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Testimony

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AUTOMATED PATENT
SYSTEM

Information on PTO's Program
to Automate Patent
Information
and Processes

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Mr. Chairman and Members of the Subcommittee:

I appreciate this opportunity to testify on our ongoing review of the Patent and Trademark Office's (PTO) effort to develop its Automated Patent System (APS). At your request, we are assessing whether PTO's automation program is meeting the agency's stated goals. In particular, we are examining the approach PTO is using to oversee the development and acquisition of the APS. Since we have not yet completed our review, our observations today are preliminary. We will provide more details and our recommendations in a subsequent report.

My statement will focus on (1) a brief overview of the APS program, (2) what PTO has accomplished through its automation effort, and (3) what remains to be done. In addition, I will discuss issues we intend to address during the next phase of our review.

OVERVIEW

PTO maintains one of the largest sources of information on technology in retrievable form anywhere in the world. PTO's files contain about 32 million documents, including 16.5 million U.S. patents,¹ 14.2 million foreign patents, and 1.2 million technical documents. Data stored in the agency's files are accessed and updated when inventors make inquiries or file patent applications, or when new information is obtained on foreign patents and related technical literature.

In 1991, PTO received and processed about 168,000 patent applications and issued over 150,000 patents. The Office estimates that this work load will grow at an annual

¹ This file contains over 5.4 million original U.S. patents cross-referenced three times.

rate of 4 percent. This work load is largely managed by over 1,800 examiners in 17 examining groups.

Although inventors and patent attorneys are the principal clients of the patent system, many users depend on the information maintained by PTO, including investors, corporations, and researchers. These clients use the information disclosed in patents to make investment decisions, allocate research and development resources, develop new products, and identify research trends. The importance of patent information to the nation is underscored by a PTO estimate showing that about 70 percent of information on emerging technologies is disclosed only in patent applications.

In 1983, PTO began a long-term program to automate the agency's paper files, along with patent application, examination, and dissemination processes. At that time, PTO estimated that APS would cost \$341 million and all capabilities would be fully implemented by 1990. After 9 years, PTO has spent \$417 million on the APS system. This includes \$283 million on development and \$134 million on operations and maintenance. PTO currently estimates that the system can be completed in the next 5 years for an additional \$277 million.

BACKGROUND INFORMATION ON THE APS PROGRAM

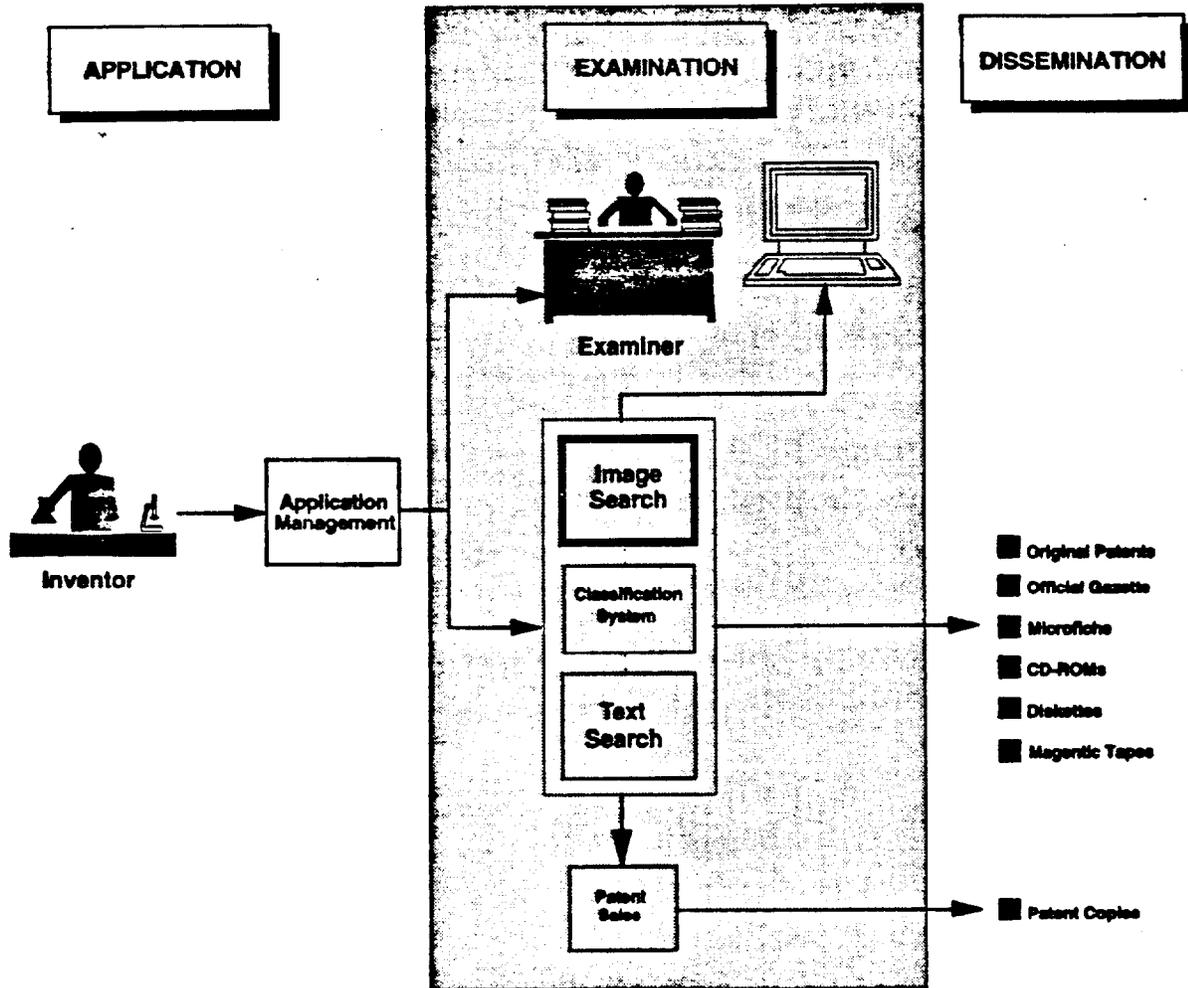
The APS program is intended to improve PTO's internal processes, improve patent quality, and facilitate public access to patent information. PTO's automation objectives include

- replacing paper files and paper-handling operations with computer-accessible data bases;
- using automation technology rather than conventional mail to communicate with applicants and other constituents; and

-- automating the application, examination, and classification processes.

When complete, the APS will consist of five integrated computer applications--an application management system, an image search system, a classification system, a text search system, and a patent sales system. PTO designations for the five systems are as follows: the application management system is called the Patent Application Management (PAM) system; the image search system is known as the Classified Search and Image Retrieval (CSIR) system; the classification system is called the Classification Data System (CDS); the text search system is called the APS Text Search or the Messenger system; and the patent sales system is called the Patent and Trademark Copy Sales (PTCS) system. Figure 1 shows an overview of the APS system.

Figure 1: The APS System



The application management system is designed to fully automate patent application and management by allowing applicants to electronically file applications and by replacing the paper-based application folder with an electronic folder.

The image search system relies on advanced imaging and optical storage technology to scan and retrieve images of documents stored on high speed optical drives. Also,

linkages between the image and text search systems allow examiners to display images of the patents identified during the text search. The system allows examiners to perform searches by class and to retrieve, display, and print the images of U.S. patents. PTO plans to deploy image search workstations to centrally located work areas called casinos, then to smaller common work areas called clusters, and finally to examiners' desks.

The classification system helps examiners classify patents. It is also designed to support the image and text search functions.

The text search system allows examiners to search the text of U.S. patents granted since 1971. The system also provides access to selected abstracts of foreign patents. Text search allows examiners to find appropriate patent references and provides them with full-text searching of the entire technology database.

The remaining system is the patent sales system. This system is designed to support on-demand printing of copies of patents and trademarks.

PTO's PROGRESS IN AUTOMATING ITS OPERATIONS

Of the five systems that make up the APS only one--the full-text searching system--is available to the entire examiner corps. Since 1986, all 1,800 PTO examiners have had access to the full-text search of all U.S. patents issued since 1971 and a limited number of foreign patent abstracts. The classified search and image retrieval capabilities have been deployed to 2 of PTO's 17 examining groups and to some examiners in a third examining group. As a result, approximately 270 examiners can access the images and text of the patents specific to their individual groups. In addition, the patent sales system is partially automated. PTO can now print copies of all 5.4 million U.S. patents stored electronically on APS storage devices.

**APS' COMPLETION DATE AND DEVELOPMENT
COST HAVE CHANGED FREQUENTLY**

Although PTO has made progress in automating its paper files and manual processes, much work still needs to be done. Specifically,

- the application management system needs to be designed, developed, and accepted;
- image search capability needs to be deployed to the remaining examiner groups;
- software to search first-page summaries of foreign patents needs to be designed, developed, and accepted;
- foreign patent first-page summaries need to be loaded into the APS;
- software to search foreign patents needs to be designed, developed, and accepted;
- foreign patents need to be loaded into the APS;
- about 1,700 examiner workstations need to be acquired and installed.

Over the past several months, PTO has provided us numerous documents showing widely varying estimates for when the agency expects to have the APS completely deployed and how much it will cost to develop it. Table 1 summarizes the various deployment dates and cost estimates provided by PTO since we began our review.

Table 1: APS Deployment Schedule and Development Cost

<u>Estimate as of</u>	<u>Deployment Date</u>	<u>Total Cost to Develop</u>
February 1991 ^a	1996	\$630 million
February 1992 ^b	2002	\$496 million
May 1992 ^c	1997	\$694 million

^a PTO's 1992 Budget Submission to the Congress

^b PTO's Office of Information Systems February 1992 APS Cost and Schedule Estimates

^c May 6, 1992, PTO letter to GAO

These frequent changes stem in large part from the fact that funding for the APS program is linked to the amount of fees collected from patent filings. As a result, the funds for APS fluctuate with the volume of applications received and the amount of fees collected.

For example, PTO attributes the 2002 deployment date to a decision by agency management to hold funding for the APS program to about \$55 million a year for each of the next 10 years. The decision was based on a forecast that showed a smaller than projected growth in patent application filings through 2002. A subsequent analysis prepared this month shows that patent applications are growing faster than previously forecast. As a result, PTO believes it can complete the APS sooner. Because an implementation plan showing how the 1997 completion date will be achieved will not be prepared until later this year, we could not assess the reasonableness of PTO's latest completion date and cost estimate.

ISSUES AFFECTING FUTURE APS DEVELOPMENT

Mr. Chairman, we have identified four issues that may affect future APS development: PTO's cost and development schedules, PTO's long-range business plan, the APS system development methodology, and the benefits of APS to its users. We plan to explore these issues further as part of our ongoing work.

Table 1 represents PTO's latest APS development estimates, provided to us earlier this month. During the next stage of our review, we will work with PTO to gain an understanding of the causes for the volatility in the APS cost and development schedules, as well as their reasonableness.

In March 1992, PTO issued its Long-Range Plan: Fiscal Years 1993-1997. This plan identifies critical issues facing the agency over the next 5 years. The plan recognizes that PTO needs to rethink the way it does business, considering recent changes in the agency's mission and operating environment. For example, the plan recognizes the need to emphasize the dissemination of patent information and improved sharing of patent information among the European, Japanese, and U.S. patent offices. As part of our continuing assessment of the APS program, we plan to review PTO's actions to ensure that its automation activities are compatible with its recently issued long-range business plan.

PTO is planning to complete the APS using a system development methodology it is creating. In 1987 the Department of Commerce convened a panel of industry experts to review the APS program. The panel recommended that PTO adopt a state-of-the-art evolutionary approach to developing APS. The approach PTO selected uses an iterative method for developing solutions to the agency's automation needs. PTO believes that the new methodology it is developing is extremely important to PTO and the government in general. PTO expects to have a draft of the methodology complete this September.

Developing and practicing this new approach poses a challenge because there are no federal information processing standards to guide PTO. Further, this methodology is not widely practiced in either the public or private sector. We support and encourage this type of pioneering effort. To help PTO define its evolutionary methodology and ensure its value to other government agencies, PTO should consider having system development experts from other government agencies, industry, and academia review and comment on the approach it is developing. In the next phase of our work we will focus on understanding how PTO's approach will affect APS development, operations, and maintenance.

APS is intended to serve PTO's examiner corps, as well as external users such as applicants and inventors. Both user groups have expressed concerns regarding APS' benefit to them. The patent examiners' union, the Patent Office Professional Association, believes that the currently projected cost of APS far exceeds the value of the system's expected benefits. In 1991, the American Intellectual Property Law Association surveyed 1,000 of its approximately 6,500 members on the quality of services offered by PTO, including the APS. Sixty-five percent of those surveyed said that PTO should not proceed further with deployment of APS if the agency cannot demonstrate that productivity or quality gains will justify the expense.

The only rigorous and documented study evaluating the impact of APS on patent operations was done in 1988. The results of the study were inconclusive. In October 1991, PTO created an Office of Search and Information Resources, which is responsible for testing and evaluating the effect of the APS on patent operations. We will continue to explore the impact of APS with other interested users and examine the results of any studies issued by the Office of Search and Information Resources during our review.

Mr. Chairman this concludes my statement. I will be glad to answer any questions you or the other Members may have.

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