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Present

Project Management

The DVD Continuing Education Series for

- Engineers
- Architects
- Contractors

Jeffrey K. Pinto, Ph.D.

This is the 3rd course in this series which includes:

✓ **Foundations of Project Management**

✓ **The Technical Side of Project Management**

✓ **How Your Projects Will Go Wrong**
  (and what to do about it)

Featuring

 Jeffrey K. Pinto,

Ph.D.

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Learning Objectives

The learning objectives of this continuing education course are to give attendees a better understanding of major reasons why projects fail, including:

1. Poor leadership
2. Setting ourselves up to fail
3. Poor knowledge of project status
4. Ineffective "solutions"
5. The unwillingness to learn the correct lessons

Applying these principals to projects will improve project management performance and increase project success.

Your Credits

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HOW YOUR PROJECTS WILL GO WRONG

(AND WHAT TO DO ABOUT IT)

With
Jeffrey K. Pinto, Ph.D.
Penn State University

Jeffrey K. Pinto, Ph.D.

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Why Has Project Management Become so Critical?

60-70% of the work in organizations has become project based work.
http://www1.wnec.edu/continuinged/index.cfm?selection=doc.3030

16.5 million people are working in Project Management worldwide.
http://www.chiefprojectofficer.com

$2.3 trn spent by public and private sectors on projects in 2001 in US
(Bureau of Economic Analysis)
http://www.projectsmart.co.uk/the_importance_of_project_management.html

126,000,000 results for Project management on GOOGLE (11/2008)

52,626 Project Management books on Amazon.com (11/2008).
(That is up from **26,940** in February, 2007)

Evidence of Failure

- The Numbers are Not Encouraging!
  - Peat Marwick: 65% of software and/or hardware projects fail. Half of the managers interviewed considered these findings "normal."
  - Price Waterhouse Coopers: of over 10,000 project surveyed, only 2.5% achieve full success and over 50% fail.
  - Standish Group: 35% project success rates have remained the same since 1994.

Symptoms vs. Causes

- Most of us understand common symptoms of project failure
  - Project Team In-fighting
  - Poor Communications
  - Stakeholder Dissatisfaction
  - Scope Creep
  - Budget and/or Schedule Slippage
  - Unclear Lines of Responsibility

Common Outcomes with Bad Projects

- Over Budget

- Over Schedule

- Faulty or Incomplete Final Outcome

- Poor Customer or Stakeholder Relations

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Causes of Project Failure

1. Poor Leadership
2. Setting Ourselves Up to Fail
3. Poor Knowledge of Project Status
   - Where are we *really*?
4. Ineffective "Solutions"
   - Doing the "Wrong Things Well"
5. The Unwillingness to Learn the Correct Lessons

1. Poor Leadership

- Projects involve *Technical* and *Behavioral* challenges

- "Leadership" Operates on Numerous Levels, Including:
  - Team Development
  - Stakeholder Management
  - Project Oversight and Control

Team Development

- Unmanaged processes NEVER go well

- You can either devote time to developing your team, OR

- Deal with the residual effects of a team that emerged on its own

Stakeholder Management

- Who are the critical groups that are affected by or can affect your project?

- Leadership involves PROACTIVE stakeholder management

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Oversight and Control

- Project Management is a "Leader Intensive" undertaking

- You don't get any days off!

2. Setting Ourselves Up to Fail

- The Seeds of Project Success or Failure are Sown Immediately, through:
  - Requirements analysis
  - Executive buy-in
  - Estimation and planning
  - Documentation
  - Stakeholder management

Requirements Analysis

- Connect our capabilities to their needs
- Locking down user requirements early is CRITICAL!
- Technical and business case analysis are both critical ("Don't turn your sales reps loose!")

Executive Buy-In

- Project sponsorship is a critical need
- What does Buy-In really mean?
  1. The executive MUST support the project manager with sufficient formal authority to succeed
  2. Do we have a culture of authenticity or one supporting fraud?
  3. "If you don't take my estimates seriously, …"

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Estimation and Planning

- Poor initial estimates are the single biggest predictor of down-stream failure
- Project managers tend to be action-oriented and view planning as wasted time
- Cost estimation and budgeting are either done incompletely (based on old data) or ignore obvious sources of information (subject matter experts)

Documentation

- What gets measured gets managed!
- Determine IN ADVANCE what types of reports will be employed
- Communicate this information to the team
- How much documentation is enough? How much is too much?

Stakeholder Management

- The single biggest (and most hidden) responsibility of project leadership is managing your stakeholders!
- Who are the stakeholders?
- What strategies are needed to manage them?

The Challenge of Managing Stakeholders

Issues / Groups	Time	Budget	Scope Changes
Top Mgmt	↓	↓	—
Accounting	—	↓ ↓	—
Client	↓	—	↑
Team	↑	↑	↓

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3. Poor Knowledge of Project Status

- When a project is in "trouble," how do we know?

- How do you track projects?
  - Standard response: "I know it when I sense it"
  - Reactive means
  - Proactive options

Reactive Means

- S-Curves

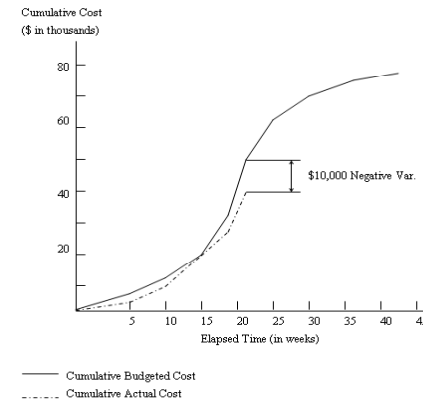- Milestone analysis (e.g., status meetings)

- Tracking Gantt charts

S-Curves

Budgeted Costs for Project

	Duration (in weeks)									
	5	10	15	20	25	30	35	40	45	Total
Design	6	2								
Engineer		4	8	8	8					
Install				4	20	6				
Test						2	6	4	2	
Total	6	6	8	12	28	8	6	4	2	
Cumulative	6	12	20	32	60	68	74	78	80	80

S-Curves

Cumulative Cost ($ in thousands) vs. Elapsed Time (in weeks). $10,000 Negative Var. Cumulative Budgeted Cost, Cumulative Actual Cost.

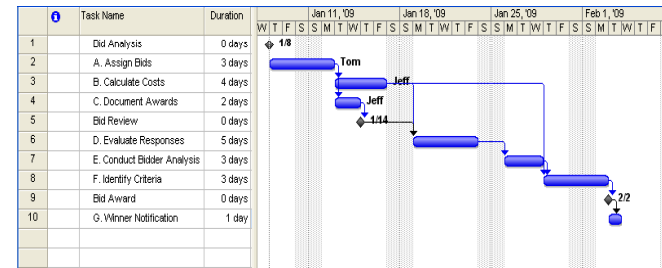**Jeffrey K. Pinto, Ph.D.**

Problems?

- S-Curves equate money spent to project progress – only!

- How did we get to where we are?

- Does $ really mean progress?

Milestones

Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.
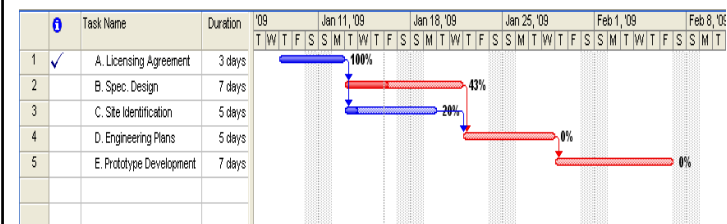
Problems?

- Milestones inform us of what we have *done* or *failed to do* – not how we are doing.

- How many milestones?

- How large the gaps between them?

- These decisions ALL have implications for their usefulness

Tracking Gantt Chart

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Problems?

- Labor Intensive – Must be updated regularly to be useful

- Show status of tasks but not the *cause* of the problems

- Do not allow for projections of future status – when will we get back on track?

Proactive Means

- Earned Value Management (EVM)
  - EVM allows for current project status to determine future progress
  - Gives "real time" information that is useful
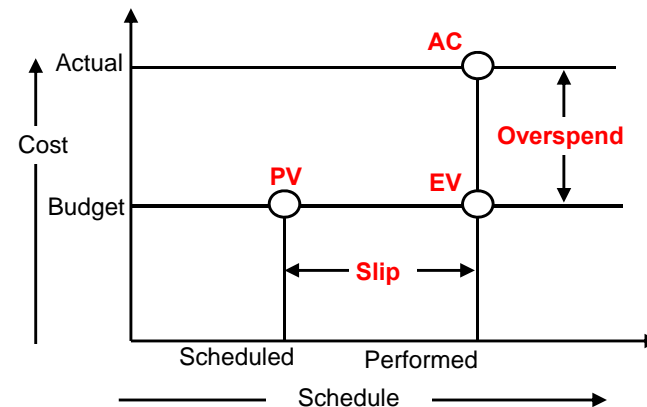 - Allows for projections to the future (likely final cost, likely final budget)

Earned Value Terms

❖ Planned value (PV)

❖ Earned value (EV)

❖ Actual cost of work performed (AC)

❖ Schedule performance index (SPI)

❖ Cost performance index (CPI)

❖ Budgeted cost at completion (BAC)

Earned Value Milestones

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Steps in Earned Value Management

1. *Clearly define each activity* including its resource needs and budget

2. *Create usage schedules* for activities and resources

3. *Develop a time-phased budget* (PV)

4. *Total the actual costs* of doing each task (AC)

5. *Calculate* both the budget variance (CV) and schedule variance (SV)

Earned Value Example

Activity	Jan	Feb	Mar	Apr	Plan	%C	Value
Staffing	8	7			15	100	
Blueprint			4	6	10	80	
Prototype			2	8	10	60	
Design				3	3	33	
Mon Plan	8	7	6	17	38		
Cmltv	8	15	21	38			
Mon Act	8	11	8	13			
Cmltv Act	8	19	27	40			

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Earned Value Example

Activity	Jan	Feb	Mar	Apr	Plan	%C	Value
Staffing	8	7			15		
Blueprint			4	6	10		
Prototype			2	8	10		
Design				3	3		
Mon Plan	8	7	6	17	**38**		
Cmltv	8	15	21	38			
Mon Act	8	11	8	13			
Cmltv Act	8	19	27	40			

Planned Value
38=15+10+10+3

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Earned Value Example

Value
8=80%(10)

Activity	Jan	Feb	Mar	Apr	Plan	%C	Value
Staffing	8	7			15	100	15
Blueprint			4	6	10	80	8
Prototype			2	8	10	60	6
Design				3	3	33	1
Mon Plan	8	7	6	17	38		
Cmltv	8	15	21	38			
Mon Act	8	11	8	13			
Cmltv Act	8	19	27	40			

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Earned Value Example

Activity	Jan	Feb	Mar	Apr	Plan	%C	Value
Staffing	8	7			15	100	15
Blueprint			4	6	10	80	8
Prototype			2	8	10	60	6
Design				3	3	33	1
Mon Plan	8	7	6	17	38	∑	**30**
Cmltv	8	15	21	38			
Mon Act	8	11	8	13			
Cmltv Act	8	19	27	40			

Earned Value
30=15+8+6+1

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Earned Value Example

Value
8=80%(10)

Activity	Jan	Feb	Mar	April	Plan	%C	Value
Staffing	8	7			15	100	15
Blueprint			4	6	10	80	8
Prototype			2	8	10	60	6
Design				3	3	33	1
Mon Plan	8	7	6	17	38	∑	30
Cmltv	8	15	21	38			
Mon Act	8	11	8	13			
Cmltv Act	8	19	27	40			

Earned Value
30=15+8+6+1

Cumulative
40=8+11+8+13

Planned Value
38=15+10+10+3

Earned Value Example

Schedule Variances

Planned Value (PV) = 38 = 15+10+10+3

Earned Value (EV) = 30 = 15+8+6+1

Schedule Performance Index = .79 = 30/38 = EV/PV

Estimated Time to Completion = (1/.79) x 4 = 5

Cost Variances

Actual Cost of Work Performed (AC) = 40 = 8+11+8+13

Cost Performance Index = .75 = 30/40 = EV/AC

Estimated Cost to Completion = 50.7 = (1/.75) x 38

Completion Values in EVM

*Accurate* and *up-to-date* information is *critical* in the use of *EVM*

➢ 0/100 Rule

➢ 50/50 Rule

➢ Percentage Complete Rule

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4. Ineffective Solutions

- "Doing the wrong things well"
- Many times the "cure" is worse than the disease
- What do you do when your project starts lagging behind?
- Common Options
  - Overtime
  - Throw extra resources (people) at the project
- Both are Counterproductive
  - Why?

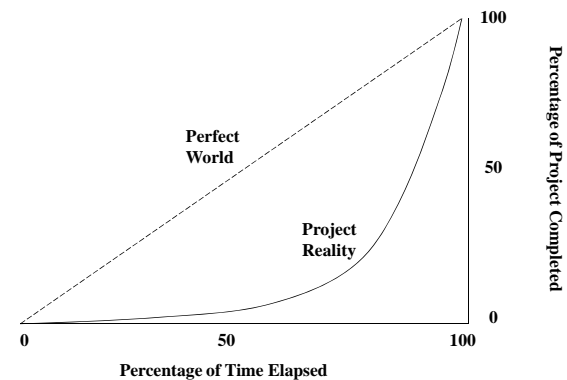## Working Smarter, Not Harder – Really?
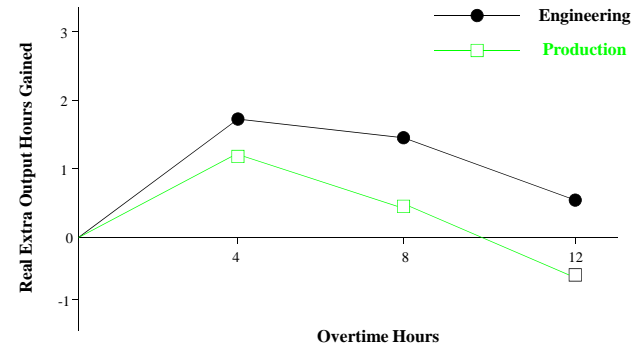
What About Adding Resources?

- Brook's Law*: Adding resources to ongoing activities only delays them further!

  - Why?

  - Learning curve effects

  - Let me explain

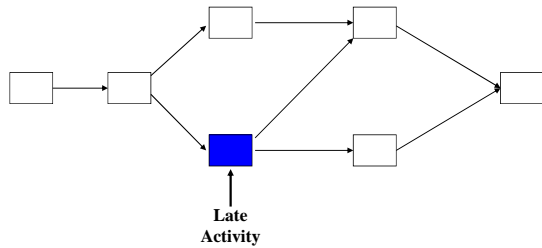 * Frederick Brooks, *The Mythical Man-month: Essays on Software Engineering*, 1995.
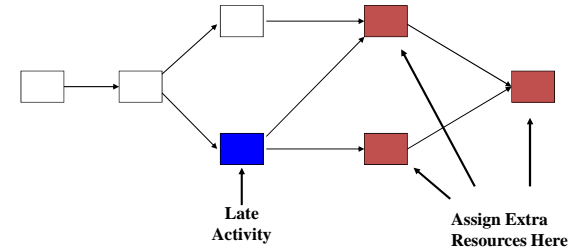
Learning Curve

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So What is the Solution?

Suppose the Following:

Late
Activity

Where is the Point of Leverage?

Late
Activity

Assign Extra
Resources Here

10 Ways to Ruin Your Project

- Chance does nothing that has not been prepared beforehand. - Tocqueville

- Experience is the name everyone gives to his mistakes. - Wilde

#1: Ignore the Project Environment (Including Stakeholders)

- Example: Nuclear power

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#2: Push a New Technology to Market Too Quickly

- Examples: Dbase IV, DeHavilland's Comet I

#3: Do Not Bother Building in Fallback Options

- Examples: Discouraging the process of asking "What if?" questions

#4: When Problems Occur, Shoot the Most Visible

- *Pour encourager les autres*
  - Voltaire

- Examples: Too numerous to mention

#5: Let New Ideas Starve to Death Through Inertia

- "Paralysis by analysis"

- "The Right of Infinite 'No'"

- Examples: Xerox Alto

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#6: Avoid Conducting Feasibility Studies

- Hope is generally a wrong guide, though it is very good company by the way. - Halifax

- Examples: Calcutta's Metro (10 years late and $4 billion over budget)
  Sydney Opera House ("But it looks good!")

#7: Never Admit a Project is a Failure

- Escalation of Commitment

- Many are stubborn in pursuit of the path they have chosen, few in pursuit of the goal. - Nietzsche

- Example: Mitsui's Iran Petrochemical Project

#8: Overmanage Your Project Managers and Their Teams

- Examples: Megaprojects

- The curse of "Staff infection"

#9: Never Bother to Understand Project Trade-Offs

- Examples: The classic "Dollar-Day" choices

- The cost of "crashing"

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#10: Allow Politics to Dictate Important Project Decisions

- Examples: Concorde

- ELDO, forerunner of the European Space Agency

5. The Unwillingness to Learn the Correct Lessons

- There is a strong temptation to walk quickly away from failures
- Need:
  - Lessons learned meetings
  - Documentation
  - Exception Reports and Variances

What Else is Needed?

- Analyze mistakes in order to learn from them

- Require future project managers to first absorb past lessons

Conclusions

- "Rounding up the usual suspects"
  - Although it is tempting to assume that all projects fail for different reasons, the truth is that we see the same patterns again and again
1. Leadership – Project success is never accidental; neither is failure
2. Setting ourselves up to fail
   - Poor planning and inattention to requirements have doomed more projects than active errors
3. Poor knowledge of project status
   - "Hope is generally a wrong guide, though it is very good company by the way."
     - Halifax
4. Ineffective Solutions
   - Avoid the "counterintuitively   counterproductive countermeasures"

5. Unwillingness to Learn
   - "We wholly conquer only what we   assimilate" - Gide

Jeffrey K. Pinto, Ph.D.

Dr. Pinto is the lead faculty member for Penn State's graduate level online project management program offering:

- Master of Project Management (30 credits)
- Graduate Certificate in Project Management (12 credits)

If you interested in receiving additional information about Penn State's graduate level online project management program, please call SunCam at 800-735-4449.