Cost Estimation and Budgeting

Chapter 8

Common Sources of Project Cost

- Labor

- Materials

- Subcontractors

- Equipment & facilities

- Travel

Types of Costs

❖ Direct Vs. Indirect

❖ Recurring Vs. Nonrecurring

❖ Fixed Vs. Variable

❖ Normal Vs. Expedited

Cost Classifications

Costs	Direct	Indirect	Recurring	Non-recurring	Fixed	Variable	Normal	Expedited
Direct Labor	X		X		X		X	
Building Lease		X	X		X		X	
Expedite	X			X	X	X		X
Material	X		X			X	X	

Cost Estimation

➢ Ballpark (order of magnitude) ±30%

➢ Comparative ±15%

➢ Feasibility ±10%

➢ Definitive ±5%

Learning Curves

Each **doubling of output** results in a reduction in time to perform the last iteration.

$$Y_x = aX^b$$

Where :

Y_x = time required for the x unit of output

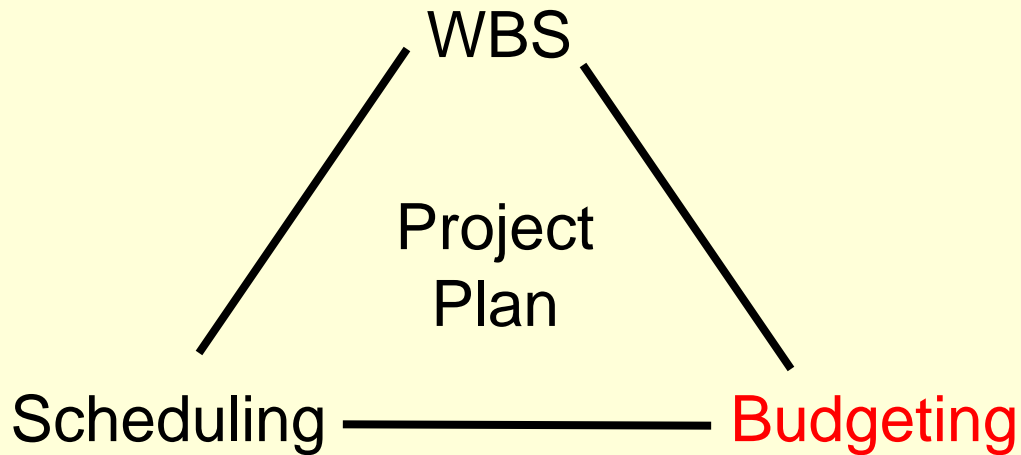a = time required for the initial unit of output

X = the number of units to be produced

b = learning curve slope = log(learning %)/log(2)

Problems with Cost Estimation

✓ Low initial estimates

✓ Unexpected technical difficulties

✓ Lack of definition

✓ Specification changes

✓ External factors

Creating a Project Budget

WBS

Project
Plan

Scheduling ———————— Budgeting

The *budget is a plan* that identifies the resources, goals and schedule that allows a firm to achieve those goals

- Top-down
- Bottom-up
- Activity-based costing (ABC)

Activity-Based Costing

Projects use activities & activities use resources

1. Assign costs to activities that use resources
2. Identify cost drivers associated with this activity
3. Compute a cost rate per cost driver unit or transaction
4. Multiply the cost driver rate times the volume of cost driver units used by the project

Budget Contingencies

The allocation of extra funds to cover uncertainties and improve the chance of finishing on time.

<u>Contingencies are needed because</u>

Project scope may change

Murphy's Law is present

Cost estimation must anticipate interaction costs

Normal conditions are rarely encountered