

Project Scheduling and Gantt Charts

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Lab Presentation

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Project Scheduling and Gantt Charts

Outline

- What is project scheduling?
- Project scheduling techniques
- Gantt charts
- Project scheduling and Gantt charts software
- References

Project Scheduling and Gantt Charts

What is Project Scheduling?

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What is Project Scheduling?

What is a project?

- What is a project
 - collection of tasks to be completed preferably
 - in minimal time
 - and minimal cost
- Examples of projects
 - software implementation
 - research paper
 - product development
- Project scheduling
 - listing of activities, deliverables, and milestones
 - with intended start and finish dates

What is Project Scheduling?

Project Statistics

- Only 2.5% of companies successfully complete
 - 100% of projects [[source](#)]
- Average cost overrun of all projects is 27% [[source](#)]
- 39% of projects fail due to lack of planning
 - resources and activities [[source](#)]
- One in six IT projects
 - average cost overrun of 200%
 - schedule overrun of 70% [[source](#)]

What is Project Scheduling?

Objectives of Project Scheduling

- Completion of tasks
 - in minimal time or at minimal cost
 - in presence of task dependencies
- Likelihood of project completion in a given period
 - extremely hard optimization scenario
 - constraints such as time, money, resources and reqs.
- Finding minimum cost schedule for project comp.
 - by a certain time

What is Project Scheduling?

Aspects of Project Scheduling

- Agree on objectives for the project
 - product features and their requirements
- Finalize resources
 - human, system and monetary
- Identify task relationships
 - helpful in scheduling tasks
- Determine task time to completion
 - and associated costs
- Critical task determination
 - and according organization

Project Scheduling and Gantt Charts

Project Scheduling Techniques

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Project Scheduling Techniques

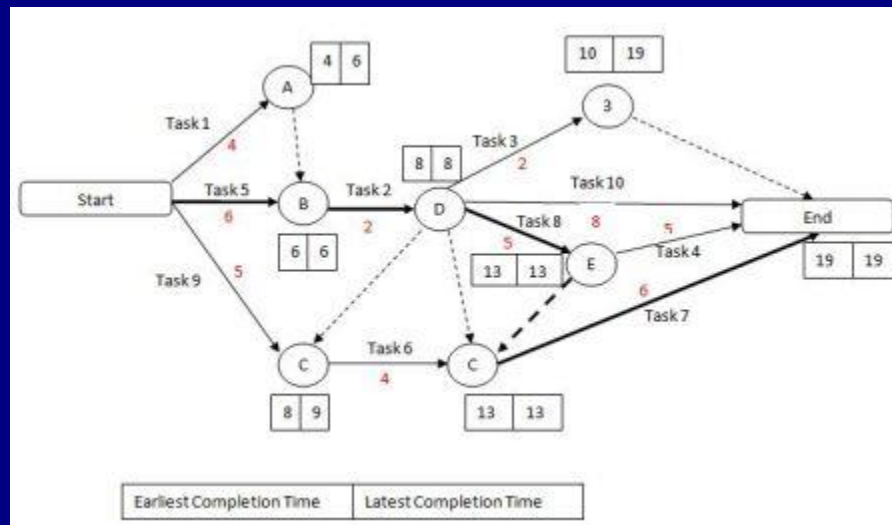
List of Project Scheduling Techniques

- Mathematical Analysis (Network diagrams)
 - Critical Path Method
 - Program Evaluation and Review Technique (PERT)
 - Graphical Evaluation and Review Technique (GERT)
- Bar Charts
 - Bar charts
 - Gantt charts

Project Scheduling Techniques

Critical Path Method (CPM)

- Joint venture between Dupont and Remington Rand
- Sequential activities from start to finish of project
- EF, ES, LF, LS are important variables

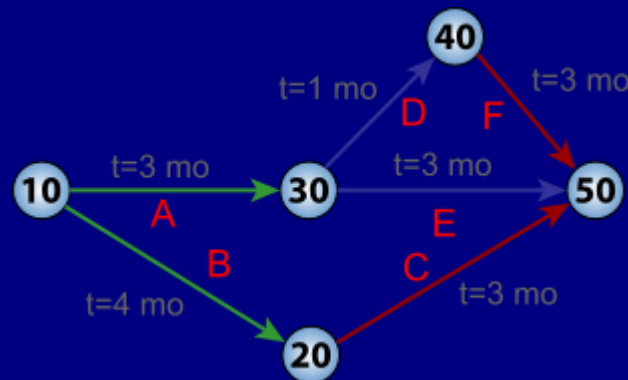


[CPM-01]

Project Scheduling Techniques

PERT

- Developed by US navy in 1950s
- Usage of a time variance
 - probabilistic approach to activity estimation
- Pessimistic time, Most likely time and Optimistic time
- Cannot be used for time/cost tradeoff analysis



[PERT-01]

Project Scheduling Techniques

GERT

- Proven less accurate than CPM and PERT
- Probabilistic treatment of network logic
 - and activity duration estimates
- Applied on subset of project activities
 - invariably applied in loops
- Node state reached
 - when a subset of its predecessors are completed
- Supports branching
 - each branch has a probability

Project Scheduling Techniques

Bar Charts

- Visual representation of project status
- Visualize the temporal relation of processes
 - among different group members
- Manage project deadlines for Project Manager
- Coloring depicts the state of a particular process
 - font also used for depicting state
- Support for process dependencies
- BSCW – Basic Support for Cooperative Work
 - software with bar chart support for project scheduling

Project Scheduling and Gantt Charts

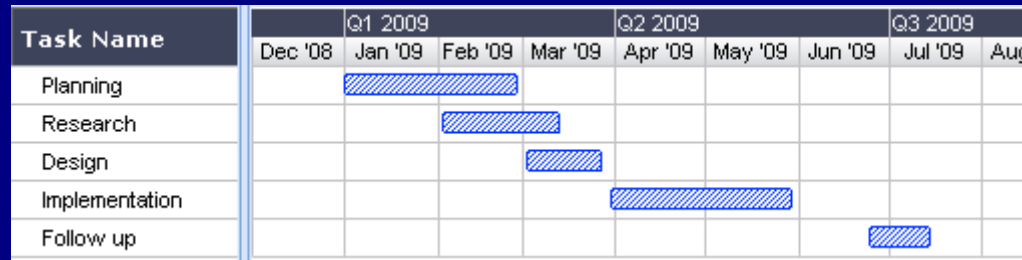
Gantt Charts

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Gantt Charts

What are Gantt Charts?

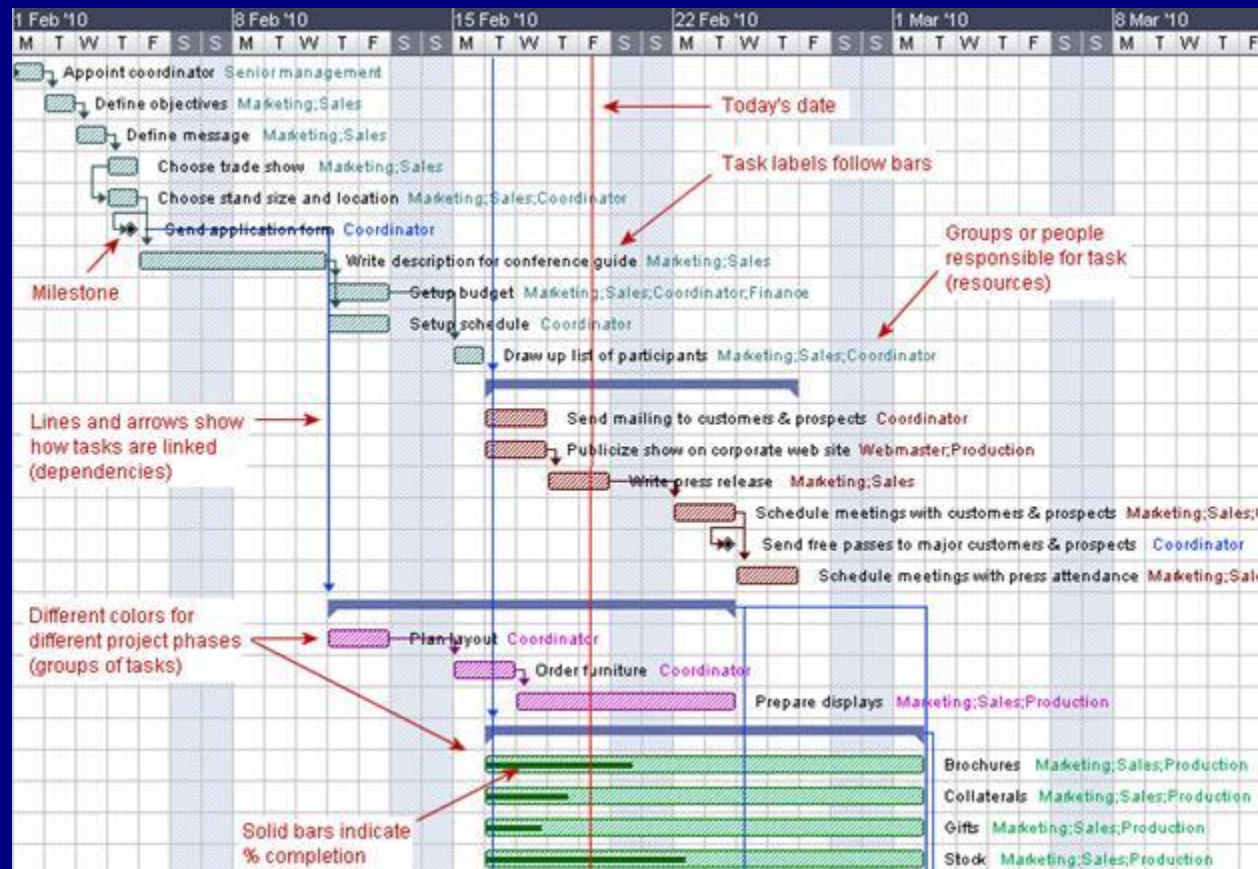
- Special version of bar chart
 - Henry Gantt around 1910s
- What a Gantt chart shows
 - different activities
 - length of activities along with start and end times
 - their dependencies



[Gantt-01]

Gantt Charts

A Typical Gantt Chart



[Gantt-01]

Gantt Charts

Creating Gantt Charts I

- Define project settings
 - start date, end date and scheduling mode
- Define project calendar
- Define task names and their durations
- Resources finalized and made as a list for distribution
 - if resource person, number of hours for particular task
 - associated cost of resource included
- Create dependencies between tasks
 - arrowheads join tasks to each other
 - tasks can have multiple predecessors or successors

Gantt Charts

Creating Gantt Charts II

- Add necessary constraints to each task
 - cost or temporal constraints most common
 - Start No Later Than (SNLT), SNET, MSO
- Add more information/comments to chart
 - add details as comments to tasks
 - highlight critical path
 - prioritize tasks
 - percentage completion for each task
- Project reviewing periodically
- In depth information
 - <http://www.gantt.com/creating-gantt-charts.htm>

Project Scheduling and Gantt Charts

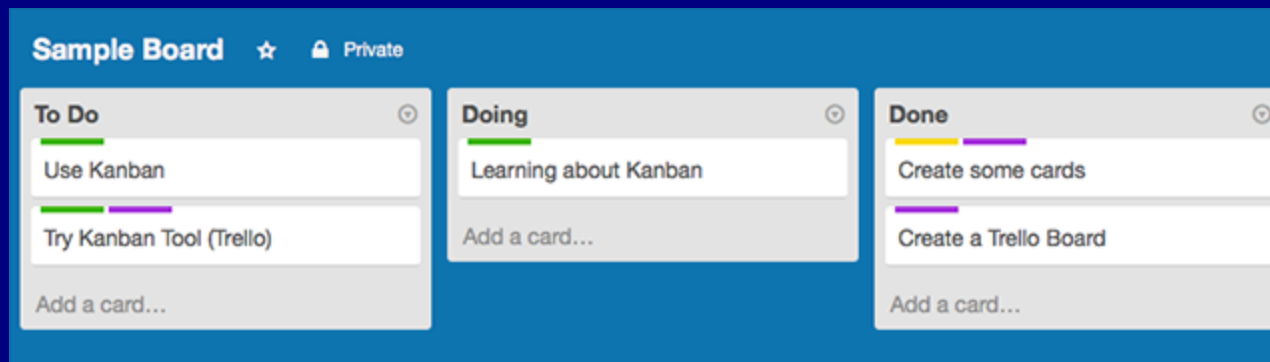
Project Scheduling and Gantt Charts Software

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Project Sch. and Gantt Charts SW

Trello

- Free web based project management tool
 - <https://trello.com/>
- Uses Kanban paradigm for management
 - originally used by Toyota for production
- Trello terminology
 - boards contain lists which contain cards



[Trello-01]

Project Sch. and Gantt Charts SW

BaseCamp

- Company started in 2005
 - <https://basecamp.com/>
- 60 day free trial period
 - 10 projects with 3 GB storage is \$20/month
- Nice email integration
 - task addition, discussion updates and progress updates
- Strong user permissions feature
 - permissions provided depending on user roles
- Missing Gantt chart integration
 - time management is difficult

Project Sch. and Gantt Charts SW

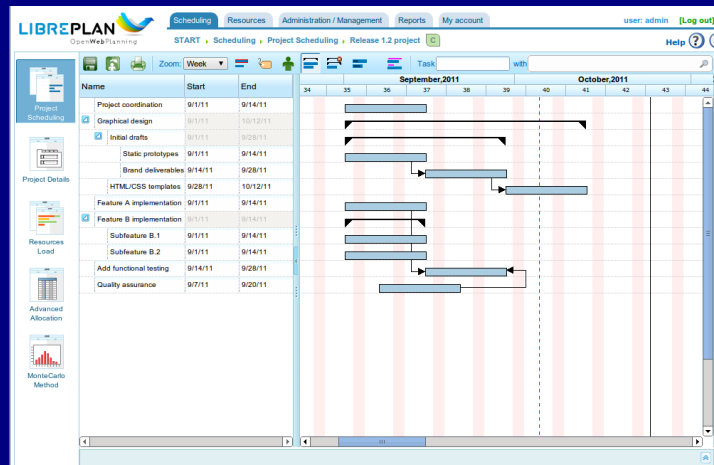
ganttproject.biz

- www.ganttproject.biz
 - desktop based free Gantt application
- Creation of tasks and milestones
- Task organization
 - in a work breakdown structure
- PERT support included
- Other features
 - pdf report generation, CSV export/import
 - png/jpeg import

Project Sch. and Gantt Charts SW

LibrePlan

- Open source web based Gantt application
 - www.libreplan.com
- Forward and Backward allocation model supported
- Positioning constraints supported
 - ASAP, ALAP, NST, NLT



[LP-01]

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References

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- [Gantt-01] <http://www.gantt.com/>
- [Trello-01] <http://wpcurve.com/trello-for-project-management/>
- [LP-01] <http://www.libreplan.com/features/plan/>

END OF FOILS

QUESTIONS???