

# PROJECT MANAGEMENT AND AGILE METHODS

## Fundamentals

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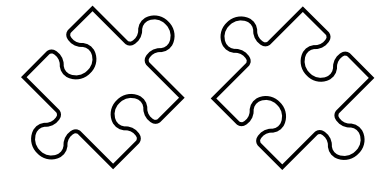
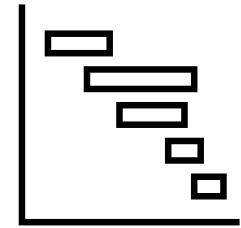
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Prof. Dr. Kris Dalm MBA



# Learning targets

After this chapter, you...

- Understand the **PM Triangle** and **PM Star**.
- Know how to formulate **SMART objectives**.
- Know what a **Project Life Cycle** is and what **Project Phases** are.
- Are familiar with **PM Methodologies** and **organizational structures**.
- Understand the roles of the **project team** and **stakeholders**.
- Have invented and defined your **own project** in a **Project Charter**.



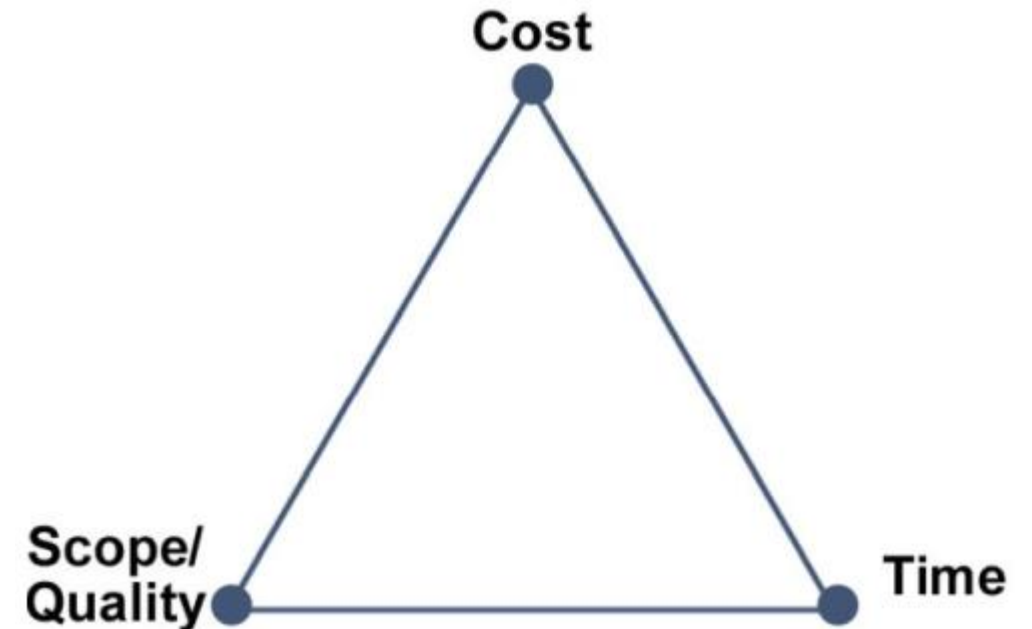


# Project Management Triangle

## Overview of the triple constraints

What happens, if a project...

- Is not on **time**?
- Is not in the planned **cost** range?
- Does not reach the desired **quality**?



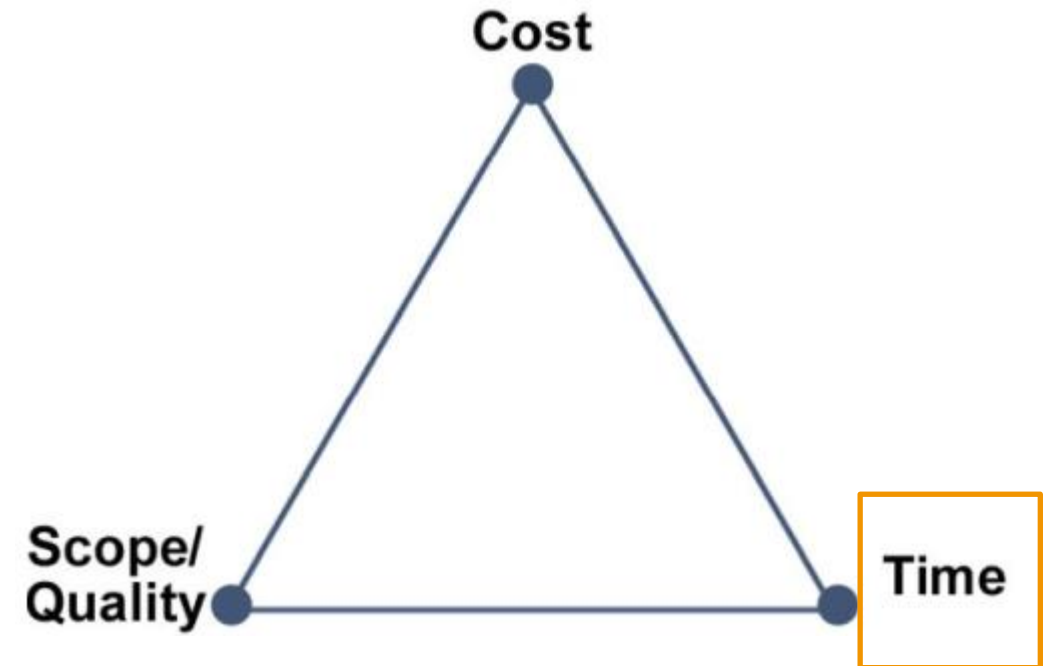
Source: <https://www.prince2.com/de/blog/project-triangle-constraints>

# Project Management Triangle

## Compromising on time

Example of an e-commerce website, a scenario:

- Customer: “I want this website to support purchases and I want it done cheap.”
- Project Manager: “We’ll need to make the website secure and compliant with the law. If you’re not going to pay for more help, people will have to double up on work, and that will take time.”



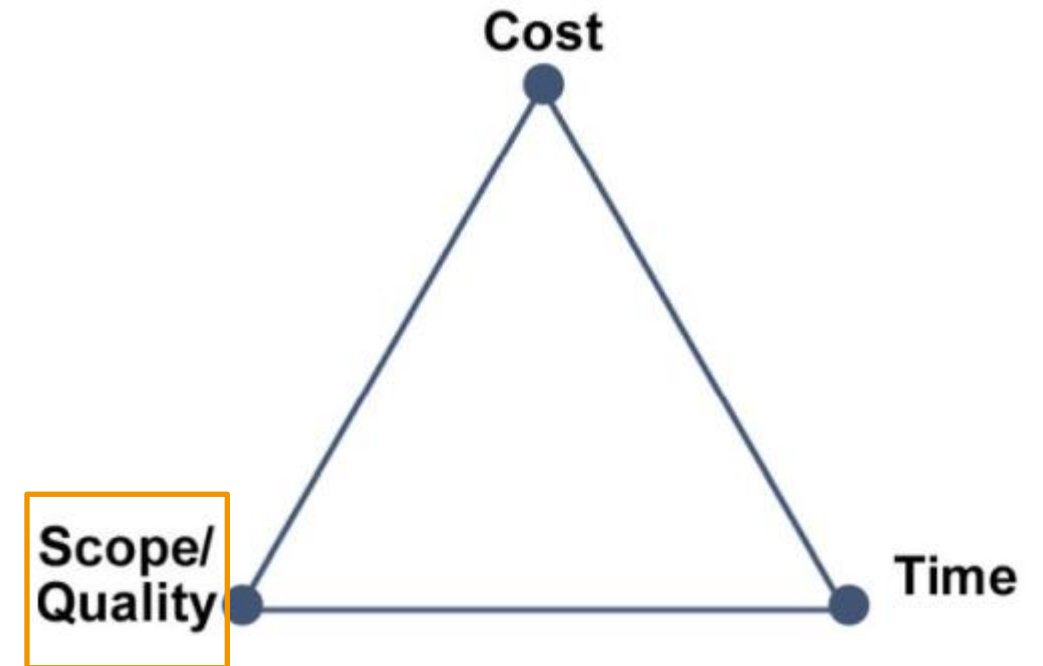
Source: <https://www.prince2.com/de/blog/project-triangle-constraints>

# Project Management Triangle

## Compromising on scope/quality

Example of an e-commerce website, a scenario:

- Customer: “I want this website done cheap and quick.”
- Project Manager: “If you’re not paying much, we’ll have to either rely on junior developers or really cut back on what the website can do, possibly just using a template site with limited ecommerce features.”



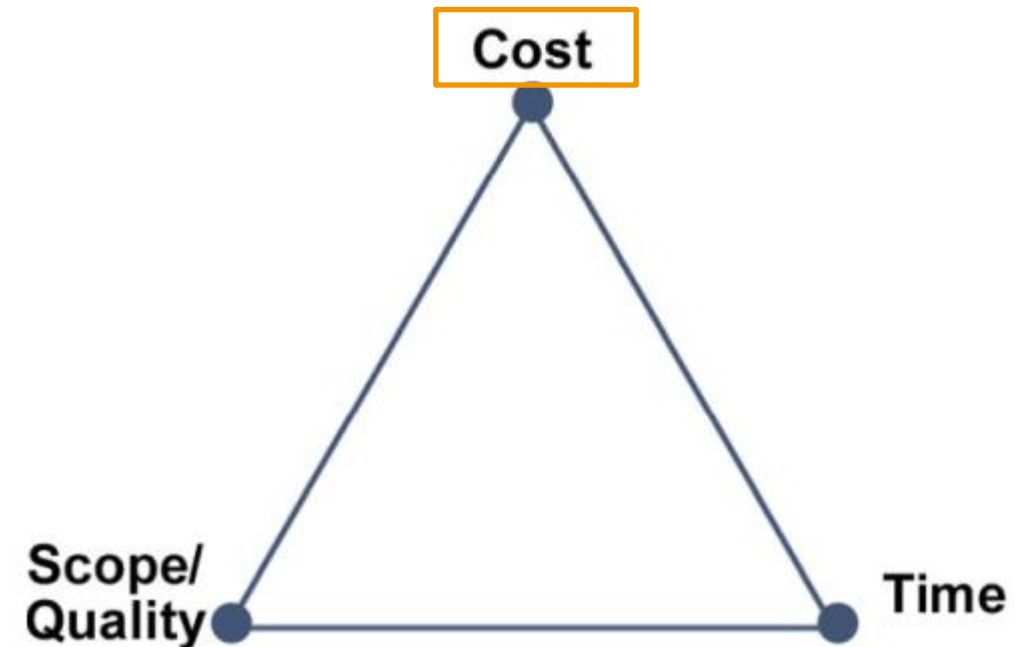
Source: <https://www.prince2.com/de/blog/project-triangle-constraints>

# Project Management Triangle

## Compromising on cost

Example of an e-commerce website, a scenario:

- Customer: “I want this website to support purchases and I want it done quick.”
- Project Manager: “We’ll have to either employ more staff or push our other work out of the way. You’ll have to pay for that, or it won’t be worth it for us.”



Source: <https://www.prince2.com/de/blog/project-triangle-constraints>

# Quiz

## Project Resources

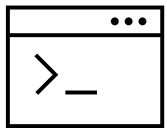
### Physical Resource



Laptop



Laboratory

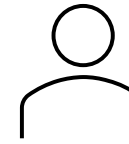


Software

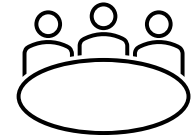


Office

### Human Resource



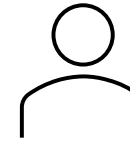
Customer



Team colleagues



Project Team



Project Management  
Assistance

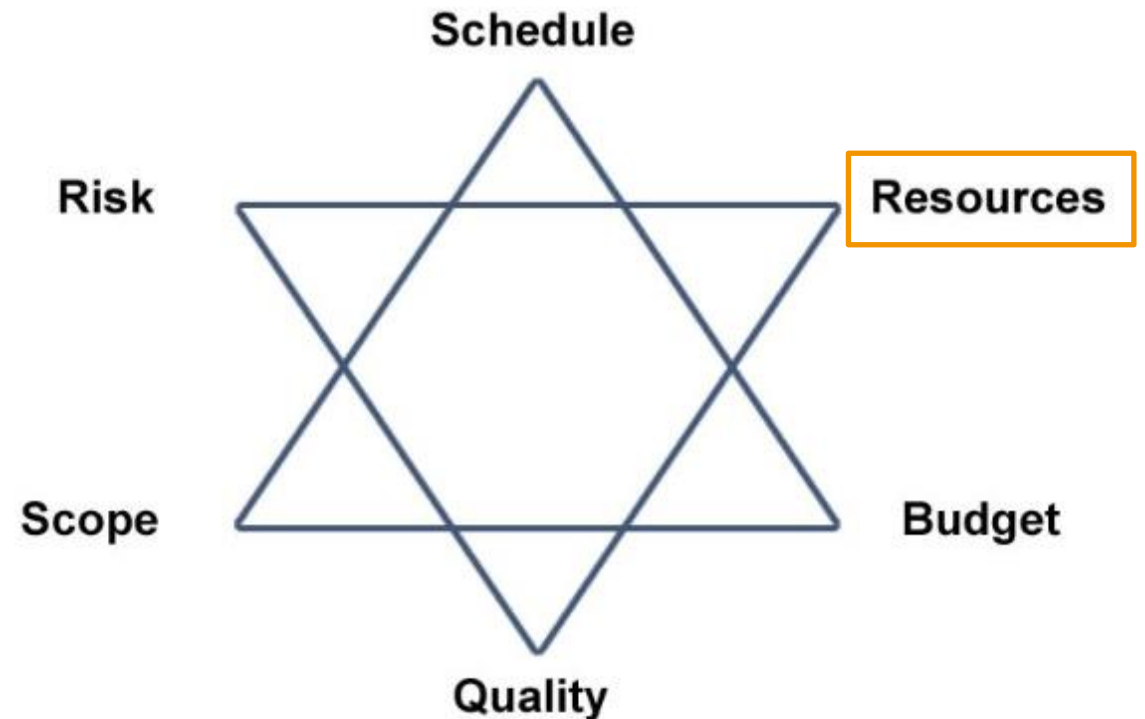
### Not part of Project



# Project Management Star

## Resources

- **Resources: physical and human resources needed to conduct the project.**
- Physical resources: any resource that is not a person.
  - Materials, equipment, software, testing environments, licenses, and so on.
- Human resources: Non-material resources involved in a project.
  - Project stakeholders

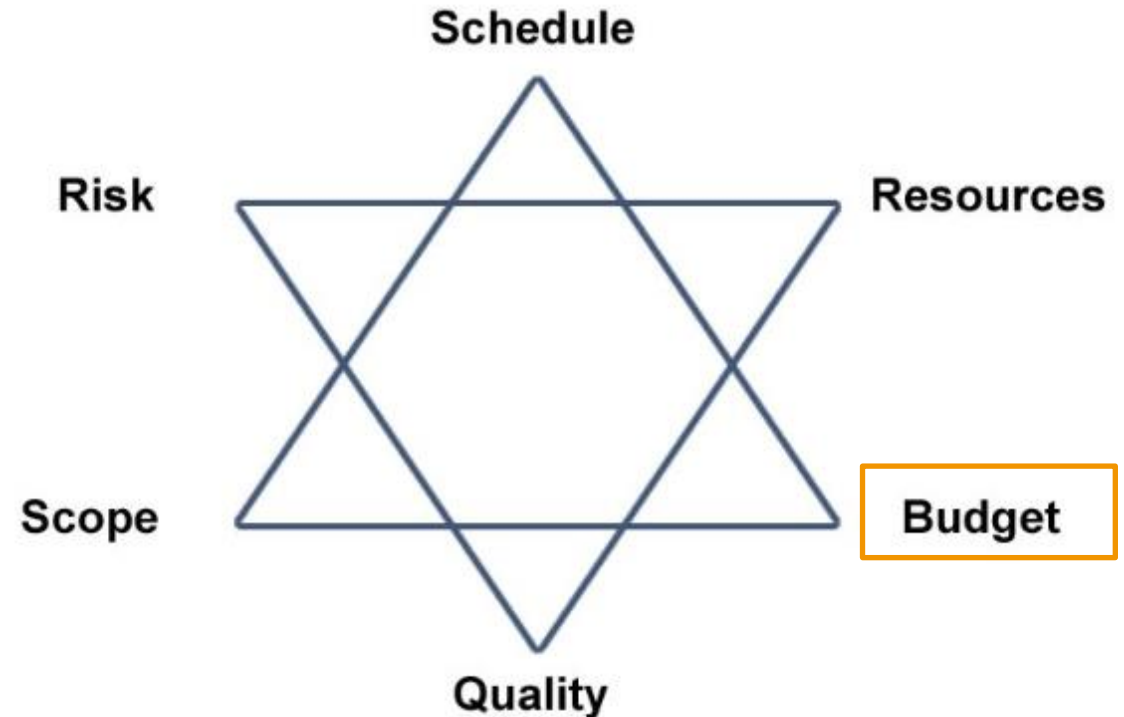


Source: prince2, PMBOK® Guide, <https://www.wrike.com/project-management-guide/faq/what-is-a-deliverable-in-project-management/>

# Project Management Star Budget

Recommendation: Plan an internal buffer, but do not communicate to the customer (hide the buffer in the work packages)

- **Time/ Cost: The project manager is expected to deliver the final products/ deliverables within the agreed ranges.**
- Costs must be controlled using a professional project controlling
- In advance, project costs can only be estimated. Estimation depends on
  - Competency of Project Management
  - Experience of Project Management
  - External Factors

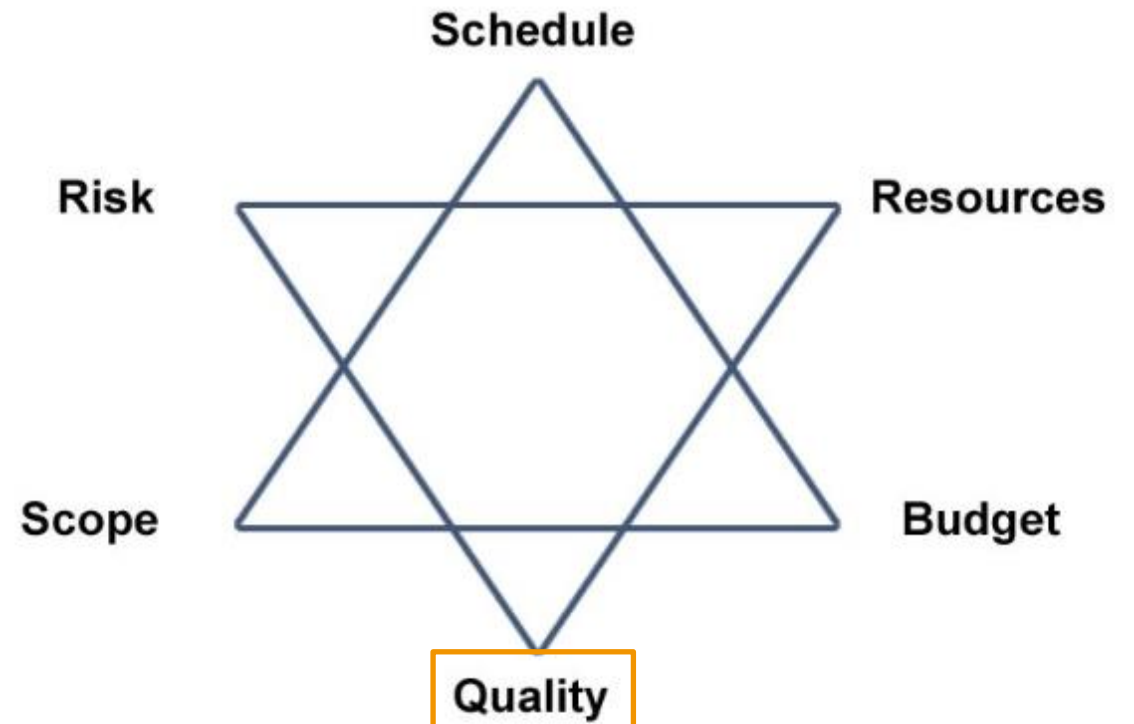


Source: prince2, PMBOK® Guide, <https://www.wrike.com/project-management-guide/faq/what-is-a-deliverable-in-project-management/>

# Project Management Star

## Quality

- **Quality: The scope items are to be delivered with the defined characteristics**
- Ensures that the specified characteristics work correctly and reliable
- Includes quality check
- Possibility of tolerances (requirements and deliverable definition):
  - No tolerance: This website must be created using Wordpress
  - Tolerence: This website must be created using a CMS (content management system)
  - The length must be 100 cm +/- 1 cm



Source: prince2, PMBOK® Guide, <https://www.wrike.com/project-management-guide/faq/what-is-a-deliverable-in-project-management/>

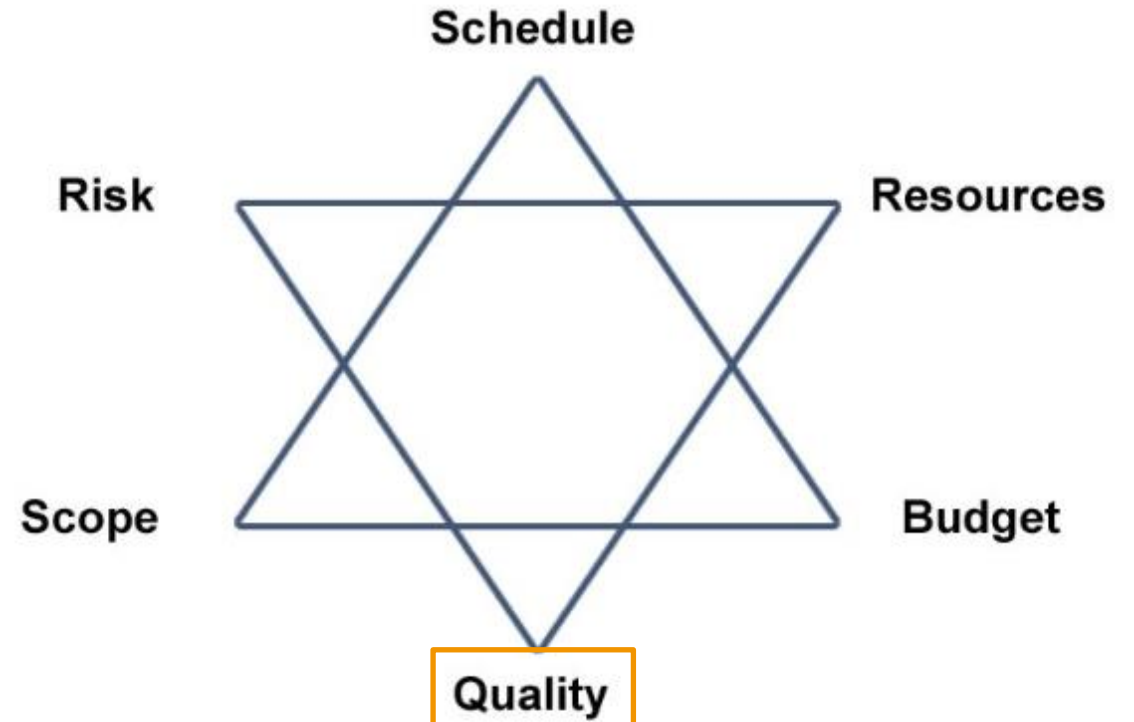
# Project Management Star Quality

- Often shortly before project end or budget is over: quality cannot be reached → deliverables will be delivered, but maybe
  - No accurate testing
  - Less tests or verification processes
  - Some characteristics might be removed

Recommendation: communicate everything with the customer

## Reality:

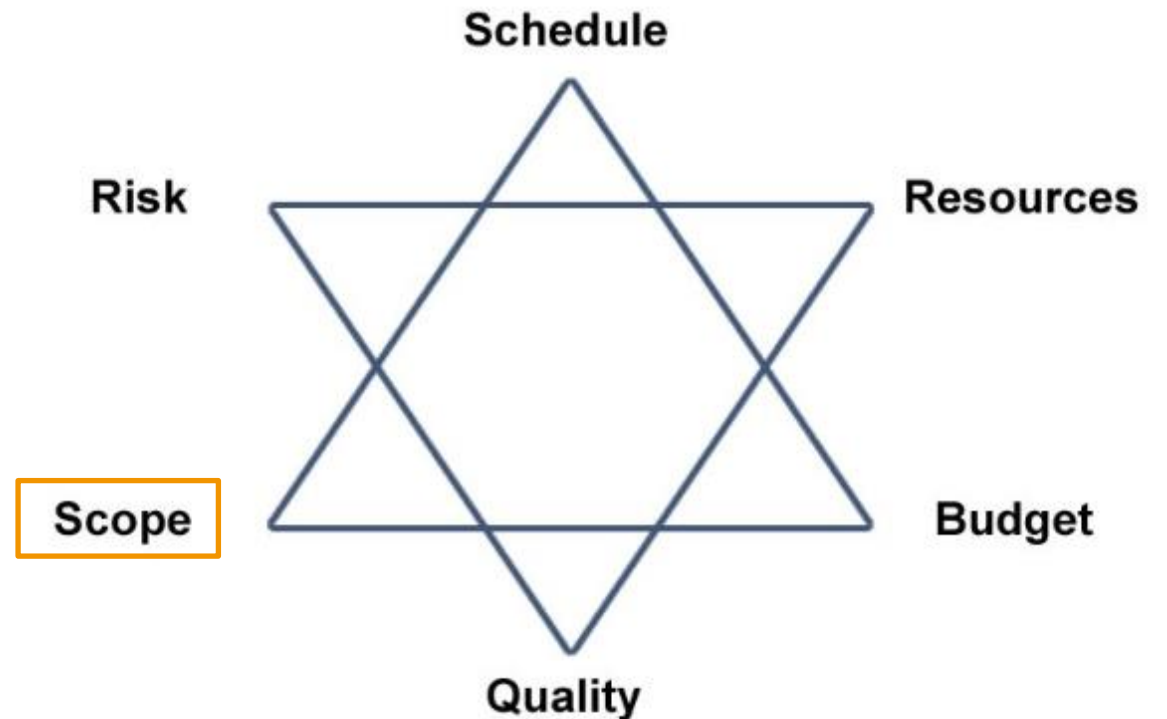
- Customer: wants exact defined deliverables
- Project Manager: try to define the deliverables with high tolerances



# Project Management Star

## Scope

- **Scope: This is what the project is expected to deliver**
- Usually defined through ranges = specific results defined by project responsible persons
- Possible Approach in requirements and deliverable definition:
  - MUST criteria
  - CAN criteria

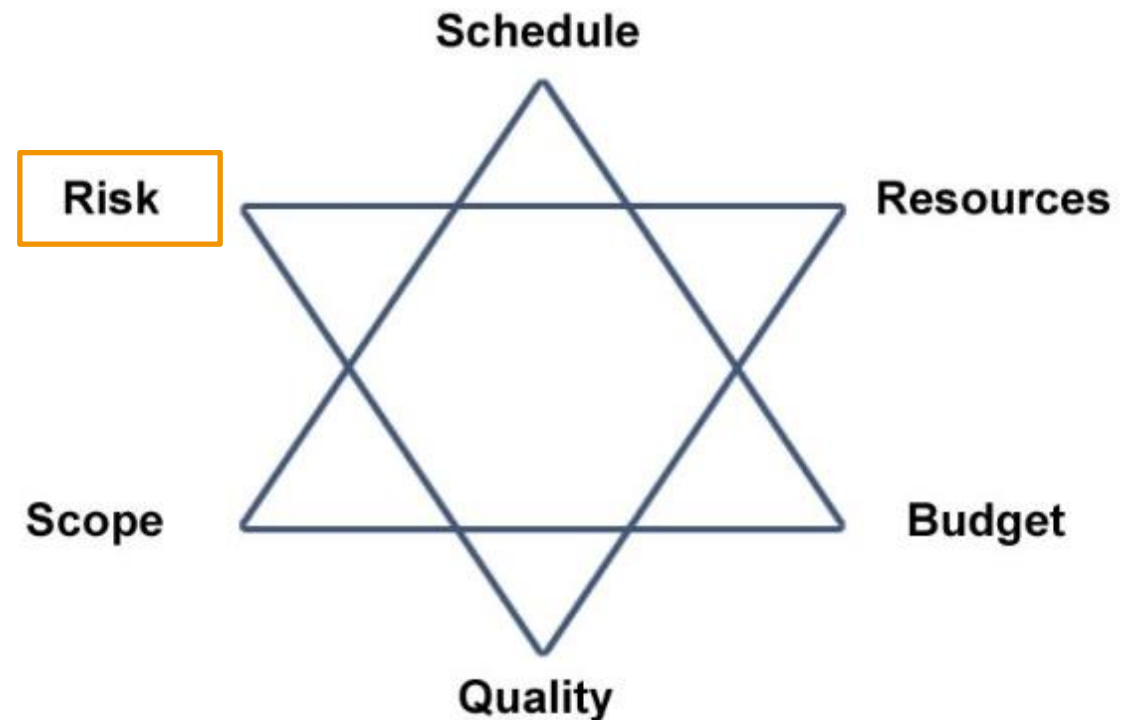


# Project Management Star

## Risk

- **Risk: We have agreement on the level of risk the sponsor/ stakeholders/ Project Board are willing to live with in the course of the project**
- Every project has risks that must be managed
- Risks must be clustered (project can fail, project can be late, risk can be tolerated, etc.)
- Professional risk management can be performed

Attention: Risk influence may change during the project!



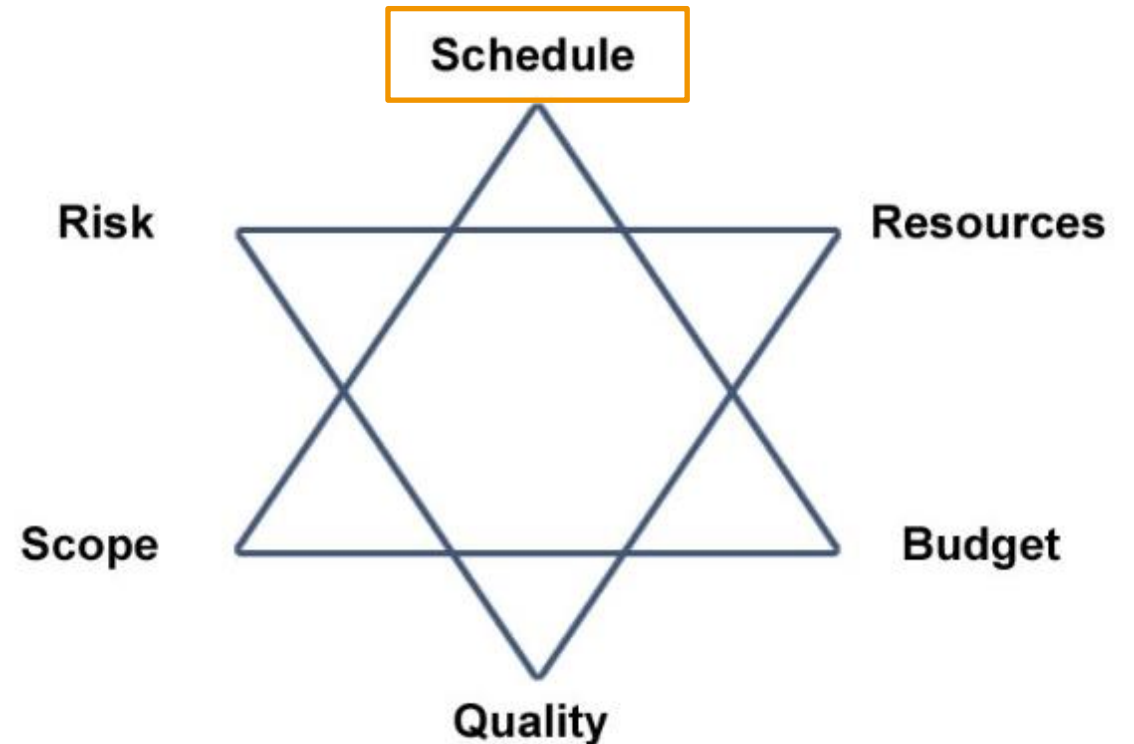
Source: prince2, PMBOK® Guide, <https://www.wrike.com/project-management-guide/faq/what-is-a-deliverable-in-project-management/>

# Project Management Star

## Schedule

- **Schedule: Timetable that organizes tasks, resources and due dates in an ideal sequence so that a project can be completed on time.**
- Project must be planned accurately
- Planning must be updated regularly

Use a project plan (Software) including a Gantt-Chart to plan your project.





# Project Management Star Exercise



- Your project: Development of a new car.
- For every corner of the PM Star:
  - Name one concrete positive scenario and one concrete negative scenario that can happen in the corresponding corner during a project.
  - Name at least two arguments for each corner what you can do as a project manager that your project does not fail in that corner?

15 min





# Project Objectives

- The target of each project is to reach a defined goal.
- Thus, the goal (or objective) needs to be formulated.
- “Good” or “bad” formulated objective?

The 16 digital outputs must have 5 V and 0.5 A.

The product must be sold within Europe.

A Compact Control Unit must be developed.

A market share of 15 % should be reached in Germany within 1 year after release.



When is an objective sufficient formulated?



# Project Objectives

## S.M.A.R.T. method

- SMART is an approach to define objectives clear.
- **S**pecific: Well defined, clear, and no two meanings.
- **M**easurable: With specific criteria that measure your progress toward the accomplishment of the goal
- **A**chievable: Attainable and not impossible to achieve
- **R**ealistic: Within reach, realistic, and relevant to your life purpose
- **T**imely: With a clearly defined timeline, including a starting date and a target date. The purpose is to create urgency.



Source: <https://corporatefinanceinstitute.com/resources/management/smart-goal/>

# Project Objectives

## S.M.A.R.T. method

- **Specific**, ask yourself the W-questions:
  - Who: Who is involved in this goal?
  - What: What do I want to accomplish?
  - Where: Where is this goal to be achieved?
  - When: When do I want to achieve this goal?
  - Why: Why do I want to achieve this goal?

Bad example	Good example
I want to get in shape.	I want to <b>obtain a gym membership at my local community center</b> and work out four days a week <b>to be healthier.</b>



Source: <https://corporatefinanceinstitute.com/resources/management/smart-goal/>

# Project Objectives

## S.M.A.R.T. method

- **Measurable**, ask yourself :
  - How many/much?
  - How do I know if I have reached my goal?
  - What is my indicator of progress?

Bad example	Good example
I want to get in shape.	I want to obtain a gym membership at my local community center and work out <b>four days a week</b> to be healthier. I want to loose <b>5 kg in the first month</b> .



# Project Objectives

## S.M.A.R.T. method

- **Achievable**, ask yourself :
  - Do I have the resources and capabilities to achieve the goal? If not, what am I missing?
  - Have others done it successfully before?

There is a gym around the corner.  
I can afford 50 € per month.

Bad example	Good example
I want to obtain a gym membership.	I want to obtain a gym membership in the <b>gym around the corner</b> with a <b>monthly rate of 50 €</b> .



Source: <https://corporatefinanceinstitute.com/resources/management/smart-goal/>



# Project Objectives

## S.M.A.R.T. method

- **Realistic, ask yourself :**
  - Is the goal realistic and within reach?
  - Is the goal reachable, given the time and resources?
  - Are you able to commit to achieving the goal?

Bad example	Good example
I want to overtake the whole robotic market in Europe.	I want to reach a share of 15 % in the European robotic market.



Source: <https://corporatefinanceinstitute.com/resources/management/smart-goal/>

# Project Objectives

## S.M.A.R.T. method

- Timely, ask yourself :
  - Does my goal have a deadline?
  - By when do you want to achieve your goal?

Bad example	Good example
I want to get in shape.	I want to obtain a <b>2-years</b> gym membership at my local community center.



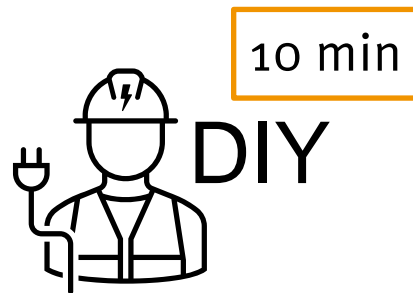
Source: <https://corporatefinanceinstitute.com/resources/management/smart-goal/>

# Project Objectives

## S.M.A.R.T. method



- Your project: Development of a new car.
  - Formulate at least 5 S.M.A.R.T objectives for the project. Formulate the objectives so that you can hand over them to your developers and their will be no misunderstandings.
  - You can also see some objectives as functionalities...





# Project Charter

## Let's start with our project

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# Project Charter Template

Introduction and Market Demand	
<i>[describe the market situation around your product/process/service]</i>	
Main Goal of Project and SMART objectives	
<i>[describe the main goal of the project and at least five SMART objectives]</i>	
Innovation	
<i>[describe the innovative character of your product/process/service]</i>	
Risks	
Technical Risk(s)	
Economic Risk(s)	
Competitors and competitive Products	
Competitors	
Competitive Products	
Differences between our and competitive products	

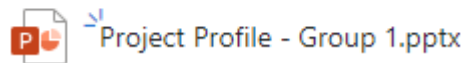
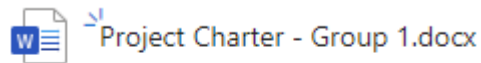
# Project Charter Template

Quality	
<i>[Concrete &amp; measurable quality aspects of final product/process/service, name at least 3]</i>	
Project Duration	
<i>[Estimated the time needed for the project from start of development until first product delivered; add, when the SOP (start of production) could be]</i>	
Budget	
<i>[Are there any expenses over 10.000 € that are known yet? Name them in bullet points]</i>	
Milestones	
<i>[Name the 5 most important milestones]</i>	
Resources	
Physical resources	<ul style="list-style-type: none"><li>• Resource 1</li><li>• Resource 2</li></ul>
Human resources	<ul style="list-style-type: none"><li>• Resource 1</li><li>• Resource 2</li></ul>

## Project Charter

### Define your own project

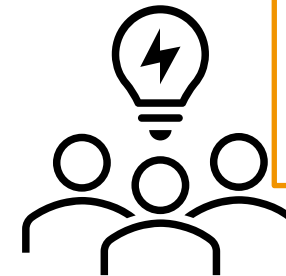
- Tasks (instructions in the doc “Project Charter”):
  - Invent a company and a product, process, or service.
  - Complete the project charter of your project.
  - Complete the project profile of your project.



- [Link to OneDrive](#) (also in Moodle)



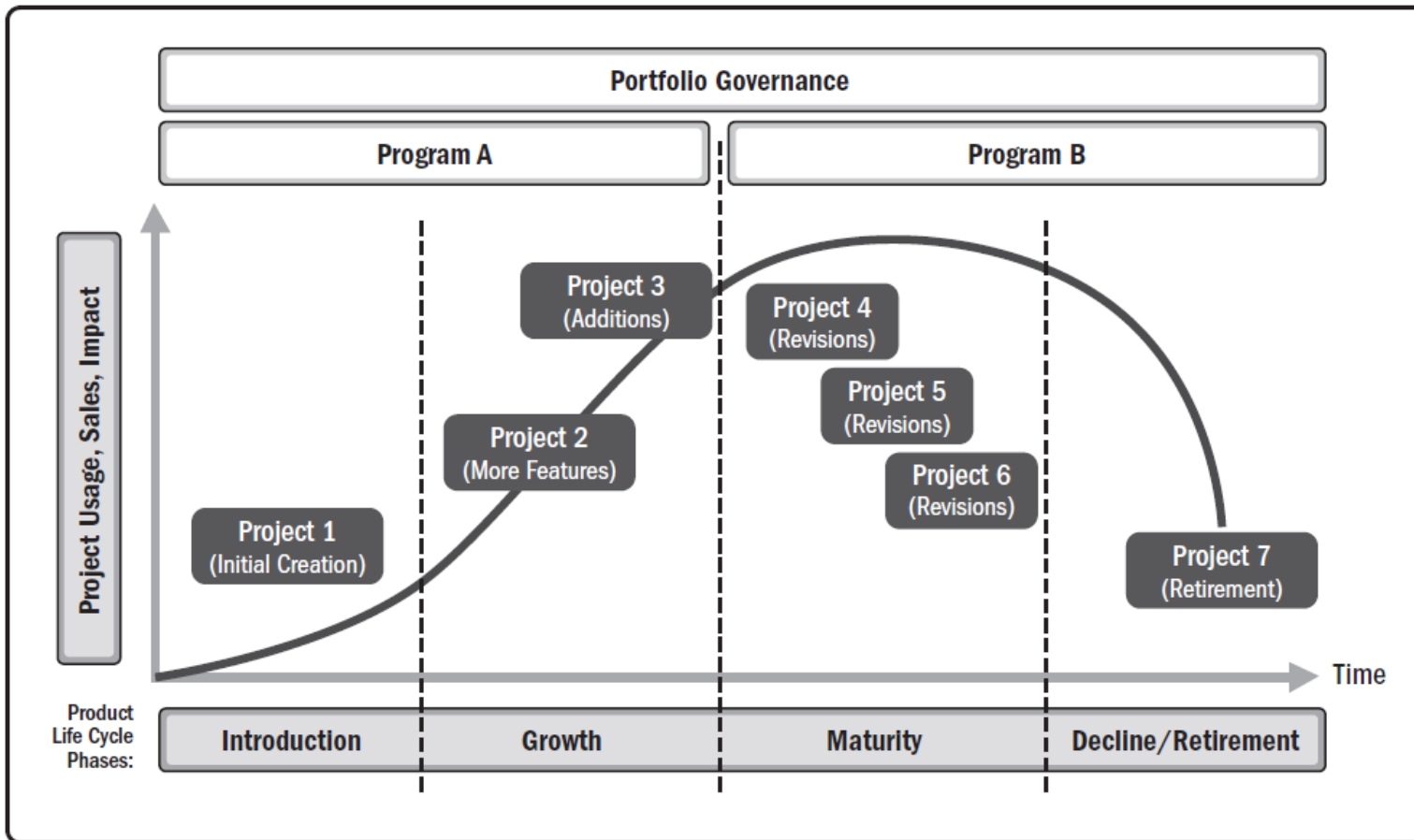
Group Work "PM Project Charter"



Preparation: 45 min  
Presentation: 5 min

# Project Management vs. Program Management

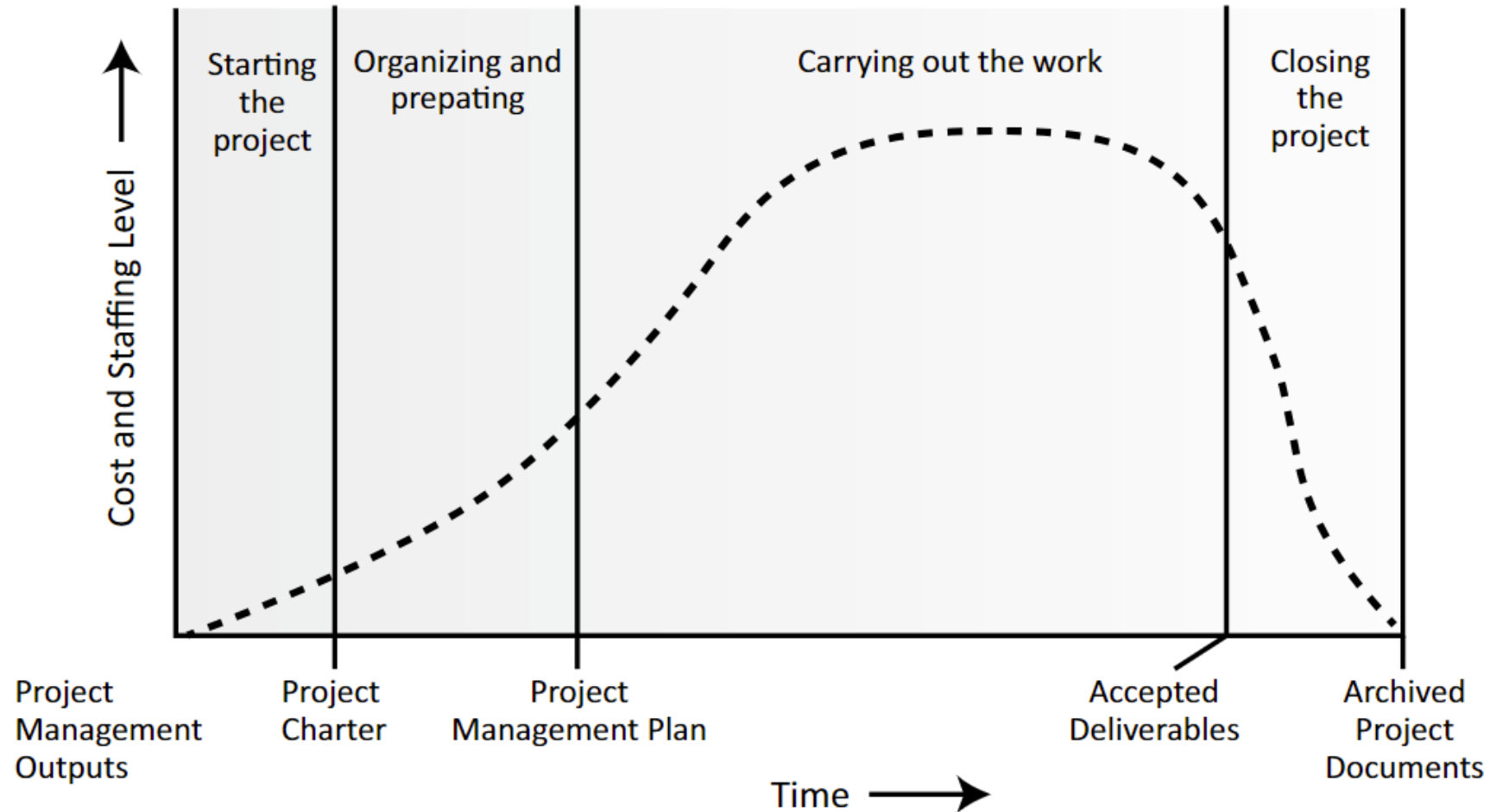
What is the difference between Project and Program Management?



- Program:
  - Several projects with similarities can be bundled in a program
- Project:
  - Project = collection of tasks to reach a specific target

Source: PMBOK® Guide

# Project Life Cycle Management



Source: 2022 Thakkar - Project Management

# Project Phases

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Source: <https://kissflow.com/project/five-phases-of-project-management/> respective PMI

# Project Phases

## Project Initiation

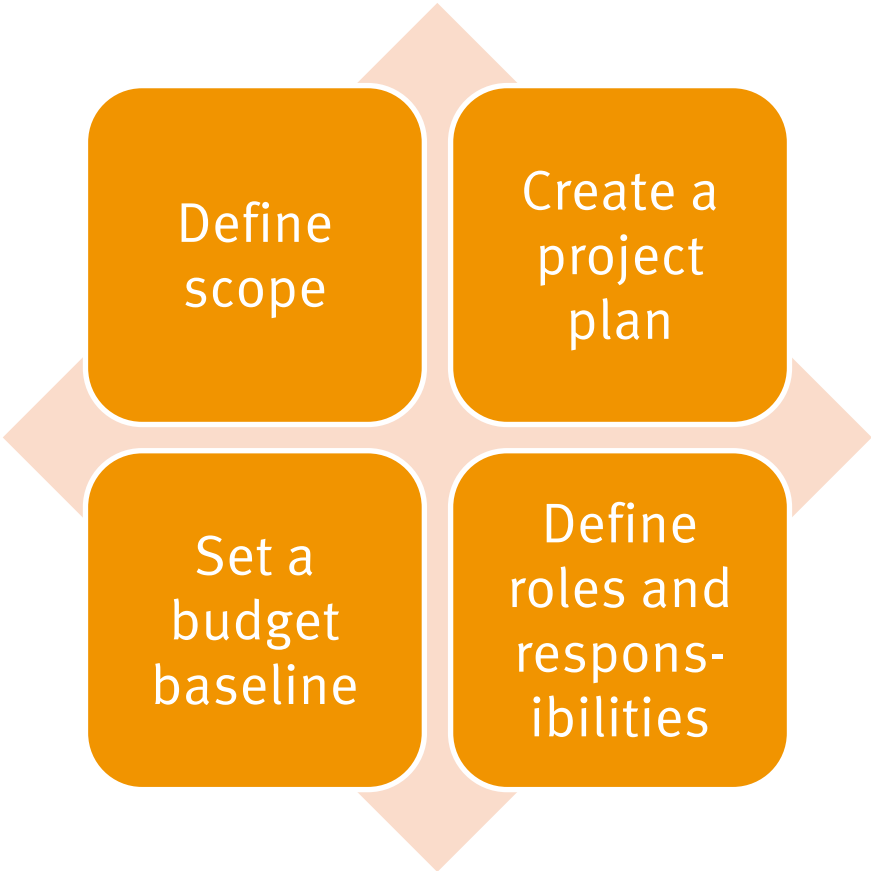


Source: <https://kissflow.com/project/five-phases-of-project-management/> respective PMI



# Project Phases

## Project Planning



Source: <https://kissflow.com/project/five-phases-of-project-management/> respective PMI

# Project Phases

## Project Execution



Source: <https://kissflow.com/project/five-phases-of-project-management/> respective PMI

# Project Phases

## Project Monitoring and Controlling



Source: <https://kissflow.com/project/five-phases-of-project-management/> respective PMI



# Project Phases

## Project Closure



Source: <https://kissflow.com/project/five-phases-of-project-management/> respective PMI

# Quiz

## Project Phases

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# Project Management Methodologies

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# Project Management Methodologies

## Waterfall Model

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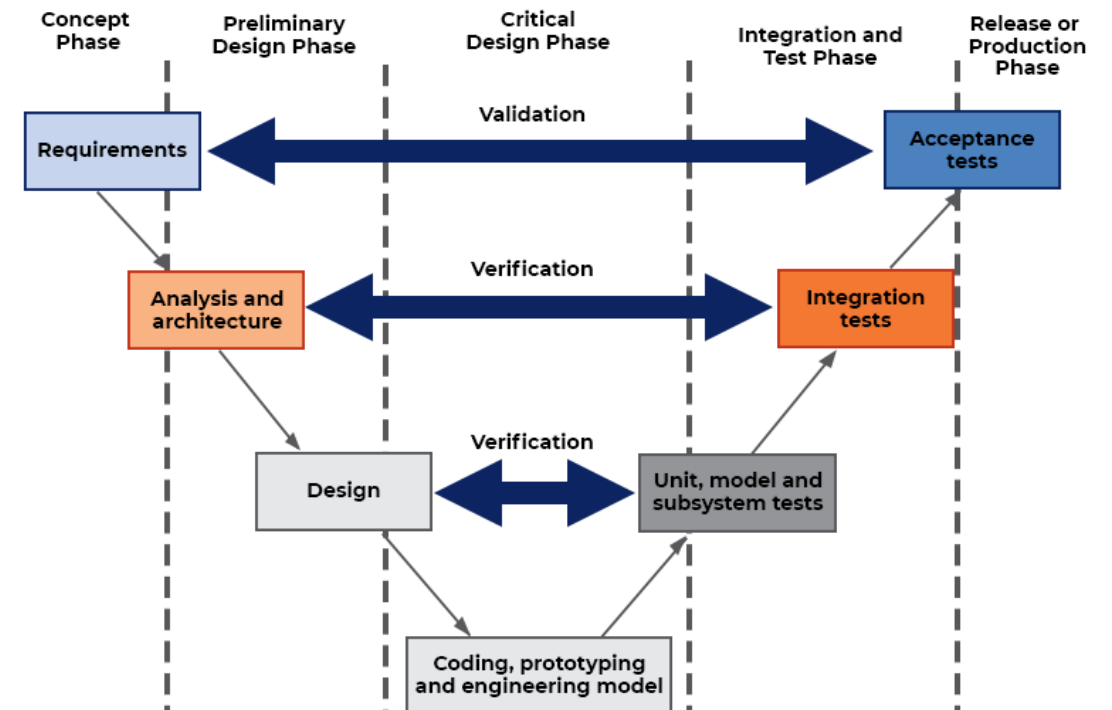


Source: <https://www.youtube.com/watch?v=bNLcRdrSQAU>

# Project Management Methodologies

## V-Model (V = Verification and Validation)

- Used for smaller (software) projects with defined requirements and specifications
- USP (Unique selling proposition): Test phase is conducted in parallel to development phase



Source: <https://kruschecompany.com/de/v-modell-softwareentwicklung/>



# Project Management Methodologies

## Agile Approach

- Used for digital products (software) projects
- Advantages:
  - Flexibility, customer-oriented, transparency
- Disadvantages:
  - Complexity of methodology
  - Pressure on team caused by daily/weekly
  - Depends strongly on team dynamics

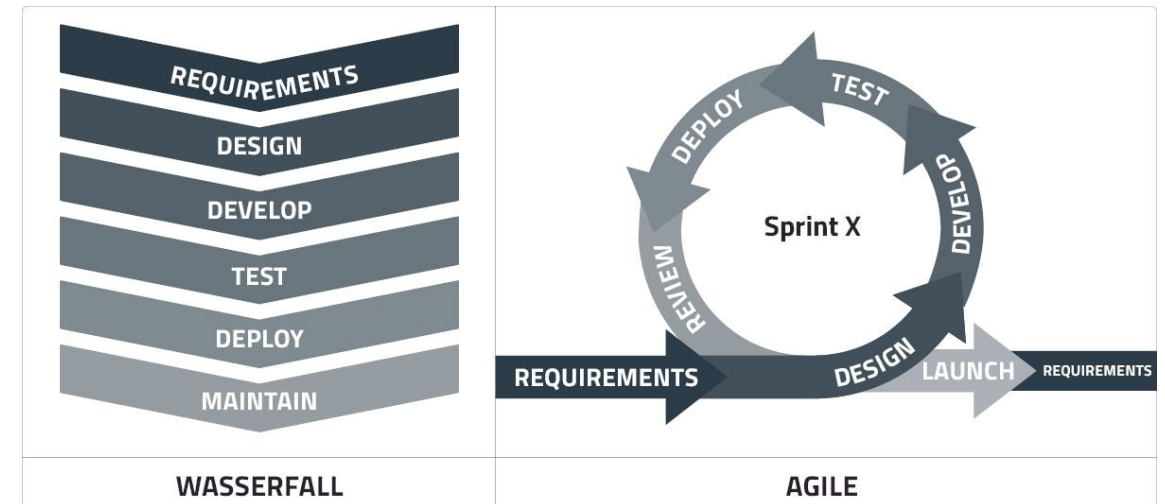


Source: <https://www.generic.de/blog/agile-softwareentwicklung-vorteile-frameworks-best-practices>

# Project Management Methodologies

## Our lecture

- No model is better or worse, it depends on the conditions what to use
- You learn:
  - Waterfall (classic PM) → Kris Dalm
  - Agile PM → Petr Cizek



Source: <https://www.generic.de/blog/agile-softwareentwicklung-vorteile-frameworks-best-practices>

# Organizational Structures

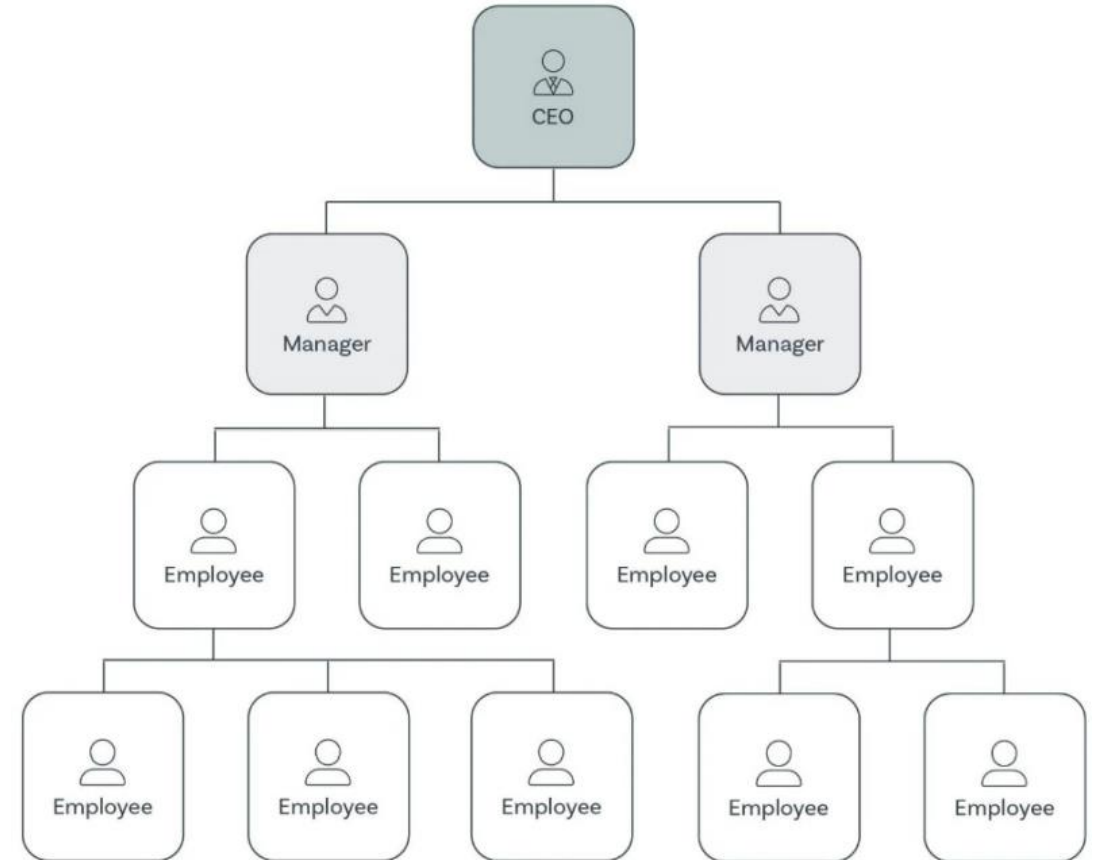
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# Organizational Structures

## Hierarchical structure

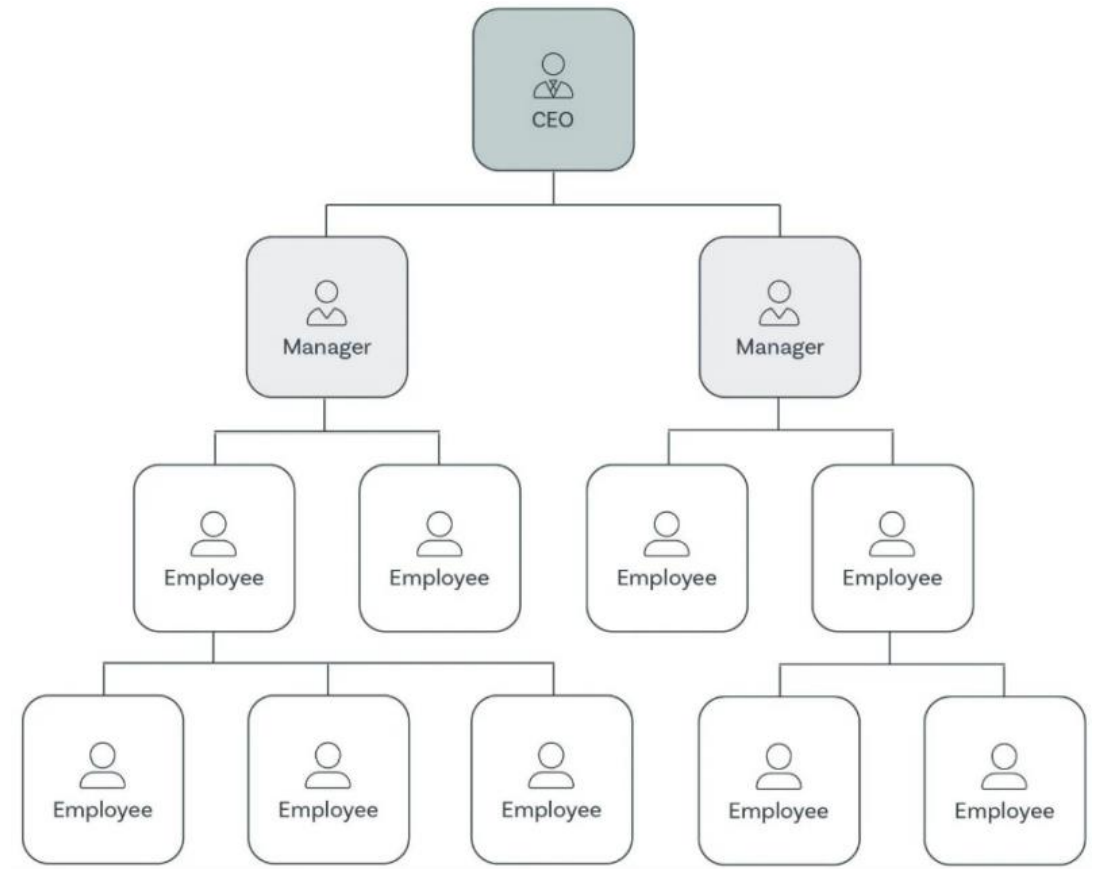
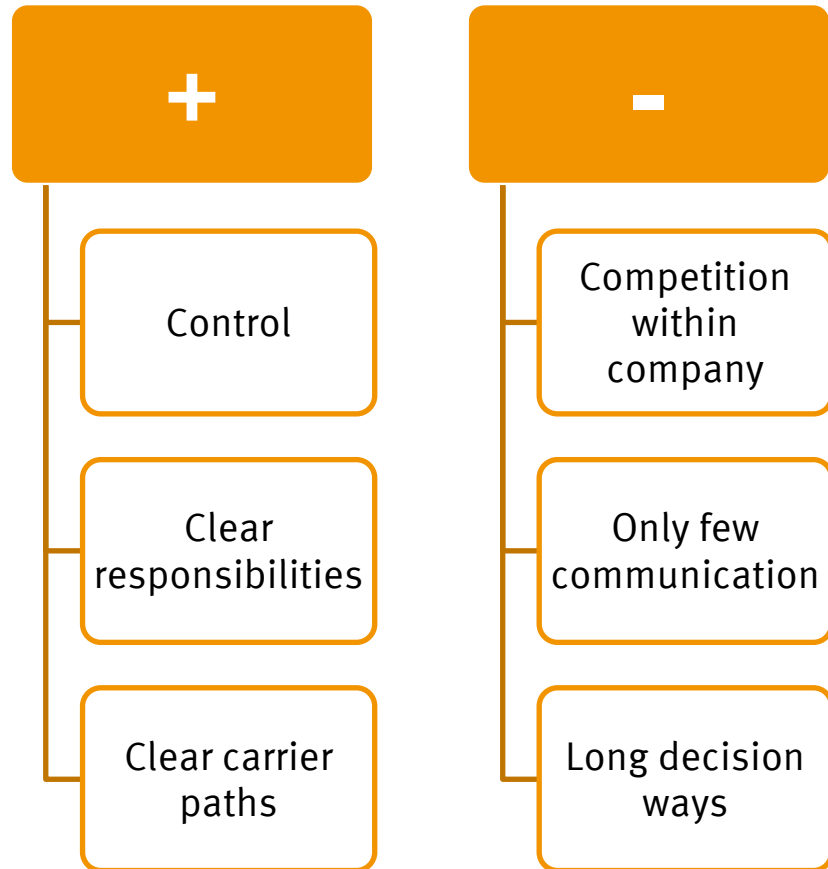
- Responsibilities and power relations are defined clearly
- Clear communication along the arrows
- Commands from top (CEO, high management) to bottom (blue collar workers)
- Specific departments, e.g., Software, HR, Finance, etc.
- Used in most companies of all sizes
- Example: Amazon



Source: <https://www.teamazing.de/die-7-beliebtsten-organisationsstrukturen-ueberblick-und-beispiele/> , <https://www.ingentis.com/de/knowledge/organisationsstruktur>

# Organizational Structures

## Hierarchical structure

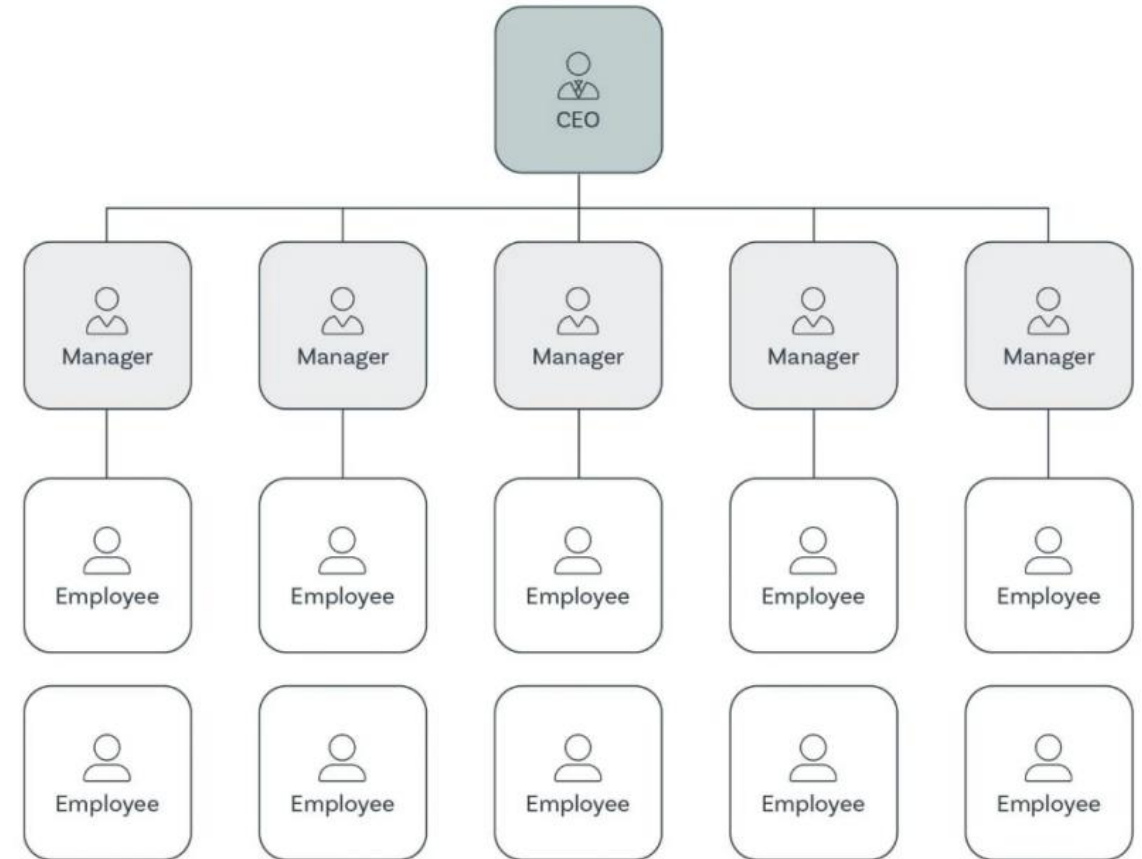


Source: <https://www.teamazing.de/die-7-beliebtesten-organisationsstrukturen-ueberblick-und-beispiele/>

# Organizational Structures

## Horizontal structure

- Flat hierarchical levels
- Responsibilities are divided
- Efficient communication on eye level
- Commands horizontal
- Affiliation of employees on products, departments or sites possible
- Based on trust and employees own decisions
- Used mostly in young companies and start-ups
- Example: Facebook

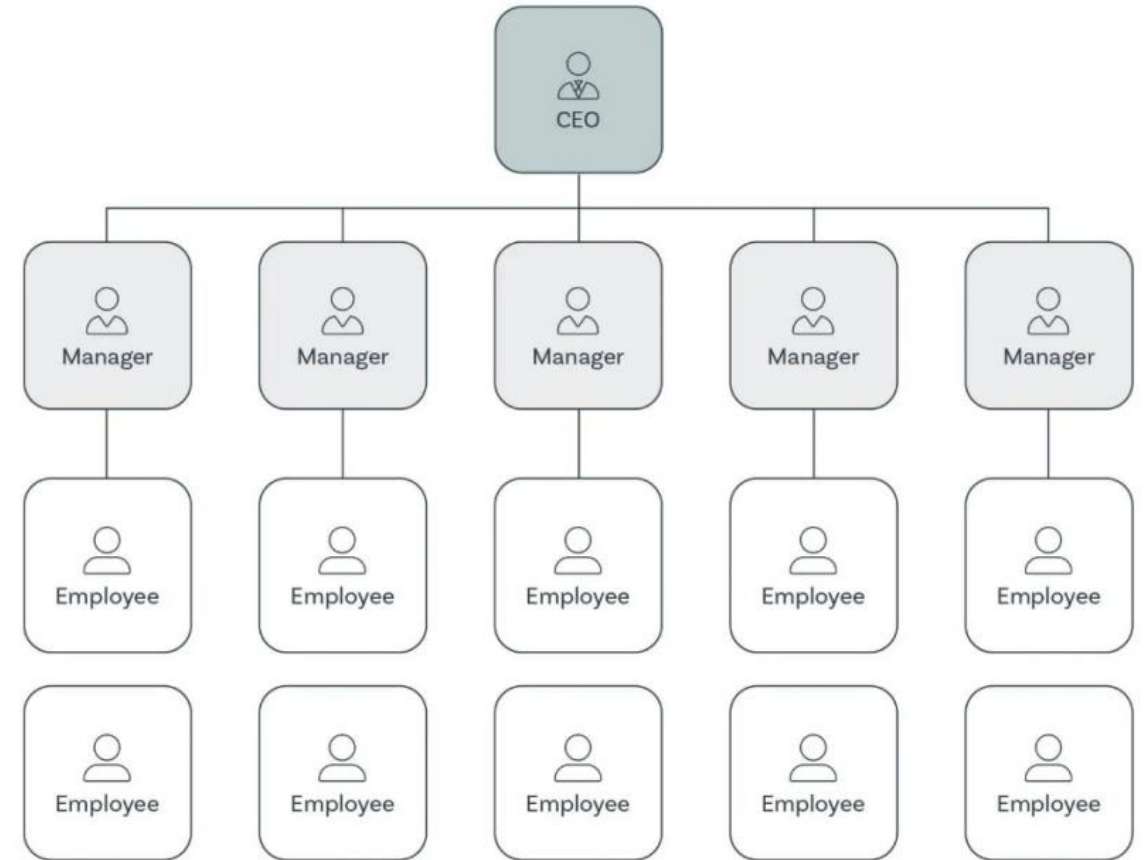
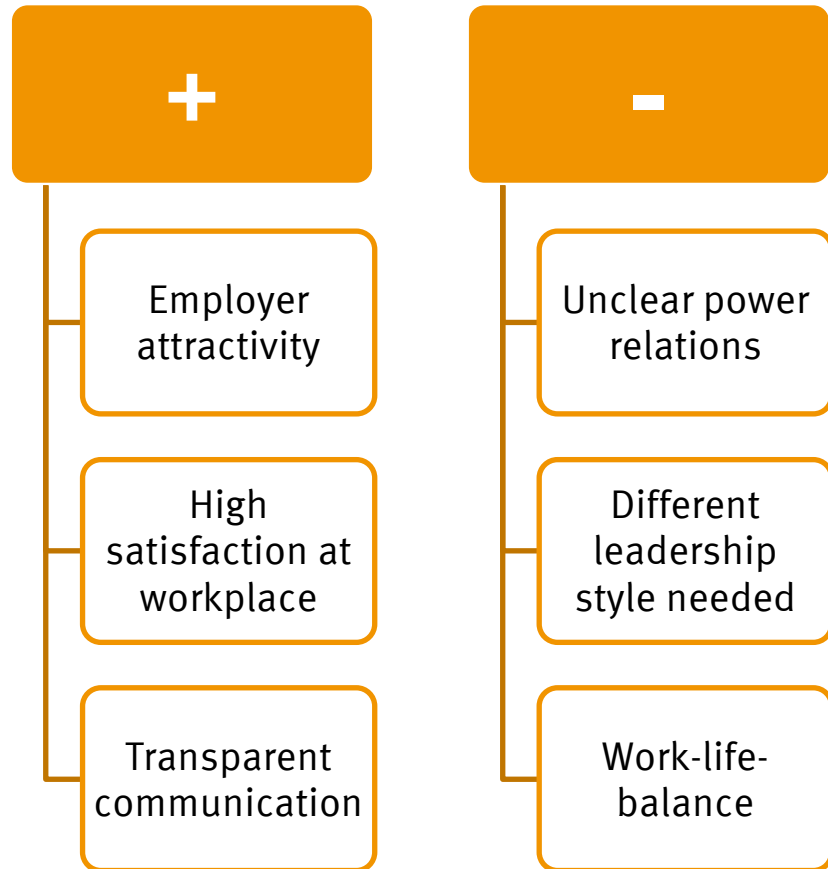


Source: <https://www.teamazing.de/die-7-beliebtsten-organisationsstrukturen-ueberblick-und-beispiele/> , <https://www.ingentis.com/de/knowledge/organisationsstruktur>



# Organizational Structures

## Horizontal structure



Source: <https://www.teamazing.de/die-7-beliebtesten-organisationsstrukturen-ueberblick-und-beispiele/> , <https://www.ingentis.com/de/knowledge/organisationsstruktur>

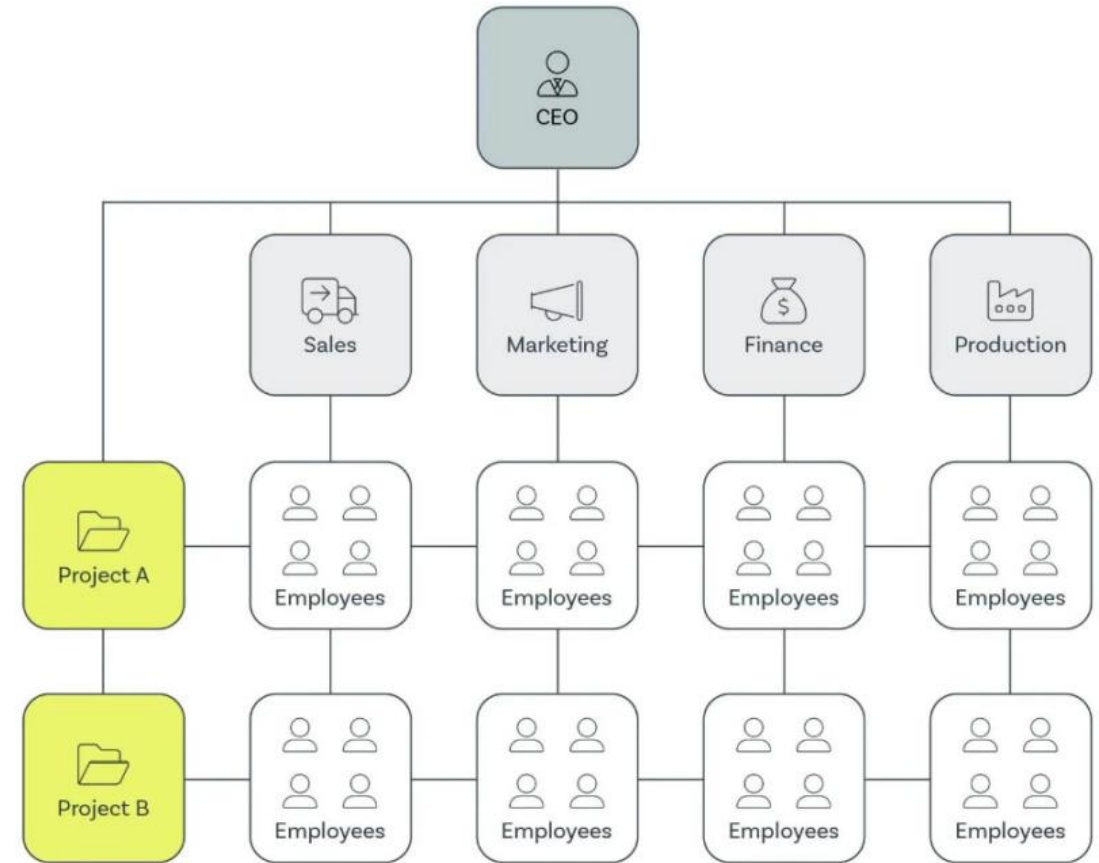


# Organizational Structures

## Matrix structure

What is the difference between disciplinary and professional leadership?

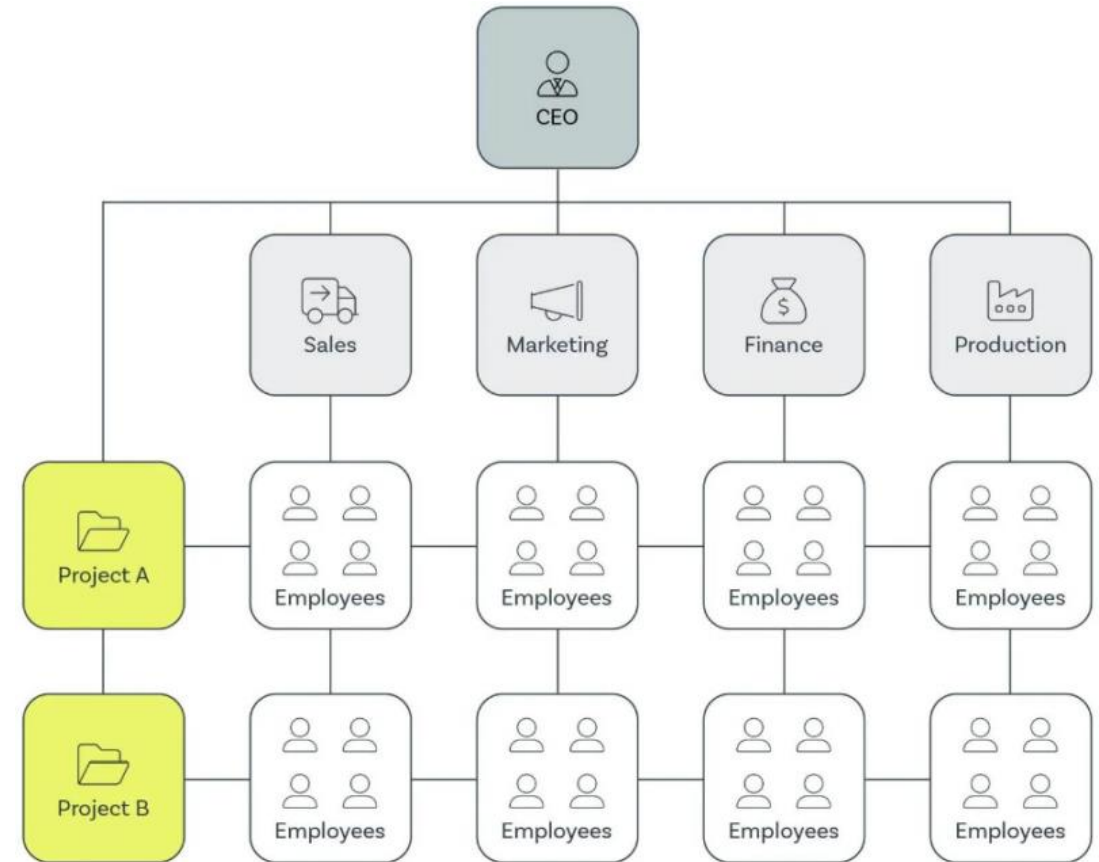
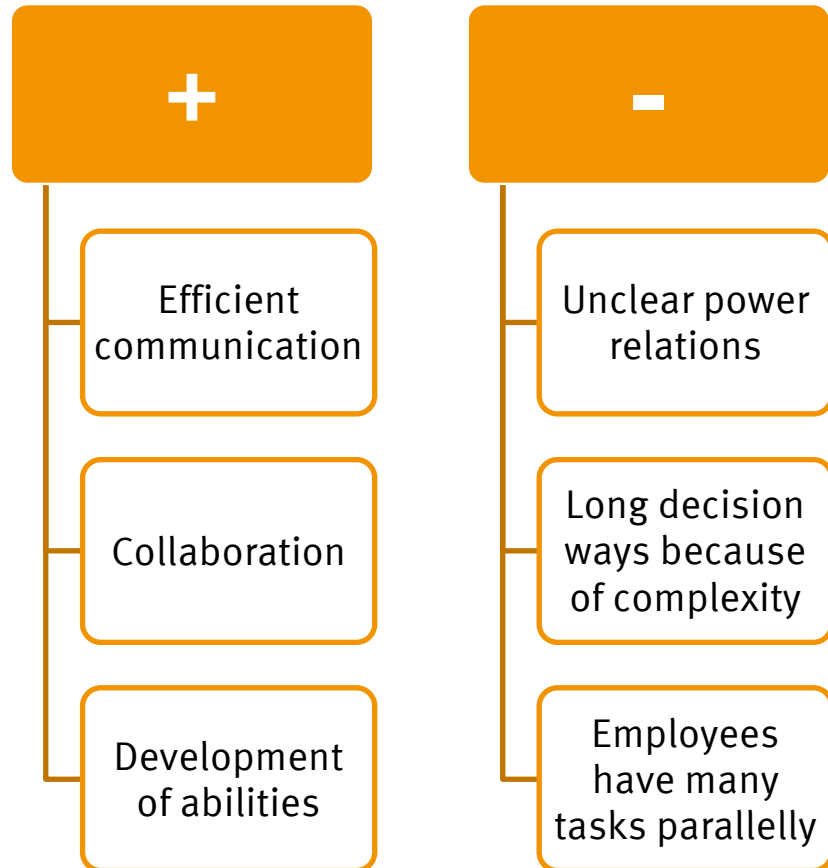
- Teams from different departments work on different projects
- Disciplinary and professional leadership mostly separated
- Employees can work on several projects
- Efficient communication
- Commands in departments and within projects
- Only used sometimes nowadays (to complex)
- Example: Starbucks



Source: <https://www.teamazing.de/die-7-beliebtesten-organisationsstrukturen-ueberblick-und-beispiele/> , <https://www.ingentis.com/de/knowledge/organisationsstruktur>

# Organizational Structures

## Matrix structure



Source: <https://www.teamazing.de/die-7-beliebtesten-organisationsstrukturen-ueberblick-und-beispiele/> , <https://www.ingentis.com/de/knowledge/organisationsstruktur>

# Organizational Structures

## Further organizational structures



- Functional organizational structure
- Divisional structure
- Team-based structure
- Network structure

Research details in the recommended literature.



- You have finished your studies at OTH and you are looking for a job in Weiden.
  - Which organizational structure should the company have where you apply? And why?
  - What are the most important parameters from the last slides (organizational structures) for you? Name at least 5.

10 min



Source: <https://www.teamazing.de/die-7-beliebtesten-organisationsstrukturen-ueberblick-und-beispiele/> , <https://www.ingentis.com/de/knowledge/organisationsstruktur>

# Stakeholders

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# Stakeholders

## Effectively engage with stakeholders

What is a stakeholder?

- Stakeholders can be individuals, groups, or organizations.
- Stakeholders may affect, be affected by, or perceive themselves to be affected by a decision, activity, or outcome of a portfolio, program, or project.
- Stakeholders also directly or indirectly influence a project, its performance, or outcome in either a positive or negative way.



### STAKEHOLDERS

Engage stakeholders proactively and to the degree needed to contribute to project success and customer satisfaction.

- ▶ Stakeholders influence projects, performance, and outcomes.
- ▶ Project teams serve other stakeholders by engaging with them.
- ▶ Stakeholder engagement proactively advances value delivery.

Source: PMBOK 7th Edition

# Stakeholders

## Stakeholder Analysis

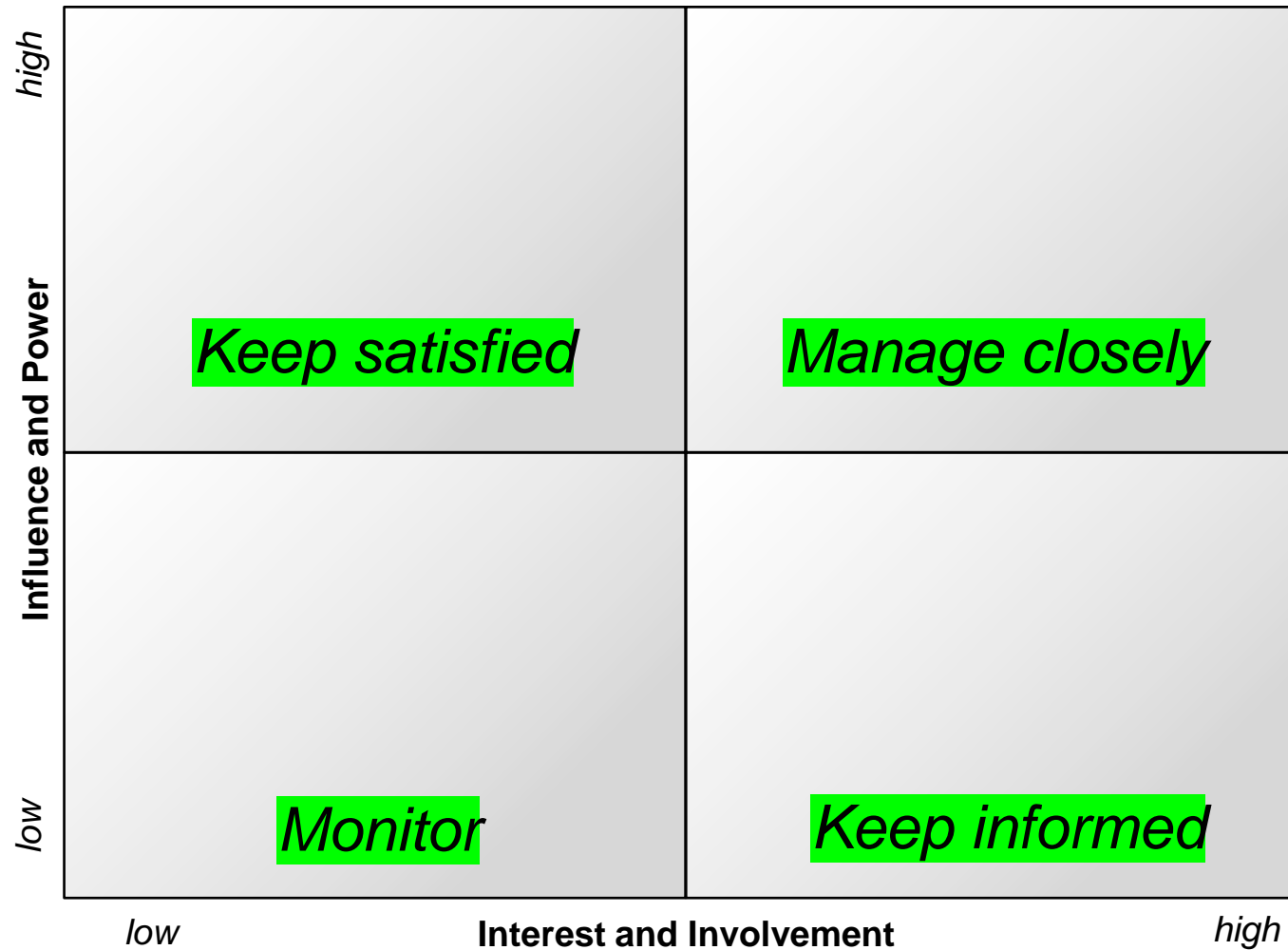
- Stakeholders may come and go throughout the life cycle of the project.
- The degree of a stakeholder's interest, influence, or impact may change over time.
- A stakeholder analysis must be conducted regularly (recommendation: every 3 months within a 2 years project)





# Stakeholders

## Stakeholder Analysis



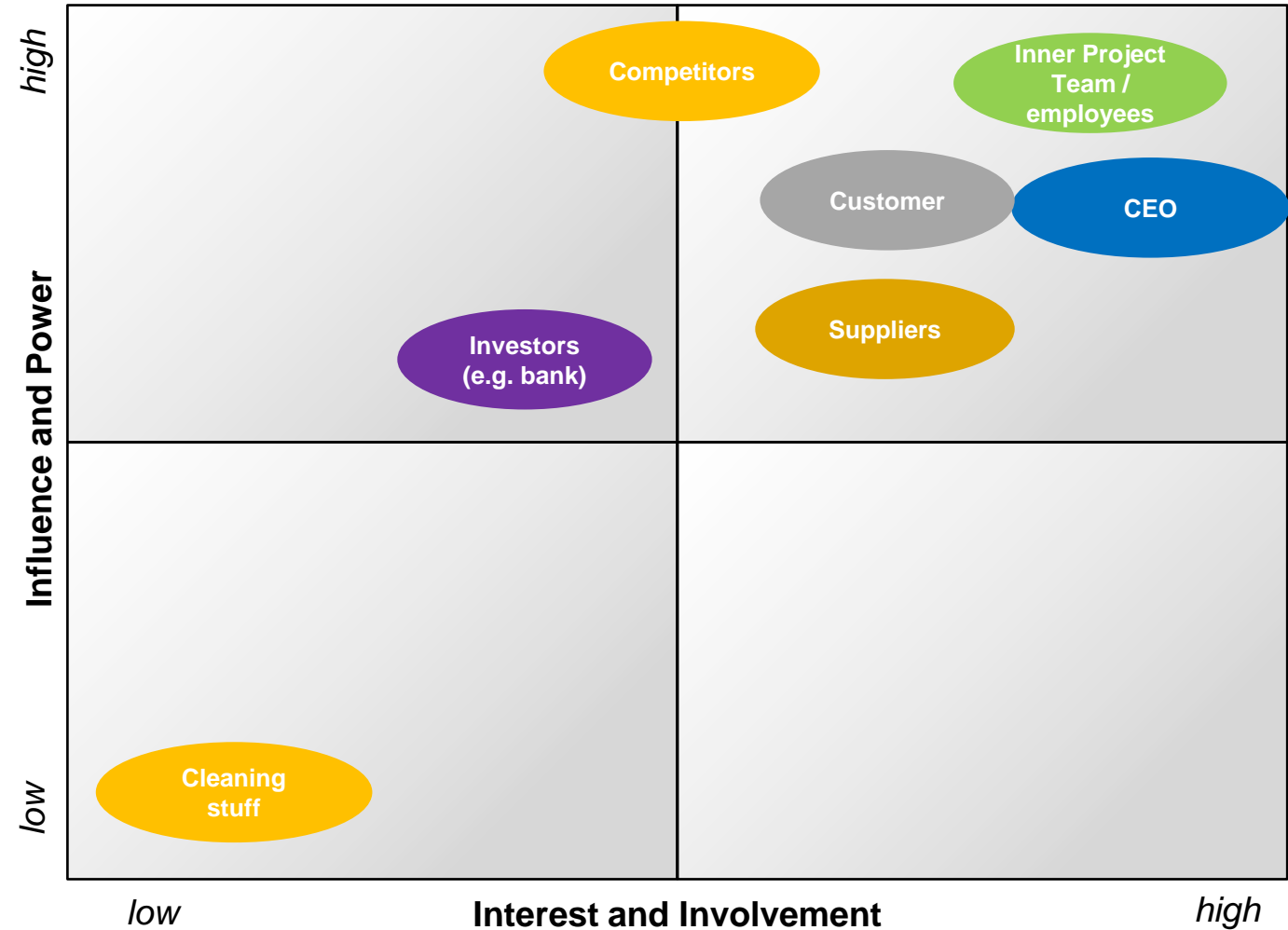


# Stakeholders

## Example CCU

Which stakeholders do I have in my project?

?



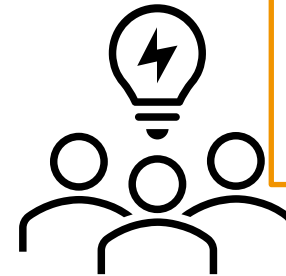
# Stakeholder Analysis

## Apply to your project

- Task: **Perform a Stakeholder Analysis to your project.**
- Find the template in Moodle



Stakeholder Analysis EN



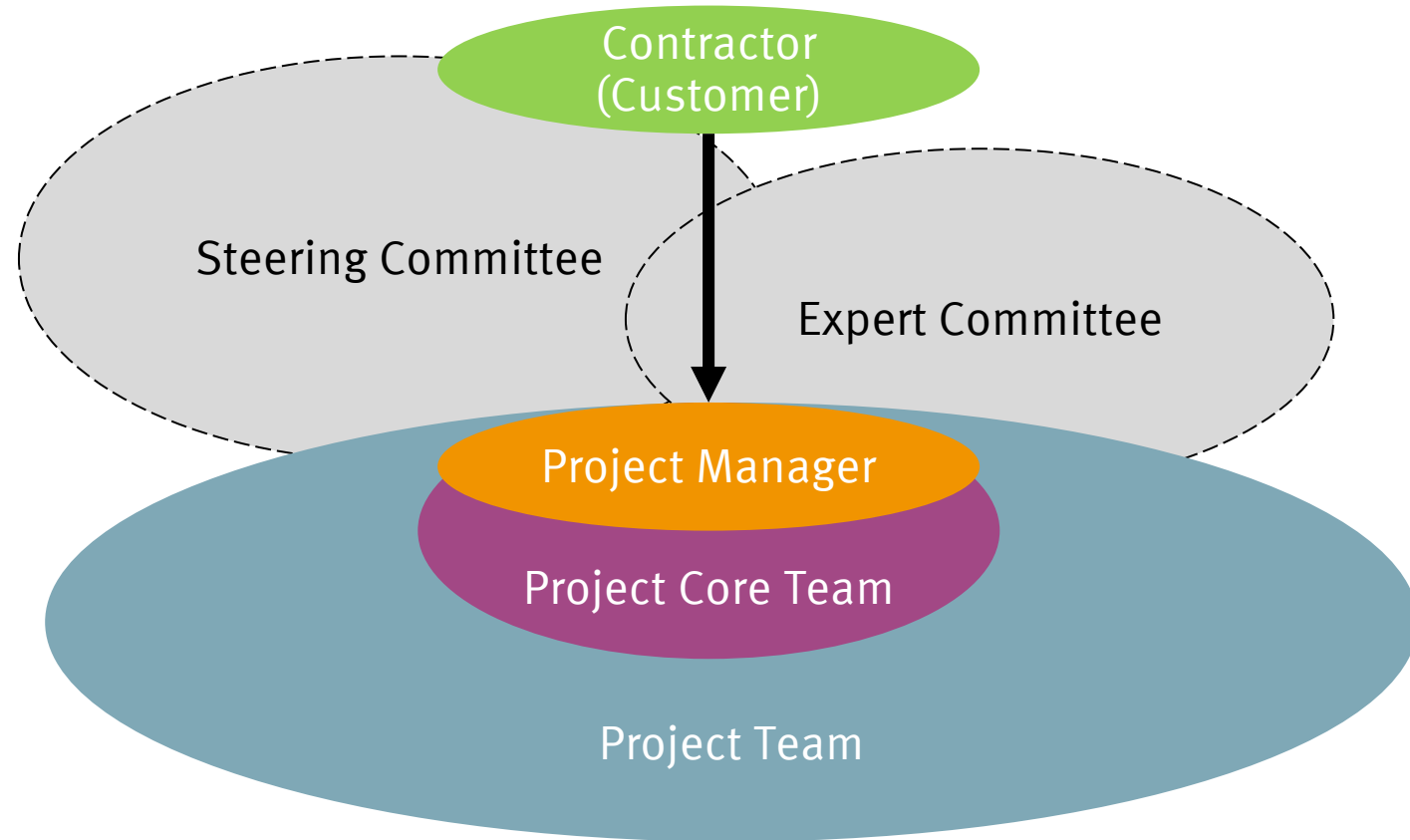
Preparation: 20 min  
Presentation: 2 min

# Active Project Roles



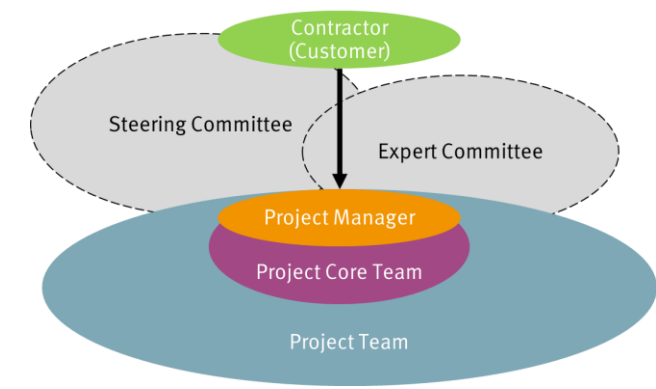
Recommendation:

As a Project Manager, create  
a well-being team culture!



Source: Prof. Dr. Arthur Kolb @ HKE

# Active Project Roles



## Project Manager

- Project Coordination
- Management of resources
- Coordination, guidance and motivation of project team
- Planning, controlling and monitoring of schedules, costs and quality
- External presentation of project
- Project completion

## Project (Core) Team

- Performance of delegated tasks
- Documentation of achieved task results
- Support of Project Manager
- Control of own tasks progress
- Feedback of work result

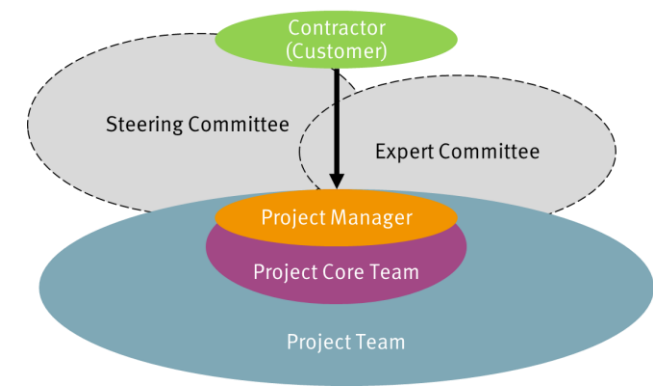
## Contractor (Customer)

- Definition of project order and goals (together with project manager)
- Provision of budget
- Acceptance of project results/deliverables
- Escalation in case of problems



Source: Prof. Dr. Arthur Kolb @ HKE

# Active Project Roles



## Steering Committee

- Sets the Project Manager
- Approval of project planning
- Support of Project Manager
- Monitoring of project progress
- Reporting to the company management

## Expert Committee

- Involved experts that are not part of the project team
- Example: members of standardization committees



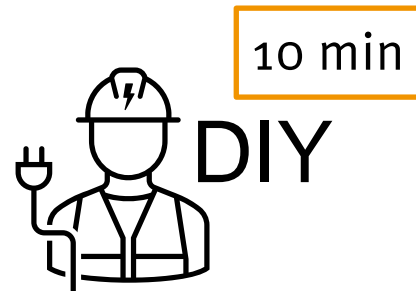
Source: Prof. Dr. Arthur Kolb @ HKE

# Active Project Roles

## Exercise Project Manager



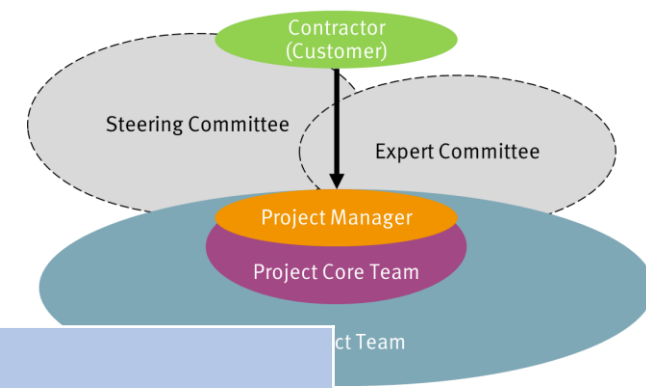
- You are the Head of Project Management, and you are looking for a Project Manager to manage your new Project (the one you have defined). The HR departments asks you to prepare the following information for the job offer:
  - Name the 3 most important social competencies the Project Manager must have
  - Name the 3 most important professional (or technical) competencies the Project Manager must have





# Active Project Roles

## Project Manager



### Personal competence

- Personal initiative
- Readiness for responsibility
- Ability to work under pressure
- Ability to concentrate
- Leadership ability

### Method competence

- Organisational ability
- Information management
- Ability to analyse
- Ability to work on problems
- Readiness to assume decisions and risks

### Social competence

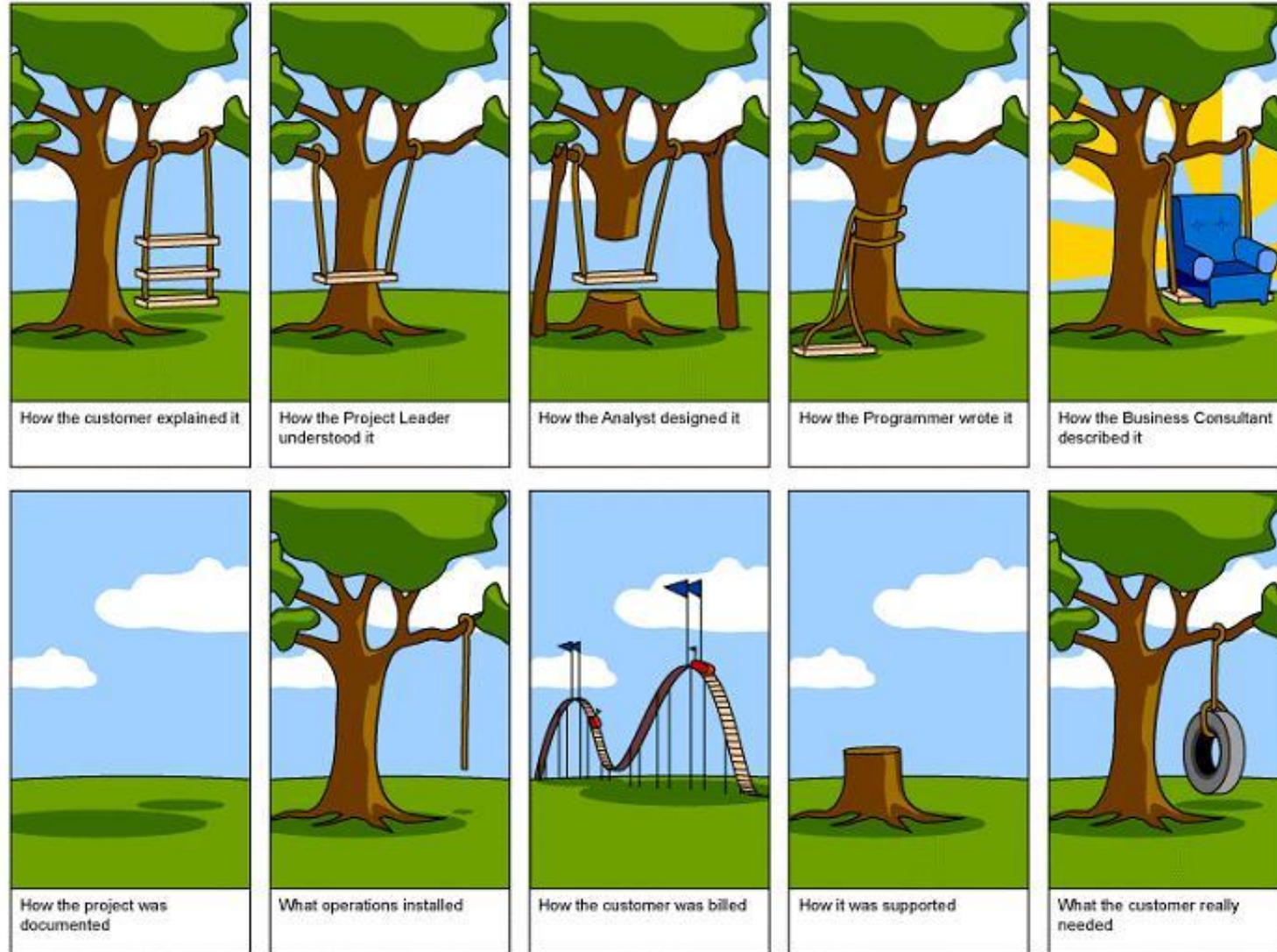
- Communication ability
- Capacity for team work
- Ability to deal with conflicts
- Motivation ability
- Presentation ability

### Professional competence

- Knowledge of PM instruments
- Knowledge to handle project content
- Contract and public procurement law
- Economic knowledge
- Know-how for implementation of PM tools



# Project Communication



Source: <https://knowyourmeme.com/photos/475749-tree-swing-cartoon-parodies>

# Project Communication

## Types of Project Communication

Type	Formal	Informal
Verbal	<ul style="list-style-type: none"><li>Presentations</li><li>Project reviews</li><li>Briefings</li><li>Product demos</li><li>Brainstorming</li></ul>	<ul style="list-style-type: none"><li>Conversations</li><li>Ad hoc discussions</li></ul>
Written	<ul style="list-style-type: none"><li>Progress reports</li><li>Project documents</li><li>Business case</li></ul>	<ul style="list-style-type: none"><li>Brief notes</li><li>Email</li><li>Instant messaging/texting</li><li>Social media</li></ul>

Source: PMBOK 7th Edition

# Project Communication

## Types of Project Communication

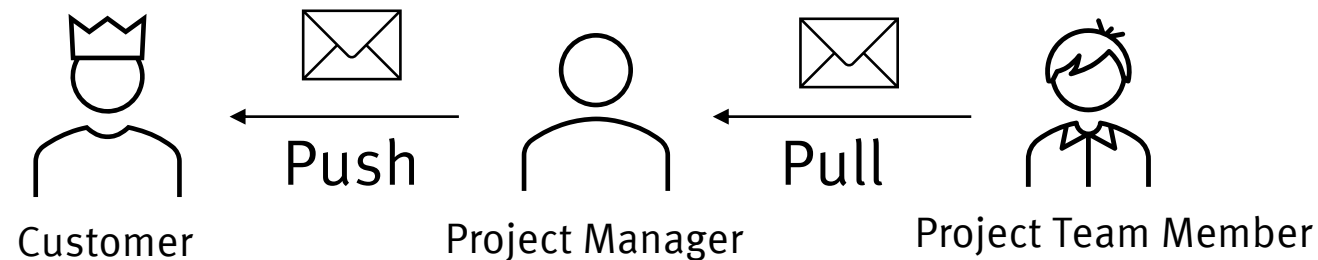
Which kind of communication with which stakeholder?



Ostbayerische  
Technische Hochschule  
Amberg-Weiden

**Push.** Communication sent to stakeholders such as memos, emails, status reports, voice mail, and so forth. Push communication is used for one-way communications with individual stakeholders or groups of stakeholders. Push communication inhibits the ability to immediately gauge reaction and assess understanding; therefore, it should be used deliberately.

**Pull.** Information sought by the stakeholder, such as a project team member going to an intranet to find communication policies or templates, running internet searches, and using online repositories. Pulling information is used for indirect sensing of stakeholder concerns.



Source: PMBOK 7th Edition

# Project Communication Recommendations

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Use an own drive / folder / sharepoint for your project, use a common file structure (e.g. 231002\_name)

Use collaboration software (e.g. Slack or Teams)

Define a communication standard document for project team

Project Leader: bring your team together and motivate it

Make a protocol, but keep it simple

Establish a transparent communication

# Project Communication

## Recommendations for Meetings

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Meetings in present  
promote  
collaboration

Bring at least one  
point into every  
meeting (stay  
visible)

Be prepared for  
every meeting!

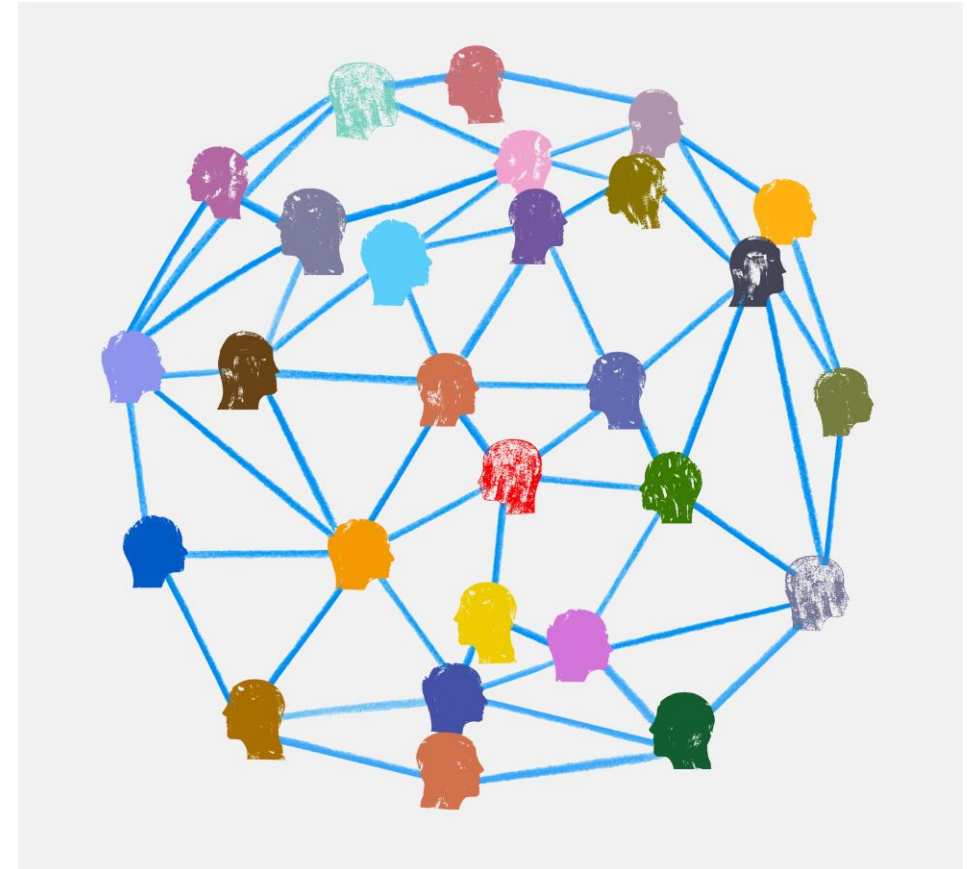
Be efficient: Spelling  
mistakes are not so  
important as content  
mistakes

Keep your language  
(German, English)  
simple

Remember always: if  
you are in a meeting,  
you cannot work  
productively...

# Project Communication

Further ideas to  
establish a good  
communication?



Source: PMBOK 7th Edition



## Links

- 5 Phases of PM: <https://kissflow.com/project/five-phases-of-project-management/>

## Books

- 2022 Thakkar - Project Management (ISBN 978-981-15-3694-6)
- 2021 PMI - PMBOK (R) Guide (ISBN 978-1-62825-664-2)

## Further Sources

- DIN standards series DIN 69901 for Project Management

# Reflection of the learning objectives

Now, you...

- Understand the **PM Triangle** and **PM Star**.
- Know how to formulate **SMART objectives**.
- Know what a **Project Life Cycle** is and what **Project Phases** are.
- Are familiar with **PM Methodologies** and **organizational structures**.
- Understand the roles of the **project team** and **stakeholders**.
- Have invented and defined your **own project** in a **Project Charter**.

