Software Project Management
CS6704: Class 10

Instructor: Shawn A. Bohner
Voice: (703) 538-8374
Email: sbohner@vt.edu

Teaching Assistant: Yunxian Zhou
Email: yxzhou@nvc.cs.vt.edu
Voice: (703) 538-8381

Agenda

- Discussions
  - Turn in Homework
  - Reading Discussion
  - Review last weeks class
- Discussion: Software Program Management Differences between Commercial and Government Institutions
  - Break
- Critical Path Preliminaries
- Homework/Project Assignment
Fall Semester Timeline

Class Begins PM Basics
Managing with Metrics
Emerging PM Paradigms
Mid-Term Exam
Program Management
Final Exam

Aug  —  Sept  —  Oct  —  Nov  —  DEC

Software Project Planning
Software Estimation
Risk Management
Human Side of PM
Project Portfolio Management

8 weeks, 5 sessions... So much to do & so little time
... When is the Project Due? 😊

Reading Discussions...

- “Software Risk Management” by Barry Boehm & Tom DeMarco
- “Critical Chain as a Management Technique” by Fred Manzer
- “Critical Chain Scheduling and Buffer Management” by Frank Patrick
- “Industrial-Strength Management Strategies” by Norm Brown
- “Middleware Challenges Ahead” by Kurt Geibs
# Prog. Mngt. Capability Maturity Model

<table>
<thead>
<tr>
<th>Maturity Level</th>
<th>Key Process Area Concentrations</th>
<th>Strategic Inflection Point</th>
<th>Effective Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Incorporated</td>
<td>Value Management, Business Continuity Planning, Procurement Management, Outsourcing and Contract Management, PM Center of Excellence</td>
<td>Integration with Business</td>
<td>Enterprise/Industry</td>
</tr>
<tr>
<td>4 Managed</td>
<td>Program Process Management, Project Integration Management, Project Performance Management, Vendor Management, PM Career Path, Staff Performance Management, Customer Relationship Management, Contingency Management, Communications Management</td>
<td>Dynamic Micro-Level Change</td>
<td>Multiple ???</td>
</tr>
<tr>
<td>3 Defined</td>
<td>PM Methodology, Skill Management, PM Training, Risk Management, Change Management, Staff Resource Management, Environment Resource Management, Conflict/Issue Management</td>
<td>Static Macro-Level Change</td>
<td>??? Project</td>
</tr>
<tr>
<td>1 - Initial</td>
<td>Acquiring New PMs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Moving Up The Program Management Maturity Scale

- **Why is ROI for Small Firms arrived at faster than large ones?**
- **Why does Level 5 ROI go higher for Large Firms?**
- **PMOs Advance Levels at Strategic Inflection Points – What are these inflection points?**
PMO-CMM Level 2:
Getting the ??? Right

- Planning
- Estimation
- Tracking
- Risk Identification
- Schedule Management
- Budget/Cost Management
- Scope Management
- Progress Reporting

Advancing to Level 2 ??? performance by instituting the ??? of Project Management

PMO-CMM Level 3:
Macro-Level Performance Focus

- PM Methodology
- Staff Resource Management
- Skills Management
- PM Training
- Risk ???
- Change Management
- Environment Management
- Conflict/Issue Management

First-Order Practices

People

Process

Technology

Reaching Level 3 increases ???-project performance by focusing on high-payoff practices in Key PM Areas
PMO-CMM Level 4:
???-Level Performance ???

- Program Process Mgt.
- Project Integration Mgt.
- Project Performance Mgt.
- Vendor Mgt.
- PM Career Path
- Staff Performance Mgt.
- Customer Relationship Mgt.
- ??? Mgt.
- Communications Mgt.

**Attaining Level 4 targets ???-??? initiative improvements by targeting “PM in the large” issues**

---

PMO-CMM Level 5:
Integrating PMO with the ???

- Value Management
- Business Continuity Planning
- Procurement Management
- Outsourcing and Contract Management
- PM Center of Excellence

**Risk ???**

**Targeting Level 5 means making project ??? integral to the executive ??? -- at the speed of business**
Enterprise PMO Position in the Organization

- Enterprise PMO Reports to CIO
- Thematic and LOB PMOs are subordinate to Enterprise PMO
- Portfolio of ... Programs/Initiatives of ... Projects

PM Dashboard in the Context of Business Value Stream
PMO Standings in the IT Value Race

- No PMO
- IT managed as a cost
- Mainframe based
- Long development lead times
- Little flexibility

Following the Pack
30%

- Level 1-2 PMO
- Spending growth but not managed
- Distributed computing growth w/uncontrolled complexity
- Strategic work content low

In the Pack
55%

- Level 3-4 PMO
- Spending under control
- Portfolio is managed
- Development effective
- Strategic content high

Competitive
10%

- Level 5 PMO
- Spending managed as an investment
- Package based solutions leveraged
- Sourcing leveraged
- “Change Ready” mindset

Leading
5%

IEEE Risk Management

- Based on IEEE Risk Standard 1540-2001

1. Plan & Implement Risk Management
   - Information Needs

2. Technical and Management Processes
   - Perform Risk Treatment
     - Management Decisions

3. Manage the Project Risk Profile
   - Project Risk Profile & Risk Actions Requests
     - Perform Risk Analysis

4. Evaluate the Risk Management Process
   - Project Risk Profile Feedback

5. Perform Risk Monitoring

6. Information Needs Improvement Actions
Risk Management Plan

1. Overview
   a. Date of Issue and Status
   b. Issuing Organization
   c. Approval Authority
   d. Updates

2. Scope

3. Reference Documents

4. Glossary

5. Risk Management Overview – The specifics of risk management for this project/situation


7. Risk Management Process Overview

8. Risk Management Responsibilities

9. Risk Management Organization – the function of the organization assign with risk management

10. Risk Management Orientation and Training

11. Risk Management Costs and Schedules

12. Risk Management Process Description
   a. RM Context
   b. Risk Analysis
   c. Risk Monitoring
   d. Risk Treatment


14. Risk Communication
   a. Process Documentation
   b. Coordinating RM with Stakeholders
   c. Coordinating RM with Interested Parties

15. Risk Management Plan Change Procedures
Interesting Observation

- Most project managers believe that if they get behind on a project, they can make it up later in the slack from follow-on activities... It is rarely true – Why?
  - Critical Paths,
  - Murphy’s Law, and
  - Parkinson’s Law
- Schedule can be reclaimed but not without discipline

Program Scheduling

- Project Scheduling is subject to a couple of well-known Laws...
  - Parkinson’s Law – The work will expand to fill the time allotted (safety).
  - Murphy’s Law – If anything can go wrong, it will (uncertainty)
- These are apparent in single projects but become “demons” in large initiatives or Programs
Achieving Speed and Reliability

- How do we protect the promised date from impacts of uncertainty (Murphy) and wasted oversafety (Parkinson)
- Parkinson Avoidance
  - Build schedule with tight duration estimates that discourage diversion of attention/focus
  - Get rid of task due dates!?!?
  - Get management to protect resources from disruptions
- Murphy Protection
  - Avoid distractions and interruptions
  - Single focus when possible
  - Account for working on more than one project at a time

Early Finishes to get Achieved Speed

- Dilemma: Without dates, how do we know when particular resources need to be available? How do we take advantage of early finishes?
- Early finishes are special case of not having predictable dates for project activities
- Resource Types
  - Critical task resources
  - Non-Critical task resources
- Step 1: Ask resources how much advanced warning is needed shift from current task to critical task
- Step 2: Require periodic updates on current estimates of the time to complete current task
- When estimate to complete matches advanced warning, alert resource to task start time
Homework Assignment for 11/5/01

- Readings
  - Critical Chain Tutorial: URL
    http://www.pdinstitute.com/tutorial/contents.html
  - More to come on Human Side of PM
- Develop a Critical Chain-based Schedule for the “Project Management Metrics Database” Project based on your last estimate
- Have a great week!