SCOPE MANAGEMENT (CONT.)

Course title: International Project Management

Lecturer: Nodirjon Makhkamov

Project Cost Management Definition

Project Cost Management includes the processes involved in estimating, budgeting, and controlling costs so that the project can be completed within the approved budget.

Cost Management Plan

PMI assumes that before you start the Cost processes you will have developed a cost management plan as part of the Develop Project Management Plan process (4.2)

You will have established:

- *Precision level ($<5MM, $1MM-$2MM, $1.5MM, $1.48MM)*
- *Units of measure*
- *Earned Value rules (e.g. 0-100, 0-50-100 etc.)*
- *As well as other organizational policies*

General Key Notes

- Main objective is to deal with the **cost** of the assets (people, equipment, contracts, etc.) required to deliver on project activities and tasks
- Consider the needs of project stakeholders must be considered: may measure costs differently (e.g. committed, ordered, delivered, incurred, recorded, etc.)
- Must also consider reward and recognition systems and the controllable & uncontrollable costs to ensure rewards reflect actual performance

General Key Notes (cont'd)

- Project cost management should not only consider the effect of project decisions on the development and delivery of the project product (scope, quality, & schedule) but also consider how they may also affect the cost of **using** the project product (often called ***life-cycle costing***)
- Project cost management will require additional processes and techniques (e.g.: ROI, discounted cash flow, payback analysis, etc.) when product predictions & analyses are included. These will be required for life-cycle costing
- The cost of predicting and analyzing prospective financial performance of the project product may be done within (e.g. capital improvement projects) or outside the project itself

Types of Costs

Project Costs can be categorized into Variable or Fixed Costs

Type	Definition	Examples
Variable	Costs that change with the amount of production or the amount of work.	Material, supplies, wages, etc
Fixed	Non-recurring costs that do not change as production changes.	Setup, rental, etc.

Incurred Costs during a project are the result of Direct or Indirect charges

Type	Definition	Examples
Direct	Costs directly attributable to the work on the project	Team travel, team wages, recognition, costs of materials used on the project, etc.
Indirect	Overhead items or costs incurred for the benefit of more than one project.	Taxes, fringe benefits, janitorial services, etc.

Cost Management Processes

1 Estimate Costs

2 Determine Budget

3 Control Costs

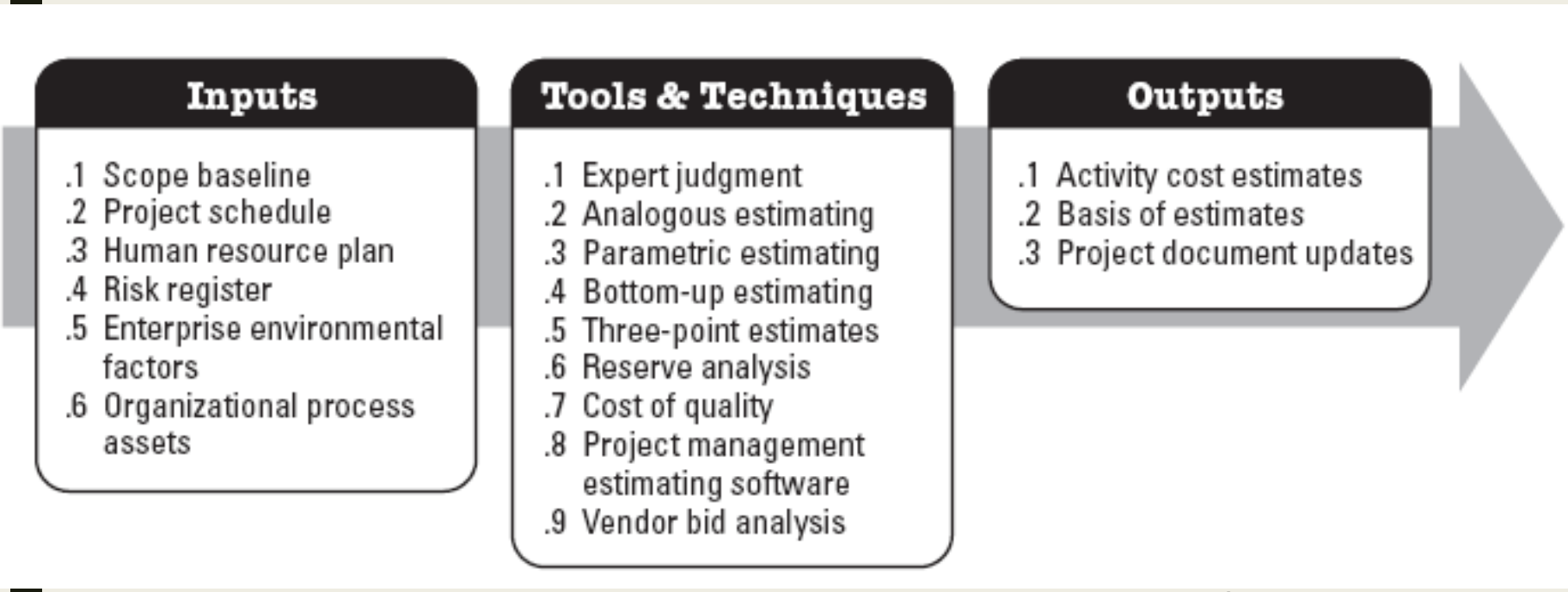
Estimate Costs Process

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring & Controlling	Closing
7. Project Cost Management	-	1 Estimate Costs 2 Determine Budget	-	3 Control Costs	-

1 Estimate Costs Process

Definition: ***"The process of developing an approximation of the monetary resources needed to complete project activities."***

PMBoK® Guide, 4th Edition, Glossary



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1.1 Estimate Costs Inputs

1.1.1	**Scope Baseline**	Describes the project in detail, its constraints and assumptions. Includes the **Scope Statement** (Section 5.2.3.1), **WBS** (Section 5.3.3.1) and **WBS Dictionary** (Section 5.3.3.2.)
1.1.2	**Project Schedule**	Contains the tasks that need to be completed, the timing around when they are to occur, and what resources are needed to complete those tasks. **Refer to Time Management processes for more detail on Project Schedule.**
1.1.3	**Human Resource Plan**	Contains the type and quantity of resources allocated to the project and when available, as well as their rates.
1.1.4	**Risk Register**	Each identified risks may have associated costs to either mitigate, accept, or avoid, The cost estimator needs to consider this information on risk responses. **Risk register is covered in detail in PMBOK section 11.2.3.1 .**
1.1.5	**Enterprise Environmental Factors**	➢ Market Conditions: Describe the products, services and results available. ➢ Published Commercial Information: Resource cost rate information from commercial databases, published price lists, etc.
1.1.6	**Organizational Process Assets**	Existing formal and informal organizational assets , such as: ➢ Cost estimating policies & templates ➢ Historical information ➢ Lessons learned

Estimate Costs Terms

Estimate Type	Margin	Process Group
Rough Order of Magnitude (ROM)	-50% to +50%	Initiating
Budget or Preliminary	-10% to +25%	Planning
Definitive or Detailed	-10% to +10%	Monitoring & Controlling

1.2 Estimate Costs Tools and Techniques

1.2.1	**Expert Judgment**	Obtaining one cost estimate per activity based on expert judgment, historical information, or guessing.
1.2.2	**Analogous Estimating**	Using the actual cost of previous, similar projects as the basis for estimating the cost of the current project. Suitable when there is limited amount of detail. Uses expert judgment. Less costly than other techniques, but also less accurate.
1.2.3	**Parametric Estimating**	A technique that uses a statistical relationship between historical data and some other variable to estimate the cost of an activity. For example: square footage in construction, lines of software code, etc.
1.2.4	**Bottom-Up Estimating**	Estimating individual work packages and then summarizing them to a higher level of generality. More accurate but also more costly; requires well-defined activities.
1.2.5	**Three Point Estimating**	A technique that uses three cost estimates to represent the optimistic, most likely, and pessimistic scenarios. Used to improve the accuracy of the estimates when the underlying activity or cost is uncertain or there is a considerable amount of risk to factor in. Often the estimates are combined by PERT* formula into one probable estimate

*Note: **PERT** (Program Evaluation and Review Technique) is an estimating method that uses a weighted average of three numbers to come up with a final estimate. One of the most used PERT equations is calculated as (Optimistic + 4Most Likely + Pessimistic)/6, which "weighs" the most likely cost most heavily, since it is weighted four times as much as the other two values.

1.2 Estimate Costs Tools and Techniques (cont'd)

7.1.2.6	**Reserve Analysis**	Many estimators include contingency reserves as costs in schedule activity cost estimates. This has the problem of potentially overstating cost estimates. **Management Reserve:** Extra money in the budget to cover the cost of unknown events that might affect the project. **Contingency Reserve:** Extra money in the budget to cover known risks identified in Risk Management Plan.
7.1.2.7	**Cost of Quality**	The **Cost of Quality** (Section 8.1.2.2) may be used in the preparation of estimates, by showing that if thorough requirements, design and planning are not done, there may be increased costs for rework due to lack in initial quality.
7.1.2.8	**Project Management Estimating Software**	Tools, such as cost estimating software applications, computerized spreadsheets, simulation and statistical tools, that can assist with cost estimating.
7.1.2.9	**Vendor Bid Analysis**	By comparing multiple bids and using PERT analysis you can determine the most likely cost for each deliverable, which will give you a more accurate project cost estimate. Also understand that when using and managing outside vendors, additional work will be required to examine the prices and proposals of individual deliverables and manage these vendors throughout the project.

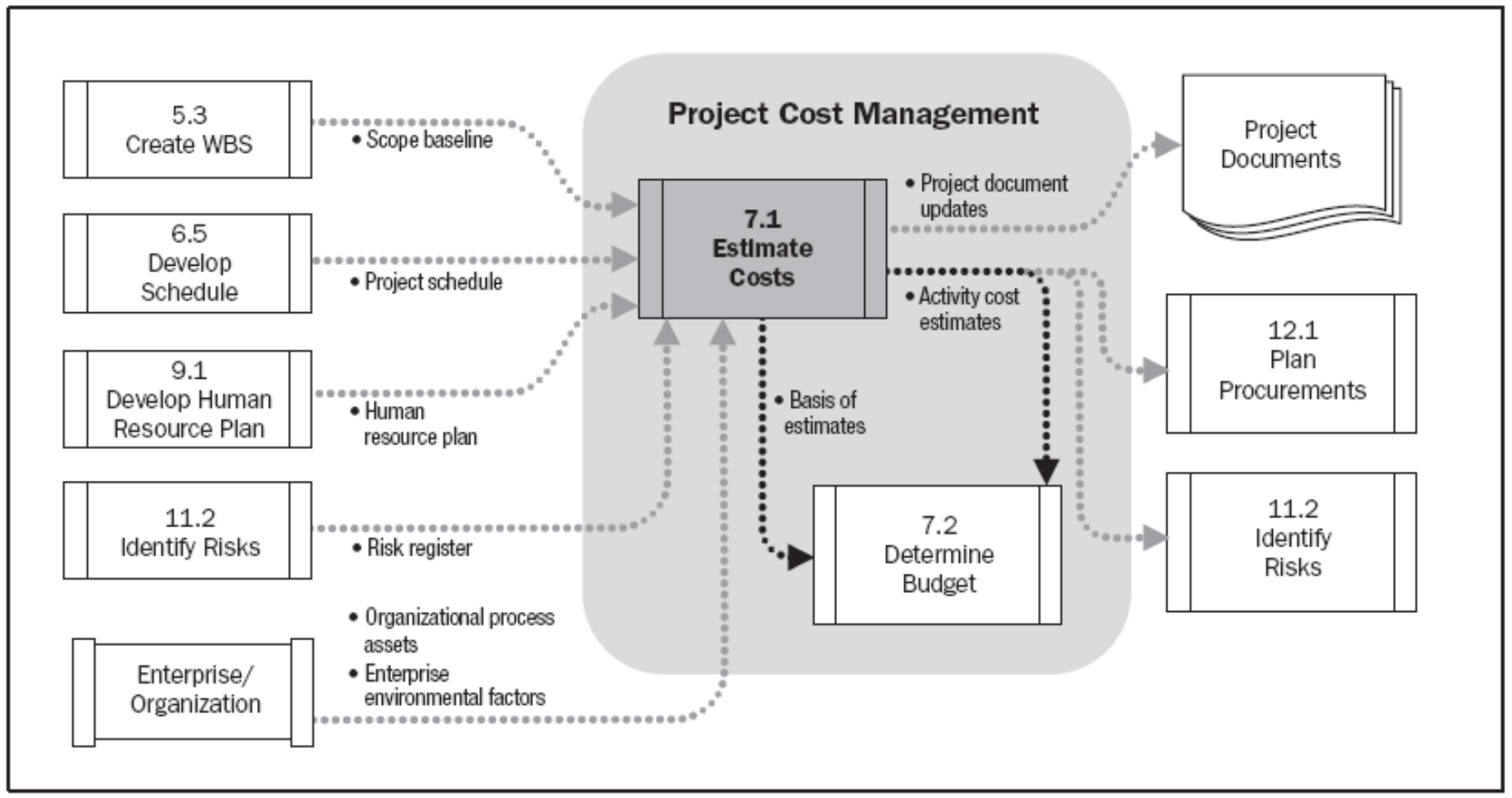
1.3 Estimate Costs Outputs

7.1.3.1	**Activity Cost Estimates**	A quantitative assessment of the likely costs of the resources required to complete a given activity.
7.1.3.2	**Basis of Estimates**	Detailed documentation of the procedures, assumptions, data, environment, events, etc. that go into a cost estimate's development. This documentation may include: - How the estimate was developed (Parametric, Bottom-Up, Vendor Bids, etc.) - Documentation of all assumptions & constraints made - If a range of possible estimates is given, provide rationale - Probability/Confidence that final estimate is accurate
7.1.3.3	**Project Document Updates**	The estimating process could result in updates to the Project Management Plan, risk register or other documents to further decrease costs or identify potential cost overruns.

Summary of Estimate Costs Methods

	Analogous or Top-Down	Parametric Modeling	Bottom-Up
Example	"The last effort like this cost $9MM so this effort should cost about $9MM."	"If one application costs $100,000, then five applications should cost $500,000."	"Task A costs **$200 &** Task B costs **$150,** so project cost is **$200+$150 = $350"**
Benefits	✓ Fast/ Inexpensive to do ✓ Limited information needs ✓ Gives PM an idea of management's expectations	✓ Moderately fast if model is simple ✓ With enough sophistication, the model can be reused for many types and sizes of similar projects	✓ Most accurate ✓ Force estimators to think twice about the work ✓ Facilitates cost monitoring and control later
Drawbacks	⊘ Generally less accurate ⊘ Only as good as the comparability of the projects ⊘ Requires expertise to make expert judgment on comparability of projects	⊘ Can be dangerously misleading ⊘ Only as good as the accuracy, detail, and comparability of the historical data used ⊘ Requires quantifiable parameters ⊘ Requires consideration of "volume discounts" and "learning curves"	⊘ Requires detailed understanding of the work ⊘ Time consuming ⊘ Harder to get management buy-in to process ⊘ Project team may pad estimates if not sure of work required

1 Estimate Costs Data Flow Diagram



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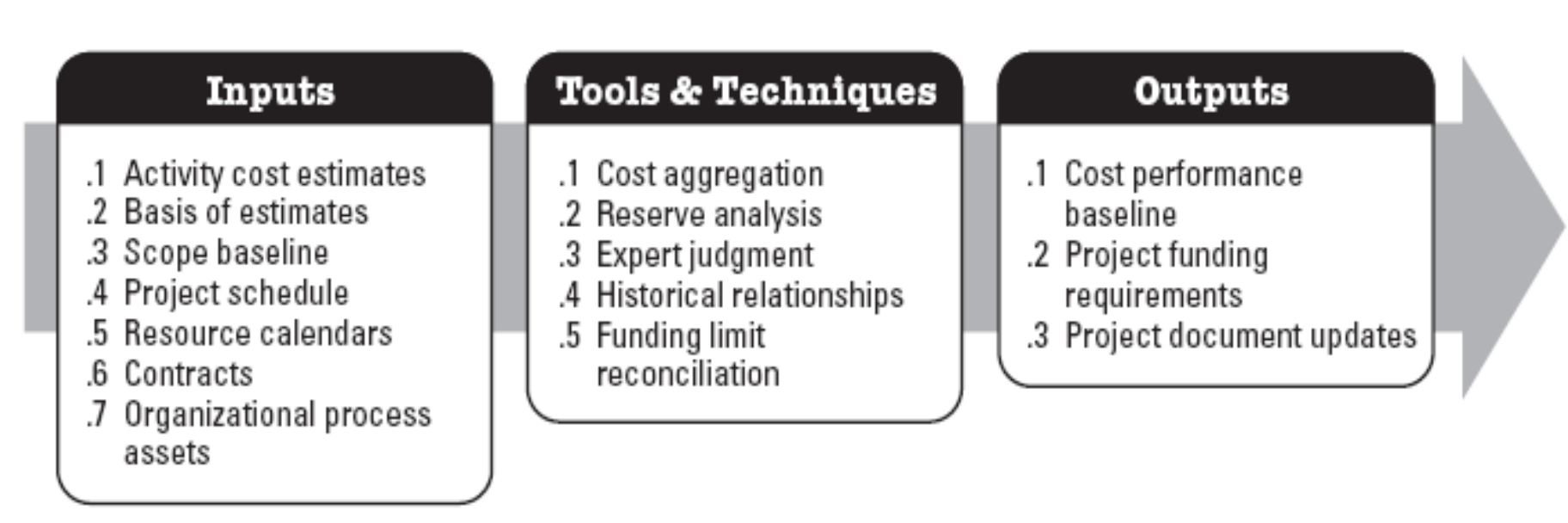
Determine Budget Process

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring & Controlling	Closing
7. Project Cost Management	-	1 Estimate Costs 2 Determine Budget	-	3 Control Costs	-

7.2 Determine Budget Process

Definition: ***"The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline."***



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2.1 Determine Budget Inputs

7.2.1.1 Activity Cost Estimates	From the **Estimate Costs** (Section 7.1.3) process.
7.2.1.2 Basis of Estimates	From the **Estimate Costs** (Section 7.1.3) process.
7.2.1.3 Scope Baseline	Describes the project in detail, its constraints and assumptions. Includes the **Scope Statement** (Section 5.2.3.1), **WBS** (Section 5.3.3.1) and **WBS Dictionary** (Section 5.3.3.2.)
7.2.1.4 Project Schedule	From the **Develop Schedule** (Section 6.5.3.1) process.
7.2.1.5 Resource Calendars	From the **Estimate Activity Resources** (Section 6.3)process.
7.2.1.6 Contracts	What products have been purchased, at what cost and under what terms.
7.2.1.7 Organizational Process Assets	Processes, procedures, and policies within a company. This could include not only present policies, but also historical information as well as any knowledge databases that may exist

2.2 Determine Budget Tools and Techniques

7.2.2.1 Cost Aggregation	Summing up the cost estimates by work packages at higher and higher level WBS components. This will include establishing of control accounts (summations of like deliverables) that will facilitate measurements at a later date.
7.2.2.2 Reserve Analysis	Establishes contingency reserves, such as the management contingency reserve.
7.2.2.3 Expert Judgment	Judgment based on expertise from many sources, such as: ➢ Other units within the performing organization ➢ Consultants ➢ Stakeholders, including customers ➢ Professional and technical associations ➢ Industry groups
7.2.2.4 Historical Relationships	Factors in costs from previous similar projects to assist in determining budget.
7.2.2.5 Funding Limit Reconciliation	• Think “cash flow”. • If funds were used as a limiting resource in the schedule development process, then the process is repeated for any rescheduling.

2.3 Determine Budget Outputs

7.2.3.1	**Cost Performance Baseline**	Developed by aggregating the costs of the individual work elements and then applying them to time intervals according to the project schedule in order to facilitate the measurement, monitoring, and control of the overall cost of the project.
7.2.3.2	**Project Funding Requirements**	Using the **Cost Performance Baseline** (Section 7.2.3.1), creation of a time based need for funding to properly support the project deliverables. Sets an expectation with management that is this funding is not provided, then the project scope, schedule, or quality will have to be adjusted.
7.2.3.3	**Project Document Updates**	Based on findings during the Determine Budget process, certain project documents may need be updated to reflect things that were uncovered during this process such as risks, limits in funding, changes in requirements, etc.

Time-Phased Project Costs - "S-Curve Diagram"

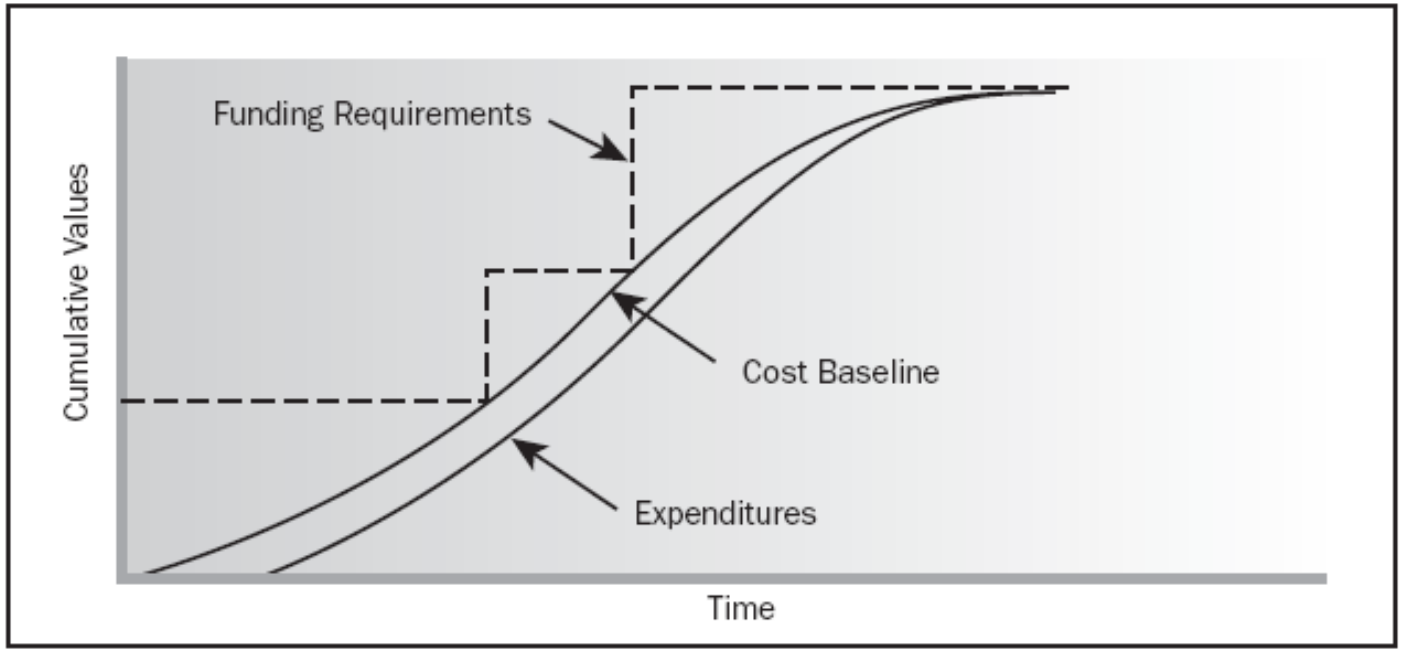

Figure 7-6. Cost Baseline, Expenditures, and Funding Requirements

Key Notes:

- If Project Expenditures exceed the cost baseline, the project is over budget.
- Project Funding Requirements need to be negotiated against available cash flow. If cash flow is not available the project funding needs to be restructured; i.e., Project Funding Reconciliation process.

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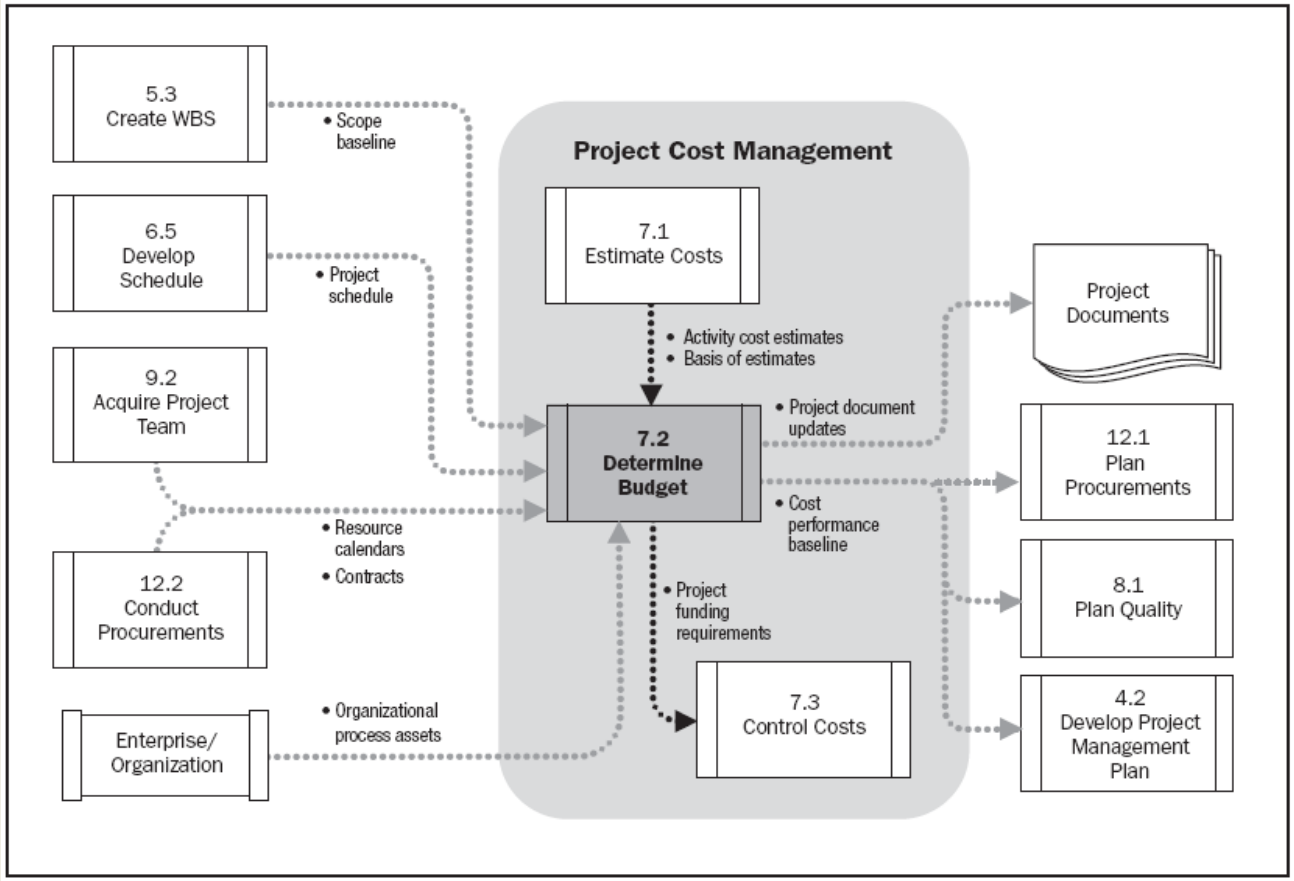
7.2 Determine Budget Data Flow Diagram



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Practice Question:

All of the following are true statements about parametric modeling EXCEPT?

A. The model is scalable.

B. Estimates are based on input from the team.

C. The parameters used in the model are readily quantifiable.

D. Statistical analysis of historical information is used to define the model.

Practice Question:

Your project has a medium amount of risk and is not very well defined, yet you are asked to come up with a cost estimate. What is the BEST method to handle this?

A. Build an analogous estimate in the form of a range of possible results.

B. Ask the team members to help estimate the cost.

C. Based on the information you have, calculate a parametric estimate.

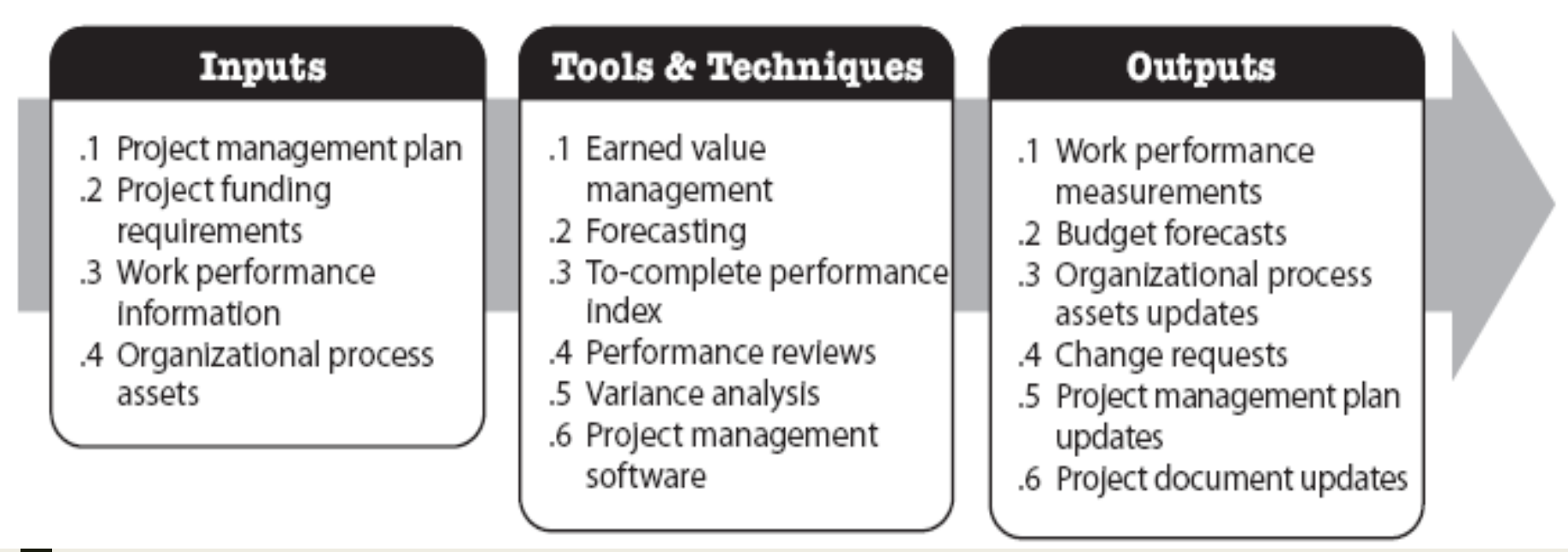
D. Create a detailed WBS and calculate a bottom up estimate.

Control Cost Process

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring & Controlling	Closing
7. Project Cost Management	-	1 Estimate Costs 2 Determine Budget	-	3 Control Costs	-

3 Control Costs Process

Definition: ***"The process of monitoring the status of the project to update the project budget and managing changes to the cost baseline."***



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3.1 Control Costs Inputs

7.3.1.1	**Project Management Plan**	The **Project Management Plan** (Section 4.2.3.1) contains the following information used to control costs: **Cost Performance Baseline:** Used for comparison to actual results to determine if a change, corrective action or preventative action is necessary. **Cost Management Plan:** Describes how the project costs will be managed and controlled.
7.3.1.2	**Project Funding Requirements**	Derived from the **Cost Performance Baseline** (Section 7.2.3.1), including projected expenditures plus anticipated liabilities.
7.3.1.3	**Work Performance Information**	From the **Direct and Manage Project Execution** (Section 4.3) process – typically deliverables that are completed, costs that have been incurred
7.3.1.4	**Organizational Process Assets**	Existing formal and informal organizational assets , such as: ➢ Cost control-related policies, procedures and guidelines ➢ Cost control tools ➢ Monitoring and reporting methods to be used

3.2 Control Costs Tools and Techniques

3.2.1	**Earned Value Management (EVM)**	Commonly used method of performance measurement that integrates project scope, cost and schedule measures to assess the project performance and progress. The principles of EVM can be applied to all projects, in any industry. The three key metrics are: ➢ **Planned Value (PV)** ➢ **Earned Value (EV)** ➢ **Actual Cost (AC)**
3.2.2	**Forecasting**	Using information available at hand today to assess where the project will be in the future (from a earned value perspective.)
3.2.3	**To-Complete Performance Index (TCPI)**	Assessment that provides an index that tells how well the project needs to perform on the remaining work in order to deliver the project within budget. Essentially it is the Remaining Work / Remaining Budget.

3.2 Control Costs Tools and Techniques

(cont'd)

3.2.4	**Performance Reviews**	Reviewing tasks in process or completed to see what can be improved upon to mitigate cost overruns/risks in the future.
3.2.5	**Variance Analysis**	Use of earned value calculations to assess the magnitude of variation in cost or schedule to the original cost baseline. The main goal of this technique is not only to identify the magnitude of the variances but also to determine the causes of them. This can help the project management team identify the factors that affect each deliverable and whether any changes in scope, schedule, or other dependencies were the root cause.
3.2.6	**Project Management Software**	Once the **Cost Performance Baseline** (Section 7.2.3.1) is established, there are many software packages available that can help in the monitoring of the earned value parameters. This software can be as simple as a spreadsheet with a few formulas, or as sophisticated as an enterprise class project management software tool that can support the portfolio of projects that your company is undertaking.

Earned Value Management (EVM) Techniques

Technique		Definition	Formula
Planned Value*	**PV**	The budgeted cost for the work scheduled.	
Earned Value*	**EV**	The budgeted cost for the work actually completed.	
Actual Cost*	**AC**	The actual cost of the work actually completed.	
Schedule Variance	**SV**	The measure of schedule performance on a project.	SV = EV – PV
Cost Variance	**CV**	The measure of cost performance on a project.	CV = EV – AC
Schedule Performance Index	**SPI**	The measure of progress achieved compared to progress planned.	SPI = EV / PV
Cost Performance Index	**CPI**	The measure of the value of work completed compared to the actual cost or progress.	CPI = EV / AC

Useful Hints:

- Variances always have monetary units - $
- Indexes are a ratio or fraction - %

Earned Value Management – Graphical depiction

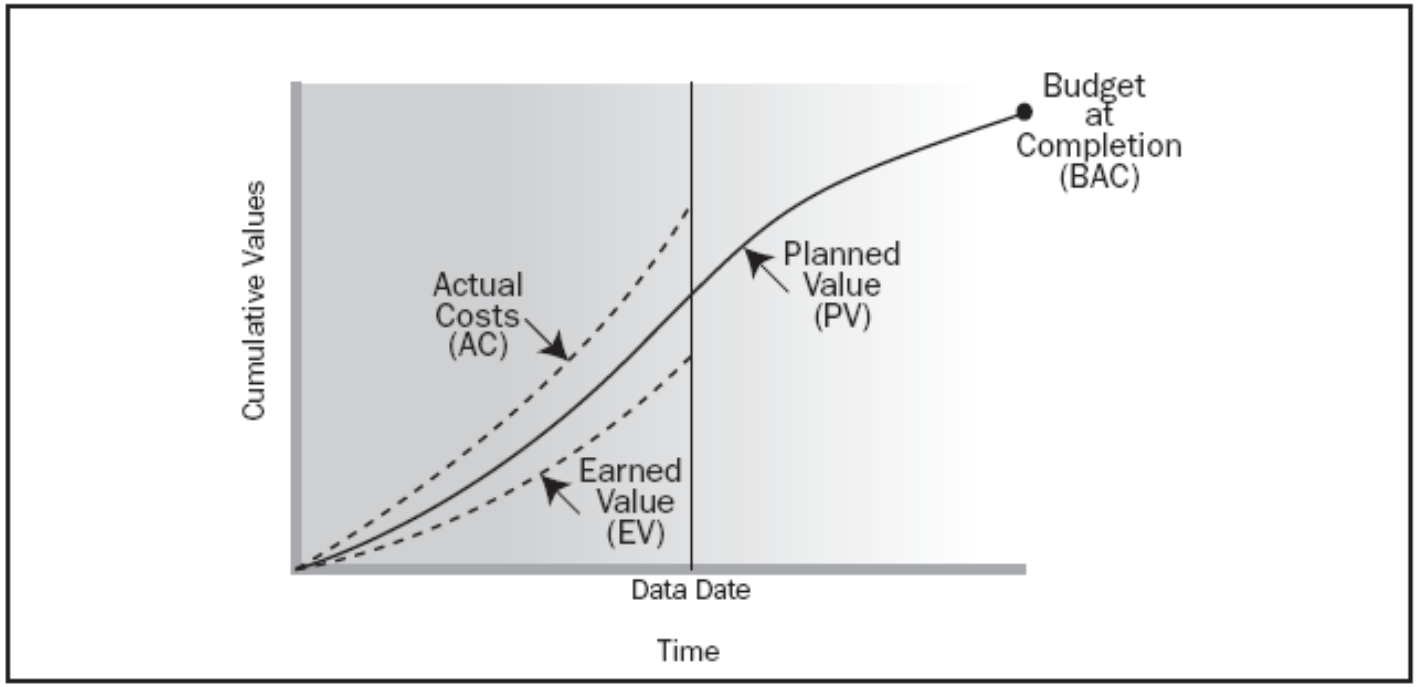


Figure 7-9. Earned Value, Planned Value, and Actual Costs

Key Notes:

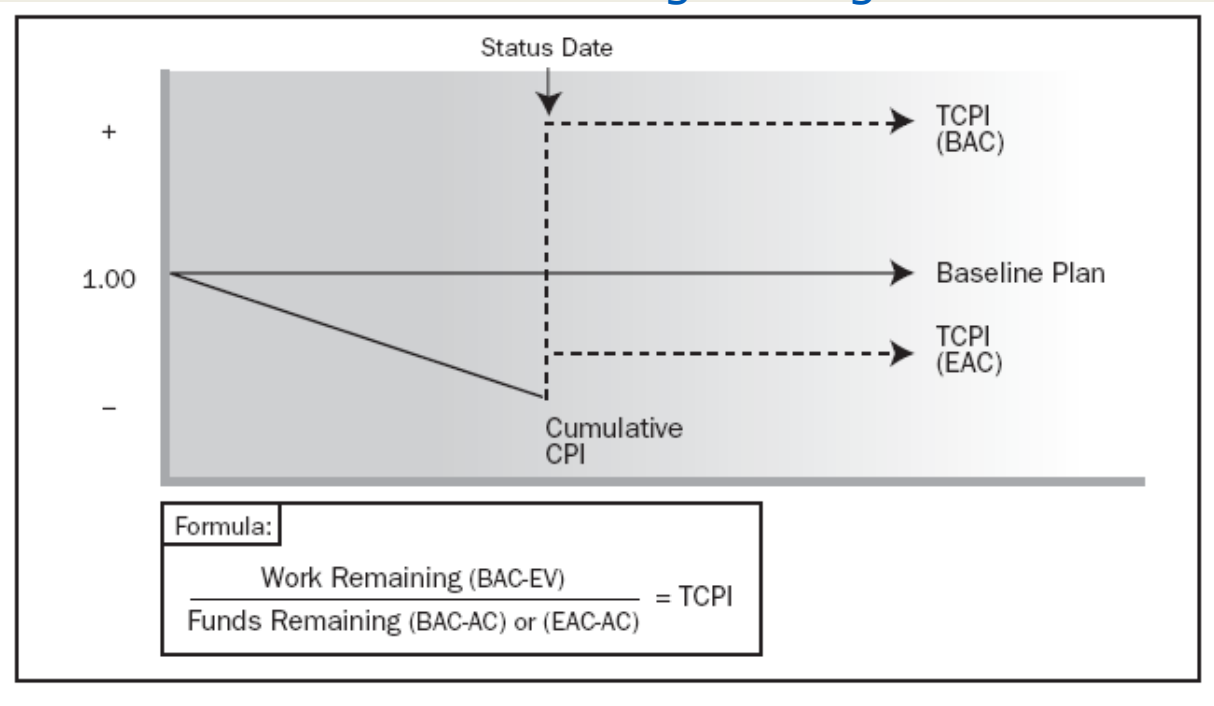
- Cumulative Values based on actual work, not planned work from the project plan, can only be calculated for dates that have already passed.
- Cumulative Values for planned work can be calculated straight from the project work plan.

Earned Value Management Interpretation

NAME	INTERPRETATION
Schedule Variance (SV)	<0 = **BEHIND** schedule 0 = **ON** schedule >0 = **AHEAD** of schedule
Cost Variance (CV)	<0 = **OVER** budget 0 = **ON** budget >0 = **UNDER** budget
Schedule Performance Index (SPI)	I am progressing at **___%** of the rate originally planned.
Cost Performance Index (CPI)	I am getting **$___** out of every $1 I am spending.

To-Complete Performance Index

Computes the required cost performance needed to achieve a target budget or cost.



Note: It may not be reasonable to assume that a project can maintain a new CPI to get the project back on to the original budget, but it may be reasonable to get the project back closer to the budget than the EAC that is forecasted based on the current CPI.

Forecasting Terms

TERM	DESCRIPTION	HOW TO DETERMINE IT
BAC	Budget at Completion	The total budget for the work as indicated in the project plan.
EAC	Estimate at Completion	The currently expected total cost for the work.
ETC	Estimate to Completion	The cost to finish the job; i.e., what is likely left to be spent.
VAC	Variance at Completion	The amount over/under budget the work will be when completed.

Forecasting Terms (cont'd)

Different ways to calculate EAC based on what you know about the project and how it is performing:

Used	Formula
Generally the best measure of EAC.	**EAC = BAC/CPI**
When past performance shows original estimating assumptions were fundamentally flawed or no longer relevant due to a change in conditions	**EAC = AC + ETC** = Actuals to date + New estimate for all remaining work
When current variances are seen as atypical and PM team expects that similar variances will not occur in the future.	**EAC = AC + (BAC –EV)** = Actuals to date + Remaining Budget
When current variances are seen as typical of future variances.	**EAC = AC + (BAC –EV)/CPI** = Actuals to date + (Remaining project budget/ Cost Performance Index)

Practice Question:

If Earned Value (EV) = 350, Actual Cost (AC) = 400, Planned Value (PV) = 325, what is Cost Variance (CV)?

A. 350

B. -75

C. 400

D. -50

Practice Question:

Although the stakeholders thought there was enough money in the budget, halfway through the project the Cost Performance Index (CPI) is 0.7. To determine the root cause, several stakeholders audit the project and discover the project cost budget was estimated analogously. Although the activity estimates add up to the project estimate, the stakeholders think something was missing in how the estimate was completed. Which of the following describes what was missing?

A. Estimated costs should be used to measure CPI.

B. SPI should be used, not CPI.

C. Bottom-up estimating should have been used.

D. Past history was not taken into account.

Practice Question:

You are a project manager working on a project that requires 100 widgets to be built in five weeks. You have just begun week three, with an overall budget of US $10,000. To date, you have spent US $2,000 with 40 widgets successfully built. What does the cost variance tell you in this circumstance?

A. The project is proceeding at 100% of the expected rate.

B. The project is $2000 under budget.

C. The project is on budget.

D. The project is getting $2 of work for every dollar spent.

Practice Question:

A project team budgeted US $3,000 for the work performed and has spent US $4,000, to date. If they budgeted US $5,000 for the work scheduled, what is the cost variance?

A. ($1,000)

B. $2,000

C. $1,000

D. ($2,000)

Practice Question:

A Cost Performance Index (CPI) of 0.89 means:

A. At this time, we expect the total project to cost 89% more than planned.

B. When the project is completed, we will have spent 89% more than planned.

C. The project is only progressing at 89% of that planned.

D. The project is only getting 89 cents out of every dollar invested.

Practice Question:

If EV is US $300,000, AC is US $350,000, and PV is US $375,000, what does the schedule performance index indicate?

A. You are only progressing at 60% of the rate originally planned.

B. You are progressing at 125% of the rate originally planned.

C. You are progressing at 116% of the rate originally planned.

D. You are only progressing at 80% of the rate originally planned.

Practice Question:

A parking lot fencing project was bid at US $11 per foot, and one company is doing all the work. The parking lot has four equal sides of 125 feet. Fencing should take 100 feet per day. After three days of work, and a cost of $2700, two sides are complete and another has 25 feet installed. What is the current status of the project?

A. The under budget, with a cost variance of 1.12

B. It is over budget, with a cost variance of -$325

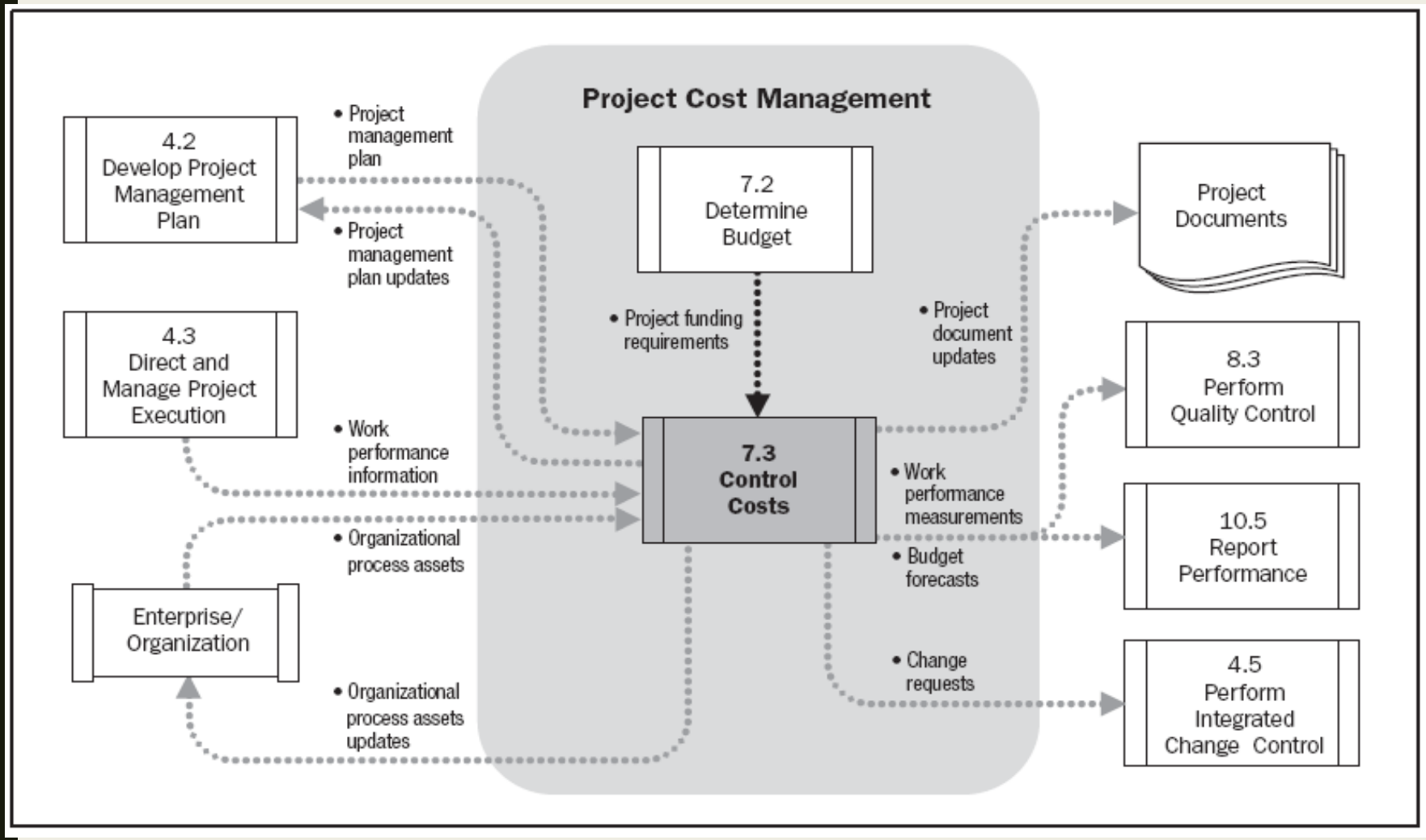
C. It is under budget, with a cost variance of +$325

D. It is over budget with a cost variance of +$325

3.3 Control Costs Outputs

7.3.3.1	**Work Performance Measurements**	The calculated CV, SV, CPI and SPI values for WBS components documented and communicated to stakeholders.
7.3.3.2	**Budget Forecasts**	Either a calculated EAC value or bottom-up EAC value is documented and communicated to stakeholders.
7.3.33	**Organizational Process Assets Updates**	Updates may include: ➢ Causes of variances ➢ Corrective action chosen and the reasons ➢ Lessons learned from project cost control
7.3.3.4	**Change Requests**	Requests may include preventative and corrective actions and are processed for review and disposition through the **Perform Integrated Change Control** process (Section 4.5).
7.3.3.5	**Project Management Plan Updates**	Updates may be made to elements of the project plan, such as: ➢ Cost Performance Baseline ➢ Cost Management Plan
7.3.3.6	**Project Document Updates**	Updates may be made to project documents, such as: ➢ Cost Estimates ➢ Basis of Estimates

7.3 Control Costs Data Flow



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Other Cost Terms (Often used for selecting one project over another)

Accounting Method	Definition	How To Use It
Present Value (PV)	The value today of future cash flows (FV). In the equation below, r = rate and n = number of time periods. $$PV = \frac{FV}{(1+r)^n}$$	Future money is worth less today
Net Present Value (NPV)	Total Benefits (income or revenue) – Total Costs	Choose the larger NPV
Internal Rate of Return (IRR)	The rate at which revenues and costs are equal	Choose the larger IRR
Payback Period	The time necessary to recover your investment in the project and thenceforth become profitable	Choose the shorter period

Other Cost Terms (Often used for selecting one project over another) (cont'd)

Accounting Method	Definition	How To Use It
Benefit Cost Ratio (BCR)	The ratio of benefits (re: revenue = payback) to the costs. Payback **IS NOT** profit!	Choose the larger BCR
Opportunity Cost	The sum of the costs of the options not taken.	The NPV of the project NOT selected is the OC for doing the project selected
Sunk Costs	Expended costs. Sunk costs should not be considered when determining whether to continue with a troubled project.	Don't consider sunk costs

Other Cost Terms – Finance & Accounting

Term	Definition
Law of Diminishing Returns	As your input increases, the rate of return on that increase will diminish.
Working Capital	Current assets minus current liabilities.
Depreciation	Long-Term assets lose value over time.
Straight Line Depreciation	Same amount taken each year.
Accelerated Depreciation	Double Declining Balance & Sum of Years Digits.
Value Analysis / Value Engineering	Find a less costly way to do the same scope of work; aka Value Engineering.

Note: You do NOT need to know the equations. Just understand the concepts!

Net Present Value Exercise

Time Period	Income	Present Value at 10% Interest Rate (Round to nearest Integer)	Costs	Present Value at 10% Interest Rate (Round to nearest Integer)
0	0		200	
1	50		100	
2	100		0	
3	300		0	
Total				

Net Present Value Exercise (cont'd)

Time Period	Income	Present Value at 10% Interest Rate (Round to nearest Integer)	Costs	Present Value at 10% Interest Rate (Round to nearest Integer)
0	0	$0/(1+.10)^0 = 0$	200	$200/(1+.10)^0 = 200$
1	50	$50/(1+.10)^1 = 45$	100	$100/(1+.10)^1 = 91$
2	100	$100/(1+.10)^2 = 83$	0	0
3	300	$300/(1+.10)^3 = 225$	0	0
Total		353		291

$$NPV = 353 - 291 = 62$$

Project Cost Management Question

For each of the four situations below which project (A or B) would you select?

Factor	Project A	Project B	Choice?
Net Present Value	$95,000	$75,000	
IRR	13%	17%	
Payback Period	16 months	21 months	
Benefit Cost Ratio	2.79	1.3	

Practice Question:

To accommodate a new project in your department, you need to move resources from one project to another. Because your department is currently working at capacity, moving resources will inevitably delay the project from which you move the resources. You should move resources from which of the following projects?

A. Project A with a benefit cost ratio of 0.8, no project charter and four resources.

B. Project B with a net present value of $60,000, twelve resources, and variable costs between US $1,000 and US $2,000 per month.

C. Project C with an opportunity cost of US $300,000, no project control plan, and an internal rate of return of 12%.

D. Project D with indirect costs of US $20,000, payback period of 6 months, and thirteen resources.

Project Cost Management Processes: Summary

Process	Purpose	Key Outputs
1 Estimate Costs	***how much?***	• Activity Cost Estimates
2 Determine Budget	***how much and when?***	• Cost Performance • Baseline (cash flow)
3 Control Costs	***as planned?***	• Budget Forecasts • Estimate at Completion • Change Requests

Reference and source

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Good Luck!!