Chapter 7: Project Cost Management

Information Technology Project Management, Sixth Edition

Note: See the text itself for full citations.

Announcements

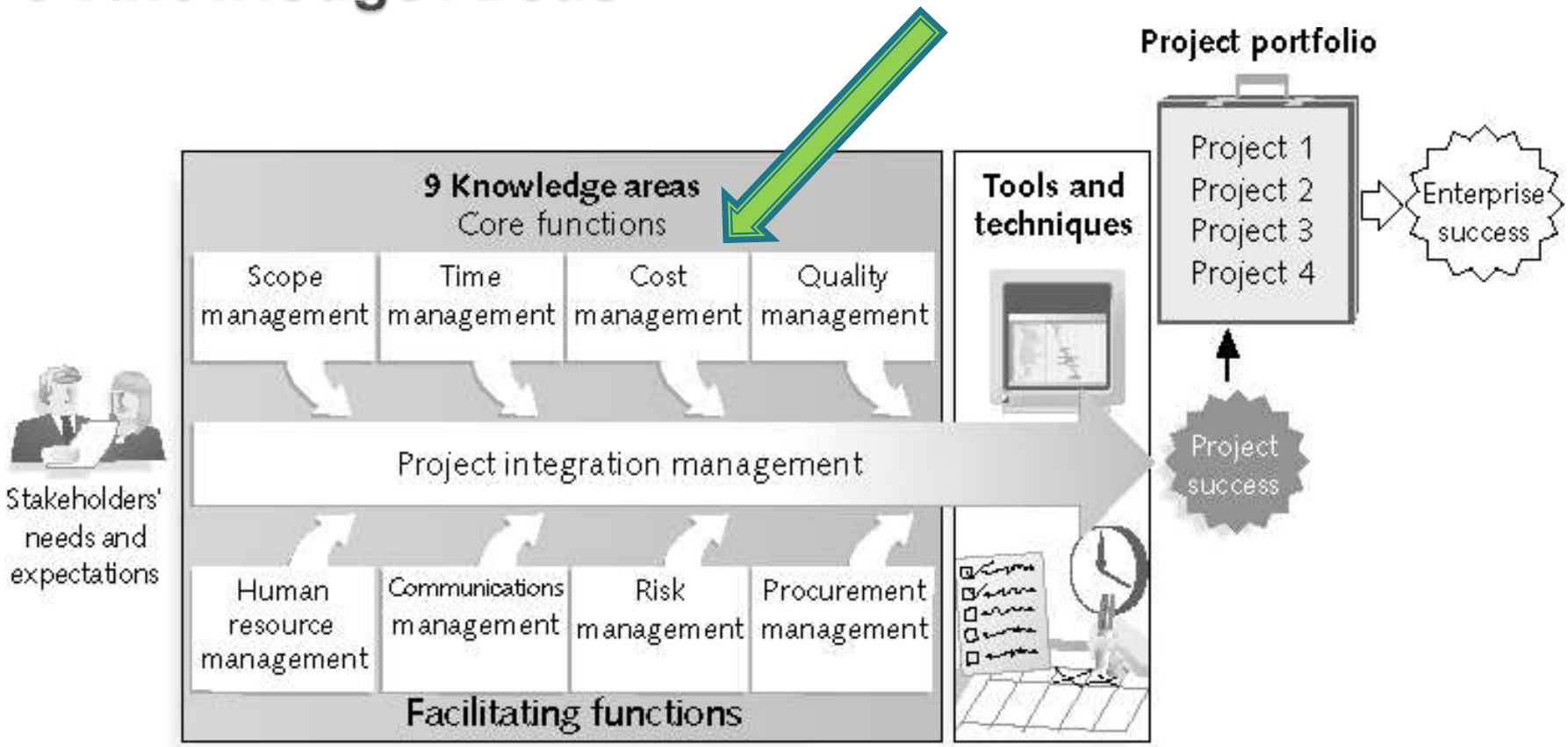
- ~~8/25 – Chapter 1, Syllabus and Class Overview~~
- ~~9/1 – Chapter 2, Term Project Guidance, Team Breakouts~~
- ~~9/8 – Chapter 3, Team Breakouts~~
- ~~9/15 – Chapter 4, Team Breakouts~~
- ~~9/22 – Chapter 5, Team Breakouts~~
- ~~9/29 –~~ No Class, Thursday follows Monday schedule….
- ~~10/6 – Chapter 6, Team Breakouts~~
- ~~10/13 – Midterm (chapters 1-6)~~
- ~~10/20 – 1st Team Presentations, due and presented~~

10/27 Chapter 7

Learning Objectives for Today!

- Understand the importance of project cost management
- Explain basic project cost management principles
- Discuss different types of cost estimates and methods
- Understand the processes involved in cost budgeting

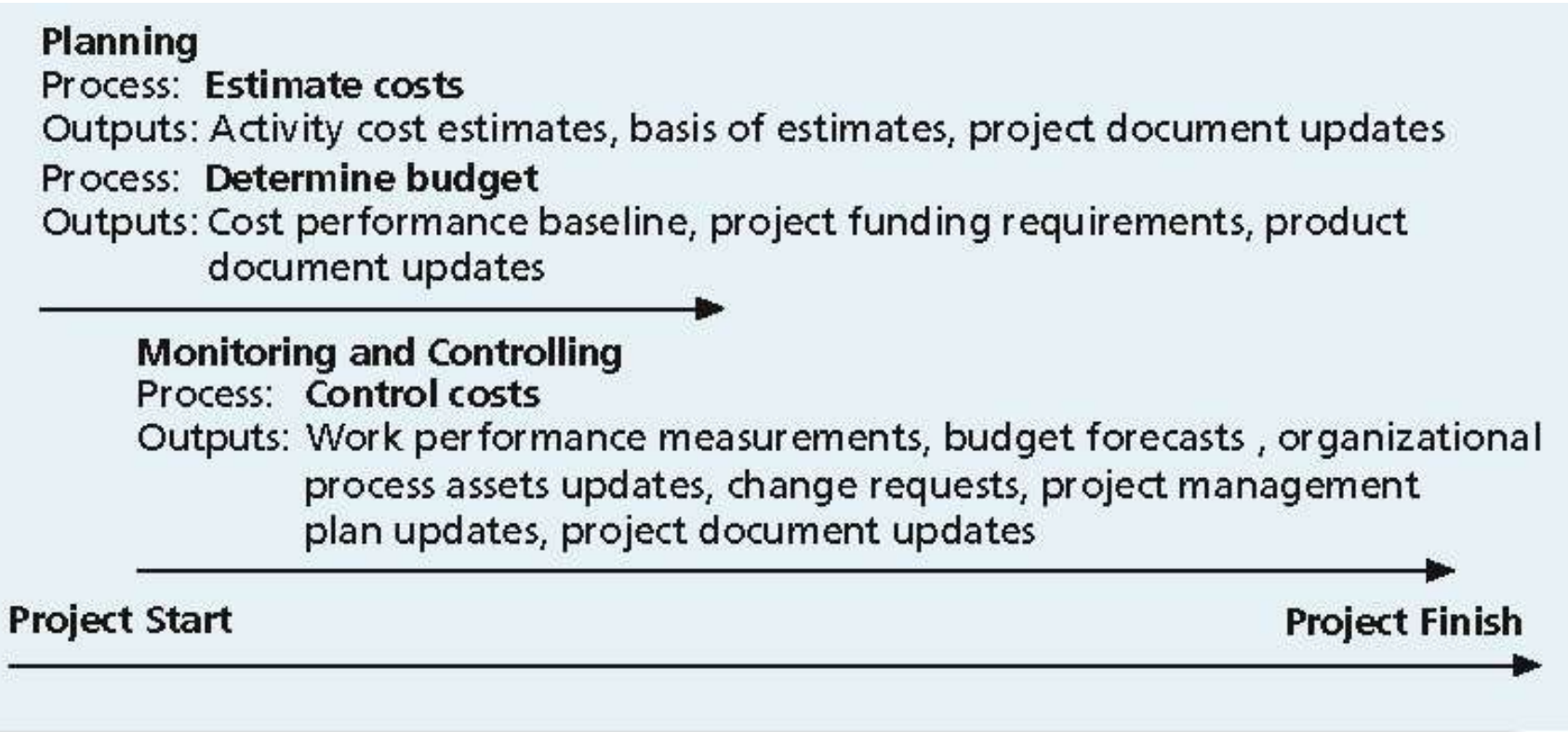
REVIEW: Project Management Framework – 9 Knowledge Areas



REVIEW:(continued)

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring and Controlling	Closing
Project Time Management (continued)		Estimate activity resources, Estimate activity durations, Develop schedule			
Project Cost Management		Estimate costs, Determine budget		Control costs	
Project Quality Management		Plan quality	Perform quality assurance	Perform quality control	
Project Human Resource Management		Develop human resource plan	Acquire project team, Develop project team, Manage project team		

Figure 7-1. Project Cost Management Summary



What is Cost and Project Cost Management?

What is Cost and Project Cost Management?

- **Cost** is a resource sacrificed to achieve a specific objective or something given up in exchange. *Ex: I'm going to spend 200k on a storage systems because it will help us store and compress our data more efficiently*

- **Project cost management** includes the processes required to ensure that the project is completed within an approved budget

Project Cost Management Processes

Cost Mgmt. Processes:

- **Estimating costs**: developing an approximation or estimate of the costs needed to complete a project
- **Determining the budget**: allocating the overall cost estimate to individual work items to establish a baseline for measuring performance
- **Controlling costs**: controlling changes to the project budget

Basic Principles of Cost Management

- Most members of a board or senior leaders better understand and are more interested in financial terms than IT terms, so IT project managers must speak their language

  - **Profits** are revenues minus expenditures
  - **Profit margin** is the ratio of revenues to profits
  - **Life cycle costing** considers the total cost of ownership (TCO), 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

  - cost **overrun** -the additional percentage or dollar amount by which actual costs exceed estimates

Basic Principles of Cost Management

- **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 intended costs that can be directly related to producing the products and services of the project
- **Indirect costs** are unintended costs that are not directly related to the products or services of the project,
- **Sunk cost** is money that has been spent in the past and will not give any benefit to the project, could be you picked the wrong vendor, wrong software, changed direction

Table 7-1. Cost of Downtime for IT Applications

Type of IT Application	Cost/Minute
Securities trading	$73,000
Enterprise Requirements Planning (ERP)	$14,800
Order processing	$13,300
Electronic commerce	$12,600
Supply chain	$11,500
Point of sale (POS)	$ 4,700
Automatic teller machine (ATM)	$ 3,600
E-mail	$ 1,900

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**)

Estimating Costs

- Project managers must take cost estimates seriously if they want to complete projects within budget

- It's important to know:
  - the types of cost estimates,
  - how to prepare cost estimates,
  - and typical problems associated with IT cost estimates

  What type of estimate are you doing? *Rough? Budgetary? Definitive?*

Table 7-2. 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	–50% to +100%
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
  - *ex: touch base and forecast during project, on budget? Need more/less?*
- 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
    - Developer @ 80hr * 165/hr = 13.2k
    - Servers = 20.3k
    - Storage = 10.5k
    - Licensing = 5k

    Total = $49k

Typical Problems with IT Cost Estimates

- Estimates are done too quickly
- Lack of estimating experience
- **Human beings are biased toward underestimation**
- Estimates done without knowledge of outside factors

Determining the Budget

- Cost budgeting involves allocating the project cost estimate to individual work items over time
- The WBS is a required and helps the cost budgeting process since 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

Figure 7-2. Surveyor Pro Project Cost Estimate

	# 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

Figure 7-4. Surveyor Pro Project Cost Baseline

Surveyor Pro Project Cost Baseline Created October 10*

WBS Items	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1. Project Management													
1.1 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
1.2 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
1.3 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
4. Testing			6,000	8,000	12,000	15,000	15,000	13,000					69,000
5. Training and Support													
5.1 Trainee cost									50,000				50,000
5.2 Travel cost									8,400				8,400
5.3 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	90,027	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. Numbers are rounded, so some totals appear to be off.

Controlling Costs

- Project cost control includes:
  - Monitoring cost performance
    - Ensure bills and invoices are correct during the project
    - Ensure appropriate project changes are included in a revised cost baseline
    - Inform project stakeholders of authorized changes to the project that will affect costs,
      - both increase and decrease….
- This is not easy! Many organizations around the globe have problems with cost control

Chapter Summary

- Project cost management is a traditionally weak area of IT projects, and project managers must work to improve their ability to deliver projects within approved budgets

- Main processes include:
  - Estimate costs
  - Determine the budget
  - Control costs