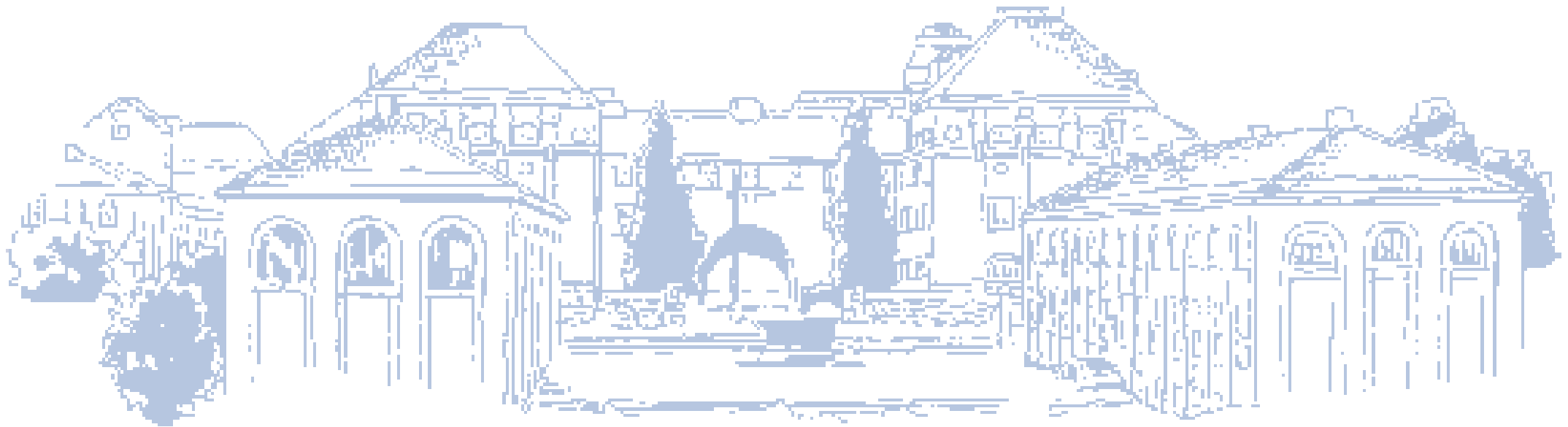




Project management

Electric Power Project Course



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Royal Institute of Technology

Stockholm, Sweden



Agenda

What do you need to do?

What is project management

Terminology

Project models

Project planning



Your assignment

Is to create a project plan for the project.

A project plan can be seen as a contract between all of you in the project group and also between the group and the sponsor

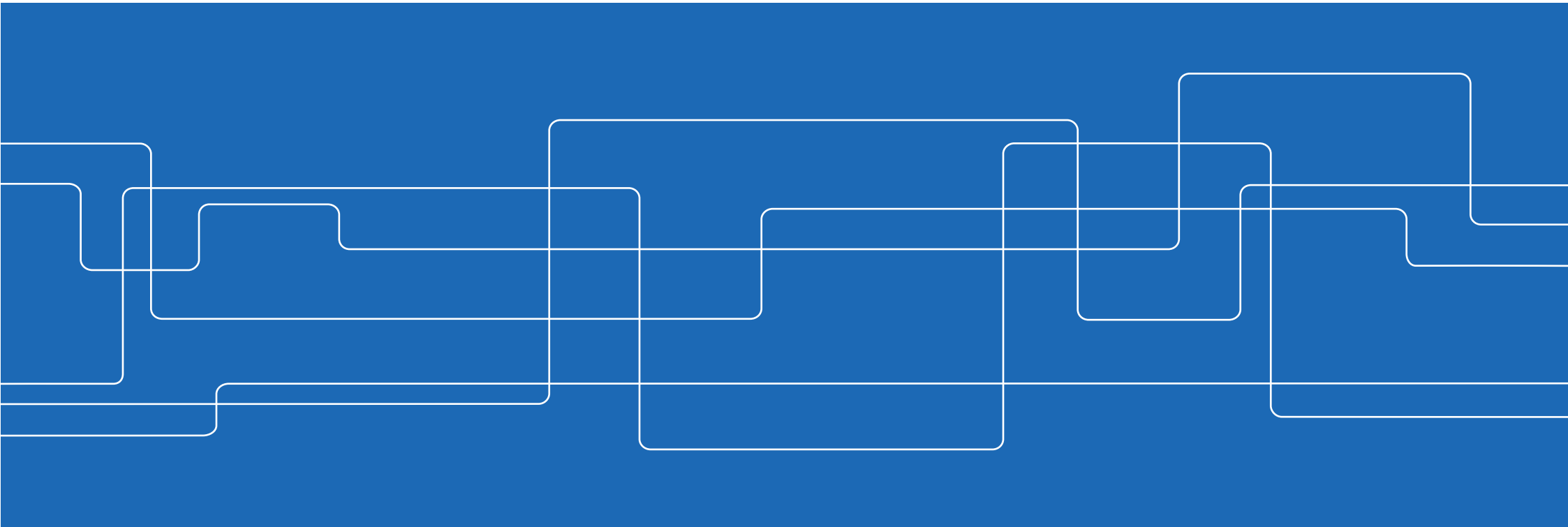
The project plan should make clear

- How you are going to cooperate
- Who is responsible for what activity
- How you are going to communicate internally and with your supervisor
- Your important checkpoints
- List your risks and suggest actions to avoid them

On Thursday I will talk more about the document

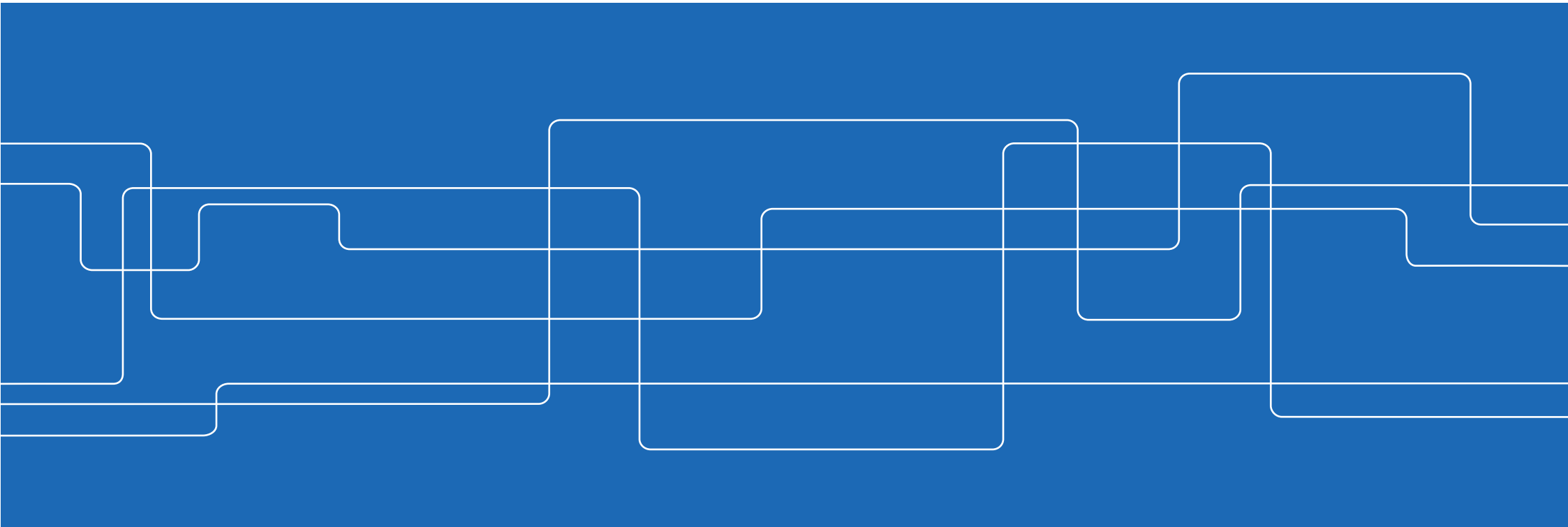


What is a project?





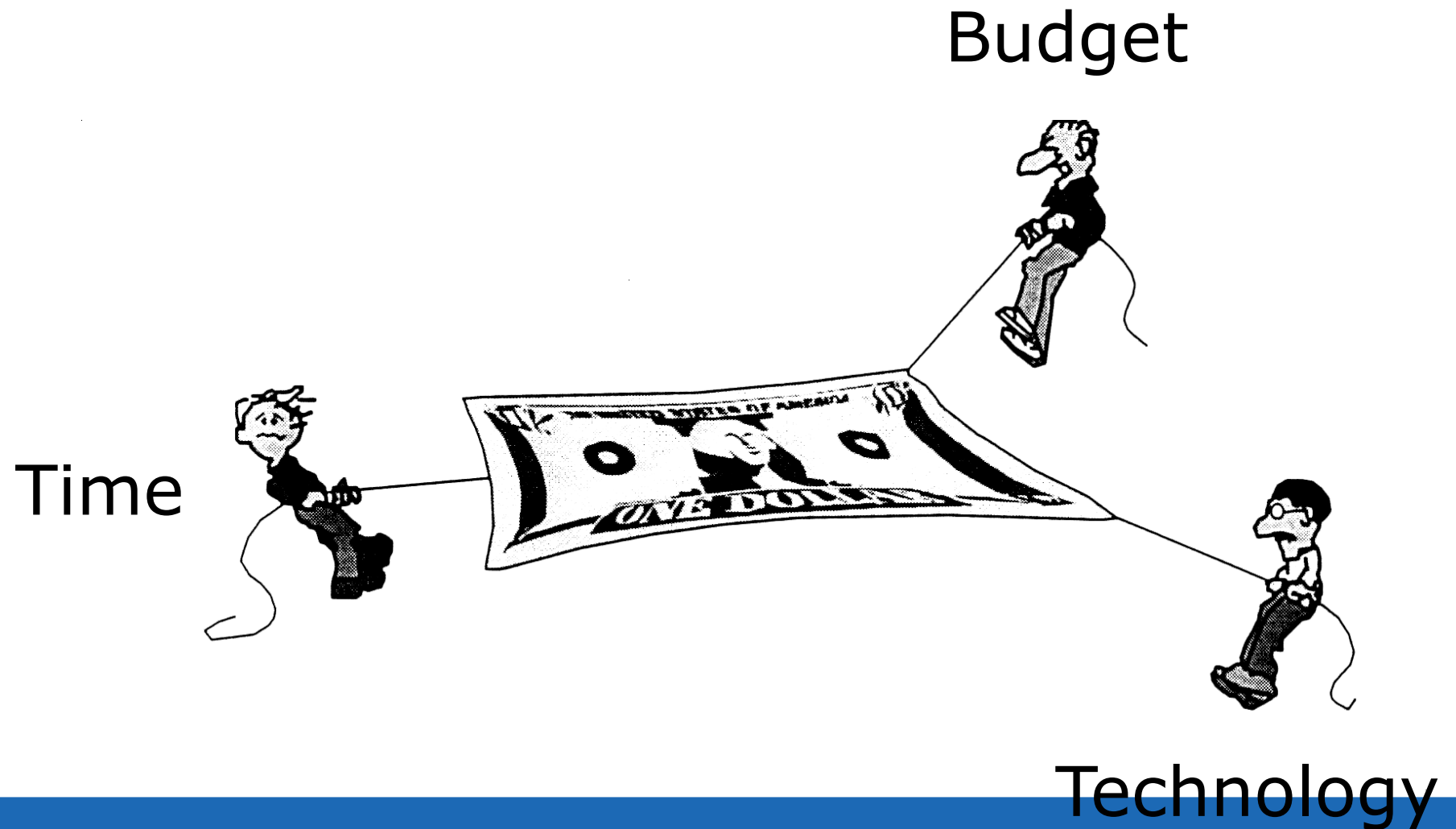
What is project management?



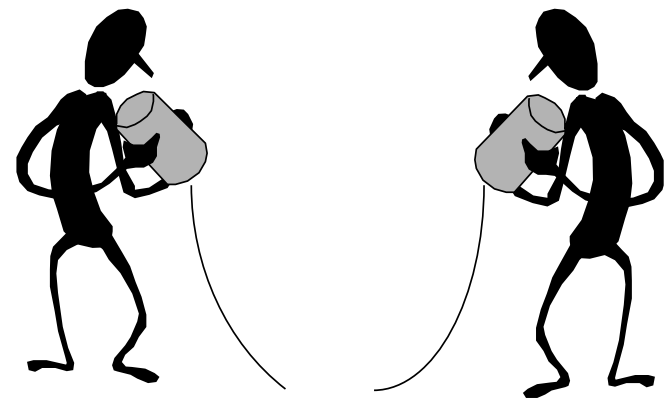
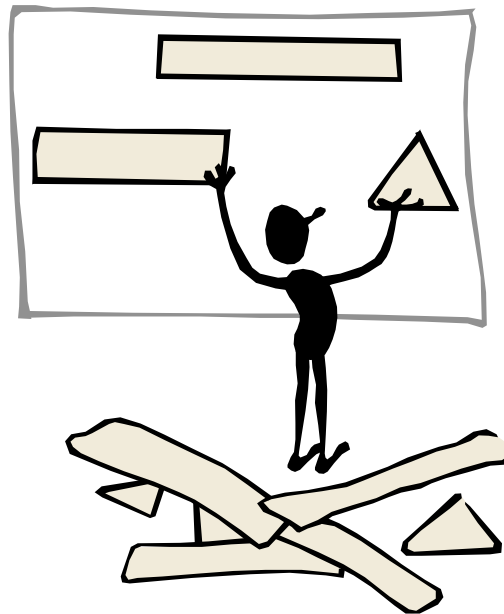


Team
Responsibility **Resource control**
Control **Organization** **Risk**
Limitations **Planning** **Expectation** **Possibilities**
Deadlines **Goals** **Education**
Software **Project Management** **Reports**
Culture **Specifications** **Budget follow-up** **Ownership**
Communication **Risk management**
Leadership **Time management**
Milestones **Priorities** **Budget**

"The Tripple Constraint"



Planning and communication





What is project management?

The application of:

Knowledge

Skills

Tools and techniques

In order to:

Meet project requirements and expectations



The key (to becoming successful)

Meet the expectations!



Disclaimer!!

Unique, depending on the context

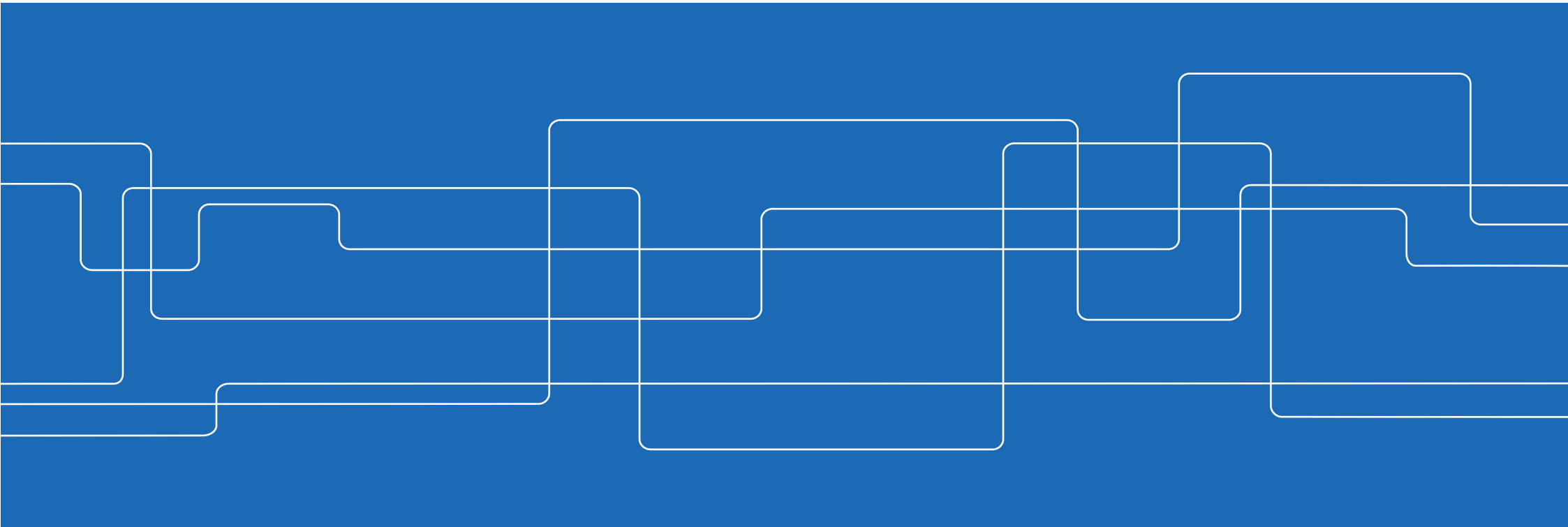
Theory is not enough: skill of craftsmanship is also needed

There is no universal truth...

”Do not try to reinvent the wheel”: ”stolen with pride!!”



Basic terminology



Project phases

A project is always divided into phases

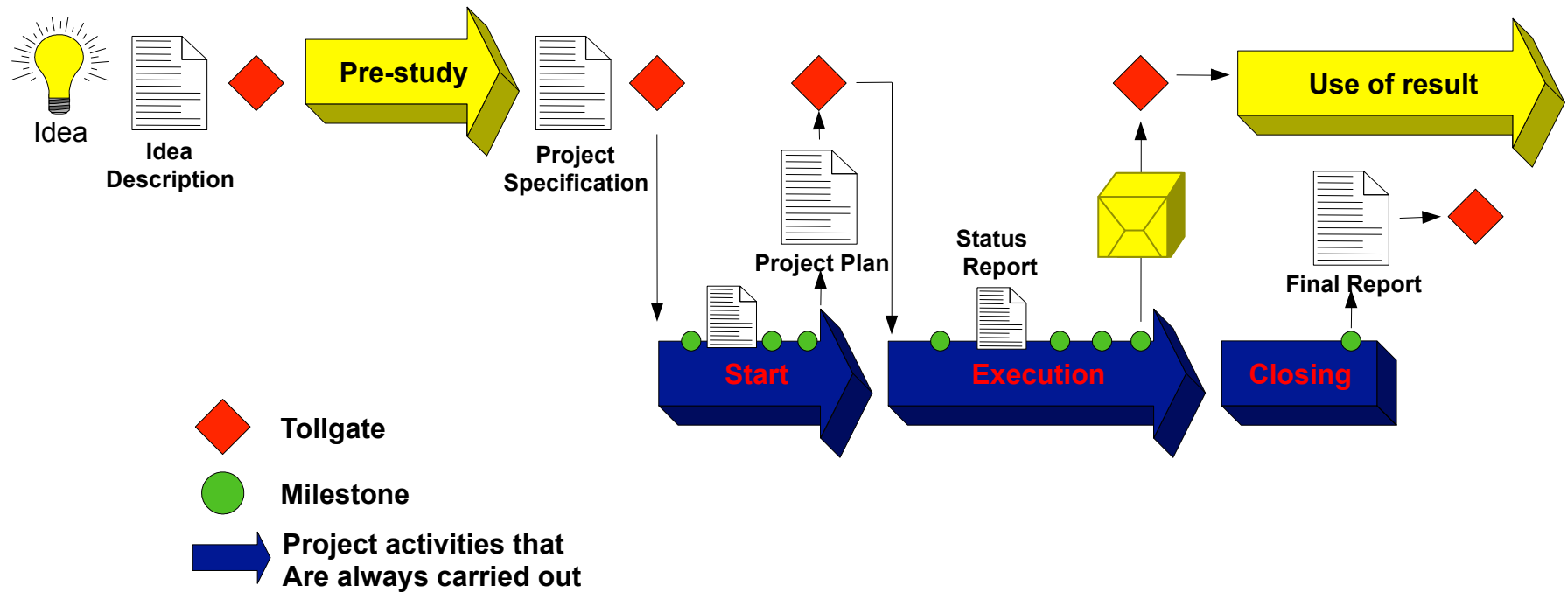
Each phase includes activities that have to be executed

Different check points are defined for each phase:

-  Milestone
-  Tollgate

Experience shows that such an approach provides a well thought through structure guiding the work to focus on the most important activities, making the final results obtain a high quality

Project phases



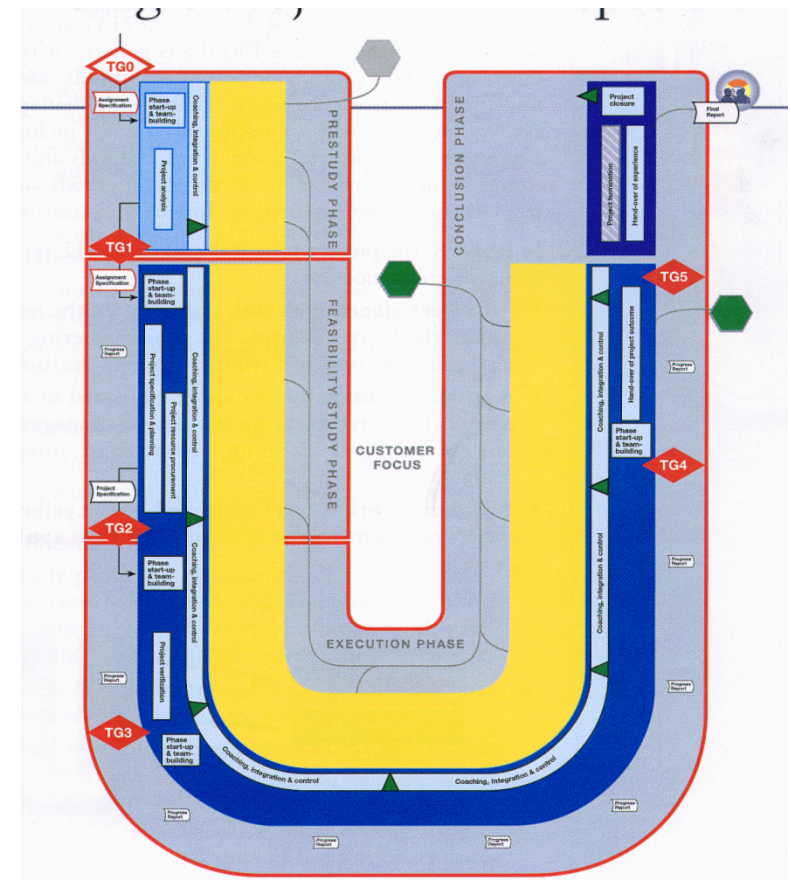
Example PROPS

Phases in PROPS

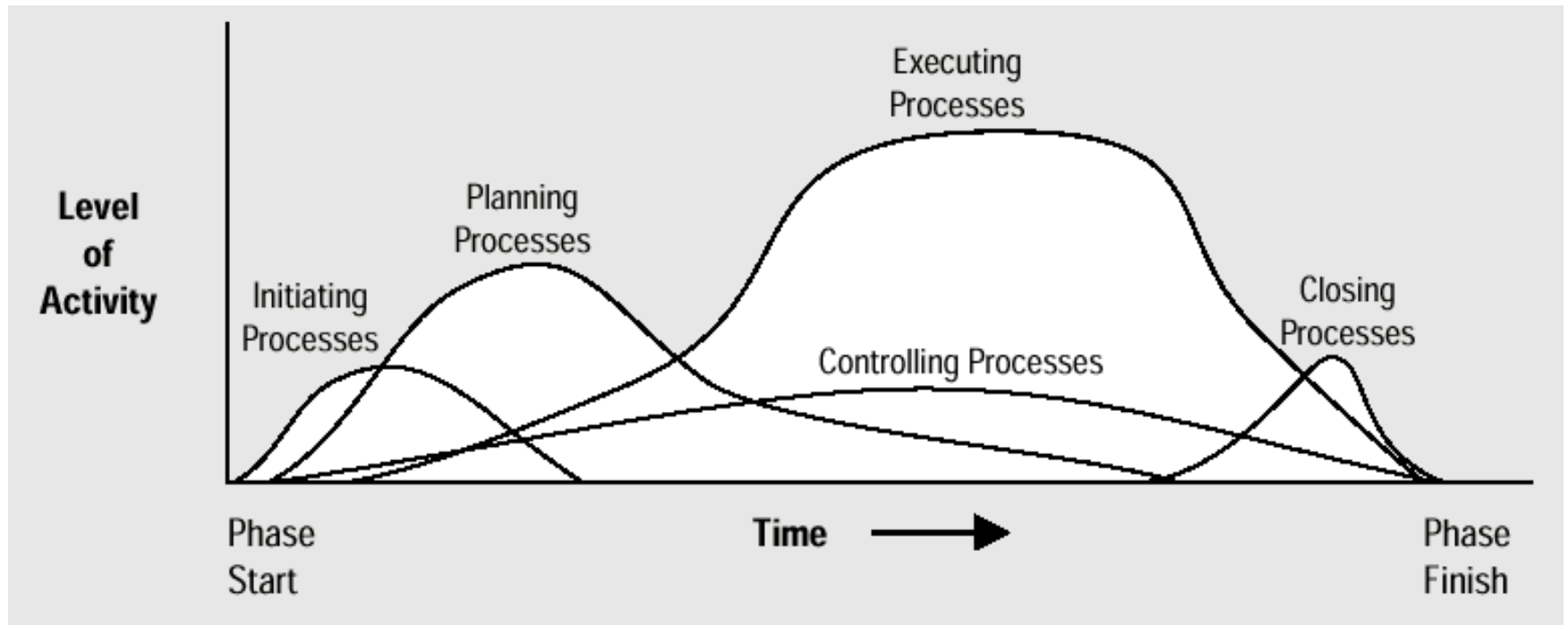
- Pre-study phase
- Feasibility study phase
- Execution phase
- Conclusion phase

5 Tollgates

>8 Milestones



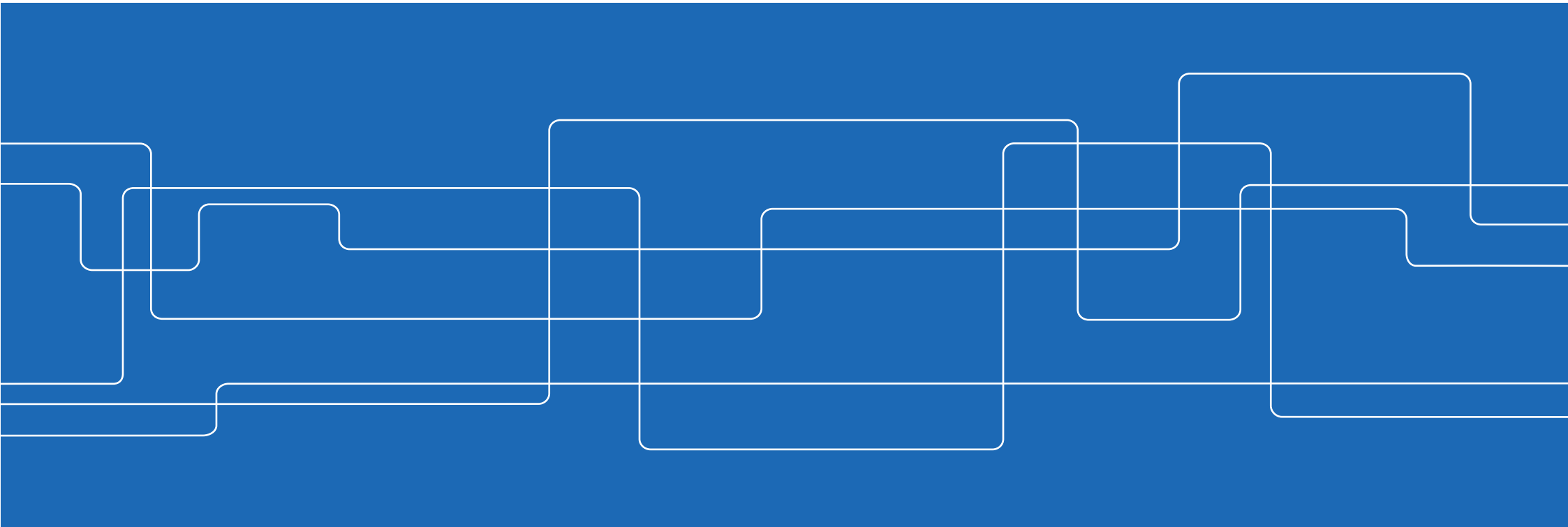
Project phases



(Ref. PMBOK)



Different approaches





Approaches

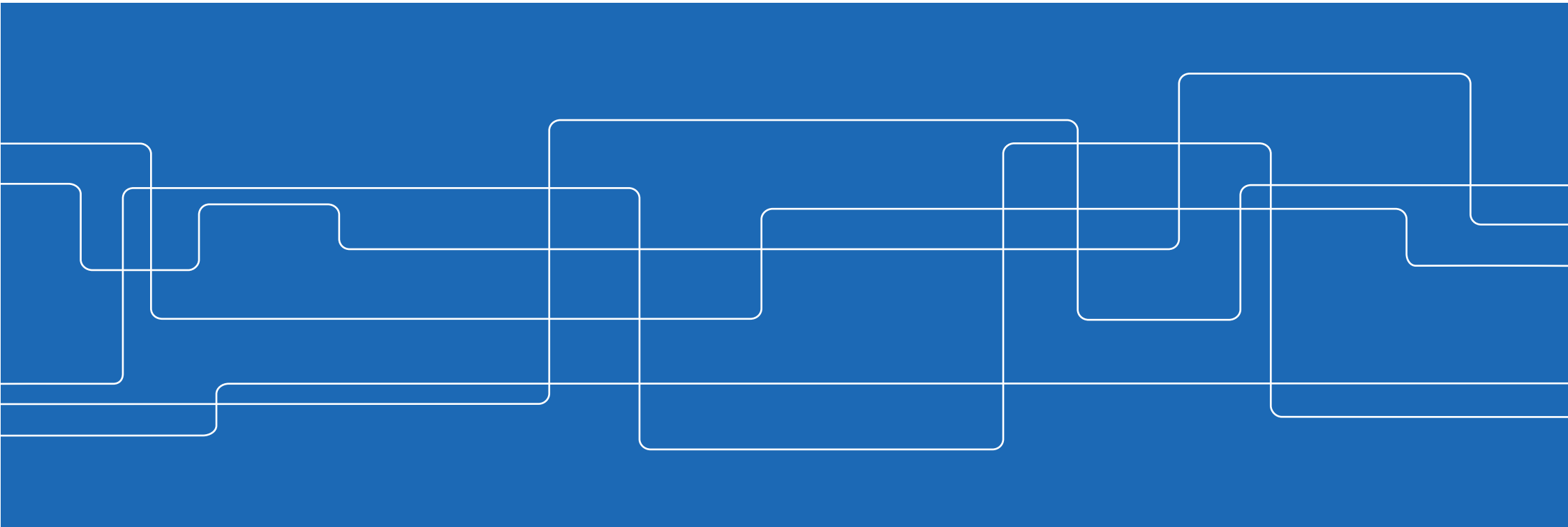
Agile

Traditional based on planning



Project planning

(If you fail to plan, you plan to fail)





Planning

Two types of planning processes:

Backwards planning

- Is something we always do without reflecting on it

Work breakdown structure planning

- "Network planning"
- Follows a structured process

The main questions of a project

What should be done?

- What kind of result should we achieve; scope, extent, content and quality
- In what form shall it be delivered?

When should it be done?

- At what point in time should the result be delivered?
- Are there any sub deliveries?

How should it be done?

- What approach should we use?
- Prototypes, COTS, develop from scratch?
- What processes and methods of work and documentation shall we use?
- How shall we deliver the result?

Which resources do we have at our disposal?

- Which are the budget resource constraints?
- Which are the material resource constraints?
- Which are the personnel resource constraints?

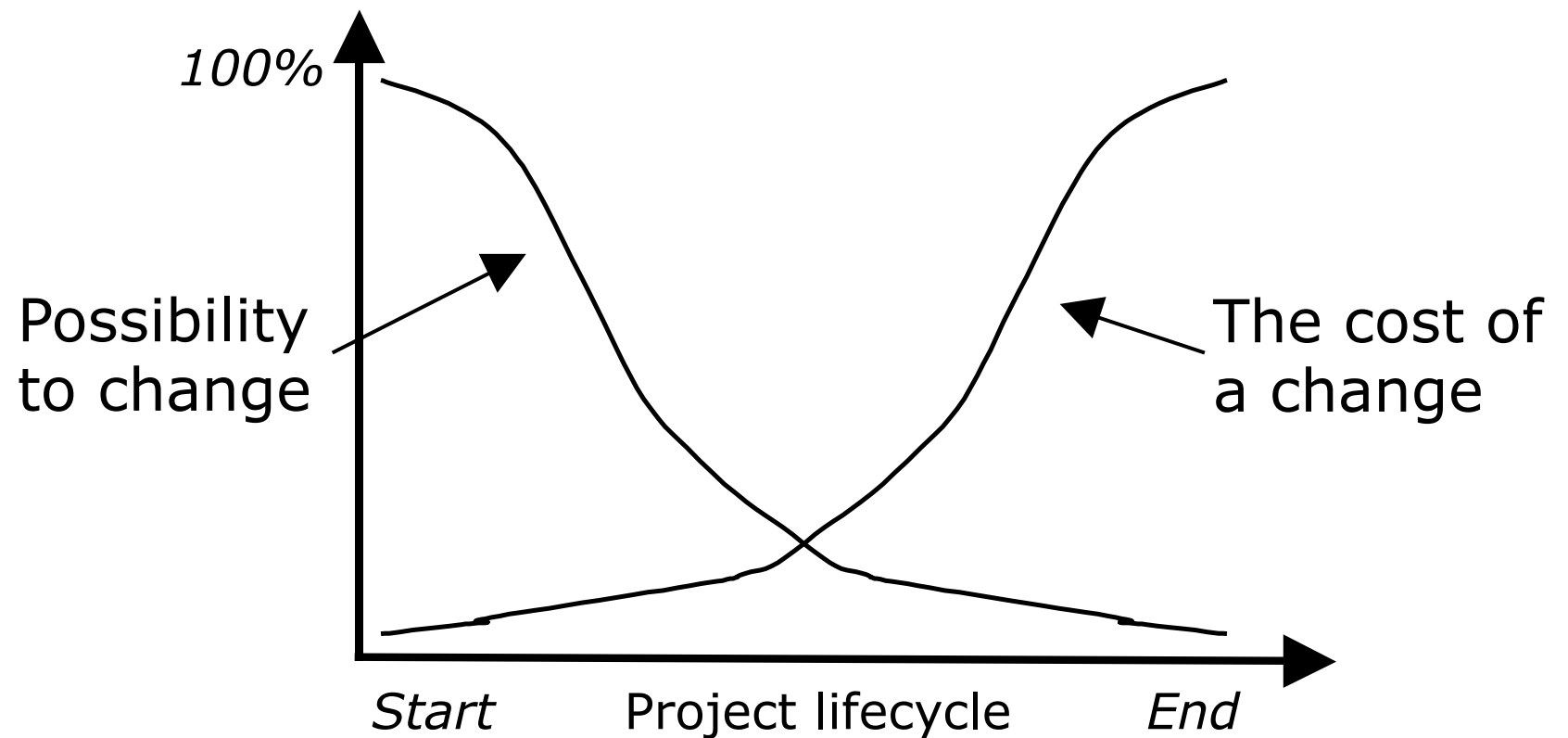
How do we ensure the right quality?



Why is the project start so important?

Why is the project start so important?

Possibility to change vs. the cost of a change



**“Plans are nothing,
planning is everything”**

Eisenhower

Planning

In project management there are two types of plans:

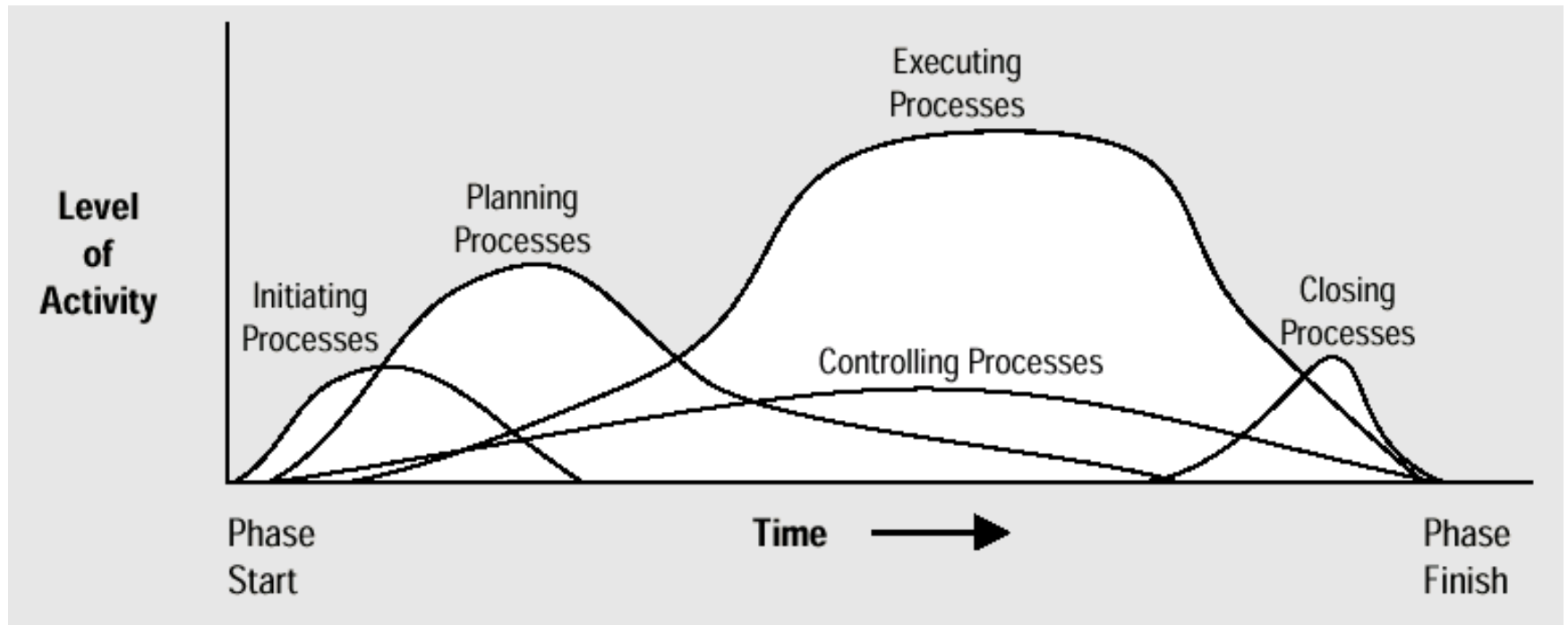
Overarching plans or Milestone plans

- Used outwards to orient people outside the project about the progress
- Often used in communication with the project sponsor, client or supervisor

Detailed plans or Activity plans

- Show the activities that must be carried through and when they should be performed
- Often made in a Gantt-schedule

Project phases



(Source PMBOK)



Project planning

1. Formulate the project goal
2. WBS – Work Breakdown Structure
3. Identify tasks
4. Identify dependencies
5. Estimate time
6. Identify the critical path
7. Distribute resources
8. Transfer to Gantt-schedules or other diagrams

Simplified planning

(no or few parallel activities)

1. **Formulate the project goal**
2. **Divide the** project into phases and activities
3. **Break down** the activities into work tasks
4. **Time estimate** each work task
5. **Schedule** and divide the time estimated work tasks on each project participant (resource planning)

Step 4 and 6 can you skip if you do not have any parallel activities

Step 7 can be done with step 8



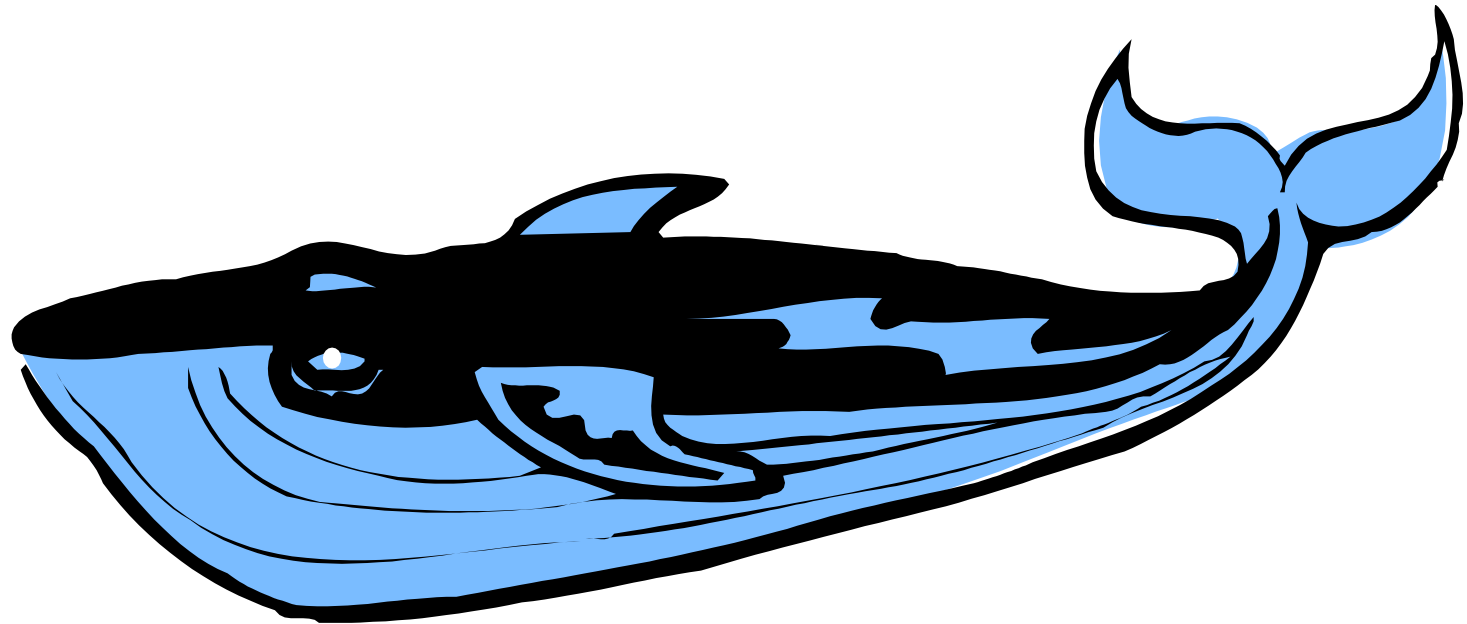
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Project planning

1. Formulate the project goal
2. Work Breakdown Structure (step 1-PBS)
3. Identify tasks (step 2-WBS)
4. Identify dependencies
5. Estimate time
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How do you eat a whale?



Work Breakdown Structure

The Work Breakdown Structure (WBS) is the process of decomposing project deliverables and work into smaller, more manageable components. It is a hierarchical description of the work that must be done to complete the project as defined in the contract/specification

Preferably performed by the project team.

Focuses on the tasks required to produce the artifacts that are to be delivered.



WBS - Work Breakdown Structure

Decomposition is usually performed in a top-down, hierarchical manner, however it can be created in many different ways

A WBS shall answer the question:

- What must be done in order to complete the project?

It does not answer the question:

- By who? or...
- When?



Project planning

1. Formulate the project goal
2. Work Breakdown Structure – (Step 1 - PBS)
- 3. Identify tasks – (Step 2 WBS)**
4. Identify dependencies
5. Estimate time
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Identify tasks

When you have a PBS/WBS with three – four levels, it is time to identify the tasks for each part

- The level should be at the most a weeks work for one or a few persons in huge projects, and half a day's work in small projects
- This identification will also serve as the base for the distribution of tasks within the group

The identification of tasks is also made without any time order

- It is more important to identify the tasks, than to arrange them in the correct order

When can we stop?

The lowest level of detail in the WBS is the work package

- Work packages are scheduled, cost estimated, monitored, and controlled

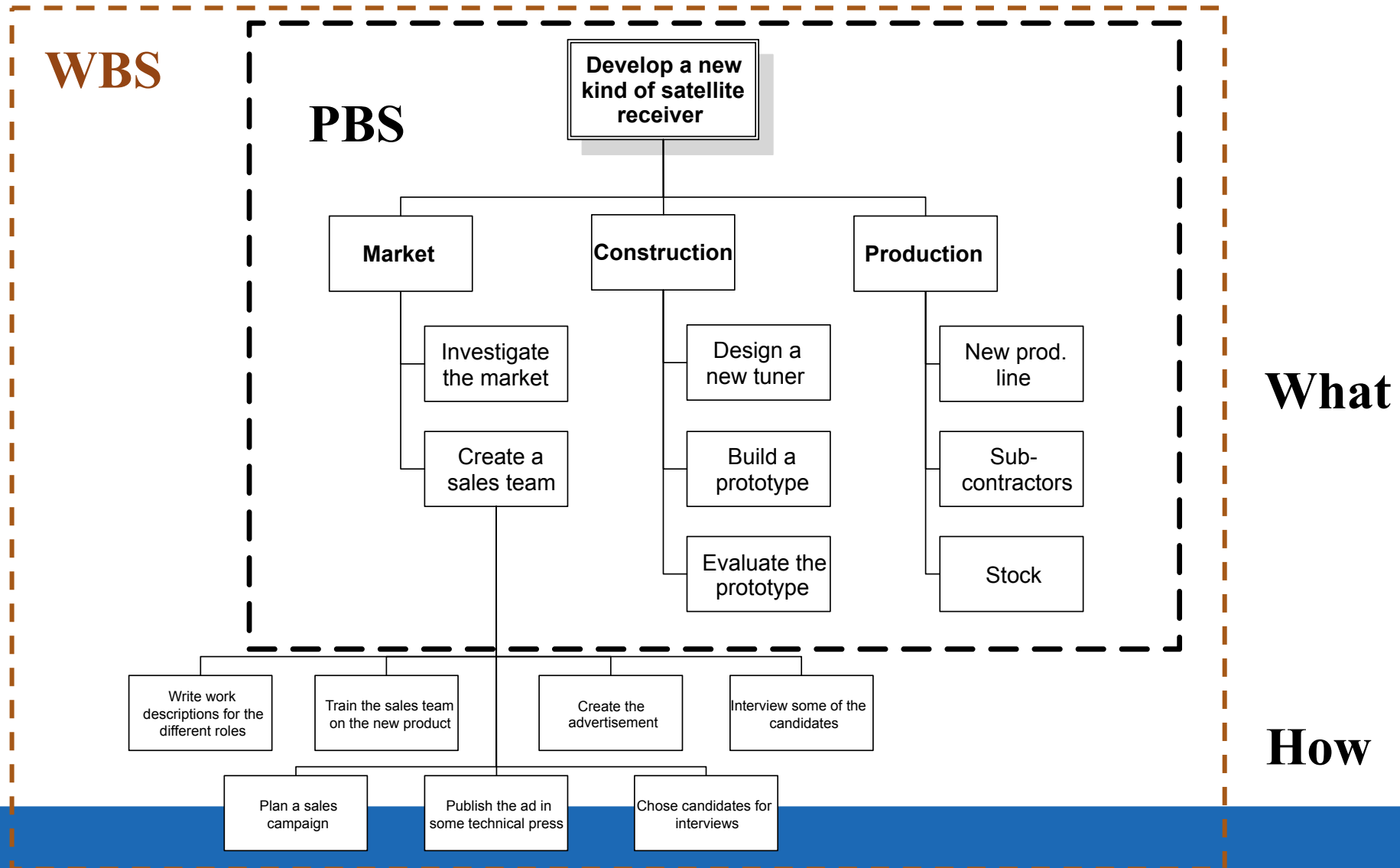
Decomposition proceeds until it is possible to define the component as a work package:

- A deliverable or work component at the lowest WBS level that includes schedule activities and milestones to complete the deliverables or 'work'

Example of levels in the WBS

	Level	Description
Management Level	1	Goal, product
	2	Sub-project
	3	Tasks
Technical level	4	Sub-tasks
	5	Work packages/assignments
	6	Work efforts

Relation WBS - PBS





Summary - the WBS is:

- Structured hierarchically:
 - each successively lower level represents a more-detailed definition of project work
- Deliverable-oriented:
 - each lower level represents a more detailed definition of project work
- A representation of project scope:
 - it organizes and defines the total scope of the project



Project planning

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Post-It method

Requires:

- En whiteboard
- Post-It notes
- Pens



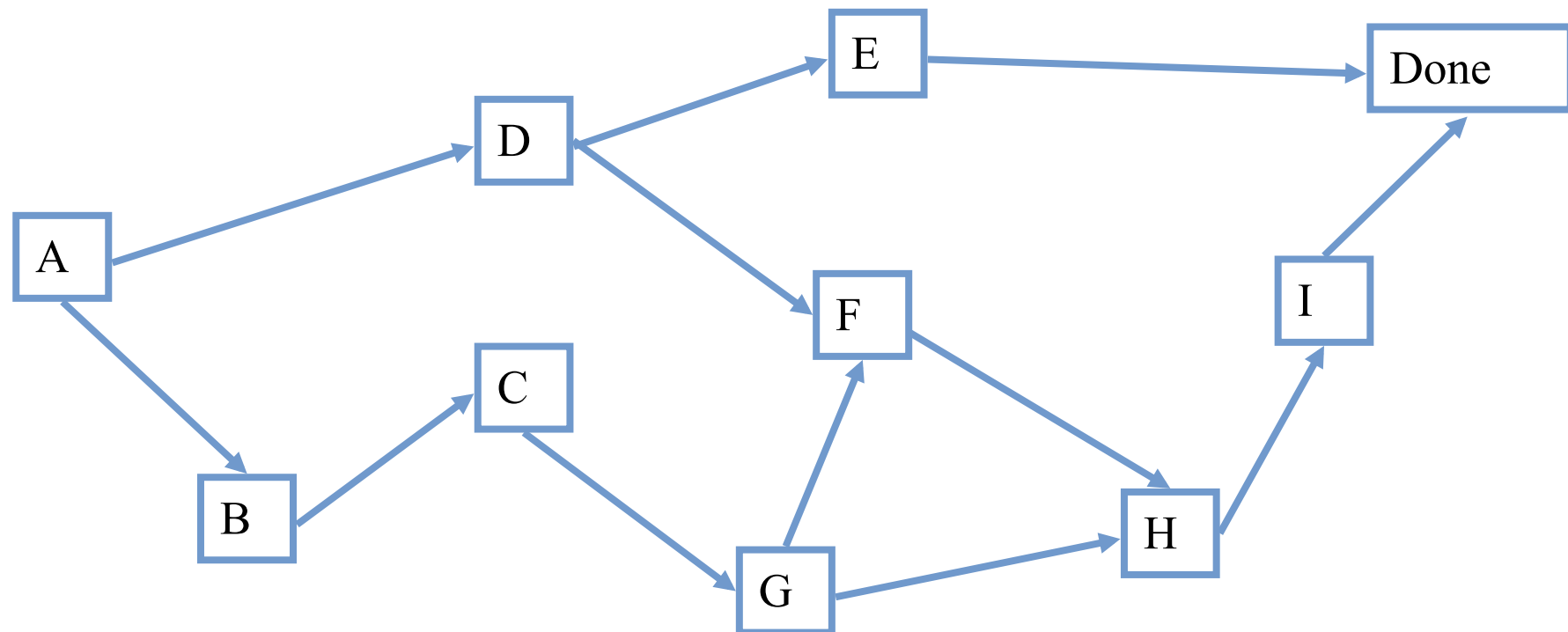
On the Post-It notes you write the tasks before putting them on the whiteboard, the pens are used to connect the tasks to each other in time

Advantage:

- Everyone can be part of this
- Easy to change the order

Identify dependencies

Sometimes called PERT-schedule





Project planning

1. Formulate the project goal
2. WBS – Work Breakdown Structure
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- 5. Estimate time**
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Estimate time

Not until all the tasks are identified and related to each other is it possible to make good time estimates

Is normally made from the "bottom-up"

- Start at the bottom of the WBS
- Start with estimating the simple tasks and sum up to the bigger tasks

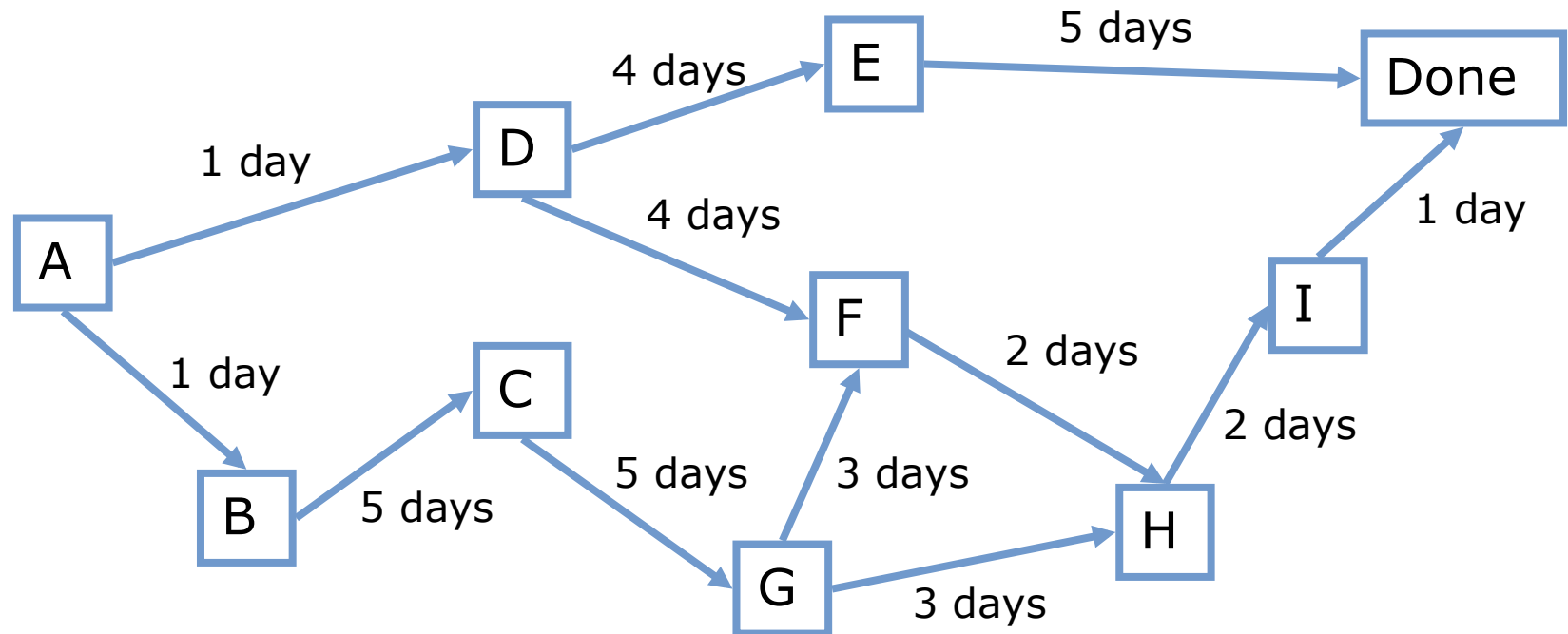


Estimate time

To sum up the times of all tasks does not give the total project time

- Some tasks are made in parallel with several persons and some are related to each other
- Go back to the PERT diagram and sum up the times for the different paths

With time estimates





Project planning

1. Formulate the project goal
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Critical path

When summing up the times for the different paths in the PERT-schedule, the critical path of the project is of special interest

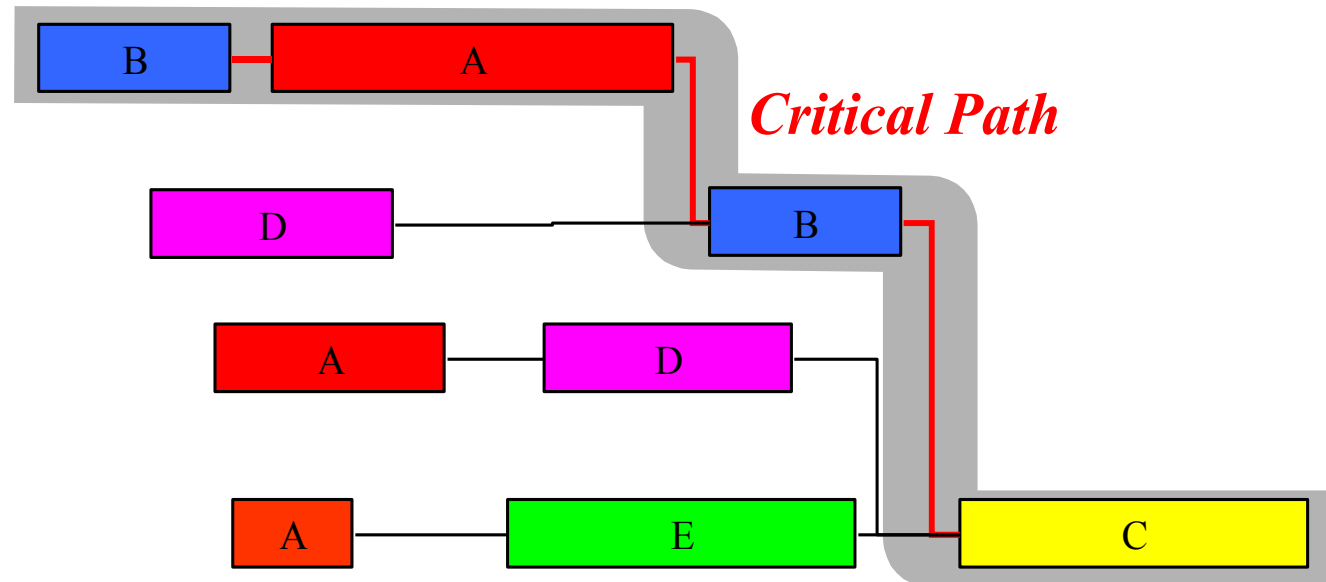
The tasks of the critical path must be focused on throughout the project

- If they are delayed, the project will be delayed

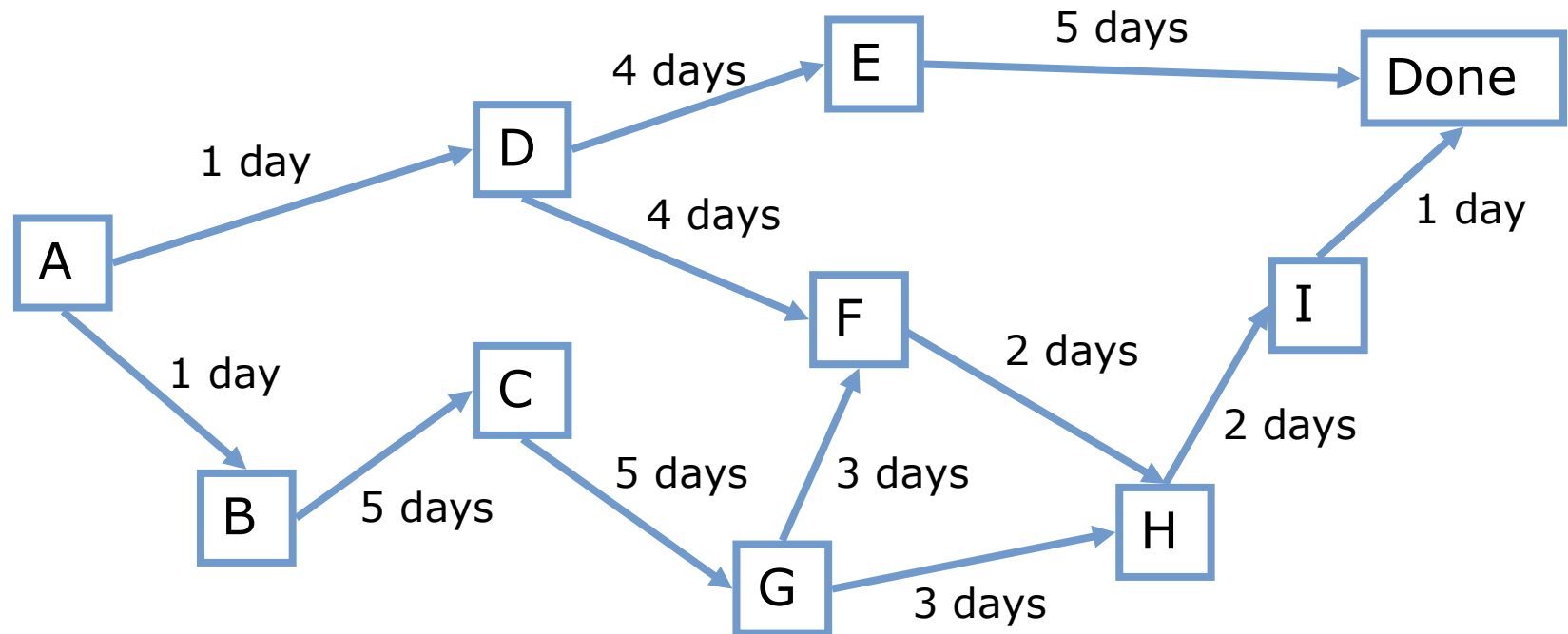
Sum up the shortest and longest three point estimations along the critical path

- Will give the shortest and longest possible time to conclude the project

Critical path



Identify the critical path





Project planning

1. Formulate the project goal
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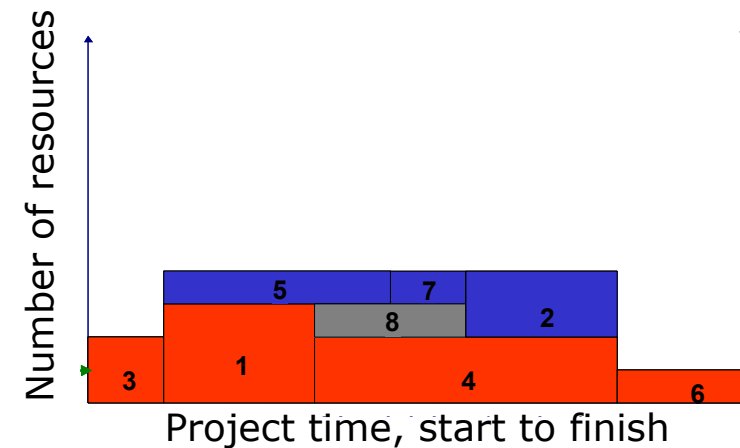
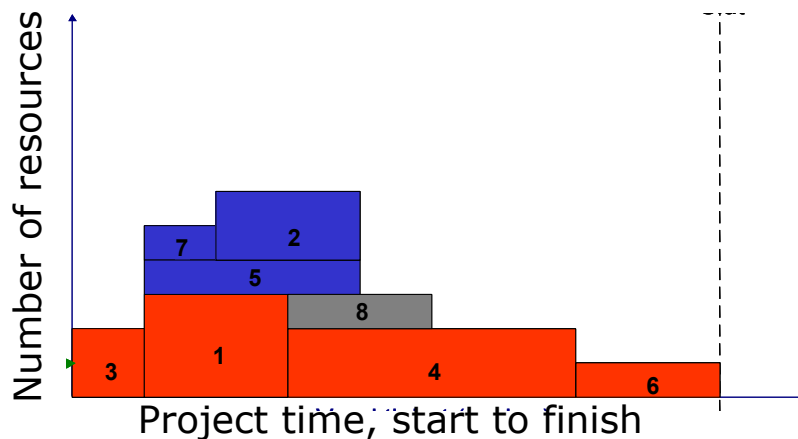
Budget

Project name					
Cost	January	February	March	April	
Own staff.	40000	190000	120000	20000	
External staff	30000	20000	10000	0	
Travels & expenses	15000	3000	2000	3000	
HW	15000	5000	0	0	
Beta-test	0	2000	15000	4000	
Equipment	20000	0	3000	0	
Total	120000	220000	150000	27000	517000

Distribute resources

The steps to plan the resources of the project

1. Identify the need for resources in each phase and put it in a diagram (x = # persons, y = time)
 - Start from critical path
2. Try to distribute the resources as well as possible
3. Sum up in the resource plan



Task and responsibility contracts

When the tasks are identified, it is time to distribute resources to them

- Who is responsible for what?
- Resources can also be rooms, computers and other equipments

A task contract can be a simple table

What?	Create ads
Who?	Osquar
Starting point	Completed working instructions
Result in	Material for publication

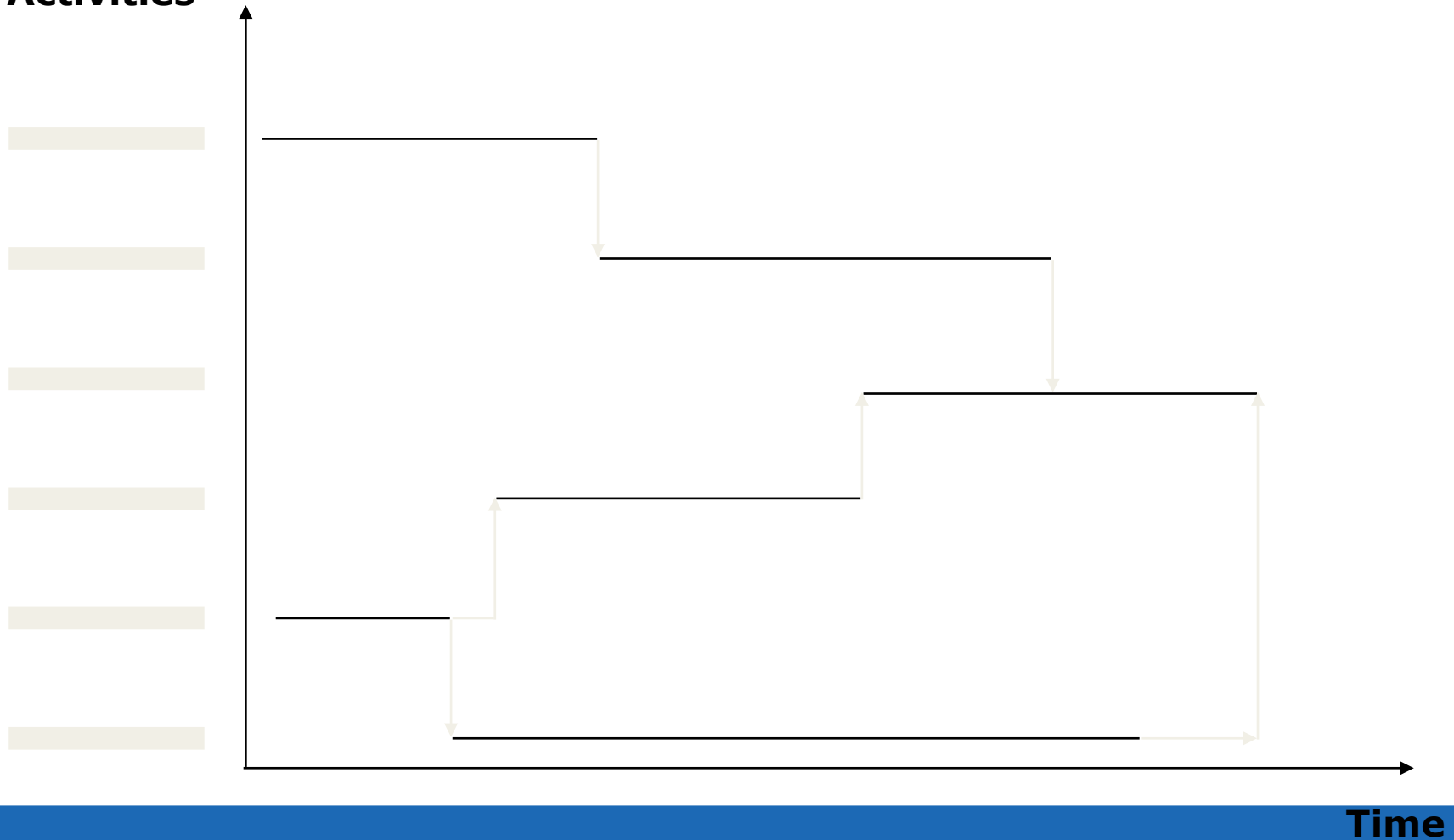


Project planning

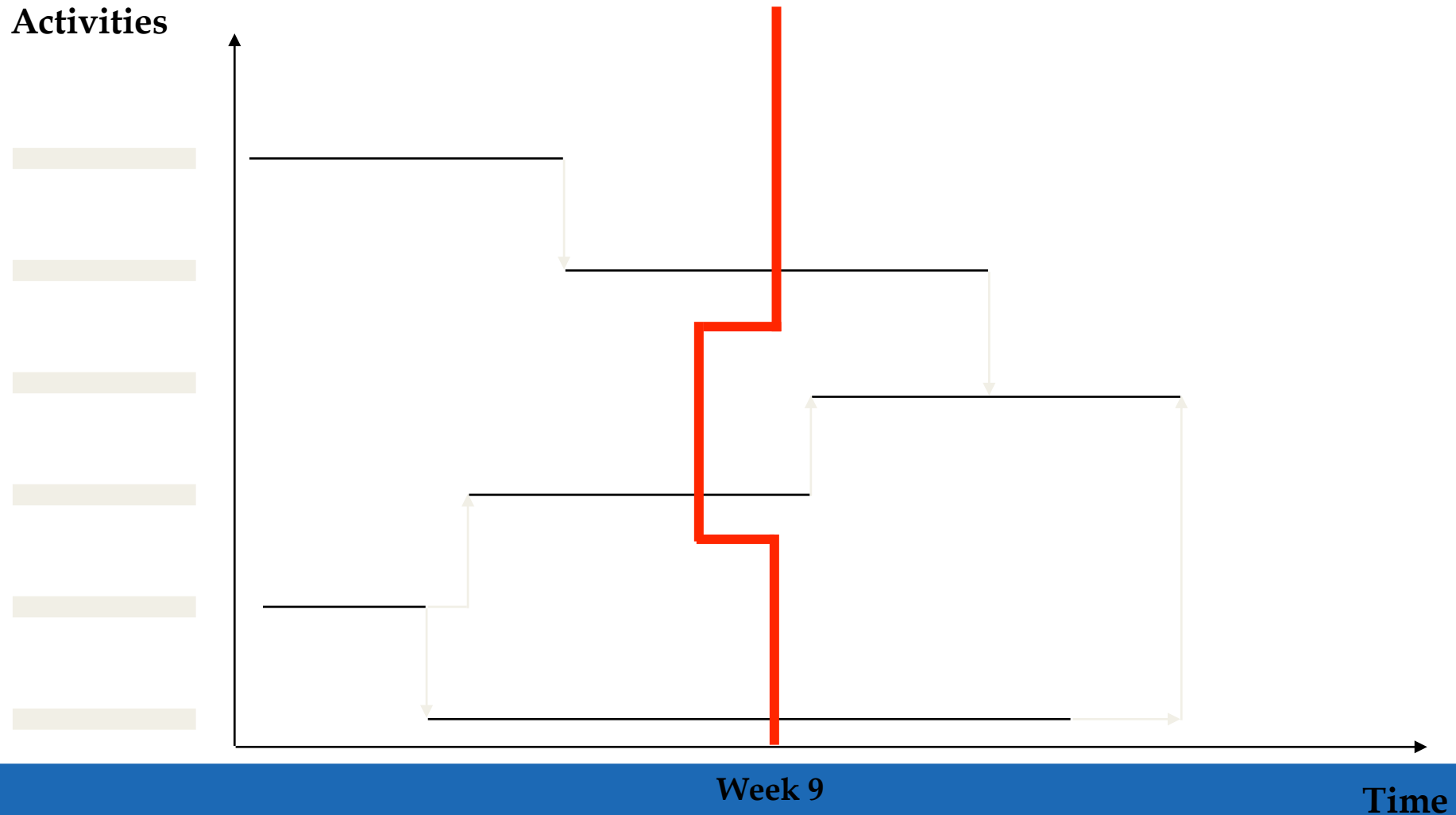
1. Formulate the project goal
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5. Estimate time
6. Identify the critical line
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GANTT

Activities



Present situation line





Milestone diagram (or time plan)

År: 2003
 Vecka 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47

Uppdaterad

Projektnamn:	Milstolpar / Bevakningspunkter	
Projektledare	1 _____	5 _____
Projektkod Datum	2 _____	6 _____
	3 _____	7 _____
	4 _____	8 _____
		9 _____
		10 _____
		11 _____
		12 _____

<http://www.ics.kth.se>



Coverage and resource plan

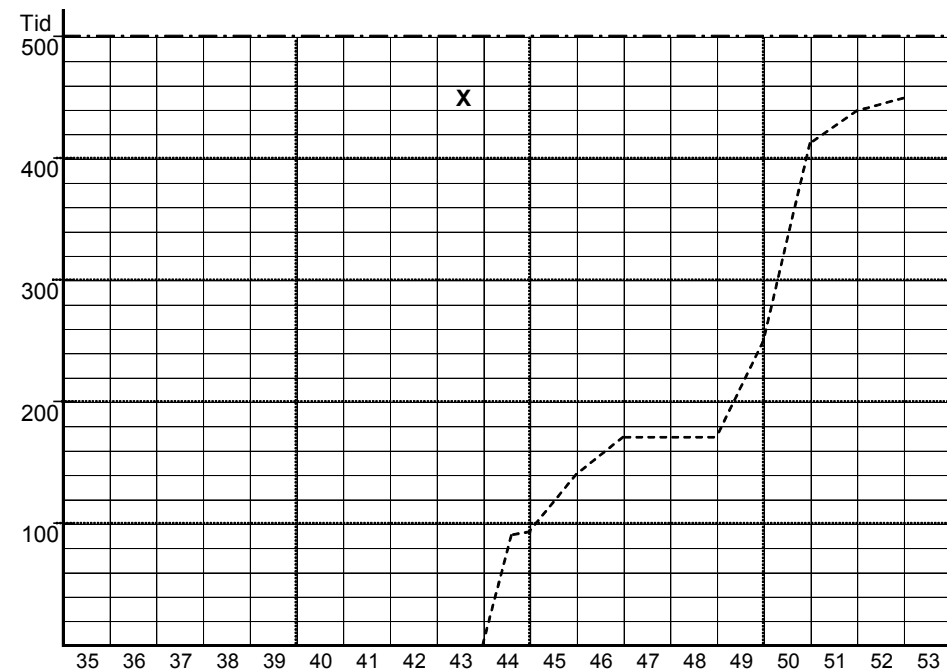
Personal	Vecka	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Oskar	Utfall (h)																			
	Planerat (h)										40	10				40	40	10		
Bjarne	Utfall (h)																			
	Planerat (h)										20					40	40			
Tina	Utfall (h)																			
	Planerat (h)										20						40	20		
Alfred	Utfall (h)																			
	Planerat (h)											20	10				40		10	
Frithiof	Utfall (h)																			
	Planerat (h)										10	20	20							
	Utfall (h)																			
	Planerat (h)																			
	Utfall (h)																			
	Planerat (h)																			

Detta skall framgå i diagrammet

- · — Kalkylerad tid
- - - Planerat arbete
- Upparbetat
- x Uppskattat slutresultat

Projektnamn:

Projektedare



Coverage and resource plan

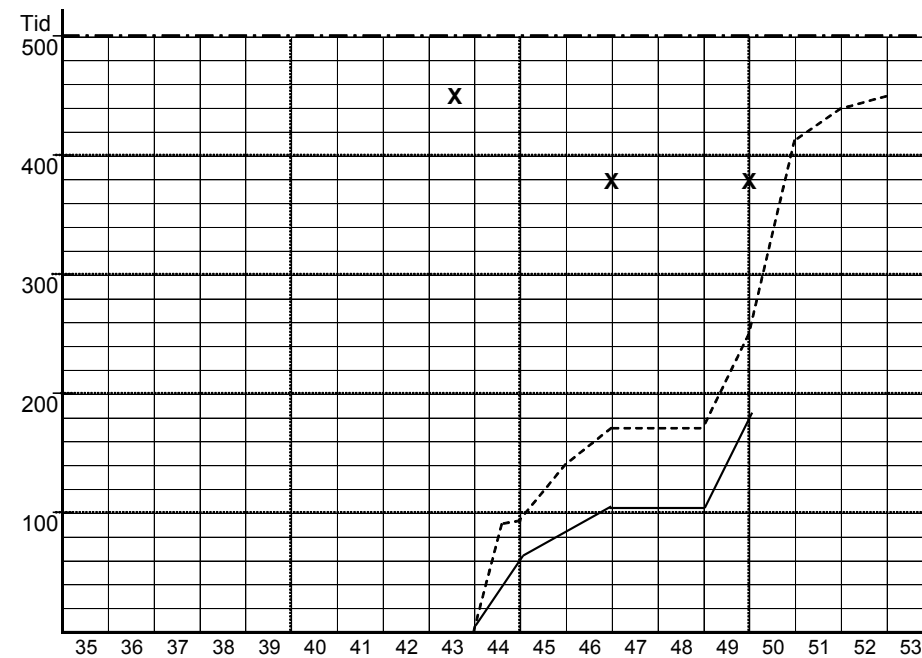
Personal	Vecka	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Oskar	Utfall (h)										30	10				40				
	Planerat (h)										40	10				40	40	10		
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	Planerat (h)										20					40	40			
Tina	Utfall (h)										10									
	Planerat (h)										20						40	20		
Alfred	Utfall (h)											10	10							
	Planerat (h)											20	10				40		10	
Frithiof	Utfall (h)										10	10	10							
	Planerat (h)										10	20	20							
	Utfall (h)																			
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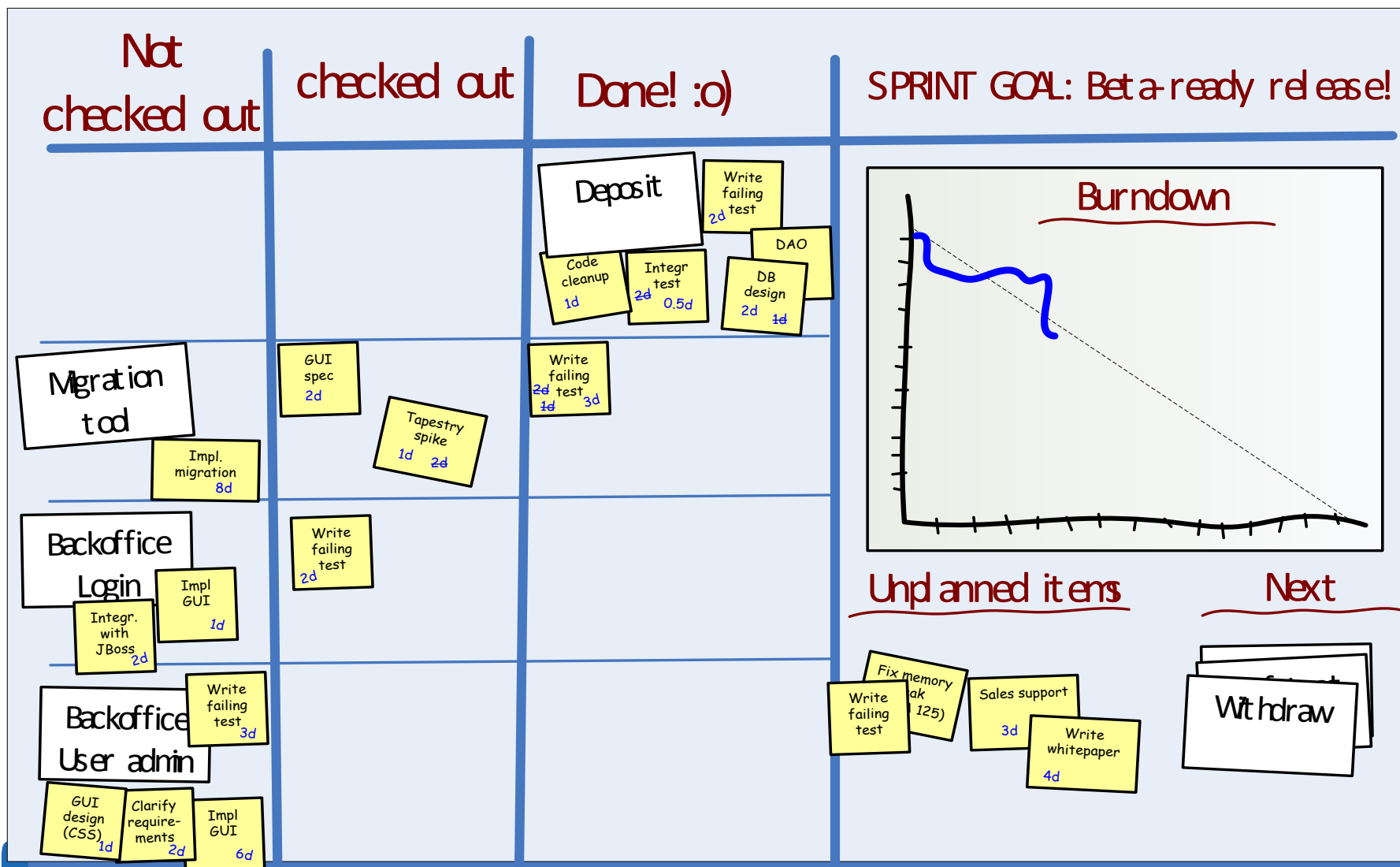


Other approaches to show your plan

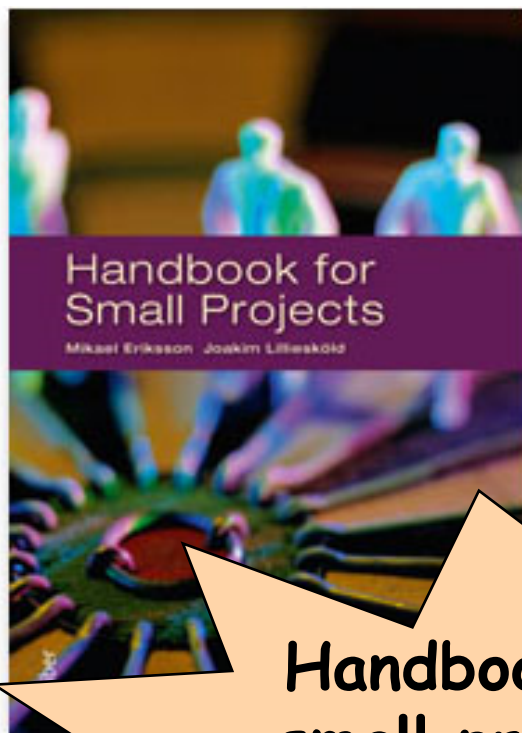


Ref: <http://www.leanproject.com>

Sprint backlog – dag X



Handbook for small projects



Basic Concepts
Practical Tips
Planning and Follow-up
Document Design
Document Management
Presentation Technique

**Handbook for
small projects**

THS Kårbokhandeln
Drottning Kristinas väg 15-19



Words of wisdom

"Mistakes are the only thing you know for sure that you will make"

"You will not make the same mistake two times, rather you will make it three- four times"

Bengt Ekenstierna