 1986 and 1990, and individual appropriations acts to allow the revenues from the fees to offset spending subject to discretionary spending caps.

[1] FY 2003 Budget of the United States Government, Analytical Perspectives, p. 84.
[2] The Report of the President's Commission on Budget Concepts in 1967 recommended this accounting concept.
[3] FY 2006 Budget of the United States Government, Analytical Perspectives, p. 301.

OMB Circular A-25 establishes general policy for federal user charges. As noted in the circular, the federal government pursues three fundamental objectives in establishing user charges:

1. ensure that each service, sale, or use of government goods or resources provided by an agency to specific recipients be self-sustaining
2. promote efficient allocation of the nation's resources by establishing charges for special benefits provided to the recipient that are at least as great as costs to the Government of providing the special benefits
3. allow the private sector to compete with the government without disadvantage in supplying comparable services, resources, or goods, where appropriate.[4]

The first objective emphasizes the revenue producing aspect of a user charge and the expectation that general taxpayers not subsidize the provision of governmental services that primarily benefit specific individuals or groups. The latter two objectives emphasize the price efficiency elements of user charges and the corresponding effects on overall resource allocation among governmental programs and between the government and the private sector.

GROWTH IN FEDERAL USER FEES

Two Congressional Budget Office (CBO) studies of user fees noted that federal user fees have experienced substantial real growth between 1981 and 1991[5]. According to the 1993 study, between 1980 and 1991, user charges increased by 54 percent in constant dollars.[6] In nominal dollars, total federal user fees increased from $38 billion in FY 1980 to $93.8 billion in FY 1991, an 8.6 percent annual compound growth rate. In addition, a 1993 CBO study noted that:

- Many federal agencies increased their reliance on user charges to finance their operations
- There was substantial variation among individual agencies with similar functional areas and missions regarding the use and importance of user charges.[7]
- Continued budgetary pressures would likely encourage the search for additional user fees to offset federal program costs rather than cutting programs.

The growth has continued since CBO completed its studies. In FY 2001, total federal user fees amounted to $133.7 billion, increasing to $162.3 billion in FY 2003 and $171.9 billion in FY 2004. The FY 2006 budget estimates indicate that user fees would increase to $186.6 billion in FY 2005 and $207.3 billion in FY 2006. The budget also projects continued growth in user fees, resulting in an estimated $243.1 billion by FY 2010. The actual annual compound growth rate in user fees between FY 2001 and 2004—8.7%—is slightly higher than that realized during the

[4] OMB Circular A-25 (revised), p. 2.
[5] CBO, *The Growth of Federal User Charges, August 1993*. p. x and *The Growth of Federal User Charges: An Update*, October 1995 memorandum, p. x.
[6] CBO, *The Growth of Federal User Charges*, August 1993, p.x.
[7] Some of this variance reflects differences in specific program objectives, and whether those objectives were established administratively or in statute. In other instances, influential stakeholder groups or powerful constituencies are able to prevent the adoption of efficient and equitable user fees. In yet other cases, the agency may lack sufficient financial data or administrative support to determine the full efficiency of a proposed user fee.

1980s, but is also slightly lower than the growth in total federal discretionary spending (10.0%) and non-defense discretionary spending (9.7%) over this same period.

The FY 2006 budget projects user fees to increase 9.8% annually between FY 2004 and FY 2006, with most of the growth occurring in FY 2006, assuming enactment of proposed new user fees. After FY 2006, annual user fee growth slows to 4.1% per year.

Business or market-oriented fees are the largest component of federal user fees, with postal service fees ($68 billion) and Medicare insurance premiums ($32.2 billion) accounting for over 58% of total federal user fees in FY 2004. However, while Medicare premiums account for an increasing proportion of federal user fees, reflecting the growth in the population eligible for Medicare services, postal fees are projected to account for a declining share. The FY 2006 Budget also projects continued growth in federal regulatory and licensing fees, including USPTO fees, over the next two years.

LEGISLATIVE AND BUDGETARY CHANGES SPUR USER FEE GROWTH

The two CBO studies noted that legislative changes and new budgetary processes have had a significant effect on user fee growth. These legislative changes began in 1985. As the 1993 CBO report noted, "beginning with the Consolidated Budget Reconciliation Act of 1985, the legal basis for setting certain user charges expanded from reimbursing an agency's costs of providing services to financing all or a specified portion of an agency's budget."[8] The report also observed that, "imposing fees that the budget measures as an offset against outlays thus allows supporters of a program to expand or maintain government services without increasing reported spending or revenues…[thus] the appropriations committees can impose or raise fees in order to comply with discretionary spending limits in the BEA."[9]

The 1993 CBO report notes that a major force behind the growth in federal user fees appears to be the effect of discretionary spending caps in conjunction with the accounting treatment of most user fees as offsetting collections rather than as federal receipts. These spending caps were introduced in the 1990 Budget Enforcement Act (BEA)[10]. This act introduced several new spending control processes for restraining federal spending and reducing the federal deficit. Rather than attempt to establish crude annual deficit reduction target such as those provided for in the Gramm-Rudman-Hollings Act,[11] the BEA contained distinct control mechanisms for discretionary and mandatory spending.[12] For discretionary spending, specific annual caps were established for total appropriated budget authority (BA) and the estimated outlays. Failure to remain under the annual spending cap could result in an across-the-board cut sufficient to achieve the cap.

[8] CBO, *The Growth of Federal User Charges*, August 1993 p. xi.
[9] Ibid, p xi.
[10] Title XIII of the 1990 Omnibus Budget Reconciliation Act, PL 101-508.
[11] The Balanced Budget and Emergency Deficit Control Act of 1985. PL 94-177.
[12] Discretionary spending is provided through annual appropriations acts. Mandatory spending is established in statute and is often termed "uncontrollable" because only a change in the authorizing statute will alter that spending.

To establish financial discipline and promote orderly budget development, the House and Senate Appropriations Committees would distribute the aggregate discretionary spending cap to each of their (then) 13 subcommittees through an allocation process. This process was part of the annual congressional budget reconciliation procedure that was expected to be completed early in the fiscal year prior to the development of individual appropriations bills.

Thus, the Commerce, Justice, and State appropriations subcommittees received their allocation of discretionary budget authority and outlays for a given fiscal year and had to fund all its discretionary spending programs within that ceiling. Since new or increased user fees offset other discretionary spending, each Subcommittee had an incentive to create additional "negative BA and outlays" to help fund high-priority discretionary spending within their allocated share of the spending cap.

The initial 1993 CBO study and the 1995 study focused on the development of new or increased user fees that were applied by the charging entity to help fund its overall program costs. Thus, several federal regulatory agencies increased their use of user fees to fund their total regulatory activities. But, the BEA's discretionary spending caps made expansion of user fees very attractive, given the traditional budget accounting for such fee revenues. Again, as the 1995 CBO study noted, "The increase in user charges reflects both administrative actions and legislative changes, which include predominantly budget reconciliation acts and annual appropriations measures. All of the budget reconciliation bills enacted since 1985 included increases in user charges, the most recent of these were the OBRA of 1990 and 1993."[13]

Under BEA budget scorekeeping rules, an offset to outlays from any source enacted by an appropriation subcommittee could provide funding room under the discretionary allocation process to support additional spending. While subcommittees would monitor other subcommittees to ensure that they both met their discretionary spending and did not try to "beggar thy neighbor" by enacting new fees for programs outside their jurisdiction, they had much greater flexibility within their own appropriations to use fees from one agency to help offset spending in another agency. Thus, fees from an agency like USPTO could help fund increases in higher-priority Justice, State, or other Commerce programs.

FEE AVAILABILITY IN USPTO AND OTHER AGENCIES

Table 1 shows the amount of user fee revenue for selected federal regulatory agencies relative to their total spending for FYs 1992, 1994, and 2000-2004. These data show that most of these federal regulatory agencies have continued or increased their reliance on user fees to fund their overall operations. In addition to USPTO, five of these agencies were fully funded by federal user fees throughout this period—the Federal Energy Regulatory Commission (FERC), SEC, OCC the Office of Thrift Supervision, and the Office of Federal Housing Enterprise Oversight (OFHEO). (A fifth regulatory agency, the Nuclear Regulatory Commission relied on user fees to fund over 85% of its operations over this period.) Several others, including the U.S. Customs Service, the FCC, and the FTC significantly increased their reliance on user fee financing.

[13] CBO, *The Growth of Federal User Charges: An Update*, October 1995. pps 2-3.

Table E-1
Selected Federal Regulatory Agencies with User Fees
(Dollars in Millions)

Agency	FY 1992			FY 1994			FY 2000		
	Revenue	Spending	Coverage	Revenue	Spending	Coverage	Revenue	Spending	Coverage
CFTC	1.6	46.6	3.43%	2	47	4.26%	0	63	0.00%
Customs	669.9	1937	34.58%	945	2181	43.33%	1290	2291	56.31%
FCC	50.7	129	39.30%	109	158	68.99%	244	269	90.71%
FERC	141.1	130.1	108.46%	165	148	111.49%	175	167	104.79%
Fed Maritime Comm	0	17	0.00%	0	18	0.00%	0	14	0.00%
FTC	13.8	84.7	16.29%	29	99	29.29%	107	126	84.92%
ICC	5.5	46.3	11.88%	8	50	16.00%	NA	NA	
INS	480.9	1397	34.42%	550	1595	34.48%	1423	4300	33.09%
NRC	489.3	540.4	90.54%	500	548	91.24%	447	480	93.13%
PTO/USPTO	428	389	110.03%	547	493	110.95%	1006	895	112.40%
SEC	400.3	228.8	174.96%	593	259	228.96%	863	357	241.74%
Copyright Office, LOC							26	37	70.27%
FDA	217						182	1050	17.33%
State Passport Office	187						849	4087	20.77%
OTS							144	144	100.00%
OCC							406	403	100.74%
OFHEO									
Farm Credit Admin									

Source: FY 1992 and FY 1994 data from CBO, *The Growth of Federal User Charges,* August 1993. FY 2000 data from FY 2005 Budget of the United States Government, Analytical Perspectives.

* CFTC (Commodities Futures Trading Commission)
** ICC (Interstate Commerce Commission)
*** INS (Immigration and Naturalization Service)
**** FDA (Food and Drug Administration)
***** OTS (Office of Thrift Supervision)

Agency	FY 2001			FY 2002		
	Revenue	Spending	Coverage	Revenue	Spending	Coverage
CFTC	0	71	0.00%	0	75	0.00%
Customs	1280	3071	41.68%			
FCC	284	315	90.16%	297	333	89.19%
FERC	183	179	102.23%	184	191	96.34%
Fed Maritime Comm	0	16	0.00%	0	16	0.00%
FTC	92	152	60.53%	69	157	43.95%
ICC	NA	NA		NA	NA	
INS	1926	5127	37.57%			
NRC	470	513	91.62%	476	559	85.15%
USPTO	1109	1065	104.13%	1145	1144	100.09%
SEC	736	431	170.77%	1013	489	207.16%
Copyright Office, LOC	28	38	73.68%	20	37	54.05%
FDA	195	1356	14.38%	291	1569	18.55%
State Passport Office	1181	4397	26.86%	426	4861	8.76%
OTS	161	161	100.00%	158	148	106.76%
OCC	435	435	100.00%	432	417	103.60%
OFHEO				27	27	100.00%
Farm Credit Admin				35	34	102.94%

Source: FY 2005 Budget of the United States Government, Analytical Perspectives.

Agency	FY 2003			FY 2004 est		
	Revenue	Spending	Coverage	Revenue	Spending	Coverage
CFTC	0	89	0.00%	0	90	0.00%
Customs						
FCC	363	369	98.37%	358	360	99.44%
FERC	192	190	101.05%	204	204	100.00%
Fed Maritime Comm	0	17	0.00%	0	18	0.00%
FTC	61	177	34.46%	135	187	72.19%
ICC	NA	NA				
INS						
NRC	526	597	88.11%	546	632	86.39%
USPTO	1188	1191	99.75%	1264	1230	102.76%
SEC	1000	620	161.29%	1547	793	195.08%
Copyright Office, LOC	27	44	61.36%	29	48	60.42%
FDA	282	1682	16.77%	322	1710	18.83%
State Passport Office	687	5316	12.92%	889	5937	14.97%
OTS	159	154	103.25%	169	178	94.94%
OCC	462	444	104.05%	484	477	101.47%
OFHEO	30	30	100.00%	40	40	100.00%
Farm Credit Admin	36	38	94.74%	41	42	97.62%

Source: FY 2005 Budget of the United States Government, *Analytical Perspectives*.

Table E-2 shows USPTO's budget authority, enacted budget, collections, and amounts that were redirected for FYs 1990-2003. Any excess of fee revenues relative to budget authority in a given year could be used under BEA budget accounting rules by the administration and the appropriations subcommittee to fund additional Commerce activities (or other discretionary spending within the Subcommittee's jurisdiction). USPTO became a fully fee-funded agency in 1992, and after that, fees consistently exceeded appropriated spending, although that excess has declined substantially since FY 2000.

Table E-2
USPTO's budget authority, collections, and funds redirected (in millions)

Fiscal year	Budget authority	Enacted budget	Total collections	Funds redirected
1990	305.9	275.9	305.9	
1991	347.3	351.4	347.3	
1992	419.7	419.4	427.8	8.1
1993	486.1	473.6	498.4	12.3
1994	532.2	504.0	546.9	14.7
1995	622.2	541.7	646.2	24.0
1996	636.5	614.5	665.2	28.7
1997	701.8	662.5	755.5	53.7
1998	690.2	691.0	890.5	200.3
1999	781.5	795.6	887.1	105.6
2000	885.0	868.0	1005.5	120.5
2001	1038.7	1038.7	1084.3	45.6
2002	1127.5	1126.0	1143.9	16.4
2003	1182.0	1182.0	1193.7	11.9
2004	1221.0	1222.4	1193.7	100.9

Source: USPTO

While it is unusual for an agency that is fully fee funded to have its fee revenue exceed its spending level, this experience is not unique to USPTO. Five agencies—FERC, USPTO, SEC, OTS, OCC, and OFHEO—have had their fee revenues exceed their spending levels in at least one fiscal year. Below is brief description of experience for OTS, OCS, OFHEO, and FERC.

- For OTS and OCC, actual fee revenues can vary slightly from actual spending in any given year, even though they are wholly dependent upon fee income to sustain their operations. The spending authority for these two bank regulators is permanent authority and not subject to annual appropriations action. Thus, the variances between spending and revenue collections reflect difference between estimated and actual collections from their assessments on their regulated entities.

- As the financial regulator of the two principal housing government-sponsored enterprises—Fannie Mae and Freddie Mac—OFHEO's assessments and spending have been subject to annual appropriations actions. The slight annual variations appear to reflect spending lags between actual outlays and obligations.

- FERC also has its user fees released in annual appropriations acts. However, to minimize changes in annual spending due to unanticipated changes in revenue collections, those

acts provide general funds to support annual FERC spending and further provide that annual fee collections offset those general fund appropriations "so as to result in a final fiscal year [1999] 2000 appropriation from the General Fund estimated at not more than 0."[14] Again, in this instance, the differences in coverage between fee revenues and spending reflect variances between actual and estimated collections and not explicit redirection of funds.

Thus, while actual fee collections can exceed spending for federal regulatory agencies wholly dependent upon user fee funding, this is due to variances between estimated and actual collections or spending lags for most of these agencies.

The two regulatory agencies whose fee revenues have consistently exceeded spending over the last decade have been USPTO and the SEC. Both of these agencies are funded by user fees made available through annual appropriations of the Commerce, Justice and State, the Judiciary and Related Agencies subcommittee.

FEDERAL CORPORATIONS' FUNDING SOURCES AND RESTICTIONS

Table E-3 shows the funding sources and any restrictions on authorized spending for 19 government corporations. Academy staff prepared it using primarily federal budget documents.

Table E-3
Federal Corporations' Funding Sources and Restrictions

Corporation	Funding Source	Restrictions
Commodity Credit Corporation	Mandatory "such sums" appropriations for losses, direct loans and loan guarantees	None; discretionary annual appropriations for loan guarantee administrative expenses
Community Development Financial Institutions Corporation	Annual discretionary appropriations for direct loan credit subsidies, grants, administrative expenses	Totally dependent upon appropriations; no independent revenue source
Corporation for National and Community Service	Annual discretionary appropriations	No independent revenue source
Export-Import Bank	Annual discretionary appropriations for credit programs, credit subsidies and administrative expenses; mandatory appropriations for all other programs	Only credit programs limited
Farm Credit Insurance Corporation	Premiums charged insured banks; interest on fund balances	Board sets premiums to maintain base amount [2 percent outstanding obligations] can refund excess fund balances to insured banks
Federal Deposit Insurance Corporation	Premiums charged insured depositories; interest on fund balances	Premiums set to maintain designated reserve ratio for insurance funds
Federal Financing Bank	Mandatory borrowing authority from Treasury; statutory authority to borrow up to $15 billion from public	None

[14] Energy and Water Development Appropriations Act, 1999.

Federal Housing Administration	Insurance premiums from borrowers; credit subsidy appropriations	1990 Federal Credit Reform Act (FCRA) limits guarantees to amounts credit subsidies support or appropriated commitment limitations
Federal Prison Industries (UNICOR)	Revenues from sale of products and services	Administrative expenses limited to appropriated amount
Government National Mortgage Association	Guarantee fees on mortgage backed securities issued	Administrative expenses limited to appropriated amount; guarantees limited to appropriated commitments
Legal Service Corporation	Discretionary annual appropriations	No independent revenue source
NCUA Central Liquidity Facility	Stock subscriptions from member credit unions	1990 FCRA limits credit programs and administrative expenses to appropriated amounts
Overseas Private Investment Corporation	Fees and premiums charged borrowers; interest on corporate balances	1990 FCRA limits credit and insurance programs and administrative expenses to appropriated amounts
Pension Benefit Guarantee Corporation	Premiums from covered plans; mandatory appropriations for program costs	Administrative expenses limited to appropriated amounts
Presido Trust	Rental income from leased properties; user fees, annual declining appropriations; 2000 $2 million credit subsidy appropriations	Credit subsidy unused
Rural Telephone Bank	Appropriations for direct loan credit subsidies and administrative expenses	Subject to 1990 FCRA credit limits; initial stock being redeemed as bank is privatized
Saint Lawrence Seaway Development Corporation	Annual appropriations from Harbor Maintenance Trust (HMT)	HMT funds must be released in appropriations act
Tennessee Valley Authority	Revenues from sales	No restrictions; 2005 appropriations for IG proposed
US Enrichment Corporation	Privatized 7/28/98	

Several of these federal corporations operate federal credit programs—direct loans and loan guarantees—or federal insurance programs. For those with federal credit programs, all but the Commodity Credit Corporation are subject to annual appropriations limitations for credit subsidies consistent with the 1990 Federal Credit Reform Act (FCRA).

Three of the corporations—Community Development Financial Institutions Fund, Corporation for National and Community Service, and Legal Service Corporation—are wholly dependent upon annual appropriations; they have no independent revenue source. Another corporation, the Saint Lawrence Seaway Development Corporation, is funded with user fees collected by a separate entity, the Harbor Maintenance Trust fund; but these user fees must be released annually through appropriations action.

On the other hand, most of those federal corporations with independent revenue sources that were not operating federal credit programs faced relatively few spending restrictions on authorized activities. Several, like Federal Prison Industries (UNICOR) and Pension Benefit Guaranty Corporation (PBGC), had limitations on annual administrative expenses established in

appropriations acts. However others, like Tennessee Valley Authority and the Federal Financing Bank (FFB), had no explicit annual restrictions on their authorized spending.

These observations seem to indicate that a federal corporation might be less likely to be subjected to annual spending limitations, except for overriding legislation such as the FCRA. But, Congress can still intervene to restrict annual spending for wholly fee-funded corporations, as it has in establishing administrative expense limitations for UNICOR and the PBGC. While a federal corporation may have greater visibility than a federal agency or bureau within a department, a corporation structure does not guarantee that limits will not be placed on its spending.

ADDITIONAL DATA ON PATENT EXAMINER ATTRITION

From 1990 to 2000, USPTO staffing doubled from 1,681 patent examiners to 3,143 patent examiners. The majority of staff lost to attrition during this decade left during their first three years of USPTO employment.

To summarize, during this decade:

- 56 percent of PE attrition was because an examiner left during the first three years
- 30 percent of the examiners who left had less than one year of USPTO service
- 17 percent had less than two years of service
- 9 percent had less than three years [1]

Just as they do now, attrition rates during this period varied by TC and industry sector. FY 99 rates show TC 1600 (biotechnology, organic chemistry), with the lowest attrition rate of 9 percent, and TC 2700 (now split into TC 2100, computer architecture, software, information security, and TC 2600, communications), with the highest attrition rate of 19 percent. During the dot.com boom, from June 1999 through October 2000, USPTO experienced an attrition rate of 46 percent for examiners with training in electrical engineering, computer engineering, and computer science – the very specific skills it was seeking to acquire to respond to increased demand for patents in this sector.[2]

In March 2002, the Department of Commerce IG issued a report,[3] which focused on patent examiner hiring and attrition, particularly among those who had worked for USPTO for less than one year. The IG attributed a significant number of these departures to USPTO not fully explaining job requirements to candidates during pre-employment interviews. The IG encouraged increased funding for and attention to recruitment and noted that USPTO had taken a series of initiatives to address these challenges, including improved interview procedures, an enhanced advertising campaign, and an effort to more realistically explain the work of the agency to job candidates..

FY 2004 patent corps attrition was at 336, or an overall rate of 8.6 percent.[4] In a January 2005 presentation, USPTO management referred to current data for entry level attrition, noting concern over the number of new hires leaving within their first year, and stated that management was seeking to determine the reasons to which these increased rates of departure might be attributable. (See the table at the end of this appendix for more detailed data on patent examiner attrition by years of service and TC, for the period FY 2000-2004.)

[1] "USPTO Patent Examiner Attrition/Retention Study," August 2000, p. 2.
[2] "Restructuring the Patent and Trademark Office," NAPA, February 2003, p. 4.
[3] U.S. Department of Commerce, Office of Inspector General Final Report BTD-14432-2-001, "Patent Examiner Hiring Process Should be Improved," March 2002.
[4] The United States Patent and Trademark Office presentation, Hires and Attritions, presented January 27, 2005, p. 11.

Total attrition during a six-fiscal-year-period (from FY 1999 through FY 2004) has amounted to 1,902 departures – roughly half the size of the current patent corps. The agency as a whole lost 439 of its 6,755 employees in FY 2003, according to OPM data, for an overall USPTO attrition rate of 6.4 percent.

Recent data also show the following patterns for USPTO examiner attrition:

- 47 percent of those who left in FY 2002 had less than one year of service
- 31 percent of those who left in FY 2003 had less than one year of service
- 24 percent of those who left in FY 2004 had less than one year of service.

From FY 2002 through FY 2004:

- 23 percent of PEs who left were GS-7s or lower at their exit; 21 percent were GS-13 or higher; of those who left within one year, 15 percent were terminated or removed
- 43 percent of the patent examiners who left had not been promoted before leaving
- 24 percent who left within a year had been promoted.

For FY 2004:

- Attrition varied greatly by TC, as it had in the previous decade's study. The highest numbers of first year departures were in TC 2100, which had 38 first-year departures (accounting for 65 percent of their attrition) and TC 2600, which had 39 first-year departures (accounting for 47 percent of their attrition). Taken together, these two TCs account for 92 percent of those who left within the year.
- Looking at those patent examiners who depart within three years of being hired as a percentage of those hired during that same fiscal year,[5] USPTO faces a challenge if it expects to hire its way out of increased pendency. Specifically:

    - The number of examiners with less than three years of service who left in FY 2004 represented 39 percent of those hired during that fiscal year
    - For FY 2003, they represented 45 percent of the hires
    - For FY 2002, they represented 15 percent of the hires
    - For FY 2001, they represented 44 percent of the hires
    - For FY 2000, they represented 82 percent – with 308 attritions and only 375 total hires.

[5] Given that an examiner can be hired in one fiscal year and leave in the next fiscal year and still not have worked a year, these statistics are not meant to imply that all of the attritions were employees hired in that same fiscal year.

Table F-1
Separation by Type: FY 2000-2004

Separation by Type	2000	2001	2002	2003	2004
Deceased	0	3	2	2	1
Resigned	386	217	183	185	258
Retired	15	13	21	25	54
Terminated	15	15	30	25	15
Transferred	26	16	16	4	12
Total	442	264	252	241	340

Note: the numbers in this table include 5 design examiners in 2000, 1 in 2001, 2 in 2002, none in 2003, and 4 in 2004.

The comparative attrition rate for NASA scientists and engineers with less than five years of experience was 3.5 percent during fiscal years 2002 to 2004. This was an increase over past departure rates in an agency with an overall attrition rate of 3.2 percent and most of that due to retirements. NASA, with a significantly disparate mission and less repetitive work than USPTO, is also different in that it has many field installations and is not located solely in the Washington, DC area. As a point of comparison, the private industry rate for engineers and scientists was 15 percent attrition during FY 1999.

Another agency with a scientific and technically educated workforce is the Centers for Disease Control (CDC), which in Calendar Year 2002 experienced an overall attrition rate of fewer than 8 percent.

The National Science Foundation (NSF) takes a different approach to staffing. They use limited time appointments (intermittent, temporary, term, visiting scientists, and Intergovernmental Personnel Act assignments) for 25 percent of their staff to infuse the workforce with just-in-time competency.[6] NSF experienced a 13 percent attrition rate among its scientists and engineers over a three-year period, from 2001 through 2004, losing 53 employees total out of a workforce of 401.[7] Their average annualized attrition rate was therefore 4.4 percent.

[6] Draft National Science Foundation Workforce Planning System, Labor Market Analysis Report," January 2005, p. 17.
[7] Ibid., p. 38.

DETAILED INFORMATION ON ATTRITION IN TECHNOLOGY CENTERS: FISCAL YEARS 2001-2004

FISCAL YEAR 2004

TC	FY Hires	<1	=>1<2	=>2<3	=>3<4	=>4<5	=>5<6	=>6<10	=>10<15	>15	Total Attrits	BOFY Staff	EORP Staff	Avg. Staff	Attrits as % of Avg. Staff
1600	75	2	2	0	8	6	2	1	1	8	30	402	451	426.5	7.03%
1700	35	2	1	3	2	2	2	1	2	11	26	466	475	470.5	5.53%
2100	115	38	9	2	1	1	2	1	1	3	58	538	603	570.5	10.17%
2600	116	39	13	13	4	1	2	4	3	3	82	675	706	690.5	11.88%
2800	31	0	7	13	7	9	5	2	4	11	58	818	792	805	7.20%
3600	26	0	0	13	3	1	8	5	3	10	43	479	457	468	9.19%
3700	45	2	6	9	3	2	4	7	2	4	39	472	475	473.5	8.24%
Total	443	83	38	53	28	22	25	21	16	50	336	3,850	3,959	3,905	8.61%
% of Total Attritions		24.70%	11.31%	15.77%	8.33%	6.55%	7.44%	6.25%	4.76%	14.88%	100.00%				

FISCAL YEAR 2003

TC	FY Hires	<1	=>1<2	=>2<3	=>3<4	=>4<5	=>5<6	=>6<10	=>10<15	>15	Total Attrits	BOFY Staff	EORP Staff	Avg. Staff	Attrits as % of Avg. Staff
1600	16	7	3	6	1	5	0	1	5	4	32	417	402	409.5	7.81%
1700	0	1	5	3	1	7	0	0	4	9	30	498	466	482	6.22%
2100	150	27	12	1	1	1	2	0	1	0	45	432	538	485	9.28%
2600	137	18	5	0	1	2	1	1	1	0	29	567	675	621	4.67%
2800	2	10	7	2	3	6	3	1	4	3	39	863	818	840.5	4.64%
3600	1	6	11	3	1	2	2	1	1	8	35	516	479	497.5	7.04%
3700	2	7	5	1	2	2	4	3	2	5	31	510	472	491	6.31%
Total	308	76	48	16	10	25	12	7	18	29	241	3,803	3,850	3,827	6.30%
% of Total Attritions		31.54%	19.92%	6.64%	4.15%	10.37%	4.98%	2.90%	7.47%	12.03%	100.00%				

FISCAL YEAR 2002

TC	FY Hires	<1	=>1<2	=>2<3	=>3<4	=>4<5	=>5<6	=>6<10	=>10<15	>15	Total Attrits	BOFY Staff	EORP Staff	Avg. Staff	Attrits as % of Avg. Staff
1600	45	13	6	5	1	4	5	2	6	2	44	420	417	418.5	10.51%
1700	48	7	1	2	5	2	1	1	3	4	26	481	498	489.5	5.31%
2100	206	19	0	4	2	2	0	2	1	0	30	365	432	398.5	7.53%
2600	171	29	3	3	2	2	0	0	0	1	40	448	567	507.5	7.88%
2800	164	35	3	5	4	3	1	1	2	8	62	758	863	810.5	7.65%
3600	53	9	2	2	0	1	0	2	5	1	22	359	516	437.5	5.03%
3700	82	7	0	2	2	2	0	4	2	7	26	465	510	487.5	5.33%
Total	769	119	15	23	16	16	7	12	19	23	250	3,296	3,803	3,550	7.04%
% of Total Attritions		47.60%	6.00%	9.20%	6.40%	6.40%	2.80%	4.80%	7.60%	9.20%	100.00%				

FISCAL YEAR 2001

TC	FY Hires	<1	=>1<2	=>2<3	=>3<4	=>4<5	=>5<6	=>6<10	=>10<15	>15	Total Attrits	BOFY Staff	EORP Staff	Avg. Staff	Attrits as % of Avg. Staff
1600	49	17	11	5	3	1	4	4	3	2	50	421	420	420.5	11.89%
1700	36	6	7	9	0	0	0	5	2	4	33	475	481	478	6.90%
2100	73	10	10	10	3	0	1	1	3	1	39	322	365	343.5	11.35%
2600	56	13	9	3	3	1	3	1	0	0	33	426	448	437	7.55%
2800	121	20	7	6	3	1	1	4	4	6	52	684	758	721	7.21%
3600	41	11	7	2	0	1	0	2	2	3	28	359	359	359	7.80%
3700	38	7	7	6	2	0	3	1	1	1	28	456	465	460.5	6.08%
Total	414	84	58	41	14	4	12	18	15	17	263	3,143	3,296	3,220	8.17%
% of Total Attritions		31.94%	22.05%	15.59%	5.32%	1.52%	4.56%	6.84%	5.70%	6.46%	100.00%				

FISCAL YEAR 2000

TC	FY Hires	<1	=>1<2	=>2<3	=>3<4	=>4<5	=>5<6	=>6<10	=>10<15	>15	Total Attrits	BOFY Staff	EORP Staff	Avg. Staff	Attrits as % of Avg. Staff
1600	78	13	2	2	3	5	2	5	4	0	36	377	421	399	9.02%
1700	30	7	15	4	0	1	0	8	2	8	45	493	475	484	9.30%
2700	83	69	34	14	3	8	1	13	0	4	146	813	748	781	18.71%
2800	115	26	25	5	1	8	1	10	4	5	85	654	684	669	12.71%
3600	32	17	15	6	1	3	1	3	2	1	49	369	359	364	13.46%
3700	37	25	23	6	2	3	4	3	4	6	76	499	456	478	15.92%
Total	375	157	114	37	10	28	9	42	16	24	437	3,205	3,143	3,174	13.77%
% of Total Attritions		35.93%	26.09%	8.47%	2.29%	6.41%	2.06%	9.61%	3.66%	5.49%	100.00%				

Notes: In FY01 TC 2700 was split into TCs 2100 and 2600, at beginning of the fiscal year (BOFY) and end of reporting period (EORP) staff includes SPEs

FEDERAL AGENCY TAILORED RECRUITMENT PROGRAMS

- **The Department of Justice's Attorney General's Honors Program** is the only way DOJ hires entry-level attorneys. It is highly competitive and prestigious and, in the words of the Attorney General, allows these attorneys to step immediately into demanding, sensitive, and important positions and be entrusted with significant responsibility on crucial matters from the day they join.[1] Candidates with law degrees begin at the GS-11 level, while those with graduate law degrees or who have served judicial clerkships begin at the GS-12 level. It is possible for attorneys starting at the GS-11 level to reach the GS-15 level in three and one-half years.

- **The Department of Labor Master of Business Administration (MBA) Fellows** program, begun in 2002, is "a comprehensive, entry-level employment and career development program designed to recruit and nurture the next generation of DOL leaders." Inspired by the President's Management Agenda, Secretary Chao initiated the program to attract individuals with the types of business skills needed to help make the government more results and business oriented as well as citizen centered. The two year program includes rotational assignments and formal training, with the option of conversion to a competitive permanent position. DOL hires these individuals with business skills at the GS-9 level, with a target grade of GS-12 upon program completion. The key competencies on which DOL focuses are planning and evaluation, research and analysis, teamwork, and written and verbal communications. The MBA Fellows program has been recognized as a model program in several publications, including the *Wall Street Journal* and *The Washington Post.*[2]

- **The U.S. Environmental Protection Agency's Intern Program (EIP)**, very much like the DOL Fellows program, focuses on recruitment for the next generation of EPA's leadership. It too is a comprehensive, entry-level, professional, full-time employment and career development program designed to "jump-start" the individual's career and develop their potential for advancement within the Agency. With an extensive nation-wide marketing campaign, the program hires primarily environmental protection specialists, biologists, and environmental scientists from among the thousands of applications it receives each year. Applicants are required to submit two one-page essays: one on a particular environmental issue on which they would like to work and one describing an activity utilizing planning, organization, team work, leadership, and written and verbal communication skills. The agency typically hires 20 to 30 EIPs a year, but circulates the applications of the remaining eligibles, who have not made the final cut after the panel interview of the top 70 candidates, to EPA hiring officials who have other entry-level job openings. EIPs are hired at the GS-7 or GS-9 level and typically have promotion potential to the GS-13.

[1] Letter from John Ashcroft to Applicants for the Attorney General's Honors Program, April 15, 2003.
[2] U.S. Department of Labor press release, "U.S. Department of Labor Launches Third MBA Fellows Class," December 23, 2003.

- Both the **SEC and OCC**, part of the Department of the Treasury, have special salary rates authorized because of strong competition from the private sector. Other federal banking entities have similar salary programs.

    - In 2002, Congress took action to stem staff turnover at the SEC, which employs about 3100 people. The legislation exempted the SEC from civil service pay rules and gave the agency authority to pay salaries comparable to those of employees at other federal financial regulatory agencies, with employees receiving base pay plus a locality percentage based on their office location. Entry level law clerks are typically paid between $75,000 and $84,000. In the Washington, DC area, lawyers with one year of legal experience earn between $75,000 and $96,000; those with two years experience earn between $89,000 and 114,000, and those in senior or supervisory positions earn from $102,00 to $159,000. At the start of the decade, the SEC was losing staff, with turnover more than double the government-wide average. During fiscal year 2000, the SEC's New York regional office lost 33 percent of its lawyers, 14 percent of its accountants, and 21 percent of its compliance examiners. The SEC uses this new pay package, along with flexiplace and flexitime programs, to attract and retain their workforce. According to a 2004 employee survey, 77 percent of SEC workers surveyed said they were very or generally satisfied with their pay.[3]

    - Although the OCC is part of the Department of the Treasury and hence part of the federal government, it has a more flexible salary and benefits program. Jobs in certain cities also receive geographic pay differentials, which are paid in addition to base salary to recognize cost-of-labor differences. Washington, DC area employees of the OCC currently receive an 8% differential. Many benefits are paid for by the OCC at no cost to its employees, including dental and vision benefits. Additionally, the OCC offers a separate 401(k) plan, with employees eligible to contribute up to 10% of salary on a pre-tax basis and the OCC providing a discretionary matching contribution currently at 2 % of salary. They are also eligible for the government-wide Thrift Savings Plan. Career civil servants, divided into nine pay bands, are eligible for pay up to the level of the Vice-President, currently $208,383 in 2005. Maximum pay rates for employees in the top two OCC pay bands exceed current maximums for the SES, with those in Pay Band VIII eligible to receive up to $165,940, as compared to SES employees in agencies with certified performance appraisal systems, who can earn up to a maximum of $162,100.

[3] "Changes in Pay and Schedules at SEC Bring Higher Employee Satisfaction Rates," *The Washington Post*, November 15, 2004, p. B 2.

JAPAN PATENT OFFICE AND EUROPEAN PATENT OFFICE WORK PROCESSES AND BACKGROUND INFORMATION

JAPAN PATENT OFFICE

The Japan Patent Office (JPO) is committed to comprehensive development of industry through planning and carrying out examinations and appeals/trials under the system of industrial property rights, which includes patents, utility models, designs and trademarks. It functions as a traditional government agency, with its budget approved by the legislature (the Diet).

Academy staff received briefings from several Japanese organizations:

- JPO
- Industrial Property Cooperation Center (IPCC)
- Japanese Patent Attorneys' Association (JPAA)
- Japanese Intellectual Property Association (JIPA).

EXAMINATION PROCESS

The average pendency is 31.1 months, which is the time elapsed from the date of request for examination until disposal,[1] and includes variations in time required for applicants to respond to office actions. Applicants in Japan are allowed 60 days to respond to an office action while foreign applicants are allowed three months and can extend that time to six months upon request.

The average pendency from request for examination to the first office action is about 25 months. JPO hopes to reduce pendency to 11 months by 2013 by employing the following methods:

- Hiring more patent examiners
- Expanding the capacity of outsourcing
- Revising the fee structure (reducing the filing and annual fees and increasing the examination fee, which will reduce the overall fees).

Deferred Examination

This system began in 1971. Applicants can file and then wait three years before requesting an examination, which is only done if they make this request. Until a few years ago, they could wait seven years, and some inventors would still prefer the longer timeframe.

[1] This does not reflect the full time the application may have been with JPO. An examination will be carried out only for those applications for which the applicant or a third party has filed a request for examination within three years from the filing data of a patent application. The pendency clock does not start until the application requests the examination.

The advantage to the applicant is that they can assess the marketability of their invention during the three-year deferral time and save the cost to examine unnecessary applications. JPO stated that the system works because 46% of applications are never examined.

The disadvantage to USPTO is that if the applicant files concurrently in the U.S. (as is often the case), the U.S. will begin its examination before JPO. JPO can (and does) use the U.S. Public PAIR system to take advantage of (exploit) the USPTO search. USPTO can rarely exploit Japanese search results.

Accelerated Examination

JPO introduced accelerated examination as an option for applicants in 1986; these applications are taken out of queue and are examined immediately. Applicants who use this system receive their first office action in approximately 2.5 months from the date that accelerated examination is requested. Recently, JPO informed its top 50 applicants that one major benefit of the accelerated examination is that they could use the results for USPTO's information disclosure statement, eliminating the barrier because the search, and first action would cover the prior art.

Not all applicants can take advantage of accelerated examination. Acceptable applications are:

- Working-related applications
    - Applications files by an applicant or licensee who has already commercialized the invention or plans to do so in the future within two years from the filing date of a request for accelerated examination.
- International filed applications
    - Applications for inventions that were files with at least one foreign IP office as well as JPO or filed under PCT.
- Academic institute applications
    - Applications filed by a university, junior college, public research institute, approved or an authorized Technology Licensed Organization (TLO).
- Small and Medium Sized Enterprises (SME) applications
    - Applications filed by an SME or individual.

Post-Grant Review

Between 1996 and 2003, JPO used two types of post grant review processes--an opposition process and an invalidation appeal. An opposition process could be requested by anyone but only within 6 months from the date the patent was published. Appeal rights were limited to the patentee.

A request for invalidation appeal could be initiated only by an interested party but could be filed anytime after the establishment of the patent rights. The challenger was also included in the invalidation process and was provided appeal rights. Valid reasons include lack of novelty, inventive step, industrial applicability, description or enablement requirement. Involved parties have the right to appeal the decision of the *inter-partes* trial to the Tokyo High Court.[2]

In 2003, to help streamline the patent system, JPO abolished the opposition process and merged it with the invalidation appeal. This merged system has many of the same features of the former opposition process.

Claims

Formality

JPO does not limit the number of claims an applicant can submit. However, examination and annual fees depend on the number of claims, which could discourage applicants to include many of them. It is also JPO's practice to consider multiple dependent claims as one claim.

Substantiality

The number of claims in an application is restricted by the "unity of invention." The provisions are designed to provide convenience for an applicant, a third party, and JPO by allowing two or more inventions that are closely related to be filed within the same application. JPO follows the international rule for unity of invention while performing the search for domestic applications or international preliminary examination for PCT applications.

Time Allowed for Examination

There is no official time set for examination. However, on average, an examiner will complete about 200 first actions per year; as noted, this does not include time spent on the search.

Rejection of Patents

An examiner's notices of refusal are sent electronically using a standard format. The first paragraph cites Japanese patent law, and the second states why the application cannot be approved. The level of detail of the reasons for refusal depends on the complexity of the application and is indicated on a claim-by-claim basis. Examiners are also expected to state clearly why a claim is refused; if there are a number of claims and the reason(s) for refusal are different for each one, the examiner breaks down the reason for each claim. If the reason(s) for refusal are the same, the examiner can group the claims and give the applicant one explanation.

[2] The Intellectual Property High Court was established on April 1, 2005.

Communication with Applicants

Supplementary means for examiner communication with the applicant include technical explanation or interview. An interview, telephone or fax is used to communicate with an applicant when their use contributes to a prompt and precise examination.. Directors and group leaders also communicate with applicants regarding general issues. To ensure transparency in an interview procedure, examiners are required to keep a record of the interview.

AUTOMATION

Almost every function within JPO is done electronically. Examples include: filing applications (including documentation submitted by applicant), drafting office actions, publication of patent applications and the provision of patent information and searching of prior art. JPO began working toward paperless filing and processing in 1984 and received its first online applications in December 1990.

JPO has the added challenge of being the only nation in the world to use the Japanese language, so it must maintain an English language web site[3] and translate abstracts of all its issued patents into English if others are to access them easily.

QUALITY

The quality of patents reflects whether or not it meets criteria of patentability under Japanese law with respect to novelty, inventive step (non-obviousness), industrial applicability and description requirement. JPO also believes that the quality of examiner work is facilitated by its open-space work environment, which encourages examiners to consult one another. Examiners can consult group leaders and directors, who generally have appeals department experience, and there is a division check before the application is disposed. Also, directors and corresponding board of appeal section heads regularly meet to discuss trends.

Twice-a-year performance reviews include a review of quality. These reviews are performed by the Examination Guideline and Practice Committee, which is a cross-sectional body composed of five director-level members. The committee receives reports from each section, and measures for quality improvement are examined as needed.

Error Rates

JPO could not provide a specific percentage. However, in 2003, 111,000 patents were granted and 4,100 appeals were processed; 970 patents were reversed or invalidated (.087 rate). JPO did not provide the number of court cases; however, they believed the figure would be low because the Japanese culture advocates negotiation rather than litigation. This was reinforced in meetings with JPAA representatives.

[3] http://www.jpo.go.jp/.

Issuance of "Bad" Patents

JPO senior staff said JPO has not issued any so-called "bad patents" and said they have clarified and revised examination standards to ensure thorough examinations. JPO has also taken countermeasures to bad patent applications by publicizing what can and cannot be patented and dispelling the myth that anything can be patented in the field of business-related inventions. In 1999, 65% of patent applications were granted and in 2003, 50% were granted.

JPO makes an effort to discuss patent administration with its users, including JPAA, JIPA, patent agents' associations, and patent applicants' associations. The JPO also meets with foreign user groups including AIPLA and the JPO-U.S. Bar Liaison Council.

HUMAN RESOURCE MANAGEMENT IN JPO

Of the 2,555 staff in JPO, 1,243 are patent examiners. The Diet has placed a cap on the total number of staff in all agencies, though it has recently permitted JPO to hire fixed-term examiners (who will serve up to 10 years) to help reduce pendency; JPO hired 98 in 2004 and intends to employ 500 more over the next five years. In addition, (and because of the cap on hiring), JPO contracts out part of its prior art search to the Industrial Property Cooperation Center (IPCC). IPCC employs more than 1,000 searchers who report their results to JPO examiners. Fifty IPCC employees previously worked for JPO and serve as trainers and supervisors.

Recruiting and Hiring

JPO's examiner education is similar to USPTO's in that most have an undergraduate technical background or a master's degree and some have Ph.D.s. Prospective examiners must pass through a vigorous selection process, which includes the highest level civil service examination followed by a series of interviews. Applicants must also take a character test and JPO said they "evaluate their personalities" prior to employment, to ensure that they are suitable for the kind of work JPO does.

Newly hired employees begin their career as assistant examiners and remain in that position for approximately four years. During that time they are trained and mentored under patent examiners who have signatory authority. They also take required training courses to learn law and patent examination; each of the courses lasts a few months and assistant examiners must pass all courses to become patent examiners.

Qualifications to become a fixed-term examiner are also strict. Applicants must have an undergraduate degree in a technical field and have at least four years of experience in R&D or IP-related work; 23 of the 98 fixed-term examiners hired in 2004 have Ph.D.s.

Salaries of JPO Examiners[4]

Position/	Pay Range From	To
Asst. Examiner G-1	$17,423	$33,049
Examiner G-2	$24,635	$40,981
Examiner G-3	$29,983	$47,575
Examiner G-4	$34,128	$50,675
Mgt. G-5	$37,105	$54,697
Division Director G-6	$41,329	$57,326
Sr. Dept. Mgr. G-7	$46,732	$64,897[5]

Promotions

Examiners are promoted based on their performance review, which includes a review of quality, production, written and oral communication, and leadership skills. For the purpose of HR development, many examiners have the opportunity to rotate to policy, planning (including elsewhere in the Japanese civil service), and administrative functions for one to two years and do these rotations more than once in their careers. While details to other positions are the norm for a JPO examiner, those who are most successful have more varied rotations and are given options to define their own career path. Supervisors counsel and mentor those who are less successful in their work, but JPO will rarely remove an employee for performance.

[4] Annual salary depicted here does not include significant individual bonus, typically equal to salary for 4.4 months, and is converted from a monthly rate in Japanese yen to US dollars, as of April 20, 2005 ($1=106.82 yen).

[5] To compare JPO senior management income to that of Japanese patent attorneys, known as "benrishis," the typical annual benrishi income ranges from about $6 million to 10 million yen. As of April 20, 2005, this converts to an annual salary range from $56,169 to $93,615.

Other Activities

JPO provides opportunities for examiners to participate in a wide array of academic conferences and training sessions, visit research institutes and companies and intern with them. JPO has also dispatched patent examiners to other patent offices such as EPO and some of the EPC contracting states' national offices, including those in Germany, the United Kingdom, and Sweden. They have also sent staff to Korea. JPO is trying to foster mutual understanding through studying search methods and examination practice in other offices and considers the exchange of patent examiners to be a contribution to the examiner development.

SEPARATION OF SEARCH AND EXAMINATION IN JAPAN

JPO began contracting out search of prior arts in 1985 on a trial basis and officially in 1989 to IPCC. Given the restrictions on hiring, JPO believes being able to contract out the search helps with pendency. Each year, JPO estimates the number of searches it expects to outsource and requests contracting funds accordingly. As discussed elsewhere, the proportion of JPO's budget that is used for employees is less than that of USPTO or EPO because so much of the work is done by contractors.

The IPCC searches are only those that involve patent literature and can be searched using JPO's F-Term classification system. JPO examiners give IPCC searchers guidance to conduct each search, and IPCC staff report search results to the examiner in person.

JPO funds IPCC on a contractual, annual basis through an appropriation from the Japanese government. IPCC informs JPO of how many searches it forecasts for the following year. JPO receives this information and decides how many searches it will request. IPCC staffs accordingly.

Relationship with JPO Examiners

JPO examiners and IPCC searchers communicate on a regular basis throughout the application-examination process. In the beginning, communication is done via e-mail or telephone and usually deals with the assignment of F-terms. Examiners and searchers will communicate in person later on to discuss the search report. The examiner will give the searcher comments and may or may not give the searcher further instructions to search more.

Each fiscal year, JPO contracts with IPCC the number of searches and the overall specifications for search work. A number of searches are then assigned to searchers based on complexity in technology, searcher's experience and so on. More detailed instructions are given when examination begins.

IPCC Location

Not all searchers are located at the Kasumigaseki branch (near JPO); approximately half are located 30 minutes by car at the headquarters branch. In most cases, (about 80%) searchers have

to present their search report face-to-face to examiners (time depends on technology). For those that are located at the headquarters branch, searchers visit JPO after they have completed 3-5 searches and usually go 2-3 times per month. Sometimes, searchers will spend the whole day at JPO presenting their search reports or doing further searching.

IPCC Work Methods and Processes

Searchers spend their days searching and writing up search reports. When Academy staff visited IPCC, searchers conducted searches on one computer and word-processed the search reports on another; on each desk were two screens. Sometimes searchers shared computer terminals because there were not enough. However, equipment has since been upgraded so searchers can search patent literature and type reports on the same computer.

Searchers are supposed to review claims in an application. There are limited exceptions, which the examiners would determine on a case-by-case basis.

Quality

IPCC supervisors continually give the searcher feedback and advice and will approve or disapprove their work. JPO examiners also provide feedback. Evaluation of the searchers performance is done by JPO and submitted to IPCC management. Supervisors will review the evaluation and possibly share it with searchers under them. If a searcher does not perform up to his or her standards, he or she would be counseled by the supervisor.

Human Resources Management in the IPCC

Recruitment is done in the private sector from among those who have strong technical backgrounds and are close to retirement (the average recruitment age of a searcher is 55 years old). Based on the number of searches JPO contracts for in a given year, IPCC will post an ad on its web site seeking searchers. IPCC does not recruit directly; rather, companies view the information on line and if they would like to second (loan) employee(s) they contact IPCC.

There are about 200 companies that second employees to IPCC; companies nominate employees and their names are placed on a list. When IPCC needs employees, it consults the list and finds a match based on the technical backgrounds needed in searching.

Searchers stay with IPCC until age 60, which is the time they would have retired from their original company. At age 60, they become consultants and stay on as consultants until age 65, granted their annual contract is renewed. At age 65, most are still in good health so they are able to stay on until age 71 on a part-time basis (17 days per month).

Expanding Outsourcing

In 2004, the Diet approved using private search firms, which JPO must approve through a registration process. The law requires that JPO assess the private sector firm to determine if they have the capacity to undertake searches. JPO will:

- Evaluate the quality of the examination report the prospective search agency has done at private sector request, and will use these evaluations to create a search agency ranking.
- Assess the prospective search firm's financial standing.

The search agencies with problems in financial standing or search quality cannot be used. JPO will outsource cases according to a firm's processing capacity, beginning with the higher ranking search agencies. Each firm will submit a price estimate, and the final price will be determined within the expected price set by JPO.

As of March 11, 2005, one private sector and one non-profit organization other than IPCC were registered search organizations.

EXTERNAL VIEWS FROM JPO STAKEHOLDERS: JIPA AND JPAA

Legislative Change in the U.S.

- The Hilmer Doctrine is a barrier for Japanese applicants and causes discrimination because of language.

Patent Process

- USPTO's information disclosure statement is very strict and stakeholders believe the criteria are not clear, for example, when requirements enter into effect. In addition, stakeholders believe the requirement to disclose prior art is unreasonable and would prefer to show references during reexamination. Changes to the information disclosure statement would facilitate harmonization.

- Stakeholders like USPTO's RCE process because there are multiple chances for patent rejection, whereas in JPO, examiners can refuse an application by a single office action.

Perspective on USPTO Examiners

- Some are skillful, and some are not. The examiner job is a stepping stone before becoming an attorney. Whereas JPO examiners are proud of their jobs, some USPTO examiners are not.

- USPTO has experienced problems because some examiners are not proficient in English.

Quality

- U.S. patent quality may be affected because examiners are young and do not have a lot of experience.

- Examiners do not have sufficient time to do a thorough examination, which deceases quality.

- It is easy to obtain a patent in the U.S., whereas it's more difficult in Europe and Japan.

Litigation

- Japanese applicants find it difficult to enforce their patents because of the litigious nature of the U.S. and its judicial system. By contrast, U.S. applicants in Japan do not have many problems because legal matters are generally negotiated. Until recently[6], there was no formal institutional law school training in Japan, but rather a process by which university-educated individuals study for competitive examinations.

Outsourcing

Hiring more examiners is more efficient than outsourcing the search because of the duplication of effort. JPO would prefer to hire more examiners, but, given civil service restraints, this is not possible.

EUROPEAN PATENT OFFICE

EPO is the executive arm of the European Patent Organization, an intergovernmental body set up under the European Patent Convention (EPC), whose members are the EPC contracting states.[7] The Organization's Administrative Council, composed of delegates from the contracting states, approves EPO's budget and oversees its activities. EPO is headquartered in Munich and has satellite offices in Berlin, The Hague, and Vienna.

The mission of the European Patent Office (EPO) is to support innovation, competitiveness, and economic growth for the benefit of the citizens of Europe. Its task is to grant European patents for inventions on the basis of a centralized procedure. By filing a single application in one of the three official languages (English, German, French), it is possible to obtain patent protection in some or all of the European Patent Convention (EPC) contracting states.

The vision and strategies that support EPO's mission have changed dramatically in recent years. Then, the patent system was in the corner of the economic scheme and patents were granted essentially for the sake of granting patents, which consequently led to monopolies. Now, the patent system is the center of the economic structure where the sharing of knowledge is in the forefront of society. EPO has responded to this by adjusting its organization to reflect more of an economic context. More specifically, EPO is striving to implement the Lisbon Agenda, endorsed by the European Community, which aims "to turn Europe into the most competitive

[6] The Diet recently passed a law, which will result in the establishment of 200 Japanese law schools.
[7] Austria, Belgium, Bulgaria, Switzerland, Cyprus, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, United Kingdom, Hellenic Republic, Hungary, Ireland, Iceland, Italy, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, Poland, Portugal, Romania, Sweden, Slovenia, Slovakia, and Turkey.

knowledge economy."[8] EPO's main role is to "manage the flow of information to a real economic added value in order to create an effective market for ideas."[9]

The Panel chair and Academy staff received briefings from the following European organizations:

- EPO
- European Patent Institute (*epi* – an institute of professional representatives practicing before the EPO)
- Licensing Executives Society (LES).

EXAMINATION AND GRANT PROCEDURE

In 2004, the EPO received approximately 179,000 patent applications (Euro direct and PCT) and granted approximately 58,700 patents.[10] Patent pendency statistics are as follows:

Average Time in Months up to a Decision (from the date of receipt of the Application	European Application1st Filings	Second Filings	Euro-PCT apps with supple-mentary search	Euro-PCT apps. w/out supplementary search	All Apps (2004)
Search Report	5.3	6.8	24		7.8
Final Decision	17.9	50.8	51.4	34.1	41.7
Grant	51.1	54.4	59.3	33.3	46.2

Filing and Formalities Examination

The first step of the European patent grant procedure is the examination on filing to determine whether the necessary information and documentation have been provided and give the application a filing date. The following information is required:

- An indication that a European patent is sought
- The designation of at least one EPC member state
- Identification information about the applicant
- Description of the invention
- One or more claims in one of the official languages.

[8] Pompidou, Alain. *Intervention at the 22nd Trilateral Conference*. 19 November 2004. Washington, DC, p. 4.
[9] Ibid.
[10] EPO's final figures will be available later in 2005.

Following this is a formalities examination, which relates to certain formal aspects of the application including the content and form of the request for grant, the designation of the inventor, any claim to priority, payment of any fees, and the appointment of a professional representative.[11]

Search

A search report is drawn up at the same time as formalities examination, which lists the documents available to EPO to consider when assessing novelty and inventive step. This report is based on the patent claims but also takes into account the description and any drawings. The report is immediately sent to the applicant after it is drawn up.[12]

In July 2003, the EPO introduced the Extended European Search Report (EESR) as a pilot for European first filings. Currently, examiners perform the search and write an early opinion on patentability but save the latter until the applicant makes the request for examination. Starting on 1 July 2005, the EESR will be applied to all European patent applications, meaning that applicants shall receive the Bring Examining and Search Together (BEST—discussed later) examiner's search report along with his non-binding first examination report. Survey results indicate that 89% of the respondents found the EESR to be helpful primarily because it gives applicants more legal value earlier on in the grant procedure and allows them to manage their patenting risks better. The results also confirm the EESR:

- Complements the BEST approach
- Reduces economic risk
- Encourages early withdrawal or “weak” applications
- Reduces pendency.

Claims

The claims must define the subject matter for which patent protection is sought in terms of technical features. They must be clear and concise and be supported by the description. Examiners focus on independent claims (one allowed per category). Dependent claims are looked at in theory and the cost is 40 Euro per claim if there are more than 10. EPO allows working examples to supplement the invention but it is not required.

[11] Ibid p. 17.
[12] Ibid p. 18.

EPO believes that it is as a result of the *Festo*[13] decision that the number of claims in applications originating from the U.S. has risen substantially.

Publishing the Application

The application is published, generally with the search report, 18 months after the filing or priority date. Applicants then have 6 months to request substantive examination. Applicants who have already requested substantive application will be invited to confirm whether or not to proceed. From the date of publication, an application confers provisional protection in the member states designated against use of the invention by third parties provided that a translation of claims is filed with the relevant national patent office.

Substantive Examination

In light of the search report, after the request for examination has been made, the examiner determines whether the invention meets the patentability and other requirements EPC has set forth.

An examining division consists of three examiners, one of whom is entrusted with the application up to the point at which a decision to grant or refuse a patent. This examiner maintains contact with the applicant or representative and issues the necessary communications on behalf of the examining division.

The final decision on the application is made by the examining division as a whole.[14]

Second and Third Pairs of Eyes

A second pair of eyes performs a formalities check and the final decision (grant or reject) is made by the 3-member Examining Division. EPO believes these additional pairs of eyes are essential; the office's intention is to grant a patent that is "bullet proof" before it reaches the designated national office(s). In addition, there is not much of a market for litigation.

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[13] Under the Supreme Court's 2002 ruling in *Festo Corporation v. Shoketsu* …Company, the patent owner, as the author of the claim language, is "expected to draft claims encompassing *readily known* equivalents," and so is estopped from later trying to recapture the accused equivalent. The Court also acknowledged that there are "some cases…where the amendment cannot reasonably be viewed as surrendering a particular equivalent…" The court reasoned that, in these limited number of cases, the patent owner should have the opportunity to overcome a presumption of prosecution-history estoppel by demonstrating that "at the time of the amendment one skilled in the art could not have reasonably been expected to have drafted a claim that would have literally encompassed the alleged equivalent." The difference between *Festo* and the previous complete-bar rule is: Instead of being completely barred from asserting infringement of equivalents, patent owners will now have to prove that, at the time of prosecution, there was no way they reasonably could have drafted a claim that *literally* covered the accused equivalent." As the Solicitor General explained in his brief, "patent holders will face a *substantial obstacle* in overcoming the presumption that their narrowed claims encompass no more than they literally embrace." Most likely beneficiaries of the Court's decision will be patent owners in industries that experience rapid technological advances, such as biotech, computer software, telecommunications, and aerospace. (Note: this information comes from findlaw.com).

[14] Ibid p. 19

The Grant of a European Patent

The patent granted is a "bundle" of national patents. In order for the patent to be enforced in most member states, it must be validated. In other words, if necessary, a translation of the specification into an official language of the state must be filed with the national patent office; fees may also be payable. These matters are governed by national law.[15]

Opposition

After a patent has been granted, it may be opposed by third parties (typically the applicant's competitors) if they believe that it was wrongly granted. Notice of opposition must be filed within nine months of publication of the mention of grant in the European Patent Bulletin. The examination of oppositions is handled by the EPO Opposition Divisions, which are comprised of three members. Note: EPO does not consider opposition to reflect lack of patent quality.[16]

2003 Examination/Opposition Figures:

International Preliminary Examination	35,591
European Examinations	73,776
Patents Granted	59,992
Patents Opposed	2,634
Decisions in Opposition Cases	1,872

Source: European Patent Office 2003 Annual Report

Appeal

Decisions of the EPO concerning grant or opposition matters are open to appeal. Decisions on appeals are made by the EPO's independent Boards of Appeal.

2003 Technical Appeals Figures

Technical Appeals Received	1,273
-*ex parte*	521
-*inter partes*	723
-PCT protests	29
Technical Appeals Settled	1,390
-*ex parte*	438
-*inter partes*	925
-PCT protests	27

Source: European Patent Office 2003 Annual Report

[15] Ibid.
[16] Ibid p. 20

BRINGING EXAMINATION AND SEARCH TOGETHER (BEST)

Prior to establishment of the EPO, searching for all patent literature for EPC member states was done at the International Patent Institute (IIB) in The Hague. In 1978, thirty-one years after the process began, the IIB was integrated into the EPO. Because IIB was perceived to have world-renowned searching capability, it made sense for IIB searchers and new EPO searchers to remain in The Hague. A sub-office of EPO was opened in Berlin later that year for Cold War reasons at first and was under the direction of The Hague branch. The decision to have EPO examiners located in Munich was political as well as historical in that the EPO wanted to have a "seed" there during that era.

In 1989, the BEST project began; searchers in The Hague began to examine and in 1991, examiners in Munich began to search. To date, all BEST examiners conduct both search and substantive examination, and the program is close to being fully implemented. Some staff still perform search only (roughly 10% of the corps), and this is because it would be inefficient to train them due to their close proximity to retirement.

The EPO stated that it is much more efficient to have one person perform search and examination. Other reasons for bringing the two functions together include:

- Lack of ability to attract highly skilled and qualified people to perform searching only. The job was perceived as being mundane and not interesting enough, and employees could not fathom a career in it.

- Pre-BEST, some searchers did not grasp the invention.

- BEST allows the EPO to shift capacity from search to examination and vice versa, depending on backlog.

- Quality of the patent depends on the search.

AUTOMATION

A total of 13.8% of Euro direct patent applications were filed electronically in 2004. Searching is done on-line, but the application and associated papers are printed and examined on paper. Office actions are then signed and passed to support staff along with the file for mailing. The file is retained by support staff, pending applicant response, then returned to the examiner. The final office action is given to a second and third examiner for review and sign off before the support staff mail it. Publication of the application is based on the electronic version of the file, which is considered the official version while the paper file is considered back-up.

EPO has not fully utilized its e-Phoenix electronic file management system and uses it for administrative purposes (USPTO recently adopted the e-Phoenix system and is currently

expanding its use by incorporating the IFW in an effort to provide electronic prosecution of applications).

Currently, there is no plan to convert to a paperless process, and EPO considers their processes to be electronic because the dossiers are on-line and searchable and updatable on-line.

QUALITY

The EPO defines quality as process steps, service, and timeliness. Currently, there are pilot efforts in place to test and improve quality (error rates are 5% and are considered the norm), but the EPO declined to be specific. They have set up a quality function independent of examination that is headed by Directorate General (DG)-2 (operations support), which would perform quality reviews of patents and provide feedback and training, establish standards and methods of measuring quality (recruitment, training, education, development and motivation are elements of the quality program as well). Quality standards currently being considered are:

- Thoroughness/ Completeness
- Timeliness
- Transparency
- Fairness/ Impartiality
- Consistency/ Uniformity.

The DG-1 operational units are responsible for monitoring individual performance and quality and for implementing the standards established by the DG-2 quality function. Once these standards and measurements are in place, independent audits will be conducted on statistically significant numbers of cases. Moreover, at the operational level, quality control will be carried out on several thousand applications, the precise number of staff to be determined at a later date, and as a function of the EPO's workload.

Also related to quality is the overall granting of patents. The EPO is conservative in this regard and patents are granted for inventions bringing an inventive technical contribution which is susceptible of industrial applicability. With regard to patentability standards, the EPO works under the concept of absolute novelty, which means that a patent application is rejected if evidence is found that the invention was made available to the public, i.e. used or described before anywhere in the world. EPO is also very strict with regard to inventive step.

Some inventions cannot be patented under the EPC. The list of non-patentable subject matter includes methods of medical treatment or diagnosis, and new plant or animal varieties. Patents may also not be granted for inventions whose exploitation would be considered contrary to "ordre public" or morality (i.e. landmines or letter bombs). Other exclusions from patentability include:

- Discoveries
- Scientific theories and mathematical methods
- Aesthetic creations, such as works of art or literature

- Schemes, rules and methods for performing mental acts, playing acts or doing business
- Presentations of information
- Computer programs per se, devoid of a technical contribution
- Business Methods.[17]

HUMAN RESOURCES MANAGEMENT

Examiner Staffing and Education

There are 6,090 employees in EPO and 3,395 are examiners. EPO employees are normally required to be nationals of EPC contracting states. Over 60% have university-level qualifications, generally in law, science or technology, and are required to be proficient and work in English, German and French.

Recruitment and Hiring

In general, EPO hires examiners who have had a minimum of five years of experience in a technical field rather than someone who has just graduated from a university. EPO visits universities; however, it is more informational, for example, "think about us in the future" rather than a means for direct recruitment and hire. There is no certification exam required for examiners, but they complete years of training.

Newly hired examiners must complete approximately one month of intensive classroom based training, followed by 8 weeks on the job training and then further periods of classroom training throughout the first year. The training on the job is supported by a tutor, whose task it is to pass on sufficient knowledge that a new examiner can function reasonably independently at the end of the first year

Salary and Allowances

The salaries and allowances of EPO staff are free from national income tax since an internal tax system covers this requirement. The salary and monthly allowances are paid 12 times per year. Most new employees of the EPO find the salaries very competitive, particularly so when the allowances are taken into account.

According to individual circumstances and family situation the following allowances can supplement the basic salary:

- Expatriation allowance

The base level of this allowance is 16% of the basic salary, but can rise to 20% for employees who receive the 'Household' allowance. The majority of EPO staff are expatriates.

[17] European Patent Office. *European Patents*, 2004, p. 13

- Household allowance

Staff who are married and/or have dependent children are entitled to this allowance subject to certain conditions. The allowance is 6% of basic salary.

- Installation allowance

This allowance is to help staff recruited from more than 100 km away from their place of employment with their initial expenses in settling at the EPO locations. It consists of one month's basic salary paid immediately upon entry into service. Staff entitled to the Household allowance can receive an additional month's salary as installation allowance subject to certain conditions.

- Child allowance

Staff members are entitled to a monthly child allowance for each dependent child.

- Education allowance

To help cover the costs of educating children away from their home country, the EPO provides an education allowance and helps with the payment of fees for some schools.

- Language allowance

Under certain conditions lower B[18] and C[19] category staff can receive a language allowance if their language skills, as tested by the Office, exceed the normal requirements and are required for their work.

- Rent allowance

B and C categories and lower A[20] category staff can receive a rent allowance to help with the payment of rent for housing under certain circumstances.

Promotion

Each career band within categories A, B and C is divided into a series of grades and provides for at least 2 promotions. Movement between career bands is possible. Each year (or later every second year) staff advance by one step within their grade until they can be promoted to the next higher grade within their career band.

[18] B category staff comprises administrative career and patent granting support as well as lower managerial positions or high technical specialist positions, such as an Operations Analyst.
[19] C category staff is comprised of non-technical and non-administrative staff such as porters, print shop and mailroom staff.
[20] A category staff are professional staff with a full university degree; patent examiners form the large majority of this category.

At the recruitment stage, a proportion of the total number of years of relevant previous experience before entry into service is taken into account to calculate the exact grade and step where a new employee will start. This experience acquired before entry into service also counts towards the experience required for eventual promotions.

Every 2 years a full reporting exercise for all staff is carried out and the performance of each staff member is assessed. The combination of number of years of service and the level of performance is used to determine whether and when staff can be promoted.

Other Activities

EPO is made up of almost 6,100 individuals, who are mainly not nationals of the country in which they are working. To help the staff establish and maintain a new social life in their new country, each site of the Office has an Amicale social body. This body is funded by the EPO and is charged with providing the framework for social activities.

The Amicale in The Hague organizes regular social and cultural activities ranging from cocktails for special occasions to concerts and exhibitions. Additionally, the Amicale has the oversight over the more than 50 different clubs that support activities ranging from flying to wood-working; if an employee cannot find a club that he or she is interested in, they are encouraged to start their own.

EXTERNAL VIEWS FROM EPO STAKEHOLDERS: *epi* and LES

Legislative Change in the U.S.

- The Hilmer Doctrine and first-to-invent are barriers for European applicants and cause discrimination.

- EPO would agree to a worldwide grace period if the U.S. adopted first-to-file.

Patent Process

- USPTO's practice of RCEs is a hindrance to the patent process, and stakeholders believe third or fourth office actions would be a better method. Furthermore, stakeholders view the RCE process as a means to increase payments to USPTO and attorneys and added points for examiners.

Grant

- Europe is more conservative in granting patents—those granted are technical in nature and that pleases constituents.[21]

[21] Unity of invention permits groups of inventions so linked as to form a single inventive concept to be examined in a single application.

- EPO is stricter than USPTO with regard to unity of invention.

- Granted patents are essentially “bullet proof” and have to be because there is not a big market for litigation in Europe.

Quality

- USPTO does not ask for a better quality submission from the applicant; it should.

- While EPO examiners are more focused on specific technologies and work in those art areas, USPTO examiners are more flexible and may work in more than one art area. The consequence is that examiners are not as proficient in their subject matter and sometimes do not understand the breadth of the claims.

Human Resources

- USPTO needs to improve examiner motivation by increasing salaries.

INFORMATION ON UTILIZATION OF SATELLITE FACILITIES

While USPTO and its employees are housed in the new Carlyle complex in Alexandria, VA, there are over 80 allied Patent and Trademark Depository Libraries (PTDLs) across the United States. The program, begun in 1871, includes academic, public, and state libraries, as well as one special research library, all of which are designated to receive and house copies of U.S. patents and patent and trademark materials, to make them freely available to the public, and to actively disseminate patent and trademark information. Many states value the presence of a PTDL because it is a rich local resource for small businesses, research and development firms, university and governmental laboratories, and independent inventors and entrepreneurs.

Other federal agencies, private companies, and foreign patent offices have found the establishment of satellite facilities useful to achieve this same kind of synergy.

In considering the establishment of satellite offices, even on a pilot basis, USPTO will obviously need to consider the following pros and cons:

- Potential to attract and, perhaps more importantly, retain workers who might not want to move to the DC area, with its high housing costs; or, for current employees, find the idea of a USPTO paid relocation desirable
- Opportunity to broaden the applicant pool by redefining the geographic options from a set of one
- Opportunities for synergistic effect with universities, including partnership in possible patent curriculum development or outsourcing of the search; and as a source of part-time, temporary, or intermittent faculty expertise, including Intergovernmental Personnel Act assignees
- Opportunity to increase customer accessibility, with possible reduction in travel time and expense for inventors, patent agents, and patent attorneys who meet with the assigned patent examiner to clarify their claims
- Potential difficulty in finding sufficient qualified and interested PEs and SPEs throughout the organization to work with new PEs recruited for the satellite office
- Possibility of appearance of USPTO conflict of interest if satellite is co-located with a single sector innovative hub
- Concern about consequences if satellite pilot was not made permanent, e.g. what to do with current employees who transferred to the new location or only wanted to work outside of Washington, DC.
- Management concern about need for duplication of effort and span of control, particularly if a TC were split.

Other agencies with highly skilled workforces with locations beyond Washington, DC are:

- **The U.S. Nuclear Regulatory Commission (NRC)**, headquartered in the DC area, has, in addition to its four regional offices, a technical training center in Chattanooga, TN and an On Site Representative High-Level Waste Management Office in Las Vegas Nevada -

- the same place that the U.S. Environmental Protection Agency (EPA) has a major radiation laboratory and also the home of the University of Nevada Las Vegas

- **The EPA**, which has offices in the ten federal regional cities, has its Motor Vehicle Emissions Laboratory in Ann Arbor, Michigan - - close to the University of Michigan campus and a short drive to the traditional center of the U.S. auto industry, Detroit

- **The Commodities Futures Trading Commission (CFTC)**, headquartered in DC, also has offices in cities that have futures exchanges - - specifically Chicago, Kansas City, and Minneapolis

- **The Research Triangle Park (RTP)** in North Carolina is perhaps the ultimate synergistic experiment, created in 1959 to take advantage of three proximate universities (North Carolina State, the University of North Carolina at Chapel Hill, and Duke University) and now housing more than 100 research and development facilities and employing over 38,500 staff. IBM, the National Institute of Environmental Health Sciences (NIEHS), EPA labs and offices, Glaxo Smith Kline, Nortel Networks, Bayer Crop Science, Cisco Systems and the North Carolina Biotechnology Center are among the institutions working together and reflecting a special spirit of cooperation and learning within the scientific and technological community.

In addition, the **European Patent Office** has multiple offices beyond its Munich Headquarters, with offices in The Hague, Berlin, and a patent information sub-office in Vienna.

EPA's HUMAN CAPITAL INNOVATION FUND PROGRAM[1]

BACKGROUND

The OHR first initiated the Human Capital Innovation Fund Program as a pilot project in fiscal year 2002. In support of EPA's Human Capital Strategic Plan, the pilot served to identify and fund regions and program offices with creative and innovative projects in support of human capital initiatives. Due to the success of the pilot, the Human Capital Innovation Fund Program has now been established to assist with the implementation of innovative projects in order to support the agency's mission.

PURPOSE

The purpose of the Human Capital Innovation Fund Program is to promote and encourage innovative and creative human capital projects in the Regions/field and Headquarters. It provides seed money or matching funds in the form of small "grants" to fund initiatives that explore ways the agency can better integrate human capital efforts with the accomplishment of its mission and with efforts to bring the agency's focus closer to American citizens.

CRITERIA

Projects that support one or more goals of "Investing in Our People II, EPA's Strategy for Human Capital, 2004 and Beyond" including:

- Agency systems and organizational structures are well designed and work together to position and support EPA employees in accomplishing the agency's strategic goals
- EPA attracts and retains a diverse and talented workforce
- EPA's employees are highly capable and perform to their highest potential to support the agency mission
- EPA employees at all levels are results-focused, act with integrity, and help to improve environmental programs through innovation, creativity and reasonable risk-taking
- Teamwork and collaboration are routinely practiced with internal and external partners
- Projects that can be replicated across the agency
- Projects that can achieve measurable results.

[1] Source: http://intranet.epa.gov/.

PLEASE NOTE: Projects that are ongoing will use the funds in the current fiscal year. Innovation funds cannot be used to pay the costs of Personnel, Compensation and Benefits and/or travel expenses. Also, these funds will not be reprogrammed out of the OHR budget.

SOLICITING PROPOSALS

OHR engages EPA's resources community and other individuals and groups with relevant knowledge and expertise to research innovative human capital projects across the agency and assist in the selection of project proposals that best fit the criteria.

EVALUATION PROCESS

The evaluation process consists of completing the Fund's Evaluation Form no later than one year after project selection. The completed Evaluation Form should be submitted to the Analysis and Innovation Team, Human Capital Accountability and Innovation Division, Office of Human Resources, no later than September 30. Projects that show measurable results and successful implementation will be compiled in a "best practices" document to be shared across the agency.

LEGAL STRUCTURE OF A PROPOSED U.S. PATENT AND TRADEMARK CORPORATION

Legal Status. Legislation chartering a government corporation must specify its corporate status. Language doing so would be as follows: "The United States Patent and Trademark Office is established as a wholly owned government corporation."

The charter language also should specify whether the corporation is to be within a department (as are the St. Lawrence Seaway Development Corporation and the Government National Mortgage Association [GNMA]), independent (such as the Export-Import Bank of the United States or the Tennessee Valley Authority), or subject to policy control of a department secretary (such as the Pension Benefit Guaranty Corporation). The 1997 House report on H.R. 400 proposed the last of these alternatives. All wholly owned government corporations remain United States government agencies and are part of the Executive Branch. Previous Academy studies that have recommended corporate status for USPTO have also advocated that the Secretary of Commerce retain policy direction over the corporation.[1]

Government Corporation Control Act. If USPTO is to be given corporate status and made subject to the Government Corporation Control Act (GCCA) [31 U.S.C. Chapter 91], Congress must pass specific legislation to accomplish this. The legislation would have to include the USPTO by name in the list of wholly owned corporations subject to that act. This ensures that GCCA provisions, such as those relating to business-type budgets, will apply. Most powers granted to government corporations, however, are specified in their chartering legislation. Any general legislation specifically applicable to government corporations automatically includes agencies that are subject to the GCCA.

Litigation. A defining characteristic of government corporations is a specific grant of authority "to sue or be sued in its own name." A corporation (government or private sector) is a category of "person" for the conduct of its activities. Therefore, as with any legal person, it should be held liable for its legal obligations. Moreover, their charters usually authorize wholly owned government corporations to handle their own litigation. A few corporations, however, are either required to seek Justice Department approval before proceeding or have chosen to do so. Examples are the Federal Prison Industries Corporation and GNMA.

A USPTO corporate charter should follow the prevailing practice for government corporations. The legislation would need to clearly establish that it may sue and be sued in its corporate name and be represented by its own attorneys in all administrative and judicial proceedings, including, with the prior approval of the Attorney General, appeals from decisions of federal courts. USPTO currently does not have this authority, which is rarely given to unincorporated agencies.

Departmental Regulations. Corporations placed in executive departments are generally subject to the regulations of those departments. Corporations that are independent issue their own regulations. Corporate entities subject to the "policy direction" of a department secretary are

[1] NAPA, *Considerations in Establishing the Patent and Trademark Office as a Government Corporation*, 1989.

required to act in accordance with the secretary's statutory authority over the corporation. However, most regulations in these cases would be issued by and in the name of the corporation.

The Academy Panel believes that USPTO as a corporation should have the direct authority to issue regulations as long as they are compatible with the policies of the Secretary of Commerce. Any other approach would impair the capacity of a corporate entity to manage its own affairs and day-to-day commercial operations in response to changing conditions and demands for its services. In a department where a corporation is subject to the policies of the secretary, departmental directives and regulations will need to indicate whether or not they apply to the corporation. It is the experience of other departments that many department directives and regulations may be irrelevant or even counterproductive when applied to a government corporation.

Taxation. Agencies of the federal government are rarely, if ever, required to pay taxes to state or local governments. This is not always the case, however, with wholly owned federal corporations. AMTRAK, as a functioning railroad, pays state and local taxes much as a private transportation company does. Other corporations (such as FDIC, the former Synfuels Corporation, and GNMA) are subject to and may pay real property taxes[2] but are otherwise exempt from state and local taxes.

The rationale for allowing or requiring a government corporation to pay taxes on real property is that, since such entities resemble private sector businesses, they should include some taxes as a normal cost of providing services funded by fees or other charges. Unlike other federal agencies, they should be financially self-sustaining, with due regard to the costs, including taxes, of doing business. On the other hand, it would seem unwise for federal agencies to be subject to differential tax treatment based on the *form* the agency takes—that is, corporation versus a traditional agency. This would defeat one of the reasons for using the corporate form in the first place—namely, improving operational efficiency.

Property Acquisition and Management. Most federal agencies are subject to the Federal Property and Administrative Services Act, but several government corporations are exempt, including FDIC, AMTRAK, and the former Pennsylvania Avenue Development Corporation. This legislation generally governs purchases and contracts for property and services, including such features as competitive bidding. The USRA had the option of following its provisions, but found it impractical to do so. And, as a PBO, USPTO is already exempt from the Federal Property and Administrative Services Act. It would be desirable to continue this exemption under a corporate charter.

[2] For some corporations, these property taxes may be on previously private properties acquired temporarily by the federal agency because of default of the owner. Normally the government only temporarily holds these properties until they can be efficiently disposed of and returned to new private ownership. During this holding period, the government pays local property taxes.

PATENT COOPERATION TREATY

The Patent Cooperation Treaty (PCT) is an international treaty that simplifies the process of filing foreign patent application in 126 countries by permitting applicants to file a single application. This application has the effect of a national application in every country bound by the treaty as of the international filing date. However, in order to file via the PCT route, at least one applicant must be a resident or national of a country bound by the treaty.

PCT applications have two phases; one is the "international phase" when they are international applications in the International Bureau under the auspices of WIPO. The second is the "national phase" when they are converted to local patent applications in countries of interest specified by the applicant(s). There are additional filing fees based on the number of countries in which the applicant wants the patent to take effect.

The regulations under PCT set forth formalities requirements as to the form and content of the international application. Once these formalities requirements are met during the international stage, a national or regional patent office cannot impose additional formalities requirements. Applicants receive an early indication as to the prior art called the international search report (ISR), together with a written opinion as to the novelty, inventive step, and industrial applicability of the claimed invention.

Applicants also have the benefit of delaying the decision as to which countries they want to enter the national stage in until 30 months from the claimed priority date. They enter the national stage in the desired national or regional patent office by notice to the patent office and payment of the filing fees.

HARMONIZATION ISSUES REQUIRING LEGISLATIVE INTERVENTION

The trilateral offices (USPTO, EPO, and JPO) receive approximately 80 percent of the world's patent applications each year, and about 200,000 of these are filed concurrently with each office. Because of constrained resources, the three offices would like to share workload rather than duplicate it and are exploring ways to do so. While they can take some actions by themselves, standardized practices (termed harmonization) cannot be fully achieved without legislative change in the U.S., Japan, and Europe. This appendix explores the following legislative changes:

- First-inventor-to-file
- Publication of patent applications
- Grace period
- Best Mode Requirement
- Hilmer Doctrine
- Deferred Examination in Japan

Much of the information in this appendix is drawn from the report of the National Academy of Sciences. Other perspectives are also presented, but this Panel of the National Academy of Public Administration found the NAS work to be objectively presented.

CHANGING TO FIRST-INVENTOR-TO-FILE[1]

Many constituencies of the patent system believe that an important step in harmonizing the U.S., Japanese, and European patent systems is for the U.S. to adopt the first-inventor-to-file system. Under the current system, a patent is awarded to the inventor who can establish that he or she was the first to invent; a first-inventor-to-file system would award a patent to the first person to file a patent application with USPTO. As the system stands now, when two inventors file an application for the same invention, USPTO uses an administrative process called an interference[2] proceeding in order to determine which inventor contrived or practiced the invention first. These proceedings can be lengthy and expensive for inventors and USPTO.

In April 2004, the National Research Council released a study, *A Patent System for the 21st Century*, which was prepared by the Board on Science, Technology, and Economic Policy of the National Academy of Sciences (NAS). NAS strongly urged the U.S. to adopt the first-to-file system and the Board believes that, because no other country uses the first-to-invent system,

[1] While all other countries use the term "first-to-file," the U.S. would use the term "first-inventor-to-file," should Congress pass legislation, to ensure that a patent is awarded to an inventor(s) and not someone, for example, acting on behalf of an inventor.

[2] USPTO defines an interference as a proceeding, conducted before the Board of Patent Appeals and Interferences, to determine priority of invention between a pending application and one or more pending applications and/ or one or more expired patents.

other countries view U.S. adoption of the first-to-file priority system as the cornerstone of harmonization.[3] The Board's reasons for recommending the first-to-file system are:

- The current discrepancy means not only that different people can own patents on the same invention in different countries, but also that there are radical differences in procedure. The United States has an elaborate legal mechanism, in USPTO and in the courts, for determining who was the first to invent. Because the rest of the world has no analogous process, foreign patent applicants are subject to uncertainty and perhaps challenges that are entirely unfamiliar.

- U.S. inventors file their applications not knowing whether they are the first or second to invent, and when a competitor might file. For those subject to challenge under first-to-invent, the proceeding is costly and often very protracted; frequently it moves from a USPTO administrative proceeding to full court litigation. In both venues, the evidence at issue is not only who first reduced the invention to practice, but also questions of proof of conception, diligence, abandonment, suppression, and concealment—some requiring inquiry into what an inventor thought and when the inventor thought it.

- Under the current U.S. system of first-to-invent, applicants rarely successfully challenge; the result is—for the overwhelming majority of applicants—the system is essentially the equivalent of having a first-inventor-to-file priority. Of the more than 300,000 applications the USPTO receives each year only about 200 to 250—less than 0.1 percent—end up in interference proceedings because a second filer claims to be the first inventor.[4]

NAS believes there are, nonetheless, three concerns that merit attention in considering whether to abandon first-to-invent. The first concern is how often first inventors would be unfairly deprived of their inventions by second inventors who happened to file with USPTO first? The answer, it turns out, is not a trivial number given the proportion of applicants involved in interferences. Lemley and Chien[5] examined two sets of interference cases—first, 76 final adjudications by the Board of Patent Appeals and Interferences (BPAI) between 1990 and 1991 that were decided by determining who was the first inventor; and second, a random selection of the few hundred interference proceedings reported on the BPAI web site between 1997 and 2003. They concluded that second filers won approximately 43 percent of the cases. Nevertheless, in a large proportion of these cases, first- and second-filers' invention dates were so close as to be nearly simultaneous.

A second concern is the inducement inherent in a first-to-file system to file early and perhaps before the invention is fully characterized, which could be a source of patent quality deterioration. The incentive for early filing surely exists but is mitigated by two factors. First, the U.S permits provisional application filing whereby inventors who file a complete technical

[3] A Summary Report of Discussions at Town Meetings on Patent Reform. Prepared from Transcripts by Staff of the Federal Trade Commission, May 25, 2005. p. 5.
[4] National Research Council pp. 124-126.
[5] Mark Lemley and C. Chien, "Are the Patent Priority Rules Necessary?" *Boalt Working Papers in Public Law*, no. 32, 2003. Available at http://repositories.cdlib.org/boaltwp/32.

disclosure secure priority rights without a major expenditure of resources for legal services. This allows the applicant a year to characterize, refine, consider claims for, and assess the commercial value of an invention before submitting a complete application. The second mitigating factor is that inventors already have significant incentives to file applications early; for instance, any inventor who seeks protection outside the United States competes in a first-to-file system.

NAS recognized that some believe that first-to-file disadvantages individual inventors and small business, who may not have the resources to be as fast as large companies. This has been the premise of very effective "independent inventor" opposition to first-to-file and harmonization generally for a very long time. To illuminate the issue, Gerald Mossinghoff studied all 3,000 interference decisions between 1983 and 2004 to determine whether small inventors were more likely to prevail in priority disputes.[6] He found that the first-to-invent system did not particularly advantage or disadvantage small entities.[7] Of that number, 286 were decided in favor of a small entity filing second, but in 289 other cases, small-entity first filers lost.

The ABA Intellectual Property Law Section supports NAS' recommendation to adopt the first-inventor-to-file system.[8] In a "white paper" circulated in June 2005, the ABA IP Law Section outlined its recommendation to Congress to adopt the first-inventor-to file system, one of 15 recommendations for a patent reform legislative agenda. The ABA believes that the first-inventor-to-file system will further efforts towards greater international patent harmonization and would result in increased productivity in patent application examination, facilitate opening a limited term post-grant window for post-grant opposition of an issued patent, and increase the number of patents granted to independent inventors.[9]

Other constituencies that support a first-inventor-to-file system include AIPLA, the Intellectual Property Owners Association, the Biotechnology Industry Organization, the Business Software Alliance, and the National Association of Manufacturers.

While the majority of patent constituencies recommend adopting the first-inventor-to-file position, many small entities (defined as nonprofit institutions, universities, independent inventors and businesses with 500 or fewer employees)[10] would prefer that the first-to-invent system be maintained because it protects the "true" inventor. Many small entities believe that the first-to-file system would impose a bias against them because they do not have the resources to prepare a patent application that large firms have and thus would likely lose the race to develop the invention and file first. Related to this concern is that the race to file might lead to

[6] Data presented by the Honorable Gerald Mossinghoff at "Town Hall Meetings" in 2005, and soon to be published in the *Journal of the Patent and Trademark Society*.

[7] Some believe that Mossignhoff's research does not take into account that relatively few parties take their disputes all the way to court. See Mark Lemley and C. Chien, "Are the Patent Priority Rules Necessary?" *Boalt Working Papers in Public Law*, no. 32, 2003. Available at http://repositories.cdlib.org/boaltwp/32.

[8] The ABA Intellectual Property Law Section adopted its position in February 2005; prior to then, the Section opposed the first-inventor-to-file system.

[9] The ABA Intellectual Property Law Section. *A Section White Paper: Agenda for 21st Century Patent Reform*, p. 1. Available at http://www.abanet.org/intelprop/home.html.

[10] See a Summary Report of Discussions at Town Meetings on Patent Reform. Prepared from Transcripts by Staff of the Federal Trade Commission, May 25, 2005, p. 6.

more "hastily drafted applications that would be of lower quality."[11] Nonprofit institutions also believe that they would be at a disadvantage of the first-to-file system because "their process from research idea to patent application was more attenuated than that of corporations, and naturally slower."[12]

PUBLICATION OF PATENT APPLICATIONS

After Congress enacted the American Inventors Protection Act in 1999, the U.S. began publishing most patent applications 18 months after their filing date. The caveat however, is that applicants have the option of opting out of publication if they do not seek to file corresponding applications abroad. In addition, their applications and invention (should a patent be granted) remain secret and are not available to other inventors as they search prior art before submitting a subsequent application. Thus, another individual or firm may devote resources to an invention that they might not pursue if they knew the prior art existed. The NAS and FTC reports recommend that the U.S. publish all applications because publication appears to increase certainty for businesses, facilitate rational planning and reduce "the problems of 'submarine patents' used to hold up competitors for unanticipated royalties by providing early disclosure of potential patents."[13] AIPLA supports the NAS and FTC recommendations to publish all patent applications. The ABA IP Section also recommends to Congress that USPTO publish all patent applications and believes that doing so will reduce the agency's administrative burden because applications would not have to be sorted prior to publication.[14]

Many independent inventors would be comfortable with 18-month publication of all patent applications if pendency were reduced to 18 months because it would eliminate the fear that a large corporation could read the application and design around the invention before the patent is issued. Other independent inventors fear a loss in trade secret rights in the publication of patent applications and believe publication to be a disadvantage because inventors are forced to decide between patent publication and trade secret status before they have adequate information.[15]

AGREEING ON A GRACE PERIOD (OR DROPPING IT IN THE U.S.)

A grace period allows someone to file a patent application within one year of publication of its details without having the publication considered prior art that precludes a patent grant. The NAS report recommends that the United States should retain and seek to persuade other countries to adopt a grace period because it encourages early disclosure and is especially beneficial to disseminate academic research results that may have commercial application. As other countries try to accelerate the transfer of technology from public research organizations to private firms through patents and licensing, the idea of a grace period is likely to become more

[11] Ibid, p. 9.
[12] Ibid, p 8.
[13] Ibid, p. 10.
[14] The ABA Intellectual Property Law Section. *A Section White Paper: Agenda for 21st Century Patent Reform*, p. 19.
[15] Ibid, p. 11.

widely accepted. Germany recently adopted such a provision.[16] The ABA IP Section also supports retaining the one-year grace period.

Academy staff have heard suggestions that the U.S. could use the grace period as a bargaining chip of sorts, suggesting that other nations adopt a grace period if the U.S. goes to first-to-file. For example, when Academy staff interviewed EPO officials, they said the EPO would agree to a worldwide grace period if the U.S. went to first-to-file.

BEST MODE REQUIREMENT

Section 112 of the Patent Act requires that an application "set forth the best mode contemplated by the inventor of carrying out his invention."[17] The NAS report recommended that Congress enact legislation to eliminate the best mode requirement in order to facilitate harmonization with foreign patent systems; the U.S. is the only country that has such a requirement. Removing best mode would also "make litigation more efficient by eliminating a subjective defense."[18] In other words, to enforce the best mode requirement, courts ask the inventor whether he or she knew of the best way to practice the invention and if the inventor believed that this mode was better than that disclosed in the application. AIPLA believes this test to be subjective because it focuses on the inventor's state of mind when the application was filed. Also, "because the defense depends on historical facts and because the inventor's state of mind can be established only by circumstantial evidence, litigation over this issue—especially pretrial discovery—can be extensive and time consuming."[19] AIPLA endorses NAS' recommendation to eliminate the best mode requirement.

The ABA IP Section also recommends that Congress repeal the best mode requirement, "relying instead on the requirements for a complete written description and sufficient enabling details to permit the full scope of the claimed invention to be readily carried out."[20]

CHANGING U.S.C. 35 SECTION 102(e) LANGUAGE AND THE HILMER DOCTRINE

Under the language rule, prior art becomes effective from the date it is published in English as opposed to the date it is published in Japanese or another non-English language. This is perceived by some other countries as discrimination on the part of the U.S.

Under the current "Hilmer" rule, information in foreign-originated U.S. patent applications is effective as prior art only as of their U.S. filing date, and not their foreign priority date. It may have been instituted to protect U.S. inventors, but was just as likely instituted because it would

[16] National Research Council, p. 127.
[17] 35 U.S.C. ss 112.
[18] See Summary Report of Discussions at Town Meetings on Patent Reform. Prepared from Transcripts by Staff of the Federal Trade Commission, p. 28.
[19] Statement of Gary Griswold, Past President, AIPLA, before the Subcommittee on Courts, the Internet and IP, U.S. House of Representatives, June 9, 2005.
[20] See the ABA Intellectual Property Section, *A Section White Paper: Agenda for 21st Century Patent Reform* p. 2.

be too difficult for USPTO examiners to search foreign-language patents. Clearly, there is prior art "out there" that is not considered when USPTO assesses an application.

The Japanese and Europeans support eliminating the Hilmer Doctrine. The Japanese believe it would mean more of the Japanese search results would be available to USPTO examiners. By their calculations, 19% of Japanese applicants now file with the U.S. within eight months of filing in Japan. With the removal of Hilmer, they project that only 3% would file within eight months, a reduction of about 9,500 applications. With Hilmer in place, far fewer of JPO's FAOMs are available to USPTO than would be the case if Hilmer were removed.

The Hilmer Doctrine is being discussed not only in trilateral meetings but also in government-to-government meetings.[21]

ELIMINATING DEFERRED EXAMINATION IN JAPAN

In a first-to-file system such as Japan, the deferred examination system gives the applicant a foot in the door without having to finalize the application. Applicants like the three-year deferral time (which used to be seven years) because they can continue to amend their application (essentially, the claims) and assess the marketability of their invention. JPO likes deferred examination because applicants do not request examination for 46% of applications, thus reducing JPO's workload.

The disadvantage to USPTO is that if the applicant files concurrently in the U.S. (as is sometimes the case), the U.S. will begin its exam before JPO does. JPO can (and does) use the U.S. Public PAIR system to take advantage of (exploit) the USPTO search. USPTO can rarely exploit Japanese search results. The disadvantage to the inventor is that others are able to include the inventor's claims with slight variations in their pending applications and, if the other party gets their patent first, can get a patent on an invention that was not really theirs.

As discussed in chapter 8, USPTO has a deferred examination system, but applicants rarely utilize it because of the associated costs they have to pay up front. A favorable view of deferred examination in the U.S. has been expressed by some stakeholders who think, based on JPO and EPO experience, that a significant number of applications would be abandoned before examination if more time were allowed to elect examination. Other stakeholders oppose deferred examination because it provides a longer period of uncertainty of patent rights and allows patent applicants to capture later claims of other applicants if the deferred application original specification is broad enough to encompass them.

[21] Third Report to the Leaders on the U.S.-Japan Regulatory Reform and Competition Policy Initiative, June 8, 2004. This report notes the U.S. will "continue to discuss with the government of Japan its requests to modify the Hilmer Doctrine." The U.S. added that this was discussed in detail at the Trilateral Working Group on Patent Harmonization in February 2004.

LIST OF RECOMMENDATIONS

Chapter 2

The Panel recommends that:

- Congress ensure that all the fees that USPTO collects during a fiscal year be available for its use without fiscal year limitation. The fees should be deposited in a revolving fund maintained by the Department of the Treasury.

- USPTO avoid intermittent "emergency" hiring—done to reduce accumulated build-ups of applications—and adopt a more consistent hiring strategy based on input about anticipated workload and attrition from each of the TCs.

- Congress amend patent law by applying the prior or intervening use rule FTC recommended to protect good-faith inventors from being sued for patent infringement.

- USPTO use every means possible to work with stakeholders to provide Congress with the necessary information to assist it in identifying the appropriate number of continuations.

- Congress amend patent law by establishing a maximum number of continuations that will be allowed for any patent application.

- As part of the evaluation of the pilot, USPTO examine the potential to outsource the search function to an FFRDC.

- USPTO consider incorporating JPO's practice of examiners providing instructions to the searcher and receiving the results in face-to-face meetings if an FFRDC approach is implemented.

Chapter 3

The Panel recommends that USPTO:

- After the initial recertifications are completed, examine opportunities for reducing the number of reviews and lengthening the three-year recertification cycle.

- Monitor the results of these reviews to (1) ensure their implementation does not result in denying patents to deserving inventors and (2) identify the appropriate number of reviews that is needed to sustain quality without adversely affecting pendency.

The Panel also recommends the following with regard to the other elements of a post-grant review process:

- The grounds for a challenge be limited to patentability and not enforceability.

- Discovery be limited to cross examination on matters relevant to the grounds for review.

- Estoppel from further litigation be limited to those issues raised and resolved in the proceeding.

- The patent owner be permitted a single narrowing of any claims, with the addition of dependent claims on good cause shown.

If a post-grant review system is adopted, the Panel recommends:

- USPTO compile data on the costs and benefits of post-grant review and *inter partes* reexamination, including the impact on patent quality. These data should help inform Congress about whether both systems should be maintained.

Chapter 4

The Panel recommends that USPTO:

- Increase compensation for all patent professionals to be in line with bank regulator levels, but only if management gains more flexibility.

- Use the OPM-authorized flexibilities, particularly those for critical pay and relocation, recruitment, and retention bonuses, and follow up with evaluation of the return on investment for each tool to inform future strategy.

- Use a broader array of hiring mechanisms—including expert/consultant employment, term employment, Intergovernmental Personnel Act assignments, and re-employed annuitants—to bring just-in-time competency to areas of increased workload and complexity, particularly to supplement non-PE functions such as training development/delivery and technology updates.

- Collect exit interview data as part of the agency "check out" process, and mine that data to anticipate trends and forestall further attrition.

- Use a competitive grant or cooperative agreement to spur development of a patent examination-centered curriculum at one or more partner universities—creating a natural pipeline of informed future employees.

- Offer individual recruitment bonuses to job candidates who have already passed the patent bar to decrease the on-the-job training time required to reach full productivity and provide incentives to individuals who are so motivated.

- Explore expanding patent work locations on a pilot basis beyond the Washington, DC area, near patent depository libraries, universities, or where a suitable work force can be found.

- Establish and maintain a competitive recruitment and developmental intern program for patent scholars—focusing, like EPA and other federal agencies, on bringing in a class of outstanding new patent examiners and giving stature and opportunities to members of the group commensurate with the rigor of the process.

- Use those flexibilities derived from its status as a PBO that allow it to establish SES positions without regard to OPM ceilings.

- Fill critical management leadership positions and reduce the SES vacancy rate.

- Enhance supervisory and management training for new supervisors.

- Compensate SPEs in a manner more equitable vis a vis non-supervisory PEs.

- Increase senior management attention on appropriate deployment of the work force, including transitions necessitated by technological or other work process enhancements, and assign accountability to senior managers to address issues raised in evaluations and studies.

- Establish a focal point for ongoing analysis of evolving mission need vis a vis staffing, and make organizational shifts and realignments to meet those needs.

- Utilize retired USPTO employees—whether as contractors, consultants, or re-employed part-time or intermittent annuitants—to serve as trainers and/or mentors, particularly for new hires and those aspiring to gain signatory authority (the ability to independently take action to grant or reject a patent).

- Establish a formal rotational program for examiners who aspire to careers in management at USPTO.

- Update the production and quality standards and awards.

- Examine historical data on production and quality to ensure new proposals, to be negotiated with the Patent Office Professional Association, mesh with agency priorities and reflect current best practices.

- Create a group award to spur innovation in work processes and overcome the “production loner” concept.

- Establish a competitive innovation fund to provide seed money for organizational elements seeking to pilot work process simplification, ways to reduce pendency, or improve quality.

- Tie special act awards and SES bonuses to effective innovation.

- Analyze data from mandatory exit surveys to understand recruiting pitfalls that result in hiring individuals not well-suited to patent examination work.

- Provide resources to managers who make hiring decisions, such as:

    - recruiting sources that have historically produced accepted job offers and successful employees
    - points to consider when hiring to ensure a good match between employee and USPTO
    - examples of pitfalls and best practices so as to learn from others' experiences.

- Establish a mentor program, with a requirement that all new hires have a mentor outside their supervisory chain.

Chapter 5

The Panel recommends that USPTO:

- Take the following leadership actions with regard to overall human capital management:

    - Internalize (rather than relying on contractors) the responsibility for human capital management decision-making as a critical part of managing USPTO work for the nation.
    - Set priorities for human capital initiatives and clearly delineate funding for each.
    - Follow through on the Strategic Workforce/Restructuring Plan and other human resource initiatives outlined in the *21st Century Strategic Plan*, with assignment of clear ownership to OHR and management accountability for effective and continued implementation of the prioritized efforts.
    - Update the 2003 “Human Capital and Accountability Framework” to reflect the current state of human capital affairs at USPTO and develop realistic alternatives for implementation.

- Develop a communication strategy, including pre-decisional input from labor unions as well as individual employees, and explain priorities, costs, and impacts of human capital choices.

- Conduct in-depth labor relations training for new supervisors

- Develop and implement a group retention allowance for SPEs or others with expertise needed to deal with increased application volume.

The Academy Panel recommends that USPTO work with Congress and OPM to:

- Create an independent personnel system for USPTO that ensures equity for employees, increases management flexibility, and puts USPTO in a position to be an employer of choice for the knowledge workers it needs.

- Develop an impasse resolution system that permits prompt renegotiation of work processes and pay rates.

- Establish a USPTO Labor Relations Board to provide a meaningful, continuing role for labor and to resolve issues between management and employee representatives.

Further, if USPTO moves to a DHS-like personnel system that provides additional flexibilities to USPTO management, the Panel recommends that USPTO:

- Raise the pay of patent examiners to a level similar to those of the bank regulation agencies, so that the organization can compete with other public and private organizations that require the same skills.

Chapter 6

The Panel recommends that USPTO:

- Ensure that the vision and goals in its Strategic Plan are integrated into its human capital planning.

- Raise the commitment to and visibility of human capital improvement efforts by incorporating some aspects of this work into the broader Strategic Plan.

- Develop strategies to make its organizational culture more positive and collaborative. These efforts should start with an assessment of the current culture, probably by an external group, and should involve employees and managers.

- Develop a process for initial employee orientation that stresses the positive work environment and many benefits of working for USPTO.

- Reinforce the initial positive presentation of USPTO's environment with periodic informal opportunities to interact with senior management in a social setting, such as "coffee with a commissioner" at lunchtime several times each year.

- Continually encourage individual employees to submit ideas for internal innovation and vigorously acknowledge as the ideas are accepted and implemented.

- Establish an Office of Management Analysis (by whatever name it chooses to call it) to review agency systems and conduct program reviews. This office should report to the Undersecretary.

- Establish a Vice-President for Management (in the corporate structure) or an Associate Commissioner for Management (in an agency structure) to coordinate planning, administration, finance, human resources, information technology, and management analysis.

Chapter 7

The Panel recommends that:

The U.S. Patent and Trademark Office be established as a wholly owned government corporation under the policy direction of the Secretary of Commerce and subject to policy control of the department Secretary. This would entail creating the U.S. Patent and Trademark Corporation (USPTC) and making it subject to the Government Corporation Control Act (31 U.S.C. Chapter 91). The corporation should be permitted to:

- Sue or be sued in its own name and be represented by its own attorneys in all administrative and judicial proceedings, including, with the prior approval of the Attorney General, appeals from decisions of federal courts

- Issue regulations as long as they are compatible with broad polices of the Secretary of Commerce

- Set its fees within parameters set by Congress

- Borrow money for capital or other multi-year expenditures other than operating costs.

Chapter 8

The Panel recommends that USPTO:

Devote additional resources to examiner exchanges so as to learn more about the search strategies and work methods of the European Patent Office and Japan Patent Office.

Volunteer to lead negotiation discussions with EPO and JPO concerning the transparency of search histories.

Document the results of the exchanges so that staff throughout USPTO understand the other offices' search methods.

Conduct a cost-benefit analysis, using the Management Analysis Unit described in Chapter 6, in order to estimate the amount of resources that should be devoted to future trilateral exchanges.

Emphasize improved harmonization as a source of efficiency across the trilateral offices.

Work closely with Congress to provide historical data to support well thought out compromises that will reduce redundancy and remove inconsistencies, while protecting that which is important to US innovation.