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September 30, 1994

The Honorable John Glenn
Chairman, Committee on Governmental Affairs
United States Senate

The Honorable Martin Sabo
Chairman, Committee on the Budget
House of Representatives

As agreed with your offices, this letter provides a
preliminary response to your February 4, 1994, request that
we review the status of the Department of Defense's (DOD)
Continuous Acquisition and Life-Cycle Support (CALS)
initiative. The objective of this automation effort, one of
Defense's most ambitious, is to digitize the vast amount of
weapon systems life-cycle management data currently on
paper. Defense plans to use CALS to decrease weapon systems
management support costs, help ensure the readiness of
military forces, increase cooperation with industry and
international partners, and posture cornerstone systems for
the National Information Infrastructure.

In response to your request for early feedback on CALS, we
have formulated and answered questions to highlight our
initial observations and concerns. These are contained in
the enclosure to this letter. This objective of this letter
was to focus on two key programs of the CALS initiative:
(1) the Joint Computer-aided Acquisition and Logistics
Support (JCALS) and (2) the Joint Engineering Data
Management Information Control System (JEDMICS). We also
are addressing the impact of the recently tested Automated
Document Conversion System (ADCS) on the CALS initiative and
the stated justification for using noncompetitive procedures
to expand the Army-specific CALS contract to a DOD-wide
scope.

BACKGROUND

The volume of paper-based technical information necessary to
support weapon systems management from "cradle to grave" is

staggering, and the manual processes currently used in Defense to handle and store technical information are complex, tedious, and labor-intensive. Digitized technical data and automated support systems offer the potential to save time and money and to improve business processes since digitized data can be more effectively stored, manipulated, maintained, and shared by DOD and its contractors.

For example, the Air Force has more than 950,000 square feet of floor space dedicated to technical manual storage. It makes almost 2 million pages of changes to technical manuals each year. A routine page change involves 13 organizations and it takes an average of 270 days to reach the user. Acquiring a complete technical manual can take up to 14 different requisitioning, warehousing, accounting, and inventory record entries and, thus, up to 45 days to receive. Under the concept of CALS, the many layers of review for changes and the cost associated with handling and storing paper manuals will be dramatically reduced by reengineering the processes and providing supporting automated systems.

Industries such as computer, automobile, and airplane manufacturers have already implemented automated systems to effectively and efficiently manage technical data. For example, by sharing digitized information, multiple contractors involved in building airplanes have cut costs, improved response times, and increased competitiveness.

Defense's goal for CALS is to use information technology in partnership with the private sector to create an automated, integrated support environment for major weapon systems acquisition, development, and maintenance. Currently, Defense often purchases weapon system information, such as engineering drawings and technical manuals, in paper form from contractors several times as the weapon system is modified throughout its life cycle. Defense plans to build automated systems and databases that facilitate acquiring information once and keeping it current to meet needs throughout the weapon systems life cycle. This capability requires digitized databases, support applications systems, and electronic connectivity (that is, telecommunications networks), between CALS users and Defense contractors.

Joint Computer-aided Logistics Support (JCALS) began as part of an Army program to automate weapon systems support and has been selected as a joint system to provide Defensewide automated access to digitized acquisition and logistics data

for weapon system support. Defense's Major Automated
Information Systems Review Council (MAISRC) has directed the
JCALS program manager to develop only jointly agreed-to
connectivity and data management capabilities. Automated
technical manuals to be used for weapon system maintenance
and repairs are the first joint CALS function to be
demonstrated by JCALS. Defense has installed JCALS
prototype systems at five sites.

The objective of the Joint Engineering and Data Management
Information and Control System (JEDMICS) is to provide a
digitized repository for engineering drawings and associated
data to be accessed by CALS users. JEDMICS originated as a
Navy system for managing engineering drawings. With
JEDMICS, engineering drawings in the form of aperture cards
and hard-copy drawings are scanned, reviewed, enhanced,
compressed, and transferred to optical disks for storage.
In essence, JCALS is to serve as an electronic librarian for
CALS data and JEDMICS is to serve as the digitized
repository.

ADCS is a major CALS-related program which Defense is
testing as a mechanism to convert engineering drawings
stored in JEDMICS into alternative formats for engineering
and design purposes. It is not currently being managed as a
part of the CALS initiative. Additional background
information on the CALS initiative and its programs is
contained in the enclosure.

RESULTS IN BRIEF

Defense has not made the basic decisions necessary to
successfully implement CALS. It is of paramount importance
that Defense decide how it wants to change the current way
it does business and not merely automate existing practices.
Defense has expanded the CALS initiative several times since
its inception in 1984, but it has not clearly defined what
the initiative should be, what it should encompass, and how
it should be implemented. Despite the significant potential
benefits offered by CALS, there is no single point of
accountability for the initiative. Instead, management
responsibilities are diffused throughout government and
industry.

Key implementation issues have not been addressed. Defense
has not been able to demonstrate that JCALS will meet the
CALS challenge for a standard, consistent approach for
managing technical data across DOD. Instead, the five

prototypes are site-unique versions of JCALS and employ different data management processes to acquire, manage, and store the data.

Technical problems are also precluding joint systems under development from meeting CALS goals to improve the management of technical data. For example, the indexing scheme needed to access documents stored at remote JEDMICS sites has not been developed. Further, Defense has not determined how it will meet requirements to protect classified data.

Since the inception of CALS 10 years ago and the expenditure of several billion dollars,[1] specialized products have become commercially available to handle this type of industrial application. Given DOD's lack of progress so far in demonstrating a return on investment with its current effort to custom-build DOD-wide CALS capabilities, we believe it would be appropriate for DOD to determine whether existing technologies would satisfy its goals for CALS. However, Defense must first decide how it would apply new technology to improve business practices.

Regarding the Justification and Approval (J&A) for noncompetitively expanding the Army-specific CALS contract to a DOD-wide scope, we determined that the J&A had not met the Competition in Contracting Act requirement to demonstrate the reason for using noncompetitive procedures.

SCOPE AND METHODOLOGY

To answer the questions in the enclosure, we examined and analyzed CALS policies and procedures and visited JCALS, JEDMICS, and ADCS prototype test sites. We interviewed senior officials responsible for these programs and from the Defense Inspector General's office. We also interviewed staff from the Office of the Secretary of Defense for Command, Control, Communications, and Intelligence, and Electronic Commerce/Electronic Data Interchange. In addition, we interviewed representatives from the Major Automated Information System Review Council (MAISRC), the Defense Logistics Agency (DLA), and the Defense Information System Agency (DISA).

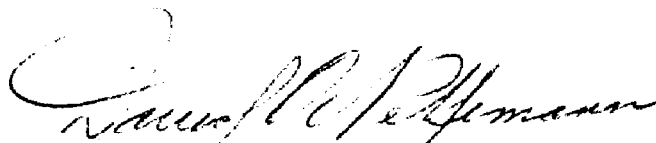[1] In 1991, we estimated $5.2 billion in existing and planned projects.

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We also reviewed many GAO and Defense reports on CALS and relied heavily on the analyses and conclusions in the following: (1) GAO's September 13, 1991, CALS report, Defense ADP: A Coordinated Strategy Is Needed To Implement the CALS Initiative (GAO/IMTEC-91-54), (2) DOD's June 30, 1991, CALS Architecture Study, and (3) the DOD Inspector General's June 8, 1994, inspection report, Management of Digitized Technical Data (94-INS-05).

Our work was performed in accordance with generally accepted government auditing standards between April 1994 and September 1994, primarily at DOD offices in Washington, D.C. As requested by your office, we did not obtain DOD comments on a draft of this letter. However, we discussed the results of our work with DOD officials and have incorporated their views where appropriate. These officials generally agreed with the facts presented in this letter.

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As agreed with your office, unless you publicly announce the contents of this letter earlier, we plan no further distribution until 30 days after the date of this letter. At that time, we will send copies to the Ranking Minority Members of your committees, appropriate House and Senate committees, the Secretary of Defense, and other interested parties. We will also make copies available to others upon request.

If you have any questions about this letter, please contact me at (202) 512-6222 or Carl M. Urie, Assistant Director, at (202) 512-6231.

David O. Nellemann
Director, Information Resources
   Management/National Security and
   International Affairs

QUESTIONS AND ANSWERS ON THE
CONTINUOUS ACQUISITION AND LIFE-CYCLE SUPPORT INITIATIVE

1. What is the Continuous Acquisition and Life-Cycle Support (CALS) Initiative?

CALS is a joint DOD and private sector initiative to move from the current paper-intensive processes to a highly automated and integrated mode of operation for management of weapon systems processes. Defense plans to convert millions of technical manuals and engineering drawings consisting of hundreds of millions of pages of text and illustrations into standard digitized formats. This information is used throughout weapon systems life-cycle phases including, acquisition, design, manufacturing, maintenance, and logistics support. With CALS, Defense plans to substantially improve the productivity and quality of the weapon system support processes.

A primary goal of CALS is to link new and existing databases to create shared databases and provide the access necessary for managing technical information, such as engineering drawings and technical manuals, to CALS' many and varied users. CALS users include Defense and industry contracting offices, design and engineering organizations, logistics support facilities, and maintenance and operations personnel. Defense's implementation of CALS has focused on developing (1) standards for data storage and exchange and (2) automated systems to store, manage, and distribute data.

Currently, the Director of CALS and Electronic Data Interchange (EDI) within the Office of the Under Secretary of Defense for Acquisition and Technology has oversight responsibilities for five major CALS programs. These programs are the Joint Computer-aided Acquisition and Logistics Support (JCALS) program, (2) the Joint Engineering Data Management and Information Control System (JEDMICS) program, (3) the Flexible Computer Integrated Manufacturing program, (4) the Integrated Data Strategy program, and (5) the EDI program. In addition, over 100 service-initiated CALS systems have been identified. In 1991, GAO estimated that Defense had invested $5.2 billion in existing and planned CALS and service unique CALS-related projects. Figure 1 shows the relationship between JCALS, JEDMICS, and the user needing technical information.

Figure 1:   Interaction Between JCALS and JEDMICS
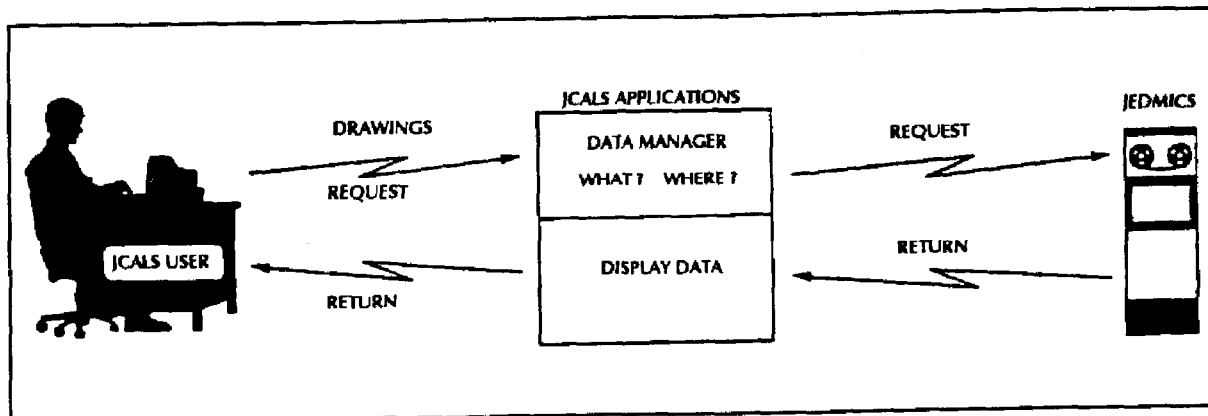
Source: Department of Defense

The scope of the CALS initiative has changed since 1985.   CALS began as the Computer-aided Logistics Support initiative to digitize weapon systems logistics data, including technical orders and manuals.   The concept soon was expanded to include the technical data generated during the weapon systems design, manufacture, and procurement processes, and the acronym was changed to the Computer-aided Acquisition and Logistics Support initiative.   In 1993, Defense renamed CALS again, this time to reflect automating and integrating manufacturing and engineering processes along with logistics and acquisition functions, and renamed CALS again to Continuous Acquisition and Life-cycle Support.

2. What problems have been identified with CALS?

Major problems with the CALS initiative have been reported by
Defense, its Inspector General (IG), and GAO. For instance, in
June 1991, a report prepared by the Joint CALS Management Office
found that the most significant obstacle facing CALS was the lack
of an adequate management structure to implement the initiative.
The study reported that this has resulted in (1) systems that do
not provide cross-service/intra-service information sharing,
(2) the use of automation to mirror, rather than to challenge,
current ways of conducting business, and (3) the use of technical
information systems that support the requirements of a limited
set of users and do not support the needs of users across the
weapon systems life-cycle. Further, the study concluded that
gaps in CALS management have resulted in duplicative systems
supporting overlapping functions. In addition, it concluded that
without adequate centralized management within DOD, the services
would continue to develop service unique "stovepipe" systems that
do not support CALS' goals for standard DOD-wide integrated data
management. Also in 1991, GAO identified the need for an
implementation plan to include specific goals, objectives,
responsibilities, and authority to effectively direct the CALS
initiative.

The DOD Inspector General's June 1994 report on Defense data
management identified major management problems with CALS
stemming from an unclear definition of the initiative.
Specifically, the IG found that Defense has not clearly stated
what the initiative should be, what it should encompass, and how
it should be implemented.

DOD's failure to define CALS has resulted in an ineffective
management structure, late allocation of program funds, and a
lack of specific guidelines needed to acquire and manage
digitized technical data. For example, the IG's report stated
that DOD has not established whether the CALS initiative is a
strategy or a program, and this has left program managers
confused as to what their roles and responsibilities are for CALS
implementation. If CALS is defined as a strategy, rather than as
a program, program managers may believe that implementation is
optional. The IG concluded that Defense must clearly define the
CALS initiative, what it is to encompass, and whether or not to
continue to implement the initiative.

These problems identified by the IG still exist and, in
conducting our review, we found the following additional
problems.

--   Major CALS programs including JCALS and JEDMICS are not
      providing the necessary framework to implement Defense's
      data sharing goals. For example, JCALS prototype sites have
      not demonstrated joint data management capabilities.

--   Defense is investing in CALS-related data conversion
      technologies before justifying a need for these
      capabilities.

--   Management responsibilities for the CALS initiative are
      shared among many Defense organizations, and there is no
      single point of accountability for the effort. Instead,
      separate organizations operate independently, controlling
      funding, policy, standards, and development of functional
      requirements for CALS and CALS-related efforts, without any
      clear relationship or accountability for the CALS
      initiative.

Moreover, CALS has undertaken major programs without providing
valid functional requirements or adequate budgeting
justification. For instance, as discussed in later answers,
although JCALS and JEDMICS have been approved as CALS programs
and millions of dollars have been spent on them, DOD has not yet
completed an economic analyses linking JCALS and JEDMICS to
clear, functional objectives; measurable goals; and estimated
savings. Further, Defense has not yet adequately identified user
requirements or described how the individual CALS programs will
work together effectively. Before Defense expands CALS programs,
we believe that it must establish clear requirements for how it
wants CALS to improve data management. If this is not done, CALS
and CALS-related systems are unlikely to meet DOD user needs
cost-effectively.

We have previously reported that major cultural and management
changes are needed within DOD to support its Corporate
Information Management (CIM) information management goals.[1] CIM
is a Defense initiative to improve operations and administrative
support by streamlining business processes, upgrading information
systems, and improving data administration and other technical
areas. In September 1991, DOD designated CALS as a CIM program

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[1]Defense ADP: Corporate Information Management Must Overcome
Major Problems (GAO/IMTEC-92-77, September 14, 1992). Defense
Management: Stronger Support Needed for Corporate Information
Management Initiative To Succeed (GAO/AIMD/NSIAD-94-101, April
12, 1994).

to be managed in accordance with CIM policies and procedures.
CALS and CIM share the same the goal of developing standard DOD-
wide management practices and automated systems. Like CIM, to
achieve CALS' goals, Defense must reengineer its current weapon
systems life-cycle management processes to ensure that
information technology is implemented effectively and
efficiently. However, our review shows that Defense has not yet
established a link between process improvements to be made under
CIM and the CALS initiative. Further, the IG found that Defense
has been unable to alter acquisition practices to promote the
introduction of CALS capabilities early in weapon systems design
to ensure that long-term savings are maximized.

3.   Will JCALS meet user requirements?

There is great uncertainty as to whether JCALS will meet user needs. There is no single DOD-wide JCALS system. Instead, prototype, site-unique versions of JCALS are currently installed at several locations. They employ different data management processes to acquire, manage, and store digitized technical manuals. As a result, Defense has not been able to demonstrate that JCALS will meet the need for a standard, consistent capability across DOD to manage digitized technical manuals.

JCALS prototype sites have focused on local rather than joint requirements because the JCALS program manager, and the services have not resolved basic developmental issues. First, there are no jointly agreed-to requirements for technical manual document format and data content. The JCALS program manager has estimated that it will take from 2 to 5 years to develop and reach consensus among the services for joint document formats. Without these standards, technical manuals cannot be managed in a consistent way across DOD.

Second, no specific security requirements and procedures have been developed for technical manuals. JCALS is required to handle classified data. However, since sufficient security requirements have not been developed, JCALS cannot satisfy DOD-wide needs to control access to secure data.

Next, the Inspector General found that a lack of common Defensewide terminology, service requirements, and information on JCALS users for weapon systems data has delayed the development of JCALS functional requirements beyond technical manuals. As a result, program managers considering the use of JCALS cannot justify the additional cost and benefits of using the system. Moreover, the problems already encountered in developing automated joint technical manuals are likely to recur in implementing other CALS capabilities, such as data management for engineering drawings and logistics support.

Finally, Defense's JCALS Cost Benefit Analysis (CBA) for technical manuals states that many of the claimed benefits cannot be quantified now in terms of operational effectiveness, improvements, or dollars. The analysis concludes that JCALS' cumulative benefits will not exceed its development and implementation total costs until fiscal year 2008. However, since neither the program's requirements nor its benefits are well defined, these claims are not supported.

4. Was the JCALS system development contract competitively awarded?

The Army originally used competitive procedures to award the contract now being used to develop the JCALS system. When the Army awarded the contract, it was limited to developing an Army, not a joint, CALS system. During the development of the Army CALS system, the Office of the Secretary of Defense (OSD) directed the Army to convert its CALS program into a joint program. The Army then used noncompetitive procedures to amend its Army CALS development contract to include developing a JCALS system.[2] However, we found that the stated justification for using noncompetitive procedures did not meet a statutory requirement to demonstrate why those procedures were appropriate in this case.

The Competition in Contracting Act (CICA) requires Defense agencies to procure property or services using competitive procedures. CICA also affords a number of specific exceptions to using competitive procedures. When an agency intends to use noncompetitive procedures, CICA requires the agency to prepare a Justification and Approval (J&A) for doing so. The J&A must include

> an identification of the statutory exception from the requirement to use competitive procedures and a demonstration, based on the proposed contractor's qualifications or the nature of the procurement, of the reasons for using that exception.[3]

In this case, the Army prepared a J&A stating that it was relying

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[2]The Army conducted its CALS system development under the policies of Office of Management and Budget Circular A-109. Under that Circular, the Army selected four contractors to begin CALS development efforts, with later stages of system development included as options. In phases, the Army was to exercise further development options for only those contractors who were able to meet its needs. Shortly after the OSD ordered the expansion of the Army CALS program to include developing the JCALS system, the Army exercised options for two of its original four contractors. These two contractors were given options to develop the JCALS system, and in December 1991, the Army exercised this option for only one final contractor.

[3]10 U.S.C. § 2304(f)(3).

on the CICA exception to competition under 10 U.S.C. § 2304(c)(1) as its authority for the noncompetitive procurement of JCALS system development. Section 2304(c)(1) authorizes DOD agencies to use other than competitive procedures when

> the property or services needed by the agency are available from only one responsible source or only from a limited number of responsible sources and no other type of property or services will satisfy the needs of the agency.

In addition, Defense agencies may use the exception in 2304(c)(1) for follow-on contracts for

> the continued provision of highly specialized services . . . when it is likely that award to a source other than the original source would result in--

>> (i) substantial duplication of cost to the United States which is not expected to be recovered through competition; or

>> (ii) unacceptable delays in fulfilling the agency's needs.[4]

The Army's J&A described the procurement of Army CALS (ACALS) system development up until that point, and stated that competitive procurement of a JCALS system development would cause an 18-month delay. The J&A also states that the delay would lead to significant costs and the failure to meet a program development milestone.

The Army's J&A does not demonstrate that the CICA exceptions under section 2304(c)(1) applied to procuring JCALS system development services. The J&A did not demonstrate that the contractors who were given options to develop a JCALS system were the only responsible sources available to provide those services. In our view, the Army's experience in its CALS system development procurement (receiving eight offers and initially awarding four preliminary development contracts) indicates that there were other responsible sources for these services. While the Army did not receive any offers to develop the JCALS system when it

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[4]10 U.S.C. § 2304(d)(1)(B).

published a synopsis in Commerce Business Daily[5], this alone
would not justify a finding that the Army CALS system development
contractors were the only responsible sources to develop a JCALS
system.

Further, the J&A did not demonstrate how the criteria of section
2304(d)(1)(B) applied to the procurement. The J&A states that
competitively acquiring the development of a JCALS system would
have resulted in duplicate costs, chiefly the $26 million already
expended on the Army CALS procurement as well as $1.2 million in
costs of preparing a new solicitation. However, the J&A does not
support these statements. Unsupported agency assertions are not
sufficient to justify using the authority of section
2304(d)(1)(B).[6] Moreover, the J&A does not show why the Army
could not have expected to recover $27.2 million through full
competition for a contract valued at over $1 billion.

The J&A also states that competitively procuring the JCALS system
development would have delayed fielding the JCALS system. The
J&A cited two consequences of the delay. First, DOD would lose
about $200 million in operational savings because of the delayed
deployment of the JCALS system. Second, the Army would not be
able to meet the deadline set by the OSD for converting the Army
CALS program to a joint program.

It is true that a fully competitive procurement would involve the
loss of some amount of operational savings. However, the J&A
statement that there would be $200 million in lost operational
savings is made "by analogy" without additional explanation. In
addition, any DOD agency asserting an unacceptable delay must be
able to show that the delay is not the result of poor acquisition

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[5]CICA requires agencies who intend to use other than fully
competitive procedures to award contracts to publish any required
public notices of the prospective contract action (10 U.S.C.
§2304(f)(1)(C)). Under 41 U.S.C. § 416 and its implementing
regulations, agencies must publish a synopsis of all prospective
contacts of more than $25,000 in Commerce Business Daily.

[6]Sperry Marine, B-245654, Jan. 27, 1992, 92-1 CPD ¶ 111; 71 Comp.
Gen. 33 (1991).

planning.[7] Here, the Army responded to a directive from the OSD to make Army CALS a joint program, but did not consider conducting a competitive procurement. In that context, the J&A does not explain why the delay (and resulting lost savings) would not have been the result of a lack of advance planning.

Finally, the Army's inability to meet an administratively set deadline to convert the Army CALS program to a JCALS program would not in itself satisfy the "unacceptable delay" criteria of section 2304(d)(1)(B). Generally, a delay is unacceptable if it would significantly affect a capability to carry out mission responsibilities.[8]

In this case, the J&A does not point out a significant mission or operational impact of a delay in competitively procuring the development of the JCALS system. Nor does the J&A otherwise demonstrate how missing an administratively set development schedule is "unacceptable" as that term is used in used in 10 U.S.C. § 2304(d)(1)(B). Thus, the J&A does not meet the statutory requirements of section 2304(f)(3)(B) to demonstrate why the CICA exception to full competition in section 2304(c)(1) applied to expanding the Army CALS system development contract to include developing a JCALS system.

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[7]CICA specifically prohibits agencies from awarding contracts using other than competitive procedures on the basis of the lack of advance planning. 10 U.S.C. § 2304(f)(5)(A). The legislative history of CICA also states that the authority under section 2304(d)(1)(B) "should not be construed as legitimizing sole source contracts that are caused by poor planning." H. Rep. No. 861, 98th Cong., 2d Sess. 1426 (1984).

[8]B-248882.3, Aug. 27, 1993 (a new type of aircraft would not be developed in time to replace older aircraft as they reached the end of their service life); The Entwistle Co., B-249341, Nov. 16, 1992, 92-2 CPD ¶ 349 (delays in procuring laser welding services could delay carrier overhaul, thereby jeopardizing the ship's operational capability); 69 Comp. Gen. 591 (1990)(night vision equipment for aircraft needed to prevent loss of life or aircraft).

5. Does JEDMICS satisfy Defense's requirements for a technical data repository?

We found that technical and management problems are precluding Defense's requirements for a technical repository from being met. JEDMICS is required to provide a secure, open, and distributed system architecture for storing, indexing, and retrieving large volumes of weapon systems engineering drawings and associated data.

First, Defense has not decided how to provide controlled access to secure data stored in JEDMICS. The JEDMICS program manager stated that Defense has not adequately identified detailed security requirements for JEDMICS. Moreover, the IG found that each of the military departments and the Defense Logistics Agency are pursuing an uncoordinated course of action concerning the security of digitized data.

Secondly, the Defense Information Systems Agency (DISA) Center for Integration and Interoperability has concluded that because JEDMICS is not compliant with DOD's guidance for open systems,[9] JEDMICS and JCALS may not be interoperable. In addition, Defense has not yet completed the analysis of requirements to design and implement a communications network needed to link JEDMICS sites. Thus, there is no well defined approach for ensuring that JEDMICS users from remote sites locations will be able to access and retrieve data.

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[9]An open system is a computer network designed to incorporate all devices--regardless of manufacturer or model--that can use the same communications facilities and protocols. In regard to individual pieces of computer hardware or software, an open system is one that can accept add-ons produced by third-party suppliers.

6. <u>What is the Automated Document Conversion System (ADCS)?</u>

The Automated Documentation Conversion System (ADCS) is a CALS-
related, congressionally directed program to convert digitized
engineering drawings and specifications, such as those already
stored in JEDMICS, into alternative formats for engineering and
design purposes. As a part of the fiscal year 1994
appropriations process, the Congress earmarked $14 million of
DLA's appropriations for acquiring and testing ADCS and required
DOD to report on the results of this test. The Conference Report
on the fiscal year 1995 Defense appropriations bill (approved by
both the House of Representatives and the Senate on September 29,
1994) included a provision that would require Defense to
establish a master plan for acquiring automated document
conversion systems. The provision also would direct that
$20 million be used to integrate ADCS into JEDMICS.

7. How Does ADCS Relate to CALS?

Defense is not currently managing ADCS as part of the CALS initiative, but is considering the use of ADCS for scanning paper documents such as maps and aperture cards and converting data already stored in JEDMICS to alternative formats. Defense has expanded the number of ADCS test sites from 6 to 10 and has installed hardware and software costing millions of dollars. However, Defense officials responsible for reviewing the ADCS test plan have concluded that the test will not confirm the effectiveness or efficiency of the system. Specifically, the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence stated that the ADCS test will not provide data on savings, manpower, and funding, which are needed to report to the Congress on the usefulness of ADCS.

Further, Defense has not identified or validated the requirements for converting JEDMICS data to alternative formats. In fact, the JEDMICS program manager told us that there are no requirements for conversion of JEDMICS data at this time. In addition, DOD already has document scanning capabilities with JCALS and JEDMICS.

8. <u>Are there other viable alternatives to CALS?</u>

Since the inception of the CALS initiative 10 years ago, new and
innovative solutions have been developed to solve historically
difficult information management problems. For example, CD-ROM
technology is now an available, mature, and inexpensive medium
for storing and transmitting large volumes of text and images.
In addition, many commercial software tools are now capable of
reading multiple data formats. Advances in computing technology
have also made it possible for workstations to perform the work
of larger and more expensive mini and mainframe computers.

Furthermore, many Defense contractors and commercial software
vendors are already using automated weapon systems life-cycle
support systems. Commercially available systems have the
potential to satisfy DOD's CALS requirements more cheaply, more
effectively, and with less risk than custom-built DOD systems.

In light of these technological changes and given that Defense
has not yet fully defined its requirements for the weapon systems
life-cycle support functions, we believe it would be appropriate
for Defense to consider whether existing technologies would
satisfy its goals for CALS.

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