Faculty of Engineering and Mathematical Sciences

Project Management & Engineering Practice
(GENG 5505)

Assoc Prof Cosimo Faiello

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Project Management & Engineering Practice (GENG5505)

Cost management: Ending the reliance on the budget variance (Ch 6)

(Week 4a) - Lecture 7, 19 March 2024

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Planning for cost management

It is the planning process that establishes the policies, procedures and documentation for planning, managing, expending and controlling project costs, given that different stakeholders:

- Contribute different amounts of funding;
- Measure costs differently;
- Report costs in different ways;
- Control costs at different times.

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Estimating project costs

- Pre-determined
- Expert judgement
- Analogous
- Group decision making
- Unit rates
- Published commercial data
- Vendor bid
- Reserve
- 3 point-estimation
- .....

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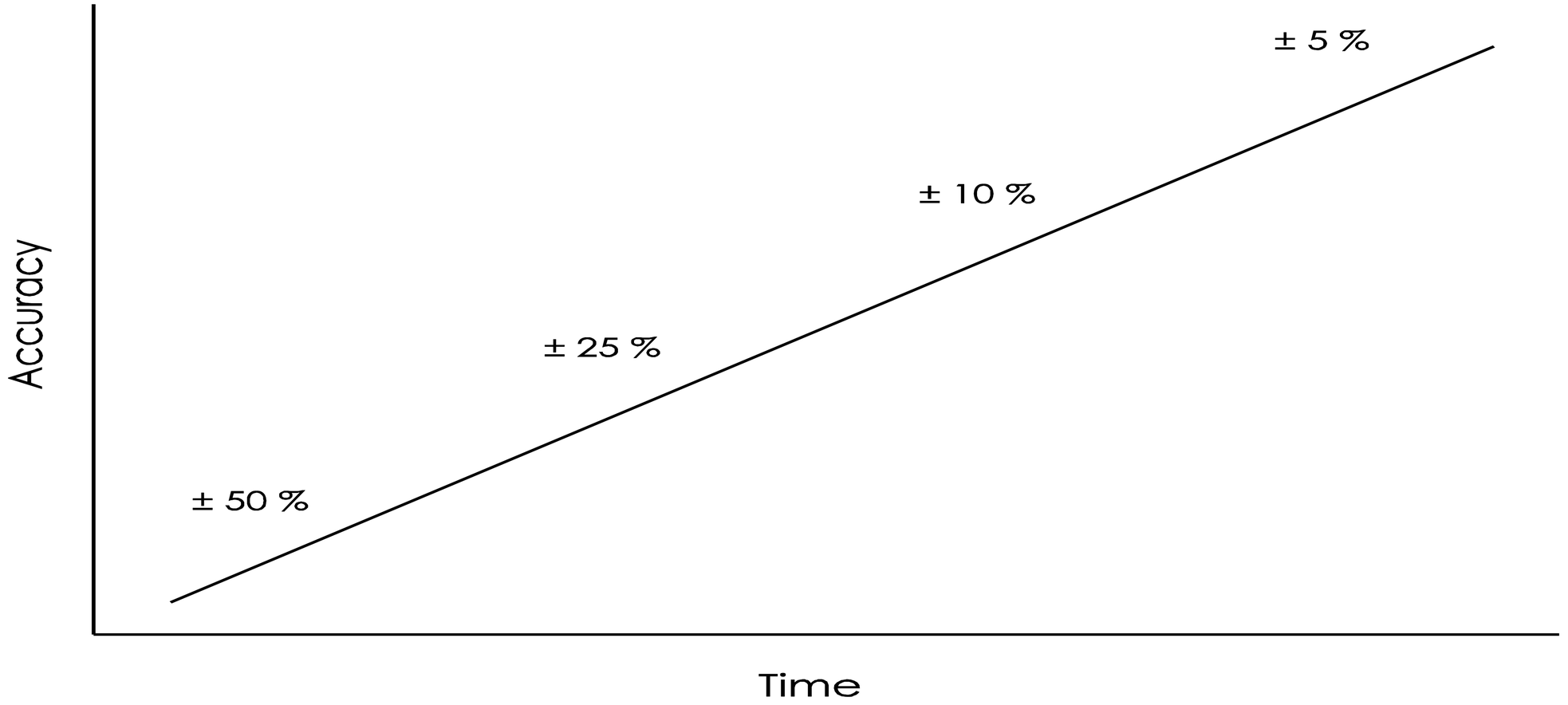
Estimating accuracy



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Completing a resource matrix

Resource	Task A	Task B	Task C	Task D	Cost: $/Day	Available	History
Mary	*	*	+	-	100	Yes	Excellent performer
Ian	+	-	+	-	75	No	Always busy
Greg	-	+	+	=	50	Yes	Un-reliable
Julie	+	+	-	+	75	Yes	Good performer
Legend: * Proficient; + Good; = Adequate; - Poor							

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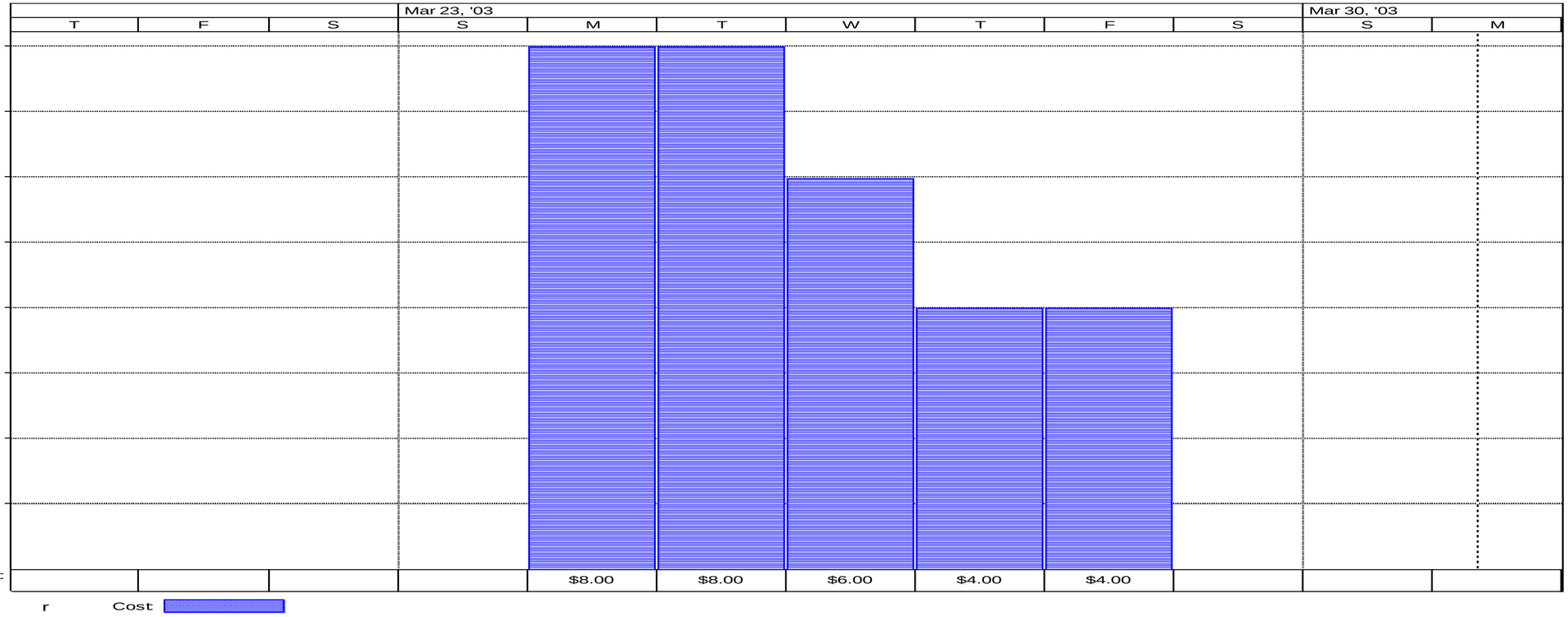
Assigning project resources

ID	Task Name	Duration	Predecessors	Resource Names
1	a	2 days		r[2]
2	b	3 days		r[2]
3	c	5 days		r[4]



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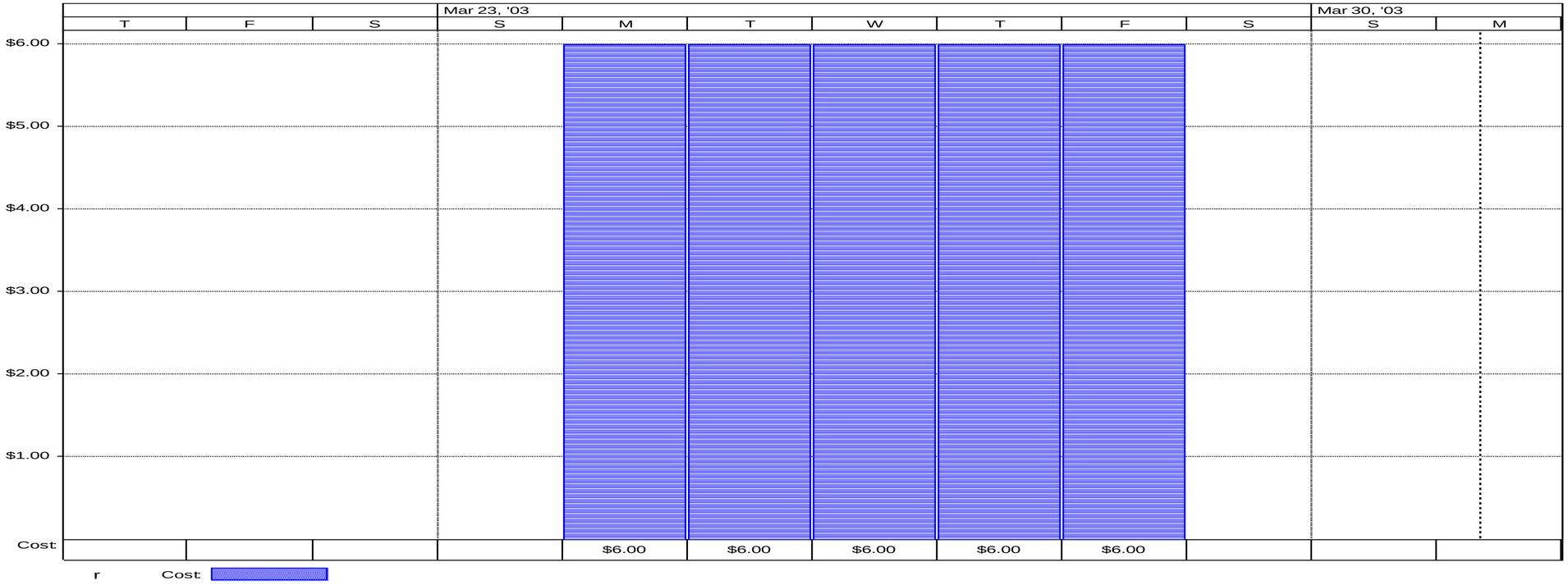
Leveling project resources

ID	Task Name	Duration	Predecessors	Resource Names
1	a	2 days		r[2]
2	b	3 days		r[2]
3	c	5 days		r[4]



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Approaches to budgeting

A budget is a formal written financial statement of management's plans for the future expressed in financial terms

Approaches to budgets

- Traditional — Previous year's level of performance is the foundation for next year's figures
- Zero based — Ignores previous results as each activity and outlay is justified. Each activity is recorded with zero spending to begin with
- Program — Activities are grouped together for projecting costs generated by each program or major activity
- Top down — Based on pooling the knowledge of senior managers & past results. Project costs are estimated & then passed to lower-level managers who continue the breakdown into further estimates
- Bottom up —Individual task budgets are estimated in detail by the people directly responsible for doing or managing the work. Estimates are aggregated to give the total project cost

Two perspectives on budgets

Advantages

- Increase ability to improve decision-making processes
- Effective means of cost control
- More reliable profits can be determined
- Assess operational financial requirements
- Ideal for areas needing control measures
- Identify & diagnose problems
- Act to improve management image
- Useful in achieving long-term objectives
- …

Disadvantages

- Top to bottom support is difficult to get
- Time spent planning can delay action
- Often ‘locked’ & inflexible
- Restrictive in terms of innovation & change
- Can ignore cyclical fluctuations
- Communicate unrealistic targets
- Based on ‘guessed’ & unreliable estimates
- Involve a high degree of uncertainty
- Can be expensive to prepare
- …

Sample project budget inclusions

Budget cost: Original (and or revised) approved estimate

Estimation technique: How was the budget determined

Actual cost: Reported actual cost

Variance: Difference between the budget and the actual costs

Confidence level: Degree of confidence & or accuracy in the estimate

Assumptions : Things believed to be true but have not been confirmed

Constraints : Limitations that may impact the estimates

Contingency: Amount of additional reserve funding required, source & approvals

% Work complete: Amount of work actually completed to date

Actual Cost: The reported cost in performing the activities to date

% Actual cost: Percentage of money spent against the budget

Variance percent: The difference between the budget and the actual costs

Tolerance: Degree of acceptable difference between budget & actual

Corrective action: Required actions to get the budget back into the ‘black’

Budget remaining: The amount of the budget remaining to complete the project

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Controlling Project Costs

Examples of traditional project budget analysis and earned value analysis (table 6.5, and 6.6) textbook, pp 222 – 228;

But,

Does this show the whole picture of a project's costs?

The ROI of Sustainability: Making the Business Case (Aberdeen Group, 2009)

➢Aberdeen Group research: Comparing companies performance (Best-in-class; average; laggard); and also attempt to understand sustainability benefits (Best-in-class companies incurred significantly lower costs - metrics shown below).

➢Operational cost category (examples of sustainability metrics)

- Paper costs
- Facilities costs
- Energy costs
- Waste/disposal costs
- Packaging costs
- Transport/logistic costs
- .....

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The ROI of Sustainability: Making the Business Case (Aberdeen Group, 2009) ...continues

➢Factors driving sustainability:

• Desire for environmental/social stewardship
• Desire to increase brand reputation/value
• Obtaining competitive advantage
• Internal/external stakeholder pressure/expectations
• Rising energy costs
• Regulatory compliance
• ....

➢Challenges:

• Budget challenges
• Difficulty to demonstrate an acceptable ROI
• Fear of disrupting current business processes
• ....

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Managing Social, Environmental and Financial Performance Simultaneously

(Epstein, Buhovac, and Yuthas, 2014)

- How companies make the trade-offs at various levels and simultaneously manage social, environmental and financial performance;

- While the companies' informal systems strongly promote sustainability, their formal systems seemingly have a very traditional focus on financial performance - Paradox

- Managers operating under these paradoxical systems do not believe these systems to be in conflict, and they do not perceive a high level of tension.

Readings week 4a

Aberdeen Group, 2009, The ROI of Sustainability: Making the Business Case, - http://www.aberdeen.com/

Epstein M. J, Buhovac A. R. And Yuthas K., 2014, Managing Social, Environmental and Financial Performance Simultaneously, *Long Range Planning*, 1-11