Abstract: One of the most difficult tasks that purchasers face is converting user or internal customer needs to new specifications and requirements. For most, it’s easier said than done, while others simply dread the thought of constructing a Statement of Work. Failure to develop a properly defined scope of work, specification, or requirement may mean the solicitation will need to be abandoned and repeated with corrections. Purchasers who are involved in putting together specifications, requirements, or SOWs need to be aware that it is worth the investment, time, and effort to create a high quality outcome. Thus, it is important that purchasers understand the importance of good specifications and requirements, as well as their contractual and practical significance. This proceeding will offer you practical techniques, tools, and process methods for constructing effective specifications, requirements, and SOWs.

The Opportunity: Key areas of focus that will be discussed in this workshop are:
- Internal customer or user needs
- The importance of a scope of work
- SOWs and work requirements
- The Statement of Work
- Writing specifications and requirements

Objective: The objective is to provide purchasing and supply management professionals with practical techniques, tools, and process methods. Its focus will revolve around establishing adequate scopes of work, functional specifications, performance specifications, design specifications, and statements of work. Most requirements will almost always consist of some combination of specifications or Statement of work (SOW); therefore, the workshop will provide realistic guidelines, examples, and types of issues that should be considered when preparing a specification. Each purchase requires its own specification. Because of the variety of goods and services purchased it is not possible in this workshop to offer guidance on what should be included in each and every specification though general guidelines will be discussed.

Proceedings: Developing specifications and requirements by converting existing/new user or internal customer needs is the most critical part of the solicitation and contracting process. This will impact both your selection of a service contractor/provider and your contract formulation negotiation with the service contractor/provider. It should be kept in mind that a specification, apart from being a means of inviting offers, forms the basis of any future contract that might result from the offers received. A good specification will spell out clearly the obligations of the parties in the intended contract. In general, specifications communicate the user's requirements to the service contractor/provider. Therefore, specifications translate operational requirements into more technical language that tells the service
contractor/provider: 1) What we will consider an acceptable project/service, and 2) How we will determine if the project/service is acceptable.

Internal Customer or User Needs: Development of a specification should be seen as an evolutionary process involving close and continuous liaison between the internal customer or user, the specification writer, and the procurement staff. Because users are the ultimate beneficiaries of any procurement it is reasonable and appropriate that they should define their requirements in the form of a specification or SOW. However, if your organization has specialist technical writers or specification writers, they should write the specification in consultation with the internal customer and purchasing staff. When internal customers or users begin developing the specification, they should first discuss the requirement with the purchasing staff who will manage the purchase. Purchasing staff should be involved from the beginning for several reasons. First, the internal customer should consult purchasing staff throughout the development of the specification so it will save them both time and effort in the long run. Secondly, early purchasing involvement (EPI) will certainly help assure all concerned to get what they want when they want it. Last, and most importantly, is the realization that over 70% of potential cost savings occurs during the concept, design, or SOW stage—not after the solicitation.

Purchasing must drive efforts to understand internal customer needs and summarize business requirements as input for their global sourcing efforts. When preparing a specification you need to bear in mind that the success of the procurement relies on the specification being a true and accurate statement of requirements. Preparing a specification should thus be seen as a key part of the procurement planning process. Purchasing needs to understand what service attributes are relevant and significant. An attribute such as performance may surface for one user as a concern, and another as a value, so it is useful to direct elicitation of both values and concerns for any internal customer(s). It is important to focus on creating just what users want with the qualities they care about. The requirements team should nonetheless be alert to requirements that users take for granted or are not able to articulate directly. Understanding the internal customer’s objectives will help surface and establish the priorities of the requirement’s qualities, values, and concerns as well as functionality, of course. All of this needs to be translated by purchasing staff into a specification or a SOW.

The Importance of a Scope of Work: The scope of work’s importance lies in marrying the user’s or internal customer’s requirements with the various departmental, business and technical needs of the solicitation. Failure to develop a properly defined scope of work may mean the solicitation will need to be abandoned or repeated with corrections. The following steps are recommended: (1) Identify whether this is a new or existing requirement—generate alternatives and options or address any changes in the user’s or internal customer’s environment that affect the existing/given specification; (2) Determine if any mission critical factors affect this requirement; (3) Define “musts,” “required,” “wants,” and “needs”; (4) Find out if there are any specific performance metrics that need incorporation; (5) Document functional requirements and deliverables schedule; (6) Establish minimum standards and special requirements; (7) Verify the contractual period of performance or project timeline; and (8) Assess opportunities and risks.

If requirements are not fully known and verified, the solicitation process should start with the distribution of a Request for Information (RFI) to determine product, performance, and service
needs, as well as to get feedback on potential service contractors/providers. An RFI can generally be described as a miniature, succinct, high-level exploratory document that is designed to address a specific need and asks simple, direct questions to make clear that point. It is generally used for requirement exploration to ascertain whether you understand your organization’s needs and the work to be performed. It may be used to help purchasing staff determine, based on the responses, which service contractors/providers will be invited to submit a detailed RFP. The scope of work helps define the total effort and enhances the supplier’s understanding of the requirement such as:

- Project justification
- Project product or service
- Project deliverables
- Project objective(s)
- Assumptions/limitations

A definition for a scope of work is the work involved in the definition, design, and production of the components for a project’s or service’s deliverables and their assembly into a satisfactory working whole. It provides the service contractors/providers with a basis for estimating, but also serves to define the extent or scope of the anticipated effort and is a detailed description of the expectations of the contract. The information in the scope of work is the basis for the potential contractor/provider to know what is expected in order to determine a cost and for you and the contractor/provider to know the basis of accountability. Therefore, the recommended components for a scope of work are:

- Project background and objectives
- Project description
- Timetable or schedule
- Contractor or provider contract proposal
- Political or business environment
- Additional contractor or provider qualifications
- Additional contractual terms
- Contractor or provider liability
- Contractor or provider valuation criteria
- Administrative items or protocols

**SOWs and Work Requirements:** Generally, there are three classes of SOWS: functional specifications, performance specifications, and detail or design specifications. SOWs for products or services will rarely consist of pure functional, performance or design specifications. However, they will almost always consist of some combination of these generic types. Thus, it is important that their practical significance be understood.

The broadest type of work description is a functional specification. It usually requires only that the service contractor/provider achieve an end result. It does not specify the means of achieving that result, nor does it specify the processes or procedures which the contractor is required to use in performance. Here is an example: A requirement that hazardous materials be safely transported from point A to point B within a certain period of time. It places the greatest degree of risk upon the supplier but also gives the supplier the greatest degree of
freedom in determining how to achieve the end result. Thus, the contractor would be free to use air, rail, motor or any other type of transportation which would achieve the end result. Because it has little or no restrictive features, a functional specification should enable the greatest number of suppliers to compete for the buyer’s requirements. Since the contractor is free to choose the how and means of performance, the purchaser will likely be required to make cost/quality tradeoffs in evaluating proposals responding to functional requirements.

Next in the breadth of the types of SOWs is a performance specification. It differs from the functional specification in that it specifies many or all of the means by which the performance objective is to be achieved. Thus, in the example of transportation of hazardous materials, the performance specification would specify the means of transportation—whether by air, rail or otherwise. However, it might not specify the processes or methods to be used in transporting the materials by the prescribed method. Such a performance specification would permit the supplier to determine how to load the material and would place the risk, that the methods chosen which would achieve the end result, on the supplier.

The most restrictive of three SOWs is the detail or design specification. Not only is the means of performance specified, but the processes and procedures which must be used in performing the work are prescribed. Such specifications are also referred to as “build-to-print” specifications. Thus, in the example of transportation of hazardous materials, a design specification would require specific methods of loading, identifying, and other factors involved in the transportation. While the provider has little or no freedom to choose how to perform, it will not be liable if the methods specified do not achieve the end result. The purchaser warrants that its design specifications are suitable for the intended purpose.

Specifications are sometimes categorized as simple or complex. A simple specification defines the requirement in only a few words or pages. Simple specifications generally contain less information than complex ones. Complex specifications, on the other hand, are generally written or are one-off requirements, which themselves are complex. By their nature complex specifications tend to be lengthy documents. Complexity of the requirement (and length of document) has no bearing on the process of developing a specification.

The Statement of Work: A written description of the work requirement which describes the buyer’s requirements in performance terms. The Statement of Work (SOW) is a document that specifies, in a complete, precise, verifiable manner, the requirements, design, behavior, or other characteristics of a system, component, product, result, or service and, often, the procedures for determining whether these provisions have been satisfied. Generally, it is a document intended primarily for use in procurement, which describes the essential technical requirements for items, materials or services including the procedures for determining whether or not the requirements have been met.

A SOW is intended primarily for use in procurement so that clearly describes the essential technical requirements for items, materials, or services, including the criteria for determining that requirements have been met. The key factor in the success of any Performance Based Contracting is your ability to write a good Statement of Work requirement.
Writing a Statement of Work (requirement) or specification (spec) to make it “contractible” and “administrable” is a serious challenge to the cross-functional writing team. We recommend the following steps:

1. A review of the requirements and documents which authorize the production or project the service work it supports.
2. A review of the various documentation which apply to the type of purchase under consideration.
3. The identification of potential cost drivers and items subject to price volatility that may affect the statement of work or specification, as well as long-term commitments with the supplier or contractor.
4. The establishment of a preliminary work breakdown structure (WBS).
5. Identification of the functional departments needed to participate in statement of work or specification preparation and individuals' roles and responsibilities in a cross-functional team approach.
6. Description of work tasks in terms of data to be delivered. So called “work words” (active tense and avoiding any ambiguities) must be used for this purpose.
7. Specification of work tasks in performance terms. Specify what is required rather than how the work is to be established.

**Writing Specifications and Requirements:** Remember, you are “writing” specifications. The words you use will have a great deal of influence on the finished product. You are directing the work of a large number of people. Individuals may have differing opinions of what the document should be. If you use words that allow a broad range of interpretation, you may be in for an unpleasant surprise when it's time for inspection. Rewriting and editing are, literally, half the battle. When setting the timeline for your completion of the “spec” or SOW requirement, always try to add a week more than you anticipate. In our experience, something always comes up during the editing process: you've forgotten something, someone now wants to add a new element, details need to be filled in, etc. Since so many people from so many different areas of expertise will be reviewing this document, it is important that it is perfect: no spelling errors, no grammatical errors, no logic errors, and no mock up errors either. To make sure you catch everything, you typically end up printing out your SOW or spec many times and editing with a pen. Here are some basic things to do during the editing process:

1. **Check your table of contents.** This is an obvious one, but make sure your table of contents correlates exactly with what’s in your document.
2. **Edit from beginning to end at least three times after you think it is done.** Three times usually seems to do the trick—sometimes more is required, but never less. The first pass usually involves a lot of rewriting and renumbering, while the second pass is typically much lighter and may catch some of the obvious things you missed the first time. By the third time, you should be merely polishing and fixing very small details.
3. **Have someone else (a third party) proofread for you.** This is optional, but we always find that it helps a great deal to have someone else read it over for you (especially if that person has a strong command of the written word or has technical proficiency).
4. **Review it.** When you're writing a spec or requirement for your organization, you're going to have a series of people reviewing it to make sure they understand what's going to be built. Expect changes, and be prepared to give reasons for why everything is written as it is. By the time you take your spec or requirement to any internal customers/clients or colleagues, it should be airtight. Part of the review process is working with your team to come up with the best spec or requirement. If they feel it will not meet their needs as specified, then find out why and offer options as to what can be done to meet their needs.

5. **Avoid self-conflicting input.** Considering the size of the specifications or requirements for some purchases, it's no surprise that they sometimes specify or require things that are mutually exclusive. This type of error usually is made because the document is written in pieces by several people at widely separated times. When the specifications or requirements are put together, the conflicting paragraphs may be many pages apart. Finding the conflicts depends on the memory of the editor.

6. **Check for tiering specifications.** This term describes the way specifications cite other specifications, which cite other specifications, etc. For the practical specification or requirements writer, this has three consequences: When you cite a specification or standard, you may actually be citing a lengthy and voluminous chain of documents; some of them may be obsolete or changed or contradictory; and there may be requirements in them that you are not aware of and which may have such a bearing on your product or service that it could cause impossibility of performance.

7. **Identify paragraph cross-references which cite other paragraphs within the same document.** Such citations are highly prone to error. It is not unusual for a reviewer to find a reference either to the wrong paragraph or to a paragraph that doesn’t exist.

8. **Complete your final editing.** After the review, take your notes back to the computer and make your changes while they're still fresh in your mind. Be sure to change your mockups and all related text, double check to make sure your changes don't affect other functionality in specs or requirements (if it does, remedy it), and then double check your table of contents. Finally, prepare the functional spec or requirement for another review. Have everybody sign off on it once a consensus has been made.

**Conclusions:** In this workshop, we have attempted to provided you with information on how to structure the specification or SOW logically so that the requirements are fully defined. The overriding concern, however, is that the requirement be clearly defined and not open to misinterpretation. When you have decided on a structure, discuss it with users and procurement staff. Refine it until all topics and sections are arranged to best reflect the requirement. And as you write the specification be alert for changes to the structure which will improve understanding for the service provider or contractor. Do not be afraid to include sketches, diagrams, tables or statistical matter if these contribute to a better specification.