

# **Introduction and Overview of Project Planning and Management**

**(Session 1 in the Project Planning And Management Module)**

**Russ Pimmel**  
***Electrical and Computer Engineering***  
***University of Alabama***

***October, 2001***

***The development of this material was supported by a grant from the Engineering Education Program of the National Science Foundation under award EEC-9802942 to the Foundation Coalition***

# **Objectives and Justification**

# **Learning Objectives – Session 1**

- **After this session students should be able to:**
  - **Define a project**
  - **Discuss the importance of project management techniques in modern industry**
  - **Describe the measures used to evaluate a project's success**
  - **List some of the tools used in planning and managing a project**

# Justification

- **Learning about project planning and management is important because:**
  - **In industry, virtually all work done as part of a project**
  - **EC2000 criteria on “modern engineering tools”**
  - **Project assignments in current and future classes**

# **Justification -- Why Is Project Management Important?**

- **Management guru Tom Peters --**
  - **“ Those organizations that take project management seriously as a discipline, as a way of life, are likely to make it into the 21st century. Those that do not are likely to find themselves in good company with dinosaurs.”**
  - **“Tomorrow’s corporation is a collection of projects”**
  - **“The new lead-actor/boss -- the project manager-- must learn to command and coach; that is, to deal with paradox”**

# **Justification – New Industrial Environment**

- **New environment in industry**
  - **Shortened market windows and product life-cycles**
  - **Rapid development of third world and closed economies**
  - **Increasingly complex and technical products**
  - **Heightened international competition**
  - **The environment of organizational resource scarcity**

*The Age of Project Management* by Pinto and Kharbanda

# Justification – Changes in Industry

- **Recent trends in industry**
  - **Global competition**
  - **Rapid technological change**
  - **Product obsolesce**
  - **Organization downsizing**
  - **Business reengineering**
  - **Employee empowerment**
  - **Quality and continuous improvement**
  - **Performance measurement**
  - **Inter-organizational systems**

# **Introduction To Project Management**



# Team Exercise -- Define a Project

- **Task** -- Write a one-sentence definition of a project
  - Answer the questions:
    - What is a project?
    - What makes up a project?
- **Process** -- Work as a team
  - Individual brainstorming (1 minute)
  - Building consensus (2 minutes)
  - Reporting results (2 minutes)
    - Randomly selected individuals report team's definition
    - Each team reports phrase or clause in definition

# Features of a Project

- **Definable goal**
- **Performance requirements**
- **Cost and schedule constraints**
- **One-time activity**
- **Temporary activity with a finite life-cycle**
- **Crosses organizational lines**
- **Element of risk**

# **What is a project? – Technical Definitions**

- **A combination of human and non human resources pulled together in a temporary organization to achieve a specified purpose**
- **Non routine series of tasks directed toward a goal**
- **A one-time activity with a well defined set of desired ends and constraints**

# Team Exercise

- **Task** -- List several measures used to monitor a project's success
  - What measures would you use in evaluating a project?
  - How do you know if a project is proceeding in a suitable fashion?
  - How do you know if a completed project was successful?
- **Process** – Work as a team
  - Individual brainstorming (1 minute)
  - Consensus building (2 minutes)
  - Reporting results (2minutes)
    - Selected teams report one measure

# Measures of Project Progress and Success

- **Standard measures of project success**
  - **Cost – Project within budget**
  - **Time -- Project on schedule**
  - **Performance – Project meets specifications**
- **Fourth measure sometime added**
  - **Client or customer acceptance**

# Key to Project Success

- **Planning**
  - Identify, schedule, and assign individual tasks
  - Allocate resources
- **Monitoring and managing**
  - Follow progress indicators (or measures)
  - Make corrective interventions
  - Monitor process -- periodically discuss the process
    - What are we doing? Why? How dose it help?
- **General rules**
  - Flexibility to make changes decreases with time
  - Cost of changes increases with time

# Life Cycle

- **Project are temporary and have a life-cycle**
  - **Conceiving and defining the project**
  - **Planning the project**
  - **Implementing the project**
  - **Completing and evaluating the project**
- **Student projects typically**
  - **Ignore steps 1 and 2**
  - **Focus on 3**
  - **Pay a little attention to 4 (completion but not evaluation)**

# **Managing Time and Resources**



# Managing a Project

- **Project -- A one-time activity with a well defined set of desired ends and constraints**
- **Project success**
  - **Accomplish the goals on-time within available resources**
  - **Judged in terms of scope, schedule, and budget**
- **The 3 S's**
  - **Scope (goals)**
  - **Spending (resources)**
  - **Schedule (time)**

# Functions of Project Management

- **Planning (3 S's)**
  - **Determine the scope, required time, and required resources**
  - **Subdivide tasks and assign responsibility**
- **Leading**
  - **Motivate team members**
  - **Monitor and evaluate progress**
  - **Intervene to keep project on course**

# Project Management Tools

- **Project management tools should**
  - **Communicate the activities, schedule, resource constraints, and progress to all team members**
    - **Also to other stakeholders (customers and contractors)**
  - **Help allocate work fairly and appropriately**
  - **Ensure that work is done in proper sequence**
    - **Allows others to depend on completion of tasks**
  - **Provide information for monitoring progress**

# Team Exercise

- **Task -- List project management tools that would help plan and monitor projects?**
  - What information would be helpful?
  - How should it be organized, presented and manipulated?
- **Process – Work as a team**
  - Individual brainstorming (1 minute)
  - Consensus building (2 minutes)
  - Reporting results (2minutes)
    - Selected teams report one tool

# Project Planning and Management Tools

- **Work breakdown structure**
  - Identify individual tasks
- **Linear responsibility chart**
  - Assign individual responsibility for each task
- **Activity network**
  - Identify task dependencies and sequencing
- **PERT chart and Gantt chart**
  - Identify start and completion times for each task
- **Budget**
  - Assign resources (including manpower) to each task
- **Percent completion matrix**
  - Tracks progress against resources expenditures

# Team Exercise

- **Task -- List the importance differences in project management between a “construction” project and a “design” project**
  - “constructing” a bridge vs. “designing“ a bridge
- **Process – Work as a team**
  - Individual brainstorming (1 minute)
  - Consensus building (2 minutes)
  - Reporting results (2minutes)
    - Selected teams report one difference

# Construction vs Versus Design Projects

- **End points**
  - CP -- well defined
  - DP– vague, evolves with the project – maybe several acceptable outcomes
- **Scope of work**
  - CP – overall approach and task sequencing easily defined
  - DP– sequence of steps uncertain – depends on chosen approach and on progress
- **Schedule**
  - CP – easily defined
  - DP– unclear -- depends on the completion of uncertain and vaguely defined steps