Overview

- Welcome and Introductions
- Survey
- Three Big Ideas
  - PM Approach
  - Triple Constraint
  - PM Expertise
- Implications and Applications
Project Management

The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. PMI-PMBOK, 2008

Project management is an organized common-sense approach that utilizes the appropriate client involvement in order to deliver client requirements that meet expected incremental business value. Wysocki, 2011

Project Knowledge Experience

[Background Survey]

- Q1: What percentage of your current work is project work?
  - 0-25
  - 26-50
  - 51-75
  - 76-100
- Q2: How many projects are you currently work on?
  - 0-5
  - 6-10
  - 11-15
  - 16-20
  - 20+
- Record your individual responses on two Post-It notes
- Place Post-It notes on charts
Percentage of Current Work that is Project Work – 102 Engineers

Number of Projects Currently Working On
Top Three Main Engineering Work Activities

Engineering Total
• Design – 36%
• Computer applications – 31%
• Management – 29%

Civil/Architectural
• Management – 45%
• Design – 39%
• Computer applications – 20%


Teamwork and Project Management

Goals
• To improve your understand of the dynamics of team development and interpersonal problem solving.
• To identify strategies for accelerating the development of true team effectiveness.
• To help you frame the project and team and identify and use an appropriate project management approach.
• To understand the critical dimensions of project scope, time, and cost management.
• To understand critical technical competencies in project management.
• To explore a variety of "best practices" including anticipating, preventing, and overcoming barriers to project success.
What percentage of the projects you work on fit in the upper right hand quadrant (High Process Clarity AND High Goal/Task/Deliverables Clarity)?

<table>
<thead>
<tr>
<th>Process Clarity</th>
<th>Goal/Task/Deliverables Clarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>

Adaptive Project Management (APM)?

Traditional Project Management (TPM)

Punt

Adaptive Project Management (APM)
Types of Projects

• On-going operations – Traditional Project Management – PMBOK
• Innovation – Agile/Adaptive Project Framework – Wysocki
Types of Projects – Exploitation vs Exploration (March, 1991)

<table>
<thead>
<tr>
<th>Exploiting Old Ways: Organizing for Routine Work</th>
<th>Exploring New Ways: Organizing for Innovative Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive out variance</td>
<td>Enhance variance</td>
</tr>
<tr>
<td>See old things in old ways</td>
<td>See old things in new ways</td>
</tr>
<tr>
<td>Replicate the past</td>
<td>Break from the past</td>
</tr>
<tr>
<td>Goal: Make money now</td>
<td>Goal: Make money later</td>
</tr>
</tbody>
</table>


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**Explore - Exploit**

- James March (1991) Exploration and exploitation in organizational learning
- Roger Martin (2010) *Design of Business* – Characteristics of exploration and exploitation, Table 1-1, p. 20
- Govindarajan and Trimble (2010) *The Other Side of Innovation*, Key differences between typical planning processes for the Performance Engine and best practices for innovation, Table 4.1, p. 99
### Characteristics of exploration and exploitation

(Martin, R. (2010) *Design of Business*, Table 1.1)

<table>
<thead>
<tr>
<th></th>
<th>Exploration</th>
<th>Exploitation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organizational focus</strong></td>
<td>The invention of business</td>
<td>The administration of business</td>
</tr>
<tr>
<td><strong>Overriding goal</strong></td>
<td>Dynamically moving from the current knowledge stage to the next</td>
<td>Systematically honing and refining within the current knowledge stage</td>
</tr>
<tr>
<td><strong>Driving forces</strong></td>
<td>Intuition, feeling, hypotheses about the future, originality</td>
<td>Analysis, reasoning, data from the past, mastery</td>
</tr>
<tr>
<td><strong>Future orientation</strong></td>
<td>Long-term</td>
<td>Short-term</td>
</tr>
<tr>
<td><strong>Progress</strong></td>
<td>Uneven, scattered, characterized by false starts and significant leaps forward</td>
<td>Accomplished by measured, careful incremental steps</td>
</tr>
<tr>
<td><strong>Risk and reward</strong></td>
<td>High risk, uncertain but potentially high reward</td>
<td>Minimal risk, predictable but smaller rewards</td>
</tr>
<tr>
<td><strong>Challenge</strong></td>
<td>Failure to consolidate and exploit returns</td>
<td>Exhaustion and obsolescence</td>
</tr>
</tbody>
</table>

### Typical Planning Processes for the Performance Engine and best practices for Innovation

Govindarajan and Trimble (2010), Table 4.1

<table>
<thead>
<tr>
<th>Planning Principles for Innovation</th>
<th>Norm in Performance Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invest heavily in planning</td>
<td>Invest in proportion to budget</td>
</tr>
<tr>
<td>Create the plan and the scorecard from scratch</td>
<td>Just modify last year’s plan</td>
</tr>
<tr>
<td>Discuss data and assumptions</td>
<td>Focus on data</td>
</tr>
<tr>
<td>Document a clear hypothesis of record</td>
<td>Document clear expectations</td>
</tr>
<tr>
<td>Find ways to spend a little, learn a lot</td>
<td>Be on budget, on time, and on spec</td>
</tr>
<tr>
<td>Create a separate forum for discussing results</td>
<td>Separate forums are unnecessary</td>
</tr>
<tr>
<td>Frequently reassess the plan</td>
<td>Deliver the results in the plan</td>
</tr>
<tr>
<td>Analyze trends</td>
<td>Analyze totals</td>
</tr>
<tr>
<td>Allow formal revisions to predictions</td>
<td>Revisions frowned on</td>
</tr>
<tr>
<td>Evaluate innovation leaders subjectively</td>
<td>Evaluate based on results</td>
</tr>
</tbody>
</table>
Distribution of PM Activity Between Supporting Innovation and Supporting On-Going Operations

Response

Project: Definition and Triple Constraint

- A project is a sequence of unique, complex, and connected activities that have one goal or purpose and that must be completed by a specific time, within budget, and according to specification. Wysocki, 2011.

- **Time – Cost - Requirements**
A project is a sequence of unique, complex and connected activities that have one goal or purpose and that must be completed by a specific time, within budget, and according to specifications.

Performance, Cost, and Time Project Targets
Project Success: Quadruple Constraint
Project Management is not just scheduling (Lewis, 2007)

It’s the intersection of:

Tools
People
Systems

Fundamental tools for the new generation of engineers and project managers....

- Systems/ systems thinking/ systems engineering
- Models
- Team work
- Quality

Characteristics of Expert PMs

- ?
- ?
Expertise Implies:

- a set of cognitive and metacognitive skills
- an organized body of knowledge that is deep and contextualized
- an ability to notice patterns of information in a new situation
- flexibility in retrieving and applying that knowledge to a new problem

Critical Success Factors and Their Importance for System Implementation
(Listed in decreasing order of correlation)

[Pinto (1986), See Smith (2014), p. 177]

1. **Project mission.** Initial clearly defined goals and general directions.
2. **Top management support.** Willingness of top management to provide the necessary resources and authority/power for implementation success.
3. **Schedule plans.** A detailed specification of the individual action steps for system implementation.
4. **Client consultation.** Communication, consultation, and active listening to all parties impacted by the proposed project.
5. **Personnel.** Recruitment, selection, and training of the necessary personnel for the implantation project team.
6. **Technical tasks.** Availability of the required technology and expertise to accomplish the specific technical action steps to bring the project on-line.
7. **Client acceptance.** The act of "selling" final product to its ultimate intended users.
8. **Monitoring and feedback.** Timely provision of comprehensive control information at each stage in the implementation process.
9. **Communication.** The provision of an appropriate network and necessary data to all key actors in the project implementation process.
10. **Troubleshooting.** Ability to handle unexpected crises and deviations from plan.
Acquisition of Expertise

- Cognition: Learn from instruction or observation what knowledge and actions are appropriate
- Associative: Practice (with feedback) allowing smooth and accurate performance
- Automaticity: “Compilation” or performance and associative sequences so that they can be done without large amounts of cognitive resources

“The secret of expertise is that there is no secret. It takes at least 10 years of concentrated effort to develop expertise.” Herbert Simon

Paradox of Expertise

- The very knowledge we wish to teach others (as well as the knowledge we wish to represent in computer programs) often turns out to be the knowledge we are least able to talk about.
70/20/10 Model for Learning and Development

- Lessons learned by successful and effective managers are roughly:
  - 70% from tough jobs
  - 20% from people (mostly the boss)
  - 10% from courses and reading

Wysocki – Challenges to Supporting Complex Projects

- Details: Number of variables and interfaces
- Ambiguity: Lack of awareness of events and causality
- Uncertainty: Inability to pre-evaluate actions
- Unpredictability: Inability to know what will happen
- Dynamics: Rapid rate of change
- Social Structure: Numbers and types of interactions

Wysocki – p. 9
Session Summary
(Minute Paper)

Reflect on the session:

1. Most interesting, valuable, useful thing you learned.
2. Things that helped you learn.
3. Comments, suggestions, etc

4. Pace: Too slow 1 . . . . 5 Too fast
5. Relevance: Little 1 . . . 5 Lots
6. Instructional Format: Ugh 1 . . . 5 Ah

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Q4 – Pace: Too slow 1 . . . . 5 Too fast (3.3)
Q5 – Relevance: Little 1 . . . 5 Lots (4.1)
Q6 – Format: Ugh 1 . . . 5 Ah (4.4)