

Project Management

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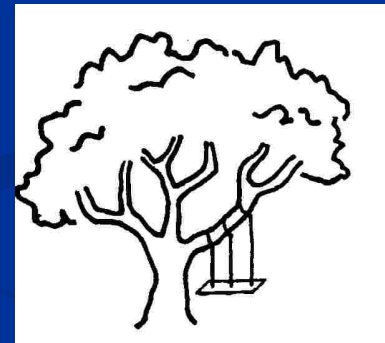
17 January 2012

Project Management

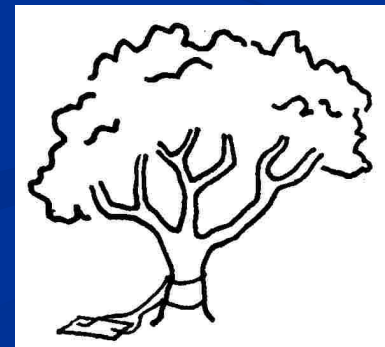
what marketing suggested



what management approved

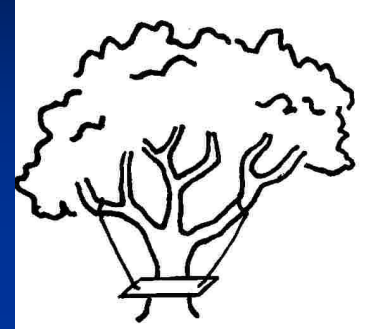


what engineering designed



Project Management

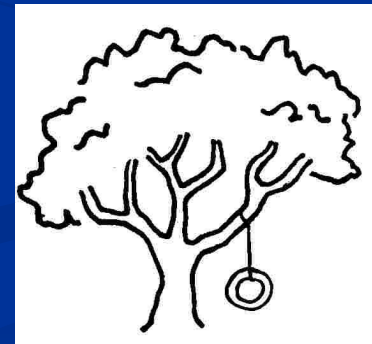
what was manufactured



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

- Assembly cell for prosthetic leg (numerous task dependencies, long lead items)

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).

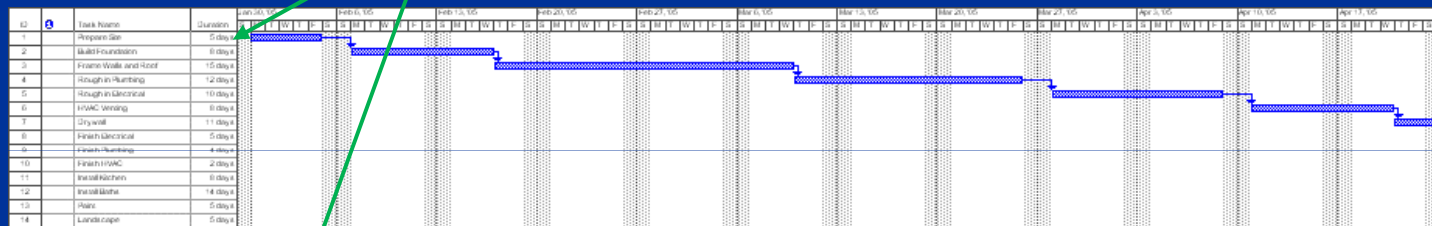
10) Multi-tasking, multi-tasking, multi-tasking, multi-tasking, and multi-tasking. Commonly thought of as a key problem in multi-project environments, where resources are expected to address tasks from different projects in a coincident time-frame, multi-tasking also impacts single project durations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

Project Management - Timing

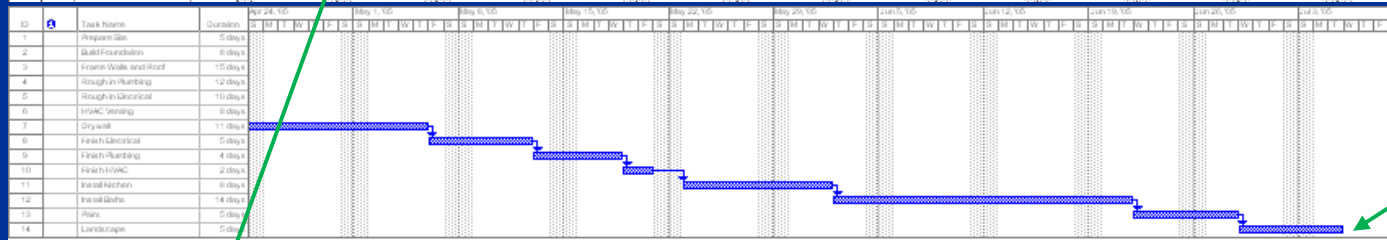
Timing – Gantt Chart

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

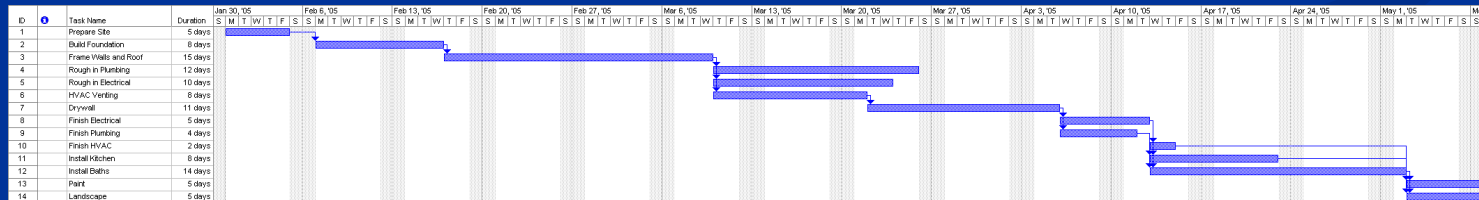
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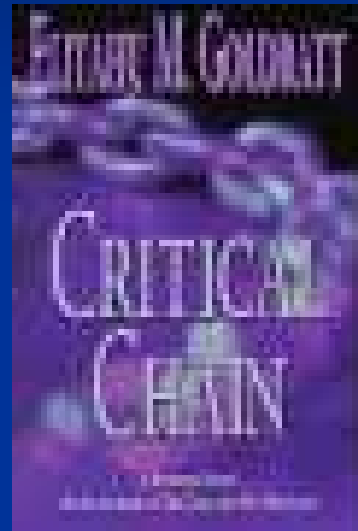
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May. 9



Project Management – Further Reading



**Critical Chain –
Eliyahu M. Goldratt**