Software Project Management

“What is happening in the project?”

Lecture Objectives

• To discuss the various aspects of project management
• To understand the tasks in software project management
• To describe the project titles in the course
• To describe the requirements of a project plan

Project

• Definition: A group of tasks performed in a definable time period in order to meet a specific set of objectives
• Project Features:
  - Likely to be unique (one-time program)
  - Have specific start and end time (life cycle)
  - Have work scope that can be categorised into definable tasks
  - Has a budget, require use of resources

What is involved

• People — the most important element of a successful project
• Product — the software to be built
• Process — the set of framework activities and software engineering tasks to get the job done
• Project — all work required to make the product a reality

A Simple Project

“Going to the movies with friends”

Management

• The planning, organizing, staffing, directing and controlling of a company’s resources to meet the company’s objectives
Definition of Project Management

The planning, organizing, directing, and controlling of resources for a specific time period to meet a specific set of one-time objectives.

Primary Objectives of Project Management

To meet specified performance
... within cost
... and on schedule

Project Management Activities

- Establish project objectives
- Defining work requirement
- Determining work timing
- Establishing resource availability and requirements
- Establishing a cost baseline
- Evaluating and optimising the baseline plan

Project Management Activities (Continued)

- Freezing the baseline plan
- Tracking the actual costs
- Comparing the progress and cost to the baseline plan
- Evaluating performance
- Forecasting, analysing and recommending corrective action

Benefits of Project Management

- Identification of function responsibilities to ensure that all activities are accounted for, regardless of personnel turnover
- Minimizing the need for continuous reporting
- Identification of time limits for scheduling
- Identification of a methodology for tradeoff analysis

Benefits of Project Management (Continued)

- Measurement of accomplishment against plans
- Early identification of problems
- Improved estimating capabilities for future planning
- Knowing when objectives cannot be met or will be exceeded
Software Projects

Factors that influence the end result ...

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- size
- delivery deadline
- budgets and costs
- application domain
- technology to be implemented
- system constraints
- user requirements
- available resources

Project Management Concerns

- product quality?
- risk assessment?
- measurement?
- cost estimation?
- project scheduling?
- customer communication?
- staffing?
- other resources?
- project monitoring?

Project Management Problems

- Resources inadequate
- Meeting (“unrealistic”) deadlines
- Unclear goals/direction
- Team members uncommitted
- Insufficient planning
- Breakdowns in communications
- Changes in goals and resources
- Conflicts between departments or functions

Resources of A Company

- Money
- Manpower
- Equipment
- Facilities
- Materials
- Information/technology

Obstacles in Project Management

- Project complexity
- Customer’s special requirement
- Organizational restructuring
- Project risks
- Changes in technology
- Forward planning and pricing

Project Management Skills

- Communication Skills
- Organizational Skills
- Team Building Skills
- Leadership Skills
- Coping Skills
- Technological Skills
Project Titles

Select one of the following project titles:

Project Plan

“What are you going to do in the project?”

Project Plan Elements

- Project Objective & Scope
- Schedule
- Team Organization
- Project Standards and Procedures
- Documentation Plan
- Quality Assurance Plan
- Resource Management Plan
- Configuration Management Plan

Organizational Paradigms

- Closed paradigm—structures a team along a traditional hierarchy of authority.
  - Hierarchical Organization

Organizational Paradigms continue

- Random paradigm—structures a team loosely and depends on individual initiative of the team members
  - Democratic Organization

Other organizational structure

- Open paradigm—attempts to structure a team in a manner that achieves some of the controls associated with the closed paradigm but also much of the innovation that occurs when using the random paradigm
- Synchronous paradigm—relies on the natural compartmentalization of a problem and organizes team members to work on pieces of the problem with little active communication among themselves
**Team Leader**
- Communications with Lecturer
- Coordination of Project Activities
- Final say in decisions if the team is unable to reach a decision

**Programming Leader**
- Responsible for programming activities
- Coordination of software development tasks
- Knowledge of programming language and tools

**Quality Manager**
- Responsible for quality in project work
- Coordination of testing and review activities
- Ensure that quality standards are adhered e.g. version control and document formats

**Document Manager**
- Responsible for documentation activities
- Coordination of document preparation tasks
- Keeps ‘master copy’ of all project documents

**Resource Manager**
- Responsible for project resources
- Treasurer - manages the costs of the project
- Ensures that resources are obtained for project tasks e.g. computer resources

**Project Standards Example**
- All documents must have a version number
- All documents must be prepared using MS Word
- All meetings must have minutes
- Project file name extensions, suffixes, prefixes
Software Configuration

- Computer programs
  - Source code
  - Executable code
- Documents that describe the computer programs
  - For technical staff
  - For users
- Data
  - Within the program and external to it

Software Configuration Item

- A document or an artifact that is explicitly placed under configuration control and that can be regarded as a basic unit for modification
- Examples:
  - Requirement documents
  - Design document
  - Code of a module
  - Test plan

References

END