IS Project Management Introduction
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Agenda

• Software Engineering
  – Managing Software Projects
Managing Software Projects

- Cost of Errors
- Schedule Estimation and Planning
- Project Risk
- Project Evaluation
- Classic Mistakes

Relative Cost of Repairing Errors

Source: Haag et al. *Management Information Systems for the Information Age*
Management Challenges

• Systems development projects
  – Often backlog, late, excessive costs, missing capabilities

• Information systems must be conceived, designed, implemented, and maintained.
• Difficult to define requirements, costs, and benefits

Project Risk

• Software not a product; it is an embodiment of knowledge
  – Customer Knowledge
  – Technical Knowledge
• Difficult to extract this knowledge

Source: Tiwana and Keil 2004
One Minute Risk Assessment Tool

- On a scale of 1-10, where 1 is low and 10 is high, how would characterize this project compared to other projects completed in your organization?
- Add the six weighted ratings (see the worked example).
- A lower overall project risk score indicates higher project risk. Range 10 (most risky) to 100 (least risky).
- Use the table below as a guide for interpreting this score.

<table>
<thead>
<tr>
<th>Overall risk score</th>
<th>10-38</th>
<th>25-46</th>
<th>47-64</th>
<th>65-82</th>
<th>83-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project risk level</td>
<td>High</td>
<td>Moderately high</td>
<td>Medium</td>
<td>Moderately low</td>
<td>Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Characteristic Question</th>
<th>Rating</th>
<th>Weight</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit between chosen methodology and type of project</td>
<td>5</td>
<td>3.0</td>
<td>15.2</td>
</tr>
<tr>
<td>Level of customer involvement</td>
<td>4</td>
<td>1.9</td>
<td>11.6</td>
</tr>
<tr>
<td>Use of formal project management practices</td>
<td>3</td>
<td>1.7</td>
<td>5.1</td>
</tr>
<tr>
<td>Similarity to previous projects</td>
<td>3</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Project simplicity (back of complexity)</td>
<td>7</td>
<td>1.1</td>
<td>7.4</td>
</tr>
<tr>
<td>Stability of project requirements</td>
<td>9</td>
<td>0.8</td>
<td>7.3</td>
</tr>
<tr>
<td>Overall project risk score (higher score indicates lower project risk)</td>
<td></td>
<td></td>
<td>48</td>
</tr>
</tbody>
</table>

Source: Tiwana and Keil 2004

Project Evaluation

<table>
<thead>
<tr>
<th>Project Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
</tr>
<tr>
<td>Cautiously examine</td>
</tr>
<tr>
<td>Avoid</td>
</tr>
</tbody>
</table>

Potential Benefits to Firm

<table>
<thead>
<tr>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and develop</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid</td>
</tr>
</tbody>
</table>

MBA 8125
Information Technology Management

Professor Truex
Classic Mistakes of Project Management

• Personnel Mistakes
• Customer Mistakes
• Process Mistakes
• Product Mistakes
• Technology Mistakes

Personnel Mistakes

• Undermined Motivation
• Weak players / problem employees / heroics
• Adding personnel to already late project
  [Brook’s law: adding more people to a late project makes the project later.]
• Noisy, crowded work surroundings
Sponsor/Customer Mistakes

- Unrealistic expectations
- No stakeholder buy-in
- Insufficient user input
- Wishful thinking

Process Mistakes

- Overly optimistic schedules
- Failure to manage unique risks
- Contractor failure
- Insufficient planning
- Abandonment of plans
- Shortchanged process / quality assurance
Product Mistakes

- Feature creep
- Developer gold-plating
- Schedule slip / added tasks
- Advancing state of art

Technology Mistakes

- Silver bullet tools
- Overestimated savings from tools
- Switching tools in middle
Why Do We Make the Same Mistakes?

- Short-Term Fix
- “No time to do it right”
- External pressure / panic / ignorance
Introduction

• What are the elements of a good project?
• Why do so many IT projects fail to meet their targeted goals?
• What is the relationship between time, scope, and cost of a project?
• Why are Gantt charts so popular for planning schedules?
• What is RAD? How does it compare to the SDLC?
• When is it time to pull the plug on a project?

Real World Examples

• The State of Florida auditor’s report about HomeSafenet was blistering.
• The system was designed to keep track of the more than 40,000 children considered to be abused or neglected.
• Started in 1994 not fully implemented until 2005.
• More than five times the original cost estimate.
• Development plagued by poor project management.
WHAT DEFINES A PROJECT?

Project Definition

“[A] project is a temporary endeavor undertaken to create a unique product or service. Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguishing way from all similar products or services.”

-Project Management Institute (1996)

Projects

- Companies use projects and operations to generate revenue.
- Projects are temporary endeavors that have a fixed start and stop date and time.
- Operations are ongoing, repetitive tasks that are performed until they are changed or replaced.
- Project managers may break projects into sub-projects depending upon the work.
### Fig. 11.1 Characteristics of operational and project work

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Operations</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor skills</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Training time</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Worker autonomy</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Compensation system</td>
<td>Hourly or weekly wage</td>
<td>Lump sum for project</td>
</tr>
<tr>
<td>Material input requirements</td>
<td>High certainty</td>
<td>Uncertain</td>
</tr>
<tr>
<td>Supplier ties</td>
<td>Longer duration</td>
<td>Shorter duration</td>
</tr>
<tr>
<td>Raw Materials inventory</td>
<td>More formal</td>
<td>Less formal</td>
</tr>
<tr>
<td>Scheduling complexity</td>
<td>Large</td>
<td>Small</td>
</tr>
<tr>
<td>Quality control</td>
<td>Lower</td>
<td>Higher</td>
</tr>
<tr>
<td>Information flows</td>
<td>Formal</td>
<td>Informal</td>
</tr>
<tr>
<td>Worker-mgmt communication</td>
<td>Less important</td>
<td>Very important</td>
</tr>
<tr>
<td>Duration</td>
<td>Less important</td>
<td>Very important</td>
</tr>
<tr>
<td>Product or service</td>
<td>On-going</td>
<td>Temporary</td>
</tr>
<tr>
<td></td>
<td>Repetitive</td>
<td>Unique</td>
</tr>
</tbody>
</table>

### What is Project Management

- Project management is the application of **knowledge, skills, tools, and techniques** to project activities in order to meet or exceed stakeholder needs and expectation from a project.
- Involves continual trade-offs
- Manager’s job to manage these trade-offs.
Typical Project Management trade-offs

- **Scope vs. Time**
  - Product and project scope.
  - Scope creep can occur.

- **Cost vs. Quality**
  - The quality of a system will normally impact its cost.

- **Identified requirements vs. Unidentified requirements**

- **User needs vs. User expectations**

- **Differing needs and expectations vs. diverse stakeholders**

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Project Management Activities

- The project manager will typically be involved in:
  - Ensuring progress of the project according to defined metrics.
  - Identifying risks.
  - Ensuring progress toward deliverables within time and resource constraints.
  - Running coordination meetings.
  - Negotiating for resources on behalf of the project.
Project Measurement

- Some metrics used for IS projects are the same as those used for all business projects
- Projects are measured against budgets of cost, schedules of deliverables, and the amount of functionality in the system scope
- IT projects are difficult to estimate and most fail to meet their schedules and budgets
- Software systems often involve highly interactive, complex sets of tasks that rely on each other to make a completed system.
- Most projects cannot be made more efficient simply by adding labor
Business vs. System Functionality

• Metrics for functionality are typically divided along lines of business functionality and system functionality
• The first set of measures are those derived specifically from the requirements and business needs that generated the project
• The second are related to the system itself such as how well the individual using the system can and does use it, or system reliability
PROJECT ELEMENTS: Essential Components

• There are four components essential for any project. These elements are necessary to assure that the project will have a high probability of success.
  – Common Project Vocabulary: so all team members can communicate effectively (since many are new this is very important).
  – Teamwork: to insure all parts of the project come together effectively and correctly (make sure to clearly define the teams objectives).
  – Project cycle plan: method and schedule to execute the project (Gantt charts, CPM, and PERT diagrams).
  – Management of the project is needed so that it is coordinated and executed appropriately.

Project Cycle Plan

• The project cycle plan organizes discrete project activities, sequencing them into steps along a timeline.
• Identifies critical beginning and ending dates and breaks the work spanning these dates into phases.
• The three most common approaches are:
  – Project Evaluation and Review Technique (PERT) (Figure 11.3)
  – Critical Path Method
  – Gantt chart (Figure 11.4)
Figure 11.3 PERT Chart

Figure 11.4 GANTT Chart
**Aspects of Project Cycle Work.**

- The manager must attend to the following aspects of the work throughout the project cycle:
  - **Technical** - includes all activities related to satisfying the technical and quality requirements.
  - **Budget** - describes all activities related to the appropriation of project funds by executive management and the securing and accounting of funds by the project manager.
  - **Business** - encompasses all activities related to the management of the project and any associated contracts.
Elements of Project Management

- The following elements can be considered as managerial skills that influence a project’s chance for success.
  - Identification of requirements
  - Organizational integration
  - Team management
  - Project planning
  - Risk and Opportunity management
  - Project control
  - Project visibility
  - Project status
  - Corrective action
  - Project leadership

Organizational Integration

- The project manager should, ideally, start with a structure similar to the organization supporting the project.
- Different structures are ideal for different projects.
- For example a Pure Functional structure works best for a single project that operates with relative independence.
- The following figures (11.7 – 11.10) show the general layout of these structures.
Team Management

- Project manager acquires and manages required human resources.
- Assessments of professional competencies and skills.
- Also personal traits and behaviors can help the project manager select team members with specific roles in mind.
- As a project progresses through its life cycle, the number of people assigned typically increases.

Risk and Opportunity Management

- Critical task of the team is to manage risks and opportunities.
- Steps include:
  - Identification and assessment
  - Outcome predictions
  - Development of strategies
- By comparing costs and benefits of various courses of action, the team can select which sequence of actions to take and obtain agreement from necessary parties.
Project Control

• Effective project management requires the exercise of control.
• Must be sufficient to minimize risks while maximizing the likelihood of meeting or exceeding requirements.
• Effective project control involves five variables:
  – The nature and number of entities that require control
  – Control standards
  – Control authority
  – Control mechanisms
  – Variance detection

Project Visibility

• Communication management among team members and between the team and any project stakeholders is essential.
• Techniques range from the old-fashioned approach sometimes called “managing by walking around” to the more technological approaches of video conferencing, e-mail and voice mail.
• One effective technique to raise visibility uses a project information center comprised of physical displays in a central location
Project Status

- Status checks measure the project’s performance against the plan to alert everyone to any needed adjustments to budget, schedule, or other business or technical aspects of the project.
- The status of these elements should be evaluated in a combined format, since they interrelate.

Corrective Action

- Corrective techniques can place the project back on track after a variation from the plan is detected
- Examples of these reactive techniques include adding work shifts, lengthening work hours, and changing leadership
Project Leadership

- Strong project leaders skillfully manage team composition, reward systems, and other techniques to focus, align, and motivate team members.
- In organizations that have developed strong processes for project management and professionals trained for this activity, the need for aggressive project leadership is reduced.
- Strong project leaders are needed to help the organization develop project competency to begin with (see Figure 11.11).

![Project Leadership vs. Project Management Process](image-url)

**Figure 11.11** Project leadership vs. project management process