Advanced Topics in Project Management: Control, Procurement and Human Aspects

By

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Project Management

Module 1
Scope/ Time/ Cost Control
Scope/Time/Cost Control

1. Report Change of Plan
2. Baseline Plan/Revised Plan
3. Change the Plan
4. Work
5. Tracking Plan
6. Fix?
7. Did fix change the plan?
8. Report on track

Flowchart:
- Report Change of Plan → Work
- Work → Tracking Plan
- Tracking Plan → Fix?
  - Fix? → Did fix change the plan?
  - Did fix change the plan? → Report on track
  - Y: Report on track
  - N: Change the Plan
- Change the Plan → Baseline Plan/Revised Plan
- Baseline Plan/Revised Plan → Report Change of Plan

Decision Points:
- Fix?: Y → Did fix change the plan? N → Change the Plan
- Did fix change the plan?: Y → Report on track N → Change the Plan
Scope/Time/Cost Control

Three steps of control:

1. Monitoring
   Formal and informal methods for getting truthful information about project progress.

2. In the case that the project is off plan, determining whether or not there is a problem (deciding the degree of panic required).

3. Reacting to the problem (before the project gets out of control):
   This may be a physical fix or a change in the plan. If the latter option is taken, all the stakeholders must be warned – (see Project Communication Management)

   - Control is never draconian.
   - Control is management by exception.
Project Control - Monitoring

Should be possible by ALL Stakeholders

Mostly by PM and Client

How does PM/Client Monitor?

Formal
- Attend team meetings, reviews
- Receive status reports (communication)

Informal
- Pizza, beer, hang around watercooler and corridors
- Intuition: informal chats

You need intuition because you can't believe everything you hear or read.
Other Monitoring Meetings

**Project (Manager’s) Review Meeting**

- Project Manager meets with each Team Leader(s); Possibly other involved functions
- Client may attend (formal invitation)
- Predefined agenda and minutes/report:
  - **Project Status & Metrics**
    1. Deliverables made vs. scheduled
    2. Review work in progress
    3. Work packages accomplished vs. scheduled
    4. Actual effort on current and closed work packages vs. plan
  - Schedule Status
  - Review of effort on WBS items vs. plan
  - Actual and projected staffing profile vs. plan
Other Monitoring Meetings

Project Manager Review Meeting (Continued)

- Team Performance
  - Internal - on time for deadlines
  - External - turnaround of customer requests
  - Team ability
- Risk review: status of known risks, analysis of new
- Review of engineering strategy plans
- Review of issues from Project Meetings
- Review of issues from other meetings, e.g., with client
- Objectives for next period
- Review of action items
- Review of decisions
- Next meeting

- THE MINUTES OF A CONTRACTOR’S PROJECT MEETING MAY BE A CONTRACT DELIVERABLE (in CDRL)
Two Very Important Meetings

Project Kickoff Meeting:

• *Part 1*: (General) Attendees: All team members plus Stakeholders (Vendor, PM, Client)
  – Introductions
  – Goals
  – Provide History
  – Roles, Structure, Contacts
  – Standards, Guidelines
  – Set up 'Functions' team
  – (High level) Schedules, budget
  – Establish mood of enthusiasm
Two Very Important Meetings

- **Project Kickoff Meeting:**
- **Part 2: (Technical) Implementation Team(s)**
  - Look at Requirements, Specs, SOW, CDRL
  - Design standards
  - Rules, Procedures
  - Reporting
  - Training requirements
  - Problem areas
  - Risks
Post Project Review (and Post Project Report Audit/Lessons Learned)

Topics
• History (report only)
• Description
• Estimates vs. Actuals
• Control methods; Status reports/Gantt's
• Evaluations
• Risks
• Successes/Failures
• Reusability
• Recommendations

Why have one?
  Constructive criticism
  Document the experience

Who attends?
  Part 1: Client, Project Team
  Part 2: Project Team (if there was a client problem)
Project Control - Monitoring

Monitoring by Team Leader

- *How Much?* Depends on
  - Project complexity
  - Worker expertise
  - Module/people interfaces
  - Workers' egos
  - Listen (as well as talk)

- *How often?*
  - Constantly informally
  - Weekly Status meeting
Project Control - Monitoring Steps

Step 1 - Take a baseline.

- Baseline plan: a copy of the plan (WBS with all dates, assignments, costs).
- Used to report progress against the baseline.
- Taken at a mutually agreed upon planning point:
  - Proposal or Analysis completion
  - +25% to -10% stage
- Baseline is (theoretically) not alterable
- Unless major scope change occurs.
### Project Control - Monitoring Steps

#### Tracking Gantt to report

<table>
<thead>
<tr>
<th>Week No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
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<td><strong>Past Task</strong></td>
<td>AS</td>
<td>DC</td>
<td>AF</td>
<td>100%</td>
<td></td>
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<tr>
<td>Baseline</td>
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<tr>
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<td>DC</td>
<td>RD</td>
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<td>0%</td>
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<tr>
<td>Baseline</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Today

John J. Rakos & Assoc. Consultants

13
Step 2: Items to monitor

- **Track:** (Versus Baseline):
  - Time: Actual Start, Finish, or % complete. Duration complete, remaining duration
  - Work: Actual work, remaining work
  - Cost: Actual cost, Remaining cost

- **Replan if necessary:**
  - Duration, or remaining duration (or end date)
  - Remaining work
  - Remaining cost

STEP 3: Report: see Project Communications
Monitoring Methods

Team Status Meeting

- Team, TL
- Objective
  - Gather information (verbally)
  - Force people to report in front of their peers
  - Discussion: Accomplishments
    - Work packages
    - Action items
    - Technical issues
- Frequency depends on Scope: Weekly is common
  - toward the end of the week
Overview

Project Procurement management (PPM) is the process of acquiring goods and services from outside the performing organization. - *PMBOK*
Procurement

Basic steps

1. Procurement planning - planning what to procure and when
2. Solicitation planning - document product requirements and potential sources
3. Solicitation - publishing an RFP, obtaining proposals
4. Source selection - choosing a bidder
5. Contract administration - managing the project and the relationship
6. Contract close-out - settlement, final payment, review
Procurement Planning

To Procure or Not to Procure?
That is the question
Build vs Buy

- Have we analyzed all make/buy/rent options (cost/benefit)
- Can we do it in-house?
- All or part?
- Will confidential knowledge get out?
- Do we have the procurement knowledge?
- Are there appropriate vendors?
  - Do products exist as-is?
  - Can products be modified?
  - Will users modify requirements to suit?
## Procurement Planning

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Risk (to buyer)</th>
<th>Risk (to seller)</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
<td>Fixed price</td>
<td>Low</td>
<td>High (depends on quality of requirements)</td>
<td>High</td>
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<tr>
<td>Fixed price with escalation</td>
<td>Low</td>
<td>Medium (escalation due to scope changes)</td>
<td>Medium</td>
</tr>
<tr>
<td>Fixed price with penalty/incentive</td>
<td>Medium-low</td>
<td>Medium-low</td>
<td>High</td>
</tr>
<tr>
<td>Cost reimbursable (Time &amp; Material)</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
</tbody>
</table>

**Others:**
- Cost plus fixed fee/percentage
- Cost plus incentive fee
- Cost plus with ceiling
- Cost Plus or Fixed with Bonus
- Joint profit
Five Guiding Principles for Government Contracting

• Equality
• Fairness
• Accountability
• Transparency
• Probity
<table>
<thead>
<tr>
<th>ID</th>
<th>WBS</th>
<th>Task Name</th>
<th>Duration</th>
<th>Predecesors</th>
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<td>1</td>
<td>1</td>
<td>Y2K for DFO Contract</td>
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<tr>
<td>2</td>
<td>1.1</td>
<td>Requirements</td>
<td>10 days</td>
<td></td>
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<tr>
<td>3</td>
<td>1.1.1</td>
<td>Analyze needs</td>
<td>5 days</td>
<td></td>
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<tr>
<td>4</td>
<td>1.1.1.1</td>
<td>Interview clients</td>
<td>5 days</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1.1.1.2</td>
<td>Read documents</td>
<td>5 days</td>
<td></td>
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<tr>
<td>6</td>
<td>1.1.2</td>
<td>Write SOW</td>
<td>5 days</td>
<td>5</td>
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<td>7</td>
<td>1.1.3</td>
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<td>0 days</td>
<td>6</td>
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<td>8</td>
<td>1.2</td>
<td>RFP</td>
<td>20 days</td>
<td></td>
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<td>9</td>
<td>1.2.1</td>
<td>Develop RFP</td>
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<tr>
<td>10</td>
<td>1.2.1.1</td>
<td>Write document</td>
<td>5 days</td>
<td>7</td>
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<tr>
<td>11</td>
<td>1.2.1.2</td>
<td>Approved by Director</td>
<td>5 days</td>
<td>10</td>
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<tr>
<td>12</td>
<td>1.2.2</td>
<td>RFP on Street</td>
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<td>13</td>
<td>1.2.2.1</td>
<td>Bidder's conference</td>
<td>5 days</td>
<td>11</td>
</tr>
<tr>
<td>14</td>
<td>1.2.2.2</td>
<td>Handle questions/updates</td>
<td>5 days</td>
<td>13</td>
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<tr>
<td>15</td>
<td>1.2.3</td>
<td>RFP Closed</td>
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<td>16</td>
<td>1.3</td>
<td>Proposals</td>
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<td>1.3.1</td>
<td>Open proposals</td>
<td>3 days</td>
<td>15</td>
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<td>18</td>
<td>1.3.2</td>
<td>Evaluate proposals</td>
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<td>17</td>
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<td>19</td>
<td>1.3.3</td>
<td>Vendor chosen</td>
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<td>18</td>
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<td>20</td>
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<td>Contracting</td>
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<td>21</td>
<td>1.4.1</td>
<td>Vendor meetings</td>
<td>3 days</td>
<td>19</td>
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<tr>
<td>22</td>
<td>1.4.2</td>
<td>Write contract</td>
<td>5 days</td>
<td>21</td>
</tr>
<tr>
<td>23</td>
<td>1.4.3</td>
<td>Award contract</td>
<td>1 day</td>
<td>22</td>
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<td>24</td>
<td>1.5</td>
<td>Project completed</td>
<td>0 days</td>
<td>23</td>
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</table>
Solicitation Planning

**Evaluation Criteria (Published in RFP)**

- **Type 1**: Detailed evaluation of precise attributes (e.g., for physical product such as the purchase a Work Station)

<table>
<thead>
<tr>
<th>Function</th>
<th>Score</th>
<th>Weight</th>
<th>Total</th>
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<tbody>
<tr>
<td>Network Card</td>
<td>Mandatory</td>
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<tr>
<td>1G RAM</td>
<td>10</td>
<td></td>
<td></td>
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<tr>
<td>2G mhz CPU</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100G disk</td>
<td>8</td>
<td></td>
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<tr>
<td>Dual core</td>
<td>6</td>
<td></td>
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<td>DVD R/RW</td>
<td>4</td>
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<tr>
<td>Grand Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost/Point</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Cost may be treated as an evaluation item if:**

1. The proposals will be similar in cost
2. Cost is not an issue
3. Cost will not be treated linearly (1/2 the cost does not imply half the score)
Solicitation Planning

**Evaluation Criteria**

- Type 2: Detailed based on imprecise attributes (e.g., purchase a software package)

<table>
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<tr>
<th>Function</th>
<th>Score</th>
<th>Weight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td></td>
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</tr>
<tr>
<td>Growth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability, availability</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>etc.</td>
<td></td>
<td></td>
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</tbody>
</table>
Evaluation Criteria

- Type 3: Generic evaluation (e.g., contract project team, process, consultant)
  - PM must have x years documented experience; PMP
  - Understanding of needs
  - Technical capability
  - Management approach
  - Financial capacity
  - Cost
  - References
  - Etc.

- Your ‘gut feeling’ in an interview
  – Can you defend the decision in a court?
Solicitation Planning

- Rank by Total Score; if cost is an issue, then Cost/Point.
- Factor in:
  - Their Project Management
    - Communication
    - Quality Assurance
    - Methodology
    - Risk management
  - Also
    - Type of contract
    - Terms and conditions/legalities
    - Support/warranty
    - Client furnished equipment and other responsibilities and dependencies
    - Change management and escalation
    - Compensation if late
    - Payment
    - Insurance
Solicitation Results

Proposals: Vendor's Considerations

- Preparation
  - Take the time to do it right
  - Treat it as a project: PM, team
  - Follow the structure of the RFP
  - Can you have informal contact with the client?
  - Present formally
Proposal Outline

1. Cover Letter (main points: cost, schedule, sell, close)
2. Title Page
3. Table of Contents
4. Scope
5. Advantages (why choose us)
6. Financial (how the cost and delivery date was determined, payback)
7. Project Plan (major steps, how the client fits into each step)
8. Deliverables
9. Acceptance
10. Alternatives (why other solutions (competitors) should not be chosen)
11. Terms, Conditions and Assumptions
12. Terminology (if non technical reader)
Source Selection and Contracting

Selection: Use Evaluation Criteria

- Screen out non compliant bids (some aspects not addressed at all)
- Lowest price may not be the best value. You get what you pay for!
- May divide the deliverables and use more than one vendor
- You do not have to pick one (e.g., even lowest bid is too expensive)
- Check references, certifications
- Award notice; brief the losers as well
- Anticipate bid protests (e.g., COREL)
Contract Administration

Manage it as you would any other Project

• The contract is managed at two levels
  – Contractor does (internal) project management. Buyer is key client/stakeholder.
  – Buyer manages seller's project (external), using milestones, reviews, reports.

• Ask for (in contract) and respond to
  – Progress/status/earned value reports
  – Audits
  – Quality reports
  – If non performance, react as agreed
    • Non payment
    • Cancellation of contract
Contract Close-out

Verify all promised items delivered
  • Product, Documentation, Training
  • Quality of deliverables with formal acceptance
  • Support (warranty in place)

Termination
  • Normal completion
  • Cancelled by buyer (default)
  • Cancelled by seller (frustration, e.g., failed to provide client furnished equipment)
  • Mutually for convenience

Post project Review
  – By contractor with report
  – By contractor + client with report
Project Management

Module 3

Project Communication
Project Communication

• Project Communications Management involves the processes required to ensure timely and appropriate generation, collection, dissemination, storage and ultimate disposition of project information.
  - PMBOK

• ___ % of PM's time is spent communicating.

• Communication Planning: *Who* needs *What* information, *Where*, *When*, and *How* (what method will be used).
Project Communication

WHO?

• Who must you communicate with? All stakeholders
• Challenge #1: stakeholders change, so communications must change.
• Challenge #2: N people have N * (N-1)/2 lines of communication.

WHAT?

• Project progress (cost/time/quality, trend/forecast)
• Resource usage
# Project Communication

<table>
<thead>
<tr>
<th>HOW?</th>
<th>Technology</th>
<th>Use with Stakeholders</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation (face to face)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Conversation (phone)</td>
<td></td>
<td></td>
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<tr>
<td>Meetings/Video Conf.</td>
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<tr>
<td>Memo/Letter</td>
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<tr>
<td>Document</td>
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<tr>
<td>E-mail</td>
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<tr>
<td>On-line availability of info: Database/Internet</td>
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<tr>
<td>Fax</td>
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</tbody>
</table>
Avoiding Miscommunication

A Communication model:

Sender → Encoding → Message → Decoding → Receiver

Filters!
Filtering Phenomena! (What I meant was not what I said and definitely not what you understood…)

- Filtering phenomena
  - Language
  - Culture
  - Semantics
  - Intelligence/knowledge
  - Message content
  - Ethics
  - Reputation/authority
  - Organizational status/position
  - Historical considerations
  - Clothes
Method 1: Meetings (Value?)

Running a good meeting

- Minimize number of attendees
- Agenda (with time allotted to topics)
- Attendees warned
- Good location
- Subject matter can be: Feasibility, Plans, Proposal, Specs, Walkthroughs
- Keep minutes, action items
Project Communication

Running a good meeting

- When?
  - Set frequency for
    - Team meeting
    - Your Steering Committee
    - Contractor team status meetings
    - Client meetings
  - When necessary:
    - Milestone
    - Start of a major phase
    - Reviews
      » Overall approach and plans
      » Functional requirement spec. (SRR)
      » Design Docs, Interface Design Docs, PDR, CDR
      » Work package status
    - Major problem
    - Project Kickoff and Post Project Review
Method 2: Reports

Reporting Project Status to Stakeholders

Status Report

- Author: Project Manager

- Objective:
  - Allows monitoring by other stakeholders (outside the project team)
  - Progress reporting
  - History
  - Gets client/management off the team’s back
  - Early warning

- Frequency: Have things changed that the world needs to know about? (Weekly or Bi-weekly is common)
Project Communication

Status Report Contents (1 written page + one MSProject produced page)

• Page 1: Word process one page
• (If you have numerous small projects try a table)

1. Accomplishments past period
   - Referring to Gantt (pg. 2)
     • Tasks started as per schedule (or not)
     • Tasks on-going as per schedule (or not)
     • Tasks complete as per schedule (or not)

2. Plan for next period
   • Tasks planned to start, continue or complete
   • (compare to plan)

3. Problems solved past period
Project Communication

Status Report Contents

4. New problems (point out where Gantt has changed since last report, and keep it to this period only!)
   – Cause/description of problem
   – Responsible resource
   – Intended solution
   – Project impact
   – *Flag any action required* from recipient(s)

5. Time and expenses for period

6. Trend analysis and project forecast
   – (You know this better than the computer)
Project Communication

*Status Report Contents*

- Page 2: Computer produced Gantt chart, showing
  - Data date (vertical line)
  - (Past) Actual start/finish dates versus baseline plan
  - (Future) Rescheduled start/finish dates versus baseline plan
Project Communication

Other types of Progress Reports

- Based on deliverables:
  - (Contracted) Deliverables
  - Against planned schedule dates and durations
  - Software: Ensure deliverables are flagged
  - Best for reporting to Client
Project Communication

Example: Progress Report based on deliverables (Client report)
# Project Communication

**Based on milestones: Against planned schedule.**

*Upper level management report*

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<thead>
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<td>Annual Survey Fe</td>
<td>1/10/93</td>
<td>NA</td>
<td>31%</td>
<td>44.46d</td>
<td>100.53d</td>
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<tr>
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<td>100%</td>
<td>36d</td>
<td>0d</td>
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<td>NA</td>
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<td>0d</td>
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<td>0d</td>
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<td>NA</td>
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<td>0d</td>
<td>10d</td>
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<tr>
<td>Sign Off</td>
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<td>0%</td>
<td>0d</td>
<td>0d</td>
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<td>0d</td>
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### Project Communication

#### Communication of issues/flagging

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<tr>
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<td></td>
<td></td>
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</tbody>
</table>

**Software: use annotations to:**
- Detail most important action items
- Resources required
- Notes to yourself
- Status of deliverables
- Anything that needs visibility
- More detail can be placed into 'notes' fields
Project Communication

Project Library

- Single, central location for:
  - History
  - Status
  - Reports
  - Plans
  - Issues
  - Problems
  - Risks
  - Minutes
  - Memos
  - All documentation needed for managing the project (basically everything except technical documents)

- Used for both Control and Communication:
- Everyone can access it.
- Keep it in a Public Place!
Project Management

Module 4

Human Resources
Project Human Resources Management

Processes required to make the most effective use of the people involved in the project. - PMBOK

Challenge: Constantly changing stakeholders:
• Project team
• Client (owner, sponsor, user)
• Management
• Other functions involved
• Additionally: ambiguous roles and responsibilities, multiple priorities
Project Human Resources Management

Why is it important?
• Of the projects that fail, 60% fail due to some aspect of HRM.
• PM spends 60% of time in HRM.

Aspects
• Choosing the right people
• Setting up the right organization
• Using the right management techniques
The Project Team

**Team Structures**

*Small to Medium-sized projects*

- Project Manager
- Team Leader
- Developer 1
- Developer 2
- Developer 5
The Project Team

Larger projects

Project Manager

Hardware Project Leader

Client HW Team

Server HW Team

Software Project Leader

Data Base SW Team

Custom SW Team

COTS SW Team Leader

Team Member

Team Member

Team Member

(Sub)projects

Maximum 5 - 7 team members (professionals)
The Project Team

Definitions

1. Responsibility: an obligation to act
2. Authority: the right to impose a degree of obedience
3. Accountability: individual is answerable - reward or punishment
The Project Team - Responsibilities

Project Manager Responsibilities

PLANNING STAGE:
Initiation
- Help Client write Project Concept
- Help Client clarify Requirements
- Risk management
- Write Plan

• Higher levels of WBS, estimates, schedule
  - Start negotiating for resources
  - Risk, Communication plans
  - Write/Present Proposal to client (may assist Account Rep)
  - QM plan
The Project Team

*Project Manager Responsibilities*

**Planning/Analysis**

– Help write detail plan
– Get resource commitments
– Technical Staff, Reviewers (technical, management), Information, Facilities, Hardware, Software, Training
The Project Team

*Project Manager Responsibilities*

**CONTROL STAGE:** PM owns the *schedule* and *milestones*

- **Execution (Design, Build, Test)**
  - Interface to Client, (Satisfaction, Control changes)
  - Communicate to enterprise
  - Manage staff
  - Monitor
  - Realize/react to issues
  - Report progress/warn if problems
  - Attend management meetings
  - Ensure resources materialize
  - Fight fires
  - Ensure staff produces documents
  - Announce to the world when product is ready
  - QA
The Project Team

Project Manager Responsibilities

CONTROL STAGE (Execution Continued)

• Acceptance
  • Schedule it, notify staff, run it
  • Ensure Client signs

• Roll out and Operation
  • Provide promised warranty

Closure

• Help sell next project
• Do Post Project Review and Apply learning to next project
• KEEP THE PROJECT NOTEBOOK
The Project Team

Project Manager Skills

• Technical skills:
  – Application, business, project management

• People Skills:
  – Communication: Leadership, motivation, teaching, sensitivity to client needs
  – Knowledge of 'procedures', negotiation, change management, decision making

• People skills come first, then technical

"The Project Manager is the buffer or screen for the administrivia."

- P. W. Metzger
The Project Team

Team Leader Responsibilities

- Job goal: product quality and integrity

- INITIATION
  - Help write Detailed Plan
    - Lower levels of WBS, estimates, schedule
  - Suggest resources
The Project Team

**Team Leader Responsibilities**

**EXECUTION**

- **Design**
  - Chief Designer
  - Help write Functional Specification
  - QC:
    - Lead it
    - Keep statistics
    - Control regression
    - Technical reviews (module design, test plan, documentation)
  - Help other designers
  - Supervise workers
  - Assign priorities
  - Help (especially with problems)
  - Do most complex/critical work (not Critical Path at first)
The Project Team

**Team Leader Responsibilities**

- **Acceptance**
  - Help demonstrate product
  - Fix problems
- **Operation**
  - Help rollout
  - Provide warranty
- **THROUGHOUT**
  - Report progress
  - Provide formal input into workers’ reviews

What if the Project Manager has both Project Administration and Technical Leader roles?
The Project Team

Technical Worker (e.g. Programmer) Responsibilities

- Detailed estimates
- Design
- Test and integration plan
- Maintenance documentation
- Build
- Report status
- Assist with integration and testing

- Possibly
  - Write user documentation
  - Write and provide training courses
  - Provide support

- CANNOT MAKE COMMITMENTS TO THE USER
Most Important Project Manager Skills: Motivation & Delegation

**Motivation: to improve productivity**

- **Theory X vs Y vs Z**

<table>
<thead>
<tr>
<th>Author</th>
<th>Theory X</th>
<th>Theory Y</th>
<th>Theory Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>??</td>
<td>McGregor</td>
<td>Ouchi</td>
</tr>
</tbody>
</table>
| Theories | • People need to be coerced to work  
• Punishment is the greatest motivator  
• Dictator approach is best  
| • People will work to achieve objectives  
• Diplomatic approach is best  
| • People will be motivated by team  
• Loyalty to company is a motivator  

People Skills

Herzberg Studies to Improve Productivity (Motivation?):

- What were the factors that you remember about your most productive job (Motivators)?
- What were the factors that you remember about your least productive job (Demotivators)?

Herzberg Study Results:

Demotivators:
- Company policy and administration 38%
- My boss 20%
- Work conditions 18%
- Salary 8%

Motivators:
- Achievement 50%
- Interesting Work (Professionals) 48%
- (Non-professionals) 13%
- Recognition 25%
- Advancement 23%
- Responsibility 13%
Managing People

Herzberg Motivators

What can you do, without anyone's permission, to increase your staff's feeling of:

– Achievement
  • Assign achievable goals, recognize completion,

– Interesting Work
  • Allow choice, change, good tools, flex time, team activities,

– Recognition
  • ‘Pat on the back’: verbal, email, announcement,

– Advancement
  • Title, Promotion, training,

– Responsibility
  • Delegate, assign important/visible work,
Managing People

Signs of a Solid Team

• Low turnover
• Communication
• Respect for the others
• Pride in the team - 'We are the best'
• Ownership of deliverables
• Having fun
Conclusions on Managing People

*Deep Thoughts (by the 'experts')*

- People are your most important asset. In setting priorities people problems are first. If you lose their loyalty and respect you're dead. - Metzger

- A good manager will eliminate his people's excuses for failure. - Townsend

- Management must be available. (MBWA) - Peters
Deep Thoughts (continued)

• LISTEN - Let the presenter solve the problem during the presentation.

• Provide formal training - your company!

• Have your people contribute to the decisions - Kidder

• Technical work is a cerebral activity.

• Technical workers are eternal optimists. Never ask, "What percent complete?"; ask rather, "How many hours/ days left?"
Resources

- PMFORUM is a good PM site. Focus is on international project management, but all facets of PM are addressed.
  - pmforum.org
- Within PMFORUM there are good links, including list of bookstores and publishers at
  - www.pmforum.org/warindex.htm
- For thousands of PM oriented titles, PMI.ORG’s bookstore at is a good source.
- And the bible of Project Management texts:

- John J. Rakos is available to teach or consult in any topic presented in this seminar.
Project Management

Quality
Although QM is the responsibility of management, it requires the participation of the whole team.
Quality Management (QM)

Planning and Control

• QM includes the processes required to ensure that the project will satisfy the needs for which it was undertaken. - PMBOK

• Three processes:
  – Quality Planning: to meet quality standards
  – Quality Assurance: ensure that the plan is done
  – Quality Control: inspect the products as they are produced to ensure that they meet the required quality.
Quality Planning

QM Plan (May just be part of Project Plan)

1. Clarify commitment of all the stakeholders and PM to Quality
2. Develop quality policy: short statement that expresses quality objectives, standards to use.
3. Review project environment for process/product characteristics that will demonstrate quality
   Process: plans, specifications, standards, contracts
   Product: design, test results, acceptance results, faults per, product performance
4. Define quality control methods:
   Process: reviews, inspections,
   Product: testing
5. Determine any investments required (training, contracting, certification, insurance…)
6. Determine roles & responsibilities (Consider Independent Verification & Validation)
Quality Planning

QM Plan (cont’d)

• Choose a quality standard and define how to meet it.

• Quality standards:
  • ISO 9000 and 10000 series
  • SEI Capability maturity Model
  • Total Quality Management
  • Continuous Improvement

• Software Engineering Institute Capability Maturity Model
Quality Assurance

Ensuring that the Plan is Implemented

- Implementing all the planned and systematic activities of the quality policy
- Management of the Quality Systems: the total set of activities comprising Quality Planning and Quality Control
- Responsible person: PM, who may delegate to a QA person or group
- Reaction to any faults (Continuous improvement)
- Quality audits: review of the QA activities
- Performance records
  - Measurement (number of faults per...)
  - Trends
Quality Control - Steps

1. Appropriate testing and verification
2. Conduct QC activities to determine compliance with the required quality
3. Use sampling and statistical techniques. Track using “control charts” such as Pareto diagram (80% of faults are from 20% of the causes)
4. Accept or reject
5. Take corrective action in “out of quality” situations
6. Complete any rework, retain completed checklists, and results of any preventative or corrective action.
7. Apply learning to next project
Software Project Quality Management

Software Engineering Institute
Capability Maturity Model (CMM)

• The CMM describes an evolutionary improvement path for organizations developing software projects. The path goes from Level 1 – an ad hoc, immature process to Level 5 – a mature, disciplined process. Each level above Level 1 has key practices for planning, engineering and managing projects. These practices improve the ability of the organization to meet the goals of cost, schedule, functionality and quality.

• The CMM can be used to judge the software project management maturity of an organization. An organization can be certified to be at a specific level.

• Although defined for software projects, the method can be applied to any organization. A PM maturity level has been defined similar to the CMM.
Software Project Quality Management

Structure of the CMM

• Level 1 - The Initial Level
  – L1 is characterized by an unstable organization environment, with no sound management practices, ineffective planning and reaction driven management. Success depends on a seasoned manager and team. The process is unpredictable and changing constantly. Occasional success happens due to individuals’ capability or motivation, but the project falls apart when these people leave the team.
Software Project Quality Management

Structure of the CMM

• Level 2 - The Repeatable Level
  – Policies and processes for project management exist, based on past projects. All new projects can follow these policies, therefore effective project management is repeatable. An effective process is practiced, documented, trained, measured and able to be improved.
  – L2 projects have control methods for cost, schedule and function. They are controlled based on realistic results of past projects. Control is based on a managed baseline. Strong customer-supplier/subcontractor relationships are set up.
Software Project Quality Management

Structure of the CMM

• Level 3 - The Defined Level
  – At L3 the processes established at L2 are documented and enforced (defined) in the whole organization. A group is set up to control this. An organization wide mandatory training program is available for both managers and staff. The defined processes include roles, responsibilities, readiness criteria, inputs, standards, procedures, verification methods, outputs and completion criteria.
Software Project Quality Management

Structure of the CMM

• Level 4 - The Managed Level
  – At L4 there are quantitative goals for both the project products and processes. An organization-wide program measures quality and productivity. The results are stored, analyzed, and fed back into the processes, thereby achieving consistent project performance. Risks are known and managed, therefore the process is predictable and product is consistently high quality.
**Software Project Quality Management**

*Key Process Areas*

- Level 2 (Repeatable) Key Process Areas
  - Requirements Management
  - Software Project Planning
  - Software Project Tracking and Oversight
  - Software Subcontract Management
  - Software Quality Assurance
  - Software Configuration Management
Software Project Quality Management

Key Process Areas

• Level 3 (Defined) Key Process Areas
  – Organization Process Focus
  – Organization Process Definition
  – Training Program
  – Integrated Software Management
  – Software Product Engineering
  – Intergroup Coordination
  – Peer Reviews
Software Project Quality Management

**Key Process Areas**

- **Level 4 (Managed) Key Process Areas**
  - Quantitative Process Management
  - Software Quality Management

- **Level 5 – (Optimizing) Key Process Areas**
  - Defect Prevention
  - Technology Change Management
  - Process Change Management
Quality Management

• Comments:
  – There are approximately 200 Level 5 organizations in the world.
  – There are approximately 100 Level 4 organizations in the world (most will go on to Level 5).
  – Most organizations are Level __.

• PM Responsibility:
  – Look for the highest possible Level of Maturity, and ensure that the organization is working toward a higher level.