Project Control Fundamentals

TCM 545/645 – Project Control Systems
Week 1

Why Study Project Control Systems?

- Four Functions of Management
  - Planning
  - Organizing
  - Leading
  - ***Controlling***
    - We will focus on this concept in this class
- To manage implies that control must be exercised

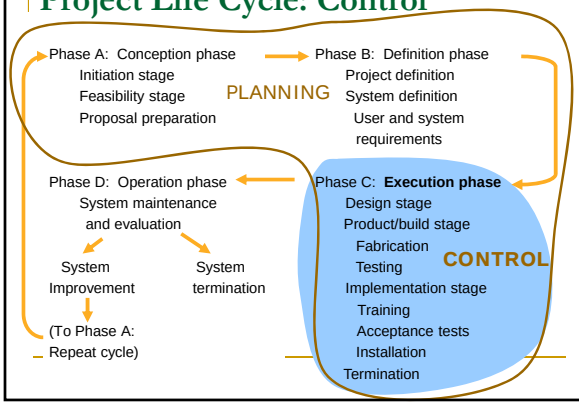
What is Project Control?

- Project Control can be defined as,
  - "Assessing actual against planned technical accomplishment, reviewing and verifying the validity of technical objectives, confirming the continued need for the project, overseeing resource expenditures, and comparing the anticipated value with the costs incurred."
- Or more simply, project control is to:
  - **Plan**
  - **Monitor**
  - **Take Action**

Project Control

- A project manager must exercise "control" throughout the project execution phase
  - Guide project to meet performance requirements, scheduled due dates, and budgeted expenses
  - Track project performance vs. plan
  - Take corrective action
    - Make project conform with plan
    - Make plan conform to new realities/expectations

Project Life Cycle: Control

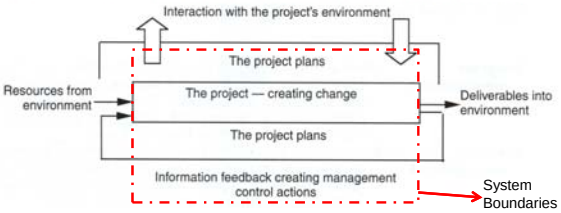


Project Control vs. Other Types of Management Control

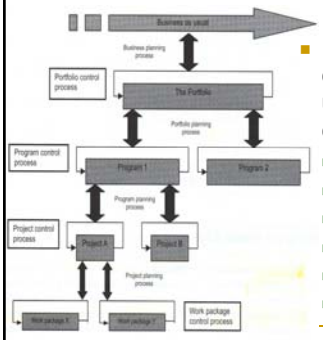
- Line management (traditional management) focuses on maximizing the efficiency of an existing set of processes – by gradual and incremental change – for as long as the processes are needed
- Projects, on the other hand, are trying to accomplish a specific set of goals in a limited time
- Thus, the main difference is not in control, but rather ***the processes that are being controlled*** **and** in ***the focus of that control***

A Systems Theory Approach to Projects

- Underlying control theory in the management sciences is the concept of the "system"
- For project management, the framework for the system can be the project itself (see figure below)

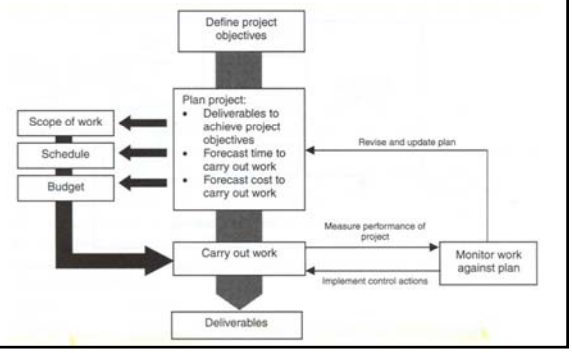


Hierarchical Control Systems



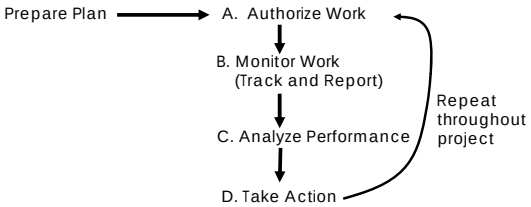
- Project control is one part of an organizational "roll-up" control system that can be used from the:
  - Business level
  - Portfolio level
  - Program level
  - Project level
  - Work package level
  - Etc.

Abstract Model of A Sample Project Control Process



Control Process

Control Process starts with the Project Plan



Main Components of Project Control

1. **Defining Project Objectives**
   - Fundamental to achieving project success
   - Project objectives are defined by:
     - Business strategy (two or three high-level project objectives)
     - Traditional Project Triumvirate (time, cost, quality)
     - And other areas (e.g., safety, reliability, etc.)
2. **Planning the project**
   - One of the key parts to actually controlling a project is establishing a baseline
   - Planning generally consists of **nine** processes
3. **Performance Measurement and Control Action**
   - Baseline performance is continually compared to actual performance
   - Corrective actions taken as necessary

Internal vs. External Control

- **Internal**

  Exercised by contractor
- **External**

  Exercised by customer
  - Audit of books and records
  - Work inspection
  - Periodic reports of costs, schedule, and performance
  - Incentive contracts
  - Customer's own project manager

Project Planning Sub-Processes

1. **Defining the deliverables**
   - Requirements definition
   - Conceptual designs
   - Concept design decision gate
   - Project specifications
   - Scope change control
2. **Defining the work packages**
   - PBS, WBS, OBS, etc.
3. **Estimating the work**
   - Time and cost estimating

Project Planning Sub-Processes

4. **Schedule the Work Packages**
   - Consideration for predecessors, durations, float, etc.
5. **Manage Resource Availability**
   - Planning and allocating resources
   - Optimizing the schedule
   - Monitoring resource utilization
   - Reviewing and revising resource allocations as necessary
6. **Create a Budget**
   - Integrating costs and schedules to create a project cash flow
   - Account for and include project contingencies

Project Planning Sub-Processes

7. **Earned Value Analysis**
   - Integrated monitoring and analysis of both project schedule and project cost
8. **ID Key Performance Indicators**
   - Areas where progress towards project objectives can be measured
9. **ID Critical Success Factors**
   - Specific items that are REQUIRED for a project's success

Performance Measurement and Control Action

- Project plan specifies methods/procedures for tracking and assessment
- Defines specific measures and metrics to be used for terms like " review", "verify", or "assess"
- Monitoring includes status meetings and reviews and specified in the communication plan

Example project communication plan, next slide

Meetings/ Reports / Role/type	Status Meeting	Status Meeting Minutes	Business Feasibility	EDARB Request	Technical Feasibility	Business Brief	Project Plan	Problems and Issues	Business Study	Use Case Analysis	System Architecture	Detailed Technical Design	Other
Client	X	X	X			X	X	X	X	X			
Relationship Manager		X	X	X	X	X	X	X	X	X	X		
Business Analyst	X	X	X			X	X	X	X	X	X		
Project Manager	X	X	X	X	X	X	X	X	X	X	X		X
Client Project Team	X	X	X			X	X	X	X	X			
IT Project Team	X	X					X	X	X	X	X		X
Client Director		X	X			X		X	X				X
IT Director		X	X	X	X	X	X	X	X	X	X		
Project Sponsor		X	X			X			X				
IT VP		X	X						X				
Architect	X	X	X	X	X	X	X	X	X	X	X		X
Security/Audit	X	X	X		X			X	X	X	X		
Internet Operations	X	X	X		X		X	X	X	X	X		X
Intranet Operations	X	X	X		X		X	X	X				
Legal/Corp. Comm.		X	X		X			X	X				
Other													

Performance Measurement and Control Action

- Use a variety of measures, qualitative and quantitative
- Invoices
- Time cards
- Managers and supervisors assess progress by observation, asking questions, and reviewing reports
- Achievement of milestones.
- Test and demonstration results.
- Design reviews—meetings with managers and technical personnel to review progress
- Opinions of outside experts.

Performance Measurement and Control Action

- Do not only measures cost and time, which are measures of input.
- Need measures of output from each task and work package
  - Output measures address the deliverables or results defined for each work package.

Project Control System Examples

- ***Scope Change Control***
  - identify where changes have occurred
  - ensure the changes are necessary or beneficial
  - contain or delimit the changes wherever possible
  - the implementation of changes.
- ***Quality Control***
  - manage work to achieve requirements and specifications
  - take preventive measures to eliminate errors and mistakes
  - identify and eliminate sources of errors and mistakes
  - includes technical performance measurement, TPM

Project Control System Examples

- ***Schedule Control***
  - keep the project on schedule and minimize schedule overruns
  - *Use Time Buffers*
  - *Fight Tendency to Multitask*
  - *Frequently Report Activity Status*
  - *Publicize Consequences of Delays and Benefits of Early Finish*

Project Control System Examples

- **Procurement Control**
  - Monitor quality, schedule, and cost of all procured items
  - Visit and inspect the facilities of subcontractors and suppliers
  - Track subcontractors' and suppliers' progress and expenses,
  - Prepare contingency for all major procured material, equipment, components, and services