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Report to Congressional Committees

March 1996

DOD RESEARCH

Acquiring Research by Nontraditional Means

GAO/NSIAD-96-11

GAO

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General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

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March 29, 1996

The Honorable Strom Thurmond
Chairman
The Honorable Sam Nunn
Ranking Minority Member
Committee on Armed Services
United States Senate

The Honorable Floyd Spence
Chairman
The Honorable Ronald V. Dellums
Ranking Minority Member
Committee on National Security
House of Representatives

With considerable congressional support, the Department of Defense (DOD) has made acquisition reform one of its highest priorities as it attempts to reduce the cost of maintaining technological superiority in an era of constrained defense budgets. Acquisition reform efforts generally focus on actions that affect DOD procurements. DOD is also experimenting, however, with new approaches to accomplish similar objectives in its science and technology efforts, including using cooperative agreement and other transaction instruments to enter into research projects with commercial firms and consortia. The use of cooperative agreements and other transactions has been cited by DOD officials as a means to (1) help reduce the barriers to integrating the defense and civilian sectors of the industrial base, (2) promote new relationships and practices within the defense industry, and (3) allow the government to leverage for defense purposes the private sector's financial investments in research and development of commercial products and processes.

This report discusses DOD's use of these instruments to further these three objectives. We also discuss two emerging issues concerning the selection and structure of the instruments. We did not review the technical merits of the research and did not attempt to quantify the benefits to be derived from such research. We performed our review as part of our basic legislative responsibility and have addressed our report to you because of the key role your committees have played in providing the authority for using these instruments.

In 1989, your committees were instrumental in enacting legislation[1]—subsequently codified in part at 10 U.S.C. 2371—to provide the Defense Advanced Research Projects Agency (DARPA)[2] authority to enter into cooperative agreements and "other transactions" for advanced research projects. The legislation did not define "other transactions," thus giving DARPA flexibility to deal with unique situations encountered when fostering technology, especially dual-use technology. Congress limited the authority to a 2-year trial period and restricted its use to those situations in which the use of standard contracts or grants was not feasible or appropriate. Congress also required that, to the extent the Secretary of Defense determined practicable, recipients should provide at least 50 percent of the project's funding. In 1991, Congress made the authority permanent and subsequently permitted the military services to use these instruments. Legislative changes in 1993 and 1994 now enable DOD to use cooperative agreements as part of its basic authority under 10 U.S.C. 2358 to conduct research.[3] Other transactions, however, may be used only when other instruments are not appropriate.

Background

Contracts, grants, cooperative agreements, and other transactions are among the tools DOD has to support or acquire research. The instruments are not interchangeable, but rather are to be used according to the nature of the research and the type of government-recipient relationship desired. Contracts are procurement instruments and, as such, are governed by the Federal Acquisition Regulation (FAR) and DOD procurement regulations. Contracts are to be used when the principal purpose of the project is the acquisition of goods and services for the direct benefit of the federal government. In contrast, grants, cooperative agreements, and other

[1]Public Law 101-189, § 251, November 1989.

[2]Between March 1993 and February 1996, the agency was known as the Advanced Research Projects Agency.

[3]Under this authority, cooperative agreements are to be entered into in accordance with chapter 63 of title 31 of the U.S. Code. These agreements are generally subject to various Office of Management and Budget (OMB) circulars and agency implementing regulations. For example, cooperative agreements entered into with institutions of higher education, hospitals, and other nonprofit institutions are subject to the provisions of OMB Circular A-110.

transactions[4] are assistance instruments used by DOD when the principal purpose is to stimulate or support research and development efforts for more public purposes. Assistance instruments are generally not subject to the FAR or DOD procurement regulations, thereby providing DOD a considerable degree of flexibility in negotiating terms and conditions with the recipients.

Between fiscal years 1990 and 1994, DOD cited the authority provided under 10 U.S.C. 2371 to enter into 72 agreements, of which 56 were categorized as other transactions and 16 as cooperative agreements. At time of award, the planned contributions by DOD and recipients totaled about $1.5 billion. DARPA has been the primary user of the authority, entering into all 56 agreements that were identified as other transactions. The Air Force and Navy entered into a total of 16 cooperative agreements, while through fiscal year 1994 the Army had not entered into any agreements using this authority.

For various policy and implementation reasons, DOD generally did not enter into assistance relationships with commercial organizations prior to the enactment of 10 U.S.C. 2371 in 1989. However, 59—or about 82 percent—of the agreements entered into under the authority of 10 U.S.C. 2371 were with consortia comprised primarily of for-profit firms. This high number of consortia-led projects was due in part to the fact that most of the programs under which the agreements were entered into—such as the Technology Reinvestment Project (TRP)—required or expected that some type of partnership arrangement be formed. Nearly all of the remaining agreements were entered into with single commercial firms. Appendix I provides additional information on various recipient characteristics.

Results in Brief

Cooperative agreements and other transactions appear to have provided DOD a tool to leverage the private sector's technological know-how and financial investment. The instruments have attracted firms that traditionally did not perform research for DOD by enabling more flexible terms and conditions than the standard financial management and

[4]The other transactions we discuss in this report are those in which DOD entered into an assistance-type relationship with commercial firms and consortia for government-sponsored research projects. DOD officials noted that other transactions can encompass a variety of other relationships and purposes. For example, under section 845 of the National Defense Authorization Act for Fiscal Year 1994, Congress provided DARPA an experimental authority to use other transactions in a procurement relationship. Additional types of other transactions in an assistance-type relationship include the lending of equipment to firms to conduct research or reimbursable arrangements that allow a firm to conduct experiments aboard a government experimental launch vehicle.

intellectual property provisions typically found in DOD contracts and grants. Thus, the instruments have contributed to reducing some of the barriers between the defense and civilian industrial bases.

These instruments also appear to be contributing to fostering new relationships and practices within the defense industry, especially under projects being undertaken by consortia. DOD and consortia representatives told us that the use of consortia improved information flow and expedited technology development. Similarly, DOD and consortia representatives indicated that the instruments promote a different government-recipient relationship, although further cultural changes are still needed within both DOD and industry to adjust to this new partnership philosophy. The instruments also provide traditional defense firms the opportunity to develop or use practices other than those employed under FAR-based contracts, but it is unlikely such firms will do so given the need to maintain their current systems to comply with regulations or standards applicable to procurement contracts.

By sharing the costs of projects, DOD has partially offset its own costs while generally enabling recipients to expand the scope of the projects undertaken. In the 72 projects we reviewed, recipients planned to contribute about $1.39 in cash or in-kind contributions for each dollar provided by DOD. However, as allowed under the FAR, some of the recipients' contributions may be allocated to their overhead costs as independent research and development (IR&D) expenses and therefore be eligible for reimbursement by DOD. Further, about 10 percent of the recipients' total planned contributions was attributable to the value of past research efforts, with such contributions accounting for more than 20 percent in 8 of the 72 agreements we reviewed. These practices increase DOD's actual monetary share of the projects' costs. In particular, accepting the value of prior research in lieu of concurrent financial or in-kind contributions may not provide an accurate depiction of the relative financial contributions of the parties under the agreement.

The selection of instruments by the military services and DARPA has not been consistent, which led to some confusion among firms that were negotiating agreements with both DARPA and the services. While the instruments share many similar characteristics, there are differences in how the services and DARPA incorporated auditing, access to records, and intellectual property provisions. With regard to intellectual property provisions, some disagreement exists within DOD as to whether 10 U.S.C. 2371 provides DOD the authority to negotiate more flexible

property rights than typically allowed. DOD is in the process of revising its February 1994 interim regulations to provide clearer guidance on the instruments' selection, use, and structure.

Reducing the Barriers Between the Defense and Civilian Industrial Bases

The use of cooperative agreements and other transactions appears to provide some opportunities to remove barriers between the defense and civilian industrial bases, in particular by attracting firms that traditionally did not perform research for DOD. In a previous report,[5] we pointed out that government acquisition requirements have caused some companies to separate their defense and commercial research and development organizations or to decline accepting government research and development funds. The flexibility inherent in these instruments has enabled DOD to attract firms that have historically declined to participate in research projects sponsored under a contract—such as Cray Research, Hewlett-Packard, and the commercial division of IBM—to participate in one or more projects either as a consortium member or as a single party. Overall, based on information provided by DOD and recipient officials, we estimate that about 42 percent of the 275 commercial firms that participated in 1 or more agreements were firms that traditionally had not performed research for DOD.

DOD officials stressed that a contracting officer cannot elect to use a cooperative agreement or other transaction to attract a nontraditional firm when the principal purpose of the research is for the direct benefit of the government. However, they indicated that for projects in which the use of such instruments was appropriate, the ability to attract such firms was a significant benefit, especially in those areas in which these firms' technological capabilities exceed those possessed by traditional defense firms. For example, in 1 Air Force agreement, 14 firms, including 5 that traditionally had not performed research for DOD, entered into a $60 million cooperative agreement to develop computer interface standards. The consortium manager told us that the commercial firms involved would not have participated had DOD imposed standard FAR clauses for certified cost and pricing data or intellectual property provisions. The Air Force program manager noted that the consortium has both large, multinational firms like IBM, as well as small, specialized companies working together. Representatives from the consortia and the Air Force believed that the mix of participants facilitated information exchange and consensus building on the interface standards.

[5] Acquisition Requirements: Impact on Company Structures and Operations (GAO/NSIAD-94-20, Apr. 19, 1994).

Discussions with DOD officials and recipients indicated that the specific terms and conditions that led to the decision to participate varied from company to company. For some, such as IBM, it was the ability to use their commercial accounting systems rather than establish systems or practices that complied with government-unique requirements; for others, such as Hewlett Packard, it was the ability to limit the government's access to and audits of the firm's financial records or the increased flexibility in the allocation of intellectual property rights that were key factors in their decision to do business with DOD.

A 1994 other transaction with a Hewlett-Packard-led consortium provides insights into how the authority was used to negotiate terms and conditions affecting both financial management and intellectual property matters that are atypical of contracts, grants, or standard cooperative agreements. We had previously reported[6] that Hewlett-Packard declined to accept government research and development funds to protect its technical data rights. In this case, however, Hewlett-Packard responded to a DARPA announcement soliciting proposals to advance the state of the art in the manufacture of more affordable optoelectronics systems and components. According to DARPA, this technology will enable data transmissions at high rates from high performance parallel processors at far lower costs than current technology allows.

Under the agreement, the financial management provisions require consortium members to maintain adequate records to account for federal funds received under the agreement, and account for the members' contributions toward the project. The members are required to have an accounting system that complies with generally accepted accounting principles, but commercial firms do not have to follow the accounting requirements specified by the FAR. The agreement does not require an annual audit and does not specifically provide DARPA or our office direct access to these records. Rather, for up to 3 years after the agreement is completed, these records may be subject to an audit by an independent auditor, who will provide a report to DARPA. In comparison, under a cost-reimbursement research contract, a traditional defense contractor would be typically required to (1) follow the FAR accounting requirements, (2) undergo audits, and (3) provide the federal contracting agency and our office with access to the contractors' pertinent records.[7]

[6]Acquisition Requirements: Impact on Company Structures and Operations (GAO/NSIAD-94-20, Apr. 19, 1994).

[7]By way of comparison, OMB Circular A-110 imposes similar requirements for institutions of higher education, hospitals, and other nonprofit organizations awarded standard cooperative agreements.

Similarly, the intellectual property provisions were structured to provide Hewlett-Packard more flexible provisions than typically allowed under contracts, grants, or standard cooperative agreements, all of which are governed by the provisions of Public Law 96-517, as amended.[8] The provisions of this act, commonly referred to as the Bayh-Dole Act, provide the government's general policy regarding patent rights in inventions developed with federal assistance and are intended, in part, to facilitate the commercialization and public availability of inventions.[9] In general, the government's policy is to allow the contractor to elect to retain title to the subject invention while providing the government a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world. Recipients must comply with certain administrative requirements. For example, under a research contract, a contractor is required to notify the government of an invention within 2 months after it has been disclosed to contractor personnel responsible for such matters. Large contractors are required to notify the government in writing whether they intend to retain rights to that invention within 8 months after disclosing the invention to the government, while small businesses are provided up to 24 months. Failure to comply with these administrative requirements provides the government the right to obtain title to an invention.

Under the Hewlett-Packard agreement, the intellectual property provisions were structured so that

- the consortium has up to 4 months after the inventor discloses a subject invention to his company to notify the government;
- the consortium has up to 24 months to inform DARPA whether it intends to take title to inventions arising from the agreement after its disclosure to the government;
- DARPA agreed to delay exercising its government purpose license rights to inventions in which the consortium retains title until 5 years after the agreement is completed; and
- the consortium has the authority to maintain inventions and data as trade secrets for an unspecified period of time under certain conditions.

[8]35 U.S.C. §200 et seq.

[9]The provisions of the Bayh-Dole Act were applicable only to small businesses and nonprofit entities. In 1987, President Reagan issued Executive Order 12591, which included a provision to provide all contractors, regardless of size, title to patents made in whole or in part with federal funds, to the extent permitted by law.

Further, under the agreement, DARPA does not receive any rights to any technical data produced under the agreement unless DARPA invokes its "march-in" rights. These rights can be invoked only if the consortium fails to reduce an invention to practical application or for other specified reasons, such as in the case in which the consortium grants another firm an exclusive right to use or sell the invention in a product that is substantially manufactured outside of the United States or Canada. In combination, these terms provide the consortium additional time to commercialize the technology, while somewhat limiting the government's rights to that technology.

These clauses illustrate the trade-offs that DOD may face as it attempts to attract firms that have not traditionally performed research for the government or move toward more commercial-like practices.[10] Many of the oft-cited barriers to integrating the defense and civilian industrial bases, such as government cost accounting and auditing requirements, rights in technical data, and other government unique requirements, were instituted to safeguard or protect the government's and taxpayer's interests, assist suppliers, or help achieve a variety of national goals. In the Hewlett-Packard example, two of the government's traditional methods of oversight—audits and access to records—were not included, while the government's standard rights to information developed under federally sponsored research are somewhat constrained.

DARPA and service program management and contracting officials acknowledged that there may be some added risks to the government due to the less stringent oversight requirements. However, most indicated that factors such as the recipient's interest in having the project succeed (given its commercial applications), the recipient's willingness to cost share, and the tendency of consortium members to self-police its agreements (since each member wants to assure that its partners are contributing as agreed), acted to reduce that risk. Similarly, DARPA officials commented that the added flexibility within the intellectual property provisions would assist the firms' efforts to develop and commercialize the technology.

[10]It should be noted that under some agreements we reviewed traditional defense contractors have also been recipients of more flexible intellectual property provisions. For example, a consortium led by McDonnell Douglas is not required to deliver any data that is developed under the agreement, nor any rights to such data, unless the government invokes its "march-in" rights. Such rights cannot be invoked until 5 years after the completion of the agreement. Similarly, the government's rights to inventions in which the consortium retains title will not begin until 10 years after the completion or termination of the agreement, whichever occurs first. According to the agency analysis supporting this decision, the allocation of rights in this manner are consistent with the government's objectives to develop technologies that further the aerospace technology base and develop technologies that will transition to military applications at some point in the future.

Promoting New Relationships and Practices

The instruments appear to be fostering new relationships and practices within the defense industry, especially for those projects being undertaken by consortia. Under a consortium, members mutually develop and sign articles of collaboration, which cover such issues as the consortium's management structure, each member's technical and financial responsibilities, and the exchange or protection of each member's proprietary information. Several officials we interviewed noted that developing the articles of collaboration tended to be contentious and time-consuming. Once the consortium is established, however, DOD officials and recipients indicated that a synergistic effect tended to occur because of the exchange of information under consortia, thereby expediting technology development. For example, recognizing their common interest in developing more affordable composite engine components, General Electric and Pratt & Whitney agreed to collaborate with material suppliers on a $32 million project. These two firms—normally competitors—developed mutually agreeable terms that balanced proprietary interests with research objectives. According to Air Force officials responsible for the effort, there was better information flow and greater technical progress using this joint approach than if each firm had undertaken the project separately.

Depending on the project, DOD program management and contracting officials viewed themselves as being more actively involved in coordinating and facilitating activities than performing a traditional government oversight function. However, DOD officials and recipients we spoke with noted that negotiating cooperative agreements was significantly different than negotiating contracts, in which most provisions are governed by a standard FAR clause and in which negotiations tend to focus on the cost proposal. These officials noted that since the FAR is not applicable to assistance instruments, more provisions were subject to negotiation. DOD officials and consortia representatives noted that moving away from the traditional reliance on FAR-based contracting approaches and clauses to which they are accustomed and increasing the use of assistance instruments would require significant cultural or mindset changes by both parties.

The potential exists for traditional defense contractors to use cooperative agreements and other transactions to develop or use new practices that may be viewed as more efficient or less cumbersome than those employed in acquisition programs under FAR-based contracts. Officials from such firms, however, generally indicated that given their investment in systems that complied with FAR or DOD requirements and the need to use these

systems for procurement contracts, developing or using alternative practices was not considered cost-effective.

Leveraging the Private Sector's Financial Investment

Leveraging the private sector's financial investment is considered an important element of projects sponsored by a cooperative agreement or other transaction for several reasons. First, by having commercial firms contribute to the cost of developing technologies with both military and commercial applications, DOD hopes to stretch its research funding. Secondly, cost-sharing is seen as appropriate since commercial firms are intended to benefit financially from sales of the technology. Finally, DOD officials indicated that the participants' contributions demonstrated commitment to the project and enabled less rigid government oversight requirements, since the firms were expending their own resources.

Participants' contributions may be in cash[11] or in-kind contributions, such as the use of equipment, facilities, and other assets. As shown in table 1, the 72 agreements DOD entered into between fiscal years 1990 and 1994 have a current value of about $1.7 billion, toward which participants have agreed to contribute about $1.0 billion, or about 58 percent. Measured another way, participants planned to contribute about $1.39 for each dollar provided by DOD.

Table 1: Planned Cost-Sharing Commitments

Dollars in millions

Source and type of contribution	Amount	Percent
DOD[a]	**$ 710.0**	**41.8**
Participant	**990.3**	**58.2**
Cash	780.0	45.9
In-kind	205.5	12.1
Undetermined	4.8	0.3
Total[b]	**$ 1,700.2**	**100.0**

[a]Does not include DOD in-kind contributions, which include work performed under separate memoranda of understanding, cooperative research and development agreements, or other agreements.

[b]Totals may not add due to rounding.

It should be noted that the government's actual share of the projects' costs may be higher than indicated by table 1. Under FAR 31.205-18(e), research

[11]Cash contributions generally include expenditures for labor (including benefits and direct overhead) and for acquiring material, buying equipment, and other cash outlays required to perform the statement of work.

costs incurred by contractors under projects entered into under 10 U.S.C. 2371 should be considered allowable IR&D expenses if such costs would have been allowed in the absence of the agreement. Consequently, to the extent that participants use IR&D as their cost-share contributions and include such costs as overhead under other government contracts, a portion of these costs subsequently will be reimbursed by DOD.

Participants also were allowed to propose the value of prior research as part of their cost-sharing contributions. These contributions do not represent the cost of prior research, but rather the estimated value of that research for the current project. On several agreements, DOD's acceptance of prior research enabled firms to offset their current contributions significantly. For example, in one DARPA agreement, 89 percent of the consortia's planned contribution of approximately $4.7 million was attributable to the value of prior research. Similarly, in three other agreements, more than 50 percent of the consortia's planned contributions consisted of the value of prior research. Overall, we estimate that participants' planned contributions included about $98 million—or about 10 percent—in the form of the value of prior research, with such contributions representing more than 20 percent in 8 of the 72 agreements.

DOD officials expressed various views as to whether the value of prior research should be accepted and to what extent. For example, an Army official told us that while they believed prior research should be taken into consideration in evaluating the project's risk, he expressed some reservation about accepting prior research as a cost-share contribution. Similarly, a February 1995 Air Force memorandum noted that while it was permissible to accept the value of prior research as a cost-share contribution, Air Force negotiators should proceed with caution. The memorandum noted that evaluating such contributions is complicated and that grant officers have a responsibility to ensure that the prior research is relevant to and brings value to the proposed effort. DARPA officials noted that while cash or concurrent in-kind contributions are the more preferred forms of contributions, they believed that the value of prior research is acceptable in certain circumstances, such as when the participant possesses significant technical knowledge but is unable or unwilling to provide cash or in-kind contributions. Accordingly, DARPA officials told us they did not place a limit on the percentage of prior research that could be accepted. Conversely, the Navy generally included a provision in its agreements that limited the contributions of intellectual property, patents, trade secrets, and other nonfederal sources to not more than 10 percent of the participants' planned cost-sharing contributions.

While 10 U.S.C. 2371 does not prohibit DOD from accepting the value of prior research as part of the participants' cost share, the legislation requires that to the extent that the Secretary deems practicable, the funds provided by the government under the cooperative agreement or other transaction should not exceed the total amount provided by other parties to the agreement. Accepting prior research in lieu of concurrent financial or in-kind contributions may obscure each party's relative contributions in the current project.

Emerging Issues Regarding Instrument Selection and Structure

Our review identified two emerging issues pertaining to instrument selection and structure of cooperative agreements and other transactions. First, we found that DARPA always designated its agreements as "other transactions," while the services always employed "cooperative agreements." While the instruments share many similar characteristics, DARPA officials indicated that a DARPA other transaction did not require participants to be subject to annual audit and generally did not require recipients to provide our office with access to their pertinent financial records. In contrast, Air Force officials indicated that their cooperative agreements generally required an annual audit, though not necessarily access to records by our office, while Navy officials indicated that their agreements generally required both. The selection of different instruments, coupled with different treatment of specific issues among the services, has led to some confusion among firms that were negotiating agreements with both DARPA and the services.

Second, there remains some disagreement within DOD regarding intellectual property provisions. While DOD officials agree that cooperative agreements are subject to the provisions of the Bayh-Dole Act, there is less consensus regarding other transactions. DARPA officials maintain that other transactions entered into under the authority of 10 U.S.C. 2371 are not subject to the Bayh-Dole Act because, in their opinion, the act only applies to contracts, grants and standard cooperative agreements. In support, they noted that Congress has twice commented favorably on DARPA's use of other transactions to provide more flexible intellectual property provisions. However, a representative from the Office of Naval Research's Office of Corporate Counsel argued that the provisions of the Bayh-Dole Act are applicable to such agreements. The representative stated that it was his office's position that the act was to be interpreted broadly as to which types of instruments were covered.

Reaching resolution on the issue may be important as DOD attempts to expand its research base. For example, while Air Force and Navy officials noted that they have been able to negotiate intellectual property provisions with participants that are consistent with Bayh-Dole, DARPA officials contended that the ability to provide more flexible intellectual property provisions than would be possible under Bayh-Dole was instrumental in reaching their agreements. DOD is updating its February 1994 draft guidance on the use of these instruments, in part to provide more consistency in the selection and structure of the agreements. However, DOD was unable to provide an estimate on when the revised guidance would be issued.

Recommendation

Because inconsistent selection of a particular instrument and treatment of specific clauses may unnecessarily increase confusion for government and industry users and may hinder their effective use, we recommend that the Secretary of Defense ensure that DOD's revised guidance on the use of cooperative agreements and other transactions promotes increased consistency among DOD components on the selection and structure of these instruments. In particular, the guidance should specifically address the extent that the value of prior research should be accepted as part of a participant's cost-sharing contribution and the extent to which these instruments are subject to the provisions of the Bayh-Dole Act and under what conditions.

Agency Comments

In commenting on a draft of this report, DOD generally concurred with the thrust of our findings and recommendation. DOD noted that it shared our assessment that the instruments, if used appropriately, could be valuable tools that help DOD take advantage of technology development in the commercial sector. DOD's comments are presented in their entirety in appendix III. DOD officials also provided technical and editorial comments on a draft of this report. We have incorporated their comments where appropriate.

We are sending copies of this report to other congressional committees; the Secretaries of Defense and Commerce; the Administrator, National Aeronautical and Space Administration; and the Director, Office of Management and Budget. Copies will be provided to other interested parties upon request.

Please contact me at (202) 512-4587 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix IV.

David E. Cooper
Associate Director
Defense Acquisitions Issues

Contents

Tables

Abbreviations

DARPA	Defense Advanced Research Projects Agency
DOD	Department of Defense
FAR	Federal Acquisition Regulation
GAO	General Accounting Office
IR&D	Independent Research and Development
OMB	Office of Management and Budget
TRP	Technology Reinvestment Project

Participant Characteristics

The Department of Defense (DOD) entered into 72 agreements using the authority of 10 U.S.C. 2371 between fiscal years 1990 and 1994. Of these agreements, 59, or about 82 percent, were with consortia, which were comprised of some 400 participants. Based on information provided by DOD officials and participants, we estimate that about two-thirds of consortia participants were for-profit commercial firms. Of the 13 agreements with single participants, 12 agreements were awarded to for-profit firms. Overall, we estimate that about 42 percent of the 275 commercial firms that participated in one or more agreements were firms that traditionally had not performed research for DOD. Table I.1 shows selected characteristics of participants of cooperative agreements and other transactions between fiscal years 1990 and 1994.

Table I.1: Selected Participant Characteristics

			Type of participant					
			For profit firm					
Recipient	Number of awards	Number of participants	Traditional defense contractor	Nontraditional defense contractor	University	Nonprofit	Other DOD or federal agency	Other[a]
Single party	13	13	5	7	1	0	0	0
Consortia	59	400	155	108	56	30	15	37
Total	**72**	**413**	**160**	**115**	**57**	**30**	**15**	**37**

[a]Other includes state and local governments, public utilities, and participants that DOD could not characterize.

Scope and Methodology

To determine the number of cooperative agreements and other transactions DOD entered into using the authority of 10 U.S.C. 2371, we reviewed the annual reports and notifications DOD submitted to Congress from fiscal years 1990 to 1993. As the fiscal year 1994 report was not available during our review, we requested information from DARPA and the services regarding their fiscal year 1994 usage. We included in our review only those other transactions that were used principally in an assistance-type relationship with commercial firms or consortia for government-sponsored research projects. Consequently, we excluded one agreement that was entered into under the authority provided by section 845 of the National Defense Authorization Act for Fiscal Year 1994 (P.L. 103-160, Nov. 30, 1993). This authority is distinct from agreements entered into under 10 U.S.C. 2371 as it enables DARPA to conduct prototype projects that are directly relevant to weapons or weapon systems proposed to be acquired or developed by DOD. Further, we did not attempt to identify to what extent DOD had used the authority of 10 U.S.C. 2371 to enter into other assistance-type relationships, such as in cases where DOD loaned equipment to firms to conduct research or in reimbursable arrangements that allow a firm to conduct experiments aboard a government experimental launch vehicle.

To characterize the agreements and analyze each participant's financial or technical contributions to the agreement, we reviewed the agreement file, which generally included the agreement, articles of collaboration, the contracting officer's agreement analyses, legal review, funding documentation, and other pertinent information. We summarized key elements of the agreement, including the recipient's planned cost-sharing information, and requested that DOD verify our interpretation or provide additional information. We did not attempt to independently verify the financial information we obtained. Further, we did not attempt to determine the extent to which participants were using DOD funds to conduct projects that would have been undertaken in the absence of DOD funding.

To obtain the views on the benefits and risks of using such instruments, we interviewed program management and contracting officials from DARPA, the Navy, and the Air Force, as well as representatives from various participants.

We also interviewed senior management individuals from each of the services and DARPA, and from the following organizations:

- Office of the Director, Defense Research and Engineering;
- Office of the Director, Defense Procurement;
- Office of the Assistant Secretary of Defense (Economic Security); and
- Office of the Deputy Under Secretary of Defense (Acquisition Reform).

Some DOD officials cautioned against making broad comparisons between the terms and conditions found in contracts with those found in cooperative agreements and other transactions since the principal purpose of the instruments—acquisition and stimulation, respectively—differs significantly. However, as acknowledged by DOD officials, DOD's relationship with commercial firms has generally been through procurement contracts. Consequently, comparing the instruments can be illustrative of the types of changes and issues that may arise as business practices evolve.

We conducted our work from May 1994 to December 1995 in accordance with generally accepted government auditing standards.

Comments From the Department of Defense

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Mr. David E. Cooper
Associate Director, Defense Acquisitions Issues
General Accounting Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Cooper:

I am pleased to transmit Department of Defense (DoD) comments on the draft General Accounting Office (GAO) report, "Acquiring Research by Nontraditional Means." The report addresses the use of cooperative agreements and of "other transactions," funding instruments other than standard grants, contracts, and cooperative agreements.

The Department concurs generally with the overall thrust of the report's findings and recommendation. The DoD shares the GAO's optimism that cooperative agreements and "other transactions," if used appropriately, will prove to be valuable tools that help DoD take full advantage of technology development in the civilian commercial sector, as well as the defense sector, of the U.S. technology and industrial bases.

I understand that DoD staff separately provided to you a markup of the draft report, with some suggestions for rewording. Please consider those comments, as you finalize the report.

Thank you for giving the DoD this opportunity to comment on the draft report.

Sincerely,

George T. Singley III
Deputy Director

Major Contributors to the Report

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