

Carnegie-Mellon University
**Software Engineering Institute**

**Technical Memorandum**
**SEI-86-TM1**
**March 1986**

# Adequate Planning for Acquiring Sufficient Documentation about and Rights in Software to Permit Organic or Competitive Maintenance

*by*

**Pamela Samuelson**
Principal Investigator, Software Licensing Project
Software Engineering Institute
Carnegie-Mellon University
Pittsburgh, PA 15213

**Approved for Public Release. Distribution unlimited.**

This work was sponsored by the Department of Defense.

The views and conclusions in this document are those of the author and should not be interpreted as representing official policies, either expressed or implied, of the Software Engineering Institute, Carnegie-Mellon University, the Department of Defense, or the U.S. Government.

Copyright (c) 1986 Pamela Samuelson

# Adequate Planning for Acquiring Sufficient Documentation about and Rights in Software to Permit Organic or Competitive Maintenance

**Pamela Samuelson**

**Abstract.** Both the DoD and industry have significant concerns regarding maintenance and enhancement of software. The DoD wants to be certain it will be able to maintain and enhance software, and where cost effective, to compete maintenance of software. Industry wants ensure that its proprietary interests will be adequately protected. This paper will explore possible ways in which both groups' interests might be satisfied.

## Introduction

The Department of Defense (DoD) is a major consumer of software. This software is used as a vital component of many systems ranging from those which perform relatively simple functions, such as intra-office communications and word processing, to sophisticated software which is embedded in major weapons and defense systems. The procurement of software is an ongoing rather than discrete event. This is because software must be maintained, and, as needs change, enhanced.

Maintenance and enhancement of software is often a problematic and expensive undertaking. As a result of issues arising under the copyright laws and DoD acquisition regulations, as well as other practical problems, the DoD quite often finds that it does not possess adequate documentation, software tools, and/or intellectual property rights to perform necessary maintenance and enhancement functions, either organically or through competitive reprocurement. As a result, the DoD may be left in the position of having to return to the original contractor whose possession of needed documentation and/or rights puts the contractor in a sole source position as to DoD maintenance and enhancement needs. This, of course, is a position DoD would prefer to avoid, for both economic and political reasons.

This paper explores the legal, regulatory and logistical problems related to software maintenance and enhancement. Some potential solutions for acquiring sufficient documentation and intellectual property rights to allow for organic and/or competitive reprocurement for maintenance and enhancement are offered.

## A. The Hybrid Character of Software

To begin, it is important to understand the hybrid nature of software. Software in its machine-readable form has some characteristics of hardware and some characteristics of technical data. This hybrid character has made it difficult to categorize exactly how software should be acquired, and then maintained after acquisition: should it be treated like hardware or like technical data, or as a distinct item altogether? This section is intended to explore ways in which this hybrid character may affect planning for software maintenance and enhancement.

## 1. Software/Hardware

Software is like hardware in that it causes machines to do things. Software is in fact merely a replacement for hardware components that could otherwise perform the same function. Software is often embedded in hardware and part of an overall hardware system. Like hardware, software can often serve as a tool for creating other items, including new software. And like hardware, software will require maintenance work from time to time to operate properly, although the type of maintenance which software requires, such as fixing a "bug" or making an enhancement, differs in many respects from the more traditional forms of maintenance required by hardware.

Software is unlike hardware, however, in many other ways. Software is, for example, less difficult and less expensive to replicate than is hardware. Once the first copy has been produced, software can be almost endlessly replicated at little cost regardless of how complex the code is. One of the consequences of this is that the government tends to think that additional copies of software ought to be deliverable at a very low cost, whereas industry, which is concerned about recouping its research and development costs, regards additional sales at higher price levels to be necessary to make the software industry viable. Because of the ease of replication, industry representatives often regard the sale of software as more akin to the sale of a production facility rather than the sale of a single product (as if one bought a General Motors factory when one bought a truck produced by GM). Another consequence of this low-cost replicability is that the software industry, for the most part, tends to make its products available only on a highly restrictive licensing basis, rather than selling copies outright.

Another important difference between software and hardware is that software may be subject to a very lengthy lawful monopoly period (i.e., the approximately 75 year period of a copyright) as well as being held as a trade secret, whereas hardware is likely to be subject to a much shorter monopoly (i.e., the seventeen year period of a patent) and most often cannot be held as a trade secret since reverse engineering of the hardware would likely reveal any "secrets" contained therein. Quite often, in fact, hardware is either not patented at all or only subject to partial patent protection. Patents are usually difficult to get because of the high standards of invention that must be met, whereas copyrights are relatively easy to obtain. Hardware, unlike software, cannot be copyrighted at all. Moreover, software, if copyrighted, will also be subject to strict limitations on the rights of the user to make derivative works from the software. Hardware, even if patented, is not subject to similar limitations.

The main point here is that because of the great breadth and length of the copyright monopoly on software, it will be much harder to get competition as to software reprocurements and maintenance than as to hardware. A consequence of this is that it is even easier to get "locked into" a sole source position as to software than as to hardware. Because the government is becoming ever more dependent on software, this should be a serious concern.

Also, because software engineering is a discipline which is still in the early stages of its development, it is generally more difficult to specify how software should be developed for particular functions and to estimate the costs and development schedule for it. Software is also virtually

"invisible" as compared with hardware, which means that it is more difficult to detect if someone delivers very similar or nearly identical software on a second development contract. Further "invisibility" means that it may be more difficult, as a general matter, to detect defects in software or to know how to fix them once the defect is known. Again, because software engineering is a developing art, software is likely to contain a lot of undetected defects that will need to be corrected while in the user's possession. Also, unlike hardware, software is, in general, readily changeable; new capabilities can be added without substantial additional costs. All of this tends to make software maintenance and enhancement a much more substantial part of software life cycle planning than may be the case with hardware.

### 2. Software/Technical Data

Software and technical data are similar in that both are recorded information. They are also alike in that both are often held as trade secrets, and licensed under restrictive conditions, rather than being sold in the marketplace. Loss of the secrets may undermine or destroy the firm's commercial advantage. Both are also capable of being claimed as unpublished copyright material. Both involve modest production costs in themselves once the technology they embody has been developed. Both are difficult to price with any precision.

Because the material costs are low (i.e, what it costs to do a drawing on paper, what it costs to make a second copy of software), the government often thinks the price ought to be low. Because it is the valuable technology that they embody that the firm wants to protect and exploit, industry tends to price them high. With both software and technical data, crucial information necessary for maintenance or enhancement of the item to which they pertain may not be readily apparent from examination of the paper or disk; rather it may be stored away in the memory of some engineer who designed it. Ongoing service contracts are sometimes necessary to be able to gain access to that type of expertise.

Where software differs from technical data is in being an "end item" in itself. Software is a product that will perform machine functions, whereas technical data is merely information about a product. As an end item, software will be more likely to be a product with a commercial market whereas technical data will often not be sold or licensed to anyone but the government. When altered, software will perform differently, as compared with technical data which will simply reflect a new configuration. Software also requires an environment of equipment and other software to be effective.

## B. Getting Adequate Rights and Documentation to Maintain and Enhance Software

The DoD has been experiencing some difficulty in acquiring sufficient rights in software and software documentation to enable it to maintain or enhance software, either in-house (commonly referred to as "organic maintenance") or by private firms through competitive bidding. This section discusses some of the reasons underlying these difficulties.

## 1. Getting Rights to Modify

In contrast to the beliefs of many who have addressed DoD's software procurement problems, the acquisition of the rights necessary to modify software is not a current software licensing problem of the Defense Department. While many other buyers or licensees of software are experiencing difficulty in negotiating with software firms about whether or not they or persons whom they authorize can modify software, this does not seem to be DoD's problem. The DoD procurement regulations require that in all software acquisition contracts the government must get the right to modify the software.[1] Government lawyers, on the whole, tend to think that this means that even when a contract between the government and a software contractor is silent about modification rights, the standard data rights clause will be construed by a court to be incorporated into the contract under the Christian doctrine.[2] On the other hand, though, some DoD personnel seem to believe that if prime contractors negotiate away the government's right to modify software in dealing with a subcontractor, the government would be bound by the prime's action. This may not in fact be so, although the law is uncertain in this area.

If, instead of relying on the DoD standard data rights clause, the government were to rely on the copyright law as a basis for obtaining rights to modify software, the government might have some serious difficulties. Copyright law regards a modification of copyrighted software as the creation of a "derivative work" for which one would need the permission of the copyright owner.[3] Although there is a limited right to modify software under Section 117 of the copyright law, the right is so limited as to be virtually nonexistent (1) because only "owners" of copies (and not licensees) have such rights, and (2) because modifications are only permitted to the extent they are created as an "essential step in the utilization of a computer program in conjunction with a machine." One court has interpreted this to mean that modifications are only permitted if the program won't execute as is.[4] Because copyright law currently offers such limited rights to modify software, it is important that DoD has made modification rights part of the package of minimum rights that it always gets in software.

## 2. Getting Adequate Documentation To Make Modifications

Getting adequate software documentation seems to be the major software maintenance/enhancement problem the Defense Department is currently having. Many of DoD's difficulties seem to fall within one of the following categories of problems:

(a) companies being unwilling to give their source code or other proprietary information to the government at any price or under any conditions;

(b) the need to be farsighted enough to ask for delivery of all the documentation needed to enhance or maintain a system;

(c) the need to supervise the delivery of documentation to insure that everything was delivered that should have been delivered;

(d) the need to supervise the attachment of restrictive notices to software; or

(e) difficulty in comprehending the documentation delivered because of its complexity or turgidity.



such rights, and (2) because modifications are only permitted to the extent they

There seems to be general agreement among DoD personnel that steps need to be taken to remedy this situation. Some are hopeful that solutions can be devised that would create greater incentives for industry to voluntarily cooperate with DoD in its efforts to get better documentation for maintenance purposes. Some worry that punitive approaches could enhance already strong disincentives to cooperate with the government in this respect. The possibility of the government entering escrowing agreements whereby needed documentation is placed into escrow with the government to have access to the documentation on an as needed basis upon the meeting of some certain specified condition(s) precedent is a potential solution which holds significant promise. Such arrangements have been used with a large amount of acceptance and success within private industry.

### 3. Getting Sufficient Rights In Software And Documentation To Get Competition As To Software Maintenance And Enhancements

Whether the government can get competition in software maintenance and enhancement contracts seems largely to turn on whether the government has ownership of or unlimited rights in software and its associated documentation, or whether the government has only restricted rights as to the software and limited rights as to the documentation. If the government has ownership or unlimited rights, getting competition in software maintenance/enhancement contracts appears to be relatively easy. If instead the government has only restricted and limited rights, it seems that getting competition is very difficult. Defense Department personnel generally report little success in getting restricted rights software competitively maintained.

As the DoD regulations are presently written, while DoD virtually always has rights to modify software, it does not automatically have rights to sublicense the modification right to others. That means that getting competition as to maintenance and enhancement of restricted rights software will only be feasible if the software's owner will agree, which he need not. If he will not agree, DoD will either have to do the modifications itself or hire the original firm to do the maintenance on a sole source basis.

Because many software companies may wish to have sole source maintenance contracts with DoD, their incentives to agree to competitive maintenance arrangements are minimal. It seems that the best, and perhaps only time there may be any opportunity to get such agreements to allow competitive maintenance is during the original competition when the development contract is let. For this reason, it seems imperative that DoD personnel involved in software acquisition be as well trained and prepared as possible to recognize DoD's maintenance and enhancement needs so as to increase the probability that they will be able to secure favorable arrangements at this time when DoD's leverage is at its peak.



competitively maintained.

## C. Maintenance Needs For Things Used In Performance of Government Contracts: Software Tools and CAD/CAM Programs

Documentation is often not the only thing needed in order to maintain or enhance software. Access to software tools and/or CAD/CAM programs may also be needed to do maintenance and enhancement work. Indeed, because of the tremendous commercial value of software tools and CAD/CAM programs, as well as the usually steep development costs, it may be even more difficult to persuade industry to make these valuable items available to the government than it would be to persuade them to part with software documentation. In addition, industry may be particularly sensitive about government proposals to license competitors to make use of these valuable technologies since these items will often be a part of the companies' competitive edge in the market place.

### 1. Software Tools

Software tools are a set of programs that may be used in the production of other programs. Software tools commonly include editors, compilers, and debuggers, among other things. The application software produced by the tools could be anything from the guidance system of a missile to an inventory control program. Much of the expensive software the government buys is software which is expected to be modified over time. For example, satellite monitoring systems must be revised whenever a new satellite is launched. In order to modify application software in an optimal way --and in some cases, in order to modify it at all -- it may be desirable or necessary to have access to the software tools that were used to create the program in the first place.

Even if the government's procurement personnel have the foresight to try to bargain to obtain rights in software tools, the company may be extremely reluctant to grant anyone -- let alone the government (which is widely perceived by industry to be unable to protect commercial secrets) -- to have a copy of the software tools, or even to have access to the tools. A software producer's tools may be perceived to be the major factor in the company's competitive edge in the industry. In addition, the development of such tools often requires a substantial inventment on the part of the company, an investment which the company, understandably, expects to be able to recoup. Consequently, making such items available to the government is often a highly charged subject. Indeed, for the government to be able to make any deal to get proprietary software tools is often thought a remarkable event.

One potential approach to this problem, as was also mentioned in the discussion regarding documentation above, would be for the government to enter into an escrow agreement with the developer. An escrow arrangement could be structured so as to allow the government access to needed tools and other programs, upon the meeting of some specified condition(s) precedent, while still protecting the company's proprietary information. Moreover, such an approach would be consistent with normal commercial practices.

Another potential approach to this problem would be for non-governmental third parties to enter into licensing arrangements with the software tool producer (assuming that the company would



to have access to the software tools that were used

license anyone) on more restrictive terms than government procurement practices would allow. The government could then allow this third party licensee to do the maintenance/enhancement work. This may not be a viable solution in some instances, however, since there seems to be a strong preference, if not a clear policy, for DoD to do "organic" maintenance/enhancement work for all weapons system software and weapons related software. It also seems that many companies would not license proprietary software tools to anyone. In these cases, however, the escrow approach might still be available.

Further, it should be noted that those software tools which are made available to the government or to third party maintainers are likely to be "older", less valuable technologies. The government may often have to be content to use such older technologies if it wants to have unlimited rights in software tools. If DoD's priority is to get the best technology, using old tools doesn't seem to be desirable. If DoD's priority is to be able to do all maintenance and enhancement organically, then having rights to old tools is better than having rights in none.

### 2. CAD/CAM Programs

Increasingly, industries are using computer aided design/computer aided manufacturing (CAD/CAM) programs to design systems of many sorts, as well as to manufacture them. This seems to be especially true with regard to the aircraft industry. Because aircraft tend to be rather expensive systems and systems which require more than a modest amount of maintenance and enhancement, both as to software and hardware components, there is growing concern within the Defense Department about getting access to and rights in the CAD/CAM programs used to design the systems initially. Access to these programs may be essential to do maintenance and enhancement work for the system. The companies that have developed them may be unwilling or at least very reluctant to give the government any rights to them, or to authorize third party maintainers to have access to them because of their great commercial value, and high development costs. This, therefore, is another area where use of escrowing agreements might prove a useful way for the government to gain access to the technology necessary to fulfill its maintenance and enhancement requirements. Arrangements providing for access to such tools, rather than actual physical possession of them, are often more acceptable to industry.

## D. Other Problems With Getting Delivery of Adequately Supportable Systems

### 1. Different Interests Of Buyers and Maintainers Within the Government

There also appears to be some structural problems internal to the Defense Department that may make adequate planning for software maintenance and enhancement difficult to achieve. Major weapons or communication systems acquired by DoD may include complex software components. These systems may also require significant and complex software systems to support the major systems. If the command which purchases the system is not the command which will

use, maintain, or enhance the system, it may not be aware of the extent of software documentation that will be needed to use, enhance, or maintain the software, and it may not be as sensitive to the need for supportability of the software as the using or maintaining command might need it to be. Although there are some structural mechanisms within DoD that are intended to provide opportunities for communication about such matters, that may not always work as successfully as DoD would wish. This could be a contributing cause toward the software maintenance and enhancement problems DoD has encountered.

## 2. Sole Source Maintenance As a Habit

From procurement personnel's point of view, if a company has built a complex piece of software for DoD, and it's a good piece of software, that company will likely know that software better and will be able to maintain it better than any other company, even if the other company gets the source code. That software engineering is still in fairly primitive stages as an engineering discipline makes reliance on the original developer to do maintenance work often seem the most expedient route to take. The developing company will have a better idea of how to avoid the problems that enhancing one section of a program can so often create in another part of code. Theoretically, the developing firm will be able to do the job faster, more reliably, and more cheaply than a competitor because they won't have to be brought up to speed on it, and if it's a good piece of code, then the developing company may be thought to deserve to reap some more rewards. Besides, procurement personnel may be wont to think, we already know those guys and they do a good job for us. Quality and quickness count for something; money isn't everything. So why not deal with that company instead of having to go through a long drawn out competition process? Over time, the original developer may become more and more confident of its position as the sole source for maintenance, and may increase the price for its services accordingly. It may thus be difficult for the government to break away from sole source maintenances no matter what the cost.

If one adds to this set of already described structural disincentives to adequate planning for software maintenance and supportability the fact that procurement personnel are often not well trained about software, system lifecycles, or data rights, one can see that the structural problems internal to the Defense Department may be significant contributors to software maintenance problems. It takes considerable sophistication and experience with major systems and what it takes to support them to plan for system supportability. Adequate planning may be made additionally difficult because at the time a development contract is let, the software for the system will often not yet be in existence, but only in the preliminary planning stages, and supportability of the software system will likely not be easily plannable until after the system is more fully developed.

It is perhaps an obvious point that the structural problems internal to the Defense Department create opportunities in software maintenance and supportability contexts for industry to charge very large sums of money for work or rights that could have been purchased more cheaply had they been bargained for at the early phases of the contractual arrangement. It is often in the industry's interest to take advantage of these opportunities when they arise.

## E. Some Recommendations About Licensing Problems Relating To Maintenance and Enhancement of Software

This article has explored various problems and concerns related to the maintenance and enhancement of software acquired by DoD. The need for rights to modify, and the need for access to documentation and software development tools has been discussed at some length. While the acquisition of modification rights was found not to be a major problem for DoD, serious difficulties with respect to the acquisition of, or access to technical documentation, software tools and CAD/CAM programs was discussed. Some potential solutions to these concerns have been suggested.

The primary problem areas which have been identified herein include:

1) The need for DoD to develop arrangements whereby companies will allow it access to commercially valuable software development tools and technical documentation the contractor would not be willing to give up physical possession of, and

2) The need for DoD planning and procurement personnel to be aware of DoD's maintenance and enhancement needs as they relate to software development tools and to be alert to strengths in DoD's bargaining position in this regard prior to the actual awarding of a contract.

The following set of specific recommendations are offered for consideration as possible solutions to the maintenance and enhancement problems discussed in this article.

### 1. Getting Adequate Documentation and/or Software Development Tools

(a) Consider entering into escrow agreements whereby documentation is placed in the hands of a third party with the documentation to be released for use by the government only upon the meeting of certain specified conditions as another possible alternative to deal with maintenance and enhancement problems.

(b) Develop a better, more specific, more standardized set of specifications about what documentation must be delivered to DoD and with what rights.

(c) Decide upfront what arrangements the government wants or needs to make about who should do the maintenance or enhancement work. For reasons other than merely cost, the government may need to do the maintenance in-house. How much rights and how much data the government needs from a contractor will in large measure depend on this decision.

(d) Assess the relative costs of acquiring different levels of rights and of sole source, internal or competitive maintenance over time so that cost-effective choices can be made upfront. Recognize that sometimes sole source maintenance will be cheaper than acquiring all the rights and data needed to do the maintenance.

(e) Insist that procurement personnel involve both the using command and the maintaining

command in the supportability planning, perhaps even getting engineers from these latter commands to sign off on the system.

(f) Train procurement personnel about software life cycle needs, about data rights, and about software documentation as regards supportability needs.

## 2. Getting Sufficient Rights To Enable Competition For Maintenance

(a) Recognize that it may be difficult to impossible to compete maintenance and enhancement of software held as a trade secret by its owner. Assess, to the extent you can, what the long term maintenance needs and costs are likely to be, taking into account what cost savings may be achievable by competition. Remember that it may not be worthwhile to buy rights to compete maintenance.

(b) Recognize that DoD's only chance to get competition as to software maintenance may be when it is initially negotiating the system development contract.

(c) If DoD decides to try to compete the maintenance, it should recognize that it will need to get upfront:

(i) the ability to sublicense the software modification right or a commitment by the contractor to license another company;

(ii) the ability to sublicense its rights in documentation about the software or a commitment by the contractor to license the other company's access to the documentation;

(iii) very detailed documentation; and possibly

(iv) rights in the software tools, or a commitment from the developing firm to license a competitor's access to the tools.

(d) It may be desirable for DoD to develop a standard competitive or maintenance license provision and clause for the DoD FAR SUPP in order to alert contract officers to the need for and the appropriate manner of obtaining rights for these purposes. It seems unwise to rely on the existing definition of "license rights" to achieve this because it refers only to licensing for governmental purposes and begs the question whether competitive maintenance and enhancement are within the scope of the "governmental purpose" language.

(e) To be able to maximize the possibility of gaining agreement for competitive maintenance of proprietary software, DoD should be prepared to make arrangements :

(i) either to name who will be the third party maintainer or define what process will be used to qualify a potential third party maintainer; and

(ii) to promise the developer of the software to put the competitive maintainer under a specific set of restrictions (such as those under which the government operates as to that software).

The government might also want to consider naming the original software developer as a third party beneficiary of the agreement between the government and the third party maintainer as to restrictions on rights so that if there is abuse, the developer can directly sue the maintainer.



the contractor to license the other

## Notes

[1]See DoD FAR SUPP sec. 52.227-7013(b)(3).

[2]See G.L. Christian and Assoc. v. United States, 160 Ct. Cl. 1 (1963) in which the court read a "termination for the convenience of the government" clause into a military housing contract.

[3]See 17 U.S.C. sec. 106(2).

[4]See Midway Mfg. Co. v. Strohon, 564 F. Supp. 741 (N.D.Ill. 1983).

# Technical Memorandum

**SEI-86-TM2**
**March 1986**

# Comments on the Proposed Defense and Federal Acquisition Regulations

*by*

**Pamela Samuelson**
Principal Investigator, Software Licensing Project
Software Engineering Institute
Carnegie-Mellon University
Pittsburgh, PA 15213

**Approved for Public Release. Distribution unlimited.**

This work was sponsored by the Department of Defense.

The views and conclusions in this document are those of the author and should not be interpreted as representing official policies, either expressed or implied, of the Software Engineering Institute, Carnegie-Mellon University, the Department of Defense, or the U.S. Government.

Copyright (c) 1986 Pamela Samuelson

# Comments on the Proposed Defense and Federal Acquisition Regulations

**Pamela Samuelson**

**Abstract.** This paper compares and contrasts the software/data rights sections (Subpart 27.4) of the DoD procurement regulations (DoD FAR SUPP) and the Federal Acquisition Regulations (FAR). The regulations currently in force, as well as recently proposed revisions to those regulations, are examined. Criticisms are made of the DoD regulations, as well as suggestions as to how those regulations could be brought more in line with procurement related legislation, intellectual property law and general commercial practice within the software industry. Inconsistencies and ambiguities found in Subpart 27.4 of the DoD acquisition regulations are discussed at some length. A recommendation is made that the DoD adopt a regulatory policy more like that found in the FAR.

## Introduction

Until recently, there has been no substantive "data rights" policy under the FAR. Because DoD needed to have a standard policy for acquiring rights in software and technical data, DoD developed its own elaborate policy, which is currently embodied in the DoD FAR SUPP Subpart 27.4.

The Competition in Contracting Act (CICA), passed last year, required development of a substantive data rights policy for federal agency acquisitions. Both CICA and the 1985 DoD Authorization Act reflect Congress' intent that there be a uniform data rights policy for all federal agencies.

Proposed Subpart 27.4 of the FAR is the substantive data rights policy that was issued this past summer to respond to this Congressional mandate. Shortly after issuance of the newly proposed FAR data rights provisions, DoD issued a set of proposed revisions to the DoD FAR SUPP. The comment period on both sets of proposed regulations has been extended to January 9, 1986. DoD has a set of interim rules in effect at this time which are, in most respects, identical to the regulations in effect for the preceding several years.

Although said to "supplement" the FAR, the proposed DoD regulations, if adopted, would entirely supplant the FAR. Supplantation of the FAR is inconsistent with the Congressional mandate for a uniform policy for federal acquisitions. Because of this and because the proposed FAR contains a superior data rights policy, one which is more straightforward and concise, more consistent with commercial practice, and more compatible with other Congressional directives in the CICA and the 1985 DoD Authorization Act, DoD should adopt the proposed FAR rather than the proposed DoD FAR SUPP. If a few additional provisions are necessary to enable the Defense Department to carry out its special mission, DoD should, of course, be able to supplement the FAR to accomplish these objectives. Complete supplantation of the FAR is, however, neither necessary nor desirable.

## A. The Need for Clear, Concise, Comprehensible Regulations on Data Rights

One of the priorities DoD should have for its data rights regulations is having regulations which are as simple, straightforward and clear as possible. The current DoD data rights regulations fall short of this goal. The proposed FAR is a distinct improvement in this regard.

The heart of the DoD's data rights policy is the standard data rights clause. (DoD FAR SUPP sec. 52.227-7013.) The current version of the DoD standard data rights clause is very long, very complicated, poorly organized, and ambiguous in some important respects. The new FAR standard data rights clause (although not perfect) is more concise, more straightforward, better organized and less ambiguous than the DoD clause.

It should be evident why a clear, concise, comprehensible data rights regulation is important: those in the procurement community who look to the data rights regulations for guidance need to understand what that guidance is, and how it applies to the situations at hand.

The need for a clarifying revision of the standard data rights policy is made the more compelling because of the complex interrelationship of the DoD regulations and intellectual property law vis-a-vis software. Unlike the hardware systems with which DoD has a long procurement history, software systems are protected chiefly by copyright and trade secret law. Software law is currently in something of a state of flux, which of course, makes the coordination of DoD policy and intellectual property law more difficult, yet even more necessary.

### 1. Policy on Privately Developed Software

One good example of how the existing DoD regulations unnecessarily complicate data rights matters is in the provision for two kinds of restricted rights for software and yet another set of restrictions ("limited rights") for technical data, including software documentation. It is extremely difficult to understand why there are two kinds of restricted rights for software, especially given that the two sets of rights are very similar but not identical. It is also difficult to comprehend why the regulations subject software documentation (which is generally classified as "technical data") to different restrictions than machine-readable code (i.e., "software"), and why the government has a much broader set of rights as to documentation than as to machine-readable code. This doesn't seem to make sense given that in the commercial market these things are either subject to the same restrictions, or documentation is treated more restrictively than the executable code. Why one would treat commercial software documentation (which DoD allows to be treated the same as machine-readable code) differently than other software documentation is also mysterious.

The newly proposed FAR data rights provisions simplify the software data rights policy by defining "software" to include not only machine-readable code, but software documentation as well. It also provides for only one set of restricted rights to be applicable to software. Thus, the sources of confusion inherent in the more complicated DoD policy are completely avoided in the FAR.

## 2. How The Contractor's Retention of a Copyright Affects the DoD's Rights

One good example of an ambiguity in a very important substantive provision of the DoD's data right clause is the effect of a contractor's decision to claim a copyright in publicly funded software on the extent of the government's rights thereafter. Subsection (b) of the DoD standard data rights clause seems to give DoD unlimited rights in all software developed at public expense. Subsection (c) of the same clause seems to say that if the contractor retains a copyright in publicly funded software (which the contractor is entitled to do unless the "special works" clause is used):

> ...the Contractor hereby grants to the Government a nonexclusive, paid-up license throughout the world of the scope set forth below, under any copyright owned by the Contractor, in any work of authorship prepared for or acquired by the Government under this contract, to reproduce the work in copies or phonorecords, to distribute copies or phonorecords to the public, to perform or display the work publicly, and to prepare derivative works thereof, and to have others do so for Governmental purposes.

The ambiguity is further compounded by the following sentence which declares:

> With respect to technical data and computer software in which the Government has unlimited rights, the license shall be of the same scope as the rights set forth in the definition of "unlimited rights" in paragraph (a) above.

This appears to mean that the contractor's retention of a copyright won't affect the government's unlimited rights in the work. But it can't NOT affect the scope of the government's rights. A general rule of contract construction (and after all, the data rights clause is a contract clause) is that ambiguities are resolved against the drafter. If this rule was applied to the interpretation of this problem, the DoD's rights would likely be cut back from an unlimited rights license to a government purpose license when a contractor exercises his right to retain a copyright.

The new FAR policy is structured to avoid this ambiguity. In its section which delineates when the government will have unlimited rights, it explicitly says that the government will have unlimited rights in software developed at public expense unless the contractor copyrights the software in which case the government will have government purpose rights. Thus the new FAR policy avoids a serious ambiguity that lies at the heart of the DoD policy.

## B. The Need for Data Rights Regulations That Are More Compatible With Standard Commercial Practices

One of the oft repeated concerns within the defense contracting community is that the Defense Department's current data rights policy as to software is too "confiscatory" to provide meaningful incentives for software firms to offer their best and latest technologies to the government. Some companies are said to refuse to consider doing business with DoD because of the data rights policy. Although DoD certainly has a lot of money to spend on software, the commercial market is currently so large and so lucrative that many of the best software development companies are likely to choose to focus their energies on the commercial market where their proprietary interests are likely to be better protected than if they sell rights in their software to DoD.

Because of its special mission, DoD will, of course, often need to have greater rights in software (and its associated documentation) than would the ordinary commercial customer. DoD, for example, may need to be able to move the software from one locale to another in wartime or to modify the software in remote locations (such as Indonesia), without having to go back and renegotiate with the software's producer. The software industry seems to be aware that DoD needs greater rights than other customers, and seems to be willing to accept that. However, the wider the gap between the terms on which DoD and the rest of the software market are willing to do business, the more incentives to do business with DoD dwindle, and the fewer the number of firms who will choose to provide their best products to DoD. Thus, if DoD wants to have access to the best technology, DoD should adopt a data rights policy that is no more divergent from standard commercial practices than is necessary to achieve its goals. Several examples of how DoD's policies may diverge from standard commercial practice more than is necessary, and how the new FAR policy would treat these problems, are discussed below.

### 1. Different Treatment for Documentation and Machine-Readable Code

One substantial respect in which the DoD policy diverges from standard commercial practice in the software field has already been mentioned briefly above in Section A. The standard DoD policy is, in general, much more restrictive about DoD's rights as to machine-readable code (e.g., restricting use of it to one computer or one facility) than as to software documentation (e.g., allowing DoD to use, duplicate, and disclose it throughout the government). Although "commercial software" -- which seems to be interpreted as requiring that at least 55% of a company's sales be made in the off-the-shelf market -- may qualify for an exemption from the limited rights policy as to software documentation, the standard for qualifying as "commercial software" seems high and it seems that one thereby forecloses an opportunity to negotiate further about data rights. It appears that if a software company elects to have its software treated as "commercial software", it and the government may be stuck with the four standard minimum rights. As mentioned above, software firms --- particularly those who do not regularly sell their software on an off-the-shelf basis --- are generally highly protective of their software documentation, even more so than as to their executable code. Just why DoD's policy should diverge so significantly from commercial practice is hard to understand. Also, if DoD is willing to exempt documentation for "commercial software" from this policy, the software industry might wonder why it can't live with the same exemption as to other software documentation.

The new FAR policy, as mentioned above, subjects software documentation to the same set of restrictions as the machine-readable code, and thus averts this collision with commercial practice.

### 2. Slight Modifications

It is standard DoD policy to take unlimited rights in all software, the development of which was sponsored to any extent with public funds. If a software company developed a piece of software wholly at private expense, and then at the government's request made some minor modifications to it to make it suitable for the intended use by the government, the company may thereby forfeit



company's sales be made in the off-the-shelf market -- may qualify for an exemption from the

proprietary status for the software. If any DoD funds are used to subsidize the modifications, the government will claim unlimited rights in the software.

Many software industry firms regard this policy as inequitable, particularly in view of the fact that it was only because the government said it needed the modifications that the modifications were made. It is also different from the standard commercial practice. In contrast, the new FAR policy allows contractors to retain the "privately developed" status for their software when only minor modifications are made for the government.

### 3. Less Than Unlimited Rights in Mixed Funding Situations

As the previous subsection has indicated, DoD takes an "all or nothing" approach to the public funding versus private funding issue. For years the software industry has been urging adoption of a policy that would permit a "middle ground" as to data rights when both private and public funding are used to develop software. The industry was encouraged by that part of the 1985 DoD Authorization Act that called for DoD to reconsider its policy in mixed funding situations.

When late this past summer, DoD promulgated its proposal for revising the data rights regulations which made no policy change as to mixed funding arrangements, the software industry's disappointment was keen. The sense of disappointment was the more intense because the proposed FAR policy (which was announced about a month earlier than the new DoD policy) did contain a provision allowing the government and the contractor to negotiate for less than unlimited rights when both private and public funds were used to develop software. The FAR policy once again is less divergent from standard commercial practice than is the DoD policy.

### 4. The Test for What Is "Developed" at Public or Private Expense

Given that the extent of the government's rights in software depend entirely on whether software is developed at public or private expense, it is curious that the DoD regulations do not define what is meant by the term "developed."

One respect in which the newly proposed DoD data rights regulations differ from their predecessors was in attempting to define this important term. The DoD definition of "developed at private expense" would have required "that completed development [of the software] was accomplished without direct government payment, at a time when no government contract required performance of the development effort, and was not developed as a part of performing a government contract." "Developed" was further defined to require that the software had been not only constructed and used, but "tested so as to clearly demonstrate that it performs the objective for which it was developed."

Industry reaction to this attempted definition was strongly negative. Almost no software would qualify for private development status if such a definition was adopted. It appeared that even if private funds were used to do the development work after the government contract was entered into, the government would claim unlimited rights to it; and if the government insisted that

software be "tested", that too could give the government a "hook" with which to claim unlimited rights.

It is understandable that, in view of Congressional outrage about DoD's data rights policy, there would be some who would think the Department's interests would best be served by taking an expansive view of what "developed at private expense" should mean. But it is equally understandable that the software industry would regard the definition as "confiscatory." If adopted, it would be likely to create substantial disincentives for software firms to do business with DoD. The newly proposed FAR data rights policy is superior to the proposed DoD policy only in not defining the term.

## C. The Need For Procurement Regulations That Give DoD the Data Rights It Truly Needs

The previous section has pointed out that in a number of respects DoD's data rights regulations claim broader rights for the government than the software industry may be willing to live with. From this, the reader might get the impression that the only respect in which the author would recommend substantive changes in the regulations would be to trim back somewhat on the government's claim of rights so as to increase industry incentives to deal with DoD. That is not so. There are a number of respects in which the current DoD regulations may confer on DoD fewer rights than the government might need. How the proposed FAR deals with these issues will also be discussed below.

### 1. Defining Unlimited Rights to Include the Right to Prepare Derivative Works

The current DoD FAR SUPP definition of unlimited rights, both in the policy and contract clause provisions of the procurement regulations is silent as to whether the DoD will have the right to prepare derivative works when it has unlimited rights in software. The current definition speaks only of rights to "use", "duplicate", and "disclose" such software. Derivative works rights are particularly important as to software because maintenance, enhancement, reuse, translation, rehosting, and retargeting are all dependent on having a derivative works right. Thus, if DoD believes that preparing derivative software is important, it would seem prudent to make explicit the DoD's claim to a derivative works right. The proposed revisions to the DoD FAR SUPP fail to rectify this problem.

The proposed FAR, by contrast, provides a more precise definition of "unlimited rights" and includes a right to make derivative works. The argument that DoD's unlimited rights includes a derivative work right despite the silence of the regulations is considerably weakened if the broader FAR definition is adopted while DoD's definition stays the same.

## 2. The Special Works Clause

When DoD wants to take a direct ownership interest in a work prepared for it by a private contractor, the DoD FAR SUPP directs that the "special works" clause be used in the development contract. The clause in effect claims a direct copyright for the government under the copyright "work made for hire" doctrine. This "special works" clause has been used in a number of DoD software development contracts. Indeed, it appears that a deviation would be required to attempt take a copyright interest in any other manner.

The problem with use of the special works clause for this purpose is that the copyright law specifically prohibits the government from taking direct ownership rights in copyrighted works. See 17 U.S.C. sec. 105. The legislative history of this section reflects that Congress considered the issue of copyright ownership of works prepared for the government by contractors and decided that while agencies could decide to permit contractors to retain copyrights, the government was not to get a direct copyright ownership in works prepared for it.

Copyright law permits the government to own copyrights only by assignment, bequest, and the like. Taking a copyright as if the work was "made for hire" is not the same as taking a copyright by assignment or bequest. What the "special works" clause will be effective in doing is precluding the contractor from claiming any ownership rights in the software. If the Defense Department wishes to obtain a copyright in software, it would be well-advised to adopt a strategy similar to that adopted by NASA and that proposed under the new FAR.

The practice at NASA when ownership and control of software is needed has been to require contractors to obtain copyright protection in the software and then to assign the copyright to NASA. Because Section 105 permits the government to own copyrights by assignment, the NASA policy seems to be consistent with the letter, if not the spirit, of Section 105.

The recently proposed FAR has a somewhat more complicated approach to the "special works" problem than does the NASA policy. Under the allocation of rights provision of the FAR special works clause, the government claims four things: (1) unlimited rights in all data (which includes software and technical data) delivered under the contract and in all data first produced in performance of the contract, (2) the right to control the contractor's exercise of claims of copyright in data first produced in performance of the contract, (3) the right to require the contractor to obtain and assign copyrights in such data, and (4) other rights to limit the contractor's right to control release and use of data developed under the contract. If ownership and control of certain software is what the Defense Department thinks it needs, the Department would be well advised to pursue a strategy similar to that reflected in the new FAR.

## 3. Four or Five Minimum Rights?

The newly proposed FAR would give the government one additional mimimum right in privately developed software over the four that the current and proposed revised DoD regulations would provide. The fifth mimimum right would give the government the right to disclose or reproduce



The practice at NASA when ownership and control of software is

software for use by support contractors or subcontractors, subject only to the latter agreeing to abide by the other restrictions that bind the government in its use of the software. The failure of the DoD FAR SUPP to claim this fifth mimimum right may be interpreted as a decision to reject this right. The loss of this fifth mimimum right may impede the ability of DoD to have other firms assist in the maintenance and enhancement of its software.

### 4. Unlimited Rights in Non-Deliverables

It is standard DoD policy to claim unlimited rights for the government in all software developed with public funds, regardless of whether the software is required to be delivered under the contract or not. Disputes have occasionally arisen when a contractor has refused to deliver -- or at least refused to deliver for free -- software developed under a government contract but not deliverable under the contract. Although DoD policy permits the insertion of a deferred ordering or a deferred delivery clause, in practice this seems rarely done. The newly proposed FAR policy would make a deferred ordering clause a standard feature in government development contracts. This would greatly facilitate acquisition of non-deliverables.

## D. The Need for Defense Department Data Rights Regulations That Are Consistent with the FAR Data Rights Regulations

The 1985 DoD Authorization Act granted the Defense Department authority to issue a set of procurement regulations governing the "legitimate proprietary interest of the United States and of a contractor in technical or other data." (See 10 U.S.C. sec. 2320.) However, the grant of authority explicitly states that Congress intended that these DoD regulations should be a "a part of the single system of government-wide procurement regulations as defined in section 4(4) of the Office of Federal Procurement Policy Act." The OFPP Act, at section 4(4), also emphasizes that there shall be a single system of government procurement regulations.

Even more significant is that section's limitation on the authority of individual agencies with respect to supplementing the FAR. Supplements "shall be limited to (i) regulations essential to implement government-wide policies and procedures within the agency and (ii) additional policies required to satisfy the specific and unique needs of the agency." Thus, the pertinent statutes appear to confine the authority of agencies to adopt different policies than those contained in the FAR. To adopt a different policy, it seems that an agency must show that this policy is necessary to carry out the specific and unique needs of the agency.

Although there may be some respects in which the special mission of the Defense Department would require DoD to have a somewhat different data rights policy than other federal agencies, it seems unlikely that the DoD's data rights policy needs differ so substantially from the needs of other federal agencies that a completely different data rights policy is justified for DoD.

For DoD to have a completely different policy than the FAR would seem to run counter to the apparent Congressional intent reflected in three separate statutory provisions (the OFPP Act, the

DoD Authorization Act, and the Competition in Contracting Act). It would also seem unwise to have two different data rights policies on purely practical grounds. Intragovernmental exchanges of software (e.g., NASA to DoD), will be impeded if the application of different sets of rights and different definitions of key phrases depends on which agency let the development contract.

The inconsistency of the DoD FAR SUPP (current and proposed) with the proposed FAR data rights policy is virtually complete. The two sets of regulations do not even define terms in the same way. The DoD FAR SUPP definition of software excludes software documentation; the FAR definition includes it. The DoD FAR SUPP definition of unlimited rights makes no reference to derivative works rights or to public performance or public display rights, whereas the FAR definition includes all three.

Not only do both sets of proposed regulations appear to differ in the extent of the government's rights when software is publicly funded (the FAR's definition being by far the more generous to the government); they also differ as to the extent of the government's minimum rights when software has been developed at private expense. DoD fails to claim the fifth minimum right provided by the FAR -- that which gives the government the right to sublicense to support contractors.

A clause-by-clause analysis of the two sets of data rights regulations reveals that there is not one identical, or even nearly identical provision common to both. Thus, the DoD policy would completely supplant and not merely supplement the FAR, which is not only contrary to Congressional intent, but undesirable from a policy standpoint.

## Conclusion

The proposed FAR data rights regulations present a clearer and more concise and comprehensible regulatory scheme than either the current or proposed DoD regulations. The proposed FAR is also more compatible with standard software commercial practices and provides more incentives for industry to make their best technology available to the government than the DoD policy, while at the same time giving to the government a number of rights that even the DoD needs to fulfill its special mission. In addition, both statutory and policy reasons support having a uniform set of federal data rights regulations. For these reasons, it would be desirable for the Department of Defense to adopt a data rights policy, such as that reflected in the proposed FAR.

**Technical Memorandum**
**SEI-86-TM3**
**March 1986**

# Understanding the Implications of Selling Rights in Software to the Defense Department: A Journey Through the Regulatory Maze

*by*

**Pamela Samuelson**
Principal Investigator, Software Licensing Project
Software Engineering Institute
Carnegie-Mellon University
Pittsburgh, PA 15213

**Approved for Public Release. Distribution unlimited.**

This work was sponsored by the Department of Defense.

The views and conclusions in this document are those of the author and should not be interpreted as representing official policies, either expressed or implied, of the Software Engineering Institute, Carnegie-Mellon University, the Department of Defense, or the U.S. Government.

Copyright (c) 1986 Pamela Samuelson

# Understanding the Implications of Selling Rights in Software to the Defense Department:

## A Journey Through the Regulatory Maze

**Pamela Samuelson**

**Abstract.** This article of the Software Licensing Project of the SEI examines problems related to DoD procurement policy as reflected in the DoD acquisition regulations (DoD FAR SUPP). This article discusses ambiguities and inconsistencies found in the acquisition regulations, and ways in which these problem areas might result in unexpected disadvantages to both the government and industry. Issues related to funding of software development, treatment of technical data and documentation, the concept of unlimited rights, the making of derivative works and other modifications of software, and the interface between DoD acquisition policy and intellectual property laws (such as copyright and trade secret law) are discussed. The article serves to catalogue potential problems that might arise under the DoD acquisition regulations.

The Defense Department has in recent years been sponsoring the development of a large number of very sophisticated software systems. Many companies are interested in exploring the possibility of participating in one or more DoD-sponsored software development projects. Small firms, in particular, may be drawn to DoD as a source of funding for large scale projects, perhaps hoping that the software developed for the military will also (at least with some modifications) have a significant commercial market. The company may think it worthwhile to take DoD funding because that will pick up the initial development costs, and then profits can be made on commercial sales.

One of the perceived drawbacks to making such a deal with the Defense Department is the "data rights" policy the Department has adopted to allocate and administer what rights the government and its contractors will have as to software acquired by the government. The DoD data rights policy is often decried as "confiscatory" by industry people, although just how and to what extent it is "confiscatory" is not well understood. Given the length and complexity of the standard data rights clause that DoD inserts in virtually all of its software acquisition contracts, it is not surprising that many industry people do not know the full implications of the clause. This article will set forth as simply and clearly as the author's capabilities permit what rights contractors are likely to have - and not have - when selling rights in software to the Defense Department. The article will also assess the potential risks of negotiating non-standard contract terms with special contractual language. Not all such special language may be enforceable for reasons set forth at some length below.

### Limits on Flexibility

There are many places one can begin this examination of the standard data rights policy. This article will begin with pointing out how little flexibility DoD's own contracting personnel seem to have under the current procurement regime. The regulations say that the standard data rights

clause is to be incorporated into every software acquisition contract into which the Defense Department enters, unless a formal "deviation" is granted owing to special circumstances. The mandatory nature of the standard data rights clause is an important limit on the ability of contracting personnel to reach agreements that contravene clear mandates of the standard clause.

This is not to say that the clause is completely inflexible. One can, for example, negotiate a special set of terms to control the government's use of privately developed software so long as the government still has the four minimum rights prescribed in the standard clause . But an agreement purporting to take away from the government one of the four standard minimum rights would be of questionable validity absent authorization for a deviation. Similarly, a specially negotiated arrangement which would give the government less than "unlimited rights" in software funded in whole or in part with federal money would be of questionable validity. If the standard data rights clause is included in a government contract (or, for that matter, a subcontract), the mandatory clause seems likely to prevail over any contradicting specially negotiated provisions if a dispute between the parties over rights arises in the future.

### Conflicts Between The Standard Clause and Special Clauses

The policy reasons that support enforcement of the standard data rights clause over a specially negotiated clause are straightforward: The Defense Department buys a tremendous volume of software (and other items). It needs a way of predicting with some certainty what minimum rights it will have in this property. The standard data rights clause is the vehicle for obtaining such assurances. It is required to be used by agency regulations; it is itself a regulation. (It is well to remember that agency regulations have the force and effect of law.) The standard clause sets forth the basic transactional rules that the government has decided are necessary to protect its interests. Because there is a way within the regulations to alter the standard data rights policy, namely the formal deviation, specially negotiated terms that contradict the standard clause might well be found ineffective when the deviation process was not used to obtain the right to an exception. This policy argument would seem to apply equally to subcontracting situations as to prime contractor situations.

Nevertheless, there may be some instances in which a software company and DoD contracting personnel have gone ahead and entered into special arrangements in which the standard data rights clause may be incorporated by reference and in which separate clauses contradicting part of this standard clause will also appear. The government contract officer and the industry representative may have between themselves reached an understanding that the specially negotiated language will govern. In many and perhaps most instances, the deal may go smoothly and no disputes about rights will arise. In the event of a dispute, the Defense Department might well take the position that the standard data rights clause prevails over the specially negotiated terms for the policy reasons discussed above. It may also argue the contract officer (or the prime contractor in the subcontract situation) had no authority to make special arrangements without getting a deviation. The inequity of subjecting a firm to vastly different terms than it had agreed to would probably give way to the larger policy underlying the procurement regulations. This is a potential risk for firms that sell rights in software to the government.



assurances. It is required to be used by agency

## Different Treatment for Software and Its Associated Documentation

There are many features of the DoD standard data rights clause that differ from standard commercial practices. One important example of this is in the different treatment accorded to machine-readable code and to software documentation. DoD defines "software" in such a way as to encompass only machine-readable code; software documentation is considered to be "technical data."

If both the machine-readable code and documentation have been developed (at least in part) at public expense, the separate classification of machine-readable code and documentation will matter very little because the government will claim the same "unlimited rights" in both. If they have instead been developed wholly at private expense, however, the machine-readable code will be subject to a tighter set of restrictions than the documentation (except if the software is an off-the-shelf commercial product).

Privately developed machine-readable code purchased by DoD must be acquired with four standard minimum "restricted rights" in the government. They are: (1) the right to use it in the computer or facility for which it was obtained, (2) the right to use it in a backup computer if the intended use computer is inoperable, (3) the right to make a backup copy of it, and (4) the right to modify it. Privately developed software documentation will typically be acquired with "limited rights" in the government which means that the government will have the rights to use, copy, and disclose it throughout the government, and in emergency repair situations, to have these same acts performed by outsiders. (The exceptions to this general rule, for commercial software and for manuals or instructional material needed for installation and training are discussed in a later section.)

It should be readily apparent that DoD's discrepant treatment of privately developed machine-readable code and its documentation is at odds with commercial practice, which tends either to treat software and documentation the same, or to treat documentation more restrictively than executable code. This is a feature of DoD's policy that warrants careful consideration by software firms supplying software and documentation to the government.

## Public vs. Private Funding of Software

Undoubtedly the most important distinction in the DoD standard data rights clause is that between "publicly funded software" and "privately developed software." The government will claim "unlimited rights" in any software and documentation developed with public funding; it will treat as "proprietary" any software developed at private expense.

The DoD takes an "all or nothing" approach in these situations. That is, no matter how much of a private firm's own money has gone into the development of a piece of software, and no matter how valuable that software or its prototype may be, if even one dollar of DoD money has gone into the software's development fund, the government will claim unlimited rights in that software and documentation. This policy is sometimes viewed by industry as particularly inequitable when

the DoD money has paid only for slight modifications to the code which were necessary to make the software suitable for government purposes. Industry has been trying for many years to alter this policy.

Indeed, recent legislation seems to call for the establishment of some form of middle ground alternative for mixed funding situations. The newly proposed Federal Acquisition Regulations (FAR) would, for example, permit the government and a contractor to make arrangements for the government to get less than unlimited rights when both supply funds for the development of software. The new FAR would also permit firms to retain "privately developed" status for software that has been slightly modified by a contractor to make it suitable for government use. This is not, however, the Defense Department's policy, as reflected in the current DoD FAR Supplement and under the proposed amendments to it.

### Unlimited Rights: What Does That Mean Vis-a-Vis Ownership?

As indicated above, the standard data rights clause provides that if DoD provides funding for any part of the development costs for software, it will claim "unlimited rights" in the software and its associated documentation. There seems to be some confusion within DoD, as well as in the industry, about what the meaning of unlimited rights is vis-a-vis an ownership interest. Many people seem to think that unlimited rights is equivalent to an ownership interest.

It appears, from a close examination of the standard data rights clause, that this assumption is not accurate. The definition of unlimited rights under the DoD clause makes no mention of an ownership interest. "Unlimited rights" is defined in the standard data rights clause to mean only the rights to use, duplicate and disclose software and its documentation in any manner and for any purpose and to have or permit others to do the same. While this is surely a very broad license, it appears that it is not an ownership interest. In intellectual property law, ownership rights are defined in terms of rights to exclude other people from doing one or more things with the property; the definition of unlimited rights confers no rights to exclude on the government. Furthermore, a close reading of the DoD procurement policy regulations reveals that when DoD wants to try to take an ownership interest in software, it should use the "special works" clause instead of the standard data rights clause.

### The Effect of Use of a Special Works Clause

The DoD special works clause purports to give to the government an ownership right and a direct copyright interest in software or other work prepared under a government contract in which this clause is used. The clause claims this direct copyright interest by claiming that the work prepared by the contractor under the clause is a "work made for hire" under the copyright law. Unfortunately, the DoD special works clause, insofar as it purports to give the government a direct copyright interest in software, may be ineffective for this purpose because it conflicts with the copyright law in two respects: (1) software is not a category of specially commissioned work that qualifies for the "work made for hire" rules, and (2) the copyright law specifically prohibits the



not accurate. The definition of unlimited rights under the DoD Regulations

government from directly owning copyrights (see 17 U.S.C. Section 105). The effect of putting the DoD special works clause in a software development contract would seem to be to put the software and associated documentation in the public domain. Use of the special works clause seems to nullify the contractors right to claim ownership in the software.

### How Broad Is The Unlimited Rights License?

How broad the government's rights are when it has unlimited rights in software might seem a tritely simple question, but it's not. Some procurement personnel tend to interpret the term as if it was tautologically defined (i.e., that "unlimited rights" means "unlimited" rights.) But the DoD's own definition of the term is limited to three basic rights: the rights to use, duplicate, and disclose the software. The most glaring omission from the definition is that relating to rights to prepare derivative works. Derivative works are defined broadly by the copyright law. There is as yet little case law to provide guidance as to the scope of this concept vis-a-vis software but it would seem to include all modifications, enhancements,translations into other programming languages, and the development of additional programs using parts of the original code (i.e., reusability of software.) Although DoD might argue that a derivative works right is implicitly included in the DoD rights, it is at least conceivable that a court might find that the DoD does not obtain the right to make derivative works of copyrighted material when it has unlimited rights. DoD's argument for implicit inclusion is weakened because the newly proposed FAR does define unlimited rights to include a right to make derivatives.

If firms that have developed software with government funds retain the right to control the government's preparation of derivative software, that would certainly be an important limitation on the government's rights. It is simply unclear whether this is so.

### Contractor-Prepared Derivatives of Unlimited Rights Software

As important a question as may be the government's right to prepare derivative software, an even more important question from industry's perspective may be whether the government will have any rights-- or perhaps even unlimited rights -- in any contractor-prepared derivative software intended for the commercial market. If DoD funds have paid for development of the original software and if some part of the original software is traceable in the derivative software, some DoD personnel might argue that the government will (or should) have unlimited rights in the derivative software as well -- despite the fact that delivery of derivative software may never have been called for under any contract.

The problem of what it might mean for the government to have unlimited rights in non-deliverables is always a thorny one, but in the context of derivative software, it could cause considerable concern. How a court would resolve a dispute of this sort is difficult to predict. It might seem inequitable to the software industry for the government to claim broad rights in derivative software whose delivery they never bargained for. However, DoD might very well take the position that the government can and should exercise rights to derivative software.



If firms that have developed software with

## The Effect of Copyrighting Software Developed at Public Expense

The making of derivative software from software funded at public expense can also be a complicated problem if the developer of the original software has copyrighted the software (as the standard data rights clause permits) and if a different company is selected to prepare the derivative software for the government. As was pointed out above, it is not entirely clear that the government has the right to authorize the making of derivatives. For the moment, let's assume it does. That still doesn't mean that there are no limits on the government's ability to authorize the creation of derivatives. One provision of the standard data rights clause suggests that the government's rights to do various things with copyrighted software and to authorize others to do the same is limited to circumstances in which they are done for governmental purposes. The regulation is somewhat ambiguous in this respect, but it may be that the effect of a contractor's copyrighting software it has developed with government funding will be to narrow the scope of the government's rights in that software from an "any purpose" license to a "government purposes" license, that is, to contract the scope of unlimited rights.

This contraction of the government's rights may be particularly important as to the creation of derivative software, for it may permit the original developer (insofar as it may be a copyright owner) to control distribution of derivative software prepared by a second firm to anyone besides the government. That is, the first firm may not be able to prevent a second firm from preparing a derivative program for the government, but it may at least be able to prevent the second firm from copyrighting the derivative and selling it widely to commercial customers. The government cannot give to the second firm a wider set of rights than the first firm has given to the government. And if the second firm -- even with the government's permission -- exceeds the scope for the government's license, it may be enjoined from infringing the first firm's copyright, and thus be unable to bring the derivative to market.

## The Policy When Software Is Developed At Private Expense

Having now a clearer understanding of the risks and uncertainties involved when a firm accepts government funding for software development, a software firm may prefer to find some independent source of funding for the software to avoid the problems just described. The firm may think, "Well, at least if it's privately developed, I'll be able to restrict the government's use of it." To an extent, this is true; to an extent, it may not be true. In the event a contractor firm uses its own funds for software development as a way of ensuring its ability to restrict the government's rights in the software, the firm should realize that it must still follow a circuituous path through the data rights regulations to secure the restricted rights protection it may be seeking.

## Commercial Software: The Option

One of the potentially helpful provisions for industry as to privately developed "commercial software" that it may take some experience with the clause to discern is that the standard data rights clause allows contractors to opt whether to have their commercial software treated as

"commercial software" or as "other-than-commercial software." (What qualifies as "commercial software" is not clear from the regulatory definition; it seems to be interpreted to reach off-the-shelf software that has a substantial commercial distribution.)

The primary advantage of having one's software treated as "commercial software" is that its documentation will be subject to the same "restricted rights" as applies to the machine-readable code instead of being subject to the broader limited (i.e., government-wide) rights that pertain to other documentation. The primary disadvantage of opting for commercial software treatment is that there is a fixed and unnegotiable set of terms that will apply to the code and the documentation; no further terms can be negotiated. Some firms with commercial software prefer to be able to negotiate additional terms, and thus exercise the option to have commercial software treated as other-than-commercial-software.

### Other Than Commercial Software: A "Booby Trap"

The DoD standard data rights clause contemplates that when DoD acquires other-than-commercial-software that has been developed at private expense, a separate licensing agreement will be negotiated between the government and the software firm which will then be made part of the government contract. The DoD must only get the standard four minimum rights in the software.

An interesting question is: what happens if the firm fails to negotiate a separate license agreement and have the agreement made part of the government contract? A cursory reading of the standard data rights clause might suggest to an industry person that if no license agreement was entered into between the government and the contractor, the government would have no more than the four standard minimum rights in the software. However, a closer reading of the clause itself indicates that the failure to negotiate a separate license or the failure to have a separate agreement made part of the government contract may instead mean that the government will have unlimited rights in the software (that is, at least, in the machine-readable code). This may strike software industry people as unreasonable, but it is the result a close reading of the regulations seems to contemplate for those who don't negotiate a separate agreement and have it made part of the contract. It would certainly be prudent to negotiate a separate licensing agreement and have it made part of the contract if a firm wants to ensure that its privately developed software will be subject to tight restrictions.

### Other Technicalities

Similarly, the failure of the contractor to put a restrictive notice on the software or documentation, or the failure of the contractor to identify in his proposal a piece of software as to which he desires to negotiate restricted rights could result in the government's claiming unlimited rights in that software, even if the software was developed wholly with private funds. Further, even if the software and documentation was developed wholly at private expense, and even if one has been careful to comply with the technical requirements of the regulations, a software firm might be



[illegible] have the agreement made part of the [illegible]

threatened with loss of its limited (or restricted) right protection for software documentation to the extent that the documentation has been incorporated into a manual or other instructional material prepared for or required to be delivered under the government contract to assist with installation, operation, maintenance, or training. The government claims unlimited rights in all such manuals and materials. Unfortunately, virtually any piece of software documentation could arguably be construed to be within this rule, so there would seem to be within the regulation yet another potential pitfall.

## Conclusion

Given this complicated and ambiguous regulatory environment, it is understandable that a software firm that might be jealously guarding its software and documentation in order to preserve its competitive edge in the marketplace might be somewhat reluctant to do business with the Defense Department. It is a system in which the Defense Department's contracting personnel have their hands tied. Short of getting permission to grant a deviation, it would appear that contract officers have no authorization to make deals that go against clear provisions of the standard data rights clause.

The fact that a contract officer would even consider entering into special agreements as well as honoring them, despite a lack of authority to do so, serves as a testament to the goodwill and reasonableness of the many DoD personnel who want the government to get good technology, and who realize that if the standard data rights policy is always insisted upon and enforced, a lot of excellent software technology will not be made available to the government. It is unfortunate that the Defense Department's procurement regulations make the job so difficult for them, and at the same time, put at risk software firms who want to believe that the government can accommodate their needs for protection of software, and who want to make their technology available to the government on fair and reasonable terms.

Why are the Defense Department regulations so difficult to change? Well, that, as they say, is another story. Until the regulations are altered to accomodate the needs and interests of those in DoD who want access to the highest quality software technology and of those who can supply it, software vendors must be prepared to journey through a complex and sometimes frustrating regulatory maze.



of excellent software technology will not be