Statement of Work (SOW)

Overview.

Large and complex systems require that detailed work requirements need to be written containing "what is to be done" in definitive and precise language and terminology.

The purpose of a SOW is to detail the work requirements for projects and programs that have deliverables and/or services performed.

There are five types of SOW (one for each phase of the acquisition life cycle) during the system life cycle as identified by the Systems Engineering Management Plan (SEMP).

The SOW covers the work requirements and in conjunction with applicable performance/design requirements contained in specifications is used for contractual agreements.

Any proposed supplier can submit a proposal based on his perception of the needs as defined by the SOW. Thus enabling a fair price for goods and/or services to be provided.

The objective of this page is to provide information and insight for managers and engineers to provide a consistent, orderly, and complete description of work required.

NOTE: Most of this information is based on MIL-STD-245 and if cited shall take precedence, the use of this page is therefore only a guide-line in these cases and highly recommended for use in defining what program plans need to be implemented.

 Additional SOW preparation guidance see WISE

Purpose.

Most contracts for large and complex systems will require a SOW which will form the basis for successful performance by the contractor or developer.

A well-written SOW will allow more opportunity for potential offerers to compete for contracts and serves as the standard for determining if the supplier meets the stated performance requirements.

General description.

A SOW should specify in clear, understandable terms the work to be done in developing or producing the goods to be delivered or services to be performed by a contractor.

A SOW defines (either directly or by reference to other documents) all non-specification requirements for contractor effort.

Qualitative and quantitative design and performance requirements shall be contained in specifications or standards. Such specifications are typically referenced in the SOW but the specific qualitative or quantitative technical requirements shall not be spelled out in the SOW. For example; a SOW will task a contractor to establish, implement, and control specific speciality programs (via a SEMP), i.e., Maintainability, Reliability, Configuration Management, Software Development, etc. Management requirements in terms of results needed rather than "how to manage" procedures for achieving those results.

When a SOW becomes contractual it shall be used as a standard for measuring contractor performance.

Format.

The documentation requirements for the SOW will be in accordance with the 'Documentation Standard' as identified in the PMS.

The standard layout for a SOW shall be as follows:

- 1. SCOPE

- 2. APPLICABLE DOCUMENTS

- 3. REQUIREMENTS

- 4. NOTES

Section 1

SCOPE

Briefly states what the SOW does and does not cover. The 'scope' paragraph shall define the breadth and limitations of the work to be done (not how to do it). The use of an introduction, background, or both is preferred.

Background information should be limited to only that information necessary to acquaint the proposer with the basic acquisition requirement.

The following shall not be included in the 'scope' section:

- Directions to the contractor to perform work tasks

- Specifications of data requirements

- Description of deliverable products

Section 2.

APPLICABLE DOCUMENTS

Section 2 shall contain a list of all documents identified in Section 3 and as containing requirements.
This section will be initially left blank and only updated when a document (specification or standard) has been justified for inclusion. Only documents invoked by specific reference in Section 3 must be identified and listed. When invoked the application shall be tailored to meet the minimal needs. Reference to guidance documentation should be avoided.
Improper document referencing has been one of the major factors in costs since total compliance with a document listed in Section 2 is implied unless Section 3 states otherwise.

Section 3.

REQUIREMENTS

The specific work tasks shall be identified in Section 3. These tasks, developed to satisfy program/project needs, are essentially the work requirements for the contractor.
A well-written SOW shall:

1. Specify requirements clearly to permit the acquirer and offerer(s) to estimate the probable cost and the offerer(s) to determine the levels of expertise, manpower, and other resources needed to accomplish the task.

2. States specific duties of the contractor in such a way that the contractor knows what is required and completes all tasks to the satisfaction of the contract.

3. Written so specifically that there is no question of whether the contractor is obligated to perform specific tasks.

4. References only the minimal specifications and standards pertinent to the task. Selectively invokes documents only to the extent required to satisfy the existing requirements.

5. Cites only the minimal applicable specification and standards, in whole or in part, and is tailored or scoped downward to limit costs.

6. Separates general information from direction so that background information and suggested procedures are clearly distinguishable from contractor responsibilities.

A list of do's and don'ts follows:

Do:

- Outline the required work effort using a WBS program;

- Select a competent team, with a team leader who is experienced in systems acquisition and SOW development;

- Explicitly define the tailored limitations of the standards and specifications cited;

- Identify explicitly the data items required on the relevant paragraph of the SOW;

- Exclude design control or hardware performance parameters.

- Specify that a contractor format is acceptable for the data product when it meets the required need;

- Require only minimum essential data and use the least intrusive means to obtain it;

- Educate personnel with respect to documentation preparation and acquisition streamlining;

- Give priority to commercial items when it meets the requirements;

- Give priority to commercial practices as a means of acquisition.

- Take notice of definition of work words.

Don'ts

- Order, describe, or discuss data to be delivered;

- Invoke, cite, or discuss the format or content of deliverable data items. However, they may be cross-referenced in a SOW;

- Specify technical proposal criteria or evaluation factors;

- Establish a delivery schedule;

- Specify design control parameters or performance of hardware or software, except when a system/subsystem specification is not provided;

- Impose on the contractor an acquirer format when a contractor format is acceptable;

- Over specify. Specify what is required and let the contractor find out the best method to fulfil the requirement;

- Invoke in-house management instructions;

- Use the SOW to establish or amend a specification;

- Invoke handbooks, service regulations, technical orders, or any other document that has not been written in accordance with the 'Documentation Standards'.

For example model text see SOW model text

Statement of Work Format. (SOW)

General.

1. SCOPE

Include here a statement about what this SOW covers. If applicable, provide some background information that will be helpful to clarify the needs of the procurement.

1.1 Background *Do not discuss any work tasks in section 1*

2. APPLICABLE DOCUMENTS

List here all documents invoked in the requirements section of the SOW by document identifier and title. These documents may include Standards, Specifications and other referenced documents needed to identify and clarify the work task or deliverable product.
Any document listed in the section must be invoked and tailored to meet the minimal needs of the planned procurement in the requirements section.

- 2.1 Specifications.

- 2.2 Standards.
  MIL-STD-499, MIL-STD-498, MIL-STD-961D, MIL-STD-1521B, others as necessary, etc.,

- 2.3 Other documents.

- 2.4 Availability of documents

3. REQUIREMENTS

1. *Detail the require tasks.*

The following provides an engineering example:

1. SCOPE

This statement of Work (SOW) defines the effort required for the design, engineering development, fabrication, and test of a prototype of the *project name* System for the Demonstration and Validation Phase. It includes the associated program management, human engineering, and logistic support planning requirements.

- ## 1.1 <u>Background</u>.

- The *name of program* program has been initiated to design, develop, produce, and deploy an improved *name of system* system that will fulfil the _____ requirements as specified in requirement No. . The System will replace the XYZ system.....

2. APPLICABLE DOCUMENTS

2.1 <u>Specifications</u>.

- *MIL-S-XXXXX, title, date.*

2.2 <u>Standards</u>.

- *MIL-STD-XXXXX title, date*
  DEF STAN XX-XX title, date
  etc.

2.3 <u>Other documents</u>.

- *document identifier - title - date*

2.4 <u>Industry/institutional documents</u>.

- *Document identifier - title - date*

2.5 <u>Availability of documents</u>.

- *Location of documents*

3. REQUIREMENTS

The arrangement of technical tasks and subtasks within the requirements section will be dictated by program (project) requirements. If a Work Breakdown Structure (WBS) is being used in the project, tasks must be organized in accordance with the WBS. Ensure that only minimal needs are tasked for the SOW or requirements.
The order of technical tasks and subtasks within this section will be determined by the program requirements. If a WBS is being used in the program, tasks should be arranged in accordance with that WBS.

Ensure that the scope of the program tasks meet only the minimal needs for the phase SOW or requirements.

3.1 General.

The developer shall design and develop a system that shall meet the requirements of the Performance Specification, in accordance with (IAW) the system engineering tasks described in section 3.1. and program management and control tasks described in section 3.3. The configuration and status of the design and contract shall be presented to the acquirer in two ways:

- Through formal design reviews, and

- 3 monthly progress reviews as described in section 3.1.7 and 3.3.1 respectively.

3.2 Detail tasks.

3.2.1 Systems engineering.

The developer shall implement a systems engineering management process in accordance with a 'Systems Engineering Management Plan' (SEMP) prepared to the instructions as described in MIL-STD-499B or an identified equivalent. The SEMP will define the necessary tasks and activities to be performed and shall include requirements analysis, functional analysis and allocation, and synthesis for the design of the system. The developer's system engineering process shall transform the requirements stipulated in the performance specification into a life cycle balanced set of products and process descriptions addressing the systems design, development, fabrication, test and evaluation, operational deployment, logistical support, personnel training, and final disposal. Where practical, system end-item requirements shall be met through the use of non-development items, when such products meet project needs, meet mission operational and environmental requirements, and are cost effective over the entire cycle of the project. The developer shall generate and maintain a requirements verification and decision matrix to provide an audit trail from requirements of the System Performance Specification to design implementation and verification, including key decisions to meet the requirements.

3.2.2 Systems analysis and control.

The developer shall identify and conduct trade studies, trade-off analyses, and cost-effectiveness analyses to ensure that a thorough and comprehensive set of options and alternatives is considered and analyzed for design, with consideration for all aspects of the system life cycle and all aspects of system life cycle cost. The level of detail of each study or analysis shall be commensurate with the cost, schedule, performance, and risk impacts.

3.2.3 Baseline generation.

The developer shall generate the system functional baseline(s) and each allocated and product baseline for the configuration items. The developer shall identify commercial-off-the-shelf (COTS) and non-developmental items (NDI), critical or long-lead items, and any acquirer provided items that are proposed as part of the design baselines.

3.2.4 Software design.

Software development shall be an integrated part of the system engineering effort. The developer shall conduct software development IAW MIL-STD-498.
All software shall be managed IAW a 'Software Development Plan' prepared IAW the product description (DID).

3.2.5 Concept of operations.

The developer shall develop, update, and maintain a concept of operations for the system that describes how the system would be operated. The developer shall identify effects of the concept of operations on the performance of the system, and the cadre who will operate the system.

3.2.6 Integrated logistics support (ILS).

The developer shall establish and document an ILS program as an integral part of its system engineering efforts. The ILS program shall address the developers proposed approach for providing total life cycle support from initial prototype design through final system disposal. The ILS program shall include the following elements:

- maintenance planning and supply support;

- design interfaces (human factors) and manpower;

- personnel and training;

- resource needs (computer resources, facilities, support, and test equipment);

- packaging, handling, storage, and transportation;

- quality assurance/quality control;

- technical documentation;

- data management;

- and, configuration management.

A CALS strategy shall be employed to enable the effective generation, exchange, management, and integration of digital technical information.

3.2.7 System safety.

The developer shall establish and maintain a system safety and environmental protection program and shall ensure that safety and environmental protection considerations are integral parts of the systems engineering efforts. The safety program shall address personnel and equipment concerns relative to the design, development, testing, use, maintenance, life cycle support and disposal of the system.

3.2.8 Design reviews.

The developer shall conduct design reviews, as defined in MIL-STD-1521B suitably modified to incorporate the requirements and products of MIL-STD-498, MIL-STD-499B, DEF STAN 05-57, etc. The developer shall commend specific streamlining of these design reviews to the acquirer.
See semp39.htm for more details

3.2.8.1 System requirements review.

The purpose of the SRR is to ensure that the system requirements have been completely and properly identified, to ensure that there is a mutual understanding between the developer and the acquirer regarding these requirements, and to review the system engineering process defined in the 'Systems Engineering Management Plan' that the developer shall use to develop the functional, allocated, and product baselines. At the SRR, the developer shall also describe how its technical concept is expected to meet these requirements, and shall identify the risks involved and how they will be managed.

3.2.8.2 System design review

The purpose of the SDR
3.2.8.3 <u>System design review.</u>
3.2.8.4 <u>Software specification review</u>.
3.2.8.5 <u>Preliminary design review.</u>
3.2.8.6 <u>Critical design review</u>.
3.2.8.7 <u>Test readiness review</u>.
3.2.8.8 <u>Functional configuration audit</u>
3.2.8.8 <u>Physical configuration audit</u>
3.2.8.9 <u>Formal qualification review</u>
3.2.8.10 <u>Production readiness review</u>

3.3 Program management.

The developer shall establish and maintain management operations IAW the following paragraphs. The use of Integrated Product and Process Development (IPPD) management approaches and the use of Integrated Product and Process Teams (IPPTs) is highly recommended. The contractor shall establish and maintain a 'Project Management System' that shall include the following areas:
Program planning and control;
Supplier control;
Configuration Management
Financial management;
Data management;
Risk management;
And other management area(s).

3.3.1 3 monthly meetings.
The developer shall conduct 3 monthly meetings with the acquirer. These meetings shall be approximately to 5 working days after the acquirer recieves the developers update to the Program Electronic Database described in section 3.2.
The meeting will provide the developer and acquirer an oppertunity to discuss any questions or issues identified in the electronic database or any recent changes to the program or configuration. These should be held using video conferencing as often as possible.
3.3.2 <u>Risk Assessment, mitigation, and management program</u>.

The developer shall establish and implement a risk management program that identifies, evaluates, and mitigates program risks from a technical, cost, and schedule perspective

3.3.3 <u>Life cycle cost (LCC) analysis, and control</u>.
The developer shall establish and maintain current a system life cycle cost estimate. A baseline LCC estimate shall be developed by the developer in conjunction with the system's functional baseline at SDR.
<u>Schedule development and control</u>.
The developer shall establish and maintain current a Program Master Schedule and a detailed schedule for development of the system up to the establishment of the production baseline.
<u>Performance management baseline management</u>.
The developer shall implement cost/schedule control procedures IAW the cost/schedule status report.

3.4 <u>Program electronic database</u>.

The developer shall establish and maintain current electronic database that will document all aspects of the program, including the system design, the developers system engineering efforts, and the developers program management effort. The developer shall maintain this electronic database in an accurate and timely fashion, updating it with all pertinent changes on at least a monthly basis, preferably more frequently when warranted by significant changes and additions. Ideally, the electronic database would be accessible by the acquirer in real-time. The purpose of this database is to facilitate and streamline the transfer of information between the developer and acquirer, and is intended to replace extensive generation and delivery of costly and time consuming reports and other paper products for the acquirer. It is the acquirer intent that the databases used to satisfy this statement of work requirement be the same databases that are used by the developer as part of his normal internal, corporate way of doing business. For example, if the developer provides its engineers with particular computer-aided design tools to generate and document the system design (specifications, drawings, etc.), then it is the acquirers desire that the acquirer be given access to the same tool(s) to review and assess the design, as opposed to having the developer generate additional documentation or additional electronic tools to accomplish the

same purpose.

TB Continued.

The contractor shall develop and implement a 'Project Management System' that clearly defines how the *XYZ system* is to be managed and controlled.
Add the relevant programs here.
NOTES: Tasks required depend on the phase, for example, the Engineering and Manufacturing phase will require the development of contract specifications, finalization of system specifications, implementation of Configuration Management and project (program plans), and the performance of cost, schedule, & performance trade-offs.
Specify explicit needs, leave nothing to the imagination.
For example [SOW terminology](#)

Terminology

Terminology used in SOW shall not contain ambiguous, non-definitive, terms.

Terminology should be consistent throughout the document.

Use the most common spelling of a word when it can be spelled in different ways.

Word usage.

Use of the words "support" and "engineering and technical services".

- support is an ambiguous term. Specify the specific type of support needed;

- The terms "engineering and technical services" encompass a broad area of expertise. SOWs must state minimal needs even if it means widening the scope of the work tasks. Include examples of the work to be performed if necessary;

- Loop-holes are probably the most frustrating problems in contracting as suppliers or inspectors go by the letter of the SOW in a legal sense. The author and reviewers at all levels of review have a responsibility to ensure that loopholes do not exist in the SOW.

Language style.

SOW requirements should be written in a language understandable to all potential offerers. Work requirements should be stated explicitly in a logical, chronological order, avoid words which allow for multiple interpretations. Use technical language sparingly with simple words predominating in concise sentences. Use "shall" whenever a provision is mandatory. "Will" expresses a declaration of purpose or intent; for example, "The vehicle will provide the power for the system". Use an active rather than a passive voice; for example, "The supplier shall establish a program" not "A program shall be established by the supplier".

Use verbs that identify work and task requirements, for example, analyze, audit, attend, control, etc., and answer the explicit question: "What are the work requirements?" When selecting the appropriate work word which properly expresses the degree of supplier

involvement, the SOW writer must explicitly define the total nature of the work requirement.

Avoid using "Any," "Either," "And/or," as these words imply that the supplier can make a choice, which may not be in accordance with the intent of the SOW. Do not use pronouns. Repeat the noun to avoid any misinterpretation. Terminology should be consistent throughout the SOW. When referring to a particular item, use the same phrase or word, particularly when referring to technical terms and items. Where words can be spelled in different ways, employ the most common spelling (specify a good dictionary containing the latest technical terms). Make every effort to avoid ambiguity, for example, in accordance with best commercial practice, in strict accordance with, workmanship to the highest quality, etc.

Spell out acronyms and abbreviations the first time it is used and put the abbreviated version in parentheses after the spelled-out phrases. This will define them for each subsequent use. Acronyms and abbreviations may be defined in the last section of a document or glossary.