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Introduction to Software Engineering

Software Project Management



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- **The product is intangible**

(intangible = dt. nicht greifbar)

Project managers cannot (easily) see progress and have to rely on others to produce the documentation needed to review progress.
(To alleviate this software, deliver working software frequently.)

- **There are no standard software processes**

In many other engineering disciplines the engineering process is better understood.

(We will discuss “software processes” in detail in one of the following lectures.)

- **Large projects are often “one-off” projects**

These makes estimations and anticipations of problems very hard. Rapid technological changes also render previous experience obsolete.

- **Proposal writing**
=dt. Angebotserstellung / Antragsstellung
I.e., an important skill that software project managers have to have is to communicate effectively both orally and in writing.
- **Project planning and scheduling**
planning =dt. Planung, Planungsvorbereitung
scheduling =dt. Terminierung, Anberaumung eines Termins
- **Project cost**
=dt. Projektkostenkalkulation
- **Project monitoring and reviews**
- **Personnel selection and evaluation**
- **Report writing and presentations**

Project Planning is an iterative process.

- A plan drawn up at the start should be used as the driver for the project; this should be **the best possible plan given the available information** (The plan evolves as the project progress.)
- Types of plans:
 - **Project Plan** (dt. [Projektplan](#)) (following slides...)
 - **Quality plan** (dt. [Qualitätssicherungsplan](#))
Describes the quality procedures and standards that will be used.
 - **Staff development plan** (dt. [Personalentwicklungsplan](#))
Describes how the skills and experience of the project team members will be developed.
 - **Configuration management plan**
Describes the configuration management procedures and structures to be used.
 - ...

1. Introduction

Objectives of the project and its constraints (time, budget,...).

2. Project organization

Organization of the development team, the involved people and their roles.

3. Risk analysis

Possible project risks, their likelihood and risk reduction strategies.

4. Hardware and software resource requirements

The hardware and support software required to carry out the project.

5....(next slide)

4....(previous slide)

5. **Work breakdown** (=dt. *Arbeitsaufteilung*)

Sets out the breakdown of the project into activities and identifies the milestones and deliverables associated with each activity.

6. **Project schedule**

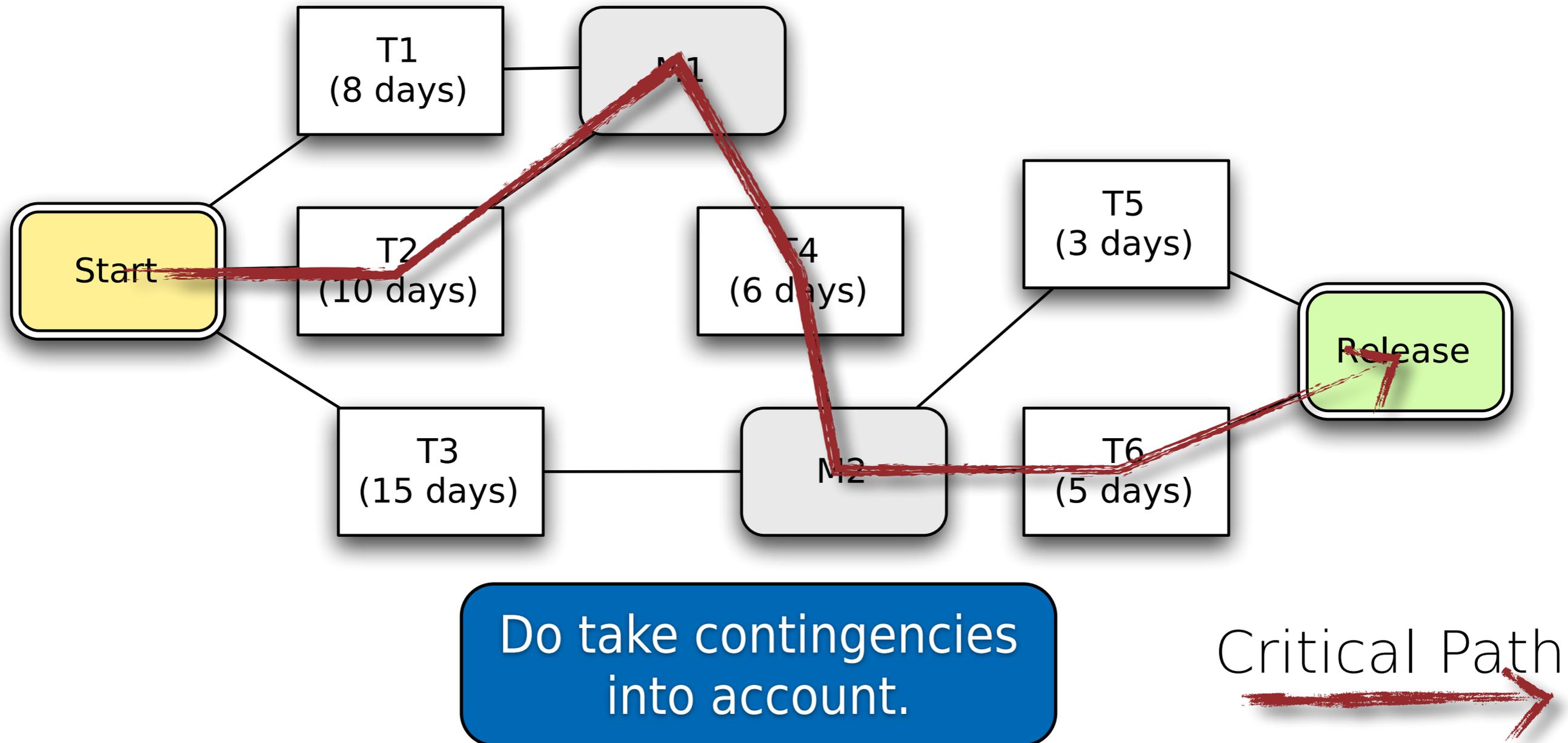
(Sometimes mistakenly called "Project Plan.")

Dependencies between activities, estimated time required to reach each milestone and the allocation of people to activities.

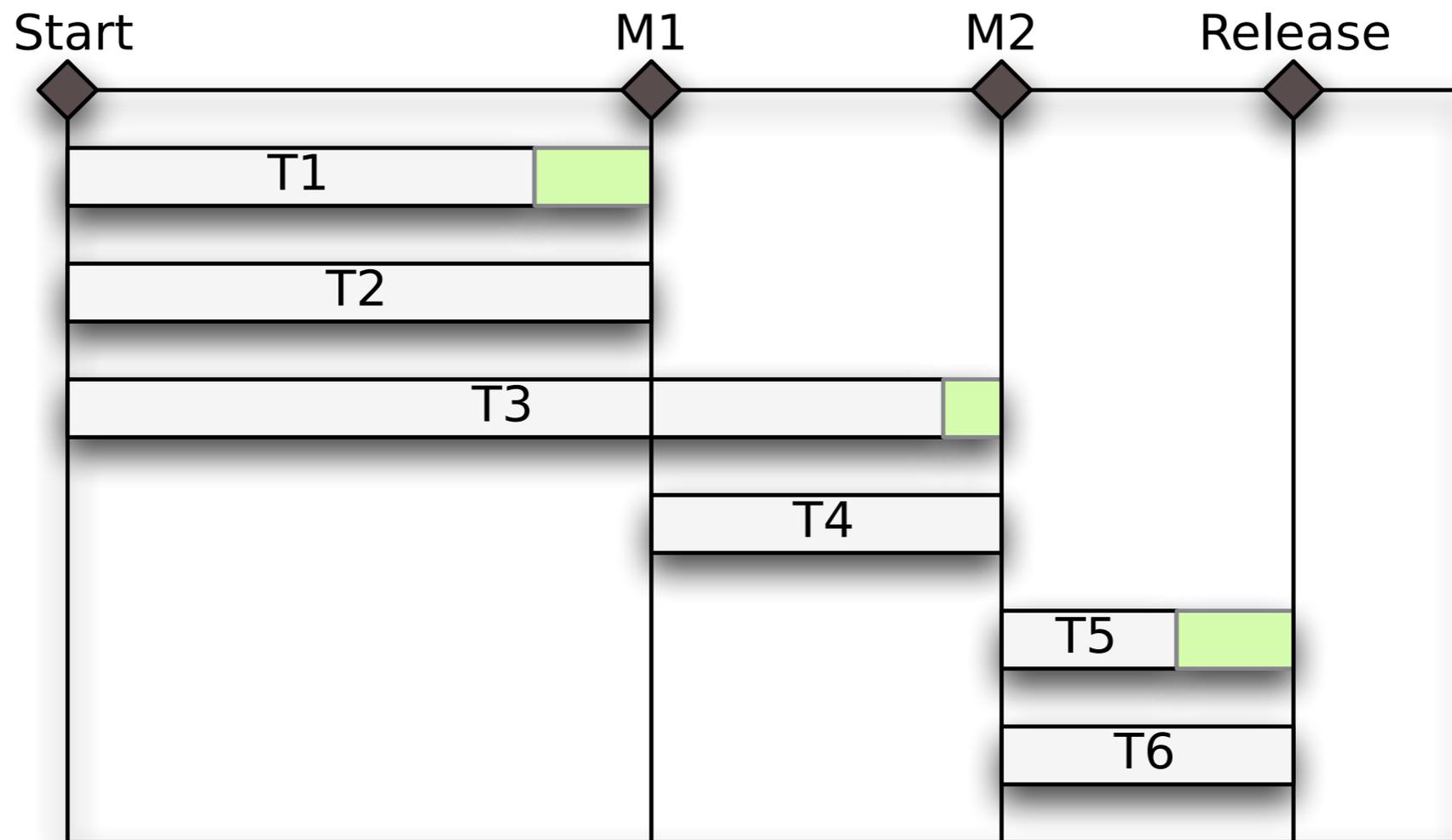
7. **Monitoring and reporting mechanisms**

Project Schedules can be illustrated using activity networks and / or gantt charts.

- A milestone has to be a concrete, verifiable goal



Project Schedules can be illustrated using activity networks and / or gantt charts.

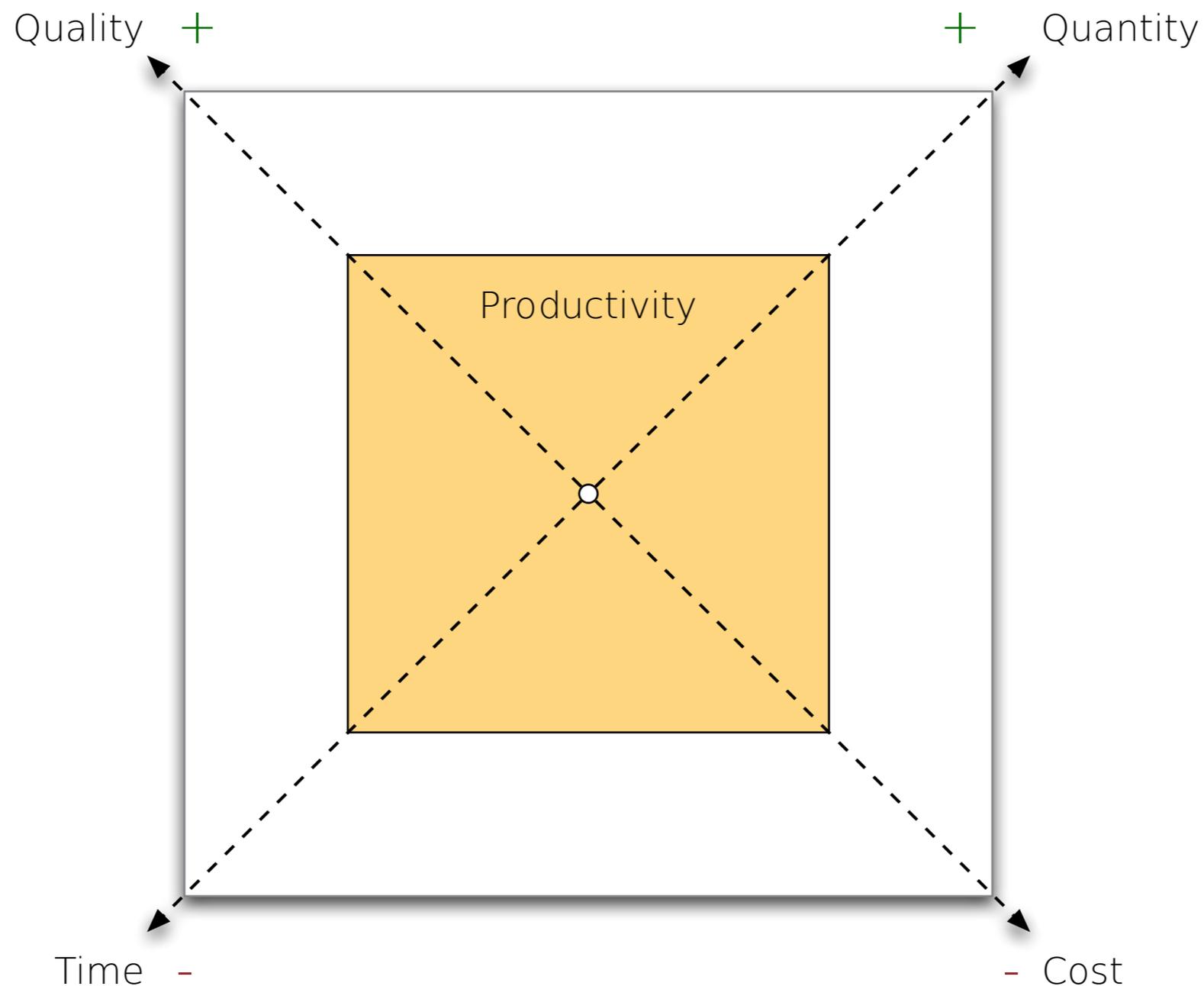


Die dt. DIN 69905 bezeichnet den **Projektplan** allgemein als "**Gesamtheit aller im Projekt vorhandenen Pläne**".

Sneed's "Devil's Square"

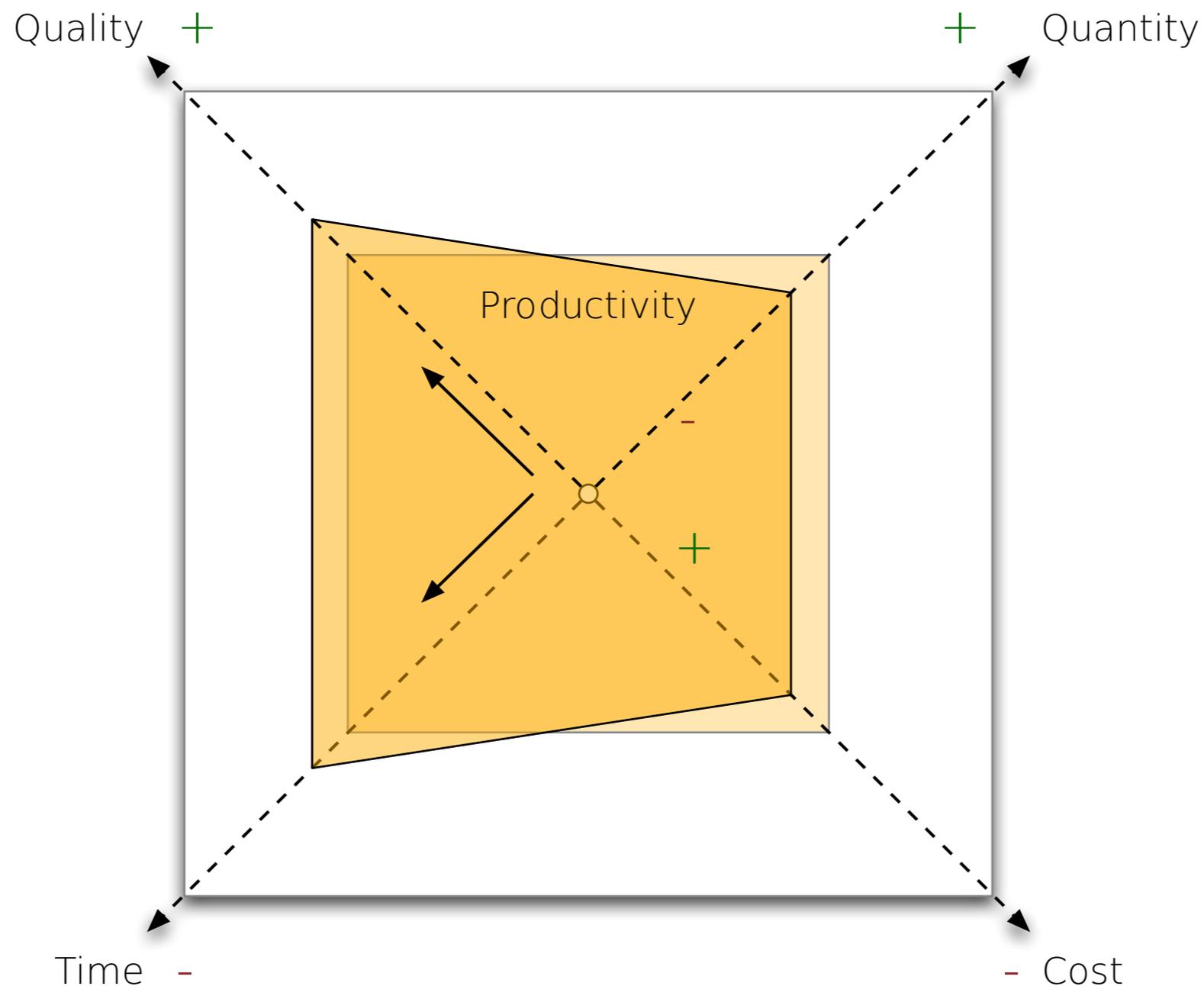
The quality and the quantity of the software is measured as well as the time and costs it takes to complete the project.

In the short term, the productivity (the "orange" area) is fix.



Sneed's "Devil's Square"

If the quality of the software should be increased and the time should be reduced, the costs will rise and the number of features has to be reduced.



The goal of this lecture is to enable you to systematically carry out small(er) commercial or open-source projects.

You should now have a good understanding of the specifics of software projects.

You should have a rough idea of some tasks that need to be carried out when managing software projects.