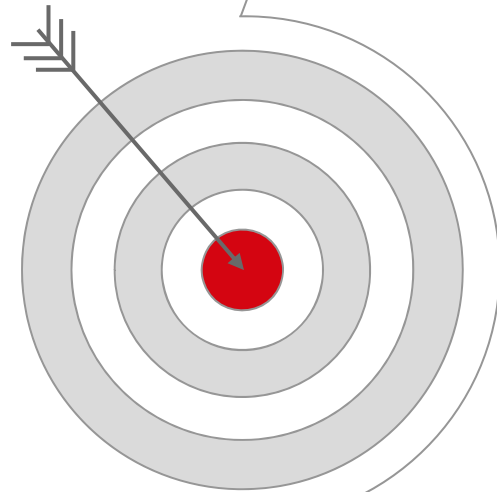


Architecture and Integration

Information System Architecture and ArchiMate

Fachbereich 2 Informatik und Ingenieurwissenschaften

Learning Objectives: IT Architecture



Explaining typical elements of an information system architecture

Modelling simple architecture with ArchiMate



Particify

What is an information system (IS)??

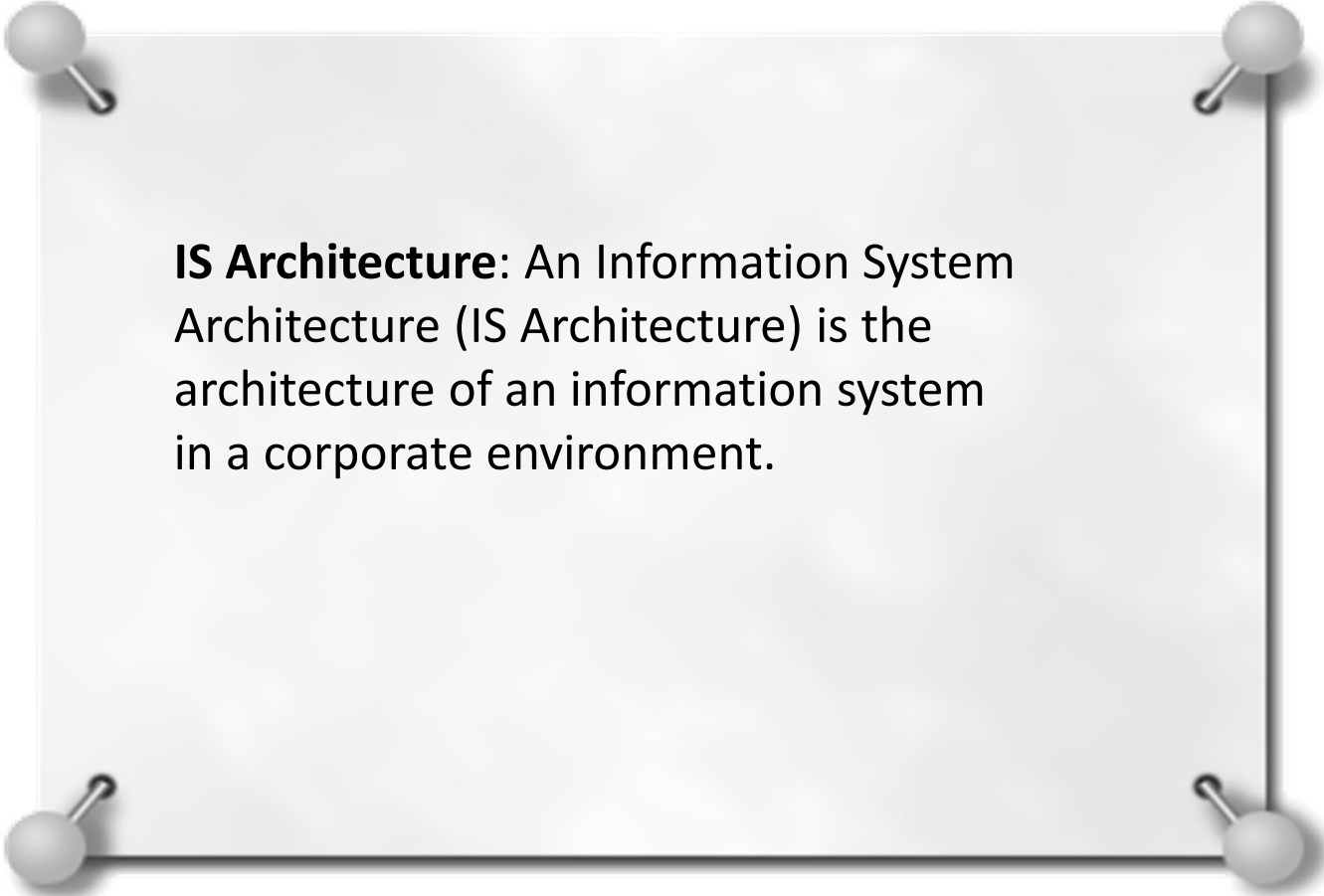


Information System – Definition

Information System: An information system can be defined [..] as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization.

Laudon/Laudon: Management Information Systems, 2022, p.246

IS Architecture – Definition



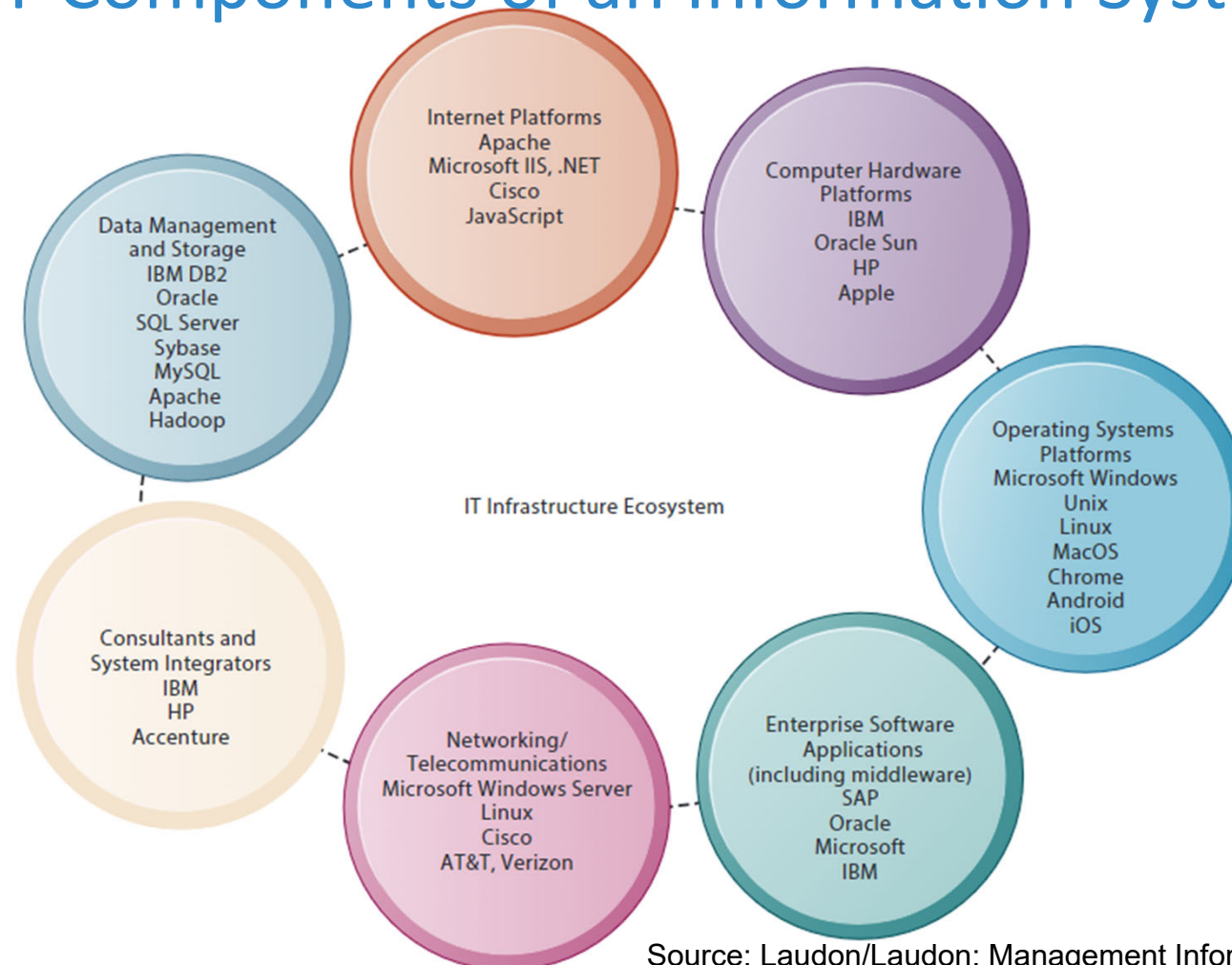
IS Architecture: An Information System Architecture (IS Architecture) is the architecture of an information system in a corporate environment.

Particify

Which kinds of components (elements, objects) does an information system consist of?

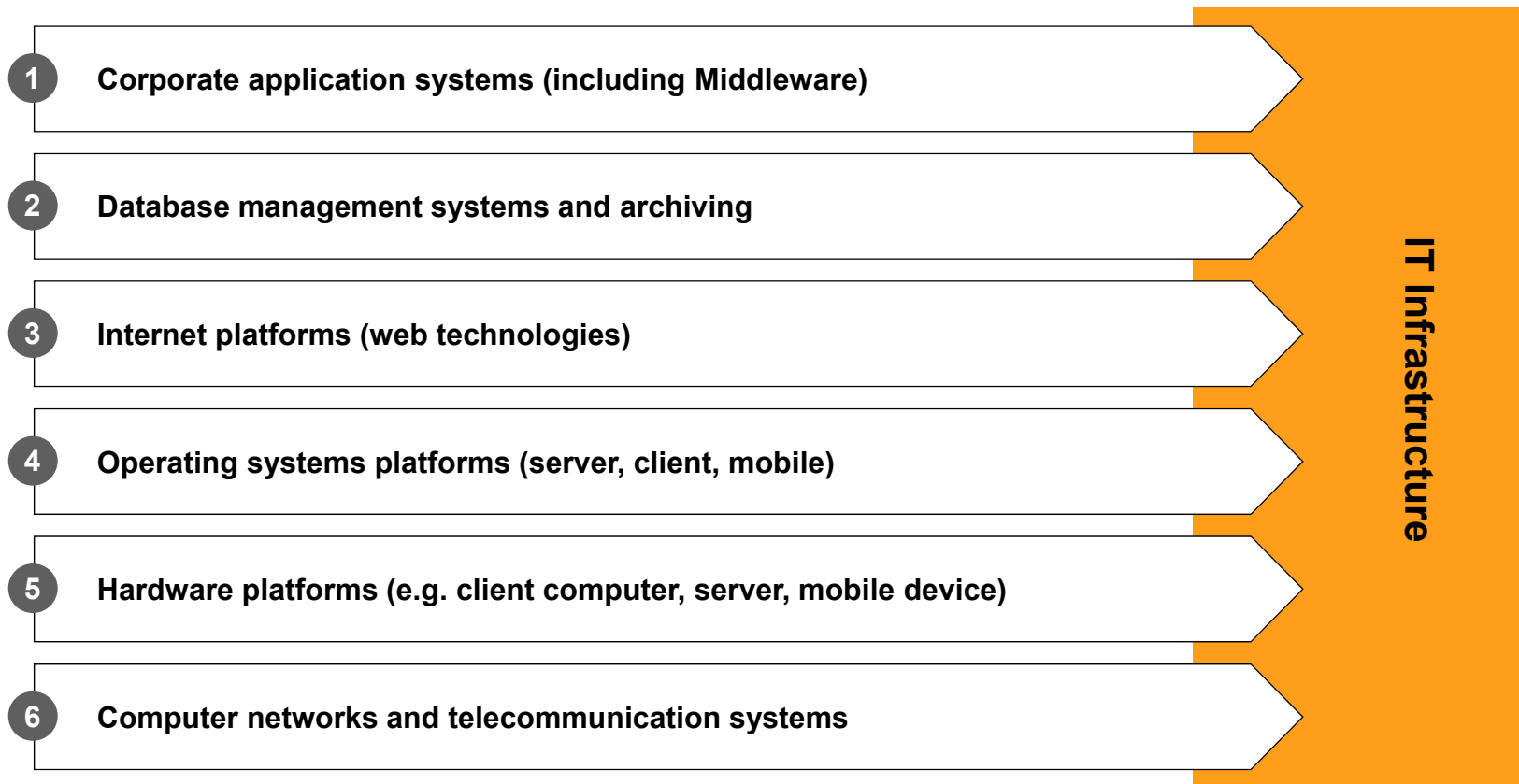


IT Components of an Information System



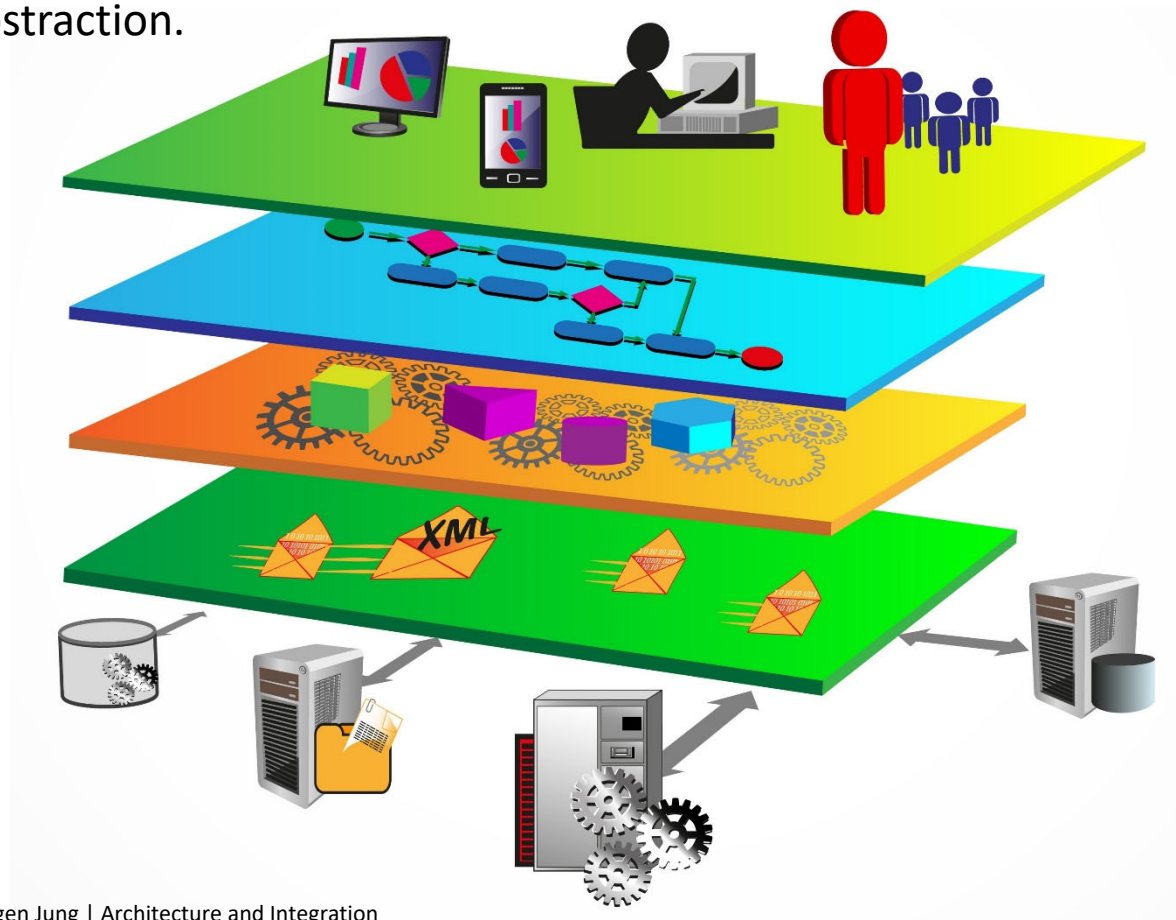
Source: Laudon/Laudon: Management Information Systems, 2022, p.209

IT Components of an Information System

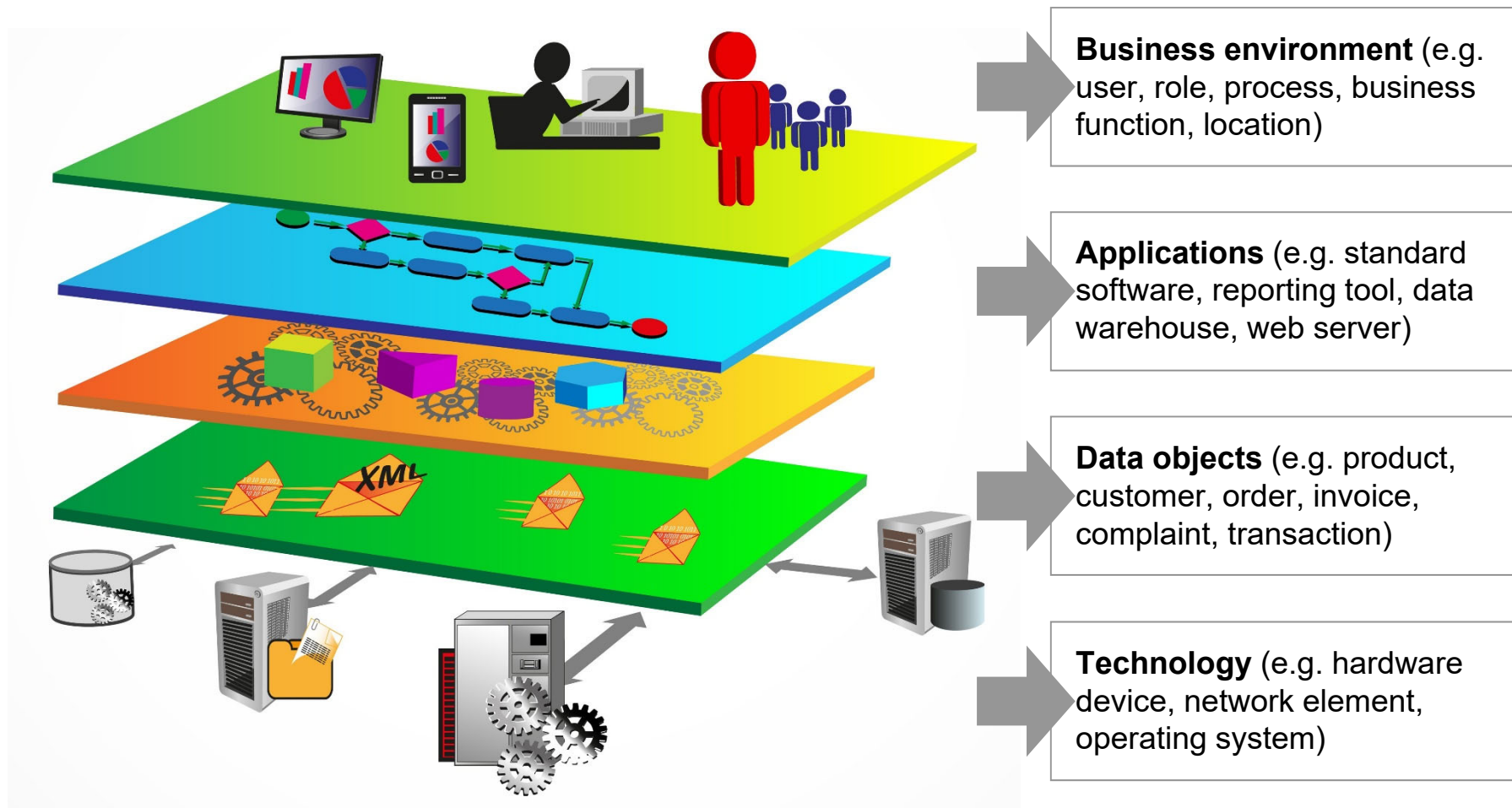


Information System – Levels

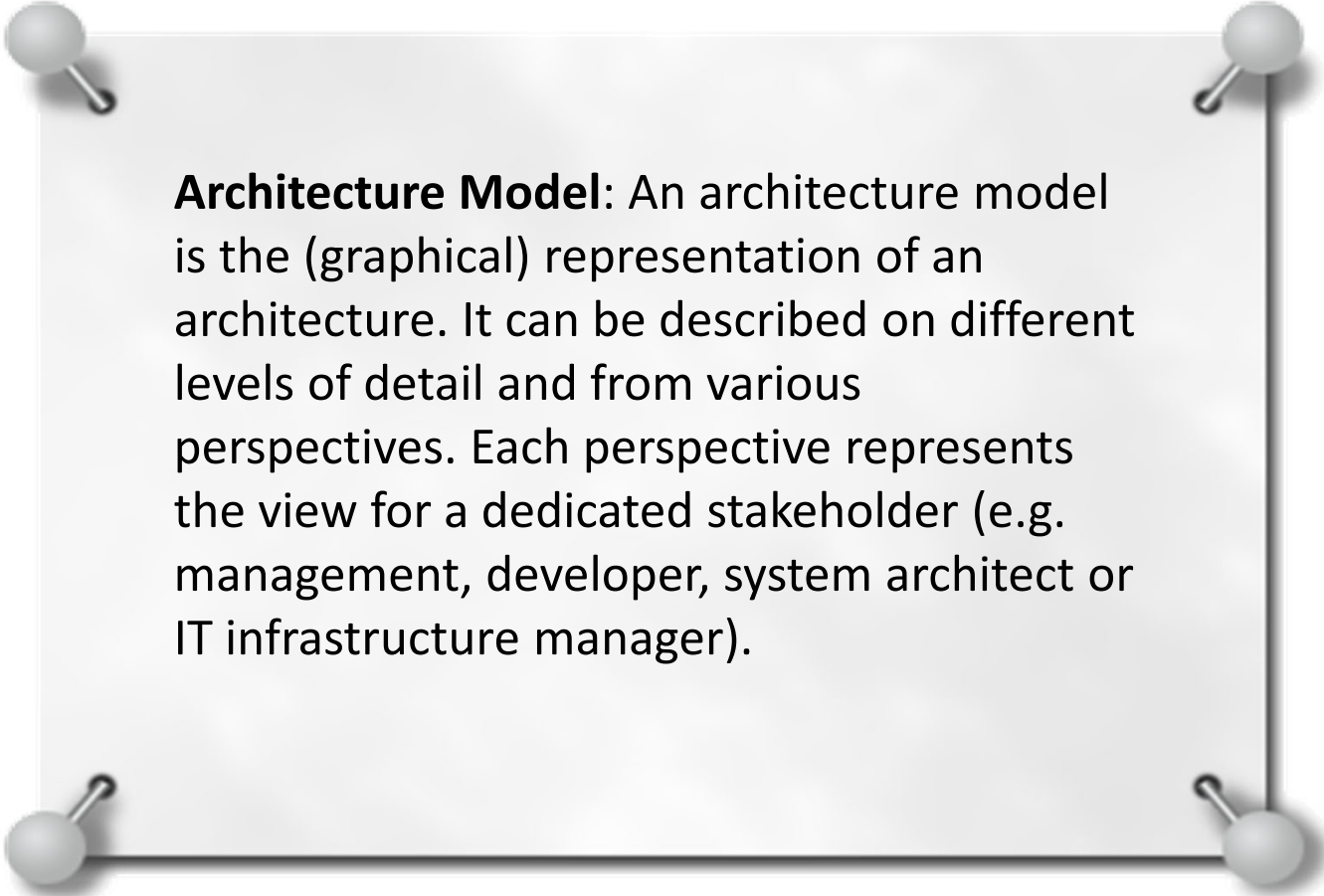
An information system in a corporate environment consists of elements on different levels of abstraction.



Information System – Concept Overview



Architecture Model – Definition



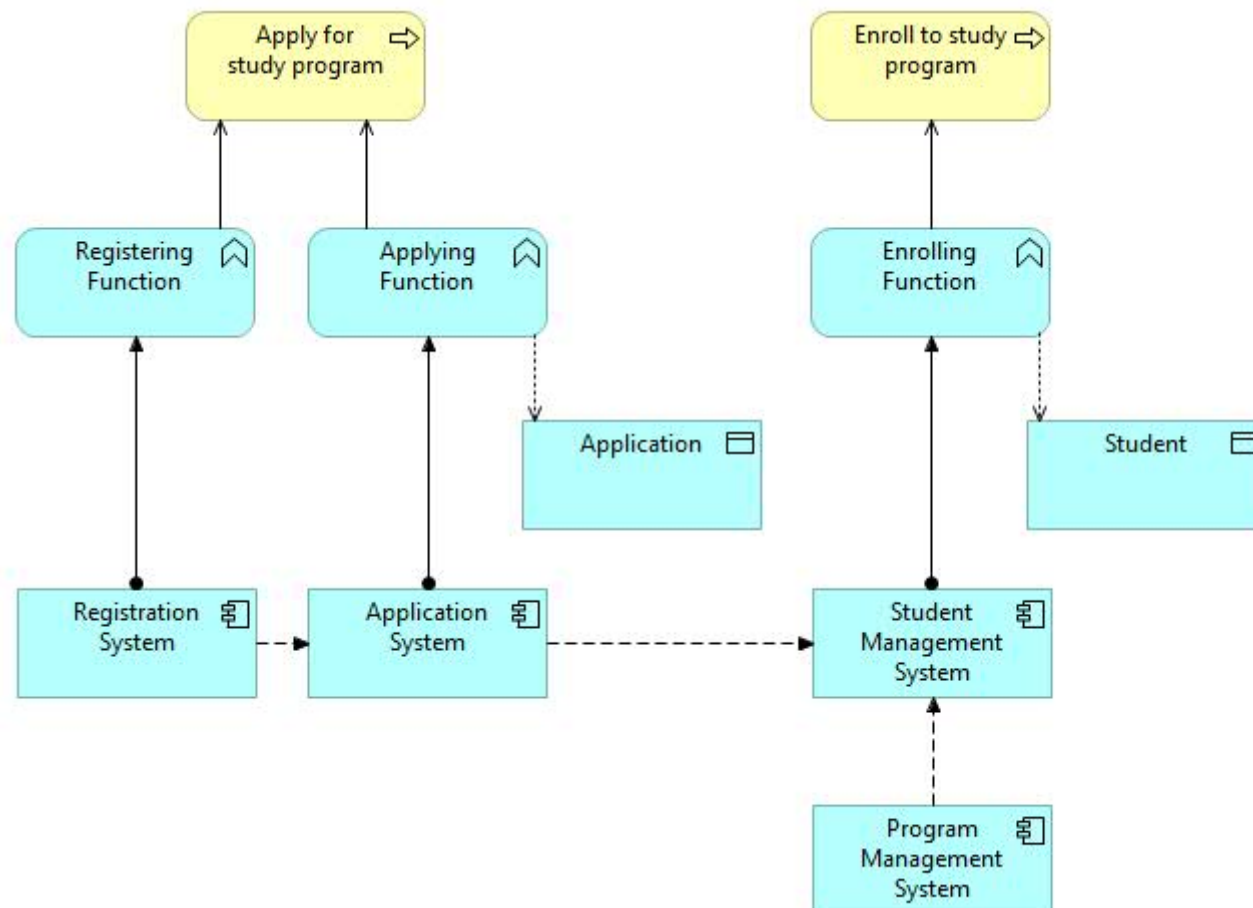
Architecture Model: An architecture model is the (graphical) representation of an architecture. It can be described on different levels of detail and from various perspectives. Each perspective represents the view for a dedicated stakeholder (e.g. management, developer, system architect or IT infrastructure manager).

Modelling IS Architecture using ArchiMate

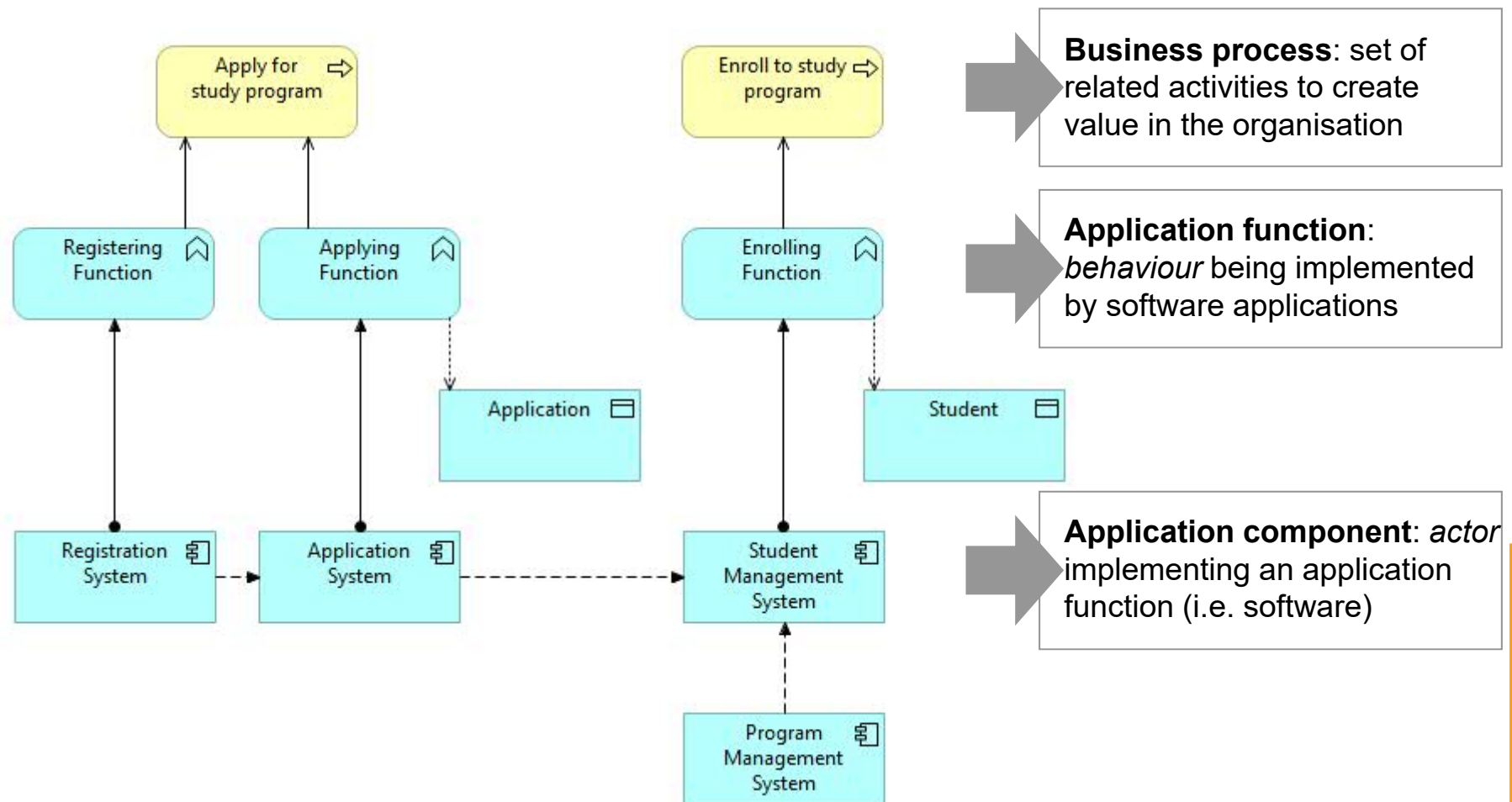


- Modelling language for Enterprise Architecture
- Standardised by *The Open Group* (vendor neutral)
- Current version 3.2 since October 2022
- Originated in a Dutch project during 2002--2004
- Supported by various modelling tools (e.g. Archi)

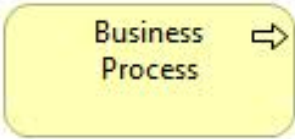


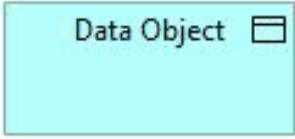
ArchiMate – Introductory Example



ArchiMate – Concepts Explained




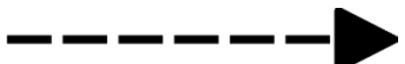


ArchiMate – Symbols (excerpt)

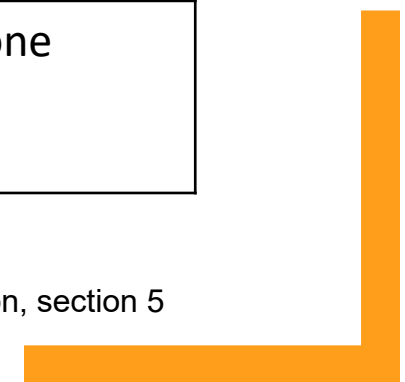
| | |
|---|--|
|  | <p>A business process represents a sequence of business behaviors that achieves a specific result such as a defined set of products or business services.</p> |
|  | <p>An application component represents an encapsulation of application functionality aligned to implementation structure, which is modular and replaceable.</p> |
|  | <p>An application function represents automated behavior that can be performed by an application component (i.e. being implemented by the application component).</p> |
|  | <p>A data object represents data structured for automated processing.</p> |

Source: ArchiMate 3.2 Specification, sections 8 and 9

ArchiMate – Relationships (excerpt)

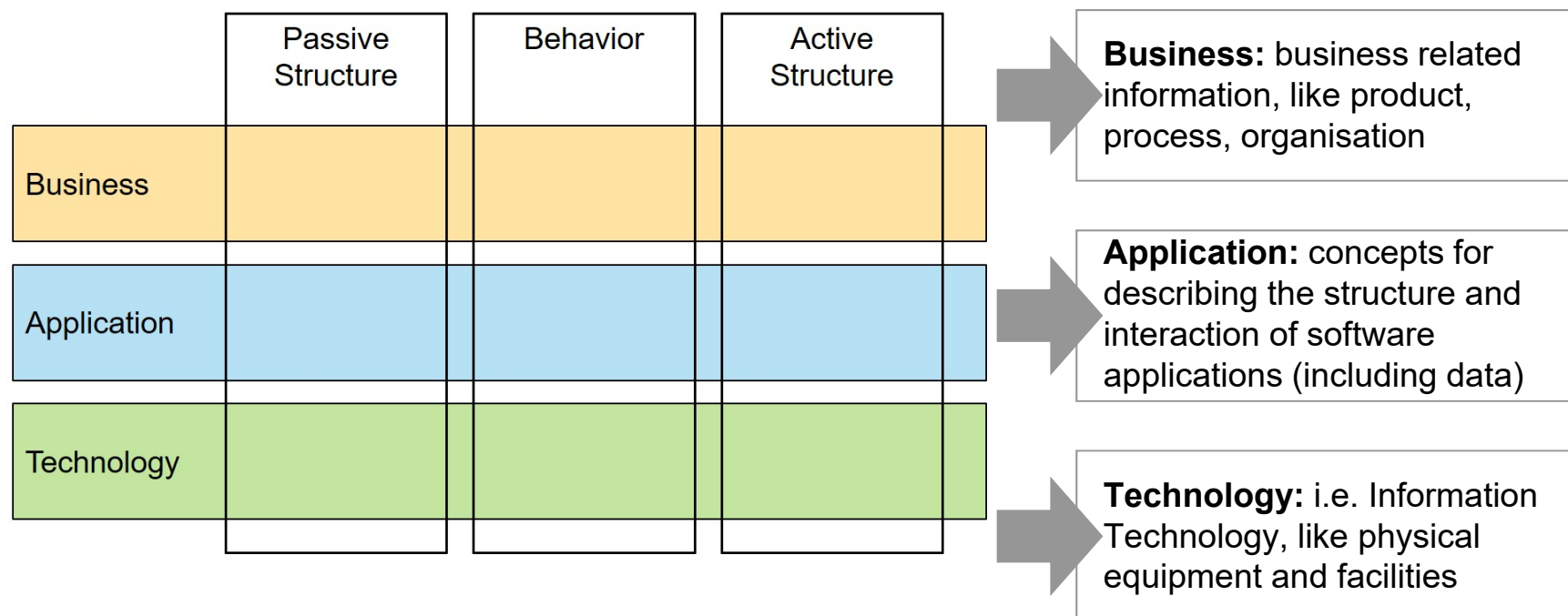
| | |
|---|---|
|  | <p>The assignment relationship represents the allocation of responsibility, performance of behavior, storage, or execution.</p> |
|  | <p>The realization relationship represents that an element plays a critical role in the creation, achievement, sustenance, or operation of a more <i>abstract</i> element.</p> |
|  | <p>The access relationship represents the ability of behavior and active structure elements to observe or act upon passive structure elements.</p> |
|  | <p>The flow relationship represents transfer from one element to another.</p> |

Source: ArchiMate 3.2 Specification, section 5



ArchiMate – Core Framework

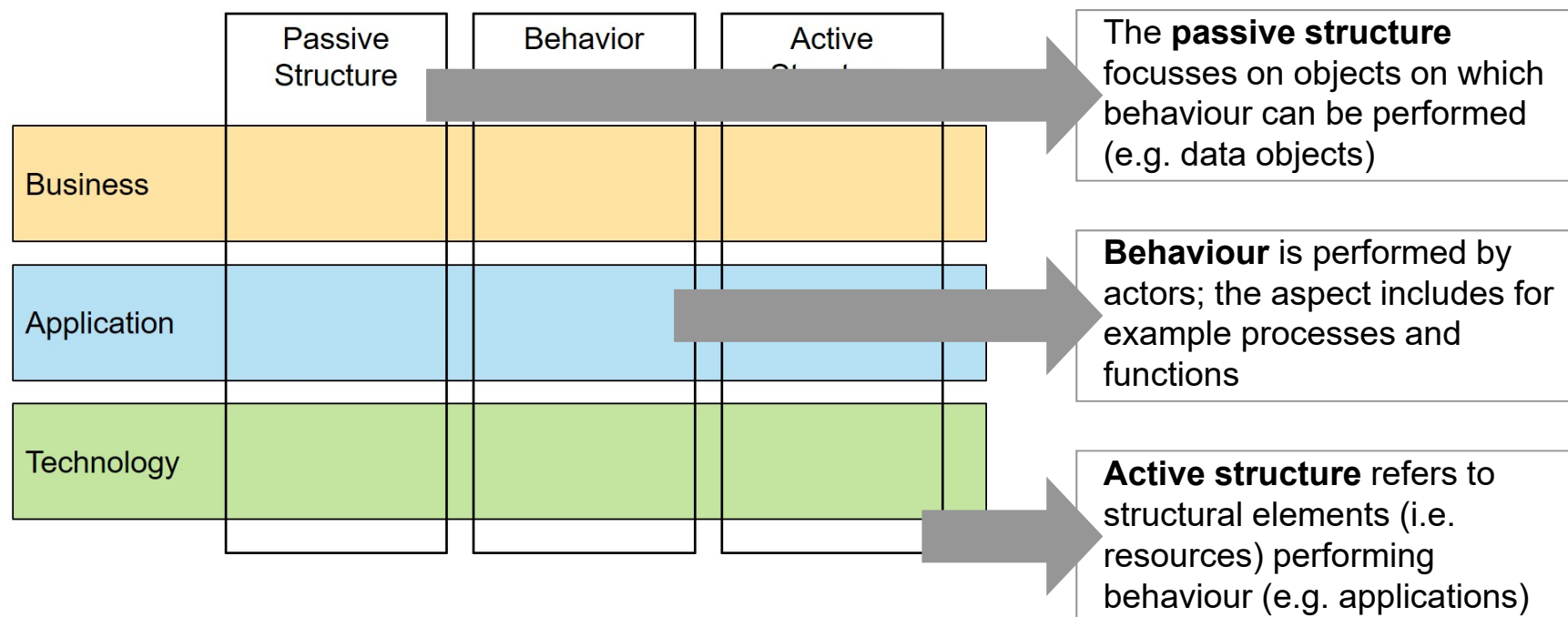
ArchiMate is based on a framework separating the models into different layers.



Source: Jung/Fraunholz: Masterclass EAM, 2021, p.188

ArchiMate – Aspects in Core Framework

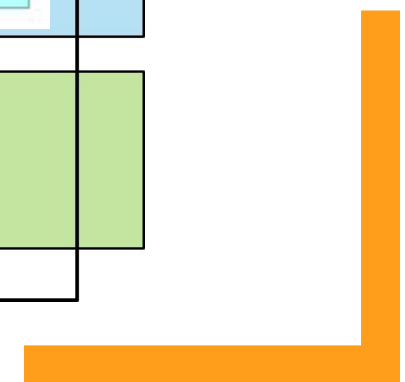
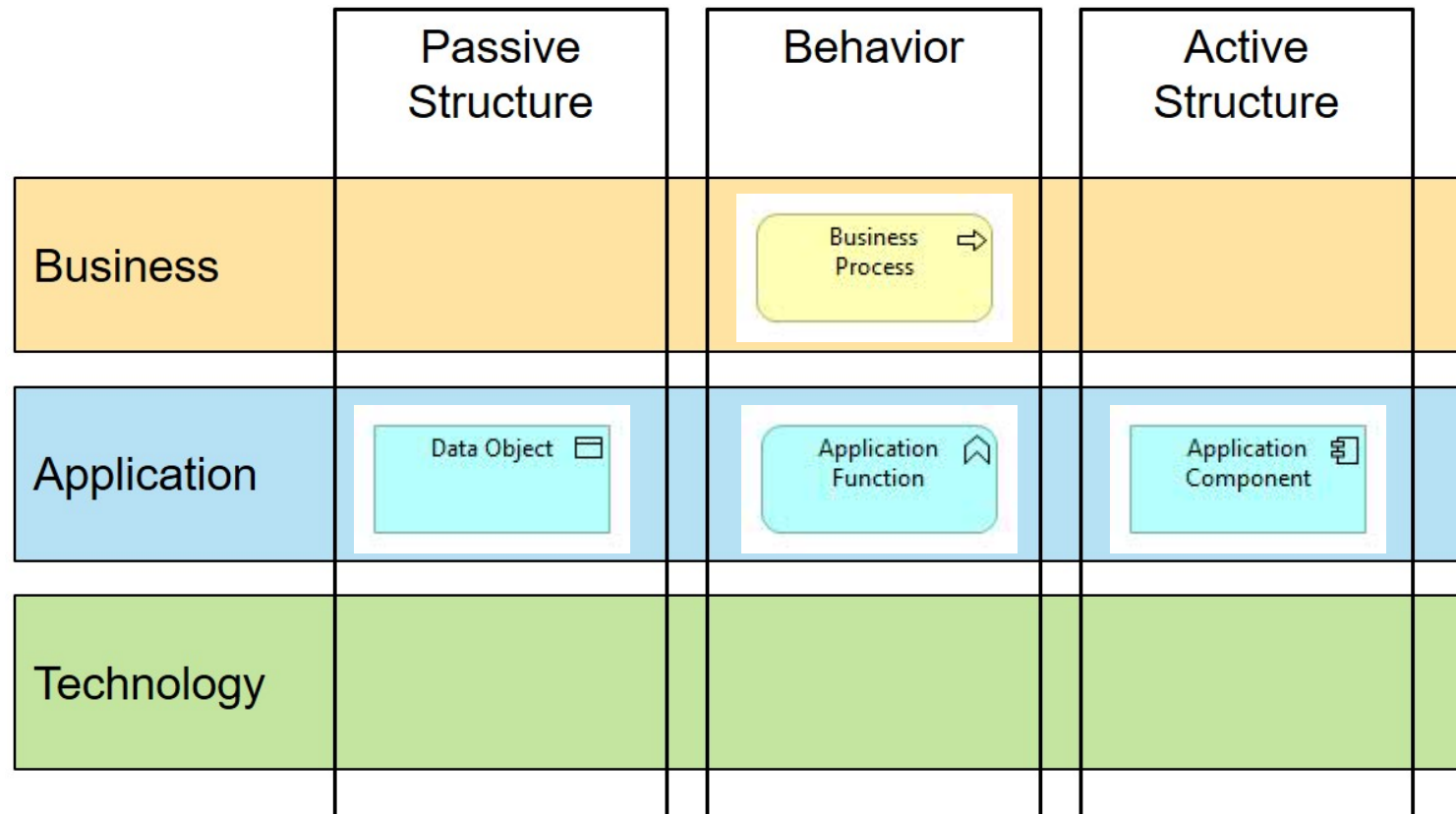
Aspects differentiate between data, functions and resources.



Source: Jung/Fraunholz: Masterclass EAM, 2021, p.188

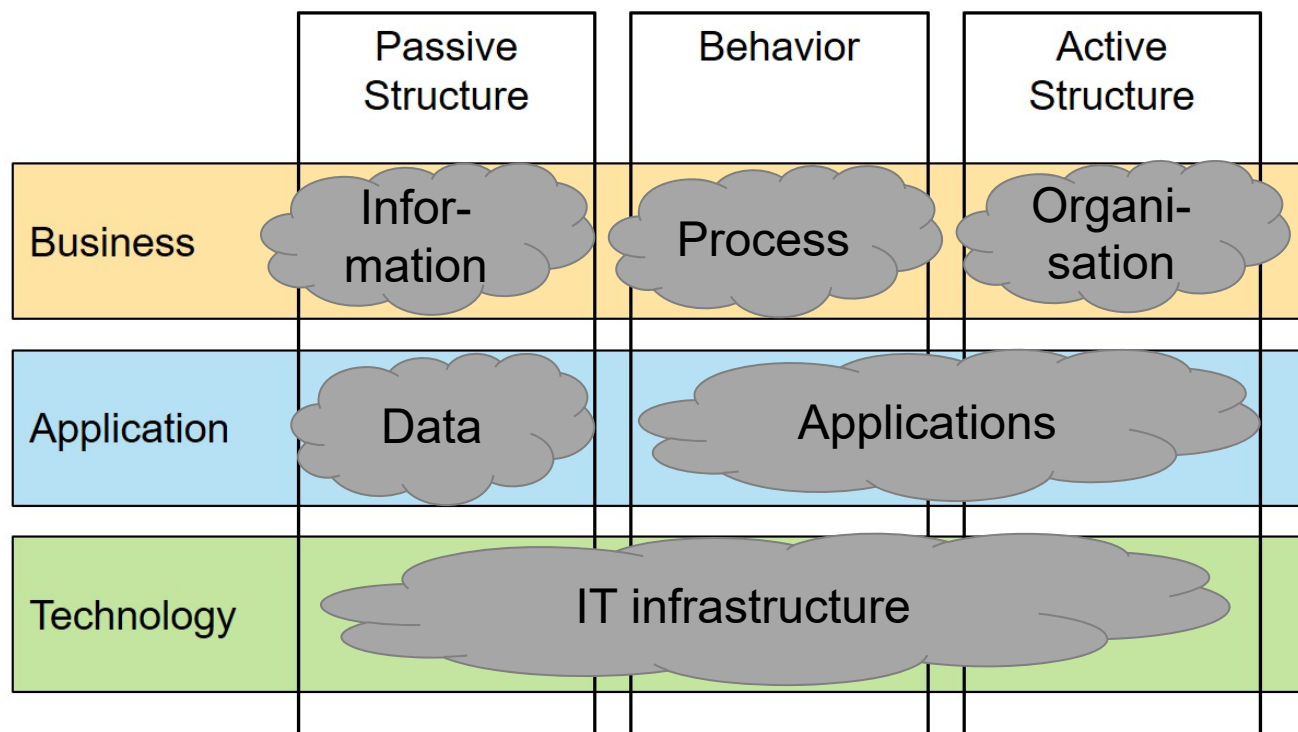
ArchiMate – Today's Elements

The four elements introduced today fit to the framework as follows:

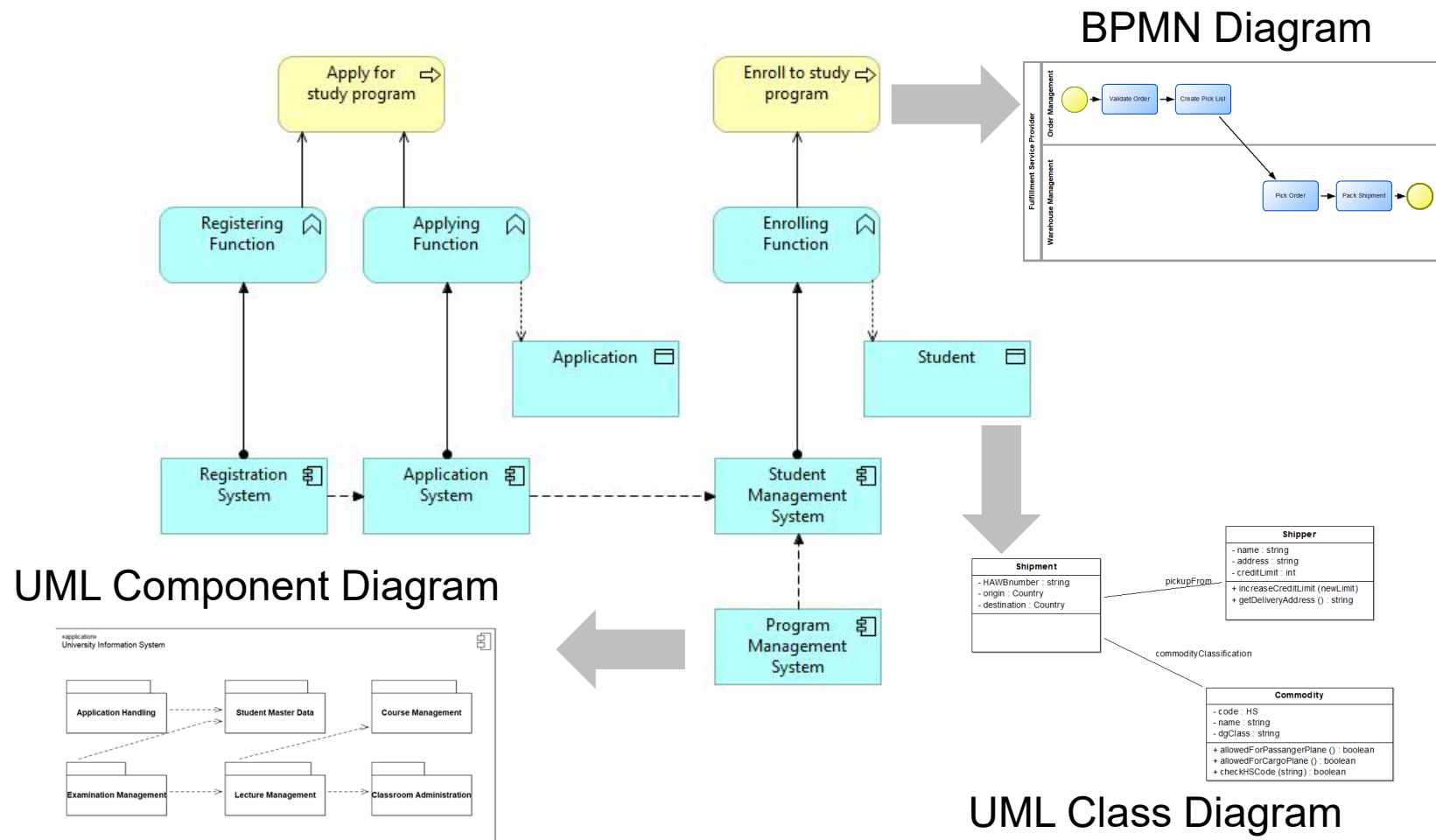


ArchiMate – Typical Elements

Aspects and layers correspond to typical elements in IS architecture.



ArchiMate – ... and other Standards



Exercise 2: ArchiMate



Tool

- Install Archi: ArchiMate Modelling Tool
- <https://www.archimatetool.com/>
- <https://www.archimatetool.com/downloads/archi/Archi%20User%20Guide.pdf>

ArchiMate

- Reference Cards (CampUAS)
- Book Excerpt (CampUAS)

Configure

- Create an “Empty Model” for the A&I
- In “Views” create a folder “First steps”

1st step

- Model the given diagram in ArchiMate
- Add roles to the two processes

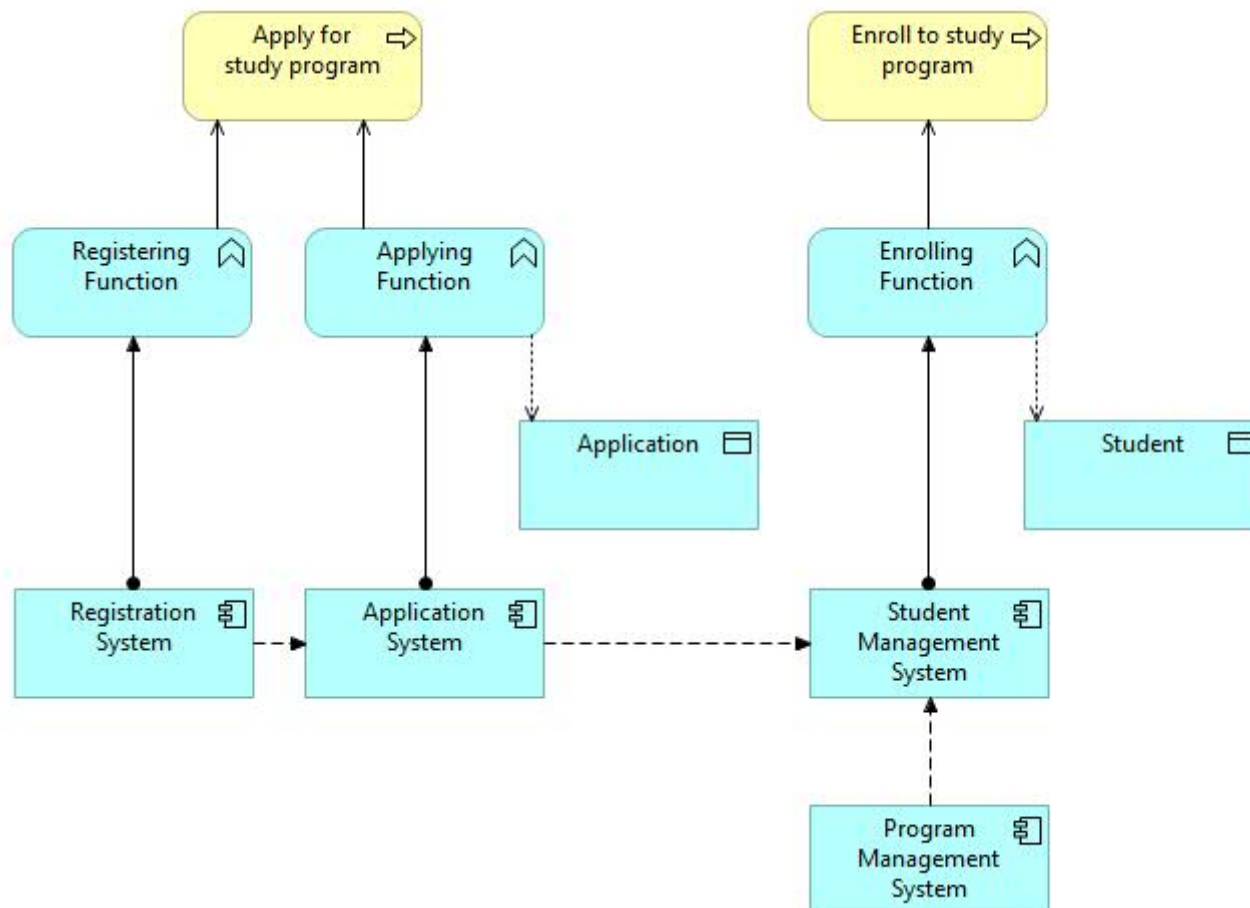
2nd step

- Model the given scenario in Archi
- Group of two

Present

- Present results to class

ArchiMate 1st Step – Model this Diagram



ArchiMate 2nd Step – Model this Scenario

The examination office of faculty 2 of the Frankfurt University of Applied Sciences uses several software systems for their activities:

1. Jira is used for processing students' requests:
 - Students can create a request
 - A request can be solved by an employee in the examination office
 - A request can be delegated to another employee in the examination office
 - A request can only be closed once it's solved
2. HIS is the central student management system
 - Student data is created by the student support team
 - Students can register for specific exams (classes) or unregister within a given period of time
 - The examination office creates the participants list for written exams
 - A teacher or an employee in the examination office enters grades after an exam
 - Students can create a report showing their past exams and grades

tbc.

ArchiMate 2nd Step – Model this Scenario

3. WiseFlow is used for managing a final thesis

- A student needs to send forms for the thesis to the examination office via Jira
- An employee in the examination office enters the data for the thesis in WiseFlow
- First and second supervisor need to confirm in WiseFlow that they will supervise the thesis
- After completion, the student submits the thesis
- The supervisors grade the thesis

4. An Outlook client and Exchange server are used for sending and receiving email

- Outlook needs to be installed on the computer of the employee in the examination office
- The Exchange server is hosted by the Campus IT on a central server

tbc.



ArchiMate 2nd Step – Model this Scenario

Create an architecture model (view in folder “First Steps”) of the examination office using ArchiMate. Identify relevant concepts:

- Application component
- Application function
- Business Process
- Business actor/role
- Device
- System software



ArchiMate 3.2 Resources

- ArchiMate textbook
Wierda, Gerben: "Mastering ArchiMate." R&A, 2017
- ArchiMate 3.2 reference cards
<https://www.opengroup.org/sites/default/files/docs/downloads/n221p.pdf>
- Archi (ArchiMate modelling tool)
<https://www.archimatetool.com/>
- ArchiMate 3.2 specification
<https://pubs.opengroup.org/architecture/archimate32-doc/index.html>

