12

PROJECT PROCUREMENT MANAGEMENT

Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team. Project Procurement Management includes the management and control processes required to develop and administer agreements such as contracts, purchase orders, memoranda of agreements (MOAs), or internal service level agreements (SLAs). The personnel authorized to procure the goods and/or services required for the project may be members of the project team, management, or part of the organization's purchasing department if applicable.

Project Procurement Management processes include the following:

12.1 Plan Procurement Management—The process of documenting project procurement decisions, specifying the approach, and identifying potential sellers.

12.2 Conduct Procurements—The process of obtaining seller responses, selecting a seller, and awarding a contract.

12.3 Control Procurements—The process of managing procurement relationships, monitoring contract performance, making changes and corrections as appropriate, and closing out contracts.

The procurement processes are presented as discrete processes with defined interfaces. In practice, procurement processes can be complex and can interact with each other and with processes in other Knowledge Areas in ways that cannot be completely detailed in the *PMBOK® Guide.* The processes described in this section are written from the viewpoint where goods or services are obtained from outside of the project.

Figure 12-1 provides an overview of the Project Procurement Management processes. The Project Procurement Management processes are presented as discrete processes with defined interfaces while, in practice, they overlap and interact in ways that cannot be completely detailed in the *PMBOK® Guide.*

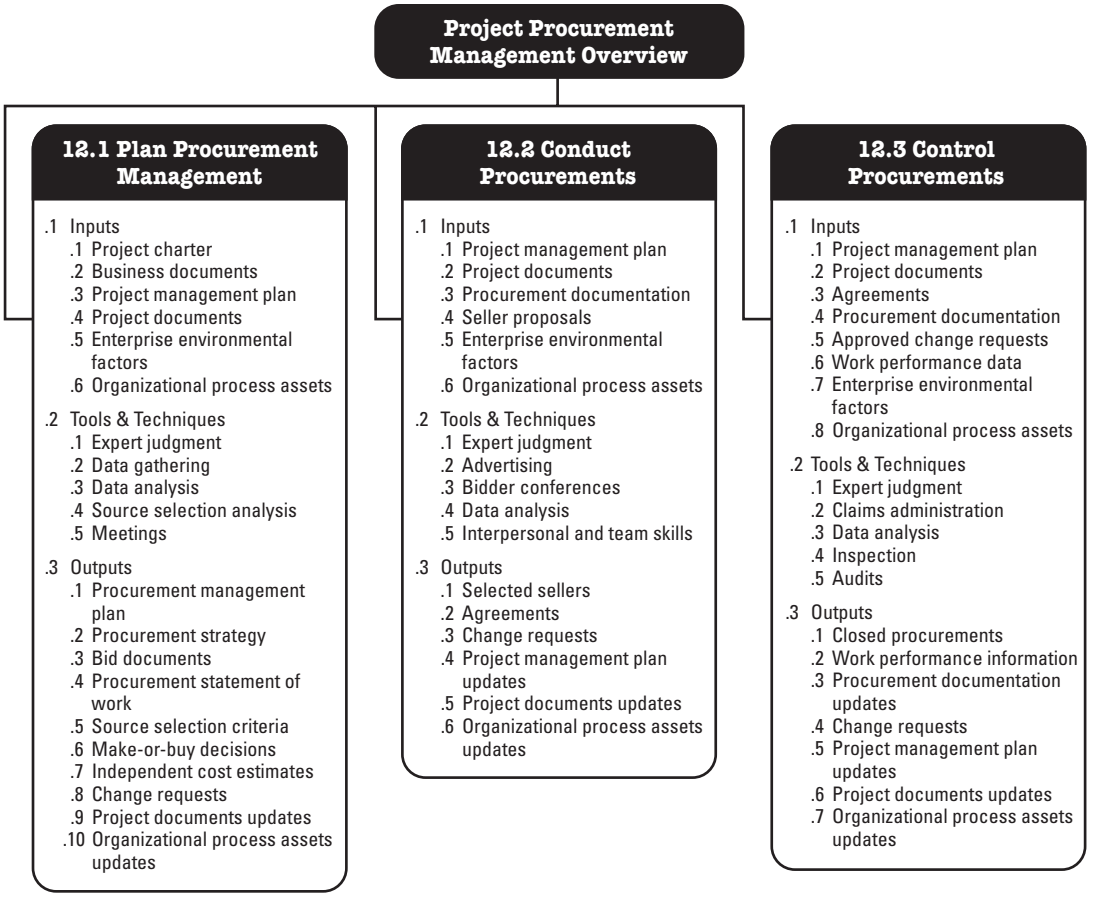

Figure 12-1. Project Procurement Management Overview

KEY CONCEPTS FOR PROJECT PROCUREMENT MANAGEMENT

More than most other project management processes, there can be significant legal obligations and penalties tied to the procurement process. The project manager does not have to be a trained expert in procurement management laws and regulations but should be familiar enough with the procurement process to make intelligent decisions regarding contracts and contractual relationships. The project manager is typically not authorized to sign legal agreements binding the organization; this is reserved for those who have the authority to do so.

The Project Procurement Management processes involve agreements that describe the relationship between two parties—a buyer and a seller. Agreements can be as simple as the purchase of a defined quantity of labor hours at a specified labor rate, or they can be as complex as multiyear international construction contracts. The contracting approach and the contract itself should reflect the simplicity or complexity of the deliverables or required effort and should be written in a manner that complies with local, national, and international laws regarding contracts.

A contract should clearly state the deliverables and results expected, including any knowledge transfer from the seller to the buyer. Anything not in the contract cannot be legally enforced. When working internationally, project managers should keep in mind the effect that culture and local law have upon contracts and their enforceability, no matter how clearly a contract is written.

A purchasing contract includes terms and conditions and may incorporate other buyer specifics as to what the seller is to perform or provide. It is the project management team's responsibility to make certain that all procurements meet the specific needs of the project while working with the procurement office to ensure organizational procurement policies are followed. Depending on the application area, an agreement can be a contract, an SLA, an understanding, an MOA, or a purchase order.

Most organizations document policies and procedures specifically defining procurement rules and specifying who has authority to sign and administer such agreements on behalf of the organization. Across the world, organizations use different names for departments or divisions that deal with procurement, such as purchasing, contracting, procurement, or acquisitions; however, the responsibilities are likely to be similar.

Although all project documents may be subject to some form of review and approval, the legally binding nature of a contract means it will be subjected to a more extensive approval process, often involving the legal department. In all cases, the primary focus of the review and approval process is to ensure that the contract adequately describes the products, services, or results that the seller is agreeing to provide, while being in compliance with the laws and regulations regarding procurements. These sections are often separate appendices or annexes, allowing standardized legal contract language to be used.

A complex project may involve managing multiple contracts simultaneously or in sequence. In such cases, each contract life cycle may begin and end during any phase of the project life cycle. The buyer-seller relationship may exist at many levels on any one project, and between organizations internal to and external to the acquiring organization.

Depending on the application area, the seller may be identified as a contractor, vendor, service provider, or supplier. The buyer may be the owner of the final product, a subcontractor, the acquiring organization, a service requestor, or the purchaser. The seller can be viewed during the contract life cycle first as a bidder, then as the selected source, and then as the contracted supplier or vendor.

The winning bidder may manage the work as a project. In such cases:

- The buyer becomes the customer to subcontractors, suppliers, and service providers and is therefore a key project stakeholder from the seller's perspective.
- The seller's project management team may be concerned with all the processes involved in performing the work or providing the services.
- Terms and conditions of the contract and the procurement statement of work (SOW) become key inputs to many of the seller's management processes. The contract can actually contain the inputs (e.g., major deliverables, key milestones, cost objectives) or it can limit the project team's options (for example, buyer approval of staffing decisions is often required on IT integration projects). The procurement SOW may have other names, such as the technical statement of work.
- The seller itself may become a buyer of lower-tiered products, services, and materials from subcontractors and suppliers.

In this section, it is assumed that the buyer of an item for the project is assigned to the project team and/or is part of the larger organization. The seller is assumed to be providing services and/or materials to the project and is usually outside the performing organization. For some projects, the seller role may be filled by a group or function that is part of the performing organization but external to the project. For larger, more complex projects, the seller may become part of an integrated project team after the contract is awarded.

For smaller organizations or startup companies and those without a purchasing, contracting, or procurement department, the project manager may assume the purchasing authority role to negotiate and sign contracts directly (decentralized purchasing). For more mature organizations, the actual procurement and contracting functions will be carried out by a separate department with the specific role to purchase, negotiate, and sign contracts (centralized purchasing).

In international contracting, the legal jurisdictions under which the contracts will be administered are clearly spelled out in the contract. In most cases, the seller is an external contractor who is bound by a formal contractual relationship.

TRENDS AND EMERGING PRACTICES IN PROCUREMENT MANAGEMENT

There are a number of major trends in software tools, risk, processes, logistics, and technology with different industries that can affect the success rate of projects. Trends and emerging practices for Project Procurement Management include but are not limited to:

- **Advances in tools.** There has been significant improvement in the development of tools to manage the procurement and implementation phases of a project. Online tools for procurement now give the buyers a single point where procurements can be advertised and provide sellers with a single source to find bid documents and complete them directly online. In the construction/engineering/infrastructure field, the increasing use of the building information model (BIM) in software tools has been shown to save significant amounts of time and money on projects using it. This approach can substantially reduce construction claims, thereby reducing both costs and schedule. Major companies and governments worldwide are beginning to mandate the use of BIM on large projects.
- **More advanced risk management.** An increasing trend in risk management is to write contracts that accurately allocate specific risks to those entities most capable of managing them. No contractor is capable of managing all the possible major risks on a project. The buyer will be required to accept the risks that the contractors do not have control over, such as changing corporate policies in the buying organization, changing regulatory requirements, and other risks from outside the project. Contracts may specify that risk management be performed as part of the contract.
- **Changing contracting processes.** There has been a significant growth in megaprojects in the past several years, particularly in the areas of infrastructure development and engineering projects. Multibillion-dollar projects are now common. A large proportion of these involve international contracts with multiple contractors from many countries and are inherently more risky than projects using only local contractors. Increasingly, the contractor works closely with the client in the procurement process to take advantage of discounts through quantity purchases or other special considerations. For these projects, the use of internationally recognized standard contract forms is increasing in order to reduce problems and claims during execution.

- **Logistics and supply chain management.** Because so many large engineering, construction infrastructure projects are done through multiple international contractors, the management of the flow of materials becomes critical to successful completion. For long-lead items, both the manufacture of the items and their transportation to the project site become schedule-drivers. In the IT field, a long-lead item may require ordering 2 to 3 months in advance. In complex construction projects, long-lead items may require ordering 1 to 2 years in advance or longer. For these projects, long-lead items may be procured in advance of other procurement contracts to meet the planned project completion date. It is possible to begin contracting for these long-lead materials, supplies, or equipment before the final design of the end product itself is completed based on the known requirements identified in the top-level design. The management of the supply chain is an area of increasing emphasis by the contractor's project team. Not only are primary sources of supplies identified early in the project, but secondary, back-up sources are also generally identified. Many countries around the world require international contractors to purchase certain minimum percentages of material and supplies from local vendors.
- **Technology and stakeholder relations.** Publicly funded projects are under increasing scrutiny. A trend in infrastructure and commercial construction projects is the use of technology including web cameras (webcams) to improve stakeholder communications and relations. During construction, one or more webcams are installed on the site, with periodic updates to a publicly available website. The progress on the project can be viewed on the Internet by all stakeholders. Video data can also be stored, allowing analysis if a claim arises. Some projects have discovered that the use of webcams minimizes disputes relating to the construction work on site, as the webcam has recorded the events, so there should be no disagreement about the facts of the matter.
- **Trial engagements.** Not every seller is well suited for an organization's environment. Therefore, some projects will engage several candidate sellers for initial deliverables and work products on a paid basis before making the full commitment to a larger portion of the project scope. This accelerates momentum by allowing the buyer to evaluate potential partners, while simultaneously making progress on project work.

TAILORING CONSIDERATIONS

Because each project is unique, the project manager may need to tailor the way that Project Procurement Management processes are applied. Considerations for tailoring include but are not limited to:

- **Complexity of procurement.** Is there one main procurement or are there multiple procurements at different times with different sellers that add to the complexity of the procurements?
- **Physical location.** Are the buyers and sellers in the same location, or reasonably close, or in different time zones, countries, or continents?
- **Governance and regulatory environment.** Are local laws and regulations regarding procurement activities integrated with the organization's procurement policies? How does this affect contract auditing requirements?
- **Availability of contractors.** Are there available contractors who are capable of performing the work?

CONSIDERATIONS FOR AGILE/ADAPTIVE ENVIRONMENTS

In agile environments, specific sellers may be used to extend the team. This collaborative working relationship can lead to a shared risk procurement model where both the buyer and the seller share in the risk and rewards associated with a project.

Larger projects may use an adaptive approach for some deliverables and a more stable approach for other parts. In these cases, a governing agreement such as a master services agreement (MSA) may be used for the overall engagement, with the adaptive work being placed in an appendix or supplement. This allows changes to occur on the adaptive scope without impacting the overall contract.

12.1 PLAN PROCUREMENT MANAGEMENT

Plan Procurement Management is the process of documenting project procurement decisions, specifying the approach and identifying potential sellers. The key benefit of this process is that it determines whether to acquire goods and services from outside the project and, if so, what to acquire as well as how and when to acquire it. Goods and services may be procured from other parts of the performing organization or from external sources. This process is performed once or at predefined points in the project. The inputs, tools and techniques, and outputs of this process are depicted in Figure 12-2. Figure 12-3 depicts the data flow diagram of the process.

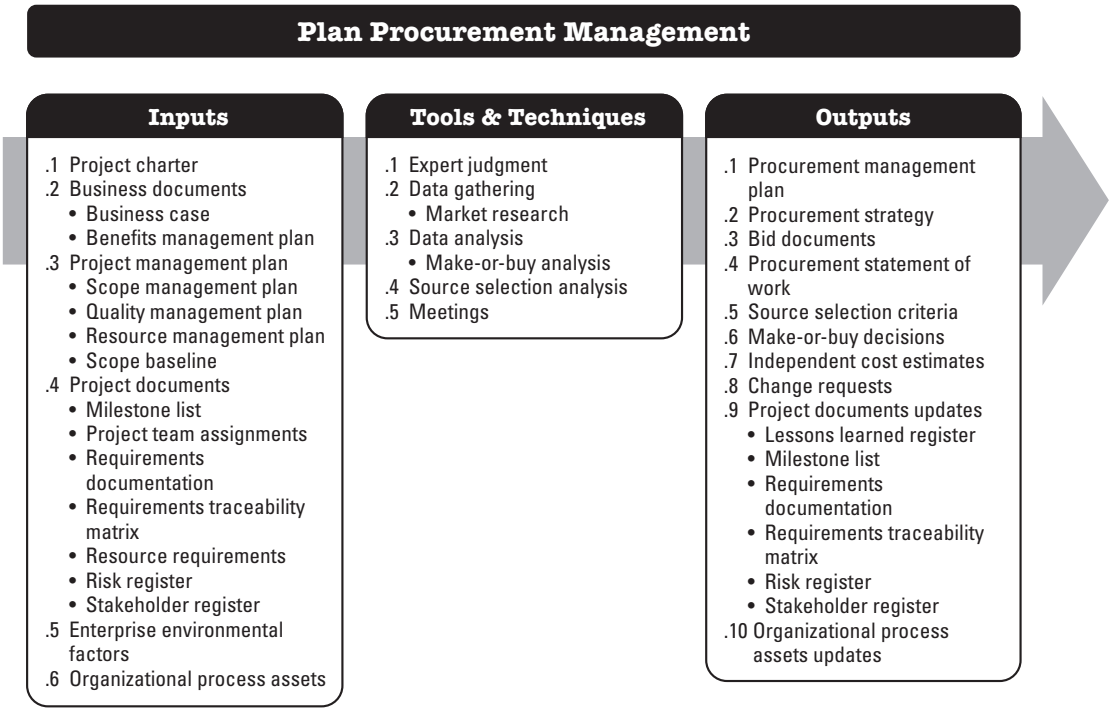

Figure 12-2. Plan Procurement Management: Inputs, Tools & Techniques, and Outputs

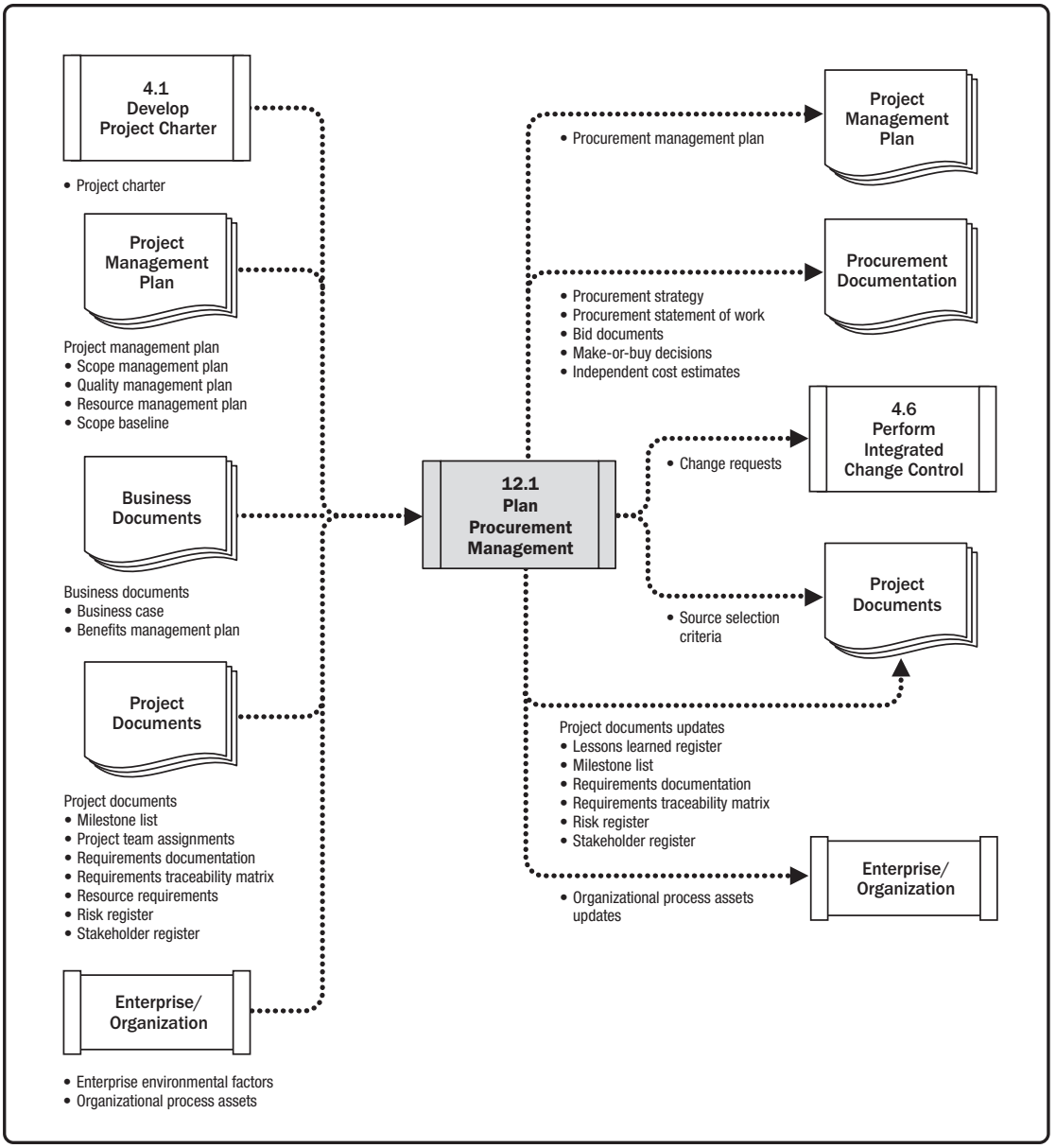

Figure 12-3. Plan Procurement Management: Data Flow Diagram

Defining roles and responsibilities related to procurement should be done early in the Plan Procurement Management process. The project manager should ensure that the project team is staffed with procurement expertise at the level required for the project. Participants in the procurement process may include personnel from the purchasing or procurement department as well as personnel from the buying organization's legal department. These responsibilities should be documented in the procurement management plan.

Typical steps might be:

- Prepare the procurement statement of work (SOW) or terms of reference (TOR).
- Prepare a high-level cost estimate to determine the budget.
- Advertise the opportunity.
- Identify a short list of qualified sellers.
- Prepare and issue bid documents.
- Prepare and submit proposals by the seller.
- Conduct a technical evaluation of the proposals including quality.
- Perform a cost evaluation of the proposals.
- Prepare the final combined quality and cost evaluation to select the winning proposal.
- Finalize negotiations and sign contract between the buyer and the seller.

The requirements of the project schedule can significantly influence the strategy during the Plan Procurement Management process. Decisions made in developing the procurement management plan can also influence the project schedule and are integrated with the Develop Schedule process, the Estimate Activity Resources process, and make-or-buy decisions.

12.1.1 PLAN PROCUREMENT MANAGEMENT: INPUTS

12.1.1.1 PROJECT CHARTER

Described in Section 4.1.3.1. The project charter contains the objectives, project description, summary milestones, and the preapproved financial resources.

12.1.1.2 BUSINESS DOCUMENTS

Described in Section 1.2.6. The business documents include the following:

- **Business case.** The procurement strategy and business case need to be aligned to ensure the business case remains valid.
- **Benefits management plan.** The benefits management plan describes when specific project benefits are expected to be available, which will drive procurement dates and contract language.

12.1.1.3 PROJECT MANAGEMENT PLAN

Described in Section 4.2.3.1. Project management plan components include but are not limited to:

- **Scope management plan.** Described in Section 5.1.3.1. The scope management plan describes how the scope of work by the contractors will be managed through the execution phase of the project.
- **Quality management plan.** Described in Section 8.1.3.1. The quality management plan contains the applicable industry standards and codes the project is required to follow. This information is used in bidding documents such as the RFP and will eventually be referenced in the contract. This information may be used in supplier prequalification or as part of the selection criteria.
- **Resource management plan.** Described in Section 9.1.3.1. The resource management plan has information on which resources will be purchased or leased, along with any assumptions or constraints that would influence the procurement.
- **Scope baseline.** Described in Section 5.4.3.1. The scope baseline contains the scope statement, WBS, and WBS dictionary. Early in the project, the project scope may still be evolving. The elements of the scope that are known are used to develop the statement of work (SOW) and the terms of reference (TOR).

12.1.1.4 PROJECT DOCUMENTS

Project documents that can be considered as inputs for this process include but are not limited to:

- **Milestone list.** Described in Section 6.2.3.3. This list of major milestones show when the sellers are required to deliver their results.
- **Project team assignments.** Described in Section 9.3.3.2. The project team assignments contain information on the skills and abilities of the project team and their availability to support the procurement activities. If the project team does not have the skills to perform the procurement activities for which they are responsible, additional resources will need to be acquired or training will need to be provided, or both.

- **Requirements documentation.** Described in Section 5.2.3.1. Requirements documentation may include:
  - Technical requirements that the seller is required to satisfy, and
  - Requirements with contractual and legal implications that may include health, safety, security, performance, environmental, insurance, intellectual property rights, equal employment opportunity, licenses, permits, and other nontechnical requirements.
- **Requirements traceability matrix.** Described in Section 5.2.3.2. The requirements traceability matrix links product requirements from their origin to the deliverables that satisfy them.
- **Resource requirements.** Described in Section 9.2.3.1. Resource requirements contain information on specific needs such as team and physical resources that may need to be acquired.
- **Risk register.** Described in Section 11.2.3.1. The risk register provides the list of risks, along with the results of risk analysis and risk response planning. Some risks are transferred via a procurement agreement.
- **Stakeholder register.** Described in Section 13.1.3.1. The stakeholder register provides details on the project participants and their interests in the project, including regulatory agencies, contracting personnel, and legal personnel.

12.1.1.5 ENTERPRISE ENVIRONMENTAL FACTORS

The enterprise environmental factors that can influence the Plan Procurement Management process include but are not limited to:

- Marketplace conditions;
- Products, services, and results that are available in the marketplace;
- Sellers, including their past performance or reputation;
- Typical terms and conditions for products, services, and results or for the specific industry;
- Unique local requirements, such as regulatory requirements for local labor or sellers;
- Legal advice regarding procurements;
- Contract management systems, including procedures for contract change control;
- Established multi-tier supplier system of prequalified sellers based on prior experience; and
- Financial accounting and contract payments system.

12.1.1.6 ORGANIZATIONAL PROCESS ASSETS

The various types of contractual agreements used by the organization also influence decisions for the Plan Procurement Management process. The organizational process assets that can influence the Plan Procurement Management process include but are not limited to:

- **Preapproved seller lists.** Lists of sellers that have been properly vetted can streamline the steps needed to advertise the opportunity and shorten the timeline for the seller selection process.
- **Formal procurement policies, procedures, and guidelines.** Most organizations have formal procurement policies and buying organizations. When such procurement support is not available, the project team should supply both the resources and the expertise to perform such procurement activities.
- **Contract types.** All legal contractual relationships generally fall into one of two broad families: either fixed-price or cost-reimbursable. Also, there is a third hybrid type commonly used called the time and materials contract. The more popular contract types in use are discussed below as discrete types, but, in practice, it is not unusual to combine one or more types into a single procurement.
  - *Fixed-price contracts.* This category of contracts involves setting a fixed total price for a defined product, service, or result to be provided. These contracts should be used when the requirements are well defined and no significant changes to the scope are expected. Types of fixed-price contract include:
    - *Firm fixed price (FFP).* The most commonly used contract type is the FFP. It is favored by most buying organizations because the price for goods is set at the outset and not subject to change unless the scope of work changes.
    - *Fixed price incentive fee (FPIF).* This fixed-price arrangement gives the buyer and seller some flexibility in that it allows for deviation from performance, with financial incentives tied to achieving agreed-upon metrics. Typically, such financial incentives are related to cost, schedule, or technical performance of the seller. Under FPIF contracts, a price ceiling is set, and all costs above the price ceiling are the responsibility of the seller.
    - *Fixed price with economic price adjustments (FPEPA).* This type is used whenever the seller's performance period spans a considerable period of years, or if the payments are made in a different currency. It is a fixed-price contract, but with a special provision allowing for predefined final adjustments to the contract price due to changed conditions, such as inflation changes or cost increases (or decreases) for specific commodities.

- **Cost-reimbursable contracts.** This category of contract involves payments (cost reimbursements) to the seller for all legitimate actual costs incurred for completed work, plus a fee representing seller profit. This type should be used if the scope of work is expected to change significantly during the execution of the contract. Variations can include:
  - *Cost plus fixed fee (CPFF).* The seller is reimbursed for all allowable costs for performing the contract work and receives a fixed-fee payment calculated as a percentage of the initial estimated project costs. Fee amounts do not change unless the project scope changes.
  - *Cost plus incentive fee (CPIF).* The seller is reimbursed for all allowable costs for performing the contract work and receives a predetermined incentive fee based on achieving certain performance objectives as set forth in the contract. In CPIF contracts, if the final costs are less or greater than the original estimated costs, then both the buyer and seller share costs from the departures based upon a prenegotiated cost-sharing formula, for example, an 80/20 split over/under target costs based on the actual performance of the seller.
  - *Cost plus award fee (CPAF).* The seller is reimbursed for all legitimate costs, but the majority of the fee is earned based on the satisfaction of certain broad subjective performance criteria that are defined and incorporated into the contract. The determination of fee is based solely on the subjective determination of seller performance by the buyer and is generally not subject to appeals.
- **Time and material contracts (T&M).** Time and material contracts (also called time and means) are a hybrid type of contractual arrangement with aspects of both cost-reimbursable and fixed-price contracts. They are often used for staff augmentation, acquisition of experts, and any outside support when a precise statement of work cannot be quickly prescribed.

12.1.2 PLAN PROCUREMENT MANAGEMENT: TOOLS AND TECHNIQUES

12.1.2.1 EXPERT JUDGMENT

Described in Section 4.1.2.1. Expertise should be considered from individuals or groups with specialized knowledge or training in the following topics:

- Procurement and purchasing,
- Contract types and contract documents, and
- Regulations and compliance topics.

12.1.2.2 DATA GATHERING

A data-gathering technique that can be used for this process includes but is not limited to market research. Market research includes examination of industry and specific seller capabilities. Procurement teams may leverage information gained at conferences, online reviews, and a variety of sources to identify market capabilities. The team may also refine specific procurement objectives to leverage maturing technologies while balancing risks associated with the breadth of sellers who can provide the desired materials or services.

12.1.2.3 DATA ANALYSIS

Data analysis techniques that can be used for this process include but are not limited to make-or-buy analysis. A make-or-buy analysis is used to determine whether work or deliverables can best be accomplished by the project team or should be purchased from outside sources. Factors to consider in the make-or-buy decision include the organization's current resource allocation and their skills and abilities, the need for specialized expertise, the desire to not expand permanent employment obligations, and the need for independent expertise. It also includes evaluating the risks involved with each make-or-buy decision.

Make-or-buy analysis may use payback period, return on investment (ROI), internal rate of return (IRR), discounted cash flow, net present value (NPV), benefit/cost analysis (BCA), or other techniques in order to decide whether to include something as part of the project or purchase it externally.

12.1.2.4 SOURCE SELECTION ANALYSIS

It is necessary to review the prioritization of the competing demands for the project before deciding on the selection method. Since competitive selection methods may require sellers to invest a large amount of time and resources upfront, it is a good practice to include the evaluation method in the bid documents so bidders know how they will be evaluated. Commonly used selection methods include the following:

- **Least cost.** The least cost method may be appropriate for procurements of a standard or routine nature where well-established practices and standards exist and from which a specific and well-defined outcome is expected, which can be executed at different costs.
- **Qualifications only.** The qualifications only selection method applies when the time and cost of a full selection process would not make sense because the value of the procurement is relatively small. The buyer establishes a short list and selects the bidder with the best credibility, qualifications, experience, expertise, areas of specialization, and references.

- **Quality-based/highest technical proposal score.** The selected firm is asked to submit a proposal with both technical and cost details and is then invited to negotiate the contract if the technical proposal proves acceptable. Using this method, technical proposals are first evaluated based on the quality of the technical solution offered. The seller who submitted the highest-ranked technical proposal is selected if their financial proposal can be negotiated and accepted.
- **Quality and cost-based.** The quality and cost-based method allows cost to be included as a factor in the seller selection process. In general, when risk and/or uncertainty are greater for the project, quality should be a key element when compared to cost.
- **Sole source.** The buyer asks a specific seller to prepare technical and financial proposals, which are then negotiated. Since there is no competition, this method is acceptable only when properly justified and should be viewed as an exception.
- **Fixed budget.** The fixed-budget method requires disclosing the available budget to invited sellers in the RFP and selecting the highest-ranking technical proposal within the budget. Because sellers are subject to a cost constraint, they will adapt the scope and quality of their offer to that budget. The buyer should therefore ensure that the budget is compatible with the SOW and that the seller will be able to perform the tasks within the budget. This method is appropriate only when the SOW is precisely defined, no changes are anticipated, and the budget is fixed and cannot be exceeded.

12.1.2.5 MEETINGS

Research alone may not provide specific information to formulate a procurement strategy without additional information interchange meetings with potential bidders. By collaborating with potential bidders, the organization purchasing the material or service may benefit while the seller can influence a mutually beneficial approach or product. Meetings can be used to determine the strategy for managing and monitoring the procurement.

12.1.3 PLAN PROCUREMENT MANAGEMENT: OUTPUTS

12.1.3.1 PROCUREMENT MANAGEMENT PLAN

The procurement management plan contains the activities to be undertaken during the procurement process. It should document whether international competitive bidding, national competitive bidding, local bidding, etc., should be done. If the project is financed externally, the sources and availability of funding should be aligned with the procurement management plan and the project schedule.

The procurement management plan can include guidance for:

- How procurement will be coordinated with other project aspects, such as project schedule development and control processes;
- Timetable of key procurement activities;
- Procurement metrics to be used to manage contracts;
- Stakeholder roles and responsibilities related to procurement, including authority and constraints of the project team when the performing organization has a procurement department;
- Constraints and assumptions that could affect planned procurements;
- The legal jurisdiction and the currency in which payments will be made;
- Determination of whether independent estimates will be used and whether they are needed as evaluation criteria;
- Risk management issues including identifying requirements for performance bonds or insurance contracts to mitigate some forms of project risk; and
- Prequalified sellers, if any, to be used.

A procurement management plan can be formal or informal, can be highly detailed or broadly framed, and is based upon the needs of each project.

12.1.3.2 PROCUREMENT STRATEGY

Once the make-or-buy analysis is complete and the decision is made to acquire from outside the project, a procurement strategy should be identified. The objective of the procurement strategy is to determine the project delivery method, the type of legally binding agreement(s), and how the procurement will advance through the procurement phases.

- **Delivery methods.** Delivery methods are different for professional services versus construction projects.
  - For professional services, delivery methods include: buyer/services provider with no subcontracting, buyer/services provider with subcontracting allowed, joint venture between buyer and services provider, and buyer/services provider acts as the representative.
  - For industrial or commercial construction, project delivery methods include but are not limited to: turnkey, design build (DB), design bid build (DBB), design build operate (DBO), build own operate transfer (BOOT), and others.
- **Contract payment types.** Contract payment types are separate from the project delivery methods and are coordinated with the buying organization's internal financial systems. They include but are not limited to these contract types plus variations: lump sum, firm fixed price, cost plus award fees, cost plus incentive fees, time and materials, target cost, and others.
  - Fixed-price contracts are suitable when the type of work is predictable and the requirements are well defined and not likely to change.
  - Cost plus contracts are suitable when the work is evolving, likely to change, or not well defined.
  - Incentives and awards may be used to align the objectives of buyer and seller.
- **Procurement phases.** The procurement strategy can also include information on procurement phases. Information may include:
  - Sequencing or phasing of the procurement, a description of each phase and the specific objectives of each phase;
  - Procurement performance indicators and milestones to be used in monitoring;
  - Criteria for moving from phase to phase;
  - Monitoring and evaluation plan for tracking progress; and
  - Process for knowledge transfer for use in subsequent phases.

12.1.3.3 BID DOCUMENTS

Bid documents are used to solicit proposals from prospective sellers. Terms such as bid, tender, or quotation are generally used when the seller selection decision is based on price (as when buying commercial or standard items), while a term such as proposal is generally used when other considerations such as technical capability or technical approach are the most important. Specific procurement terminology used may vary by industry and location of the procurement.

Depending on the goods or services needed, the bidding documents can include a request for information, request for quotation, request for proposal, or other appropriate documents. The conditions involving their use are presented below:

- **Request for information (RFI).** An RFI is used when more information on the goods and services to be acquired is needed from the sellers. It will typically be followed by an RFQ or RFP.
- **Request for quotation (RFQ).** An RFQ is commonly used when more information is needed on how vendors would satisfy the requirements and/or how much it will cost.
- **Request for proposal (RFP).** An RFP is used when there is a problem in the project and the solution is not easy to determine. This is the most formal of the "request for" documents and has strict procurement rules for content, timeline, and seller responses.

The buyer structures bid documents to facilitate an accurate and complete response from each prospective seller and to facilitate easy evaluation of the responses. These documents include a description of the desired form of the response, the relevant procurement SOW, and any required contractual provisions.

The complexity and level of detail of the bid documents should be consistent with the value of, and risks associated with, the planned procurement. Bid documents are required to be sufficiently detailed to ensure consistent, appropriate responses, but flexible enough to allow consideration of any seller suggestions for better ways to satisfy the same requirements.

12.1.3.4 PROCUREMENT STATEMENT OF WORK

The statement of work (SOW) for each procurement is developed from the project scope baseline and defines only that portion of the project scope that is to be included within the related contract. The SOW describes the procurement item in sufficient detail to allow prospective sellers to determine if they are capable of providing the products, services, or results. Sufficient detail can vary based on the nature of the item, the needs of the buyer, or the expected contract form. Information included in a SOW can include specifications, quantity desired, quality levels, performance data, period of performance, work location, and other requirements.

The procurement SOW should be clear, complete, and concise. It includes a description of any collateral services required, such as performance reporting or post-project operational support for the procured item. The SOW can be revised as required as it moves through the procurement process until incorporated into a signed agreement.

The phrase *terms of reference* (TOR) is sometimes used when contracting for services. Similar to the procurement SOW, a TOR typically includes these elements:

- Tasks the contractor is required to perform as well as specified coordination requirements;
- Standards the contractor will fulfill that are applicable to the project;
- Data that needs to be submitted for approval;
- Detailed list of all data and services that will be provided to the contractor by the buyer for use in performing the contract, if applicable; and
- Definition of the schedule for initial submission and the review/approval time required.

12.1.3.5 SOURCE SELECTION CRITERIA

In choosing evaluation criteria, the buyer seeks to ensure that the proposal selected will offer the best quality for the services required. The source selection criteria may include but are not limited to:

- Capability and capacity;
- Product cost and life cycle cost;
- Delivery dates;
- Technical expertise and approach;
- Specific relevant experience;
- Adequacy of the proposed approach and work plan in responding to the SOW;
- Key staff's qualifications, availability, and competence;
- Financial stability of the firm;
- Management experience; and
- Suitability of the knowledge transfer program, including training.

For international projects, evaluation criteria may include “local content” requirements, for example, participation by nationals among proposed key staff.

The specific criteria may be a numerical score, color-code, or a written description of how well the seller satisfies the buying organization’s needs. The criteria will be part of a weighting system that can be used to select a single seller that will be asked to sign a contract and establish a negotiating sequence by ranking all the proposals by the weighted evaluation scores assigned to each proposal.

12.1.3.6 MAKE-OR-BUY DECISIONS

A make-or-buy analysis results in a decision as to whether particular work can best be accomplished by the project team or needs to be purchased from outside sources.

12.1.3.7 INDEPENDENT COST ESTIMATES

For large procurements, the procuring organization may elect to either prepare its own independent estimate or have a cost estimate prepared by an outside professional estimator to serve as a benchmark on proposed responses. Significant differences in cost estimates can be an indication that the procurement SOW was deficient or ambiguous, or that the prospective sellers either misunderstood or failed to respond fully to the procurement SOW.

12.1.3.8 CHANGE REQUESTS

Described in Section 4.3.3.4. A decision that involves procuring goods, services, or resources may require a change request. Other decisions during procurement planning can also create the need for additional change requests. Changes to the project management plan, its subsidiary plans, and other components may result in change requests that impact procurement actions. Change requests are processed for review and disposition through the Perform Integrated Change Control process (Section 4.6).

12.1.3.9 PROJECT DOCUMENTS UPDATES

Project documents that may be updated as a result of carrying out this process include but are not limited to:

- **Lessons learned register.** Described in Section 4.4.3.1. The lessons learned register is updated with any relevant lessons regarding regulations and compliance, data gathering, data analysis, and source selection analysis.
- **Milestone list.** Described in Section 6.2.3.3. This list of major milestones shows when the sellers are expected to deliver their results.
- **Requirements documentation.** Described in Section 5.2.3.1. Requirements documentation may include:
  - Technical requirements that the seller is required to satisfy, and
  - Requirements with contractual and legal implications that may include health, safety, security, performance, environmental, insurance, intellectual property rights, equal employment opportunity, licenses, permits, and other nontechnical requirements.
- **Requirements traceability matrix**. Described in Section 5.2.3.2. The requirements traceability matrix links product requirements from their origin to the deliverables that satisfy them.
- **Risk register**. Described in Section 11.2.3.1. Each approved seller comes with its own unique set of risks, depending on the seller's organization, the duration of the contract, the external environment, the project delivery method, the type of contracting vehicle chosen, and the final agreed-upon price.
- **Stakeholder register.** Described in Section 13.1.3.1. The stakeholder register is updated with any additional information on stakeholders, particularly regulatory agencies, contracting personnel, and legal personnel.

12.1.3.10 ORGANIZATIONAL PROCESS ASSETS UPDATES

Organizational process assets that are updated as a result of the Plan Procurement Management process include but are not limited to information on qualified sellers.

For projects with few procurements and relatively simple procurements, some of these outputs may be combined. However, for projects with large, complex procurements and where much of the work is done by contractors, there are several different types of documentation. Table 12-1 is a representative list of common types of documents used in procurements and some of their contents. Given the legal nature of procurements, this list should not be considered prescriptive, but rather it should be used as a general outline of types of documents and contents needed to conduct procurement. The organization, environment, and legal constraints dictate the required bid documents and information needed for the project.

Table 12-1. Comparison of Procurement Documentation

Procurement Management Plan	Procurement Strategy	Statement of Work	Bid Documents
How procurement work will be coordinated and integrated with other project work, particularly with resources, schedule, and budget	Procurement delivery methods	Description of the procurement item	Request for information (RFI), Request for quote (RFQ), Request for proposal (RFP)
Timetable for key procurement activities	Type of agreements	Specifications, quality requirements and performance metrics	
Procurement metrics to manage the contract	Procurement phases	Description of collateral services required	
Responsibilities of all stakeholders		Acceptance methods and criteria	
Procurement assumptions and constraints		Performance data and other reports required	
Legal jurisdiction and currency used for payment		Quality	
Information on independent estimates		Period and place of performance	
Risk management issues		Currency; payment schedule	
Prequalified sellers, if applicable		Warranty	

12.2 CONDUCT PROCUREMENTS

Conduct Procurements is the process of obtaining seller responses, selecting a seller, and awarding a contract. The key benefit of this process is that it selects a qualified seller and implements the legal agreement for delivery. The end results of the process are the established agreements including formal contracts. This process is performed periodically throughout the project as needed. The inputs, tools and techniques, and outputs of the Conduct Procurements process are depicted in Figure 12-4. Figure 12-5 depicts the data flow diagram for the process.

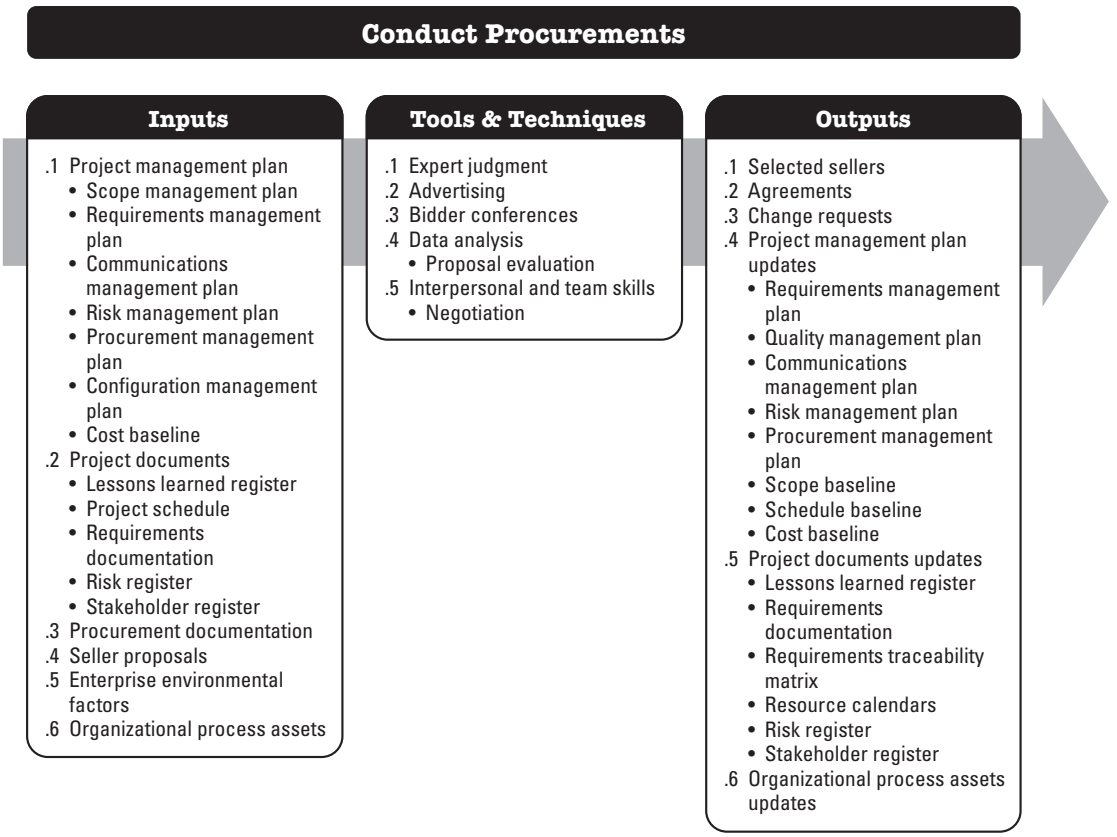

Figure 12-4. Conduct Procurements: Inputs, Tools & Techniques, and Outputs

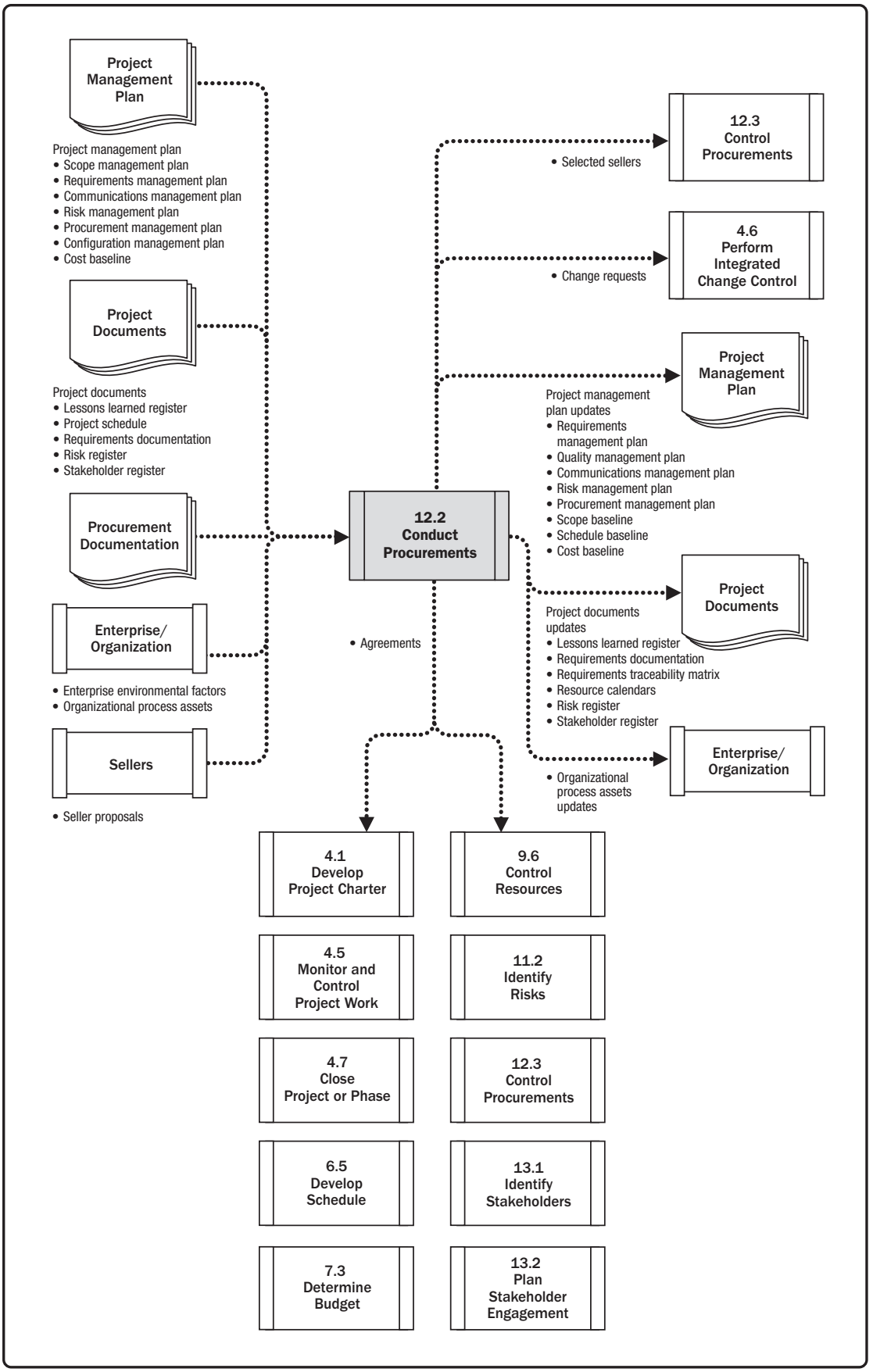

Figure 12-5. Conduct Procurements: Data Flow Diagram

12.2.1 CONDUCT PROCUREMENTS: INPUTS

12.2.1.1 PROJECT MANAGEMENT PLAN

Described in Section 4.2.3.1. Project management plan components include but are not limited to:

- **Scope management plan.** Described in Section 5.1.3.1. The scope management plan describes how the overall scope of work will be managed, including the scope performed by sellers.
- **Requirements management plan.** Described in Section 5.1.3.2. The requirements management plan describes how requirements will be analyzed, documented, and managed. The requirements management plan may include how sellers will manage the requirements they are under agreement to satisfy.
- **Communications management plan.** Described in Section 10.1.3.1. The communications management plan describes how communications between buyers and sellers will be conducted.
- **Risk management plan.** Described in Section 11.1.3.1. The risk management plan is a component of the project management plan and describes how risk management activities will be structured and performed for the project.
- **Procurement management plan.** Described in Section 12.1.3.1. The procurement management plan contains the activities to be undertaken during the Conduct Procurements process.
- **Configuration management plan.** Described in Section 5.6.1.1. The configuration management plan defines those items that are configurable, those items that require formal change control, and the process for controlling changes to such items. It includes formats and processes for how sellers will provide configuration management in a way that is consistent with the buyer's approach.
- **Cost baseline.** Described in Section 7.3.3.1. The cost baseline includes the budget for the procurement as well as costs associated with managing the procurement process and sellers.

12.2.1.2 PROJECT DOCUMENTS

Project documents that can be considered as inputs for this process include but are not limited to:

- **Lessons learned register.** Described in Section 4.4.3.1. Lessons learned earlier in the project with regard to conducting procurements can be applied to later phases in the project to improve the efficiency of this process.
- **Project schedule.** Described in Section 6.5.3.2. The project schedule identifies the start and end dates of project activities, including procurement activities. It also defines when contractor deliverables are due.

- **Requirements documentation.** Described in Section 5.2.3.1. Requirements documentation may include:
  - Technical requirements the seller is required to satisfy, and
  - Requirements with contractual and legal implications that may include health, safety, security, performance, environmental, insurance, intellectual property rights, equal employment opportunity, licenses, permits, and other nontechnical requirements.
- **Risk register.** Described in Section 11.2.3.1. Each approved seller comes with its own unique set of risks, depending on the seller's organization, the duration of the contract, the external environment, the project delivery method, the type of contracting vehicle chosen, and the final agreed-upon price.
- **Stakeholder register.** Described in Section 13.1.3.1. This document contains all of the details about the identified stakeholders.

12.2.1.3 PROCUREMENT DOCUMENTATION

Procurement documentation provides a written record used in reaching the legal agreement, and may include older documents predating the current project. Procurement documentation can include:

- **Bid documents.** Described in Section 12.1.3.3. Bid documents include the RFI, RFP, RFQ, or other documents sent to sellers so they can develop a bid response.
- **Procurement statement of work.** Described in Section 12.1.3.4. The procurement statement of work (SOW) provides sellers with a clearly stated set of goals, requirements, and outcomes from which they can provide a quantifiable response.
- **Independent cost estimates.** Described in Section 12.1.3.7. Independent cost estimates are developed either internally or by using external resources and provide a reasonableness check against the proposals submitted by bidders.
- **Source selection criteria.** Described in Section 12.1.3.5. These criteria describe how bidder proposals will be evaluated, including evaluation criteria and weights. For risk mitigation, the buyer may decide to sign agreements with more than one seller to mitigate damage caused by a single seller having problems that impact the overall project.

12.2.1.4 SELLER PROPOSALS

Seller proposals, prepared in response to a bid document package, form the basic information that will be used by an evaluation body to select one or more successful bidders (sellers). If the seller is going to submit a price proposal, good practice is to require that it be separate from the technical proposal. The evaluation body reviews each submitted proposal according to the source selection criteria and selects the seller that can best satisfy the buying organization's requirements.

12.2.1.5 ENTERPRISE ENVIRONMENTAL FACTORS

The enterprise environmental factors that can influence the Conduct Procurements Process include:

- Local laws and regulations regarding procurements;
- Local laws and regulations ensuring that the major procurements involve local sellers;
- External economic environment constraining procurement processes;
- Marketplace conditions;
- Information on relevant past experience with sellers, both good and bad;
- Prior agreements already in place; and
- Contract management systems.

12.2.1.6 ORGANIZATIONAL PROCESS ASSETS

The organizational process assets that can influence the Conduct Procurements process include but are not limited to:

- List of preferred sellers that have been prequalified,
- Organizational policies that influence the selection of a seller,
- Specific organizational templates or guidelines that will determine the way agreements are drafted and built, and
- Financial policies and procedures regarding invoicing and payment processes.

12.2.2 CONDUCT PROCUREMENTS: TOOLS AND TECHNIQUES

12.2.2.1 EXPERT JUDGMENT

Described in Section 4.1.2.1 Expertise should be considered from individuals or groups with specialized knowledge or training in the following topics:

- Proposal evaluation;
- Technical or subject matter;
- Relevant functional areas such as finance, engineering, design, development, supply chain management, etc.;
- Industry regulatory environment;
- Laws, regulations, and compliance requirements; and
- Negotiation.

12.2.2.2 ADVERTISING

Advertising is communicating with users or potential users of a product, service, or result. Existing lists of potential sellers often can be expanded by placing advertisements in general circulation publications such as selected newspapers or in specialty trade publications. Most government jurisdictions require public advertising or online posting of pending government contracts.

12.2.2.3 BIDDER CONFERENCES

Bidder conferences (also called contractor conferences, vendor conferences, and pre-bid conferences) are meetings between the buyer and prospective sellers prior to proposal submittal. They are used to ensure that all prospective bidders have a clear and common understanding of the procurement and no bidders receive preferential treatment.

12.2.2.4 DATA ANALYSIS

A data analysis technique that can be used for this process includes but is not limited to proposal evaluation. Proposals are evaluated to ensure they are complete and respond in full to the bid documents, procurement statement of work, source selection criteria, and any other documents that went out in the bid package.

12.2.2.5 INTERPERSONAL AND TEAM SKILLS

Interpersonal and team skills that can be used for this process include negotiation. Negotiation is a discussion aimed at reaching an agreement. Procurement negotiation clarifies the structure, rights, and obligations of the parties and other terms of the purchases so that mutual agreement can be reached prior to signing the contract. Final document language reflects all agreements reached. Negotiation concludes with a signed contract document or other formal agreement that can be executed by both buyer and seller.

The negotiation should be led by a member of the procurement team that has the authority to sign contracts. The project manager and other members of the project management team may be present during negotiation to provide assistance as needed.

12.2.3 CONDUCT PROCUREMENTS: OUTPUTS

12.2.3.1 SELECTED SELLERS

The selected sellers are those who have been judged to be in a competitive range based on the outcome of the proposal or bid evaluation. Final approval of complex, high-value, high-risk procurements will generally require organizational senior management approval prior to award.

12.2.3.2 AGREEMENTS

A contract is a mutually binding agreement that obligates the seller to provide the specified products, services, or results; obligates the buyer to compensate the seller; and represents a legal relationship that is subject to remedy in the courts. The major components in an agreement document will vary, and may include but are not limited to:

- Procurement statement of work or major deliverables;
- Schedule, milestones, or date by which a schedule is required;
- Performance reporting;
- Pricing and payment terms;
- Inspection, quality, and acceptance criteria;
- Warranty and future product support;
- Incentives and penalties;
- Insurance and performance bonds;
- Subordinate subcontractor approvals;
- General terms and conditions;
- Change request handling; and
- Termination clause and alternative dispute resolution mechanisms.

12.2.3.3 CHANGE REQUESTS

Described in Section 4.3.3.4. Change requests to the project management plan, its subsidiary plans, and other components are processed for review and disposition through the Perform Integrated Change Control process (Section 4.6).

12.2.3.4 PROJECT MANAGEMENT PLAN UPDATES

Any change to the project management plan goes through the organization's change control process via a change request. Components of the project management plan that may require a change request for the project management plan include but are not limited to:

- **Requirements management plan.** Described in Section 5.1.3.2. There may be changes to project requirements due to changes identified by sellers.
- **Quality management plan.** Described in Section 8.1.3.1. Sellers may offer alternative quality standards or alternative solutions that impact the quality approaches defined in the quality management plan.
- **Communications management plan.** Described in Section 10.1.3.1. As sellers are hired, the communications management plan is updated to incorporate their communications needs and approaches.
- **Risk management plan.** Described in Section 11.1.3.1. Each agreement and seller has its own set of risks that may require updates to the risk management plan. Specific risks are incorporated into the risk register.
- **Procurement management plan.** Described in Section 12.1.3.1. Updates may be required depending on the results of the contracting and negotiations processes.
- **Scope baseline.** Described in Section 5.4.3.1. The project WBS and deliverables documented in the scope baseline are considered when performing procurement activities. Any one or all of these may change during the procurement process.
- **Schedule baseline.** Described in Section 6.5.3.1. If there are delivery changes created by sellers that impact overall project schedule performance, the baseline schedule may need to be updated and approved to reflect the current expectations.
- **Cost baseline.** Described in Section 7.3.3.1. Contractor and materials prices can change frequently during the delivery of a project. These changes can occur because of fluctuating materials and labor prices created by the external economic environment and need to be incorporated into the cost baseline.

12.2.3.5 PROJECT DOCUMENTS UPDATES

Project documents that may be updated as a result of carrying out this process include but are not limited to:

- **Lessons learned register.** Described in Section 4.4.3.1. The lessons learned register is updated with information on challenges encountered while conducting procurements and how they could have been avoided as well as approaches that worked well.
- **Requirements documentation.** Described in Section 5.2.3.1. Requirements documentation may include:
  - Technical requirements that the seller is required to satisfy, and
  - Requirements with contractual and legal implications that may include health, safety, security, performance, environmental, insurance, intellectual property rights, equal employment opportunity, licenses, permits, and other nontechnical requirements.
- **Requirements traceability matrix.** Described in Section 5.2.3.2. As sellers are incorporated into the project's plan, the requirements register and the traceability matrix may change depending on the capabilities of the specific seller.
- **Resource calendars.** Described in Section 9.2.1.2. Schedule resource calendars may need to be updated depending on the availabilities of the sellers.
- **Risk register.** Described in Section 11.2.3.1. Each approved seller comes with its own unique set of risks, depending on the seller's organization, the duration of the contract, the external environment, the project delivery method, the type of contracting vehicle chosen, and the final agreed-upon price. Changes are made to the risk register during the contracting process, which reflect the specific risks of each seller.
- **Stakeholder register.** Described in Section 13.1.3.1. This document contains all the details about the identified stakeholders. The stakeholder register is updated as agreements are made with specific sellers.

12.2.3.6 ORGANIZATIONAL PROCESS ASSETS UPDATES

Elements of the organizational process assets that can be updated as a result of the Conduct Procurements process can include:

- Listings of prospective and prequalified sellers; and
- Information on relevant experience with sellers, both good and bad.

12.3 CONTROL PROCUREMENTS

Control Procurements is the process of managing procurement relationships; monitoring contract performance, and making changes and corrections as appropriate; and closing out contracts. The key benefit of this process is that it ensures that both the seller's and buyer's performance meet the project's requirements according to the terms of the legal agreement. This process is performed throughout the project as needed. The inputs, tools and techniques, and outputs of this process are depicted in Figure 12-6. Figure 12-7 depicts the data flow diagram of the process.

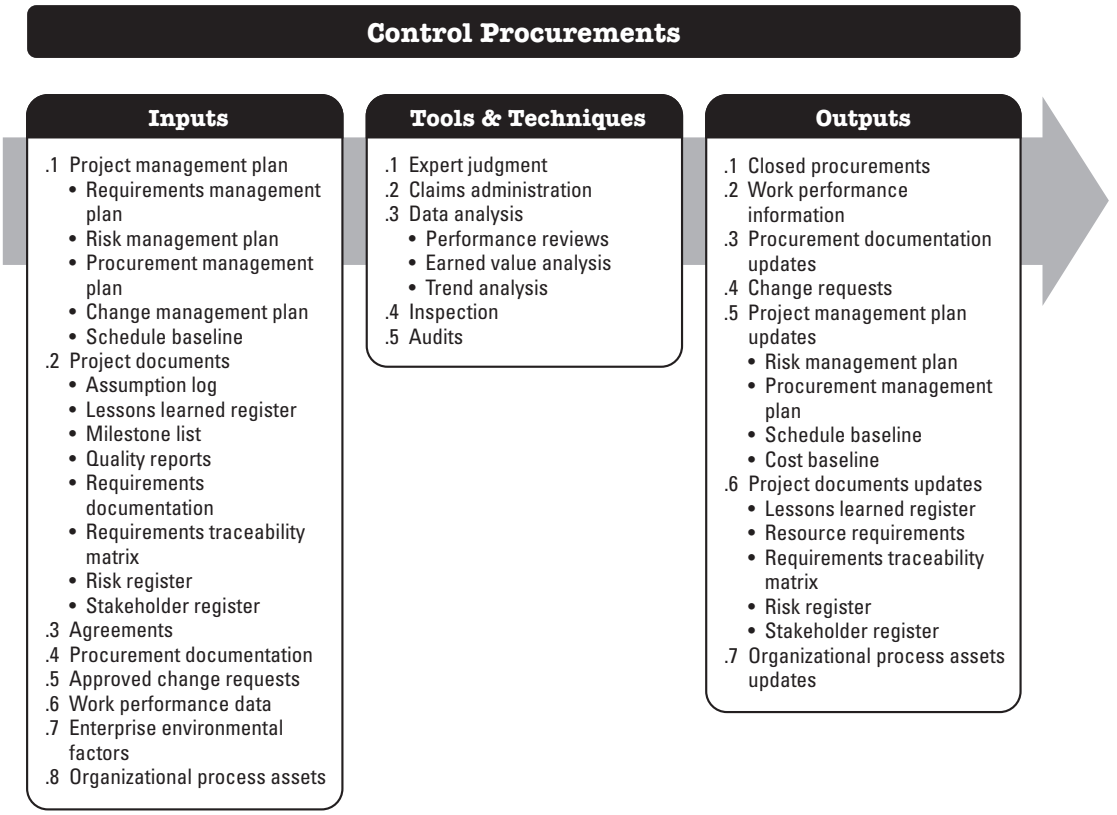

Figure 12-6. Control Procurements: Inputs, Tools & Techniques, and Outputs

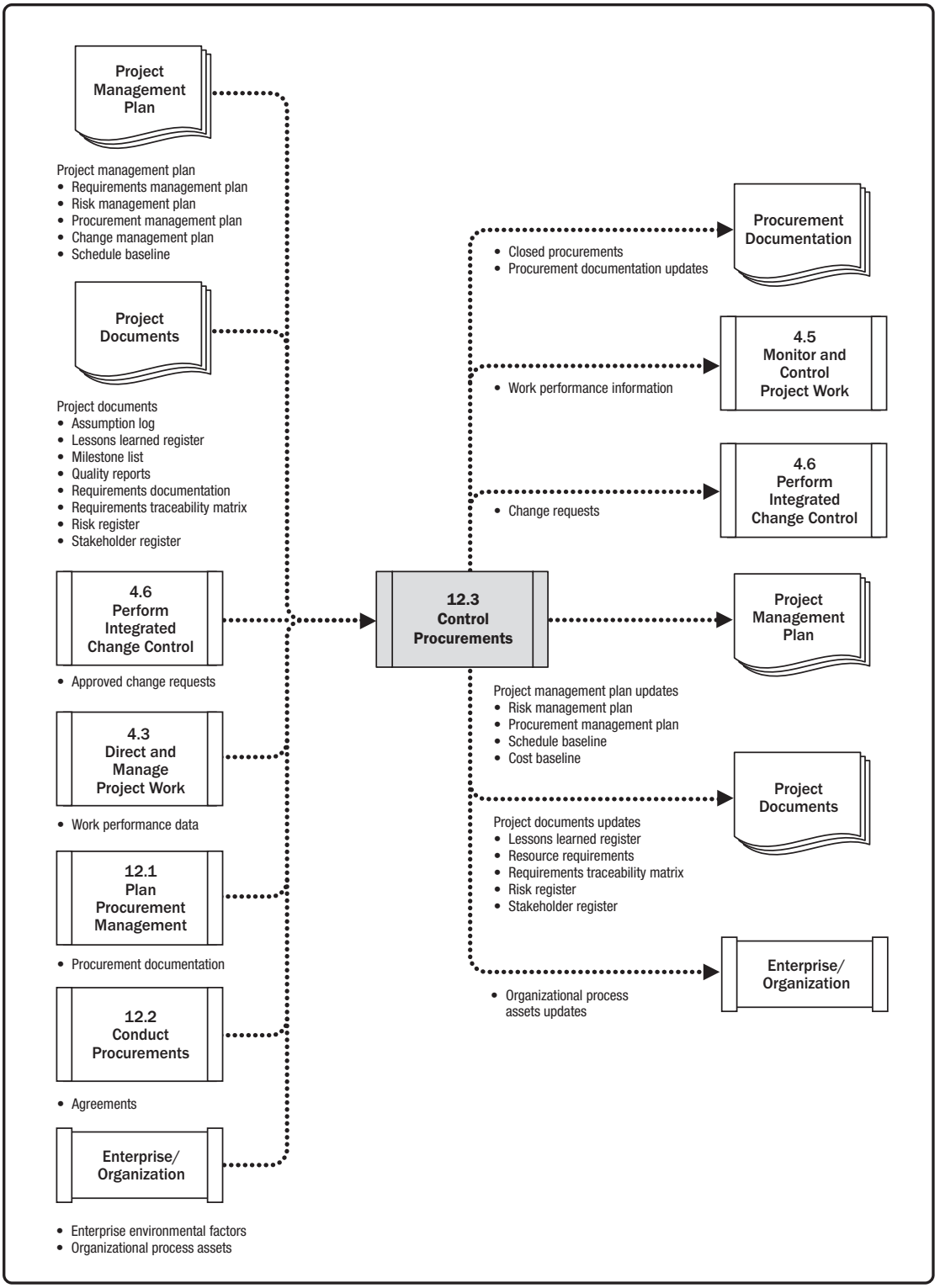

Figure 12-7. Control Procurements: Data Flow Diagram

Both the buyer and the seller administer the procurement contract for similar purposes. Each is required to ensure that both parties meet their contractual obligations and that their own legal rights are protected. The legal nature of the relationship makes it imperative that the project management team is aware of the implications of actions taken when controlling any procurement. On larger projects with multiple providers, a key aspect of contract administration is managing communication among the various providers.

Because of the legal aspect, many organizations treat contract administration as an organizational function that is separate from the project. While a procurement administrator may be on the project team, this individual typically reports to a supervisor from a different department.

Control Procurements includes application of the appropriate project management processes to the contractual relationship(s) and integration of the outputs from these processes into the overall management of the project. This integration often occurs at multiple levels when there are multiple sellers and multiple products, services, or results involved.

Administrative activities may include:

- Collection of data and managing project records, including maintenance of detailed records of physical and financial performance and establishment of measurable procurement performance indicators;
- Refinement of procurement plans and schedules;
- Set up for gathering, analyzing, and reporting procurement-related project data and preparation of periodic reports to the organization;
- Monitoring the procurement environment so that implementation can be facilitated or adjustments made; and
- Payment of invoices.

The quality of the controls, including the independence and credibility of procurement audits, is critical to the reliability of the procurement system. The organization's code of ethics, its legal counsel, and external legal advisory arrangements including any ongoing anti-corruption initiatives can contribute to proper procurement controls.

Control Procurements has a financial management component that involves monitoring payments to the seller. This ensures that payment terms defined within the contract are met and that compensation is linked to the seller's progress as defined in the contract. A principal concern when making payments is to ensure there is a close relationship of payments made to the work accomplished. A contract that requires payments linked to project output and deliverables rather than inputs such as labor hours has better controls.

Agreements can be amended at any time prior to contract closure by mutual consent, in accordance with the change control terms of the agreement. Such amendments are typically captured in writing.

12.3.1 CONTROL PROCUREMENTS: INPUTS

12.3.1.1 PROJECT MANAGEMENT PLAN

Described in Section 4.2.3.1. Project management plan components include but are not limited to:

- **Requirements management plan.** Described in Section 5.1.3.2. The requirements management plan describes how contractor requirements will be analyzed, documented, and managed.
- **Risk management plan.** Described in Section 11.1.3.1. The risk management plan describes how risk activities created by sellers will be structured and performed for the project.
- **Procurement management plan.** Described in Section 12.1.3.2. The procurement management plan contains the activities to be performed during the Control Procurement process.
- **Change management plan**. Described in Section 4.2.3.1. The change management plan contains information about how seller-created changes will be processed.
- **Schedule baseline.** Described in Section 6.5.3.1. If there are slippages created by sellers that impact overall project performance, the schedule may need to be updated and approved to reflect the current expectations.

12.3.1.2 PROJECT DOCUMENTS

Project documents that can be considered as inputs to this process include but are not limited to:

- **Assumption log.** Described in Section 4.1.3.2. The assumption log documents the assumptions that have been made during the procurement process.
- **Lessons learned register.** Described in Section 4.4.3.1. Lessons learned earlier in the project can be applied further along in the project to improve contractor performance and the procurement process.
- **Milestone list.** Described in Section 6.2.3.3. This list of major milestones shows when the sellers are expected to deliver their results.
- **Quality reports.** Described in Section 8.2.3.1. The quality reports can identify seller processes, procedures, or products that are out of compliance.
- **Requirements documentation.** Described in Section 5.2.3.1. Requirements documentation may include:
  - Technical requirements the seller is required to satisfy, and
  - Requirements with contractual and legal implications that may include health, safety, security, performance, environmental, insurance, intellectual property rights, equal employment opportunity, licenses, permits, and other nontechnical requirements.

- **Requirements traceability matrix.** Described in Section 5.2.3.2. The requirements traceability matrix links product requirements from their origin to the deliverables that satisfy them.
- **Risk register.** Described in Section 11.2.3.1. Each approved seller comes with its own unique set of risks, depending on the seller's organization, the duration of the contract, the external environment, the project delivery method, the type of contracting vehicle chosen, and the final agreed-upon price.
- **Stakeholder register.** Described in Section 13.1.3.1. The stakeholder register includes information about identified stakeholders, including contracted team members, selected sellers, contracting officers, and other stakeholders who are involved in procurements.

12.3.1.3 AGREEMENTS

Described in Section 12.2.3.2. Agreements are understandings between parties, including understanding of the duties of each party. The relevant agreements are reviewed to verify terms and conditions are met.

12.3.1.4 PROCUREMENT DOCUMENTATION

Procurement documentation contains complete supporting records for administration of the procurement processes. Procurement documentation includes the statement of work, payment information, contractor work performance information, plans, drawings, and other correspondence.

12.3.1.5 APPROVED CHANGE REQUESTS

Described in Section 4.6.3.1. Approved change requests can include modifications to the terms and conditions of the contract, including the procurement statement of work (SOW), pricing, and descriptions of the products, services, or results to be provided. All procurement-related changes are formally documented in writing and approved before being implemented through the Control Procurements process. In complex projects and programs, change requests may come from sellers involved with the project that can influence other involved sellers. The project should have the capability of identifying, communicating, and resolving changes that impact the work of multiple sellers.

12.3.1.6 WORK PERFORMANCE DATA

Described in Section 4.3.3.2. Work performance data contains seller data on project status such as technical performance; activities that have started, are in progress, or have completed; and costs that have been incurred or committed. Work performance data can also include information on the seller invoices that have been paid.

12.3.1.7 ENTERPRISE ENVIRONMENTAL FACTORS

The enterprise environmental factors that can influence the Control Procurements process include but are not limited to:

- Contract change control system,
- Marketplace conditions,
- Financial management and accounts payable system, and
- Buying organization's code of ethics.

12.3.1.8 ORGANIZATIONAL PROCESS ASSETS

The organizational process assets that can influence the Control Procurements process include but are not limited to, procurement policies.

12.3.2 CONTROL PROCUREMENTS: TOOLS AND TECHNIQUES

12.3.2.1 EXPERT JUDGMENT

Described in Section 4.1.2.1 Expertise should be considered from individuals or groups with specialized knowledge or training in the following topics:

- Relevant functional areas such as finance, engineering, design, development, supply chain management, etc.;
- Laws, regulations, and compliance requirements; and
- Claims administration.

12.3.2.2 CLAIMS ADMINISTRATION

Contested changes and potential constructive changes are those requested changes where the buyer and seller cannot reach an agreement on compensation for the change or cannot agree that a change has occurred. These contested changes are called claims. When they cannot be resolved, they become disputes and finally appeals. Claims are documented, processed, monitored, and managed throughout the contract life cycle, usually in accordance with the terms of the contract. If the parties themselves do not resolve a claim, it may have to be handled in accordance with alternative dispute resolution (ADR) typically following procedures established in the contract. Settlement of all claims and disputes through negotiation is the preferred method.

12.3.2.3 DATA ANALYSIS

Data analysis techniques that can be used to monitor and control procurements include but are not limited to:

- **Performance Reviews.** Performance reviews for contracts measure, compare, and analyze quality, resource, schedule, and cost performance against the agreement. This includes identifying work packages that are ahead or behind schedule, over or under budget, or have resource or quality issues.
- **Earned Value Analysis (EVA).** Described in Section 7.4.2.2. Schedule and cost variances along with schedule and cost performance indexes are calculated to determine the degree of variance from target.
- **Trend Analysis.** Described in Section 4.5.2.2. Trend analysis can develop a forecast estimate at completion (EAC) for cost performance to see if performance is improving or deteriorating. See 7.4.2.2 for more detail on EAC methods.

12.3.2.4 INSPECTION

An inspection is a structured review of the work being performed by the contractor. This may involve a simple review of the deliverables or an actual physical review of the work itself. On a construction/engineering/infrastructure project, inspections involve walkthroughs of the site by both the buyer and the contractor to ensure a mutual understanding of the work in progress.

12.3.2.5 AUDITS

Audits are described in Section 8.2.2.5. Audits are a structured review of the procurement process. Rights and obligations related to audits should be described in the procurement contract. Resulting audit observations should be brought to the attention of the buyer's project manager and the seller's project manager for adjustments to the project, when necessary.

12.3.3 CONTROL PROCUREMENTS: OUTPUTS

12.3.3.1 CLOSED PROCUREMENTS

The buyer, usually through its authorized procurement administrator, provides the seller with formal written notice that the contract has been completed. Requirements for formal procurement closure are usually defined in the terms and conditions of the contract and are included in the procurement management plan. Typically, all deliverables should have been provided on time and meet technical and quality requirements, there should be no outstanding claims or invoices, and all final payments should have been made. The project management team should have approved all deliverables prior to closure.

12.3.3.2 WORK PERFORMANCE INFORMATION

Described in Section 4.5.1.3. Work performance information includes information on how a seller is performing by comparing the deliverables received, the technical performance achieved, and the costs incurred and accepted against the SOW budget for the work performed.

12.3.3.3 PROCUREMENT DOCUMENTATION UPDATES

Procurement documentation that may be updated includes the contract with all supporting schedules, requested unapproved contract changes, and approved change requests. Procurement documentation also includes any seller-developed technical documentation and other work performance information such as deliverables, seller performance reports and warranties, financial documents including invoices and payment records, and the results of contract-related inspections.

12.3.3.4 CHANGE REQUESTS

Described in Section 4.3.3.4. Change requests to the project management plan, its subsidiary plans, and other components such as the cost baseline, schedule baseline, and procurement management plan, may result from the Control Procurements process. Change requests are processed for review and disposition through the Perform Integrated Change Control process (Section 4.6).

Requested but unresolved changes can include direction provided by the buyer or actions taken by the seller, which the other party considers a constructive change to the contract. Since any of these constructive changes may be disputed by one party and can lead to a claim against the other party, such changes are uniquely identified and documented by project correspondence.

12.3.3.5 PROJECT MANAGEMENT PLAN UPDATES

Any change to the project management plan goes through the organization's change control process via a change request. Components that may require a change request for the project management plan include but are not limited to:

- **Risk management plan.** Described in Section 11.1.3.1. Each agreement and seller has its own set of risks that may require updates to the risk management plan. If significant unexpected risks occur during the execution of the contract, the risk management plan may require updating. Specific risks are incorporated into the risk register.
- **Procurement management plan.** Described in Section 12.1.3.1. The procurement management plan contains the activities to be undertaken during the procurement process. Updates may be required depending on the results of the performance of the sellers during execution of the work.
- **Schedule baseline.** Described in Section 6.5.3.1. If there are significant schedule changes created by sellers that impact overall project schedule performance, the baseline schedule may need to be updated and approved to reflect the current expectations. The buyer should be aware of any cascading impacts of schedule delays created by a seller that impact other sellers.
- **Cost baseline.** Described in Section 7.3.3.1. Contractor and material costs can change frequently during the delivery of a project. These changes can occur because of fluctuating materials and labor prices created by the external economic environment and need to be incorporated into the cost baseline.

12.3.3.6 PROJECT DOCUMENTS UPDATES

Project documents that may be updated as a result of carrying out this process include but are not limited to:

- **Lessons learned register.** Described in Section 4.4.3.1. The lessons learned register can be updated with techniques that were effective in maintaining the scope, schedule, and cost of the procured items. Where variances occurred, the register should show the corrective actions that were used to respond to variances and how effective those actions were. If there are any claims, information should be documented to avoid recurrences. Additional information on how to improve the procurement process can also be recorded.
- **Resource requirements.** Described in Section 9.2.3.1. As the work progresses by the contractors, there may be changes to the resource requirements resulting from work being done that is not in accordance with the planned work schedule.

- **Requirements traceability matrix.** Described in Section 5.2.3.2. The requirements traceability matrix is updated with information on requirements that have been satisfied.
- **Risk register.** Described in Section 11.2.3.1. Each approved seller comes with its own unique set of risks, depending on the seller's organization, the duration of the contract, the external environment, the project delivery method, the type of contracting vehicle chosen, and the final agreed-upon price. Changes are made to the risk register during the execution of the project, as early risks may no longer be applicable and new risks occur.
- **Stakeholder register.** Described in Section 13.1.3.1. As the work progresses through the execution phase, the contractors and suppliers may change. These changes should be reflected in the stakeholder register.

12.3.3.7 ORGANIZATIONAL PROCESS ASSETS UPDATES

Organizational process assets that can be updated as a result of the Control Procurements process include but are not limited to:

- **Payment schedules and requests.** All payments should be made in accordance with the procurement contract terms and conditions.
- **Seller performance evaluation documentation.** Seller performance evaluation documentation is prepared by the buyer and documents the seller's ability to continue to perform work on the current contract, indicates whether the seller can be allowed to perform work on future projects, or rates how well the seller is performing the project work or has performed in the past.
- **Prequalified seller lists updates.** Prequalified seller lists are lists of potential sellers who are previously qualified (approved). These lists will be updated according to the Procurement Control process outcomes because sellers could be disqualified and removed from the lists based on poor performance.
- **Lessons learned repository.** Lessons learned should be archived in the lessons learned repository to improve procurements on future projects. At the end of a contract, the actual results of the procurement are compared with the projected results in the original procurement management plan. These lessons learned state whether the project objectives were achieved and, if not, provides the reasons they were not.
- **Procurement file.** A complete set of indexed contract documentation, including the closed contract, is prepared for inclusion with the final project files.