

▶ **Progressive Acquisition and the RUP Part V: Contracting Activities**

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In [Part I](#) of this series we discussed bridging the gap between the expectations of traditional procurement specialists and the realistic needs of software developers. In [Part II](#) we showed how traditional contracting could be tailored to meet these needs. [Part III](#) and [Part IV](#) covered contracting basics and the various considerations that govern contract formulation.



Now, in Part V, the final installment in this series, we will take a look at the activities involved in contracting and how they fit into the Rational Unified Process,® or RUP,® from the acquirer's perspective.¹ In the Appendix, we will provide a helpful glossary for preparing and administering progressive software acquisition contracts.

Progressive Acquisition Workflow

As you will recall, Part II described a two-level contracting approach consisting of a Head Contract and a series of Contract Work Orders (CWOs). Now we will look at some aspects of the primary contracting activities involved in developing the Head Contract and pursuing the CWOs. For readers who are familiar with RUP terminology, we can express the workflow, activities, and artifacts for the Head Contract and first CWO as shown in Figure 1.

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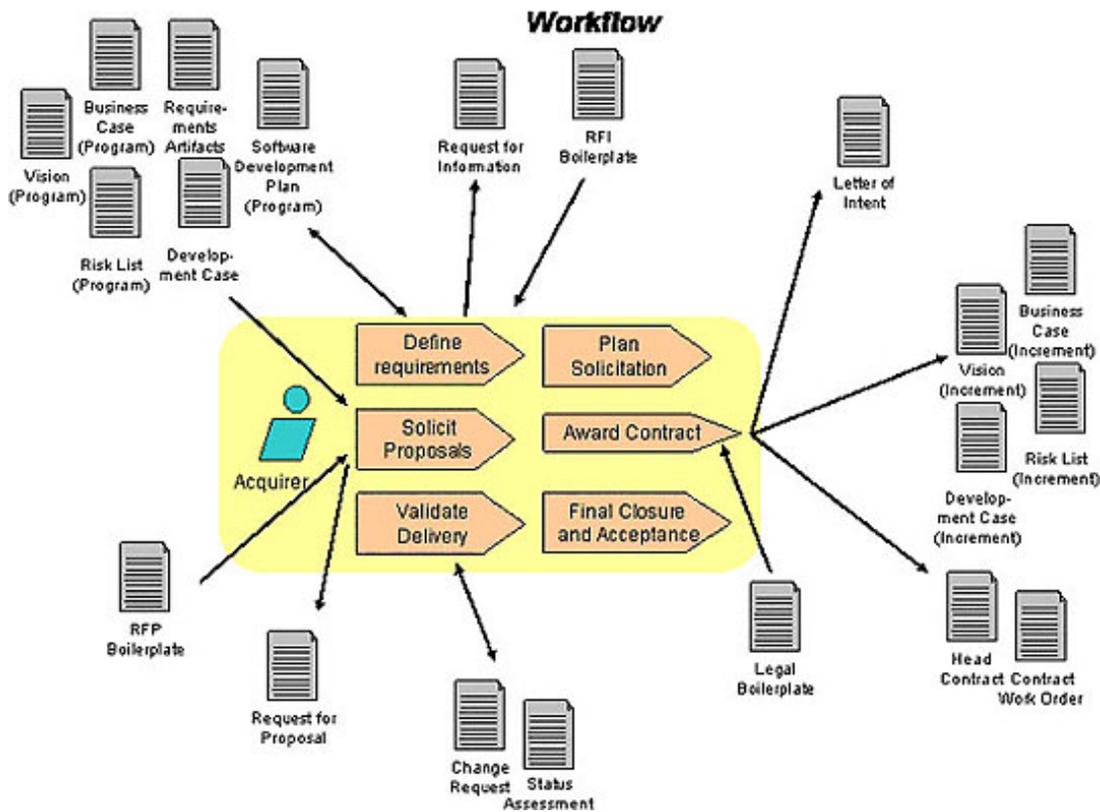


Figure 1: Workflow, Activities, and Artifacts for Head Contract and First Contract Work Order (CWO)

For subsequent CWOs and the remaining project life span, we can express these things in a similar view, but we would modify the figure to look like the one in Figure 2. Note that most of the work associated with the Head Contract has been eliminated, and this workflow focuses specifically on the next CWO.

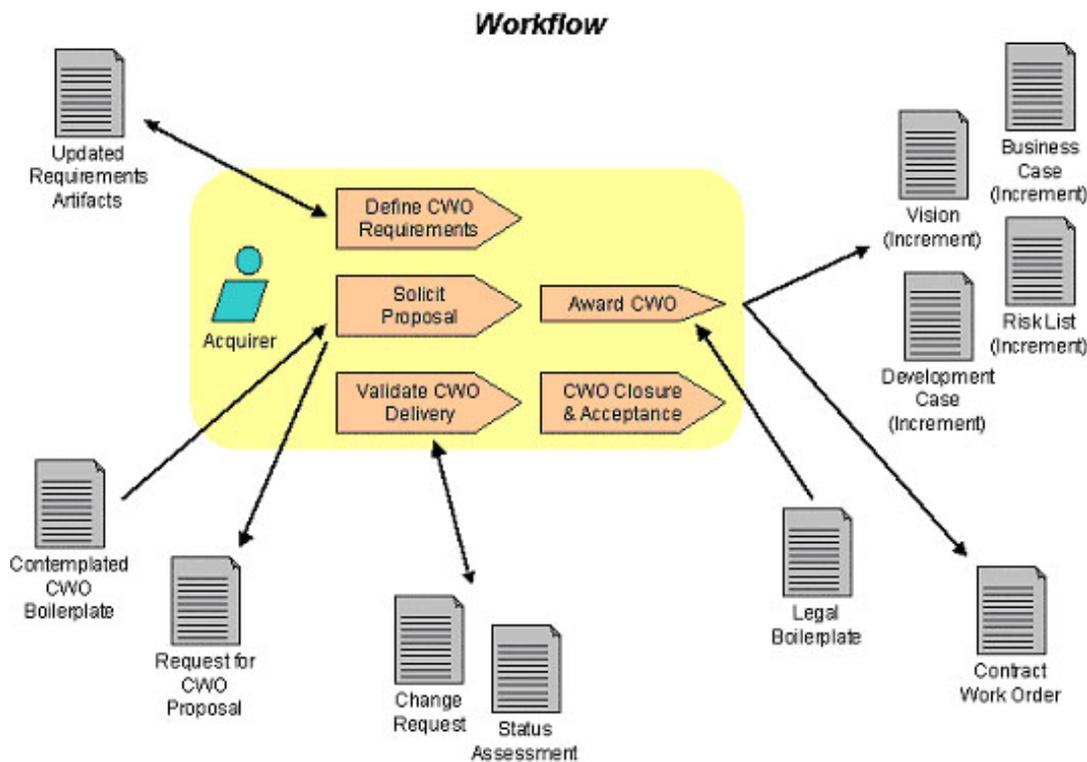


Figure 2: Workflow, Activities, and Artifacts for Subsequent Contract Work Orders

However, our real goal is to help technical professionals talk to procurement personnel, so let us now discuss these aspects of contracting in the traditional terms of the contracting industry rather than in RUP terms. Indeed, some terms are used quite differently in these different contexts.

Throughout our discussion, we will view these aspects of contracting from the acquirer's perspective.

Specifying the Work

In general contracting practice, the information that defines or specifies the work of the contract can take one of several forms:

- Functional Specification
- Performance Specification
- Technical Specification
- Some combination of all three types of specifications -- provided that the instructions are not in conflict.

Please note that we are using these terms as they are used in the contracting industry; the terms *functional*, *performance*, and *technical* have a different meaning within the context of the Rational Unified Process. To avoid confusion, and to understand the general application of these three terms, here is a brief explanation of each.

Functional Specification. This is a document that describes how users will employ the product and the functional capabilities it must have. It stimulates suppliers to propose creative responses, possibly at lower cost. The supplier has the risk of performance, but as an acquirer, you may find it difficult to establish or enforce acceptance criteria.

Performance Specification. This document specifies measurable capabilities the product must achieve in terms of operation (sometimes referred to as "form, fit, and function"). As an acquirer, you can spell out acceptance criteria as objective tests the product must satisfy; otherwise you will reject the product. The supplier carries the risk of performance.

Technical Specification. This document describes in detail the elements and commercial products contained within the final product for delivery -- in other words, the programming language, platform, configuration or architecture, methodology if applicable, and so forth. It should include charts, diagrams, and tables that specify how to construct the product and prescribe the tests and observations that you, as the acquirer, intend to conduct to verify or ensure compliance. In this case, you -- as the acquirer -- take the risk of performance. However, if you demand a fixed price contract, then the supplier assumes the cost risk.

On the face of it, this may seem like a winning solution and, indeed, in the

absence of contrary instructions it is the type most often chosen by procurement departments. Unfortunately, in the real world of software development, it is practically impossible to develop technical specifications with sufficient accuracy to enable a controversy-free basis for a fixed price contract. This is true even if you assume that the acquirers know exactly what they want, are technically knowledgeable, and are proficient in the RUP. For this reason, fixed-price contracts are also the type that lead most often to serious disagreements, unsettled claims, expensive legal actions -- and less than successful projects!

Selecting or Pre-Qualifying Suppliers

From the acquirer's perspective, it is always a good idea to seek more than one proposal because there are several benefits:

- Serious proposers will invest more effort into understanding your requirements and produce a better response.
- It is a useful way of collecting alternative ideas for solving the particular software problem (although this is frowned upon by the supplier community, which views it as "free" consulting).
- Competition sharpens both the mind and the pencil.

The criteria for selecting suppliers typically include:

- Technical capability relative to the required product.
- Management capability.
- Corporate financial strength.
- Previous positive experience with the supplier.

You should carefully avoid and strongly discourage less desirable selection criteria, especially biases based on proximity, nationality, ethnicity, or political persuasion.

Under certain conditions, you may decide to seek bids from one supplier only:

- There are few qualified suppliers for the work contemplated.
- Time pressures preclude a competitive proposal process.
- Quality rather than lowest cost is the overriding consideration.
- Your company has a long-standing and comfortable relationship with the chosen supplier.
- The work is highly confidential and can be assigned only to a trusted or legally bound supplier.

Making the Solicitation

The means by which an organization secures a bid for a software development project is typically a solicitation called a Request for Quotation, Request for Proposal, or Request for Tender (or Bid). Although the terms are often used interchangeably, the actual form and content for these solicitations varies widely across the contracting community. We can distinguish among them as follows.

Request for Quotation (RFQ). Use this to request a price or prices for standard products that can be purchased in varying quantities using a purchase order -- software licenses, for example. The purchase order issued to the supplier represents the offer, and it becomes the contract when the supplier accepts it.

Request for Proposal (RFP). Use this to solicit proposals for both price and technical approach, based on a performance specification included in the RFP. Then, base your selection of a supplier on pre-set evaluation criteria, and negotiate the work content, price, and terms. When you review the various suppliers' proposed technical solutions, it's important to ensure they have not introduced unwanted modifications to your intended technical approach. It is equally important to ensure that the technical approach they offer is acceptable for your particular working environment. Consequently, it may be necessary to negotiate the technical content and language in the final contract.

Request for Tender (RFT), Request for Bid (RFB). If you must insist on a firm price, rather than adopting the progressive acquisition approach we recommend, then make sure you have a healthy management reserve to cover legitimate changes! Request a firm-price tender from competitive bidders based on a technical specification. This form of solicitation demands the most thorough legal and technical specifications from both the acquirer and suppliers. Include the exact form of contract with the RFT or RFB; the offer (tender or bid) you accept will then become part of the contract. In evaluating responses, make sure that the respondents meet all the criteria you described in the request. Those that do not meet the published criteria should be rejected; otherwise, you will undermine the validity of your process and tarnish your reputation.

In the case of both RFPs and RFTs, you should plan on holding a "bidders' conference" to answer potential suppliers' questions and thus ensure everyone has a clear understanding of the requirements. If this raises issues that you overlooked in the original request, you can issue an "addendum" to the original requirements. In any case, you should formally document and distribute your answers so that they become part of the solicitation documents.

Evaluating Submissions

As the acquirer, your objective is to negotiate or select the solicitation response that best serves your requirements. So, in addition to criteria relative to the supplier's capability, you should consider applying the following criteria:

- Product technical performance relative to your functionality "musts"

and "wants."

- Supplier's schedule for performing the work.
- Cost, including both product lifecycle costs (i.e., potential in-service maintenance service costs), as well as the initial project acquisition costs.
- Demonstration of ability to provide a quality product.

Naturally, suppliers will be more responsive if they perceive your evaluation process as fair; including your evaluation criteria as part of the solicitation documentation helps to convey this message. The key is to conduct an open, honest, and logical appraisal.

Negotiating the Contract

Once you receive and evaluate proposals in response to a solicitation, you select the highest-ranking supplier or suppliers to develop a contract that best fulfills your needs. This is not an easy process; and especially for large contracts, you must conduct this process with the utmost ethical integrity. The following measures can help ensure high standards:

- Plan and prepare carefully for negotiations; get internal consensus on what you want as an organization.
- Conduct meetings formally and stick to an agenda.
- Follow up promptly and translate terms of agreement into writing as soon as possible.
- Conduct an in-house, post-negotiation review to capture lessons learned.

At the end this process you should arrive at a binding agreement that obligates the supplier to produce and deliver the product and you, the acquirer, to pay for it.

Administering the Contract and Controlling the Supplier's Work

In all but the simplest of agreements, the acquirer has certain technical responsibilities with respect to the contract. How well you perform these responsibilities will have a significant effect on the supplier's performance. Your overriding aim should be to maximize the likelihood of meeting all the contract objectives on both sides. Therefore, you should pay close attention to fulfilling the following responsibilities.

- Provide technical clarifications quickly.
- Respond as soon as possible to supplier requests for information, or reviews and approvals, relating to schematics, architecture, interface configurations, use of subcontractors, and so forth.
- Coordinate, or ensure coordination, among suppliers if the project

involves multiple contracts.

- Promptly exercise quality control acceptance, waiver, or rejection; if you reject something, quickly request correction of defects and certify progress when the correction is complete.
- Resolve disputes and/or claims early by forewarning the supplier of potential difficulties, initiating fact-finding activities for potential or registered disputes, and initiating a change order process if appropriate.
- Show interest by monitoring and tracking the supplier's progress and expediting roadblocks.
- Process changes expeditiously.
- Abide by the terms of the contract.
- Above all, pay progress payments promptly. Nothing discourages a supplier more than leaning on his 30-, 60-, or 90-day line of credit!

Contract Control

As we noted earlier, the type of contract you select largely determines the degree of control you have over the supplier's work; the firmer the price, the lower the acquirer's level of control over contract performance. Nevertheless, even in fixed-price situations you still have levers, short of extreme actions such as termination and lawsuits. These levers are:

- You can tie payments to acceptance or rejection of results; in other words, you can agree to pay upon acceptance but hold back payment if there are performance deficiencies. Your position will be stronger if you specify staged progress payments in the contract.
- You can submit change orders to the supplier for adding or subtracting work. Preferably, you and the supplier should agree on the validity of each change order as well as on a corresponding adjustment to the cost.
- You can issue a stop work order (under unilateral and exceptional conditions) provided that you justify the cause.

Of course, you must make sure to write these control procedures into the contract. You cannot expect to unilaterally assume these privileges after the contract is signed -- at least not without risk of legal action by the supplier!

Common Problems and Issues

Knowing some of the common problems and issues that arise in contract situations can help you avoid them. Here are four things to watch out for.

- **Flawed technical requirements, specifications, or descriptions.** If the product you specify turns out to be a practical impossibility (although the supplier will have a difficult time proving this), all or part of the contract may be invalidated.

- **Formal registration of disputes and/or the application of extreme remedies.** These typically cripple any work in progress. Therefore, make every effort to ensure that the work can continue while disagreements are being resolved.
- **Questions over warranty.** Most contracts include an express warranty clause. However, if the supplier is aware of the acquirer's purpose and use for the product, then there is also an implied warranty. Disputes arise when the product does not meet the acquirer's needs, and the supplier refuses to honor that implied warranty.
- **Inappropriate change processing.** Changes can be a source of dispute if:
 - Either the supplier or acquirer makes unilateral changes in breach of the contract or does not follow the change process agreed upon in the contract.
 - The acquirer (or one of the acquirer's agents), as a result of action or inaction, creates the need for a change that forces the supplier to perform in a manner that is more costly or difficult than that prescribed or contemplated in the original contract.

Terminating the Contract

Under normal circumstances, the acquirer closes the contract by issuing a final acceptance -- and paying the bill -- once the supplier has performed all the specified work.

Under certain circumstances, however, you might want to or have to terminate the contract:

- By mutual agreement -- because you want to replace the contract with another in light of new information, corporate changes, or a condition specified in the original contract.
- Because of mutual frustration -- if the work proves impossible to perform or because of radically altered circumstances.
- Because of legal requirements -- if the supplier files for bankruptcy, for example.
- For breach of an essential contractual term -- a material breach on the part of one party may discharge the other from any further obligations.

Understand Progressive Acquisition, but Work with Experts

In this five-part series on progressive acquisition, we have given you a lot to digest, but do not be intimidated. If you have a knowledgeable and sympathetic procurement and legal staff, they will take care of most of it. Your job is, first, to be aware of the advantages that progressive

acquisition offers and how it works so that you can advocate for this approach, whether you are on the supply or the acquisition side. In addition, if you are aware of the various contractual requirements and issues that we have identified, you can ensure that your solicitation and contract documentation are complete and provide maximum risk protection for you, whether you are acting as an acquirer or a supplier. On the acquisition side, that includes specifying how you want the workflow to unfold and how you want it administered.

The basic concept to get across to your procurement and legal staff is the idea of establishing a Head Contract that encompasses the essence of the project venture and then creating a series of CWOs. If you issue the first CWO along with the Head Contract, it can lay a foundation with detailed requirements and possibly business modeling. Then, based on the results of this work, you can issue subsequent CWOs for Elaboration, Construction, and Transition with a much higher degree of certainty. This will be true for both technical content -- that is, functionality -- as well as cost and schedule parameters. In short, this approach yields a higher degree of control, certainty of outcome, and likelihood of product success.

Appendix: Glossary of Terms for Progressive Acquisition

As a project manager, you have probably found that arriving at common definitions for the terminology used in software development projects can be problematic. It becomes even more so when people of different backgrounds are involved. And the challenge is even greater when you are introducing a new discipline, such as progressive acquisition, to contract procurement and legal professionals. Here are some definitions that you can use as a starting point for promoting a common understanding of progressive acquisition.

Acquirer -- Also known as the purchaser or buyer. An organization that acquires or procures a system, software, or software service from a supplier.

Acquisition -- The process of obtaining a system, software product, or software service through contract. Also known as buying, contracting, procurement, or purchasing. Note that acquisition is not restricted to obtaining standard, "off-the-shelf" software.

Agreement, Legal Agreement -- A legal document setting out the terms of a contract between two parties.

Bid -- See **Offer**.

Change Order (CO) -- A formal document issued by the organization's contracting officer, directing the contractor to make a change that is specified in the governing contract as permissible, even without the contractor's consent.

Contemplated Contract Work Order -- A proposed **Contract Work Order (CWO)** issued by the acquirer with a view to initiating and

negotiating, if necessary, the technological content of a specific project phase and obtaining the supplier's price for that part of the work.

Contract -- A document that represents a binding agreement between two parties, enforceable by law, for the supply of a software service or the development, production, operation, and/or maintenance of a software product. In contract law, the most common terms used to designate the parties to a contract are "buyer" and "seller."

Contract Work Order (CWO) -- A short-term contract defining specific deliverables. Multiple CWOs are specifically linked to a longer-term **Head Contract**.

Contracting Officer -- An individual with an official position within the acquiring organization and with the organizational authority to conduct the acquisition process.

Contractor -- See **Supplier**.

COTS Software -- Customizable, off-the-shelf software.

Developer Organization -- An organization that performs software development activities, including requirements analysis, design, testing through to acceptance, during the software life cycle process.

Evaluation -- A systematic determination of the extent to which a product or part of a product meets its specific criteria.

Evaluator - A person who conducts an evaluation.

Head Contract -- A longer-term contract that contains the basic terms of the supplier-acquirer relationship, such as payment cycles. The Head Contract is formulated before work begins on the project and is then linked to a number of **Contract Work Orders (CWOs)** specifying a series of deliverables to the client. These are formulated in conjunction with specific milestones, as the work progresses.

Increment -- A simple term used to refer to the deliverables covered by a specific **Contract Work Order (CWO)**. Each increment evolves the existing functionality as necessary and adds new value to the product under development.

Monitoring -- The process of examining the status of activities that are the responsibility of a performing organization (supplier) to determine progress toward product delivery.

Offer -- Also called a *tender*, *bid*, *proposal*, or *quotation*. A document prepared by a supplier that responds to a solicitation. If accepted, the offer binds the supplier to the terms of the resulting contract. However, *quotation* sometimes refers to an approximate estimate rather than a firm price. Note that an acquirer can also make an offer in response to a supplier's offer; this is usually termed a *counter offer*.

Procurement -- This refers to all stages involved in the process of acquiring supplies or services, beginning with the determination of a need for supplies or services and ending with contract completion or closeout.

Progressive Acquisition (PA) -- A strategy to acquire a large and complex software system, the specifications for which will predictably change during the development lifecycle. The objective of PA is to minimize many of the risks for both parties associated with such projects. The final system is realized through a series of operational increments that advance the system capability.

Project Director -- Also known as the project owner, owner's representative, or project sponsor. The individual in the acquiring organization who has authority and responsibility for directing the project -- and the business process that the new product will support. The project director provides overall direction to the supplier's project manager within the terms of the governing contract.

Project Manager -- The person responsible for the project management process -- in other words, for executing the project work day by day. In practice this is not a discrete responsibility, because often both the acquirer and the supplier have their own project managers. Ideally, the person responsible for the project within the acquirer's organization should have the title *project director*, while the equivalent position in the supplier's organization should be called *project manager*.

Proposal -- See **Offer**.

Purchase Order (PO) -- A formal document issued by the acquirer to a supplier that commits the organization to the purchase according to specified terms and conditions. A PO becomes a contract when accepted by the supplier but typically contains much less legal language than a formal contract. Generally, a PO is used only for the acquisition of "off-the-shelf" products, or if the work to be done is of a minor nature; most companies place limits on the cost of work that can be performed under a PO. A PO is different from a change order, although it may be modified to double as a change order.

Purchaser -- See **Acquirer**.

Quotation -- See **Offer**.

Request for Information (RFI) -- A formal document prepared by the acquirer and presented in the marketplace, typically to elicit "expressions of interest," from suppliers that have the capacity, capability, and availability to undertake and bid on, or tender for, work described in the request. The work description is typically a preliminary version of an eventual request for proposal.

Request for Proposal (RFP) -- A formal solicitation prepared by the acquirer to elicit proposals from potential suppliers. An RFP generally consists of a solicitation letter, instructions to suppliers, evaluation criteria, a statement of requirements, and/or a product performance specification. Selection of the supporting technology for the product may be left to the

supplier.

Request for Quotation (RFQ) -- A formal solicitation similar to an RFP but commonly used for simplified acquisition procedures. An RFQ is appropriate for acquiring a standard "off-the-shelf" item that may be purchased in varying quantities (e.g., software licenses) and requires little or no customization. May also be used if the work to be done is of a minor nature. The corresponding contract document is a **Purchase Order (PO)**.

Request for Tender, Request for Bid (RFT, RFB) -- Also known as an invitation to tender, or tender invitation. A formal solicitation prepared by the acquirer to obtain firm prices from potential product suppliers for a product based on a technical specification. An RFT or RFB typically consists of a letter of invitation, instructions to bidders (suppliers), a specification about the form of contract (the accepted offer becomes part of the contract), a system specification and/or statement of work, and possibly other technical documentation. This form of solicitation demands the most thorough legal and technical specifications from both acquirer and supplier. The supplier is selected on the basis of best price.

Scope, Contract Scope -- A document used by the acquirer to describe the product to be delivered under the contract, along with the product's attributes. These may include such considerations as functionality, performance, quality, operability, maintainability, and so on.

Seller -- See **Supplier**.

Solicitation -- The process of issuing a document requesting submission of an offer, quote, or information. *Solicitation* may also refer to the document itself.

Statement of Work (SOW) -- A document used by the acquirer to describe and specify the tasks to be performed by the supplier under the terms of the contract.

Subcontract -- A contract between the prime contractor and another supplier. Whereas a *subcontract* is also a *contract* in the legal sense, a contract is not a subcontract unless there is a "main" or **Head Contract** in place. That is, unless there is a contract between the original acquirer and a supplier. Even though an acquirer may parcel out separate pieces of work in a project, the use of the term *subcontract* in this context is incorrect.

Supplemental Agreement -- A document that sets out terms to modify an existing contract, reached by mutual agreement between the acquirer and supplier. Generally used for changes that fall outside the contract's change provisions. The Supplemental Agreement must cover both the work to be done and the price to be paid.

Supplier -- Also known as the *contractor* or *seller*. Any organization, including contractors and consultants, that supplies services or products to the acquirer.

Tender -- See **Offer**.

User (End User) -- The individual or group who will use the system when it is deployed in the intended environment. Note that users do not necessarily have the same interests as official acquirers, and their specific areas of interest -- or indeed their involvement -- are not always spelled out in the contract. Failure to involve end-users may lead to poor acceptance of the product and consequently a less-than-successful project.



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