



INFO 6245

Planning &

Managing

Information

Systems

Development

Module 11

Project Procurement Management

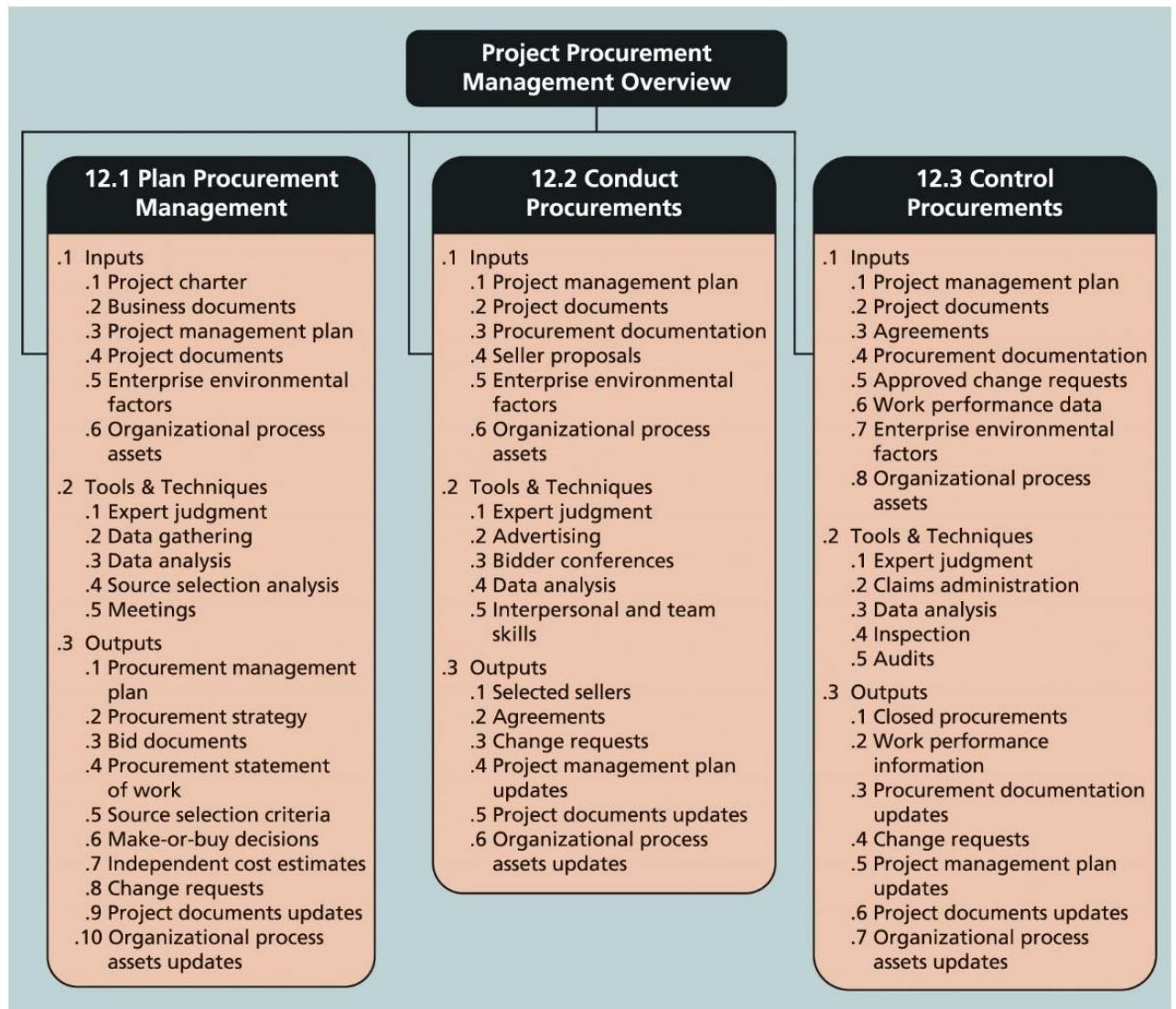
Topics of Discussion

- Importance of Procurement Management
- Planning Procurements
- Conducting Procurements
- Controlling Procurements

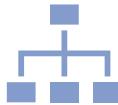


Procurement Management

- **Project procurement management** includes the processes required to acquiring goods and services for a project from outside the performing organization
- **Planning procurement management:** determining what to procure and when and how to do it
- **Conducting procurements:** obtaining seller responses, selecting sellers, and awarding contracts
- **Controlling procurements:** managing relationships with sellers, monitoring contract performance, making changes as needed, and closing out contracts



Key Elements



Identification of Needs: The first step is to identify what goods or services are required. This involves detailed specifications and requirements to ensure that the procurement process aligns with the organization's goals.

Supplier Selection: This involves researching and evaluating potential suppliers. Criteria for selection can include cost, quality, reliability, and the ability to meet delivery schedules. The process often involves sending out Requests for Proposals (RFPs) or Requests for Quotations (RFQs).

Contract Negotiation: Once a supplier is selected, the terms of the contract are negotiated. This includes pricing, delivery schedules, payment terms, and any other conditions that need to be met.

Order Placement and Management: After the contract is signed, orders are placed, and the procurement team manages the process to ensure timely delivery and compliance with the contract terms.

Quality Assurance: Ensuring that the received goods or services meet the specified quality standards is crucial. This may involve inspections, testing, and feedback loops with the supplier.

Payment and Record Keeping: Once the goods or services are delivered and accepted, payments are processed according to the agreed terms. Proper documentation and record-keeping are essential for transparency and future reference.

Types of Procurement

Direct Procurement:

Involves acquiring raw materials and components that are directly used in the production process.

Indirect Procurement:

Involves purchasing goods and services that support the organization's operations but are not part of the final product (e.g., office supplies, maintenance services).

Challenges in Procurement



Risk Management: Identifying and mitigating risks associated with supplier reliability, geopolitical factors, and market volatility.



Sustainability: Ensuring that procurement practices are environmentally sustainable and socially responsible.



Technology Integration: Leveraging technology to streamline procurement processes, such as using procurement software for better data management and analytics.

Definitions

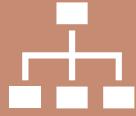
Procurement means **acquiring** goods and services from an outside source.

The term procurement is widely used in government; many private companies use the terms **purchasing** and **outsourcing**.

Organizations or individuals who provide procurement services are referred to as **suppliers**, vendors, contractors, subcontractors, or sellers.

Outsourcing to other countries is called **offshoring**.

Outsourcing for IT



Many IT projects involve the use of goods and services from outside the organization.



PMI defines an outside source as a source outside the project team, so the same organization can be a supplier to the project team, or the project team can be a supplier to another group in the organization.



In fact, many IT departments in organizations are in direct competition with outside vendors, and they are subject to the same kind of requirements definition, statements of work, and bids.

Why Outsource?



ACCESS SKILLS AND TECHNOLOGIES.
ORGANIZATIONS CAN GAIN ACCESS TO SPECIFIC SKILLS AND TECHNOLOGIES AS THEY ARE REQUIRED WITHOUT WORRYING ABOUT EMPLOYEE RETENTION, SKILLS TRAINING, OR ATTRITION.



REDUCE BOTH FIXED AND RECURRENT COSTS.
OUTSOURCING SUPPLIERS CAN USE ECONOMIES OF SCALE AND OFFER LESS EXPENSIVE LABOR.



FOCUS ON CORE BUSINESS. ORGANIZATIONS CAN AVOID SPENDING VALUABLE TIME AND RESOURCES ON IT FUNCTIONS AND INSTEAD FOCUS ON CORE COMPETENCIES AND THEIR “SECRET SAUCE” THAT ARE CRITICAL TO THE SUCCESS OF THE ORGANIZATION.



PROVIDE FLEXIBILITY. OUTSOURCING TO PROVIDE EXTRA STAFF DURING PERIODS OF PEAK WORKLOADS PROVIDE BETTER FLEXIBILITY AND ECONOMIES.



INCREASE ACCOUNTABILITY. A WELL-WRITTEN CONTRACT CAN CLARIFY RESPONSIBILITIES AND SHARPEN FOCUS ON KEY DELIVERABLES OF A PROJECT. BECAUSE CONTRACTS ARE LEGALLY BINDING, THERE IS MORE ACCOUNTABILITY FOR DELIVERING THE WORK AS STATED IN THE CONTRACT.

Why Not Outsource?

- When an organization outsources work, it often does not have as much control over the aspects of projects that suppliers carry out.
- An organization could become too dependent on specific suppliers. If those suppliers went out of business or lost key personnel, it could cause great damage to a project.
- Organizations must also be careful to protect strategic information that could become vulnerable in the hands of suppliers.

PROS AND CONS OF IT OUTSOURCING

Keeping developers is not your concern



Risks connected to sharing the company's data



Large talent pool, high quality and lower rates



Code ownership issues



Reduced risks connected to unexpected quits



Expertise built outside your company



More developers for the same price



Outsourcing vs. Offshoring

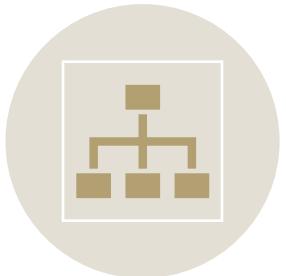
Outsourcing: This is the practice of obtaining goods or services from external suppliers rather than producing them in-house. It allows organizations to focus on their core competencies and leverage the expertise of specialized suppliers.

Offshoring: When outsourcing involves suppliers located in other countries, it is referred to as offshoring. This practice can offer significant cost savings and access to specialized skills. However, it also presents challenges such as time zone differences, communication barriers, and the need to comply with international regulations.



Planning Procurement

Planning Procurement



Identifying which project needs can best be met by using products or services outside the organization



Involves deciding whether to procure, how to procure, what to procure, how much to procure, and when to procure



An important output of this process is the make-or-buy decision



If there is no need to buy any products or services from outside the organization, then there is no need to perform any of the other procurement management processes

Procurement Planning Process

Requirement Analysis:

- **Identify Needs:** Determine what goods or services are required for the project. This involves detailed specifications and understanding the scope of what needs to be procured.
- **Internal vs. External:** Decide which items can be sourced internally and which need to be procured from external suppliers.
- **Make-or-Buy Decision:** This critical decision helps organizations determine whether it is more feasible to produce the required goods or services in-house or to outsource them to external suppliers. Factors such as cost, resource availability, expertise, and time constraints are carefully analyzed to make this choice.

Procurement Strategy:

- **Procurement Methods:** Select the appropriate procurement methods such as Requests for Proposals (RFPs), Requests for Quotations (RFQs), or direct negotiations. The choice depends on the complexity and nature of the procurement.
- **Contract Types:** Define the type of contract to be used (e.g., fixed-price, cost-reimbursable, time and materials). Each contract type has its own advantages and risks.

Budgeting:

- **Cost Estimates:** Develop cost estimates for the procurement items. This helps in setting a realistic budget and ensuring that the procurement aligns with the project's financial constraints.
- **Funding Approval:** Secure the necessary funding approvals from stakeholders or financial authorities within the organization.

Risk Management:

- **Risk Identification:** Identify potential risks associated with the procurement process, such as supplier reliability, market volatility, or geopolitical factors.
- **Risk Mitigation:** Develop strategies to mitigate these risks, such as having backup suppliers or including specific clauses in contracts to address potential issues.

Procurement Documentation:

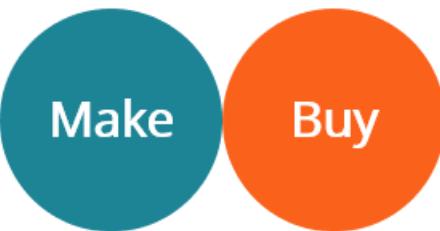
- **Procurement Management Plan:** Create a comprehensive procurement management plan that outlines the procurement strategy, timelines, roles and responsibilities, and criteria for selecting suppliers.
- **Statements of Work (SOW):** Develop detailed SOWs that clearly define the scope, deliverables, timelines, and performance criteria for the procurement items.

Supplier Selection Criteria:

- **Evaluation Criteria:** Establish criteria for evaluating potential suppliers, such as cost, quality, delivery time, and past performance.
- **Supplier Prequalification:** Conduct a prequalification process to shortlist potential suppliers who meet the minimum requirements.

Tools & Techniques

- **Make-or-buy analysis:** Used to determine whether an organization should make or perform a particular product or service inside the organization or buy from someone else. It involves estimating the internal costs of providing a product or service and comparing the estimate to the cost of outsourcing.
- **Expert judgment:** Experts both from inside and outside an organization can provide excellent advice in planning purchases and acquisitions
- **Market research:** Many potential suppliers are often available for goods and services, so the project team must choose suppliers carefully



Costs of Making Product (In-house)

- Production costs
- Extra labor costs
- Monitoring costs
- Storage requirement costs
- Waste product disposal costs

Cost of Buying Product (Outsourcing)

- Product purchase price
- Sales tax charge
- Shipping costs
- Inventory holding costs
- Ordering costs

Make Buy Analysis

Cost Estimation:

- *Internal Costs:* Estimate the costs associated with producing the product or service in-house. This includes direct costs (e.g., materials, labor) and indirect costs (e.g., overhead, equipment maintenance).
- *Outsourcing Costs:* Estimate the costs of procuring the product or service from an external supplier. This includes the price quoted by the supplier, transportation costs, and any additional fees.

Comparison:

- Compare the internal production costs with the outsourcing costs. The goal is to identify the most cost-effective and efficient option that aligns with the organization's capabilities and project requirements.

Strategic Considerations:

- *Core Competencies:* Determine whether the product or service is within the organization's core competencies. If it is not, outsourcing may be more advantageous.
- *Resource Availability:* Assess whether the organization has the necessary resources (e.g., skilled labor, equipment) to produce the product or service internally.
- *Time Constraints:* Consider the time required to produce the product or service in-house versus the lead time for outsourcing.

Risk Assessment:

- Evaluate the risks associated with both options. This includes supply chain risks, quality control issues, and potential disruptions.

Procurement Management Plan

A document that describes how the procurement processes will be managed, from developing documentation for making outside purchases or acquisitions to contract closure.

Guidelines for types of contracts to be used in different situations

Standard procurement documents or templates to be used

Guidelines for creating contract work breakdown structures, statements of work, and other procurement documents

Roles and responsibilities of the project team and related departments, such as the purchasing or legal department

Guidelines for using independent estimates to evaluate sellers

Suggestions for managing multiple providers

Processes for coordinating procurement decisions with other project areas, such as scheduling and performance reporting

Constraints and assumptions related to purchases and acquisitions

Lead times for purchases and acquisitions

Risk mitigation strategies for purchases and acquisitions, such as insurance contracts and bonds

Guidelines for identifying prequalified sellers and organizational lists of preferred sellers

Procurement metrics to assist in evaluating sellers and managing contracts

Statement of Work

- A statement of work (SOW) is a description of the work required for the procurement
- If a SOW is used as part of a contract to describe only the work required for that particular contract, it is called a contract statement of work
- A contract SOW is a type of scope statement
- A good SOW gives bidders a better understanding of the buyer's expectations

Statement of Work (SOW)

- I. **Scope of Work:** Describe the work to be done in detail. Specify the hardware and software involved and the exact nature of the work.
- II. **Location of Work:** Describe where the work must be performed. Specify the location of hardware and software and where the people must perform the work.
- III. **Period of Performance:** Specify when the work is expected to start and end, working hours, number of hours that can be billed per week, where the work must be performed, and related schedule information.
- IV. **Deliverables Schedule:** List specific deliverables, describe them in detail, and specify when they are due.
- V. **Applicable Standards:** Specify any company or industry-specific standards that are relevant to performing the work.
- VI. **Acceptance Criteria:** Describe how the buyer organization will determine if the work is acceptable.
- VII. **Special Requirements:** Specify any special requirements such as hardware or software certifications, minimum degree or experience level of personnel, travel requirements, and so on.

Bid Documents

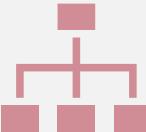
- **Requests for Information (RFI)** are used to gather general information about potential suppliers and their capabilities. They are typically issued early in the procurement process when the buyer is exploring options and seeking to understand the market better.
- **Requests for Quotes (RFQ)** are used to solicit quotes or bids from prospective suppliers. A bid, also called a tender or quotation, is a document prepared by sellers providing pricing for standard items that have been clearly defined by the buyer
- **Request for Proposals (RFP)** are used to solicit proposals from prospective sellers. A proposal is a document prepared by a seller when there are different approaches for meeting buyer needs

Aspect	RFP (Request for Proposal)	RFQ (Request for Quote)	RFI (Request for Information)
Purpose	Solicit detailed proposals and solutions from potential suppliers.	Solicit price quotes or bids for well-defined needs.	Gather general information about potential suppliers and their capabilities.
Complexity	High - Requires detailed proposals including approach, timelines, qualifications, and pricing.	Medium - Focuses primarily on pricing and terms for specified items or services.	Low - Used for information gathering, less formal.
Evaluation	Comprehensive - Evaluates multiple factors such as cost, technical approach, experience, and fit with project goals.	Primarily evaluates price and terms.	Preliminary screening based on general information.
Key Components	Introduction, Project Background, Scope of Work, Proposal Requirements, Evaluation Criteria, Submission Guidelines.	Item Description, Pricing Information, Terms and Conditions, Submission Guidelines.	Introduction, Information Requested, Submission Guidelines.
Flexibility	High - Encourages innovative solutions and approaches from suppliers.	Low - Focuses on obtaining the best price for well-defined needs.	Medium - Helps understand market and supplier capabilities.
Benefits	Allows for comprehensive evaluation and innovative solutions; straightforward purchases; detailed proposals help in informed decision-making.	Simplifies the process for focuses on cost efficiency and quick turnaround.	Provides market understanding and preliminary screening of suppliers.
Usage Scenario	When the buyer has specific needs but is open to different approaches or solutions.	When the buyer knows exactly what they want and needs the best price.	Early in the procurement process to explore options and understand the market.

Source Selection Criteria



It's important to prepare some form of evaluation criteria, preferably before issuing a formal RFP or RFQ. Organizations use criteria to rate or score proposals, and they often assign a weight to each criterion to indicate its importance



Beware of proposals that look good on paper. Be sure to evaluate factors, such as past performance and management approach.



Some IT projects also require potential sellers to deliver a technical presentation as part of their proposal. The proposed project manager should lead the potential seller's presentation team

Key Components

Technical Capability:	Cost:	Past Performance:	Management Approach:	Compliance:	Quality Assurance:	Delivery Schedule:
<ul style="list-style-type: none">Relevance: Assess the technical expertise and capabilities of the seller in relation to the project requirements.Innovation: Evaluate the seller's ability to provide innovative solutions that can enhance project outcomes.	<ul style="list-style-type: none">Price: Consider the overall cost of the proposal, including any potential hidden costs.Value for Money: Assess whether the proposal offers good value for the investment, balancing cost with quality and benefits.	<ul style="list-style-type: none">Reliability: Review the seller's track record on similar projects to gauge their reliability and consistency.Client Feedback: Consider feedback from previous clients to understand the seller's performance and customer satisfaction.	<ul style="list-style-type: none">Project Management: Evaluate the seller's project management plan, including their approach to scheduling, resource allocation, and risk management.Team Structure: Assess the qualifications and experience of the proposed project team, particularly the project manager.	<ul style="list-style-type: none">Regulatory Adherence: Ensure that the seller's proposal complies with all relevant laws, regulations, and industry standards.Contractual Obligations: Verify that the seller can meet the contractual terms and conditions outlined in the RFP or RFQ.	<ul style="list-style-type: none">Standards: Evaluate the seller's quality assurance processes and their ability to meet the required quality standards.Testing and Validation: Consider the seller's approach to testing and validating deliverables to ensure they meet project specifications.	<ul style="list-style-type: none">Timeliness: Assess the proposed timeline for delivering the project and whether it aligns with the project's deadlines.Flexibility: Evaluate the seller's ability to adapt to changes in the project schedule if necessary.



Contract Types

Firm Price Contracts



Different types of contracts can be used in different situations. Project managers and their teams must understand and decide which approaches to use to meet their project needs.



Fixed price or lump sum contracts involve a fixed total price for a well-defined product or service. The buyer incurs little risk in this situation because the price is predetermined. The sellers reduce their risk by inflating their estimate, but still staying competitive.



A **firm-fixed-price (FFP) contract** has the least amount of risk for the buyer, followed by a fixed-price incentive fee (FPIF) contract.



Includes a special provision for predefined final adjustments to the contract price due to changes in conditions such as inflation or the cost of specific commodities. An FP-EPA contract is intended to protect both the buyer and seller from external conditions beyond



Time and material contracts: hybrid of both fixed price and cost reimbursable contracts



Unit price contracts: require the buyer to pay the seller a predetermined amount per unit of service

Cost Reimbursable Contracts

Cost-reimbursable contracts involve payment to the seller for direct and indirect costs.

Direct costs can be directly related to producing a project's products and services. Normally, these costs can be traced back to a project in a cost-effective way.

Indirect costs are not directly related to the products or services of the project, but they are indirectly related to performing the project. Indirect costs are often calculated as a percentage of direct costs.

These contracts are often used for projects that include providing goods and services that involve new technologies. The buyer absorbs more of the risk with cost-reimbursable contracts than with fixed-price contracts.

Cost-reimbursable contracts often include fees, such as a profit percentage or incentives for meeting or exceeding selected project objectives.

Types of Cost-Plus Contracts

Cost plus incentive fee (CPIF) contract is where the buyer pays the supplier for allowable costs (as defined in the contract) along with a predetermined fee and an incentive bonus to reduce contract costs

Cost plus fixed fee (CPFF) contract is where the buyer pays the supplier for allowable costs plus a fixed fee payment that is usually based on a percentage of estimated costs.

Cost plus award fee (CPAF) contract is where the buyer pays the supplier for allowable costs plus an award fee based on the satisfaction of subjective performance criteria.

Cost plus percentage of costs (CPPC) contract is where the buyer pays the supplier for allowable costs (as defined in the contract) along with a predetermined percentage based on total costs. This is the least desirable type of contract for buyers since the supplier has no incentive to decrease costs.

Other Types Of Contracts

- **Time and material (T&M) contracts** are a hybrid of fixed-price and cost-reimbursable contracts. The supplier would send an invoice to the buyer each week or month; the invoice would list the materials fee, the number of hours worked, and a description of the work produced. This type of contract is often used for required services when the work cannot be specified clearly, and total costs cannot be estimated in a contract.
- **Unit pricing** can also be used in various types of contracts to require the buyer to pay the supplier a predetermined amount per unit of product or service. The total value of the contract is a function of the quantities needed to complete the work. This type of pricing often involves volume discounts. This flexible pricing strategy is often advantageous to both the buyer and the seller.

Contract Risks

- Looking at the spectrum of risk to the buyer and the supplier for different types of contracts, the CPPC carries the lowest risk to the seller and the FFPC carries the lowest risk to the buyer.
- Time and material contracts and unit-price contracts can be high or low risk, depending on the nature of the project and other contract clauses. the contract would include a termination clause that allows the buyer or supplier to end the contract.

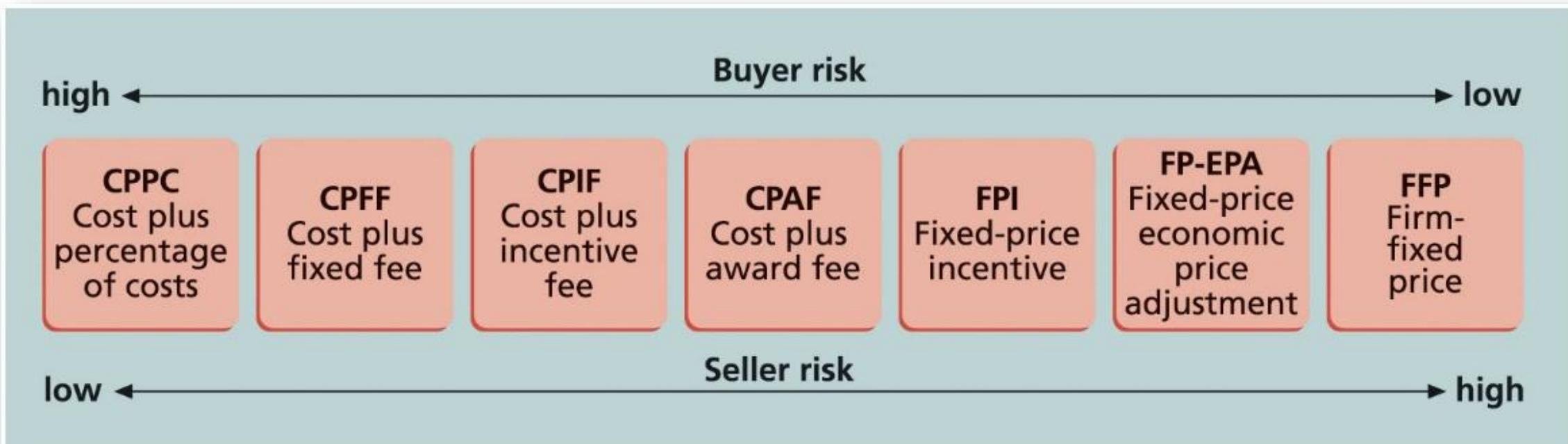


FIGURE 12-2 Contract types versus risk

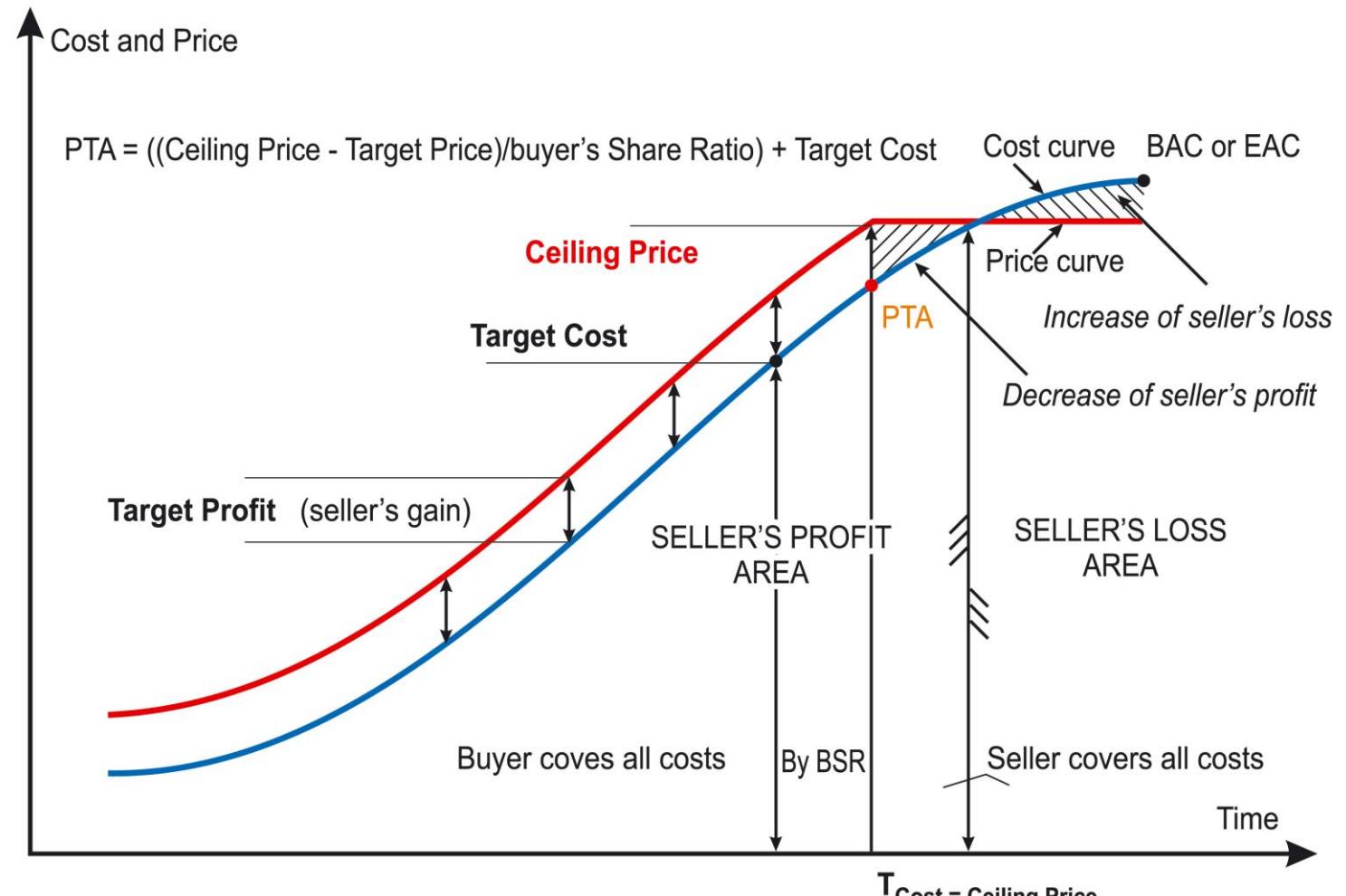
Point of Total Assumption

- **Point of Total Assumption (PTA)** is the cost at which the contractor assumes total responsibility for each additional dollar of contract cost
- Contractors do not want to reach the PTA because it hurts them financially, so they have an incentive to prevent cost overruns.
- The PTA is calculated with the following formula:

$$PTA = \frac{(Ceiling\ Price - Target\ Price)}{Buyer's\ share\ ratio} + Target\ Cost$$

Calculation of Point of Total Assumption (FPIF contracts)

The case when "BAC exceeds PTA" is shown



Conducting Procurements



Conducting Procurements

The next process involves deciding whom to ask to do the work, sending appropriate documentation to potential sellers, obtaining proposals or bids, selecting a seller, and awarding a contract. Two of the main outputs of this process are a selected seller and agreements.

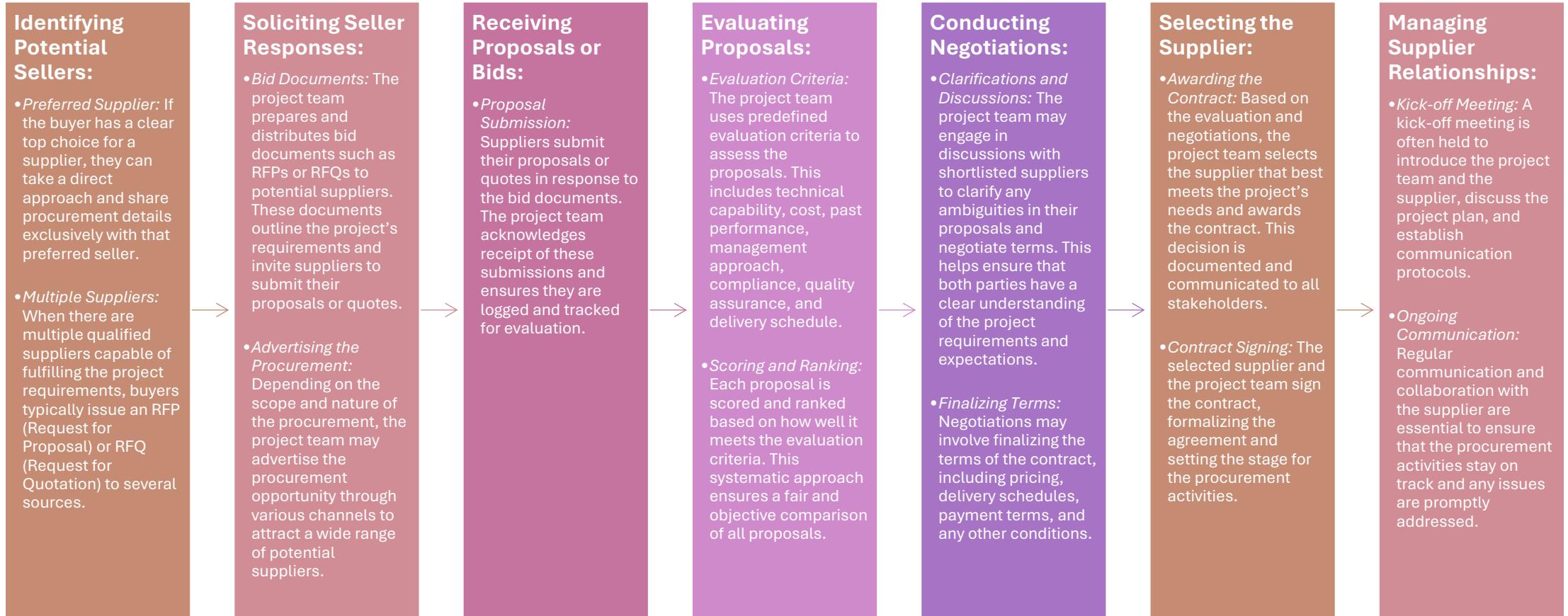
If a specific supplier is the top choice for the buyer, they can directly approach the preferred seller and give the procurement information just to that company. If the preferred supplier responds favorably, they proceed to work together by forming good working relationships.

When more than one supplier are qualified to provide the goods and services, buyers will provide RFP/RFQ to multiple sources and receive bids from them to take advantage of the competitive business environment.

Offshore outsourcing has increased tremendously as organizations find suitable sellers around the globe. As a result of pursuing a competitive bidding strategy, the buyer can receive better goods and services than expected at a lower price.

A bidders' conference, also called a supplier conference or pre-bid conference, is a meeting with prospective sellers prior to preparation of their proposals or bids to help clarify expectations.

Key Steps in Conducting Procurements



Source Selection

- Source Selection is the process of selecting suppliers or sellers, and involves evaluating proposals or bids from sellers, choosing the best one, negotiating the contract, and awarding the contract.
- Several stakeholders in the procurement process are responsible for evaluating various sections of the proposals and selecting the best supplier for the project.
- There might be a technical team, a management team, and a cost team to focus on each major area.
- Buyers typically develop a short list of the top three to five suppliers to reduce the work involved in selecting a source.
- A proposal evaluation sheet is a form of a weighted scoring model, used by the project team to create a short list of the best three to five proposals.

Criteria	Weight	Proposal 1		Proposal 2		Proposal 3		Etc.	
		Rating	Score	Rating	Score	Rating	Score		
Technical approach	30%	90	27	80	24	70	21		
Management approach	30%	85	25.5	75	22.5	85	25.5		
Past performance	20%	95	19	70	14	75	15		
Price	20%	75	15	95	19	80	16		
Total score	100%		86.5		79.5		77.5		

FIGURE 12-4 Sample proposal evaluation sheet

Seller Selection



After developing a short list of possible sellers, organizations often follow a more detailed proposal evaluation process



It is customary to have contract negotiations during the source selection process



Sellers on the short list often prepare a best and final offer (BAFO)



Final output is a contract signed by the buyer and the selected seller

Controlling Procurements



Controlling Procurements



Ensures the seller's performance meets contractual requirements



Contracts are legal relationships, so it is important that legal and contracting professionals be involved in writing and administering contracts



Project team members must be aware of potential legal problems they might cause by not understanding a contract



It is critical that project managers and team members watch for constructive change orders



Constructive Change Orders are oral or written acts or omissions by someone with actual or apparent authority that can be construed to have the same effect as a written change order

Key Steps in Controlling Procurements



Good Practices

Changes to any part of the project need to be reviewed, approved, and documented by the same people in the same way that the original part of the plan was approved

Evaluation of any change should include an impact analysis

Changes must be documented in writing

Project managers and teams should stay closely involved to make sure the new system will meet business needs and work in an operational environment

Have backup plans

Use tools and techniques, such as a contract change control system, buyer-conducted performance reviews, inspections and audits, etc.

Agile Considerations

Agile projects values customer collaboration over contract negotiation, setting an important tone for procurement relationships on agile projects.

The buyer and seller should work together to create the required products and services throughout the entire procurement process.

Intelligent Procurements

Data scientists build predictive models to analyze big date related to finance, marketing, etc.
Why not model procurement processes?

Behavioral economists know that people do not act rationally. Why not apply irrationality to your advantage in negotiations?

Quality control/assurance departments encourage employees to suggest quality improvements all the time. Why not enable your workers to be on the lookout for additional new and innovative suppliers?

Crowdsourcing solicits ideas from a large group of people. Can it apply to some of your organization's procurements?

Closing Procurements



Involves completing and settling contracts and resolving any open items



The project team should determine if all work was completed correctly and satisfactorily, update records to reflect final results, and archive information for future use



The contract itself should include requirements for formal acceptance and closure



Contract Closure Tools



Procurement audits identify lessons learned in the procurement process



A records management system provides the ability to easily organize, find, and archive procurement-related documents



Ideally, all procurements should end in a negotiated settlement between the buyer and the seller; if negotiation is not possible, then some type of alternate dispute resolution such as mediation or arbitration can be used



Archiving information for future use is particularly important

In-Class Group Exercise



Make-Buy Analysis

- Pick any one aspect of your Team Project – Market Research, Development, O&M, HR, Accounting, or anything else that fits your project.
- Evaluate 3 prospective suppliers (web search)
- Conduct a Make-Buy Analysis using the template provided in the Canvas Discussion Board.



Assignment

