How IT systems are used to support Project Management

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Topics

- How IT Planning Techniques Support Project Management
  - Basic Concepts in the Development of IT Plans
- Planning Duties
  - Timeline for all tasks that make up project
  - Coordinate project's tasks
  - Communicate all project participants
  - Organise working teams

Failure of IT Development

Software developers systematically fail to manage projects within the constraints of cost, schedule, functionality and quality.

Solutions have been developed during the past 35 years, with important results published already some 15 years ago.

Still, in practice not much has changed. The challenge is to find ways to catch the practical essence of solutions and ways to get the developers to use these solutions.

Topics

- Forecast the in-flow and out flow
- Monitor Performance
- Control project both for Time and Cost

The Planning Approach

- What is a project
- What are the timescales
- Who are the main staff required
- What cost is involved
- What main constraints apply

IT Planning

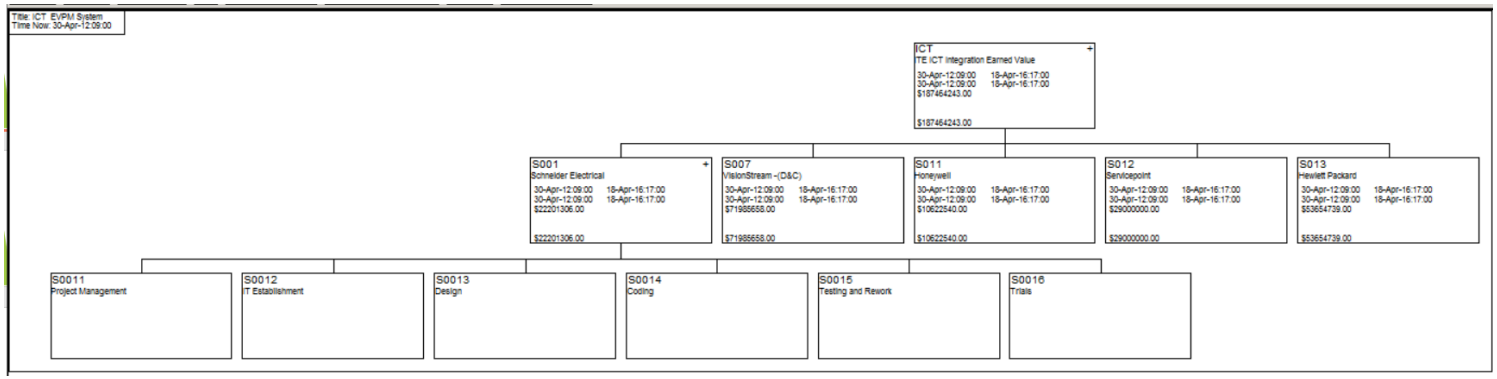
- It is a basic and demanding activity in the management and execution of construction projects.
- Need the definition of work tasks, the estimation of the required resources and durations for individual tasks
- Identification of any inter-dependency among the different work tasks
- It is the basis for developing the budget and the schedule for work
- Creating the IT plan is a critical task in the management of a IT project
- The technical aspects of IT planning, require the planner to make organizational decision about the relationships between project stakeholders and which other organizations to include in a project.
  e.g. which sub-contractors to be used on a project is often determined during planning.

IT Planning

- Planning Strategy
- Creating the Plan
  - Tasks / Activities
  - Resources
  - Logic
  - Duration
  - External Constraints

IT Planning

Planning Elements



IT Planning

Types of IT Planning

In order to create a suitable and practical plan, need to know the type of Planning process being proposed. Eg

- Waterfall
- Brickwork
- Structural Concrete
- Structural Steel
- Low level domestic style
- Multi – story

IT Planning Method

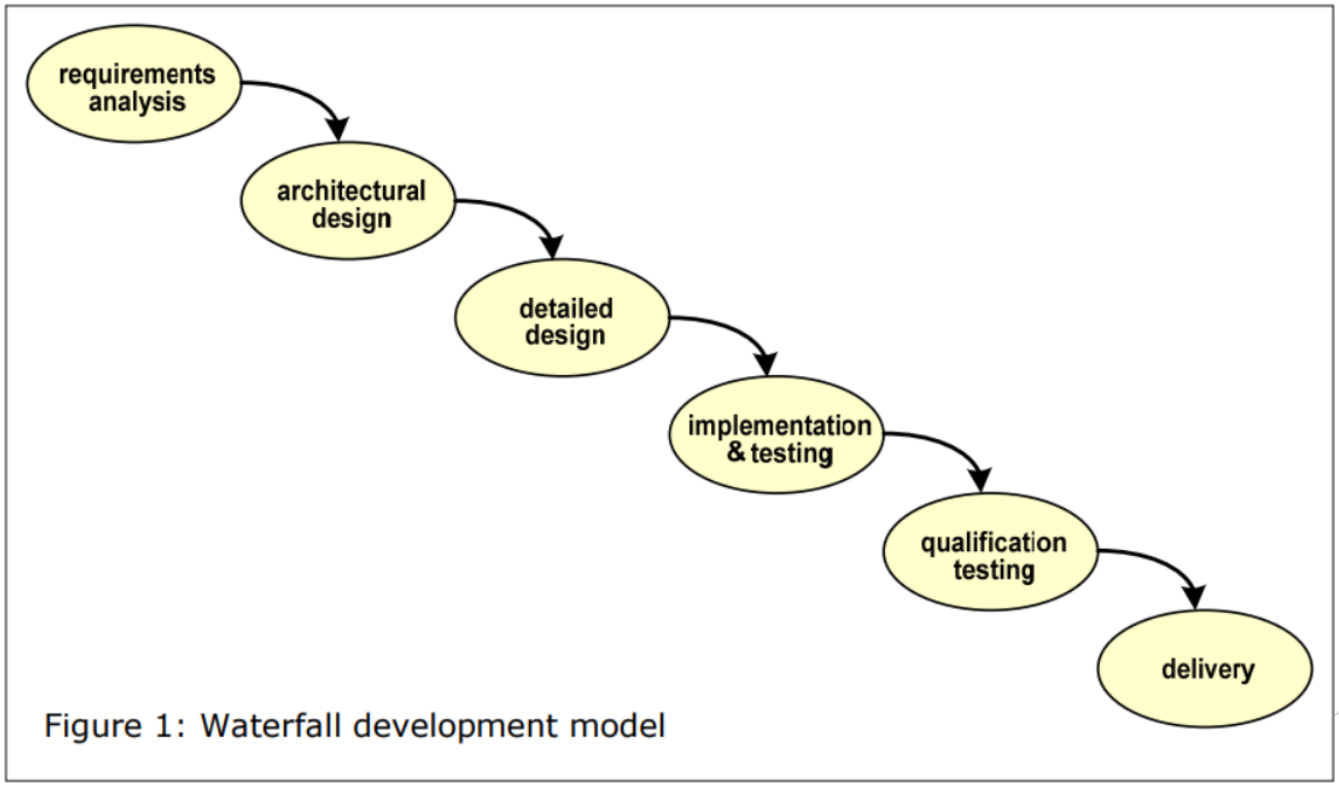


Figure 1: Waterfall development model

IT Planning

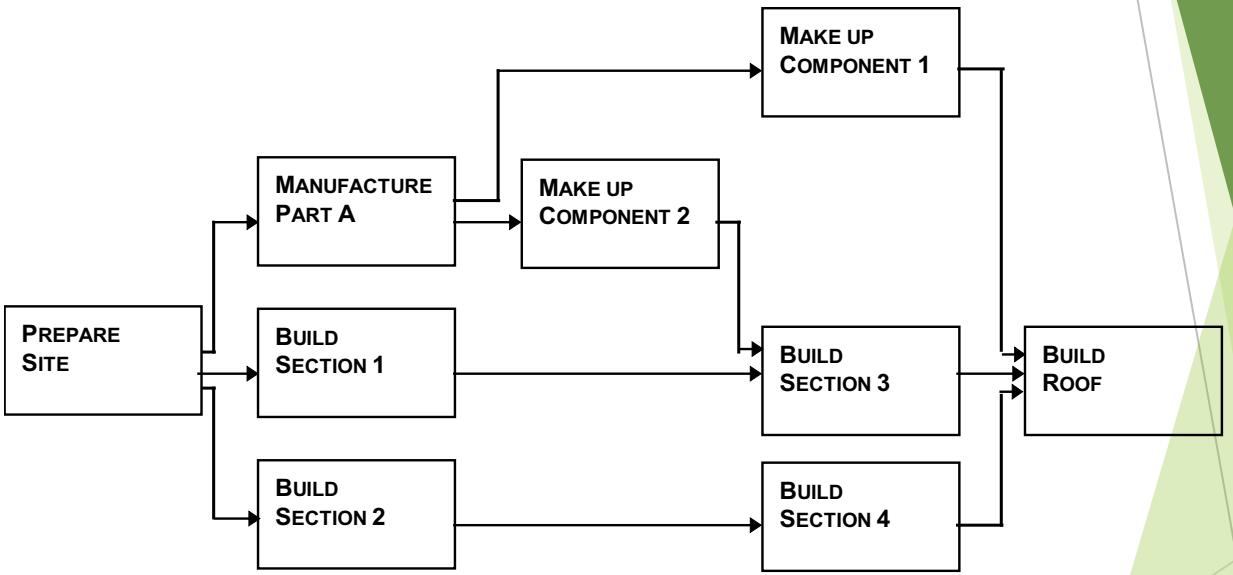
Necessary Steps to define

- Decide on which critical path format (ADM or PDM)
- Decompose the Project (WBS)
- Defining the Tasks
- Defining inter-dependencies and inter - relationships between Tasks
- Estimate the Task Durations
- Estimate the Resource Requirements for Tasks
- Contingency – where it belongs

Critical Path Network Techniques

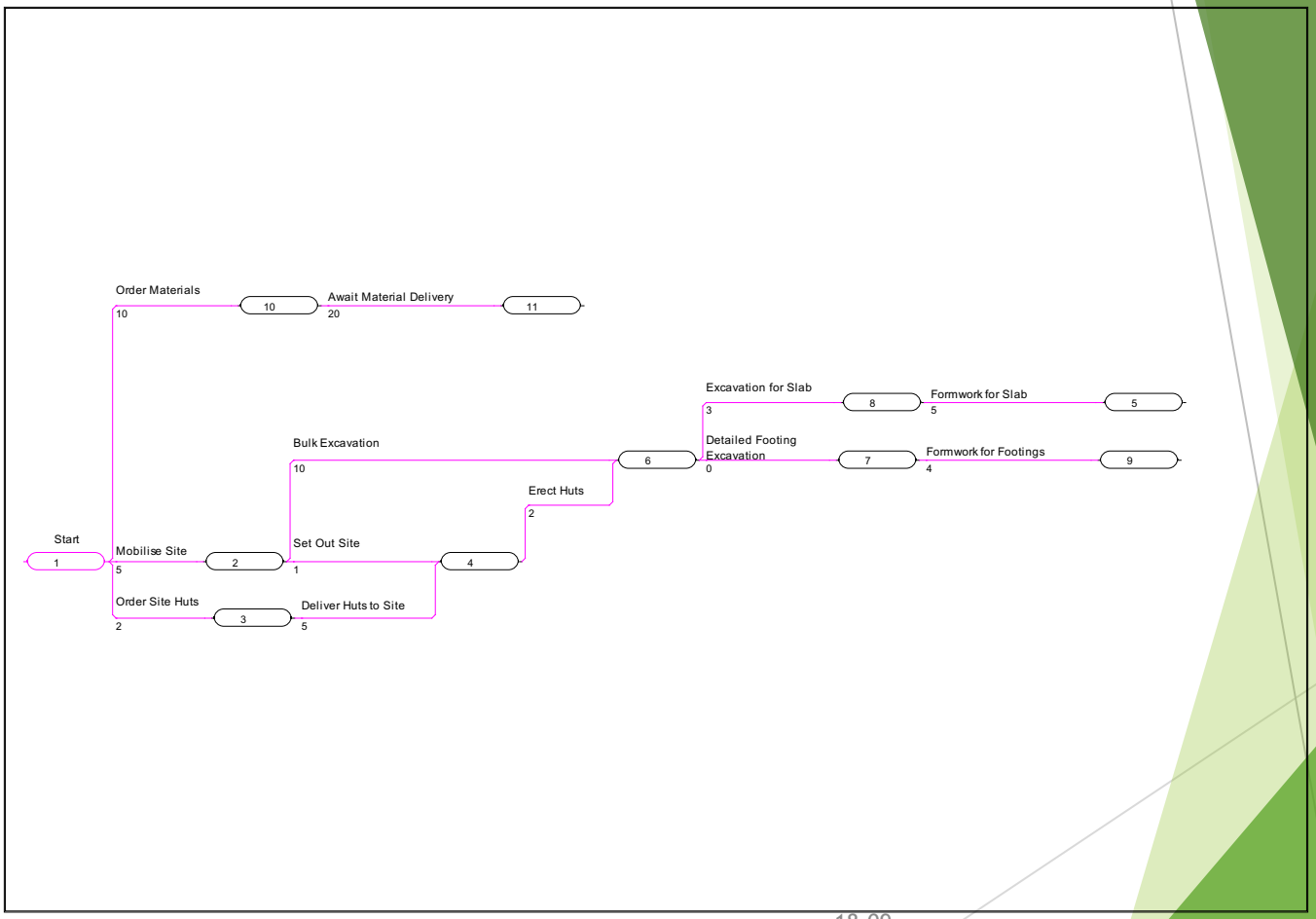
- Graphical Representation of a Project Showing all its Inter-relationships
- Activity on Arrow
- Activity on Node – (Precedence)

IT Planning
Precedence Diagram



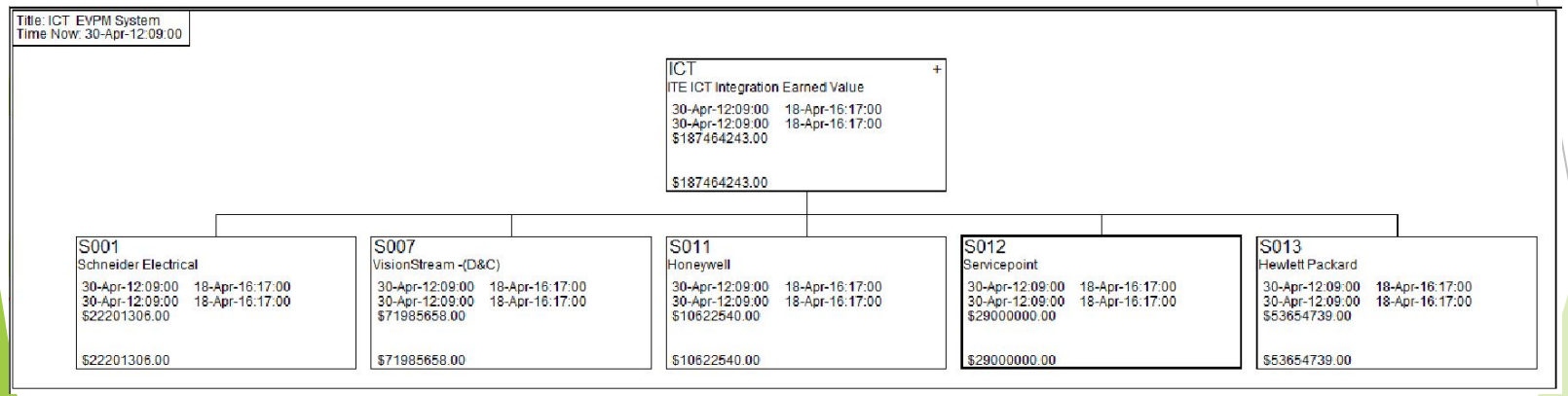
IT Planning

Arrow Diagram

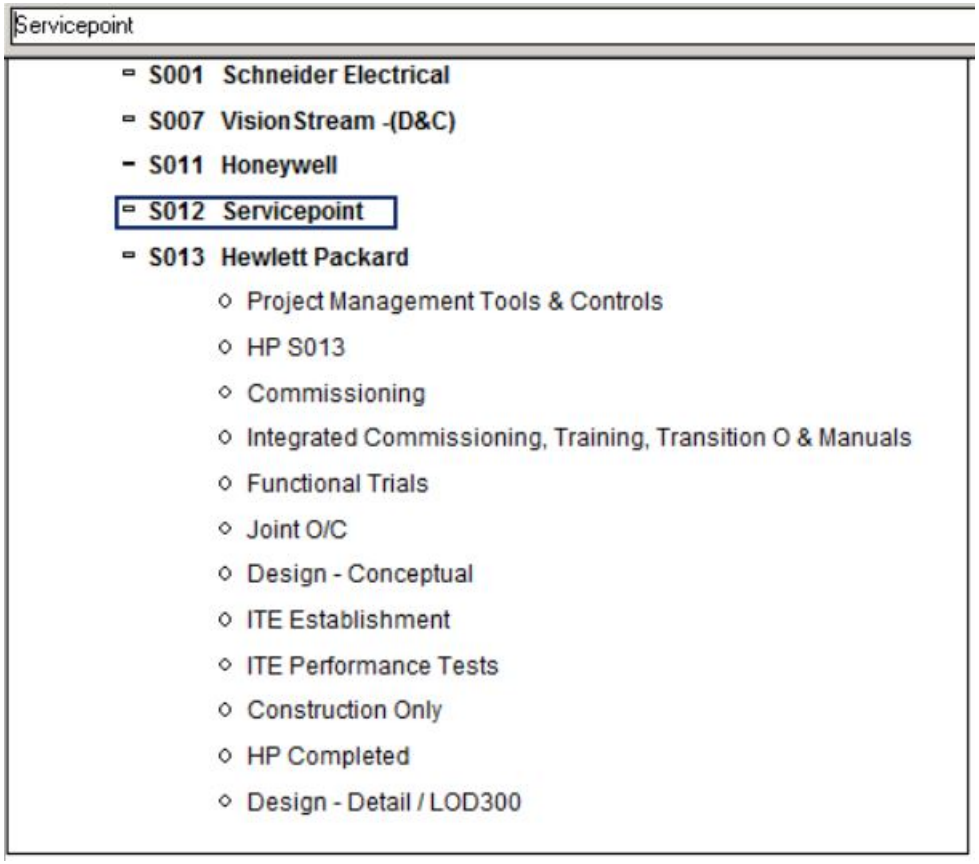


IT Planning

Create The Work Breakdown Structure



IT Planning
WBS in Outline Format



IT Planning

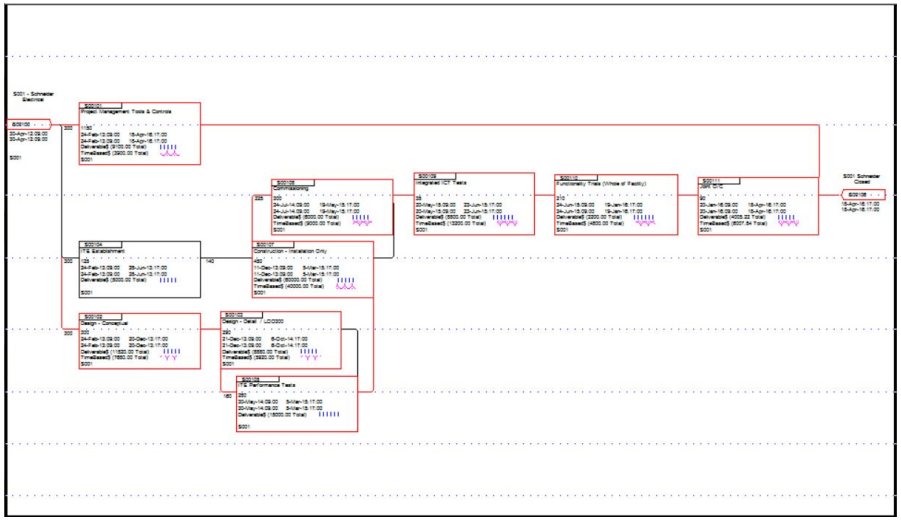
- Defining the Tasks

A task represents the basis on which to define the *scheduling* of Elements of work for construction activities, along with the need to estimate the *resources* required by the individual work tasks, and any necessary *inter-relationships and inter-dependencies* among the tasks. (ie production of the logic)

IT Planning

- Defining inter-dependencies and inter – relationships between Tasks

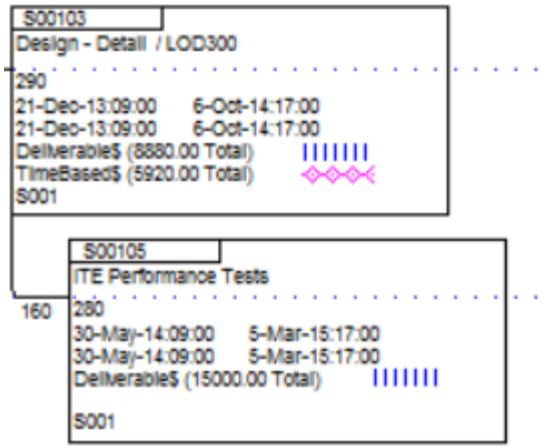
Inter-dependencies and inter-relations between activities signify that the activities take place in a particular sequence. As shown below



Tasks with Finish to Start Dependency

IT Planning

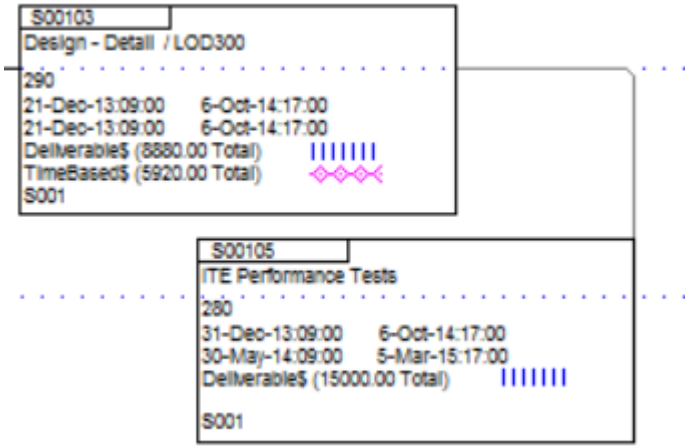
Start to Start



The start of the succeeding task is delayed until after the start of the preceding task. If a 'lag' is nominated (say three days), the start of the succeeding task is delayed until three days after the start of the preceding task. This type of dependency primarily controls the start of tasks (not the finish).

IT Planning

Finish to Finish



The completion of the succeeding task is delayed until after the completion of the preceding task. If a 'lag' is nominated (say three days), the finish of the succeeding task is delayed until three days after the finish of the preceding task. This type of dependency primarily controls the finish of tasks (not the start).

IT Planning

In order to schedule procedures, each task requires a time duration.
This durations is used in calculating a schedule.

Durations may be expressed in various units, eg

- Weeks
- Days
- Hours
- Minutes
- Weeks and Days
- Days and Hours
- Hours and minutes

IT Planning

- Every Task Requires a duration estimate
  - It may be specified in Weeks, Days, Hours and Minutes
- Three Time Estimates used where Estimating Doubt
  - (a) Most Optimistic a 1 in 100 chance
  - (b) Most Likely a 98 in a 100 chance
  - (c) Most Pessimistic a 1 in 100 chance

Three Time EstimatesDuration (Cont)

- Task Duration = a + 4b + c / 6

IT Planning

- Forward Pass Calculates
  - Earliest Start, Earliest Finish
- Backward Pass Calculates
  - Latest Start, Latest Finish
- Total Float
  - Calculated as Latest Finish – Earliest Finish

IT Planning

Defining Resources

- Need to define the resource requirement estimates for each task, the requirements for particular resources during the course of the project must also be identified.

- Thus potential bottlenecks are identified, and schedule, resource allocation or changes can be made to avoid problems

IT Planning

Project Budget

IT Planning

What is Contingency ?

Where is it located ?

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Types Of Contingency

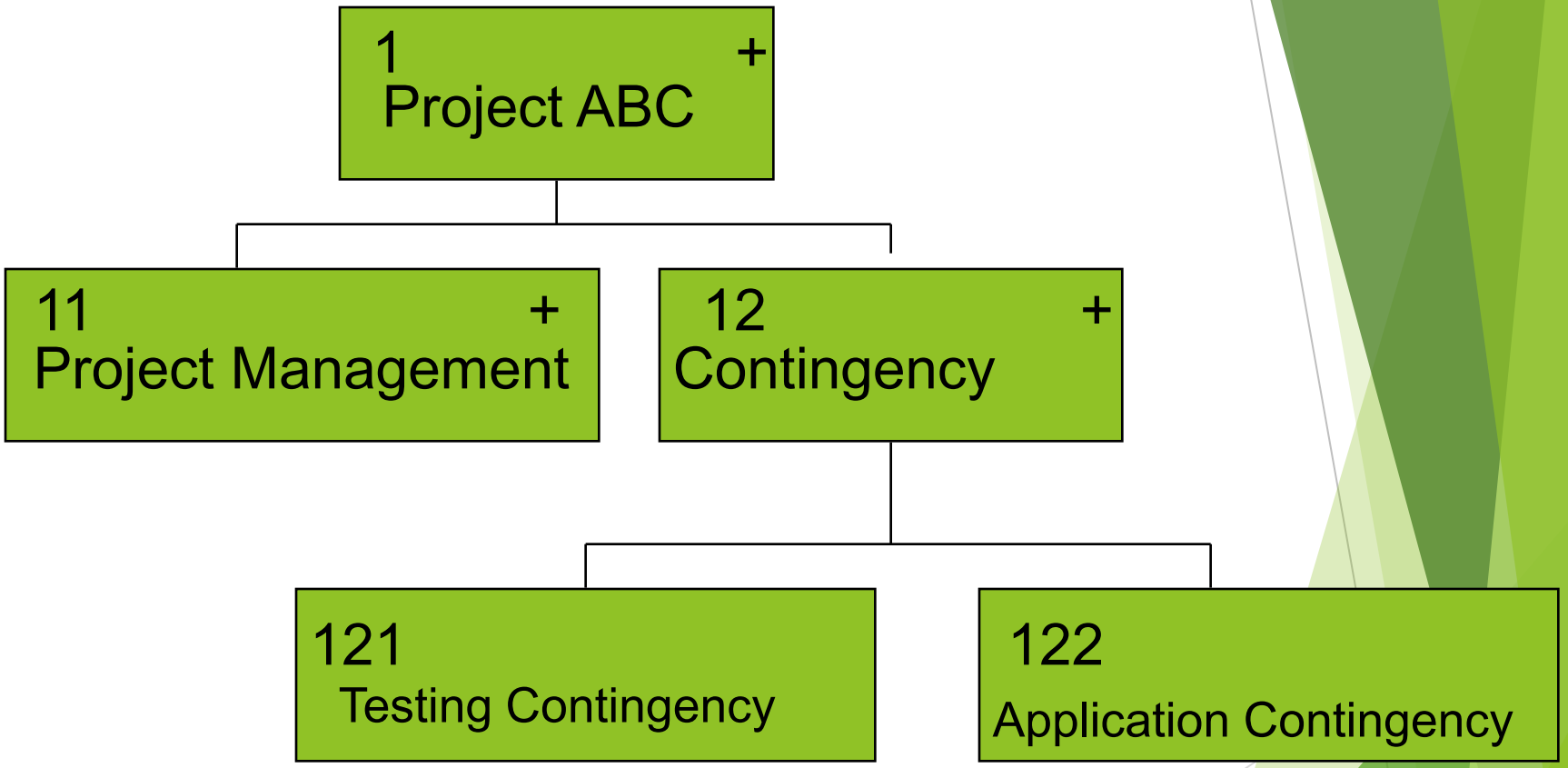
" A thing dependent on an uncertainevent"

Source " Shorter Oxford" dictionary

" Something liable to happen as an adjunct to something else"

Source: " Webster" dictionary

IT Planning



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Definition of Contingency

.... the sum of funds included within an estimate to cover materials, labour, conditions, and risk situations which are intrinsic part of the presently intended scope of work, but are not specifically allowed for elsewhere in the estimate, due to uncertainty either as to their existence, nature, likelihood of occurrence, or magnitude of effect"

Source:US Dept of Energy Order 4700.1

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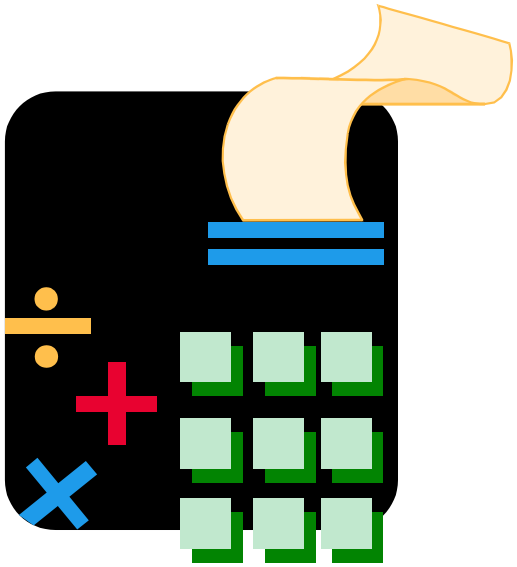
Estimating Contingency



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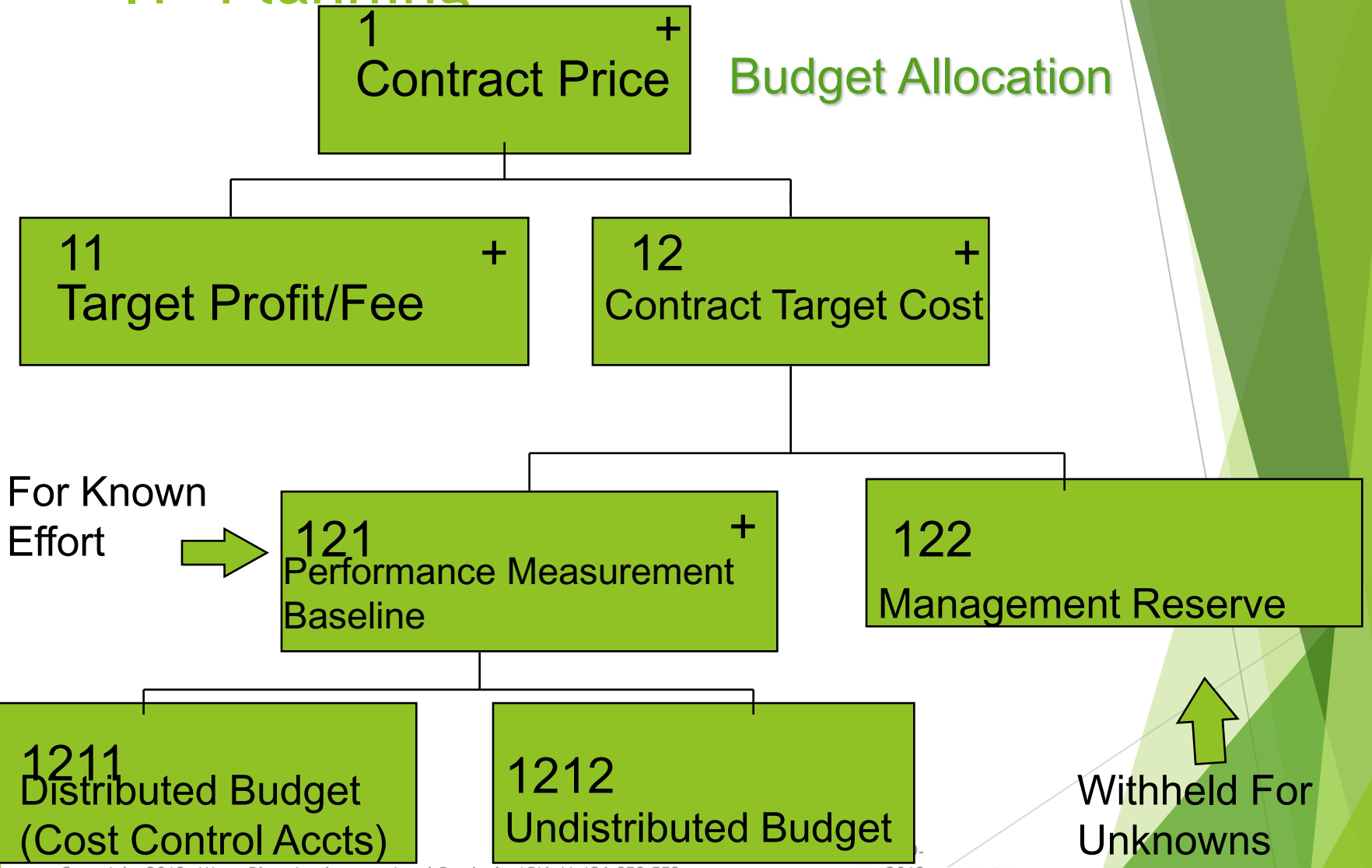
Within The Performance Measurement Baseline Planning For Contingency

IT Planning



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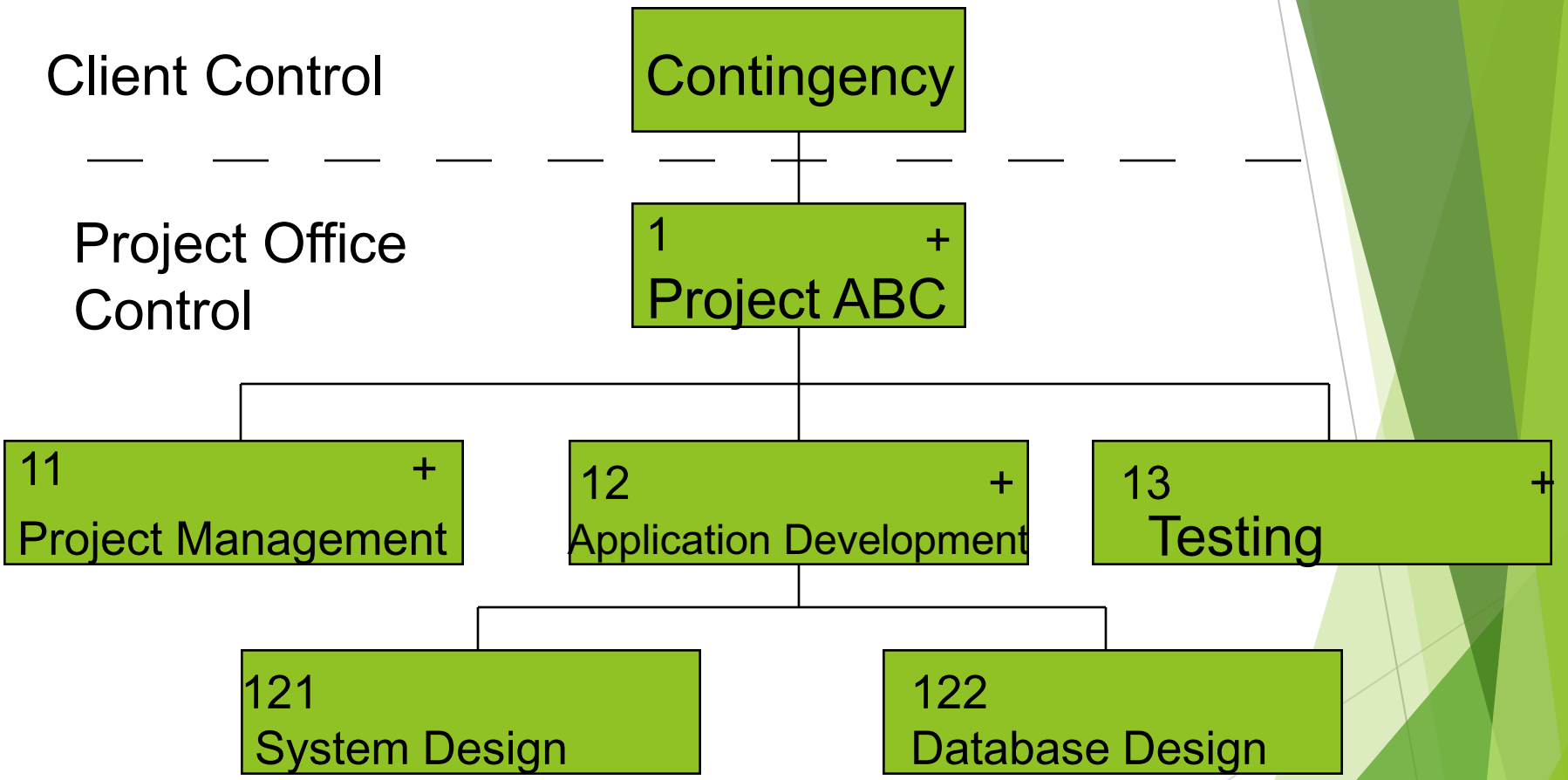

Contingency Under Client Control

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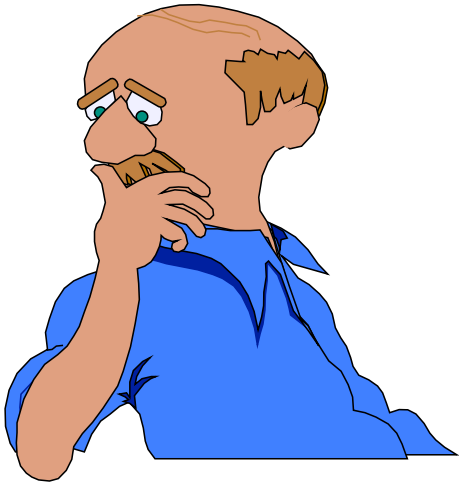
Where To Locate Contingency Budgets?



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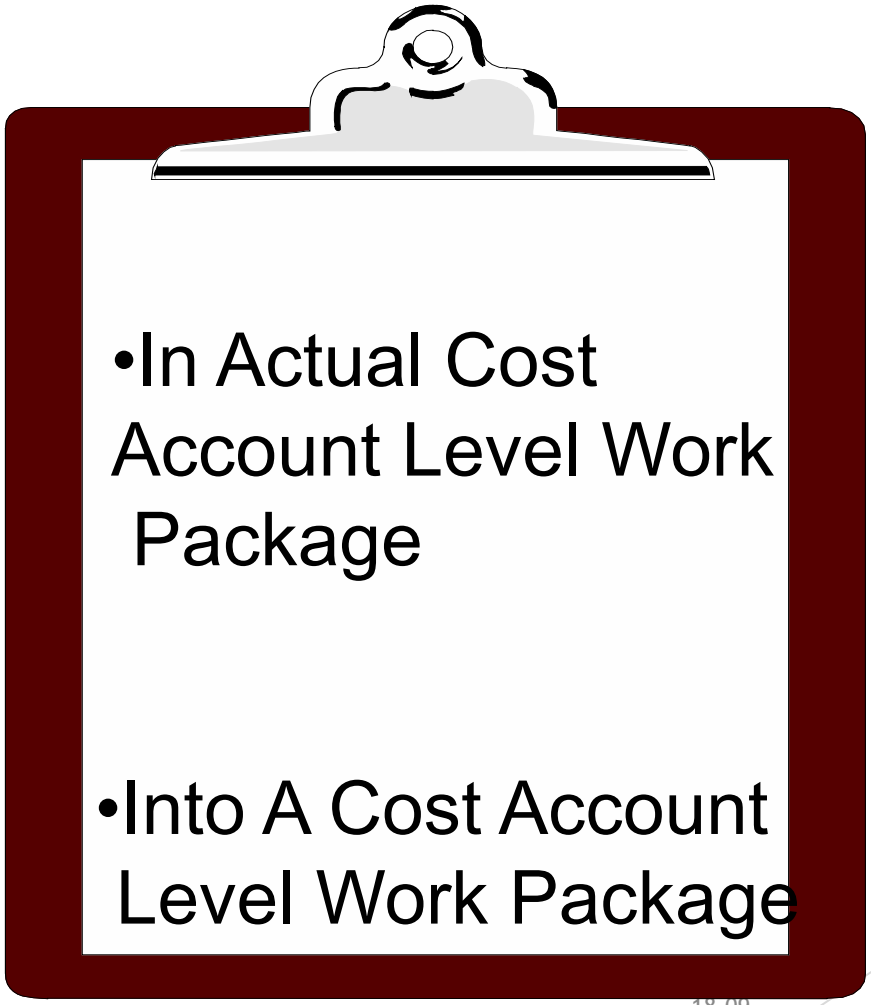
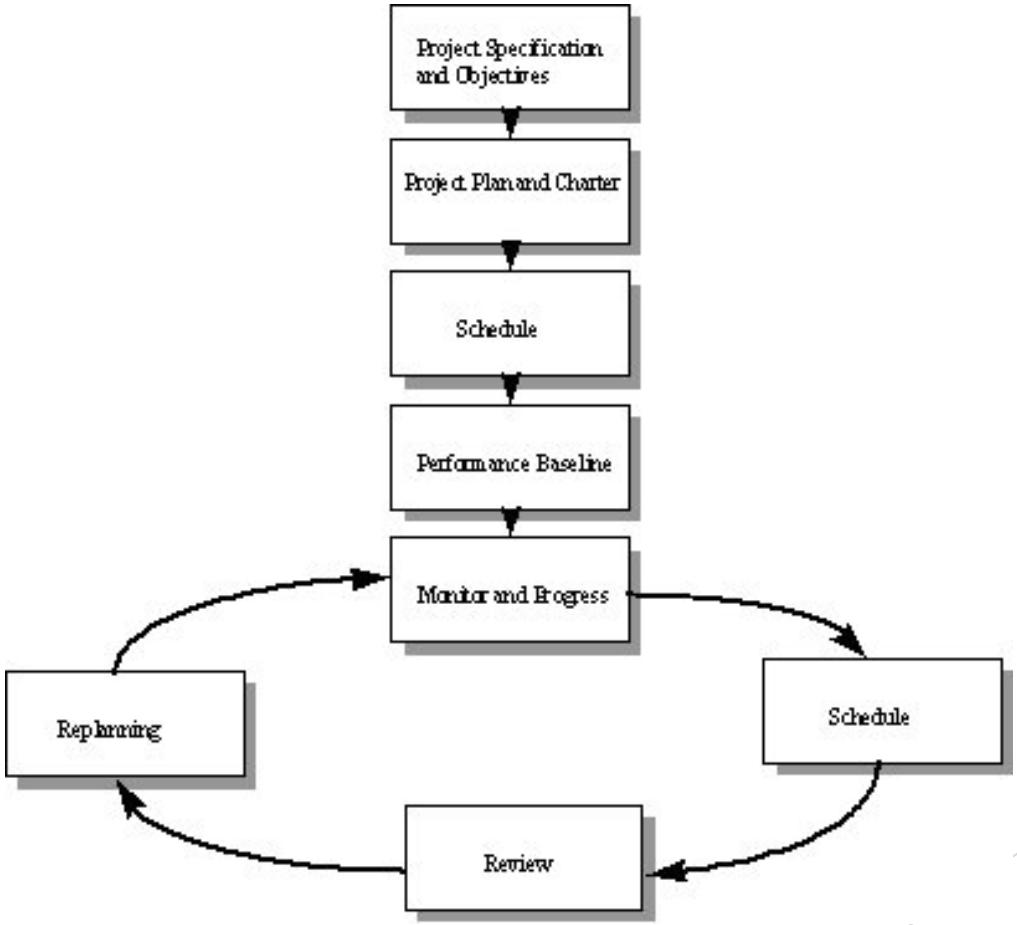


IT Planning

IT Planning and Scheduling

The Planning Cycle



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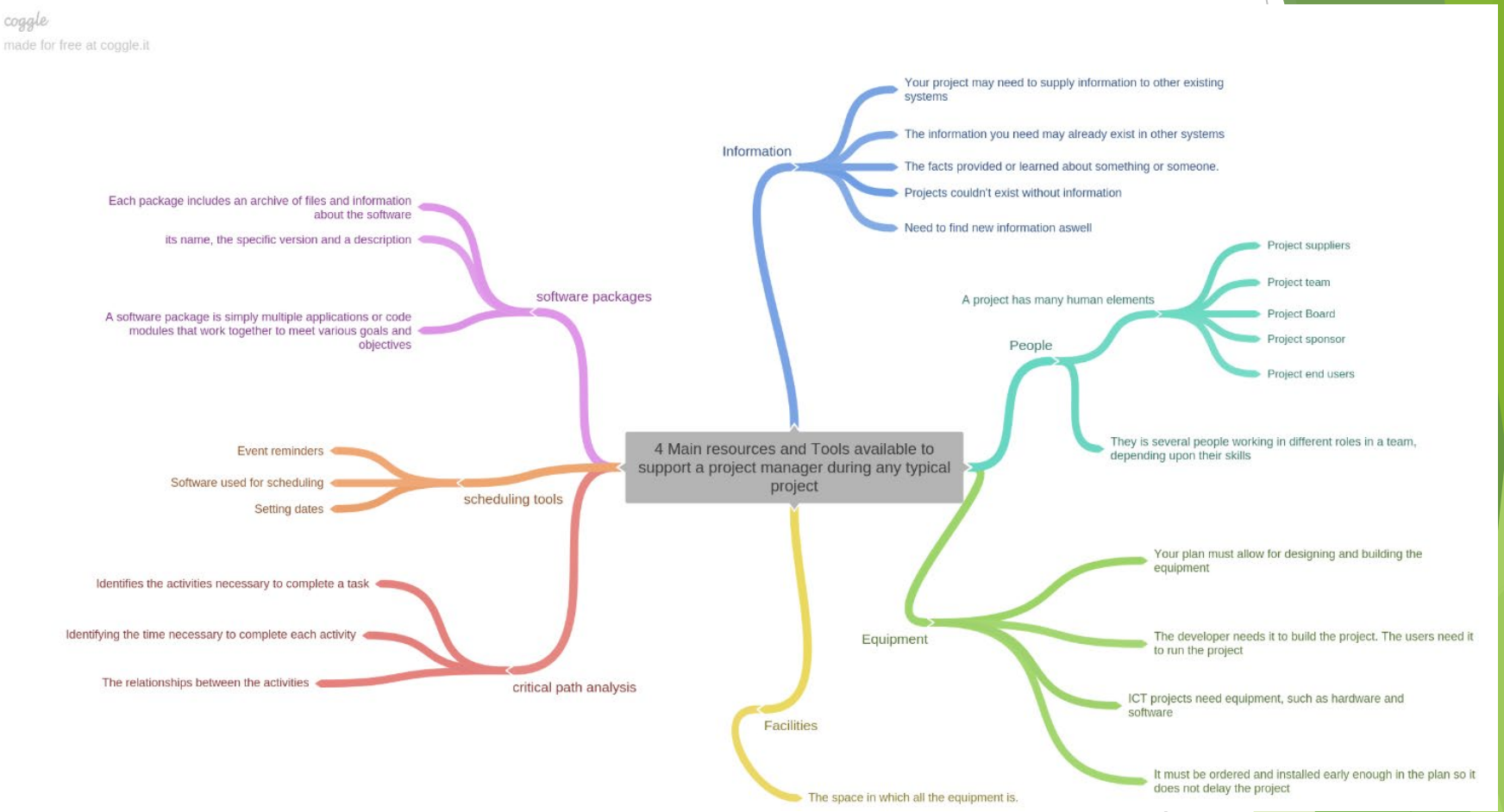

IT Planning
Gantt Chart