# Acquisition and Management of Technical Data

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# ACQUISITION AND MANAGEMENT OF TECHNICAL DATA

The development of technical data is an inherent part of the engineering design, development and manufacturing of products. The acquisition and management of technical data has become innate to the way the Department of Defense (DOD) acquires and manages weapon systems. A major reason for this is the mission of DOD. That mission is to provide for the security and defense of our country twenty-four hours a day, seven days a week, anywhere in the world where our national security or interests are threatened. DOD must be prepared to deploy personnel and their equipment on short notice to any troubled spot and perform their mission for a sustained period of time.

The success or failure of a large-scale operation is not determined at the time the troops are deployed. There is much planning and prepositioning of logistics support that precedes the actual deployment of the troops. The need to maintain a high state of readiness necessitates a support structure that ensures that the right equipment is available in the right quantities at the right time. That support structure includes thousands of personnel working in maintenance shops to troubleshoot and repair the equipment used in the theater of operation.

Operating and maintenance personnel are using technical data acquired through the acquisition process to operate and maintain the equipment. These maintenance personnel are not concerned about how the technical data was procured or that DOD spends millions each year to acquire the data. Their concern is that the information is accurate and will allow them to accomplish their job. The task of ensuring that the right documentation is procured and available is the responsibility of a functional manager working in the procuring activity. This functional manager could be the Engineering Data Manager or the Technical Manual Manager. This article addresses the process used by the DOD to acquire and manage technical data. It addresses data identification, requirements, and the coordination of technical data.

## DEFINITION OF TECHNICAL DATA:

Technical data is recorded information of a scientific or technical nature regardless of the form or method of recording or delivery. This definition would include engineering drawings, technical publications, interface standardization documents or any other type of technical documentation that provides DOD personnel with the technical information required to operate and maintain the equipment in the inventory.

Technical data has typically been acquired on contract by the application of military specifications and standards that called out the style, format, and technical content of the data. Often, these specifications and standards were called out in documents from the system level all the way down to the lowest reparable component parts.

Acquisition reform dictated DOD re-examine the use of military specifications and standards. The Perry Memorandum of 29 June1994, required the move to greater use of performance and commercial specifications and standards. The memorandum stated that performance specifications shall be used when purchasing new systems, major modifications, upgrades to current systems, and nondevelopmental and

commercial items, for programs in any acquisition category. In those cases when the use of a performance specification is not practicable, a non-government standard shall be used. Military specifications may be used in those cases when non-government standards or performance specifications are not available or are not cost effective.

**PERFORMANCE BASED ACQUISITION**

Performance Based Acquisition is a strategy that moves the DOD acquisition process toward the commercial models. The intent is to provide more flexibility to contractors in defining and implementing innovative and cost effective solutions to weapon system requirements. The five main features of this strategy are:

1. Performance based specifications that are incrementally verified throughout development

2. The discipline to organize the required development, design and fabrication information consistently at all levels of the requirements allocation hierarchy (Specification tree) so that tractability is maintained throughout the weapon system cycle

3. Contractor control of the development and detailed design to the maximum extent feasible.

4. Contractor use of their own company/facility processes

5. Enhanced opportunities for incorporation of advanced technology

In the execution of Performance Based Acquisition, it is imperative that seven basic principles be recognized and understood:

1. A complete technical data package that describes the products to be procured is necessary at all levels from top system level requirements down to the lowest reparable level. The fundamental content of this technical data package is the same regardless of who (the government or the contractor) controls it.

2. Flow down of the technical requirements to the lowest level of the supplier chain is essential and must be accomplished if the benefits of acquisition reform are to be realized.

3. Contracts must be written in a manner that encourage prime contractors to communicate with their suppliers in performance based terms.

4. The build-to and support packages will have a common technical basis because the support package is derived from the build-to package.

5. Implementation flexibility is critical. Business decisions based upon the potential for increased contractor and government efficiency, cost benefits gained from enhanced competition and continued support in the event that supplier(s) no longer conduct business with the DOD.

6. The ability of DOD to mandate the use of military specifications and standards on its contractors has been severely restricted by acquisition reform. These documents have been used in the past (either by reference in the Statement of Work or in specifications) to convey requirements for products and/or their verification. The essential performance attributes of these documents will need to be incorporated in the appropriate specifications.

7. Discussions on who controls which portions of the technical data packages at each level of the specification tree will be driven by program/technical risk, contractor capability and business strategies.

Contractors exhibiting the capability for self-governance will be given greater authority and responsibility than those who do not.

**Technical Manuals**

The Program Manager is responsible for managing the total resources for the acquisition of equipment used by the military. This management task is challenging and requires the PM to establish an organization of personnel with expertise in many functional areas. A key member of this management team is the technical manual manager. Depending on the military department, the job title may be technical order manager, technical writer, technical manual manager or logistics manager. For the purpose of this paper, the person performing this responsibility will be identified as the technical manual (TM) manager.

The TM manager needs to be identified in the Conceptual and Technology Development phase of a program so that TM plans are developed concurrently with the total program planning effort and are compatible with the overall program objectives. During the early planning phases, the TM manager must understand the users total requirements and establish points of contact with the operating and supporting commands, training command, and other activities that interest in the development of the technical manuals. Establishing these points allows the TM manager to discuss and coordinate matters such as:

1. Dissemination of any program manager's guidance and discussion of strategy for TM development.

2. Planning for initial pre-contract documentation to include coordination of the data call and preparation of the contract statement of work (SOW) or Statement of Objectives (SOO).

3. Discussion of appropriate support documentation to include tailoring of appropriate specifications and standards, Data Item Description (DIDs), Federal Acquisition Regulation (FAR) clauses and other contractual documentation.

4. Planning for TM conferences, in-process reviews and other joint efforts relative to the program.

5. Establishing quality control procedures and coordinating with the contractor on how TM validation and changes will be managed by the prime contractor and vendors.

**Data Call**

Once the TM manager has established the initial coordination with the appropriate agencies their efforts should then be directed towards the data call. A Data Management Officer (DMO) will generally prepare a data call letter to all interested parties requesting their data needs. The TM manager coordinates with the DMO to ensure the data call letter is forwarded to organizations having TM requirements. Under Acquisition Reform, the TM manager should be coordinating the TM requirements through and as a part of an Integrated Product Team (IPT). The TM manager must ensure that all support documentation is tailored to meet the specific requirements of the weapon system or hardware. Proper tailoring will reduce confusion and will minimize time delays and cost

**Quality Assurance**

Establishing an effective quality assurance program is important in the development of technical manuals. While both the program office and the contractor must cooperate in implementing an effective quality assurance program, the contractor has prime responsibility for incorporating quality assurance into the development of technical manuals. In the development of a quality assurance programs plan, the contractor should address the following areas:

- Procedures describing inspection, discrepancy correction, and record keeping.

- A plan detailing the contractor's validation effort.

- Provisions for support of the Government TM verification effort.

**Team Coordination**

The operating, training, and support activities are excellent sources for information, particularly in identifying types of technical manuals to be developed, identifying support equipment requirements, establishing time schedules for the development of TMs, and ensuring availability of qualified personnel to attend in-process reviews. The training organizations will be vitally interested in submitting their input, particularly if the new system will introduce new technology that

will require training of personnel. Test and evaluation organizations and Defense Contract Management Agency personnel can provide the expertise required to effectively monitor contractor validation, supervise the verification effort, and conduct in-process reviews. The weapon systems of today are too complex for any one person or office to possess the expertise required to manage the total acquisition process. The TM manager must coordinate and seek assistance from such organizations as mentioned above.

**Role of Contracting Officer**

With the increase in volume and cost of technical data, contracting officers will have to place greater priority to the acquisition of data and be more responsive to functional manager's efforts in managing data products. The contracting office can play a significant role in assisting the TM manager by coordinating pre-award surveys at contractor facilities, identification of proper FAR clauses to support data acquisition, and ensuring that information forwarded to potential bidders adequately identifies the requirements for technical data.

**Coordinating Pre-award Survey:**

The more familiar a TM manager is with a contractor's capabilities to prepare and deliver technical data, the better job that manager will do in data acquisition. One of the best vehicles available is the pre-award survey, especially if it is a new contractor that has never prepared technical data to government specifications. Information that is important for a TM manager to know about a potential contractor is:

- Will the contractor have a permanent staff that develops and manages technical publications? If so, what is their experience and proficiency level. What other contracts have they worked that required preparation of technical data?

- Does the contractor have internal operation procedures that address the development and management of technical manuals? This would include keeping the data current and processing changes. Does the contractor's in-house procedures support DOD requirements?

- How does the contractor plan to coordinate and manage data requirements prepared by subcontractors and vendors?

- Does the contractor have procedures for marking and managing data rights and proprietary data?

- Does the contractor have the capability to automate the data in accordance with current Integrated Data Environment policy in DoD 5000.2-R?

**Federal Acquisition Regulations (FAR)**

Most contracting officers are generally not qualified to make decisions on the technical accuracy of data submitted in support of each of the functional areas. Therefore, the TM manager must be familiar with those sections of the Federal Acquisition Regulation (FAR) pertaining to data. Sections that should be reviewed for applicability are: Rights in Technical Data, Deferred Delivery of Technical Data, Deferred Ordering of Technical Data, and Warranty of Technical Data. TM manager should be involved in determining the appropriateness of the inclusion or exclusion of these clauses in the acquisition contract.

**Integrated Data Environment (IDE**)

The preparation and management of technical data has always been a major concern to DOD procuring activities. The design and development of new systems has always required large volumes of data to document the design, development, testing, operation and maintenance of the system. Traditionally, the media for documenting this type of information has been paper in the form of technical manuals, engineering drawings, specifications, test reports and other types of technical documentation. DOD depends on these documents to effectively deploy, operate, and maintain systems in the field.

In 1985, William Howard Taft IV, then Deputy Secretary of Defense, Directed DOD procurement activities to initiate procedures that would enable the exchange of fully digital data between DOD and industry contractors. The CALS program office was then organized to coordinate and assist the effort of DOD activities and industry. Acquiring data in digitized, electronic form reduces acquisition cost, expedites delivery of technical data to users, accommodates faster turn around for updates and changes of technical data, improves maintenance, and reduces support costs. CALS has now evolved to be known as the IDE.

Currently DoD 5000.2-R states the following:

> *"DoD policy requires the maximum use of digital operations throughout acquisition and the entire system life cycle. The acquisition strategy shall summarize how the PM will establish a cost-effective data management system and appropriate digital environment that shall allow every activity involved with the program, throughout its total life-cycle, to digitally exchange data. The IDE shall keep pace with evolving automation technologies, and shall use existing infrastructure (e.g., Internet) to the maximum extent practicable. The following shall also apply:*
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> *PMs shall establish a data management system and appropriate digital environment to allow every activity involved with the program to cost effectively create, store,*

*access, manipulate, and/or exchange data digitally. The IDE shall, at a minimum, meet the data management needs of the support strategy, system engineering process, modeling and simulation activities, T&E strategy, and periodic reporting requirements. The design shall allow ready access to anyone with a need-to-know (as determined by the PM), a technologically "current" personal computer, and Internet access through a Commercial, Off-the-Shelf (COTS) browser.*

*Solicitations shall require specific proposals for an IDE solution to support acquisition and operational support activities. Unless analysis verifies prohibitive cost or time delays or a potential compromise of national security, new contracts shall require the contractor to provide on-line access to programmatic and technical data. Contracts shall give preference to on-line access (versus data exchange) through a contractor information service or an existing IT infrastructure. Contracts shall specify the required functionality and data standards. The data formats of independent standards-setting organizations shall take precedence over all other formats. The issue of data formats and transaction sets shall be independent of the method of access or delivery."*

**Conclusion**

The responsibility for planning and managing the acquisition of hundreds of technical manuals that are in various stages of development during a program cycle is a gigantic task and one that requires management attention at all levels. Accomplishing these tasks will require a team effort between the system program office, operating command, supporting commands, and the contractor(s). Early planning and effective coordination must be the common thread that binds the development of technical manuals to ensure that the Program Office will obtain accurate, economical, and timely technical manuals that meet the user's requirements.