Project Cost Management

What is Cost and Project Cost Management?

- **Cost** is a resource sacrificed or foregone to achieve a specific objective, or something given up in exchange.
- Costs are usually measured in monetary units, such as dollars.
- **Project cost management** includes the processes required to ensure that the project is completed within an approved budget.

Project Cost Management Processes

1. **Cost estimating**: Developing an approximation or estimate of the costs of the resources needed to complete a project.

2. **Cost budgeting**: Allocating the overall cost estimate to individual work items to establish a baseline for measuring performance.

3. **Cost control**: Controlling changes to the project budget.

Basic Principles of Cost Management

- Most members of an executive board have a better understanding and are more interested in financial terms than IT terms, so IT project managers must speak their language.
  - **Profits** are revenues minus expenses.
  - **Life cycle costing** considers the total cost of ownership, or development plus support costs, for a project.
  - **Cash flow analysis** determines the estimated annual costs and benefits for a project and the resulting annual cash flow.

Basic Principles of Cost Management

Exam Hint !!

- **Tangible costs** or **benefits** are those costs or benefits that an organization can easily measure in dollars.
- **Intangible costs** or **benefits** are costs or benefits that are difficult to measure in monetary terms.
- **Direct costs** are costs that can be directly related to producing the products and services of the project.
- **Indirect costs** are costs that are not directly related to the products or services of the project, but are indirectly related to performing the project.
- **Sunk cost** is money that has been spent in the past; when deciding what projects to invest in or continue, you should *not* include sunk costs.

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Basic Principles of Cost Management

- **Learning curve theory** states that when many items are produced repetitively, the unit cost of those items decreases in a regular pattern as more units are produced.
- **Reserves** are dollars included in a cost estimate to mitigate cost risk by allowing for future situations that are difficult to predict.
  - **Contingency reserves** allow for future situations that may be partially planned for (sometimes called **known unknowns**) and are included in the project cost baseline.
  - **Management reserves** allow for future situations that are unpredictable (sometimes called **unknown unknowns**).

Exam Hint !!

1. Cost Estimating

- Project managers must take cost estimates seriously if they want to complete projects within budget constraints.
- It's important to know the types of cost estimates, how to prepare cost estimates, and typical problems associated with IT cost estimates.

Types of Cost Estimates

Type of Estimate	When Done	Why Done	How Accurate
Rough Order of Magnitude (ROM)	Very early in the project life cycle, often 3–5 years before project completion	Provides estimate of cost for selection decisions	–25% to +75%
Budgetary	Early, 1–2 years out	Puts dollars in the budget plans	–10% to +25%
Definitive	Later in the project, less than 1 year out	Provides details for purchases, estimates actual costs	–5% to +10%

Cost Management Plan

- A **cost management plan** is a document that describes how the organization will manage cost variances on the project.
- A large percentage of total project costs are often labor costs, so project managers must develop and track estimates for labor.

Cost Estimation Tools and Techniques

- Basic tools and techniques for cost estimates:
  - **Analogous** or **top-down estimates**: Use the actual cost of a previous, similar project as the basis for estimating the cost of the current project.
  - **Bottom-up estimates**: Involve estimating individual work items or activities and summing them to get a project total.
  - **Parametric modeling**: Uses project characteristics (parameters) in a mathematical model to estimate project costs.
  - **Computerized tools**: Tools, such as spreadsheets and project management software, that can make working with different cost estimates and cost estimation tools easier.

Typical Problems with IT Cost Estimates

1. Developing an estimate for a large software project is a complex task that requires a significant amount of effort.
2. People who develop estimates often do not have much experience.
3. Human beings are biased toward underestimation.
4. Management might ask for an estimate, but really desire a bid to win a major contract or get internal funding.

Exam Hint !!

Sample Project Cost Estimate

Surveyor Pro Project Cost Estimate Created October 5, 2006

	# Units/Hrs.	Cost/Unit/Hr.	Subtotals	WBS Level 1 Totals	% of Total
WBS Items					
1. Project Management				**$306,300**	**20%**
Project manager	960	$100	$96,000		
Project team members	1920	$75	$144,000		
Contractors (10% of software development and testing)			$66,300		
2. Hardware				**$76,000**	**5%**
2.1 Handheld devices	100	$600	$60,000		
2.2 Servers	4	$4,000	$16,000		
3. Software				**$614,000**	**40%**
3.1 Licensed software	100	$200	$20,000		
3.2 Software development*			$594,000		
4. Testing (10% of total hardware and software costs)			$69,000	**$69,000**	**5%**
5. Training and Support				**$202,400**	**13%**
Trainee cost	100	$500	$50,000		
Travel cost	12	$700	$8,400		
Project team members	1920	$75	$144,000		
6. Reserves (20% of total estimate)			$253,540	**$253,540**	**17%**
Total project cost estimate				**$1,521,240**	

* See software development estimate

2.Cost Budgeting

- Cost budgeting involves allocating the project cost estimate to individual work items over time.
- The WBS is a required input for the cost budgeting process because it defines the work items.
- Important goal is to produce a **cost baseline**:
  - A time-phased budget that project managers use to measure and monitor cost performance.

Sample Project Cost Baseline

Surveyor Pro Project Cost Baseline Created October 10, 2006*

WBS Items	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1. Project Management													
Project manager	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	96,000
Project team members	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	144,000
Contractors		6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	66,300
2. Hardware													
2.1 Handheld devices				30,000	30,000								60,000
2.2 Servers				8,000	8,000								16,000
3. Software													
3.1 Licensed software				10,000	10,000								20,000
3.2 Software development		60,000	60,000	80,000	127,000	127,000	90,000	50,000		594,000			594,000
4. Testing			6,000	8,000	12,000	15,000	15,000	13,000		69,000			69,000
5. Training and Support													
Trainee cost									50,000				50,000
Travel cost									8,400				8,400
Project team members							24,000	24,000	24,000	24,000	24,000	24,000	144,000
6. Reserves				10,000	10,000	30,000	30,000	60,000	40,000	40,000	30,000	3,540	253,540
Totals	20,000	86,027	92,027	172,027	223,027	198,027	185,027	173,027	148,427	753,027	80,027	53,567	1,521,240

*See the lecture slides for this chapter on the companion Web site for a larger view of this and other figures in this chapter.

3. Cost Control

- Project cost control includes:
  - Monitoring cost performance.
  - Ensuring that only appropriate project changes are included in a revised cost baseline.
  - Informing project stakeholders of authorized changes to the project that will affect costs.
- Many organizations around the globe have problems with cost control.

Earned Value Management

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- Earned Value Management (EVM) is a critical technique in project management used to monitor and control project performance and progress.

- It integrates project scope, time, and cost measures to help assess project performance and predict future outcomes. Here's an explanation of EVM and its key components.

For more : Click

Summary

- Project cost management is traditionally a weak area in IT projects, and project managers must work to improve their ability to deliver projects within approved budgets.
- Main processes include:
  - Cost estimating
  - Cost budgeting
  - Cost control