TESTIMONY OF

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MARKET AND TECHNOLOGY ASSESSMENT

TO THE

HOUSE SUBCOMMITTEE ON TECHNOLOGY

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Thank you for inviting me to testify before you today. I certainly do not need to tell the members of this particular Committee about the importance of linking our unparalleled federal laboratories and universities with American industry. Today's hearing is another significant step toward strengthening these ties which hold great promise for our future economic prosperity. It also underscores the 20 year commitment of this Committee in fostering public/private sector relationships when such ideas seemed outlandish to many.

While we can certainly improve the current public technology management system, we have made enormous strides in the past two decades. Most of us can remember in the 1970's when it was fashionable in some circles to bash U.S. industry and U.S. workers and moan that our best days as a nation were behind us. There were also cries for a Japanese style centrally directed economic policy. Luckily, we chose a more traditional American path--removing barriers to innovation and trusting the genius of the market to respond. We also applied this same philosophy to the perplexing dilemma of how to open up our public sector to commercial partnerships with our private sector. These ideas were first expressed in this very hearing room.

In encouraging R&D partnerships between industry and government, there were no clear models to follow in the 1970's. The journey has turned out to be a step-by-step process. I was fortunate enough to be on the Senate Judiciary Committee staff when the effort began in 1978 to encourage universities and small businesses to commercialize their federally-funded research. This was a highly controversial idea in those days. We certainly realized that by addressing the universities and small businesses we were certainly not solving the entire problem, but former Senator Birch Bayh believed that creating one successful model would ultimately impact the entire federal R&D system. We were delighted when

Senator Bob Dole agreed to become a principal co-sponsor in this effort.

While Senators Bayh and Dole disagreed on many issues, they were in strong agreement that increased international competition no longer allowed us to segregate our public and private sectors from working together to create economic wealth. Luckily this bi-partisan cooperation has continued.

The passage of the Bayh-Dole Act in 1980 was a sea change in U.S. technology policy. The Act removed bureaucratic barriers allowing creators of technologies in universities to work with the developers of products-- our private sector. The legislation relies on providing incentives for success along with a decentralized approach to technology management. This is the traditional American economic policy which has held us in such good stead. Ironically, it is this U.S. model that our economic competitors are studying today.

The Association of University Technology Managers has conducted an important study on the

tremendous economic benefits this law has garnered not just for the universities and companies directly involved in each partnership, but more importantly, for the U.S. economy as a whole.

As we were drafting the original Bayh-Dole bill, I looked at previous legislation in the area. One bill I studied came from this Committee. It was legislation by Rep. Thornton that was headed in the same direction we were. The Thornton bill had a provision that I liked concerning licensing "on the shelf" government inventions. We added your language to Bayh-Dole.

These government licensing provisions are the topic of the hearing we are having today.

The debate over Bayh-Dole was solely focused on the then radical idea that we should allow universities to manage their R&D without micromanagement by government lawyers, so that they could license their inventions to U.S. companies for commercialization.

We believed that the "Thornton" provisions would also demonstrate that while Bayh-Dole was important in itself, it was really the first step in examining the larger question of how to improve the commercialization of billions of dollars of federal R&D. Senator Bayh believed that adding the provisions on licensing government-owned inventions would make it clear to the agencies that we also expected them to be more aggressive in finding partners for their research.

This is what the report of the Senate Judiciary Committee on these sections states as our purpose:

> **S. 414 (*the Senate bill number for Bayh-Dole)* will also allow the agencies to have greater flexibility in finding licensees for the patents that are now in the Government's patent portfolio. Dr. Betsy Ancker-Johnson, Vice President for Environmental Affairs of General Motors and former Assistant Secretary of Commerce for Science and Technology, told the committee that the agencies are now licensing less than 4 percent of the 28,000 patents that the Government now owns to private industry for development. The central problem seems to be that the agencies seek to issue non-exclusive licenses for these patents which are available to all interested parties. Nonexclusive licenses are generally viewed in the business community as no patent protection at all, and the response to such licenses has been lackluster.**
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> **The University and Small Business Patent Procedures Act (*now called Bayh-Dole)* would allow the agencies to license out these patents nonexclusively, partially exclusively, or exclusively depending upon which avenue seems to be the most effective**

means for achieving commercialization. It eliminates current uncertainty over the authority of many agencies to grant such licenses. The bill would require that all interested parties include in their application for Government licenses a plan for commercialization of the patent and agree to submit periodic reports to the agency on their progress. The bill requires public notice and other procedures before the issuance of exclusive licenses, but is not meant to discourage the granting of such licenses when the plans proposed by prospective exclusive licensees show a greater commitment to commercialization than those proposed by persons seeking non-exclusive licenses. A first preference in such licensing would be given to small businesses in order to encourage increased competition.

It is essentially a waste of public money to have good inventions gathering dust on agencies' shelves because of the unattractiveness of non-exclusive licenses. The presence of "march-in rights" in the licensing program (where the agency could issue additional licenses to competitors if such licensing were required to meet a public need) should be a sufficient safeguard to protect public welfare requirements and prevent any undesirable economic concentration.

S. 414, however, does not actually mandate more extensive Government licensing programs. However, the bill will put agencies in a position to more adequately respond to requests for exclusive licenses, to more effectively utilize the resources now rather unsuccessfully devoted to licensing and technology utilization efforts, and to devise licensing programs that might be effective at relatively low cost to the taxpayer. The successful licensing of government-owned patents represents a very real gain to the agencies since it will not only encourage commercialization of the patents, but will also bring in revenues to the government through licensing fees.

The very idea of encouraging the exclusive licensing of government inventions was a very bold idea in 1979 when the report was filed. During this period there were many who believed that patents were bad because they were "monopolies" and that it was unseemly, if not downright immoral, for the government to be a party to such practices. The continued loss of American jobs in high technology fields brought a more market oriented approach to the fore. Companies simply were not willing to invest the funds and effort to develop new products if they could not defend their investments with adequate intellectual property protection. This is especially true in the development of publicly-funded R&D where the discoveries are usually a long way from commercial development.

President Reagan adopted the Bayh-Dole approach as the centerpiece of his technology management policies. President Reagan asked David Packard for a report in 1983 on why the federal laboratories were not having the same degree of commercial success that universities were beginning to enjoy. The Packard Report pointed out many of the barriers facing the laboratories, one of which was the absence of strong legal authority encouraging such relationships.

In 1984 the next step in the overhaul of the federal technology management system occurred when the Reagan Administration and Congress extended the concepts of Bayh-Dole to university-operated federal laboratories. The 1986 passage of the Federal Technology Transfer Act and its extension to all of the DOE contractor-operated laboratories in 1989 were the next logical steps.

The passage of the National Technology Transfer Act of 1995 under the leadership of Representative Morella was the latest step in this progression. The provision that an industrial partner in a cooperative R&D agreement can be guaranteed an exclusive field of use license for inventions created in a cooperative R&D agreement underscores how seriously Congress takes this issue, and how far we have progressed from the time when, with great caution, we raised the idea of effectively licensing government-funded inventions.

In each evolution, Congress has sought to make the technology transfer process more "industry friendly," realizing, correctly, that without significant time and resources by private companies new products, processes and jobs will not be created for the U.S. economy. Congress has also reminded the public sector technology managers that they are expected to vigorously apply the tools provided them.

While we have progressed a long way in the past 17 years since passage of Bayh-Dole, the provisions for licensing on-the-shelf government inventions remain the same. It is now time to look back on these procedures in light of what we have learned, and improve the system. I believe that this is the next step in our continuum.

The basic problem in the current licensing provisions for government-owned inventions is that they are out of step with the rest of the system.

The current licensing regulations establish a complex system which a company seeking an exclusive license must go through. The creating agency must provide notice in the Federal Register for 90 days that the invention is available for licensing. If someone applies for an exclusive license a 60 day Federal Register notice must be provided giving the name of the company seeking the license. Competitors can seek to block the application by saying that they will accept a non-exclusive license for the invention. This is not the kind of procedure that assures innovative companies that the federal government is a reliable partner.

When Bayh-Dole passed and the Department of Commerce subsequently wrote the

implementing regulations, the idea of the Internet was inconceivable. It is a very rare company that reads the Federal Register looking for technology. Now that virtually every university and federal laboratory has its own web-site, the "public notification" provision is really showing its age. One of the main thrusts of Bayh-Dole was to encourage small companies to develop federally-supported research. The current notification procedures in the Federal Register are certainly not small business friendly.

With electronic notification virtually anyone who is looking for new discoveries can readily find them. This is a much more fair approach than having to comb through the Federal Register. Indeed, companies do not even need computers to find technologies. Entities like the National Technology Transfer Center (NTTC) maintain toll free numbers to assist companies by performing data base searches for them. Posting inventions available for licensing electronically is much more in line with today's world than the current regulations.

While making such a change to the regulations certainly does not require legislation, experience has shown that agencies are very reluctant to make these types of adjustments without "legislative cover." Expediting the current notification process and getting it ready for the 21st Century is a very useful exercise.

The present regulations also make it difficult for government-owned and operated laboratories to bring already existing inventions into CRADA's if such an inclusion would create a more complete technology package. Government-owned, contractor-operated laboratories are allowed to manage their inventions just like universities do. They do not face onerous notification provisions to grant exclusive licenses, and more importantly, they can include already existing inventions in their cooperative R&D agreements under the Federal Technology Transfer Act. Several GOCO technology transfer officials that I spoke with before drafting my testimony believed that the ability to include these inventions greatly strengthened their partnerships.

Companies are taking considerable risks when they agree to develop and commercialize federally-funded technologies. Typically these inventions are a long way from the marketplace. Giving agencies discretion and incentives to consider how already patented discoveries might improve their CRADA's is a positive step. My current position at the NTTC was created to assist the laboratories and universities better assess the commercial worth of their discoveries. We are now beginning work with the NASA and Navy to look at these "on-the-shelf" patents. Having the ability to readily "bundle" related technologies to make them more attractive to industry is an idea we would strongly recommend that our clients consider. This flexibility allows the laboratories to better respond to the realities of the commercial marketplace. I believe that this will prove to be a significant new tool for the laboratories and one that they should be encouraged to aggressively utilize.

The current system with subtle the nuances between what "GOCO's and GOGO's" can do in CRADA's are exactly the kind of bureaucratic jargon that makes industrial executives' eyes roll. I believe that it is helpful to have Congress speak on this subject. The message should be that agencies can include already existing inventions into CRADA's if warranted. Agencies would be expected to use good judgment and would retain needed flexibility on when and when not to use this authority. But such consistency across the federal system is justified if we expect American companies to effectively commercialize technologies from federal laboratories regardless of if they are government or contractor operated. The ability of universities to include existing inventions in their agreements with industry is one of the keys to their phenomenal success rates under Bayh-Dole.

We should seek to make the technology transfer system as understandable to the private sector as possible. A large part of my current job at the NTTC is alerting U.S. industry to the possibilities of working with our federal laboratories and universities. Encouragingly, industry is more open to these partnerships than ever before. When companies convince themselves that they might actually benefit from a partnership with a federal laboratory and then run into a system where one kind of laboratory can manage technology one way and another funded by the same government can't, they are rightly very confused. This desire for greater simplicity in dealing with the federal laboratories led to the passage of the National Technology Transfer and Advancement Act.

Even more importantly, the current restrictions on licensing on-the-shelf technology do not benefit the American taxpayers. It is hard enough to build R&D partnerships. As stated before, any company interested in commercializing publicly-funded R&D is undertaking a real risk. It is not unusual for public technologies to take five-to-seven-years to reach the marketplace. If an agency believes that a company is a good partner and can bring the technology to market, forcing them to wait months and run the gauntlet of public notices

does not benefit anyone. Indeed, it would be a rare company that would want its competitors to know what technologies they are seeking to license. This can be a valuable tool in discerning a company's commercial strategy. This kind of public disclosure underscores many executives' worst fears about working with the government -- it simply does not know or apparently care how the marketplace actually works. It was for similar reasons that this Committee authored the 1995 National Technology Transfer and Advancement Act making clear to industry and agencies the seriousness of moving federally-funded R&D quickly to market.

The core of the Bayh-Dole Act remains solid. The provisions being considered today balance public policy needs with industrial requirements. We can both provide adequate protection of the rights of the public, encourage serious companies to develop existing government inventions, and best of all, make the entire system of developing government technologies more consistent and simple.

The guiding principles of Bayh-Dole in licensing government inventions have held up remarkably well. Agencies must retain ample authority to ensure that a prospective partner company intends to take the technology to market. Agencies need a clear ability to enforce their licenses. The scope of the license should be tailored to the specific plans of the requesting company. Preferences are given to small companies and to those who will manufacture the products in the United States.

In short, I recommend taking a well-thought out incremental approach like the pending bill that simplifies current procedures while retaining important safeguards for the American public. It is gratifying to see that the foundation of Bayh-Dole is still solid. This should not discourage us from shoring it up from time to time.

Thank you very much.

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Biographical Data

Vice President, Market and Technology Assessment National Technology Transfer Center

The NTTC was created by Congress to assist U.S. industry in building commercial partnerships with the massive national laboratory/university R&D system. The Department has just been created in response to requests by the public and private sectors for a more systematic approach for quickly finding and exploiting promising technologies. Services include technology assessments, licensing, automated patent tracking services, and general research portfolio management. Prior to this assignment, Joe headed the Training Department and served as Director of Planning and Development.

Director, Office of Technology Commercialization U.S. Department of Commerce

The office was the principal federal technology management unit of the Department's Technology Administration. Joe was involved in the passage of major laws like the 1986 Federal Technology Transfer Act and the 1989 National Technology Transfer Competitiveness Act which allow U.S. industry to perform joint R&D with federal laboratories. The office also oversaw the implementation of these laws as well as those allowing universities to license their patentable technologies to U.S. industry.

Joe was a negotiator in several international agreements such as the U.S.-Japan Science and Technology Agreement, which were renegotiated to bring them into line with current U.S. technology transfer laws so that publiclyfunded R&D was not inadvertently given away under international scientific agreements.

Professional Staff Member, U.S. Senate Judiciary Committee

Joe staffed the passage of the Bayh-Dole Act of 1980 which reversed 50 years of previous practices making the commercialization of federally-funded technology very difficult. This law is the basis for the present high degree of U.S. university-industry cooperation.

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National Technology Transfer Center

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Ballistic Missile Defense

Organization (BMDO) $1,502,799 $2,467,171 $2,743,500

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Future (TSF) $817,044 $1,696,650

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