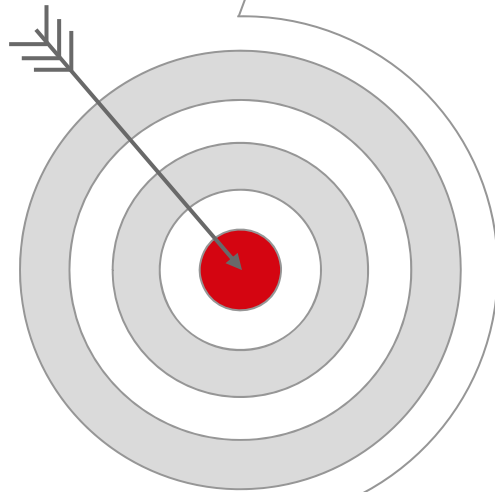


# Architecture and Integration

## Architecture Principles

**Fachbereich 2** Informatik und Ingenieurwissenschaften

# Learning Objectives: Architecture Principles



Explain selected architecture principles

Evaluate architecture principles with respect to a given scenario



# Architecture Principles: Motivation

## Challenges

- An architecture's quality can only be evaluated based on its **purpose**
- Existing measures are rather **technical** and do not address purpose and context
- **Experience** is needed in order to assess an architecture
- Architectures fail if they are not helpful

## Principles

Principles support ...

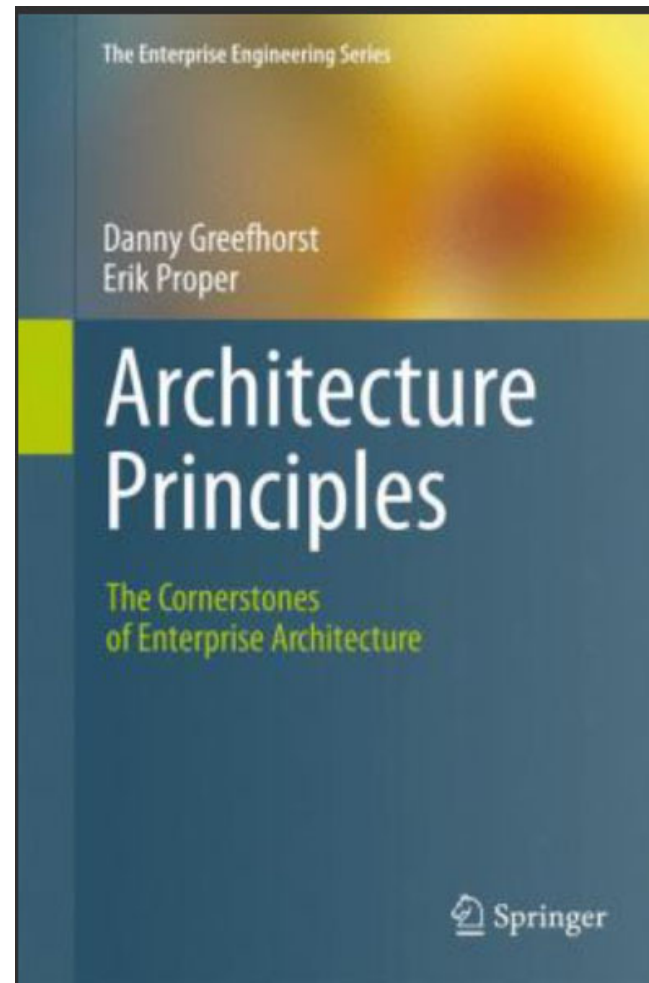
- ... design good architecture
- ... evaluate an architecture
- ... improve existing architectures
- ... following business needs

Principles ...

- ... are based on best practices
- ... document expert knowledge
- ... incorporate economic aspects
- ... are not just formal measures



# Architecture Principles: Book



## Architecture Principles: Definition

**Architecture Principle:** A design principle included in an architecture. As such, it is a declarative statement that normatively prescribes a property of the design of an artifact, which is necessary to ensure that the artifact meets its essential requirements.

Greefhorst/Proper: Architecture Principles. Springer 2011

# Architecture Principles: Definition Explained

“design principle”

- Principle for designing an artifact (i.,e. architecture)
- Used in a constructive way

“declarative”

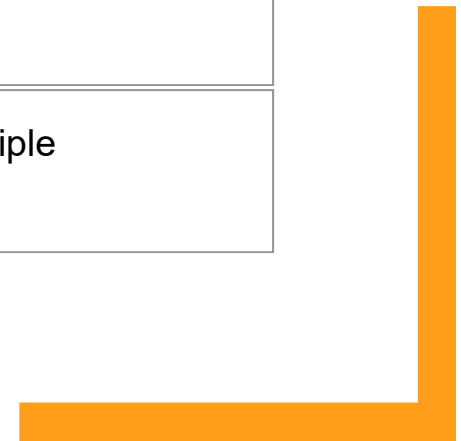
- Describing requirements on a solution or the target state
- Does not prescribe how to achieve the target state

“normatively prescribes”

- Setting a norm for a given context
- Prescription for designing an architecture
- It's not a law per se but you can make it a law

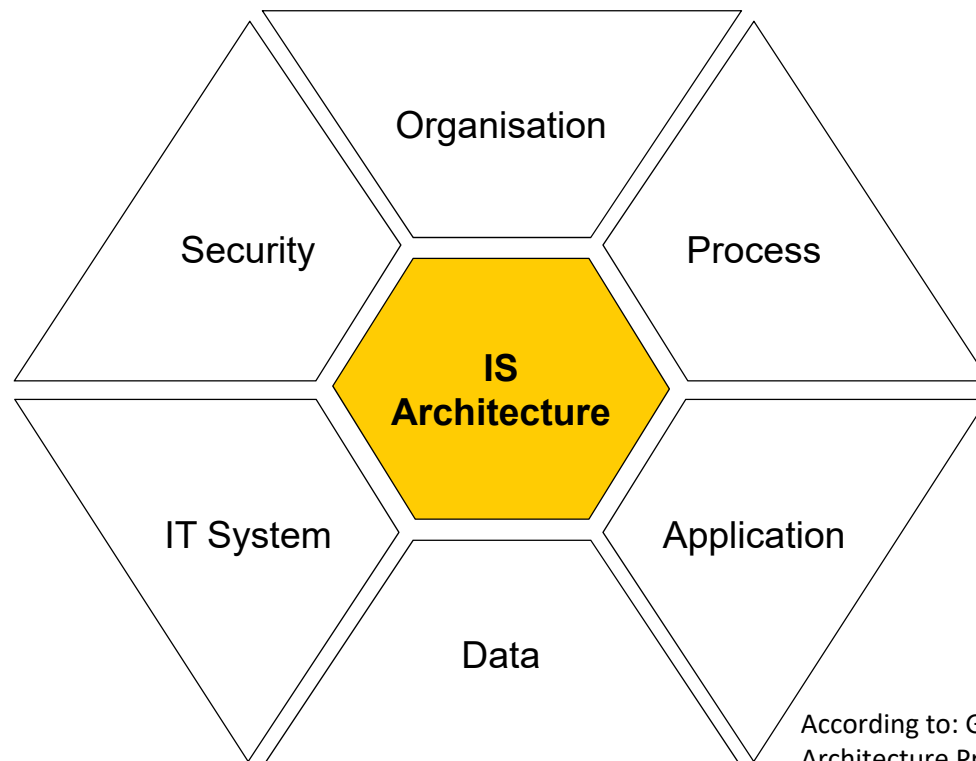
“essential requirements”

- Requirements define the applicability of the principle
- Requirements are derived from business context



## Principles: Overview

Architecture principles aim at providing guidance (based on best practices) for designing good architectures in a corporate environment, covering different aspects.



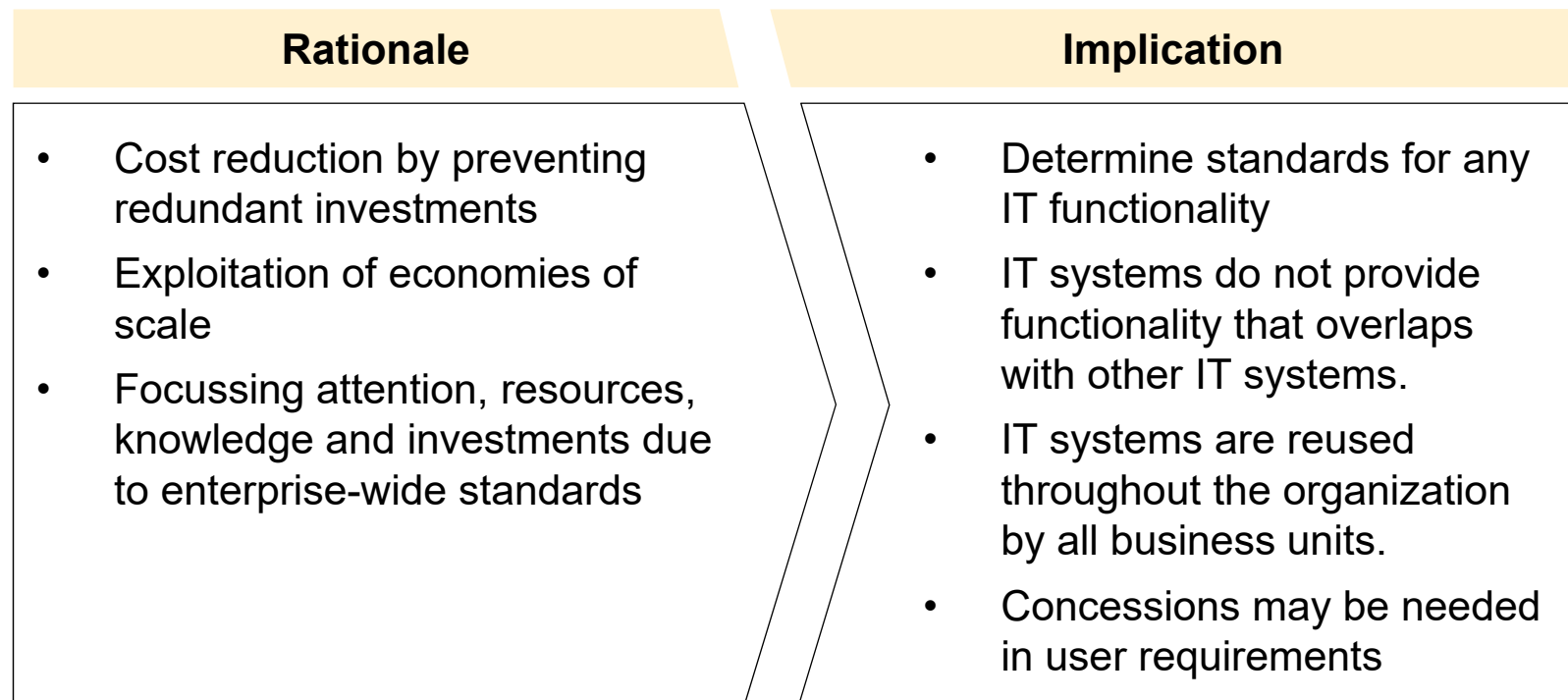
### Principles aim to ensure

- Provision of functionality
- Availability of information systems
- Performance as required
- Security and data protection
- Scalability with respect to business needs
- Compliance
- Sustainability (technologically and economically)

According to: Greefhorst, D.; Proper, E.:  
Architecture Principles. Springer, 2011

# Principle: Standardisation

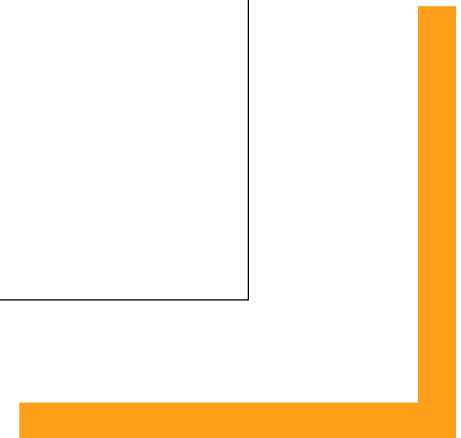
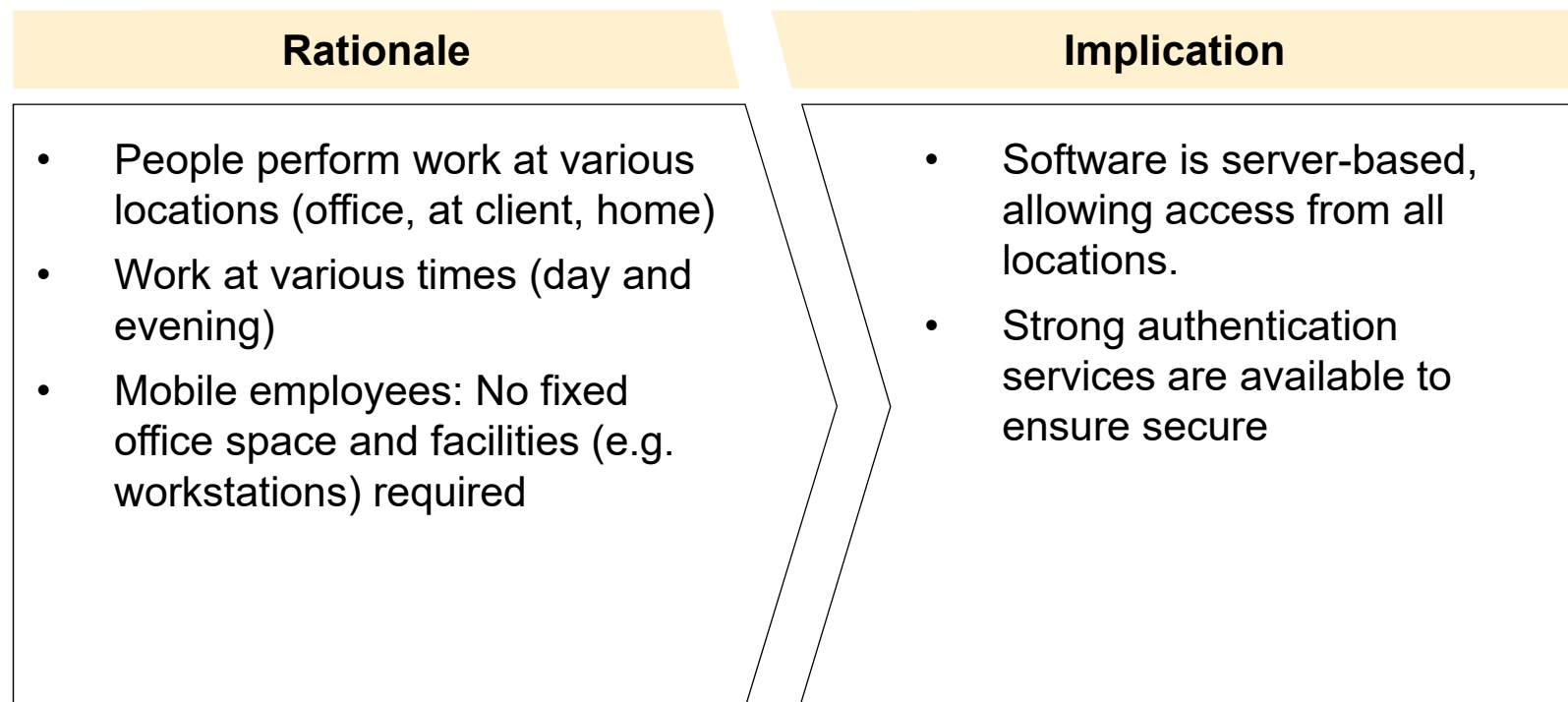
## IT Systems Are Standardized and Reused Throughout the Organization





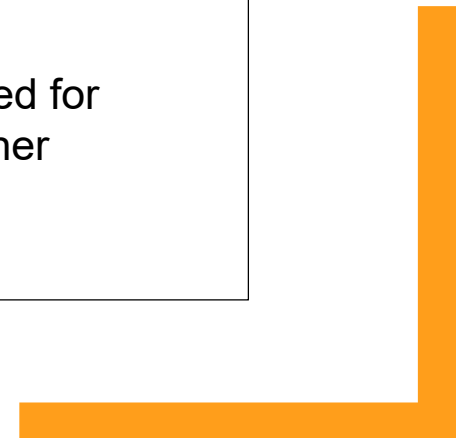
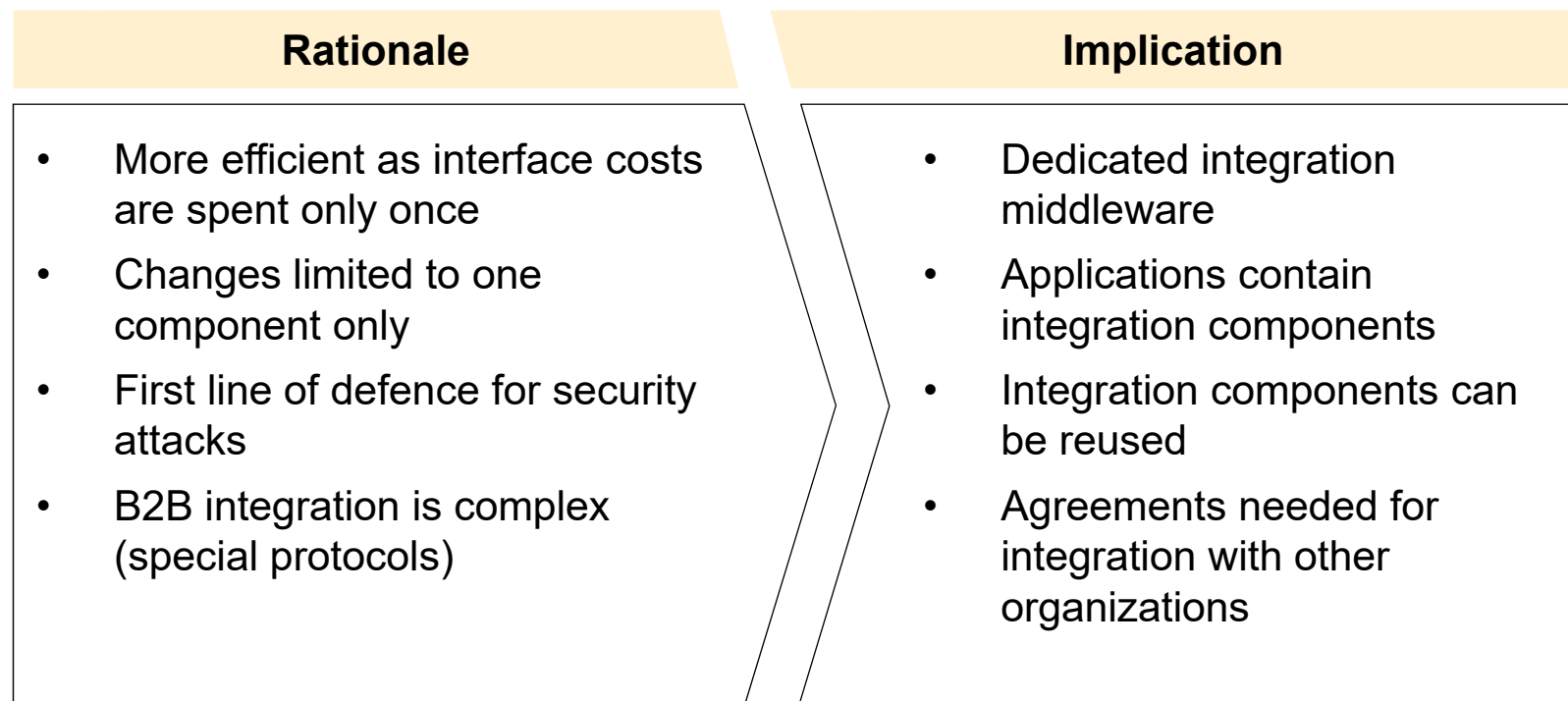
# Principle: Availability

## IT Systems Are Available at Any Time on Any Location



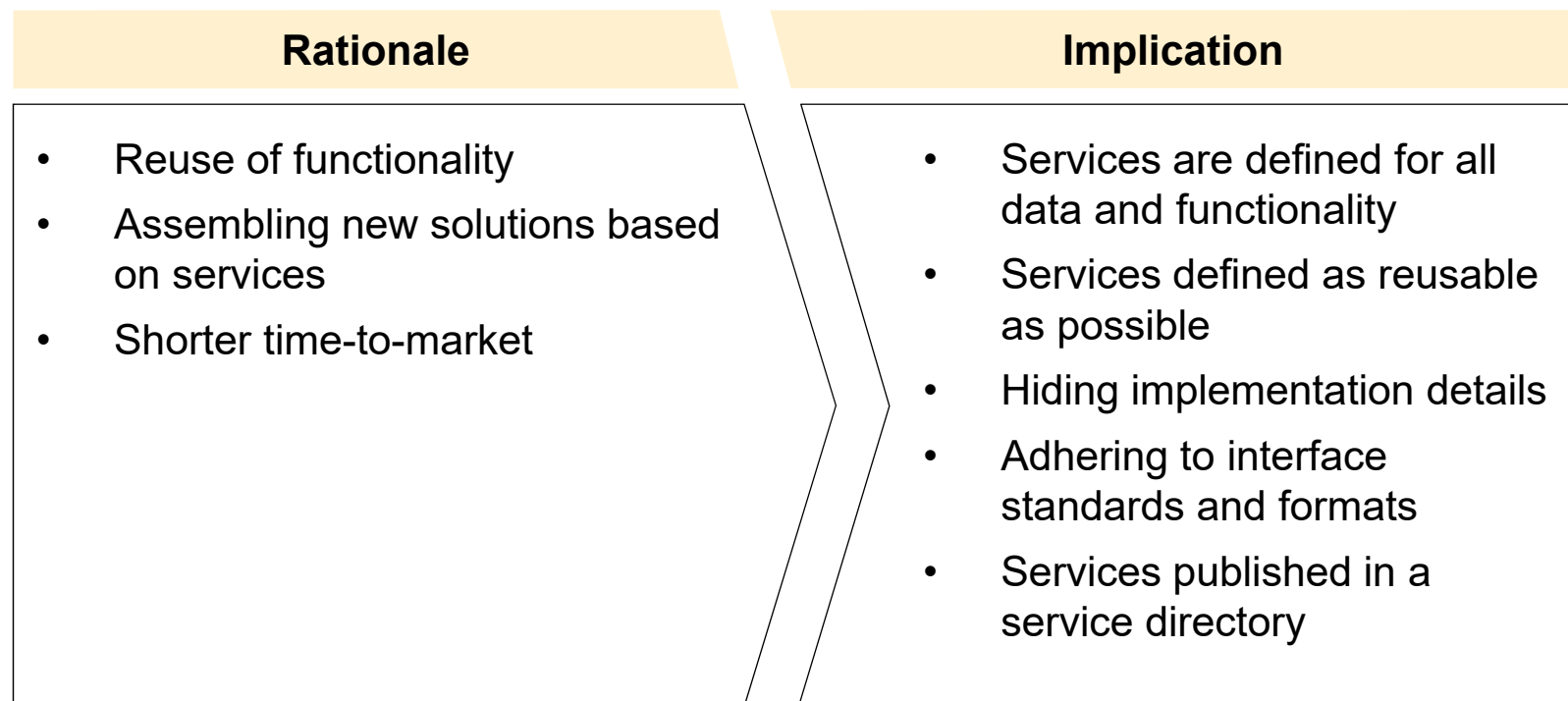
# Principle: Partner Integration

## Integration with External IT Systems Is Localized in Dedicated IT Components



# Principle: Partner Integration

## IT Systems Communicate Through Services



## Exercise

You will be assigned one of the architecture principles. Read the principle's description carefully and discuss within you group:

- Mark new or unfamiliar terms. Try to figure out their meaning (i.e. web search).
- Explain the principle in your own words.
- Clarify terminology.
- Is the principle relevant for the IS architecture of examination?
  - If no: Explain, why not
  - If yes: Provide an example
- Did you find the principle helpful? Why (not)?

Create a presentation on the topics above in order to explain the principle to your fellow students.

