Example:

System spesification: motor must provide sufficient thrust.

System requirement: motor mut be ≥ 88 kN thrust

#5 Planning fundamentals.

Project Plan:

1. Scope Statement, Charter, SOW
2. Detailed Requirements
3. Project organization & responsibilities
4. Detailed work definition (WBS)
5. Detailed schedule with milestones.
6. Project budget
7. Quality plan
8. Risk plan
9. Work Review plan
10. Testing plan
11. Change control plan
12. Documentation plan
13. Procurement plan
14. Implemention plan.

1. Scope, Charter, SOW

Purpose: provide a broad description of master plan

Describes the breadth of project, areas to be covered, and deliverables

Includes:
- Objectives (contractor view)
- Requirements
- Deliverables
- Milestones
- Limits & exclusions.

SOW: Statement of work, scope document for contracted projects

2 types:
- SOW in master plan
- SOW in contract (CSOW)

SOW & CSOW must contain the same information and requirements

Requiremensts for every end-item task must be clear enough that parties can sign-off acceptance.

Suggestions:
- Never use passive terminology "should" "try to"
- Categorize specifications applicable to entire project seperate from parts

Hold meetings with customer to review clarity and completeness

Typo

Charter: scope document internal projects
issued by senior management to legitimize project
pm authority to iniate work and apply resources

includes:
- Background
- Objectives
- Scope/SOW
- Deliverables
- Constraints
- Approach
- Schedule
- Project team
- Risk
- Management plan.

*4. Work definition (WBS) *

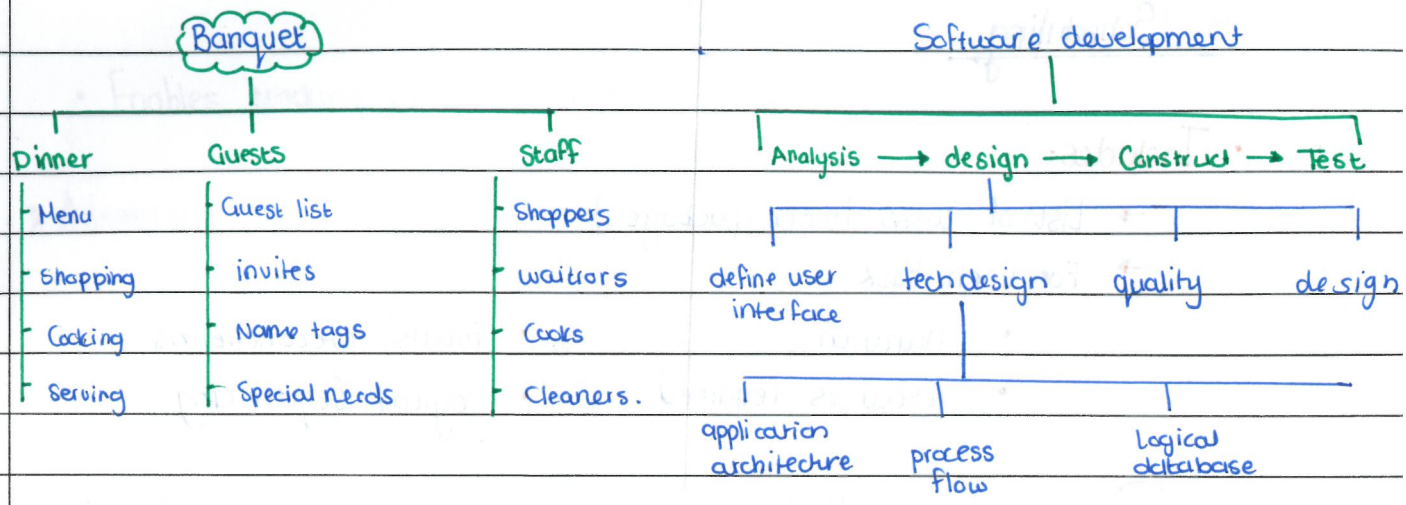
Divide the project into well defined tasks →
- Project schedule
- Budget
- Risk managment.

→ Start with the SOW and requirements → 5-10 high level activities yield needed results
→ Question: " What is involved here, what is required "
→ if difficult to answer → break down further.
→ Continue until all tasks are well defined.

Well difined task is called a work package
- SOW & requirements
- clear definition of work
- time estimates
- cost estimates
- responsibilities
- deliverables
- resources
- risk assesment

Creating a WBS:
- Project team
- Multiple teams
- Experts.

Two approaches:
- End-item Sub-system Approach
- Process Step approach.



- Every task/work package has a unique identifier.

Integrated Planning & Control:

unnecessary

1. FM, subcontractors, and others responsible are identified and become involved
2. Work pages in each phase are logically & physically related to previous phases
3. Work packages are the basis for budgets & schedules
4. The project organization are formed around work packages
5. Project is directed by directing people working on work packages
6. Project control is exercised through control of work packages

3. Project Responsibility

- People responsible for areas in a project are documented in Responsibility Matrix

* Responsibility Matrix: *

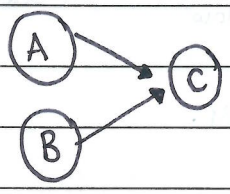
- for each task, shows who is responsible
- Prevents later conflict
- Every task is accounted for (nothing falls through the cracks)
- Each responsibility represents mutual agreement

P:	primary / lead	R:	Responsible
S:	Secondary	A:	Accountable
N:	notification required	C:	Consult
A:	approval required	I:	inform.

Typo

5. Scheduling

- Includes:
  - → List of tasks (work packages)
  - → For each task
    - duration
    - resources required
    - inputs, preconditions
    - logical sequencing



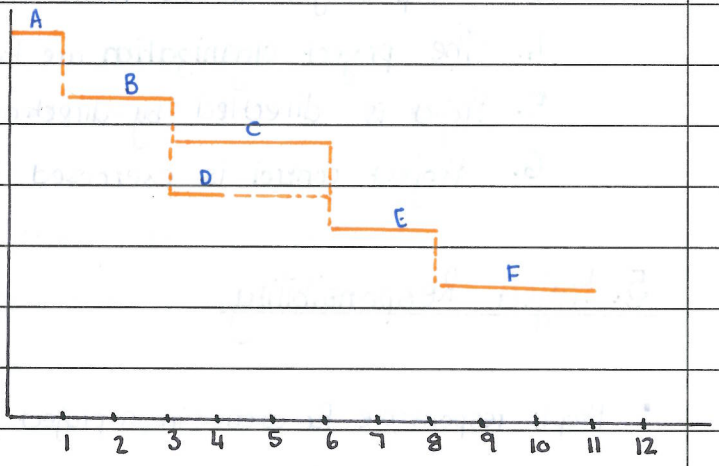
Predecessor: a task that must be completed before another task can start.

A & B are predecessors to C

* Gantt Chart

- Scheduling tool

Activity	Predecessor	Time
A	...	1
B	A	2
C	B	3
D	B	1
E	C, D	2
F	E	3



- Dotted lines show predecessor relationship
- x-axis – time incl time off for weekends / holidays
- Pro: easy to construct / understand
- Con: does not indicate relationship among tasks
- Good for displaying schedules

Line of balance

- Also called linear scheduling method, sloping bar chart, linear sloping method
- Used in projects that require number of identical units, each unit involves a number of steps.

- Enables tracking progress of these units

Advantages:
- Rates of progress is shown
- Repetitive work, problem areas are spotted
- Helpful allocation of resources.
- Helpful in determining minimum buffer size
- Simplicity of illustrating work schedule.

Disadvantages:
- useful for repetitive work
- otherwise less or not repetitive.

Look at the example in the book !

Procurement management

- Planning, budgeting, scheduling and control of procured good, work/ services.

1. Equipment, materials or components designed/provided by vendors
2. Off the shelf equipment/ components
3. Bulk materials
4. Consumables or loose tools
5. Equipment not already owned
6. Administrative equipment not already owned.

- involves decisions about which items are to be designed/built/provided and which to be procured
- happens during WBS process
- Contracting with suppliers/subcontractors often through RFP/proposal
- Integrating produced CWS into project life cycle and project plan
- Logistics
  - transport/ storage of materials
  - timely delivery of materials

Typo