

School of Engineering

PROJECT PLANNING

Mark Sandford

PLANNING

Planning is an unnatural process

It is much more fun to do something

The nicest thing about not planning is that failure comes as a complete surprise rather than being preceded by a period of worry and depression.

(John Harvey Jones)

WHAT IS A PROJECT?

An undertaking which is:

- ❖ Non-routine
- ❖ Non repetitive
- ❖ One off

Generally a project is

- ❖ An objective or task
 - ❖ Made up from a collection of smaller or sub-tasks
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PROJECT OBJECTIVES

- ❖ How will the success of the project be judged?
 - ❖ Should you create and agree a project specification?
 - ❖ Is there any doubt or ambiguity about what you have to achieve?
 - ❖ Are you clear on what targets are being placed on you?
-

SMART Project Objectives

- ❖ **S** : Specific
 - ❖ **M** : Measureable – how do we know when we have fulfilled the specification?
 - ❖ **A** : Agreed – that we can do it
 - ❖ **R** : Realistic – possible to achieve
 - ❖ **T** : Time bound – a date for finishing
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PROJECT OBJECTIVES

Performance and Quality

- ❖ Functional Specification

Cost

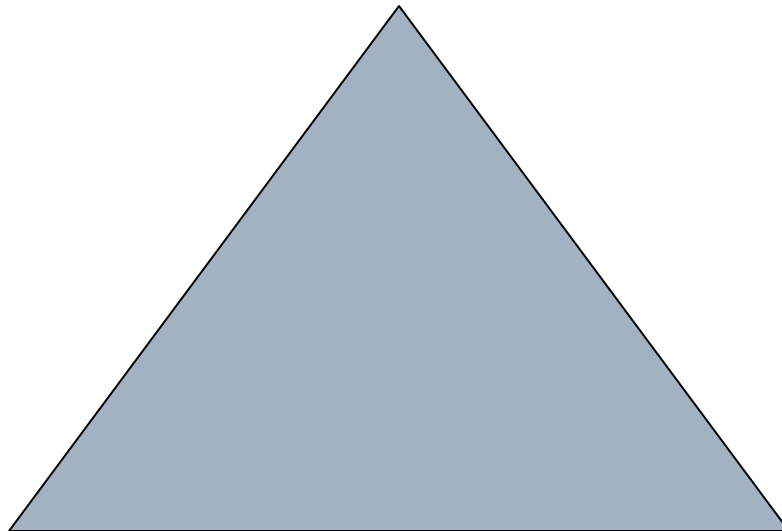
- ❖ Budget to spend

Timing

- ❖ When should the project be completed by
-

PROJECT OBJECTIVES

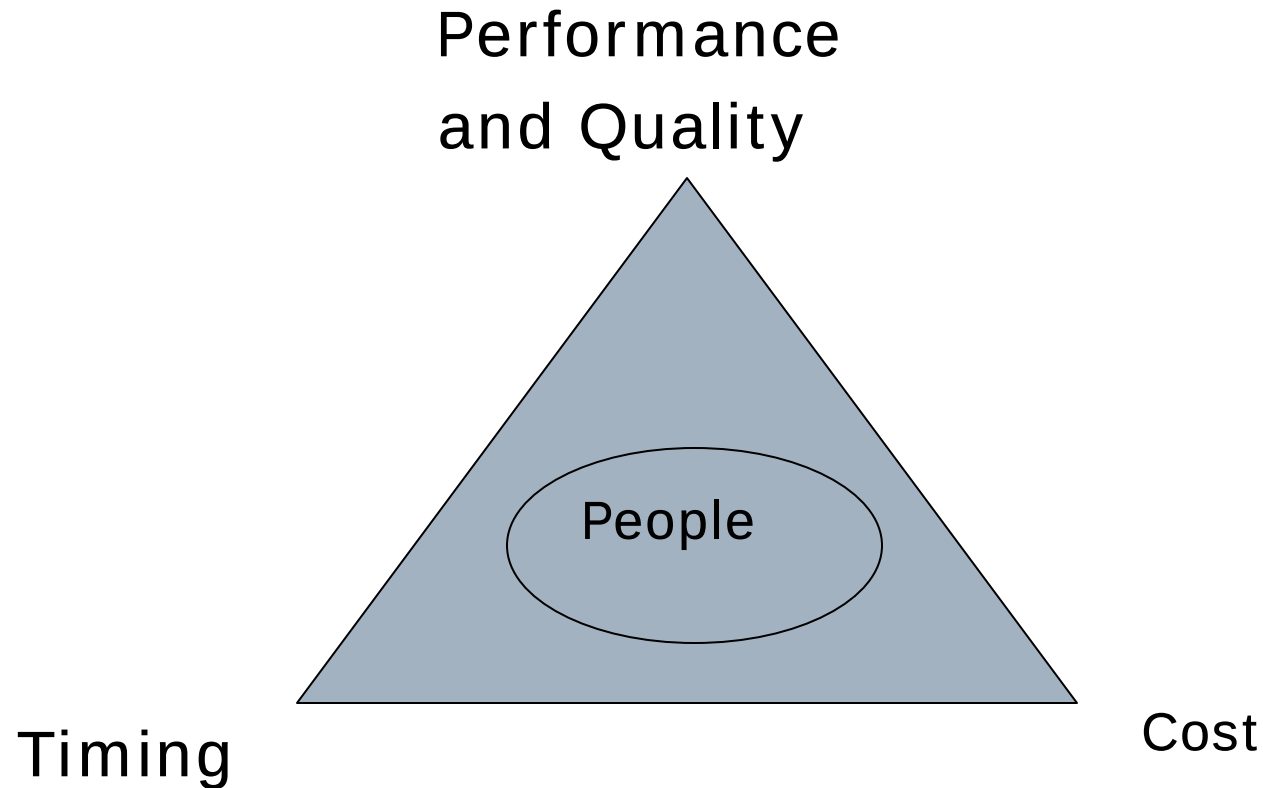
Performance
and Quality



Timing

Cost

PROJECT OBJECTIVES



Why Plan ?

Estimation

- ❖ Can it be done?
- ❖ How much (will it cost) and how long (will it take)
- ❖ Sanity check – do we really want to do it?

Monitor progress

- ❖ Adherence to functional Specification
 - ❖ Budget and spending
 - ❖ Timing - check project progress
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Why Plan? - the 5 P's

- Prior**
 - Planning**
 - Prevents**
 - Poor**
 - Performance**
-

WORK BREAKDOWN STRUCTURE

Family tree of items and tasks required to complete the project e.g.

- ❖ Sub-projects
 - ❖ Work tasks
 - ❖ Services
 - ❖ Components / materials
 - ❖ Test programmes / quality assurance
-

Cup of tea

☐ Materials

☐ Equipment

☐ Tasks

Cup of tea Family tree

NETWORK ANALYSIS

Activity on arrow

- ❖ Activity on the arrow quick and simple
 - ❖ Handles inter-relationships between activities
 - ❖ Identifies activities critical to the project finishing on time
 - ❖ Time flows from left to right
 - ❖ Nodes and arrows are NOT to scale
 - ❖ No event can occur until all activities leading to it are completed (precedence)
 - ❖ No activity can start until the preceding event has occurred
-

Cup of tea arrow network

- ☐ Materials
 - ☐ Equipment
 - ☐ Chronology
-

Cup of tea time-ing

- Time elements of cup of tea assembly

NETWORK ANALYSIS

Activity on node

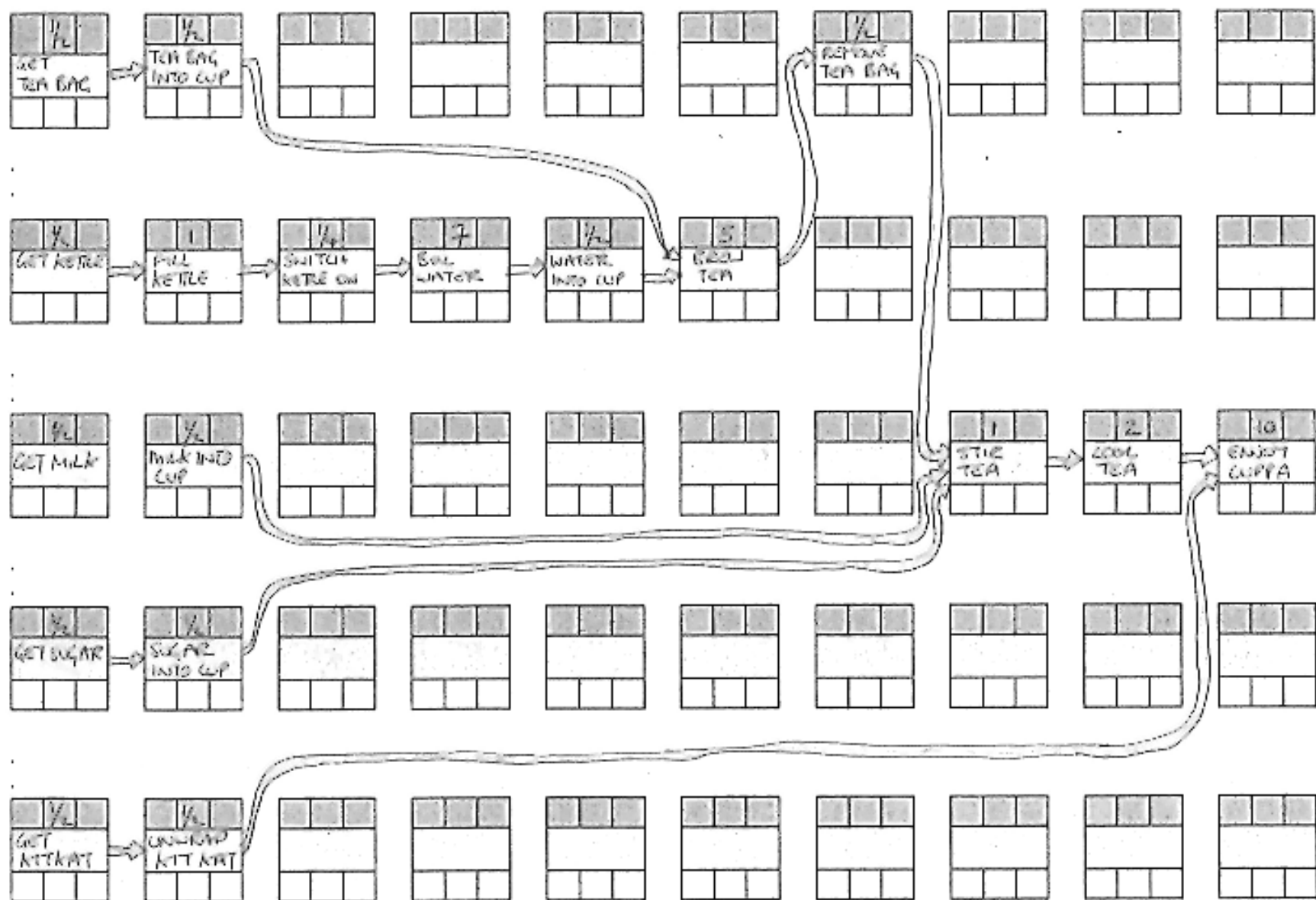
(Precedence diagrams, PDM)

- ❖ Activity on the node a little more complex
 - ❖ Handles inter-relationships between activities
 - ❖ Identifies activities critical to the project finishing on time
 - ❖ Highlights task 'float' or 'slack'
-

NETWORK ANALYSIS

Activity on node

	Duration	
Activity Title		



NETWORK ANALYSIS

Activity on node - Earliest

Earliest Start	Duration	Earliest Finish
Activity Title		

Working left to right – forward in time

NETWORK ANALYSIS

Activity on node - Latest

Earliest Start	Duration	Earliest Finish
Activity Title		
Latest Start		Latest Finish

Working right to left – backward in time

NETWORK ANALYSIS

Activity on node - Float

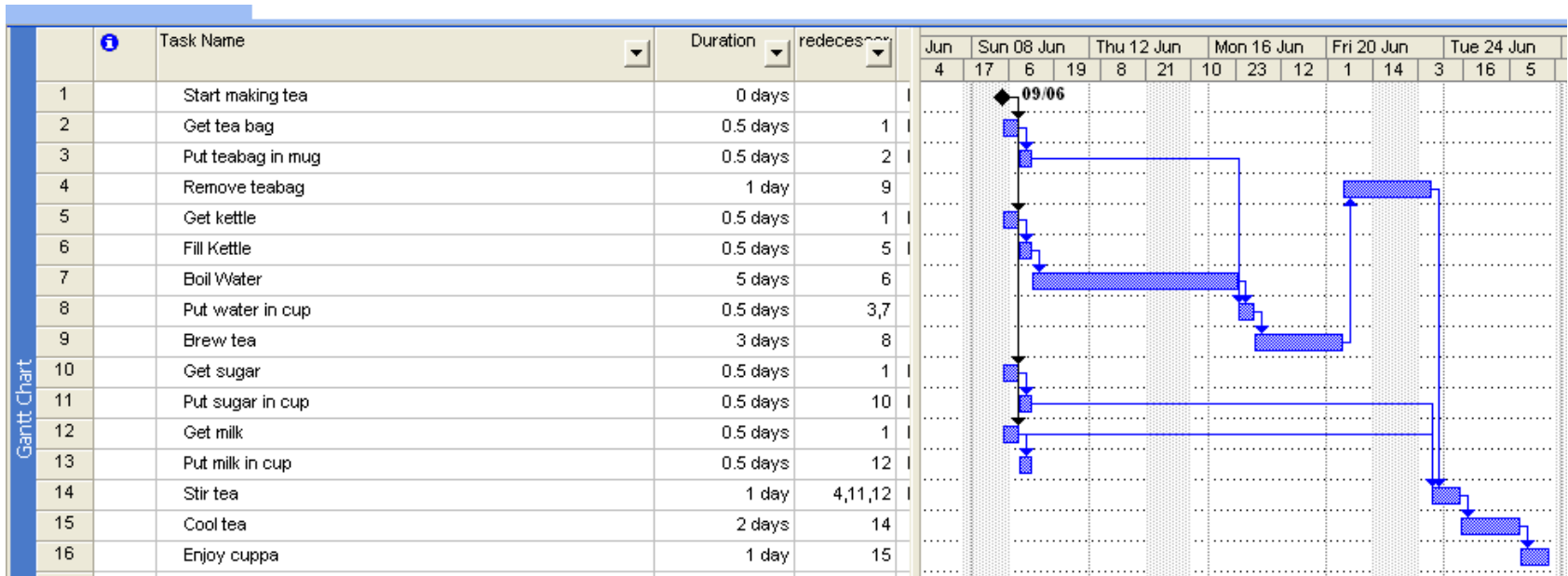
Earliest Start	Duration	Earliest Finish
Activity Title		
Latest Start	Float	Latest Finish

Float = Latest start – Earliest start

GANTT CHARTS

- ❖ Clear – pictorial model of the project
 - ❖ Simple – requires very little training to understand and use
 - ❖ Shows progress
 - ❖ Can be used for resource planning
- *****
- ❖ Can show inter-relationships or critical paths
 - ❖ Limited size – but enough to grasp the plan
 - ❖ Size limitation can be overcome by using a hierarchy of bar charts
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Gantt Chart – cuppa tea



Summary

- ❖ What is a project
 - ❖ Project objectives
 - ❖ Performance / Cost / Time ,relationship
 - ❖ Work breakdown structure
 - ❖ Activity on arrow network
 - ❖ Activity on node network
 - ❖ Concepts of float, critical path, resource level
 - ❖ Gantt Charts
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