

Project Management

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Agenda:

Definition of a project

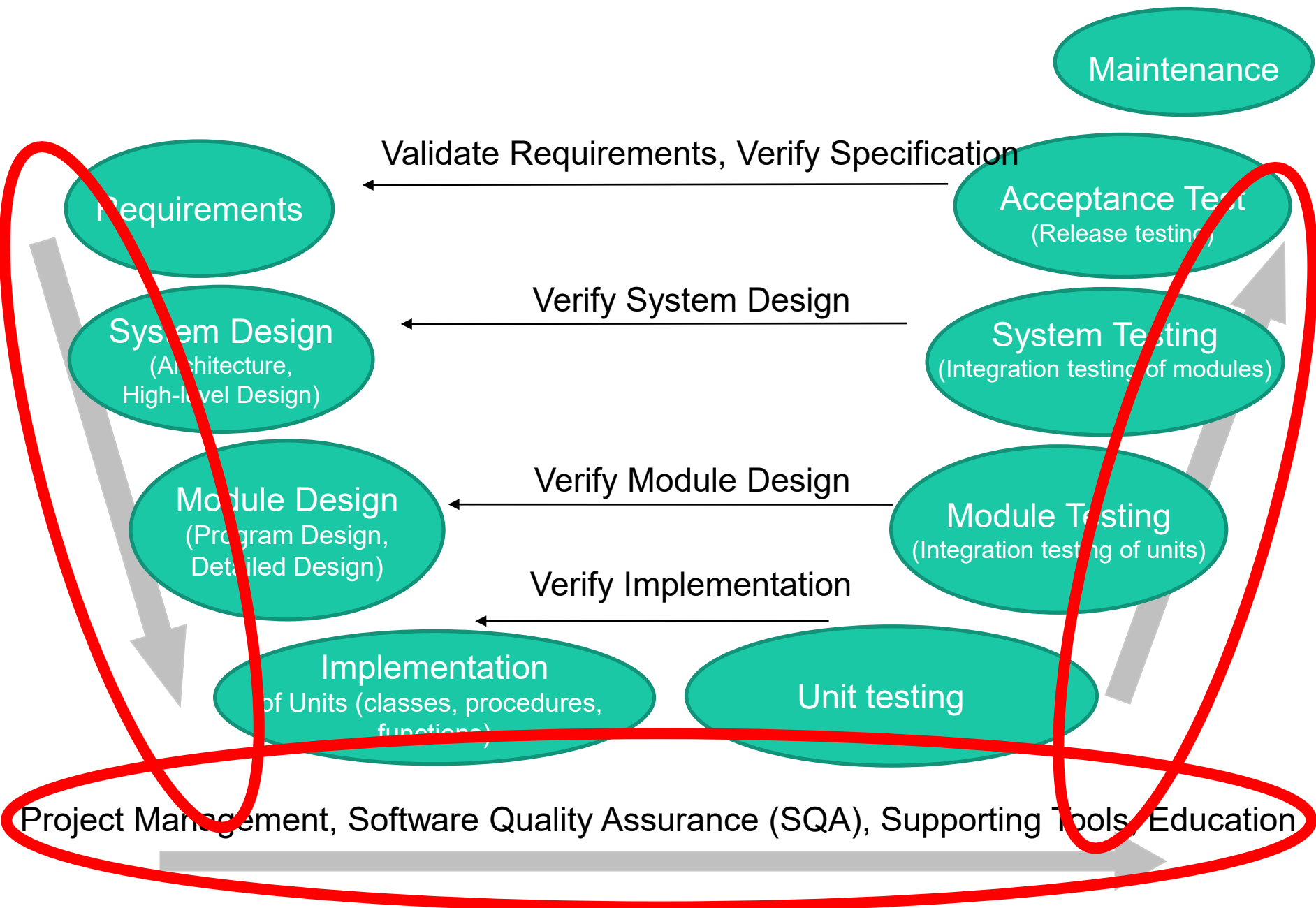
GANNT chart

Estimation

Two success factors

Risks

Documentation



What is a project?

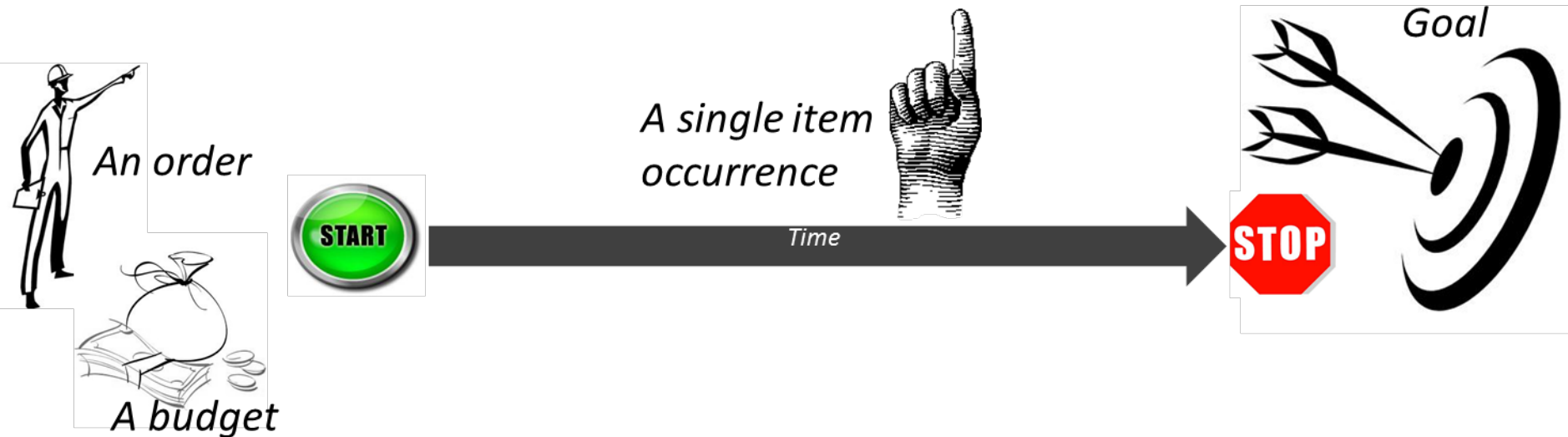


Definition of a project

- A project is a temporary endeavor undertaken to create a unique product or service

Project Management Institute

Necessary parts of a project



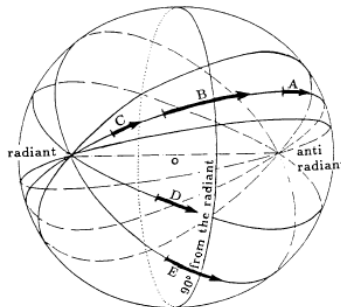
There is always a balance between goal and process



Clear **purpose/goal**, but no predefined process to follow to get there.



Unclear purpose/goal, but a strict **process** that you have to follow.



Which project would you like to work in?



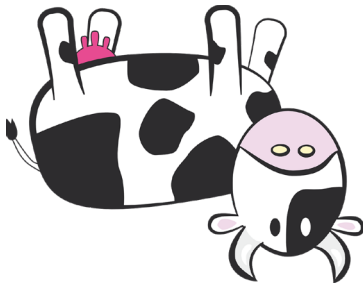
<https://www.menti.com/9x8hi5h31w>

Smart goals

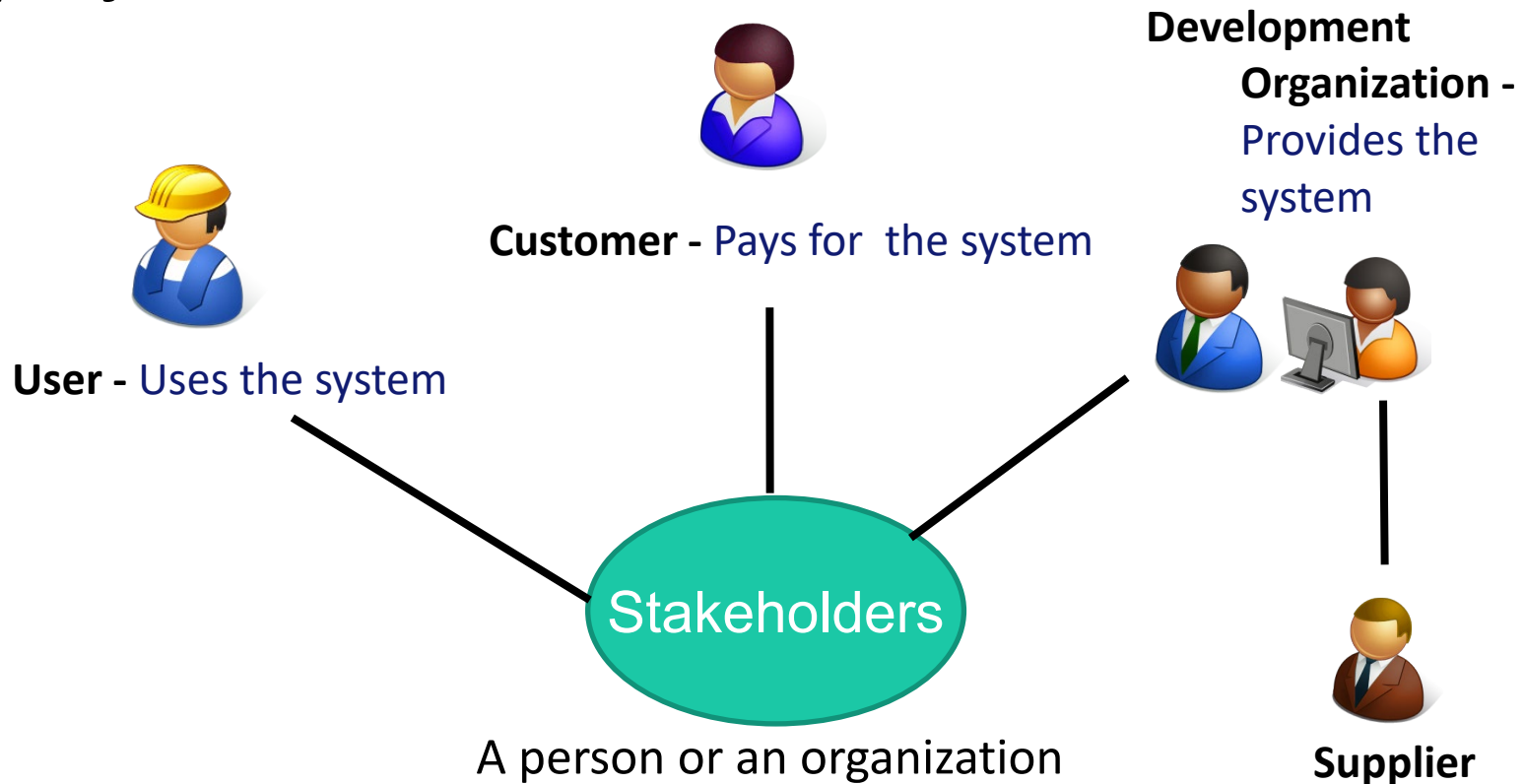
- **Specific** Must be straightforward and answer the questions:
What will you do? **Why** is it important?
- **Measurable** If you cannot measure it, how do you then know if the goal is reached or not?
- **Agreed upon** Agreed upon with all stakeholders (e.g. customer, user etc.)
- **Realistic** Possible with the current resources, knowledge and time.
You must be both willing and able to do it.
- **Timely** A clear time frame for the goal.

A SMART goal is normally the best, but ...

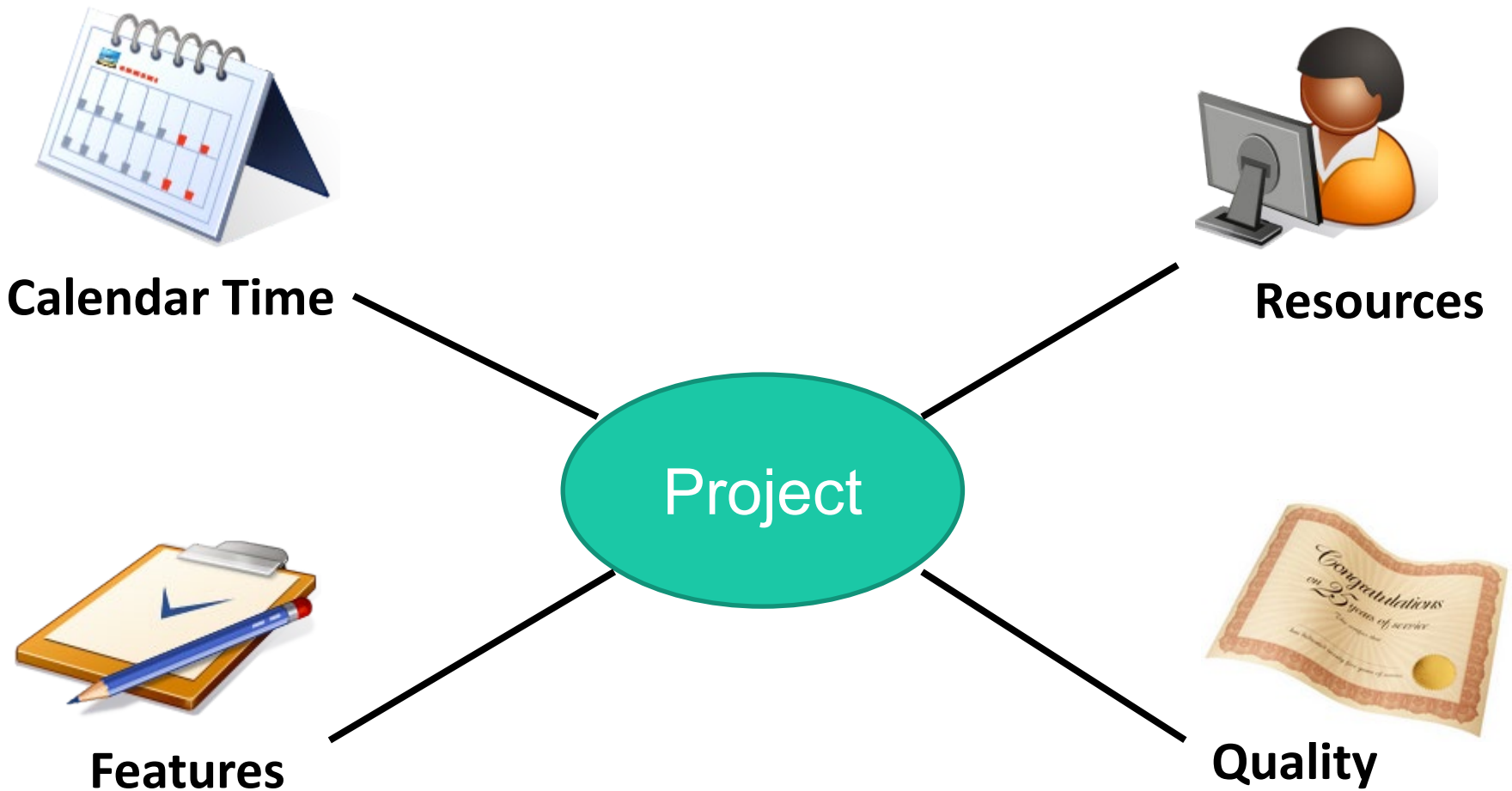
- 18 years late
- 11 times more costly
- Injured employees
- Dead cows



A stakeholder has a major interest in the project outcome



The four dependent project parameters



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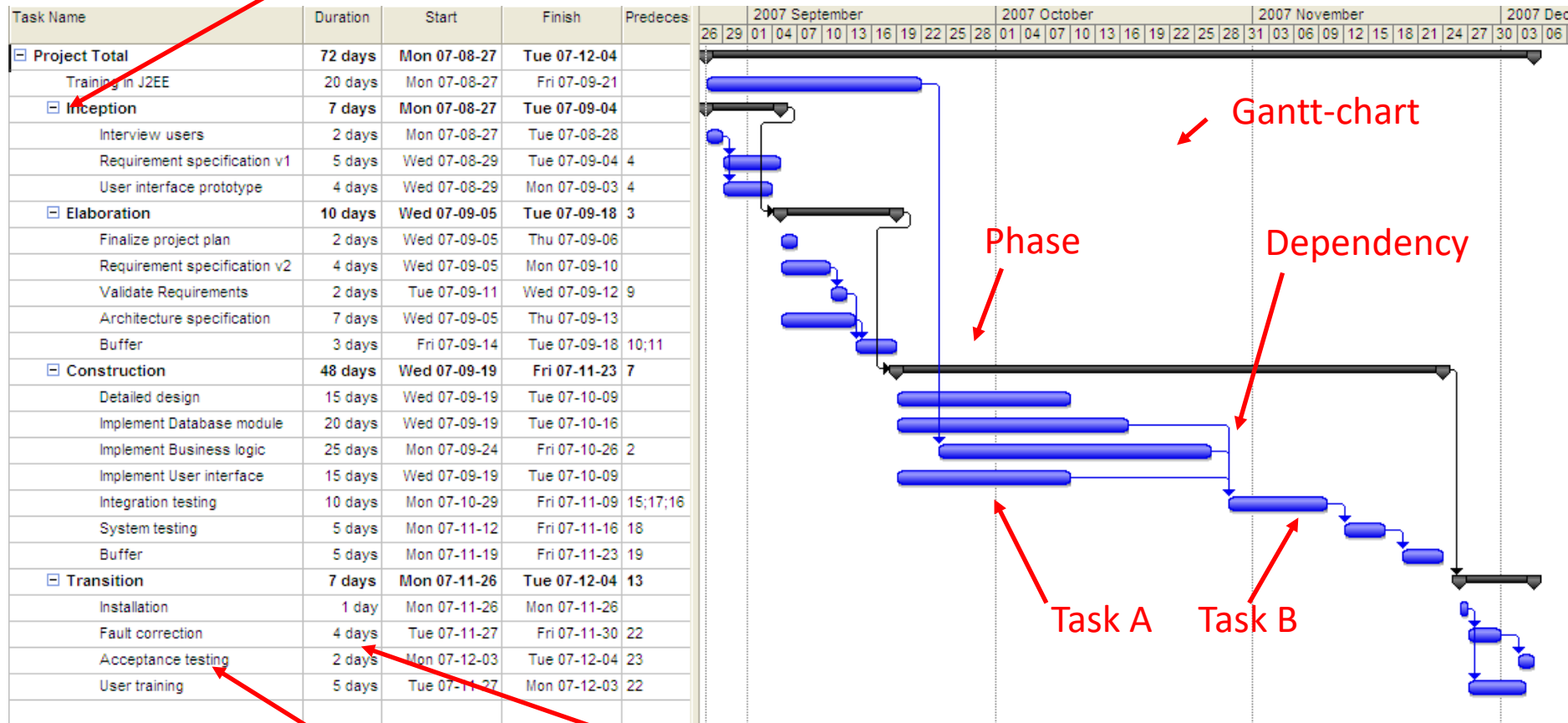
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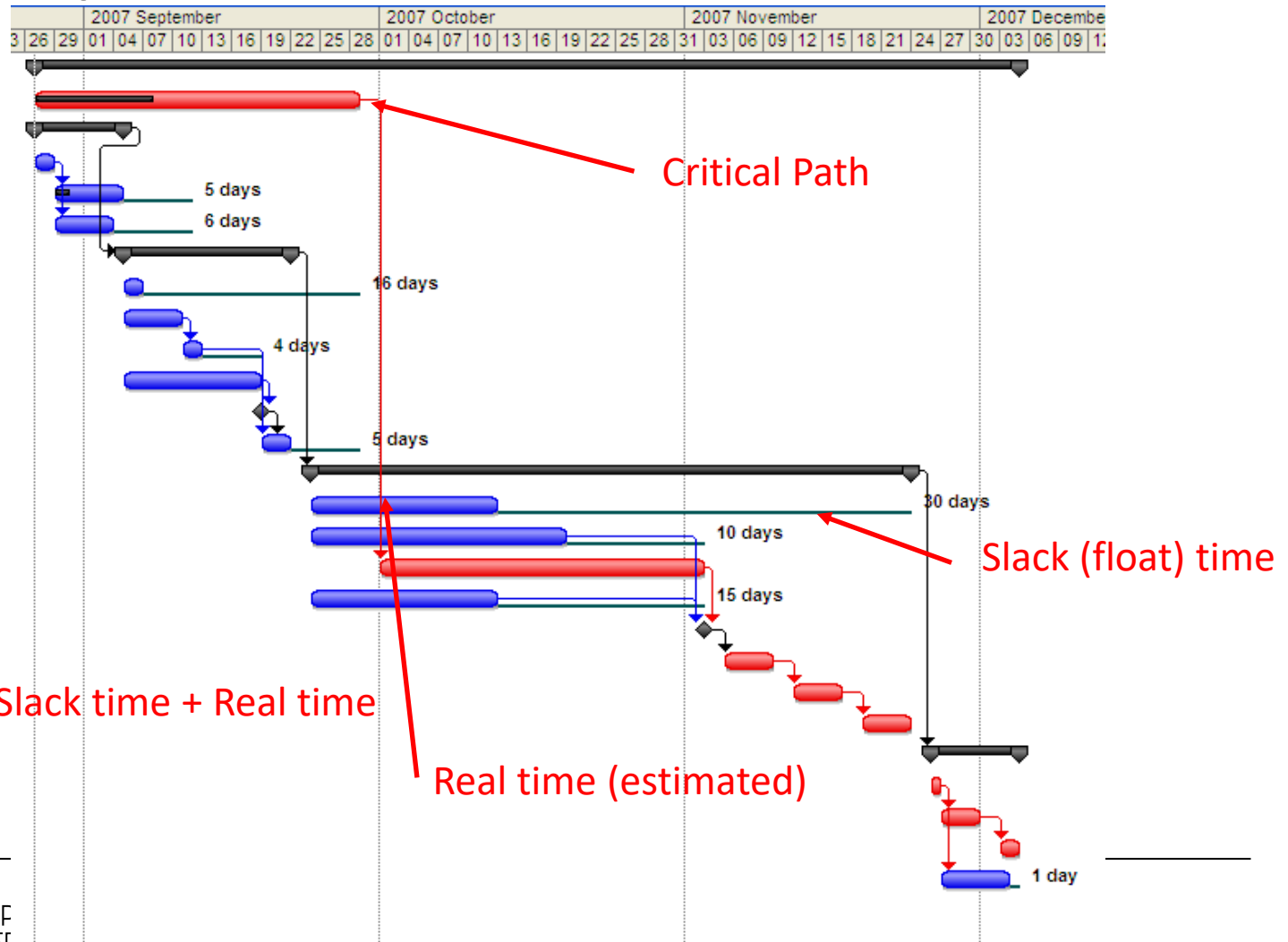
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Tasks, duration, and dependencies

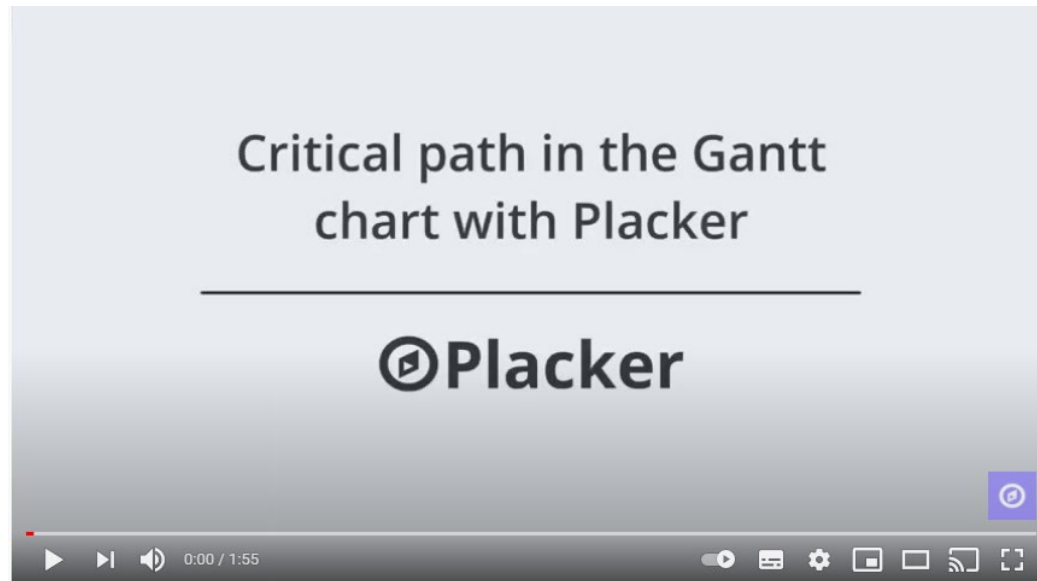
Phases



Critical path, slack time, and real time

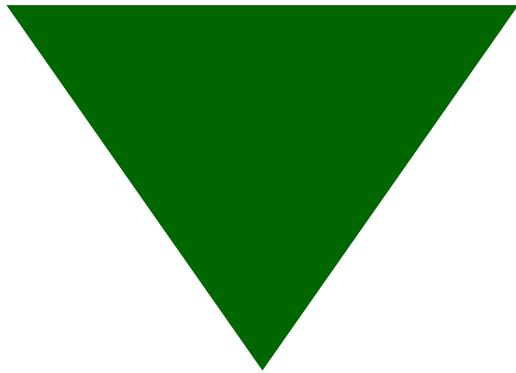


Repetition of critical path in GANTT charts

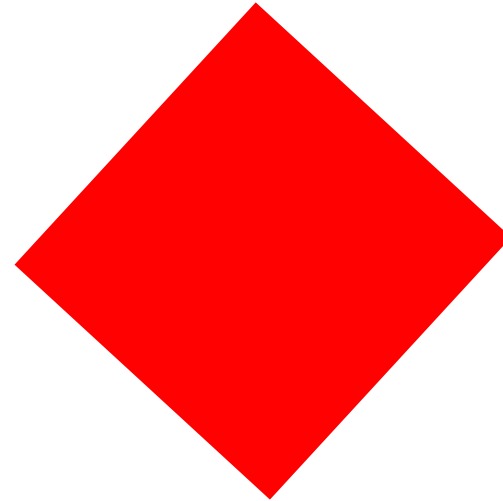


<https://youtu.be/scOu4l2ZvQs>

Mile-stone and toll-gate



Milestone



Tollgate

Verify internal sub-goal fulfillment

- Properties of a SMART goal

External decision point

- E.g. after a pre-study phase, the customer decides if the project should continue or not.

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Effort estimation in practice?

How long time does it take for you to implement the encryption layer?



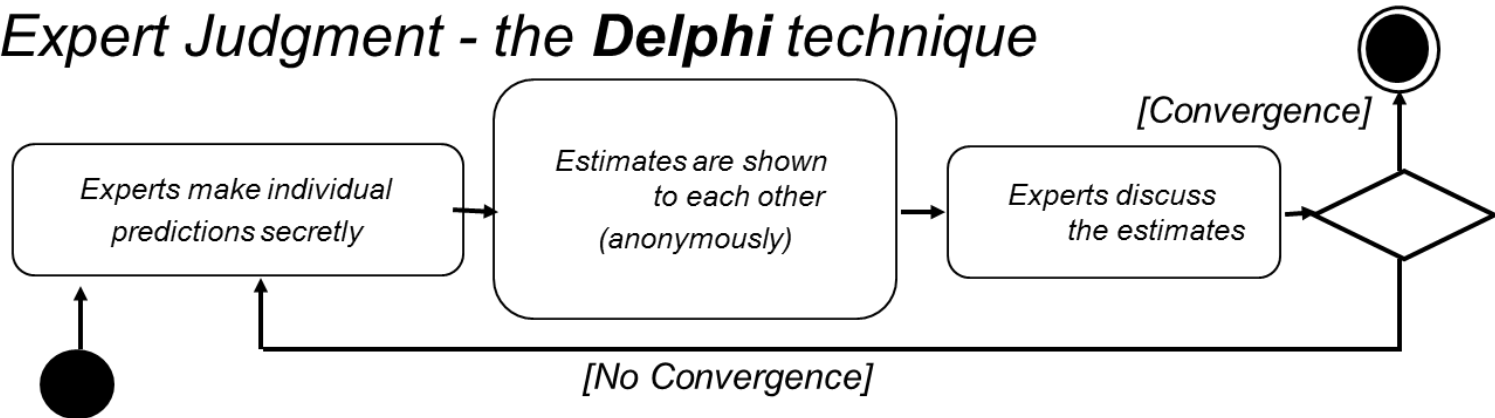
No idea. I have never done this before... I wonder if it is even possible.



8 months +- 2 months

Two lines of research and practice

Expert Judgment - the **Delphi** technique



Algorithmic Methods - COCOMO and COCOMO II

COCOMO (Boehm, 1981)

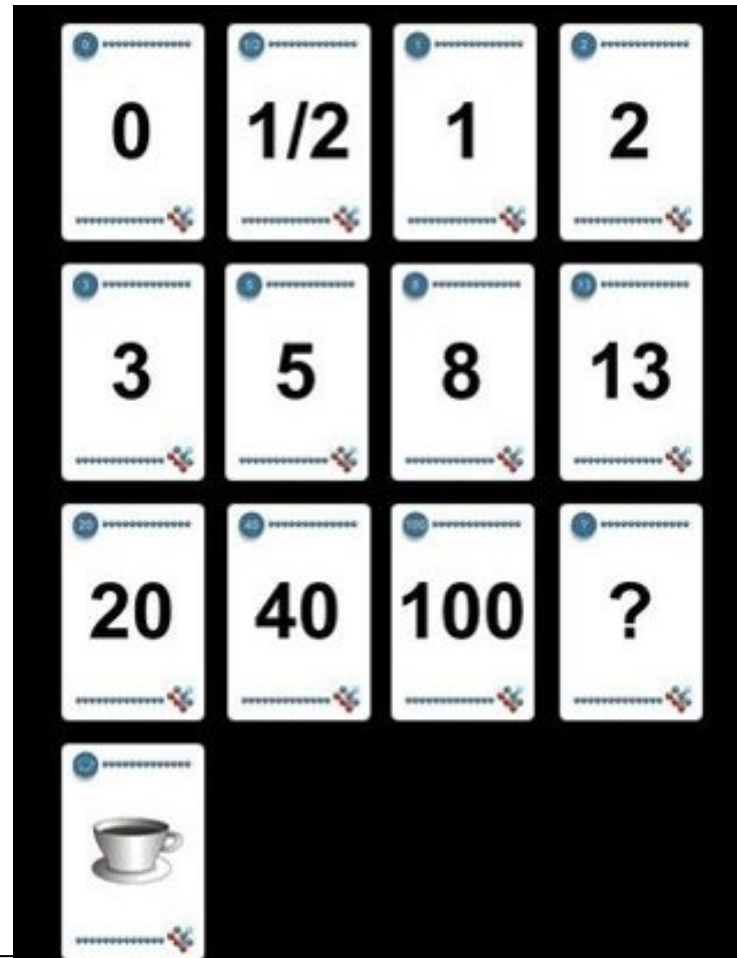
- An formula where parameters are estimated using real projects.
- Input: No of code lines
- Output: Effort (time)

COCOMO II

- Takes into account changes in SE, such as component reuse, prototyping
- Other inputs than number of code lines. E.g. functionality from requirements, number of screens etc.

Agile estimation and planning poker

- Variant of Delphi method
- Unit: Points (the effort of a well understood, small item)
- Fibonacci-series of numbers



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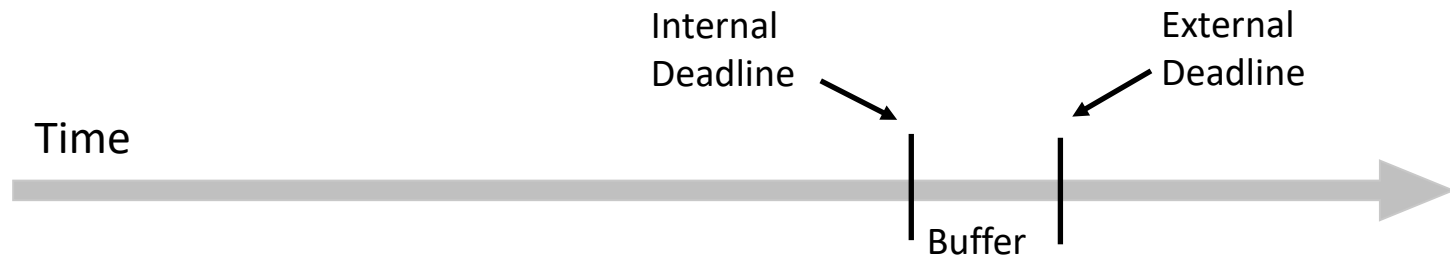
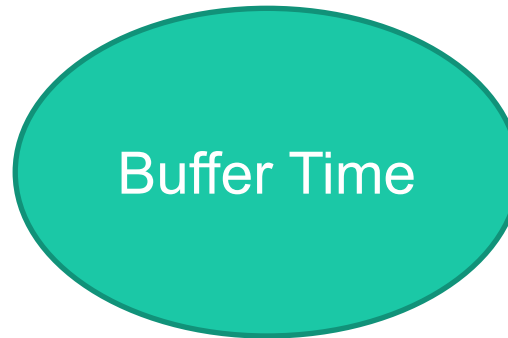
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Buffer time is a key to success



To whom should you communicate the deadlines?

A good team is another key to success



Team efficiency

A good team can produce better results than individuals working alone.

Optimal team size

Optimal size between 5-12 members



Large projects can divide into several teams.

Cross functional team (XFT)

- Members with diverse competence => multiple perspectives of the product
- Members with enough competence => autonomous; breaks silos and hierarchies in the organization
- Pros:
 - Sees the overall goals
 - Sees the hurdles
 - Sees the innovation
- Cons:
 - Limits individual competence growth
 - Too broad goal creates aimless discussion

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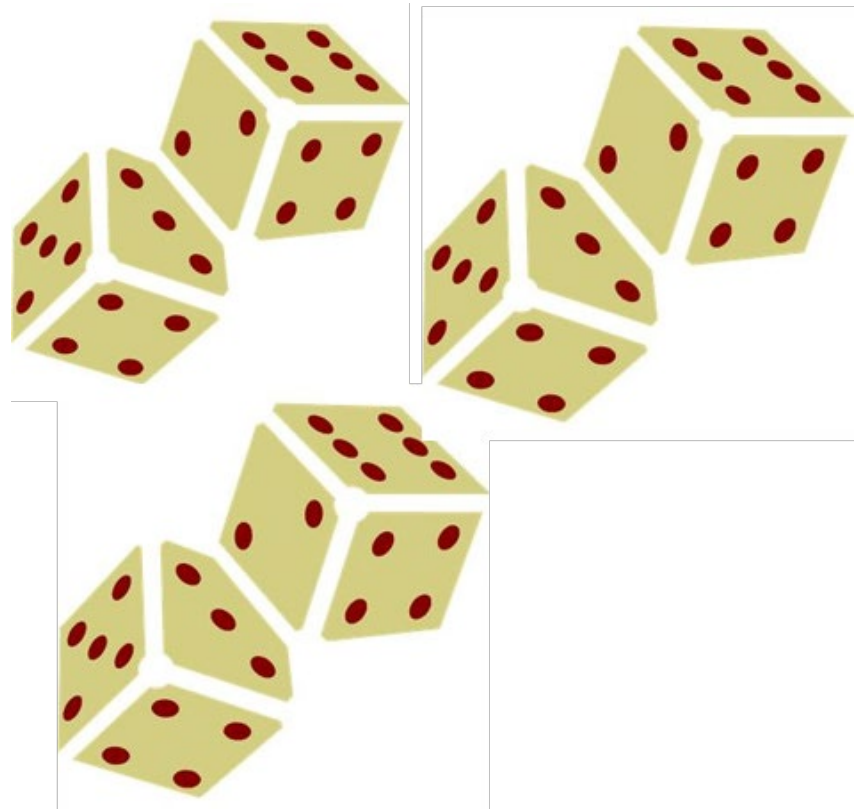
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Risks

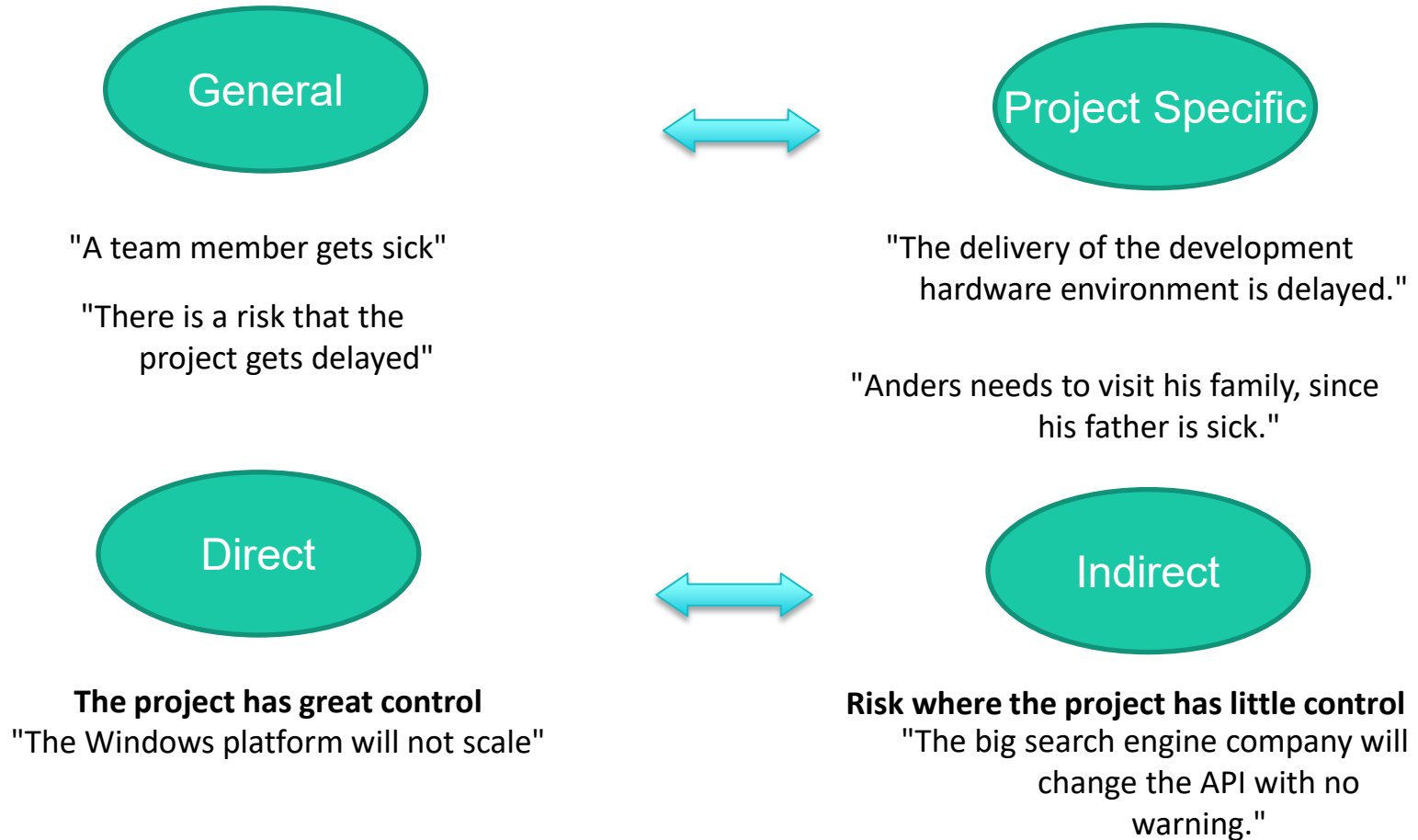
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Risk is something that can eliminate full success of the project

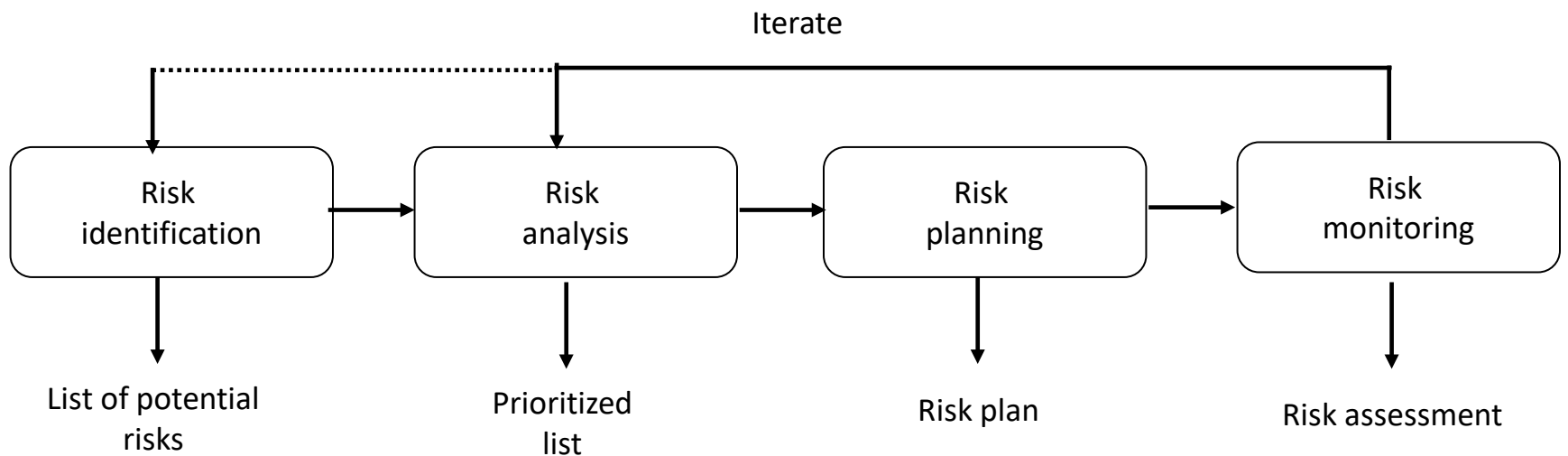
- **Staff turnover** - Experienced team members will leave the project
- **Requirement change** - Significant requirements will change late in the process.
- **Size underestimated** - The size of the project was larger than expected



Kinds of risks



Risk management is the process of measuring or assessing risk and then developing strategies to manage the risk.



"What can go wrong"

"How bad is it"

"What shall we do with it"

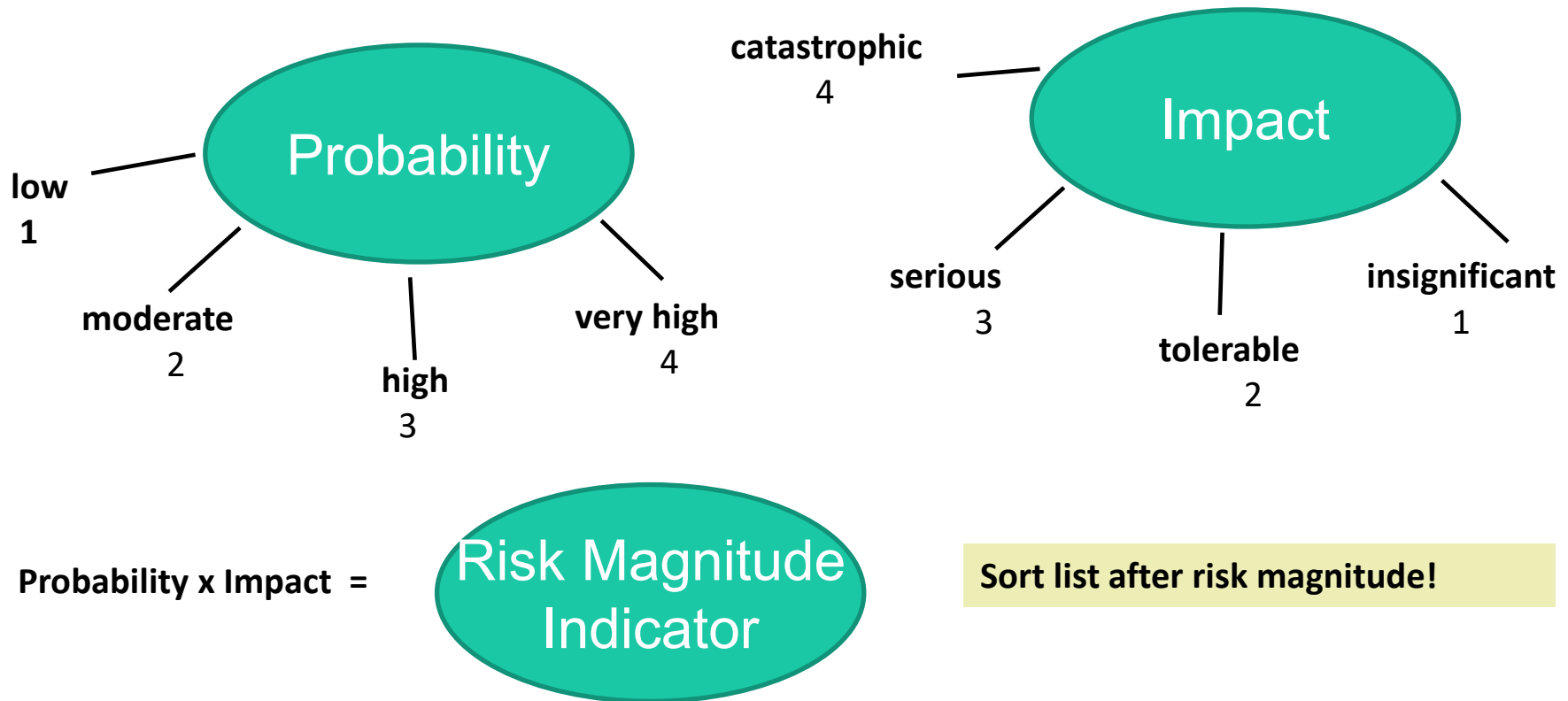
"Has the probability changed?"

1. Risk identification: brainstorming

- **What can go wrong?**
 - **Technology risks** - Hardware/software technology used for development, e.g. using Java
 - **People risks** - people in the development team
 - **Organizational risks**
 - **Tools risks** - Risks with the current tool used
 - **Requirements risks** - Changes in customer requirements
 - **Estimation risks** - Wrong project estimations



2. Risk analysis



3. Risk planning: What do we do if...?

1. Risk Avoidance

Reorganize so that the risk disappears.

"Communication problem between develop sites in Stockholm and India

-> localize all development in India?"

"the web-server fails often low accessibility

-> outsource the operation?"

2. Risk Transfer

Reorganize so that someone else takes the risk, insurance, customer, bank.

"Changes of requirements late in project

-> a prototype?"

3. Risk Acceptance

Live with it

Mitigate the risk

Lower the probability.

"The key architect starts to work for another company -> 2 architects?"

Define Contingency plan

Lower the impact
A plan B...

Example

Identify

Analyze

No Risk Description

- 1 During implementation it is discovered that the new web-platform cannot talk to the legacy database system

Probability

Moderate (2)

Impact

Serious (3)

Risk Factor

6

Plan

Avoid risk: Do not introduce a new web-platform. Use the existing platform.


Transfer risk: Sign a contract with a contractor, who guarantees access to the system.

Accept risk

Mitigate: - Create a prototype early in the process.
- Solve issues before implementation phase

Contingency plan: Transfer the whole old legacy database system to a modern DBMS.

Make risks useful



Few
(3-10)

Project Specific

Regular
meetings

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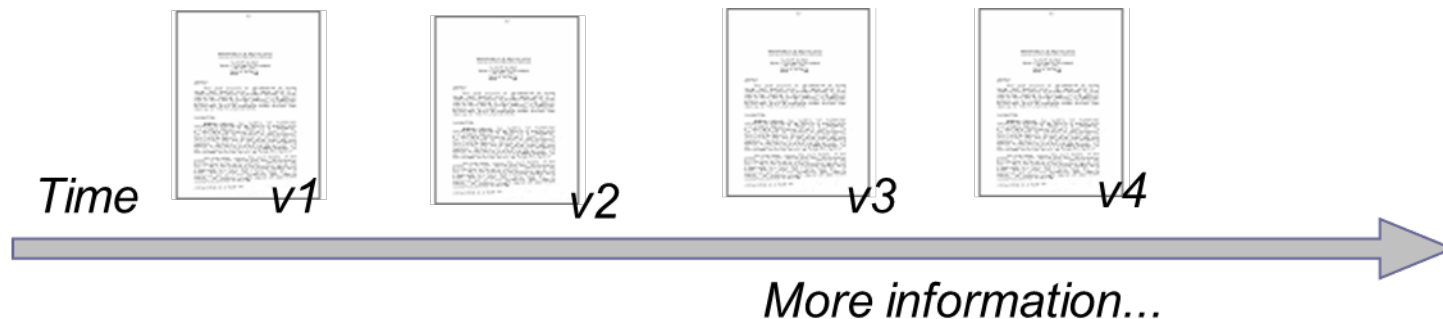
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Documentation

The project plan

- Tool for the project manager
- Communication medium between project members and other stakeholders
- **What** should be done, **when** and by **who**
- **When is the plan finished?**



Content of the project plan

Project Description

- Background to the project
- Relevant constraints (budget etc.)
- Project Goal
- Start and expected end date.

Time and Resource Plan

- Milestones
- Tollgates
- Deliverables
- Activities
- Resources

Project Organization

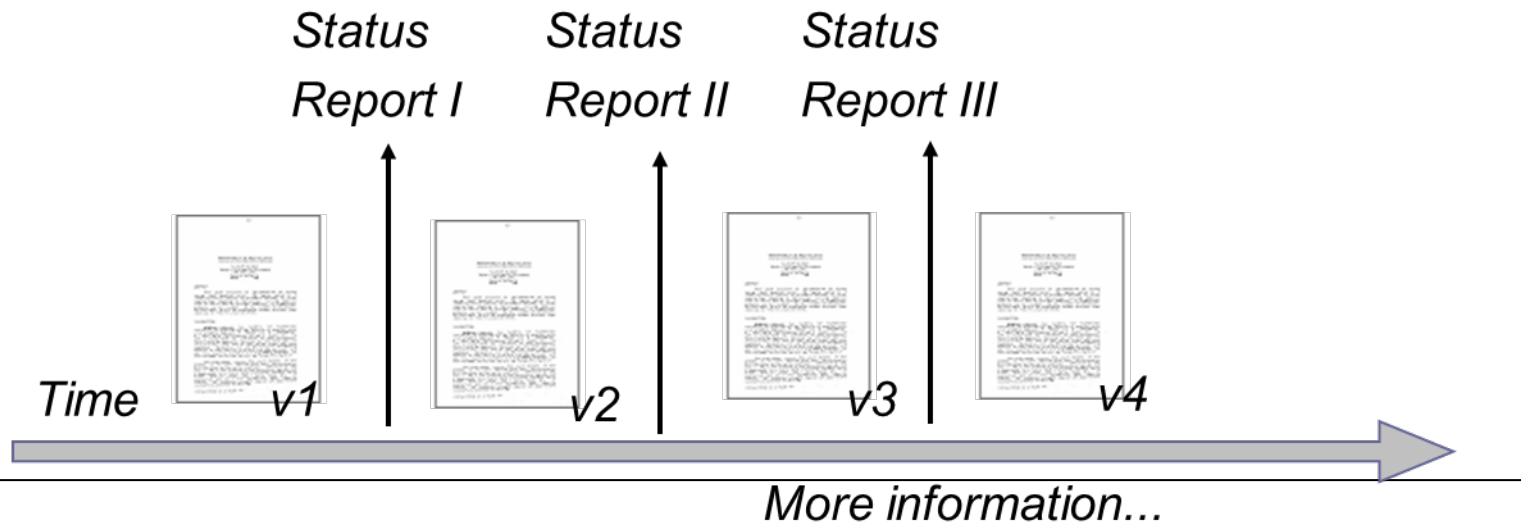
- Roles
- Knowledge / skill
- Training
- Communication and reports

Risk Management

- Risks, Probability, and Impact
- Mitigation and Contingency plan

Project status reports

- Summary - current status
- What has happened since last report
- What happens next (both in long and short term)
- Problems and risks



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