

# Project Management

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# Project Management

what marketing suggested



what management approved



what engineering designed



# Project Management

what was manufactured



what maintenance installed



what the customer wanted



# Project Management

## What is Project Management?

Tracking project timing and cost.

Managing project resources (people, materials, budget).

Motivating personnel.

Ensuring functional deliverables.

## Why do Project Management?

To monitor if your project is staying on time and is within budget.

To ensure project goals are met.

# Project Management Mechanics

## ■ Planning

- Identify tasks and task details (Gantt charts and Excel spreadsheets)
- Develop budget
- Identify tool and material requirements

## ■ Example project planning

- Windsor Engine Plant – F150 4.6, 5.4, 6.8L engine (numerous task dependencies, long lead items, \$1.2 Billion, 2.5 year launch)

# Project Management Mechanics

## ■ Execution

- Assign tasks
- Perform tasks
- Track budget
- Modify plans (timing and budget) as necessary
- Ensure quality
- Ensure timing
- Resolve problems
- Motivate team

# Project Management Psychology

## ■ With respect to Senior Design:

- Do you have one or multiple project managers?
- Are the team members listening to the project manager?
- Have you identified all your tasks?
- Is everyone trying to work jointly on all tasks or have you divvied up tasks?
- How are you ensuring timing?
- How are you ensuring a quality product?

# Project Management Realities

- **With respect to Senior Design:**
  - How many weeks until PDR deadline?
  - How far into the design have you gotten?
  - How are you going to deal with cost overruns?
  - What are you going to deliver in 7 weeks?
  - Other?



# Project Management – Examples of Success

- Willow Run Bomber Plant (Ford)
  - B24 Liberator Bomber
  - Two years to build facility (started in early 1940)
  - Some stats:
    - 488,193 parts
    - 30,000 components
    - 24 major subassemblies
    - peak production – 25 units per day
    - 25,000 initial engineering drawings
    - ten model changes in 6 years
    - 34,533 employees at peak
- Apollo Moon Mission
  - 1957 - Sputnik I orbits earth
  - 1958 – NASA formed
  - July 20, 1969 – “The Eagle Has Landed”
- Hoover Dam

# Project Management – Examples of Failures

- Denver Airport
- Numerous ERP System Conversions
- Numerous highway systems

# Project Management – Reasons for Failure

**Top 10 Sources of Project Failure** Do any of these conditions exist in your organization? <http://www.focusedperformance.com/toptenpm.html>

- 1) Failure to appreciate the impact of a multi-project environment on single project success.
  - 1 a) Trying to put 10 pounds of projects through a 5-pound pipeline in a multi-project environment.
  - 1 b) Wasting of resources through dedication to projects, making them unavailable to support other projects.
  - 1 c) Failure of management to provide real guidance on priority of projects before they are planned and promised.
    - 1 c1) As well as the flip side, ignoring rational plans and promises for perceived, but questionable, priorities.
    - 1 c2) Another flip side regarding priorities -- failure of management to kill projects when their reason for existence goes away.
- 2) Irrational promises made due to a failure to take into account the variable nature of task performance.

# Project Management – Reasons for Failure

## Top 10 Sources of Project Failure –cont.

- 3) Irrational promises made due to a failure to take into account the statistical nature of project networks.
- 4) Insufficient identification of dependencies necessary to deliver the project.
- 5) Focus on (and active management of) only a portion of what should be the full project -- a true bottom-line value adding outcome for the sponsoring organization.
- 6) Reliance on due-date, train-schedule, and actual-against-budget-to-date performance to drive project performance, resulting in the wasting of any safety included in the project (to account for 2 and 3 above) and in the effects of Parkinson's Law -- Work will expand to fill (and exceed) the time allowed. The whole concept of "time allowed" is a major culprit.
- 7) Wasting of resources through underutilization because they aren't the "best resource" for the job.
- 8) Wasting of the "best" resources through over-utilization, multi-tasking, and burn-out.

# Project Management – Reasons for Failure

## Top 10 Sources of Project Failure –cont.

**9)** Delivering original scope when conditions/needs change. Flip-side: accepting changes to scope without sufficient analysis of impact on the project (or on other projects).

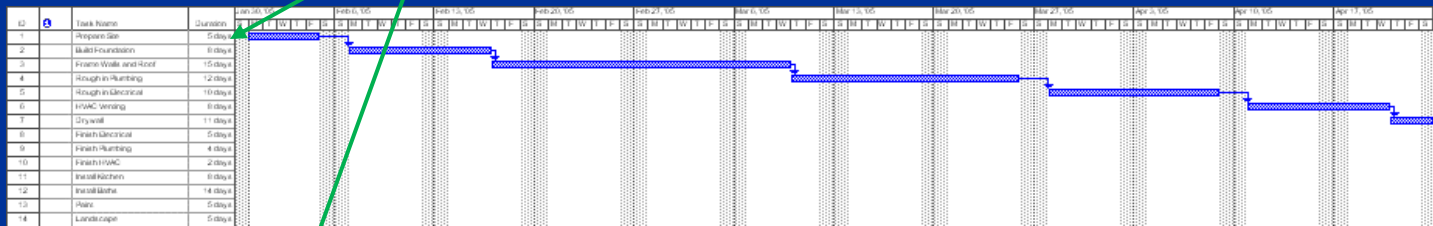
**10)** Multi-tasking, multi-tasking, multi-tasking, multi-tasking, and multi-tasking. Commonly thought of as a key problem in multi-project environments, where resources are expected to address tasks from different projects in a coincident time-frame, multi-tasking also impacts single project durations (and wastes safety) when dedicated resources are expected to wear several hats.

# Project Management - Timing

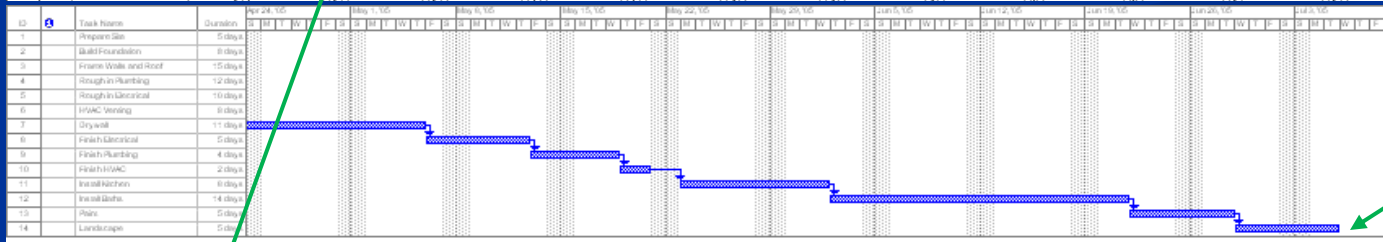
## Timing – Gantt Chart

Tasks and task durations are often represented as Gantt Charts.  
No consideration for task precedence.

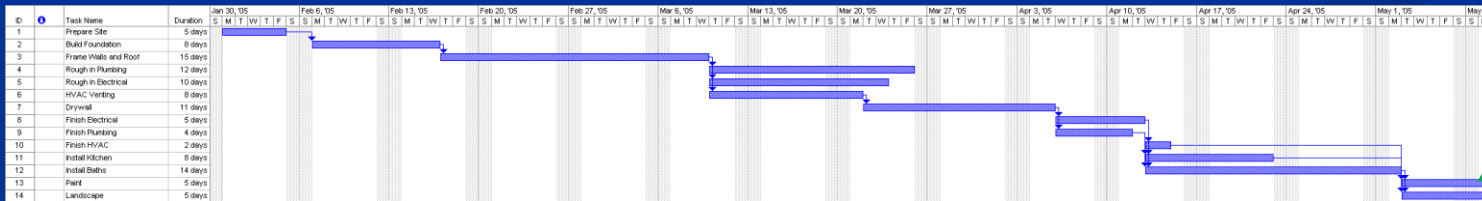
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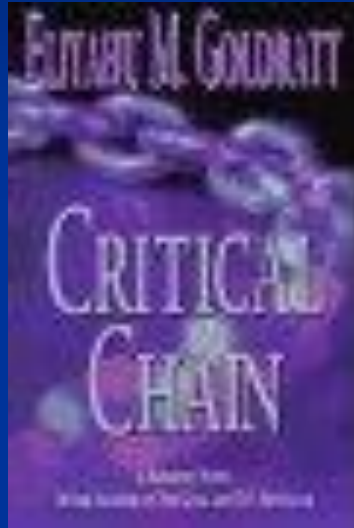
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May. 9



# Project Management – Further Reading



**Critical Chain –  
Eliyahu M. Goldratt**