

Project Management

Expect the Unexpected

Bob Casagrande
Adjunct Professor, School of Engineering
Director, Operations and Facilities Management
Southern Methodist University

A Project

- A sequence of tasks performed to achieve a unique goal within a specific time frame.
- A temporary endeavor undertaken to create a unique project or service





Project Management

- Planning your future outcomes
- Construction on time and within budget
 - Hitting your target even when it rains
 - Getting it done and still having fun
 - Expecting the Unexpected
 - Assessing the unknown
 - Building and executing excitement

Effective project management is the critical difference between

▪ a profitable project that meets customer needs



▪ and one that is embroiled in seemingly continual difficulties

Project Management

$(A - B) = C^2$

A

- New Construction
- Remodels
- Renovations
- Alterations
- Implementations
- Plans
- Programs
- Schemes
- Events

B

- Integration
- Scope
- Time
- Procurement
- Relationships
- Communication
- Quality
- Costs
- Risks

C

- Cost Overruns
- Liabilities
- Change Orders
- Delays
- Suits
- Liens
- Under Allocations
- Contract Disputes
- Errors
- Adjustments

The Profession

- Began in 1968
 - Now considered a profession
 - Differentiates a project manager from a functional manager
- Major fields
 - Construction, architecture, engineering information technology

Management Skills

- Scope
- Time
- Cost
- Procurement
- Relationships
- Communication
- Quality
- Risk
- Integration

Management Skills

- **Scope Management**
 - Used to define the work that needs to be done on any given project
- **Time Management**
 - Creating or refining the work breakdown structure, determining dependency relationships estimating the efforts and duration of the tasks and creating the schedule
- **Cost Management**
 - Cost categories, estimating use of each resource in each category
 - Fixed and variable cost budgets

Management Skills

- **Procurement Management**
 - Developing executing and monitoring contracts and purchase orders
- **Relationships Management**
 - Identify and stakeholders and their involvement

Management Skills

- **Communications Management**
 - Most important and most often neglected
 - Who needs what information to what level of detail and what media and time frames.
- **Quality Management**
 - Quality planning, Quality Assurance and Quality control

Management Skills

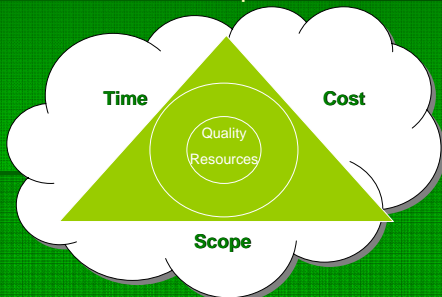
- Risk management
 - Potential risk to a project
 - their likelihood of occurrence
 - Impact to project
 - Prevention and response plans
- Integration Management
 - Creation of a cohesive comprehensive and well designed project pan and the execution of that plan

Resources/Constraints

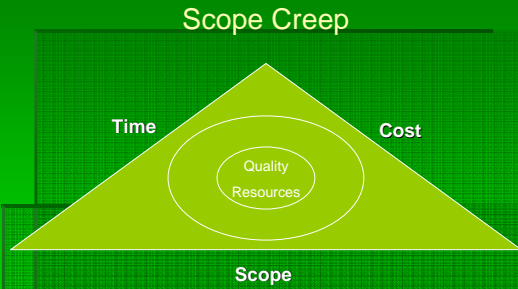


Project Management Triangle

5 Interrelationships of Success



Project Management Triangle



What's in it for me?

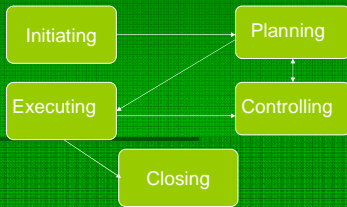
True or False

- A) Using project management tools and techniques will guarantee a project's success
- B) Using project management tools and techniques doesn't really help; it just adds overhead

Project Management Techniques

Gantt, PERT and CPM
1800s
Henry Gantt Task and Bonus System at Bethlehem steel
1950s
Pert -- Program Evaluation and Review Technique used network diagramming
CMP Critical Path diagramming called activity on node longest path

Project Processes



Initiating

- One single process that is authorizing the project or phase

Planning Process Core processes

- Scope
 - Planning
 - Definition
- Activity
 - Definition
 - Sequencing
 - Duration
- Schedule
 - Development
- Cost
 - Estimating
 - Budgeting
- Risk Mgmt Planning
 - Resource Planning
 - Project Plan Development
 - Quality Planning
 - Organizational
 - Communication
 - Risk identification
 - Qualitative risk analysis
 - Quantitative Risk analysis
 - Risk response planning
- Procurement
 - Solicitation

Executing Process

- Execution
- Quality assurance
- Team development
- Information distribution
- Solicitation
- Source selection
- Contract administration

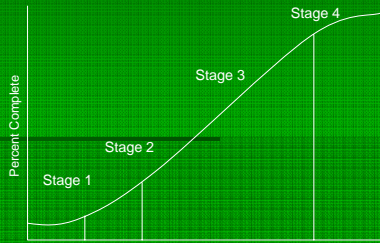
Controlling Process

- Integrated Change Control
- Scope verification
- Schedule Control
- Cost Control
- Quality Control
- Performance Reporting
- Risk Monitoring Reporting

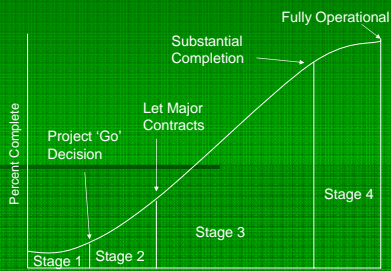
Closing Process

- Contract Closeout
- Administrative Closure

Life Cycle



Life Cycle



Stage 1 Feasibility

- Project Formulation
- Feasibility Studies
- Schematic Design and approval

Stage 2 Planning & Design

- Design Development
- Detailed Planning
- Cost and Schedule
- Contract Terms and Conditions

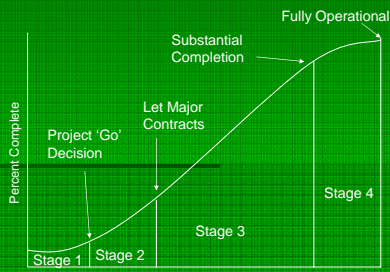
Stage 3 Construction

- Construction
- Manufacturing
- Delivery
- Civil Works
- Installation
- Testing

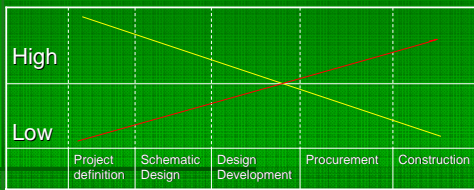
Stage 4 Turnover and startup

- Final testing
- Commissioning
- Operations and Maintenance
- Submittals
- As-built plans
- Warranties
- Specifications

Life Cycle



Ability to Influence project quality cost and schedule Cost to Implement changes in quality cost and schedule



Measures of Success

Traditional Measures

- On Time
- Within Budget

Value Measures

- Scope
 - Were project goals met?
- Quality
 - Was client satisfied?
- Resources
 - Were there casualties either to the team or to interrelationships?

Measuring Performance

- SPI Schedule Performance Index
- CPI Cost Performance Index

CPI

$$\frac{\text{Earned work hours or dollars to date (EV)}}{\text{Actual work hours or dollars to date (AC)}}$$

Comparison of the number or work hours being spent on work tasks to the hours budgeted

It is an indicator of productivity

SPI

$$\frac{\text{Sum of Earned work hours to date (EV)}}{\text{Sum of scheduled work hours to date (PV)}}$$

The amount of work performed to the amount scheduled to a point in time

Indices Interpretations

CPI > 1.0

- Overestimated amount of effort required
- Measurement of percent of completion is too optimistic
- Better than planned productivity

CPI < 1.0

- Underestimated amount of effort required
- Measurement of percent completion too pessimistic
- Poorer than planned productivity

Indices Interpretations

SPI > 1.0

- Started work prior to or out of sequence to logical restraints
- Better than planned productivity resulting in activities complete early
- Working on critical activities

SPI < 1.0

- Understaffing or under equipping activities
- Delayed in starting of activities
- Work is more difficult than planned
- Improper sequencing of activities
- Work is disorganized

Success Formula

- **Project** – A temporary endeavor undertaken to create a unique project or service
- **P- MGMT** – Managing the process to successful completion
- **Process** – Initiating, planning, executing, controlling & closing
- **MGMT skills** – Integration, scope, time, communication, procurement, quality, Relationships, cost & risk
- **Life Cycle** – feasibility, planning & design, construction, turnover and startup
- **Measure your success** SPI, CPI etc.

Expect the Unexpected

Project Management

Expect the Unexpected

Bob Casagrande
Adjunct Professor, School of Engineering
Director, Operations and Facilities Management
Southern Methodist University
