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Copyright Law Constraints on the Transfer of Certain  
Federal Computer Software With Commercial Applications

Statement of  
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Before the  
Subcommittee on Science, Research, and Technology  
Committee on Science, Space, and Technology  
House of Representatives



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Mr. Chairman and Members of the Subcommittee:

I am pleased to present our views on the law's prohibition against copyrighting the federal government's computer software. My statement today is based on our ongoing work for the Subcommittee on Courts, Intellectual Property and the Administration of Justice, House Committee on the Judiciary. At the Subcommittee's request, we are examining (1) federal agencies' efforts to comply with the prohibition on copyrighting works of the government, (2) the extent to which copyright law has constrained the transfer of federal software, and (3) the pros and cons of amending copyright law to allow federal agencies to copyright computer software. This review follows up our March 1988 report to the Chairman, House Committee on Science, Space, and Technology, in which we identified copyright law as one of four constraints to the transfer of federal computer software to U.S. businesses.<sup>1</sup>

In our most recent work, we examined the extent that the copyright law has constrained the transfer of federal software at six federal agencies that fund about 89 percent of the research and development (R&D) performed at all government-operated laboratories in fiscal year 1989.<sup>2</sup> These agencies are the Department of Agriculture, the Department of Commerce, the Department of Defense, the Environmental Protection Agency, the National Aeronautics and Space Administration, and the National Institutes of Health. I would like to summarize the results of our work, which we will include in a soon to be released report:

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<sup>1</sup>Technology Transfer: Constraints Perceived by Federal Laboratory and Agency Officials (GAO/RCED-88-116BR, Mar. 4, 1988).

<sup>2</sup>We also interviewed Department of Energy officials, who stated that the copyright law has not constrained their efforts to transfer software because very little research-related software is developed by federal employees.

- We found no evidence that federal agencies are copyrighting software developed by federal workers.
  
- Efforts at the six agencies to transfer software with potential commercial applications to U.S. businesses have been constrained to a significant but not precisely determinable extent because the government cannot copyright and license software. In particular, federal laboratories are having only limited success in encouraging U.S. businesses to collaborate on developing software, through cooperative R&D agreements, because of businesses' concern about whether they could sufficiently protect their investment in developing and marketing the software.
  
- Authorities to copyright and license federal software and share any royalties with federal employees would stimulate the transfer of federal software with commercial applications. In determining whether to grant a nonexclusive, partially exclusive, or exclusive license, the federal agency could provide a business protection commensurate with its investment in further developing and supporting the software. However, officials of the Information Industry Association, which represents businesses that create and distribute information, expressed concern that providing copyright and licensing authority for software could, among other things, limit public access to federal scientific and demographic data bases that software provides.

#### BACKGROUND

Copyrights protect literary and artistic expression by giving authors, for a limited period of time, the exclusive right, among other things, to reproduce and sell copies of their copyrighted work and prepare derivative works. But under 17 U.S.C. 105, the

U.S. government is prohibited from copyrighting any of its works, including technical publications, computer software, and data bases. The law's legislative history states that this prohibition is intended to place all works of the federal government in the public domain. Most federal computer software is generated by federal agencies' laboratories as part of their research mission. This software is primarily distributed through the National Technical Information Service (NTIS) and other software distribution centers operated by the Department of Energy (DOE) and the National Aeronautics and Space Administration (NASA).

In response to the rising concern about the U.S. trade deficit and the ability of U.S. businesses to compete in world markets, the Congress and the administration have taken actions to strengthen the links between U.S. industry and the nation's research and technology base. These actions include stimulating the transfer of technology from federal government-operated laboratories, which funded about \$15.8 billion in R&D in fiscal year 1989, to U.S. businesses. To support this goal, legislation over the past 10 years has authorized federal agencies to (1) grant nonexclusive, partially exclusive, or exclusive patent licenses; (2) negotiate rights to intellectual property under a cooperative R&D agreement;<sup>3</sup> and (3) give federal inventors a share of any royalties from a licensed invention. Although this legislation has facilitated the commercialization of federal inventions, it has not addressed federal computer software--computer programs and supporting documentation--which currently cannot be copyrighted.

AGENCIES' EFFORTS TO COMPLY WITH THE  
PROHIBITION ON COPYRIGHTING

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<sup>3</sup>Intellectual property rights result from the physical manifestation of original thought.

We found no evidence that federal agencies have improperly copyrighted computer software developed by federal workers. In fact, despite recent emphasis on transferring technology to the private sector, federal laboratories' efforts to transfer software through cooperative R&D agreements have been limited because of uncertainty about the extent of protection federal agencies can offer for jointly developed works and because of businesses' concern that whether this protection is insufficient for their investment in developing and marketing the software. Some Department of Defense laboratories have transferred software to U.S. businesses through cooperative R&D agreements. Since this software is not fully developed and documented, the laboratories have not made it generally available through NTIS. Further, it is unclear whether this software would be made available to others who might subsequently request it.

COPYRIGHT LAW CONSTRAINS TRANSFER  
OF CERTAIN FEDERAL SOFTWARE

According to officials we talked with from seven federal agencies, making software generally available allows for the adequate dissemination of most of their agencies' software. They noted that their agencies primarily develop research-related software for specific scientific applications related to their missions. This software typically has little commercial application. DOE's contractor-operated laboratories develop almost all of DOE's research-related software, and the operating contractor can request authority from DOE to copyright commercially useful software.

However, senior officials from some agencies told us that their inability to copyright and exclusively license computer software has constrained the transfer and use of a certain portion of software that has broader commercial applications. These agencies are the Department of Agriculture; the Department of

Commerce; the Department of Defense, including Air Force, Army, and Navy; the Environmental Protection Agency; NASA; and the National Institutes of Health (NIH). Software constrained by the copyright prohibition includes, for example, artificial intelligence software that could assist doctors in diagnosing diseases or farmers in making decisions about irrigating, fertilizing, or spraying their crops. While these officials did not know exactly how much of their agencies' software was affected by the copyright prohibition, officials for four agencies believe that a conservative estimate would be 10 percent of all of their software.

Just as businesses are unwilling to commercialize inventions without patent protection, they are generally unwilling to invest in documenting and developing commercial applications for federal software without having copyright protection. Executives from two businesses that have considered commercializing federal software noted that a business' return on investment is time-sensitive. To prevent competitors from marketing alternative software packages that are potentially less developed and less expensive, their companies would require copyright protection and exclusive rights to federal software.

The officials at the six agencies concerned about copyright law cannot precisely determine the extent to which the government's inability to copyright has constrained their laboratories' efforts to transfer software because cases often do not come to their attention in the first place. For example, when a business knows that it cannot copyright government work, it does not seek to license the software or enter into a cooperative R&D agreement to further develop it. In other cases, senior laboratory administrators, technology transfer officials, and patent attorneys never learn of opportunities to transfer laboratory software. This occurs because preliminary negotiations between private and government representatives, which occur at lower levels within the

laboratory, fall apart early on because of the government's inability to protect intellectual property.

The transfer of software was constrained in several specific instances because a business could not protect it by a copyright. According to an NIH research manager, for example, the government's inability to copyright has constrained efforts to commercialize a computer program that would assist dermatologists in prescribing medications and other treatments for medical problems, such as acne. Because the software needed to be tested among larger groups of dermatologists before it could be marketed, NIH sought a business that would assume this responsibility. An executive for a small business stated that his company was interested in the software, but it clearly was an early version that would have to be further developed before it could be marketed. His company decided not to try to commercialize the software mainly because it believed dermatologists were not ready to accept and use the software. Another important factor was the company's inability to obtain copyright protection, which created uncertainty over whether it could sufficiently protect its investment from a competitor who might be able to obtain the same software from NIH or NTIS. NIH has not further developed the software and has yet to attract a business partner to commercialize it.

Although NIH has signed about 130 cooperative R&D agreements, it is negotiating its first agreement that has a major software component. Similarly, of the 140 agreements that the Agricultural Research Service has signed or is negotiating, none focuses on software. The government's limited success in developing and commercializing software through cooperative R&D agreements is generally believed to be the result of the copyright law's prohibition on copyrighting.

On the other hand, 9 of the 26 cooperative R&D agreements signed or being negotiated by the Army Corps of Engineers involve

the further development of its software. The Corps, however, has specific legislative authority to fund up to 50 percent of the costs in agreements negotiated under a new Construction Productivity Research program. Nevertheless, Corps officials indicated that the inability to copyright federal software has been a constraint to entering into cooperative R&D agreements.

PROS AND CONS OF AMENDING COPYRIGHT LAW  
FOR FEDERAL COMPUTER SOFTWARE

According to senior officials at the six agencies concerned about the copyright law, to improve the transfer and use of federal software with commercial applications, the government should be allowed to copyright and exclusively license computer software, and federal researchers should be able to share in any royalties from licensed software. With such changes, businesses could protect their investment in developing and marketing the software, and federal researchers would have an incentive to work with businesses in developing and documenting the software.

The authority to copyright and share royalties would provide federal computer programmers with opportunities for career, financial, and intellectual recognition similar to those for federal researchers whose inventions are patented. In addition, these authorities could improve public access to federal software because the software might not otherwise be sufficiently developed and documented for general dissemination. Several agency and laboratory officials also noted that copyright authority would further their agencies' missions to improve public health and safety because they could better control the software's quality and distribution.

Some federal laboratory managers and researchers, however, oppose amending the copyright law. In their view, copyrighting and licensing federal computer software would (1) distract researchers



from the laboratory's basic research mission, (2) interfere with informal exchanges between federal and university scientists, and (3) interfere with the government's existing policy of publicly disseminating technical information. In addition, Information Industry Association representatives oppose allowing federal agencies to copyright computer software because agencies might use this authority to either restrict access or give favored access to federal scientific and demographic data bases, such as those at NIH's Library of Medicine or the U.S. Census Bureau.

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In summary, we found no evidence that federal agencies are improperly copyrighting software developed by federal employees. Furthermore, federal software is generally available to the public. However, officials at four agencies stated that at least 10 percent of their laboratories' software may not be effectively transferred and used because of the copyright prohibition. This software may have significant commercial applications with potentially important technological and economic benefits to our nation.

Effective transfer of this software is an appropriate goal that could be achieved by amending the copyright law to provide copyright and licensing authority. Such a fundamental change, however, must be balanced against the concern that it might reduce the public's access to federal data bases and shift the federal laboratories' basic research mission.

To accommodate these concerns and still achieve effective transfer, it may be appropriate to provide copyright authority for software with wider commercial applications that needs further investment to be effectively transferred. This could be accomplished by amending the copyright law (17 U.S.C. 105) to allow federal agencies to copyright and grant nonexclusive, partially exclusive, or exclusive licenses to computer software on a case-by-

case basis if such protection would stimulate the software's effective transfer and use. Alternatively, the Federal Technology Transfer Act (15 U.S.C. 3710a) could be amended to authorize federal agencies to copyright and grant licenses to federal software under a cooperative R&D agreement.

Under either option, consideration should be given to amending the Federal Technology Transfer Act's royalty-sharing section (15 U.S.C. 3710c) to allow federal employees who develop software that is subsequently commercialized to share in royalties. In addition, if the copyright law were amended, consideration should be given to instituting procedures similar to those required for granting patent licenses (35 U.S.C. 209) to ensure fairness in granting an exclusive or partially exclusive license to a nonfederal entity and diligence by the licensee in commercializing the software.

Mr. Chairman, this concludes my remarks. I would be happy to respond to any questions you or other Members of the Subcommittee may have.