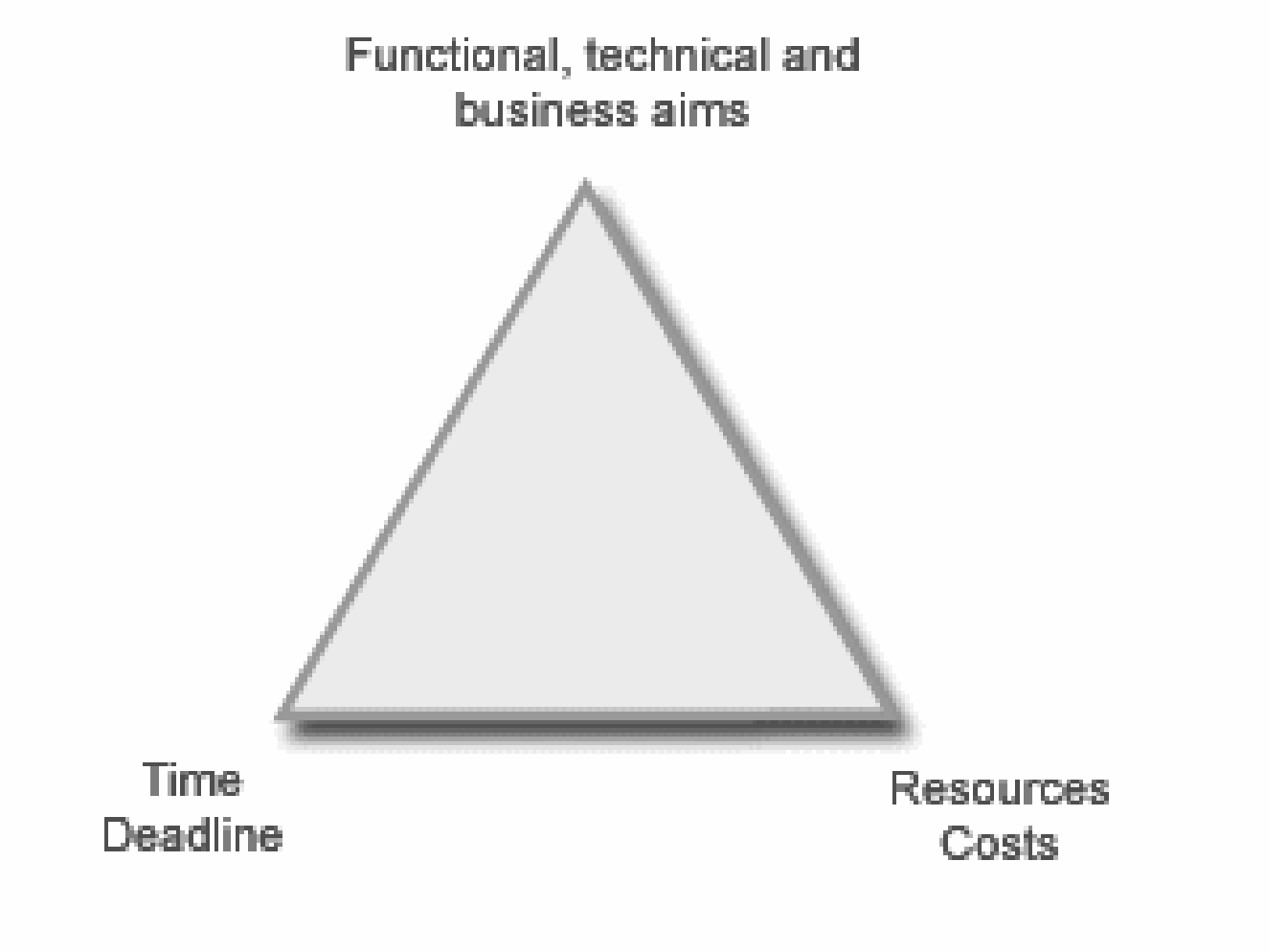
Project Scheduling

Project Management 2007
Sofia University
Martin Ruskov

Balancing Triple Constraints

- Time
- Cost
- Scope

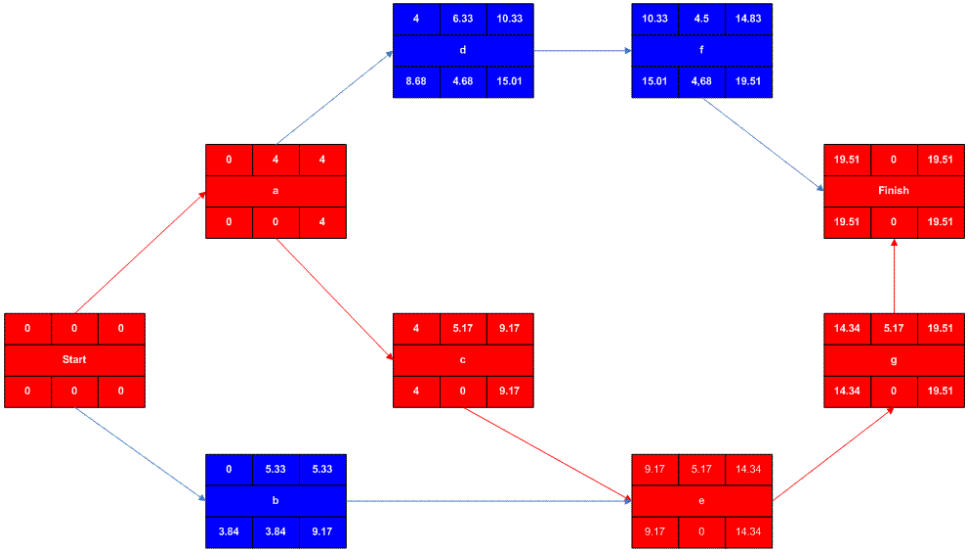


Project Time Management

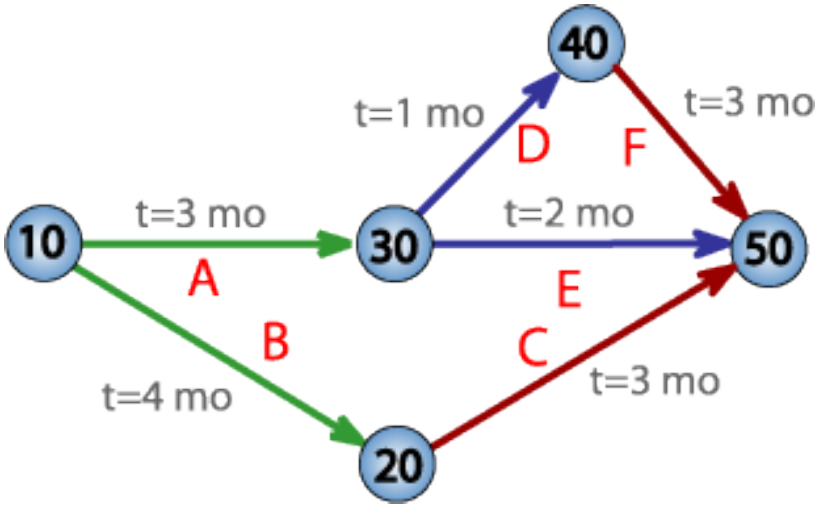
- **Activity Definition** - identifying the specific activities that must be performed to produce the various project deliverables
- **Activity Sequencing** - identifying and documenting interactivity dependencies
- **Activity Duration Estimating** - estimating the number of work periods that will be needed to complete individual activities
- **Schedule Development** - analyzing activity sequences, activity durations, and resource requirements to create the project schedule
- **Schedule Control** - controlling changes to the project schedule

Network Diagrams

- Activity on Node (AON)



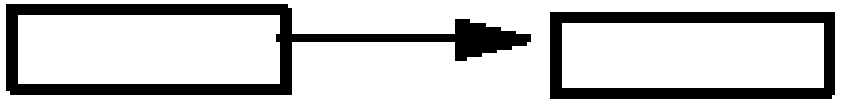
- Activity on Arrow (AOA)



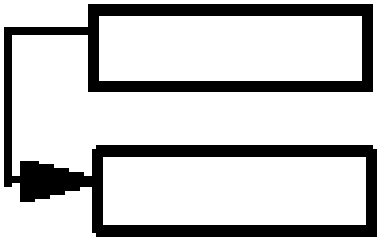
Source: Wikipedia

Dependencies

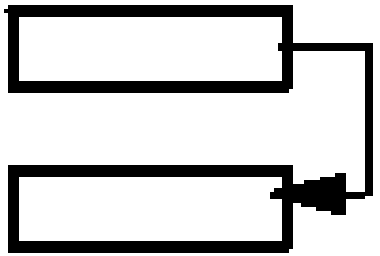
Finish-to-Start (FS)



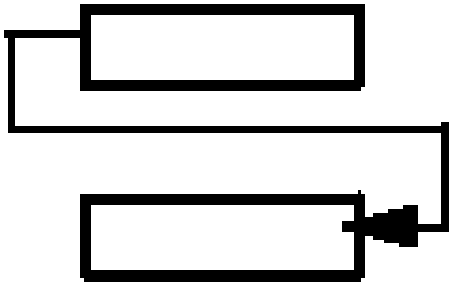
Start-to-Start (SS)



Finish-to-Finish (FF)

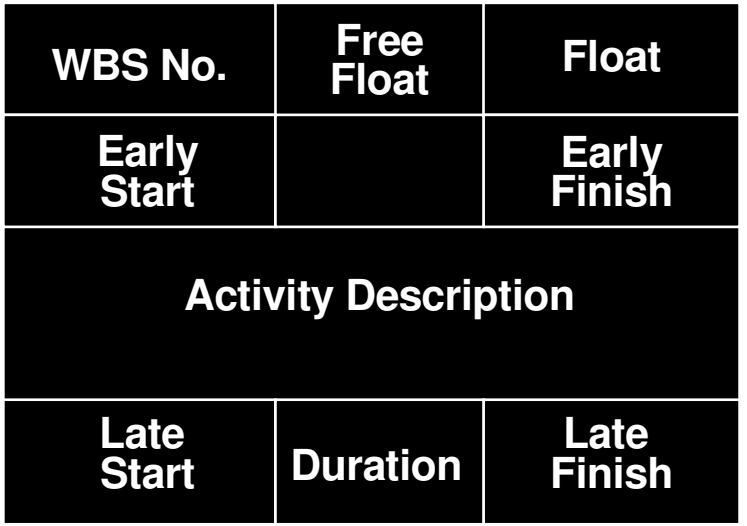


Start-to-Finish (SF)

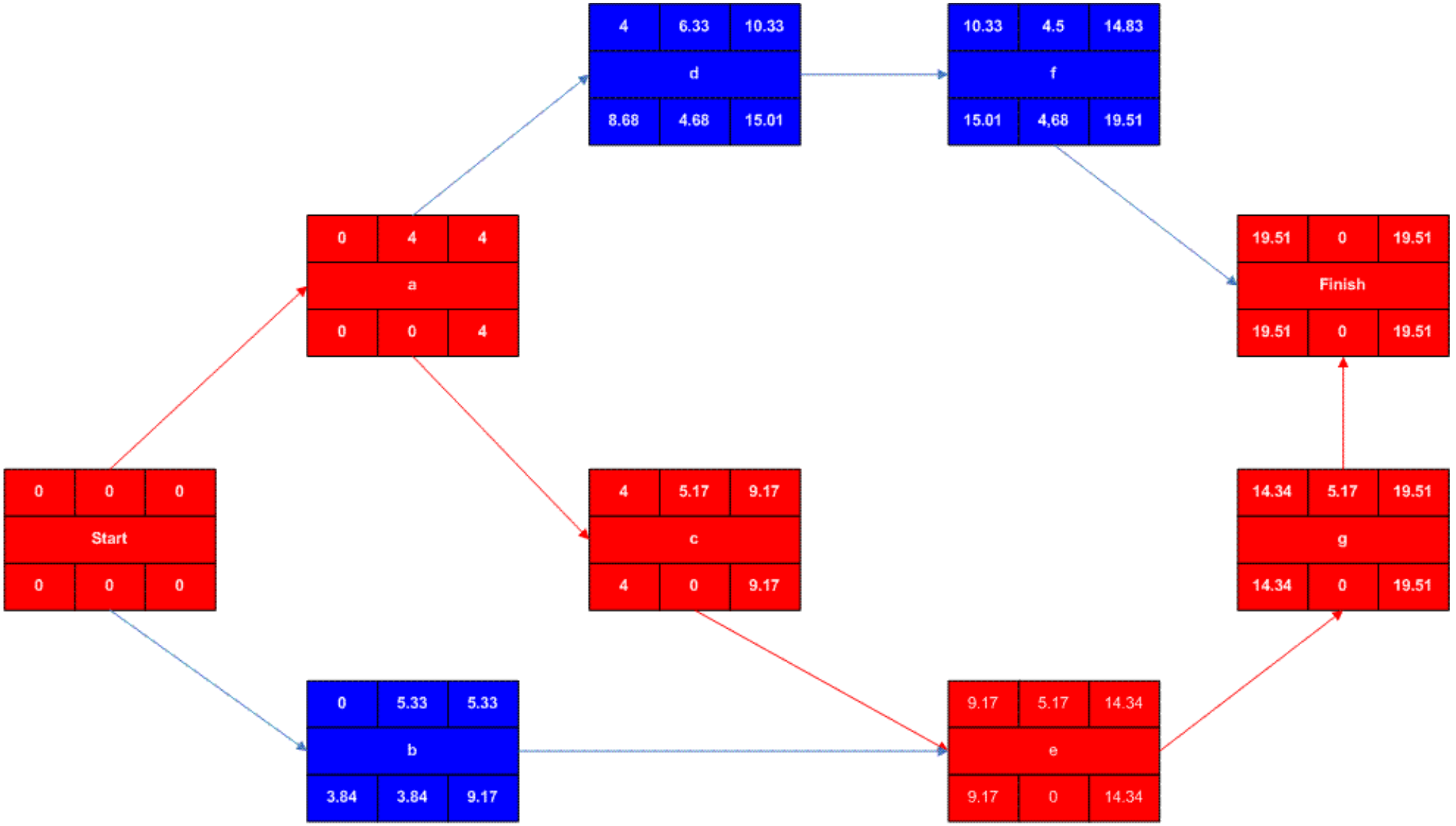


Critical Path Method

- Initially
  - Duration
- Forward pass
  - Early start
  - Early finish
- Backward pass
  - Late finish
  - Late start
  - Slack time

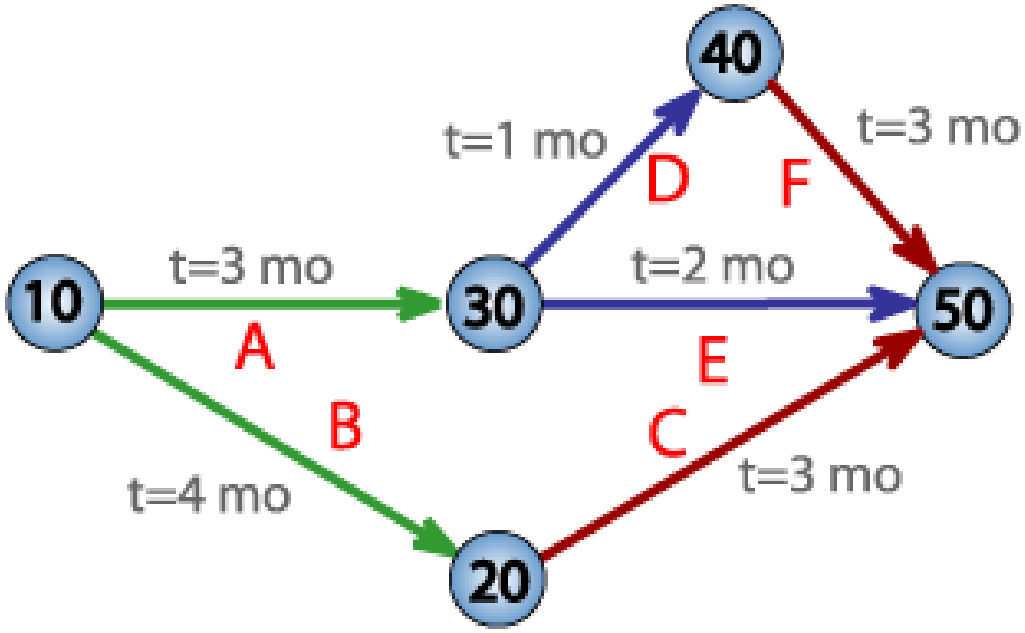


Critical Path Method



Program Evaluation and Reviewing Technique

- Introduced in 1950s by US Military
- Activity on Arrow diagramming
- Each activity duration is estimated by three values
  - optimistic
  - most probable
  - pessimistic
- Statistic for expected duration
  - Triangle distribution
  - Gamma distribution



Schedule Adjustment

- **Fast Tracking:** Techniques to change the relationships among tasks to shorten the critical path

- **Crashing:** Taking action to decrease the total project duration after analyzing alternatives to see how to get the maximum duration compression for the least cost

Fast Tracking

- Most applicable in construction projects
- Usually related to higher risks - more change orders
  - Loss of productivity
  - Increased cost
  - Loss of time
- How to do it:
  - Do tasks in parallel that would normally be done in sequence
  - Change approach to work to create a different set of interrelated tasks with a shorter critical path (Note: This may change the WBS)
  - Change a finish-start relationship to a finish-finish relationship
  - Change a date constraint to enable a task on the critical path to start or end earlier

Schedule Crashing

- Taking action to decrease the total project duration after analysing alternatives to see how to get the maximum duration compression for the least cost
- Depends on the particular type of tasks and on the allocated and available resources

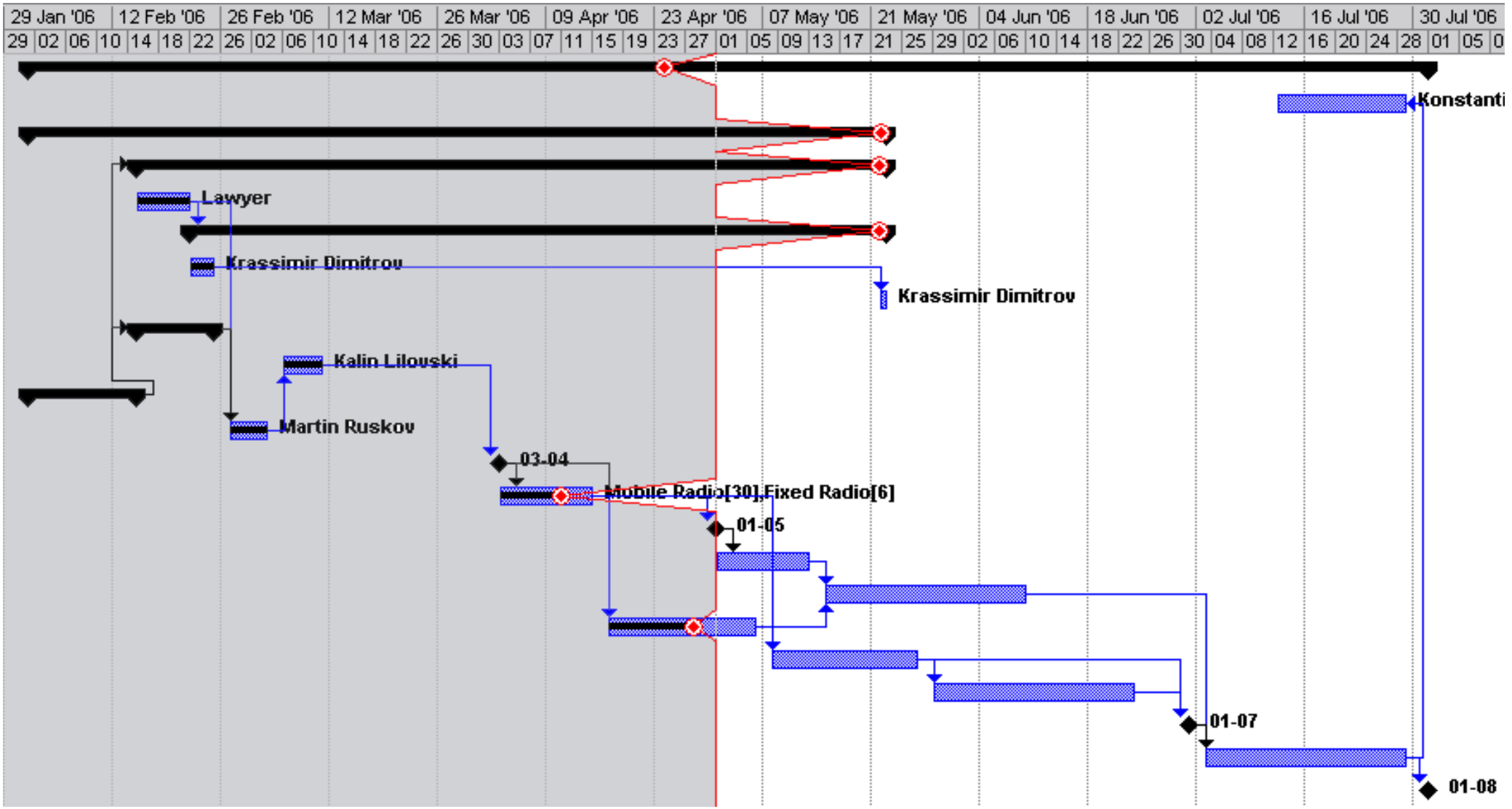
Add Management Tasks

- Management tasks are usually level-of-effort tasks that include:
  - Project management
  - Change control management
  - Risk management
  - Communication management
  - Performance management
  - Contract management
- Include more than just the time set aside for the project manager

Contingency Planning

- The development of a management plan that identifies alternative strategies to be used to ensure project success if specified risk events occur.
  - A **contingency reserve** or **contingency allowance**, consists of funds for use in unforeseen areas or as a buffer in areas with less precise estimates.
  - It is used:
    - As a risk containment in areas where tasks are not part of a contingency plan
    - As a buffer for the schedule

Gantt Chart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12 Mar '06
26 Mar '06
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07 May '06
21 May '06
04 Jun '06
18 Jun '06
02 Jul '06
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29 02 06 10 14 18 22 26 02 06 10 14 18 22 26 30 03 07 11 15 19 23 27 01 05 09 13 17 21 25 29 02 06 10 14 18 22 26 30 04 08 12 16 20 24 28 01 05
Konstanti
Lawyer
Krassimir Dimitrov
Krassimir Dimitrov
Kalin Lilovski
Martin Ruskov
03-04
Mobile Radio[30],Fixed Radio[6]
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