Enterprise Architecture

Dr. Adnan Albar

Faculty of Computing & Information Technology
King AbdulAziz University - Jeddah

Dimensions of Architectural Modeling

Lecture 7

Week 6 Slides

King AbdulAziz University - FCIT

Overview

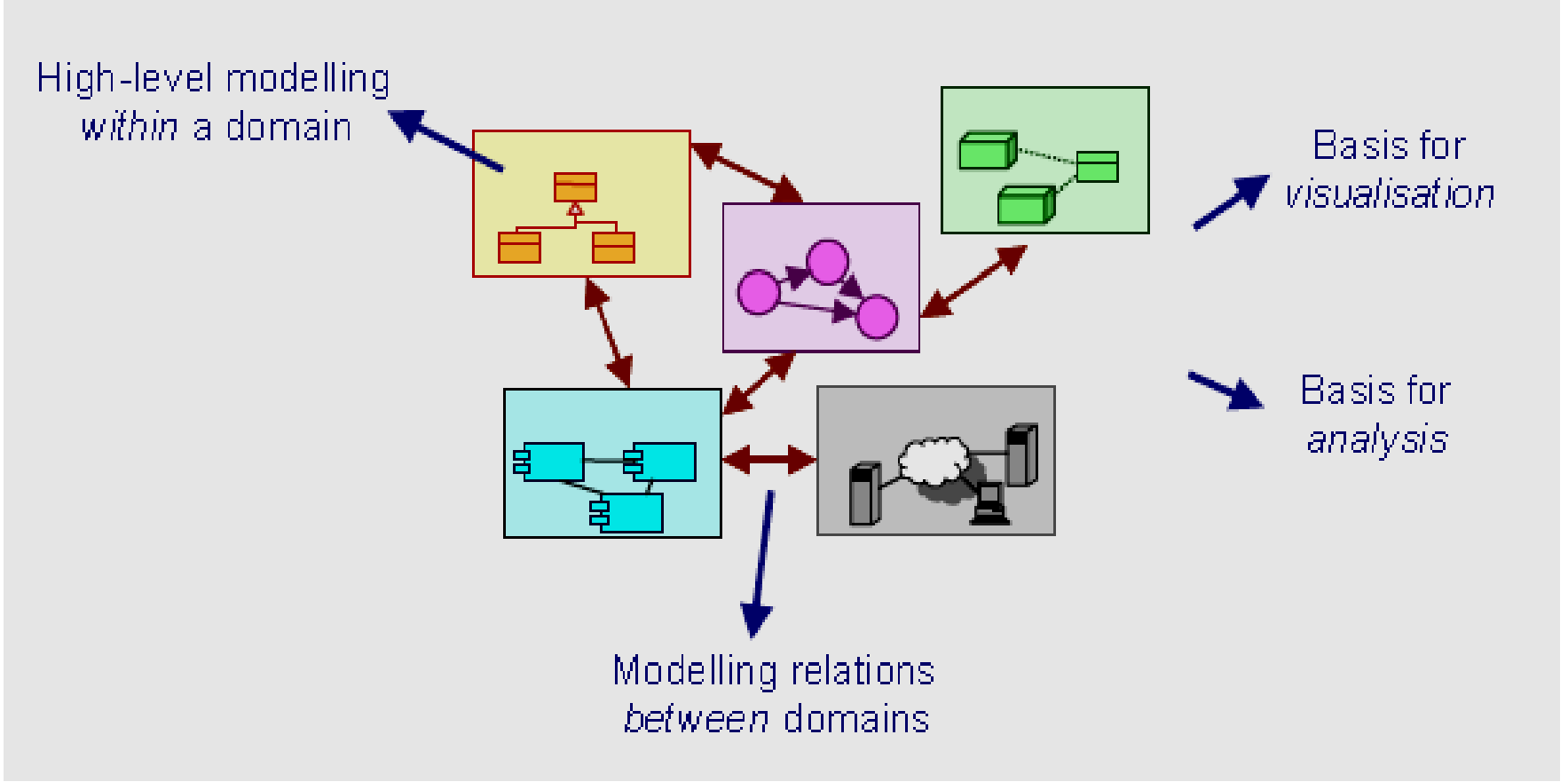
- Relevant relations *between the domains*
- Service Orientation and Layering
- Three Dimensions of Modeling
- Main concepts of the ArchiMate language
- Concepts of Layers
- Business, Application and Technology Concept

Relevant relations *between domains*

- There are strong dependencies between the domains
- Examples:
- The goal of the (primary) business processes of an organization is to realize their products
- Software applications support business processes
- Technical infrastructure is needed to run the applications
- Architects are needed to align designs in the different domains, a clear picture of the domain interdependencies is indispensable

Relevant relations *between domains*

In diagram, the role that the enterprise architecture modeling language plays in our approach is summarized.



The role of the ArchiMate language

Relevant relations *between domains*

- **The ArchiMate language**

- Provides a means for *integration*

- Allows creation of models that show high-level structures within domains

- Show high-level relationships between domains

- Provides the basis for the visualization and analysis

Service Orientation and Layering

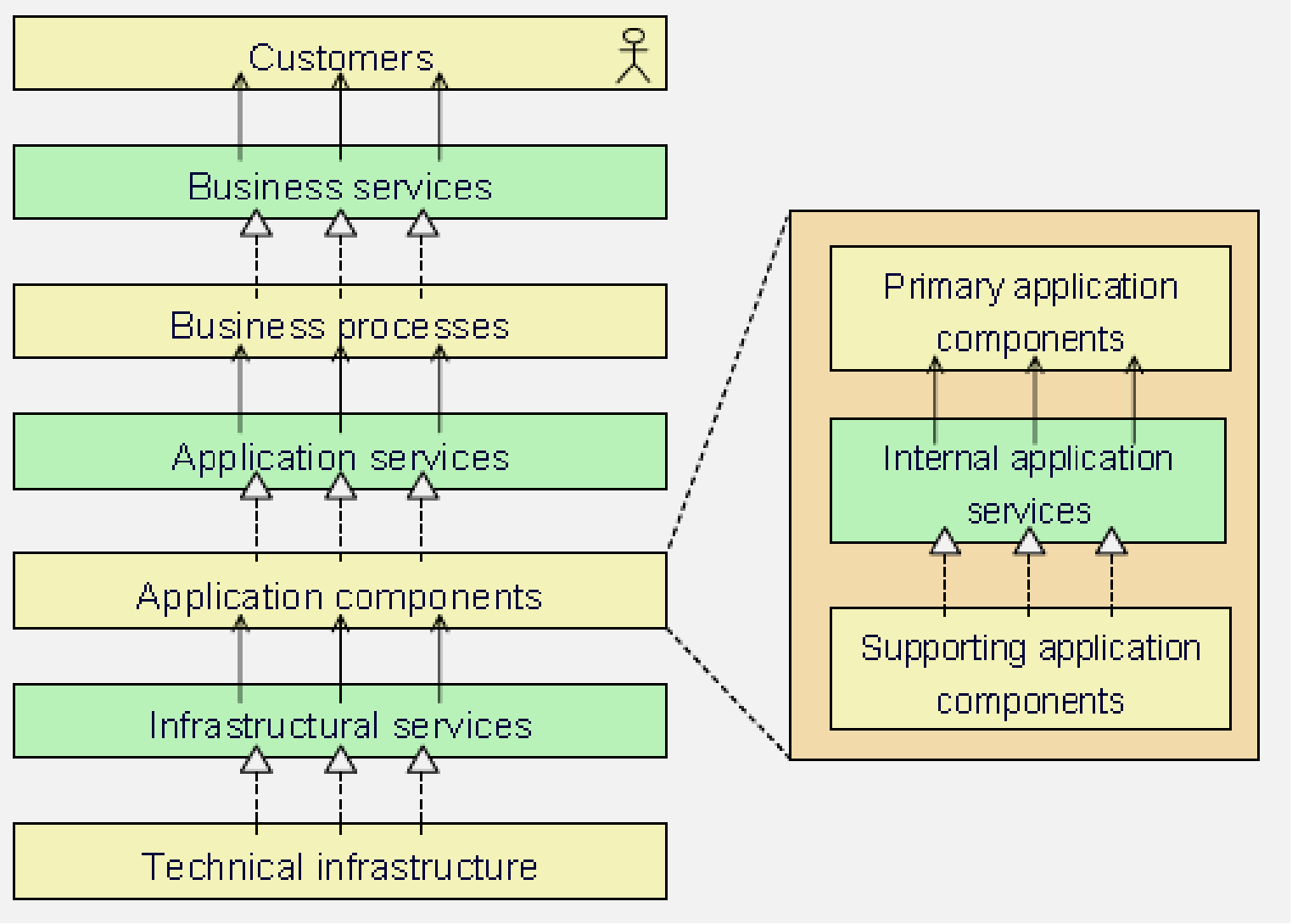
- A ***service*** is defined as a unit of functionality that some entity (e.g., a system, organization, or department) makes available to its environment

- It has some value for certain entities in the environment (typically the 'service users')

- Service orientation supports current trends ranging from the service-based network economy to ICT integration with Web services

- Service orientation may typically lead to a layered view of enterprise architecture models, where the service concept is one of the main linking source

Service Orientation and Layering



Service Layered View

Service Orientation and Layering

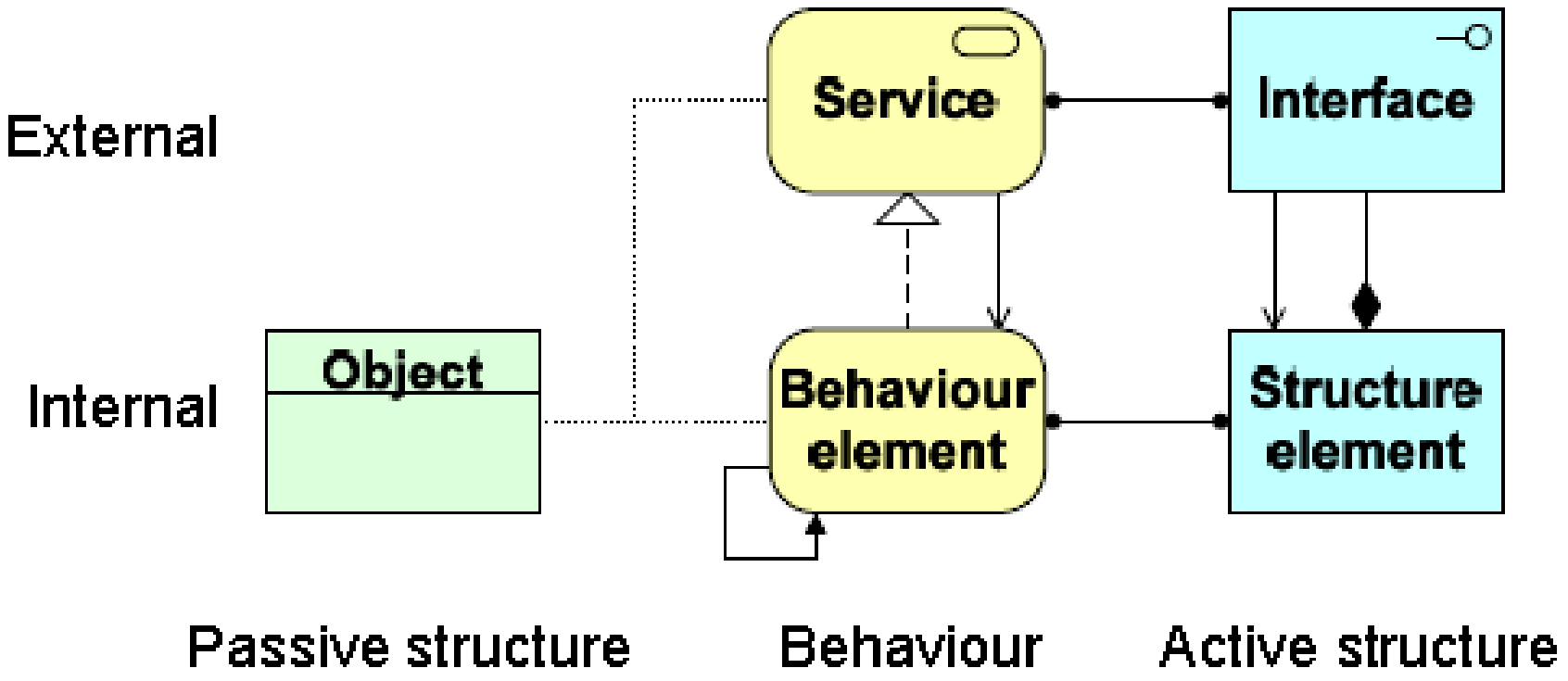
- In an abstract level, the concepts that are used within each layer are similar, we define more concrete concepts that are specific for a certain layer. In this context, we distinguish three main layers:

1. The ***business layer*** *offers products and services to external customers,* which are realized in the organization by business processes (performed by business actors or roles)

2. The **application layer** supports the business layer with application services which are realized by (software) application components

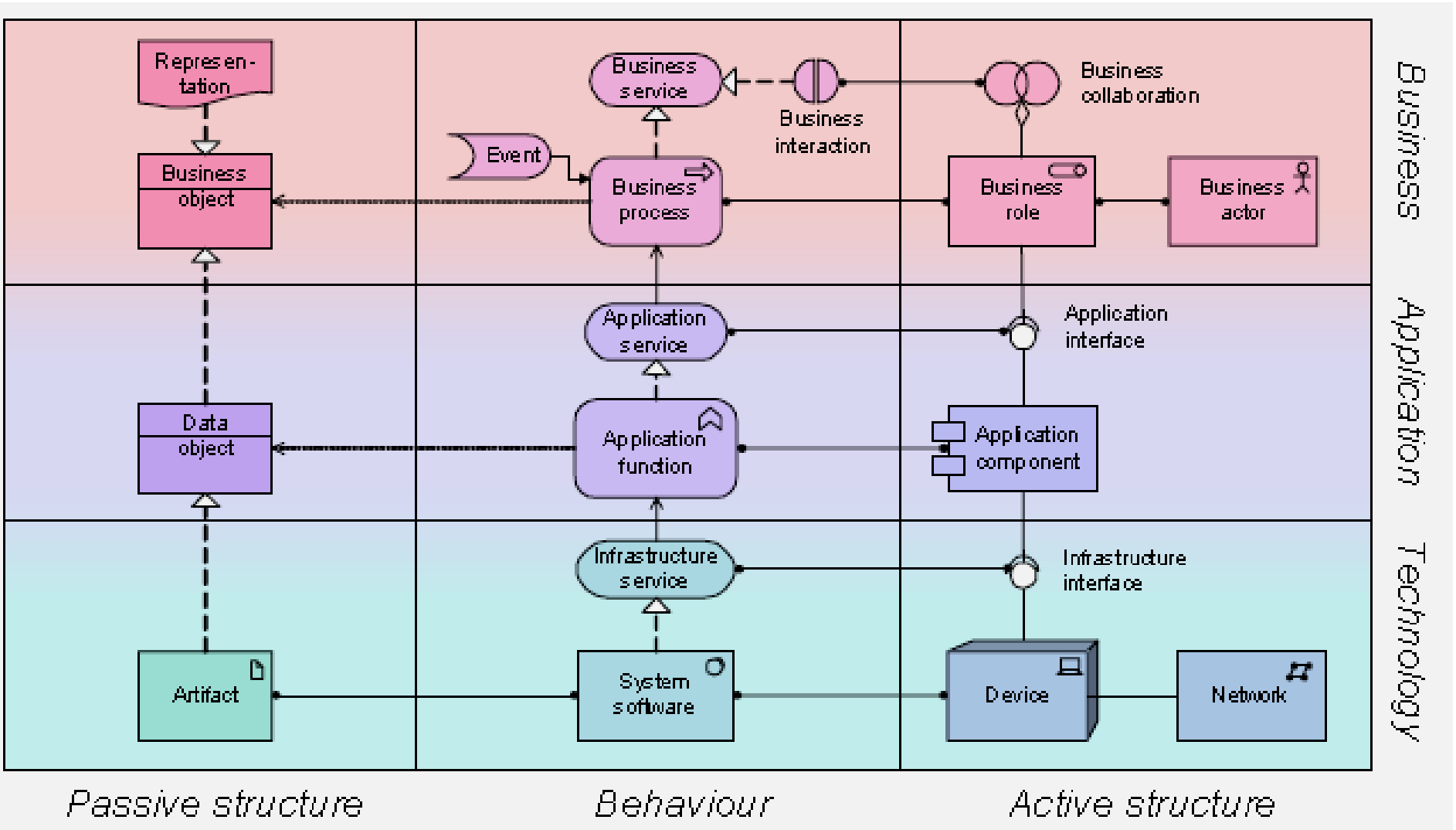
3. The **technology layer** offers infrastructural services (e.g., processing, storage, and communication services) needed to run applications, realized by computer and communication devices and system software

Concepts of the ArchiMate language



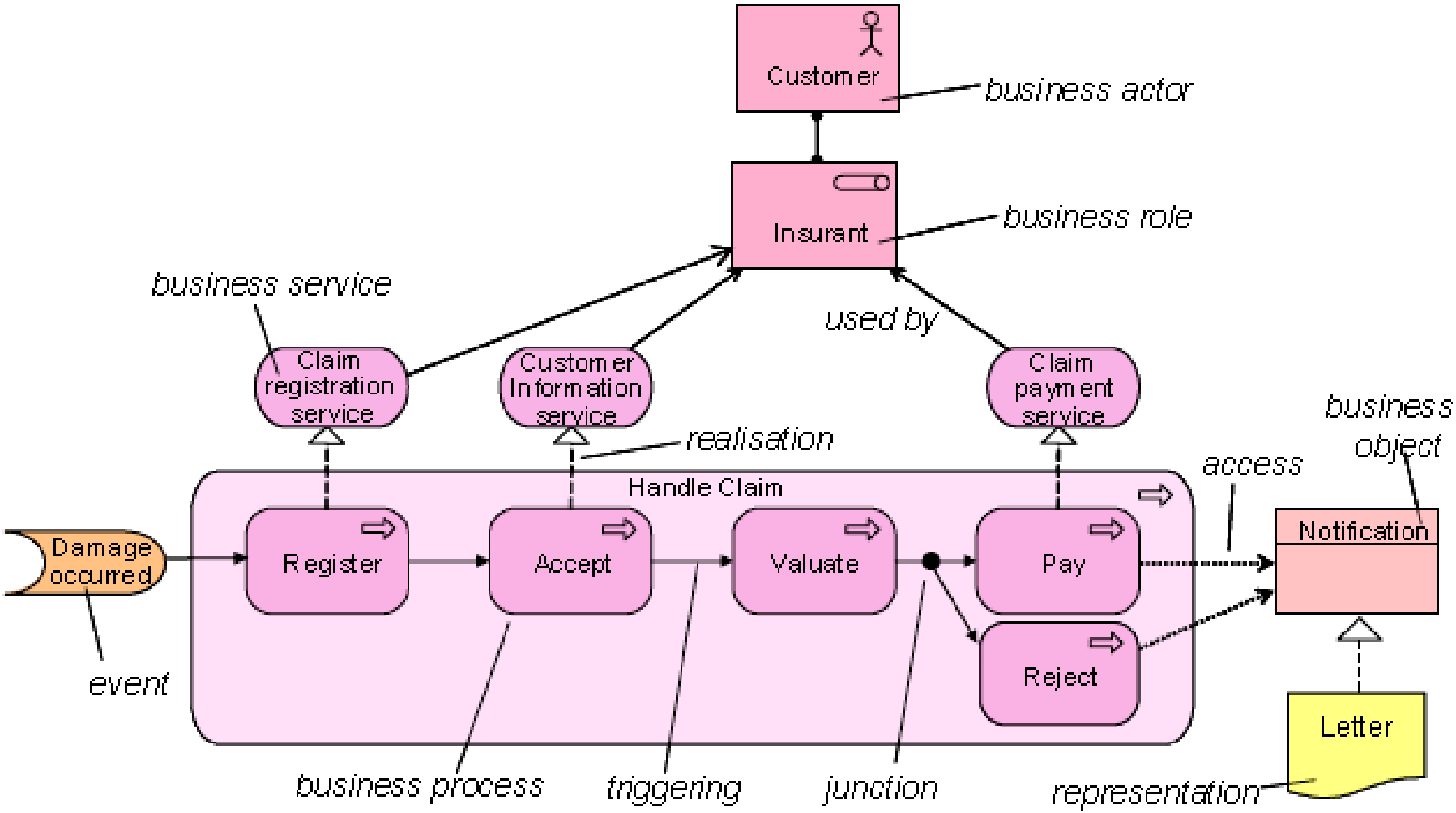
The Core Concept of the Archimate Language

ArchiMate , Service Orientation & Layering



Layering and Service Orientation in ArchiMate

Business Layer Concepts in ArchiMate



Example of a business layer model

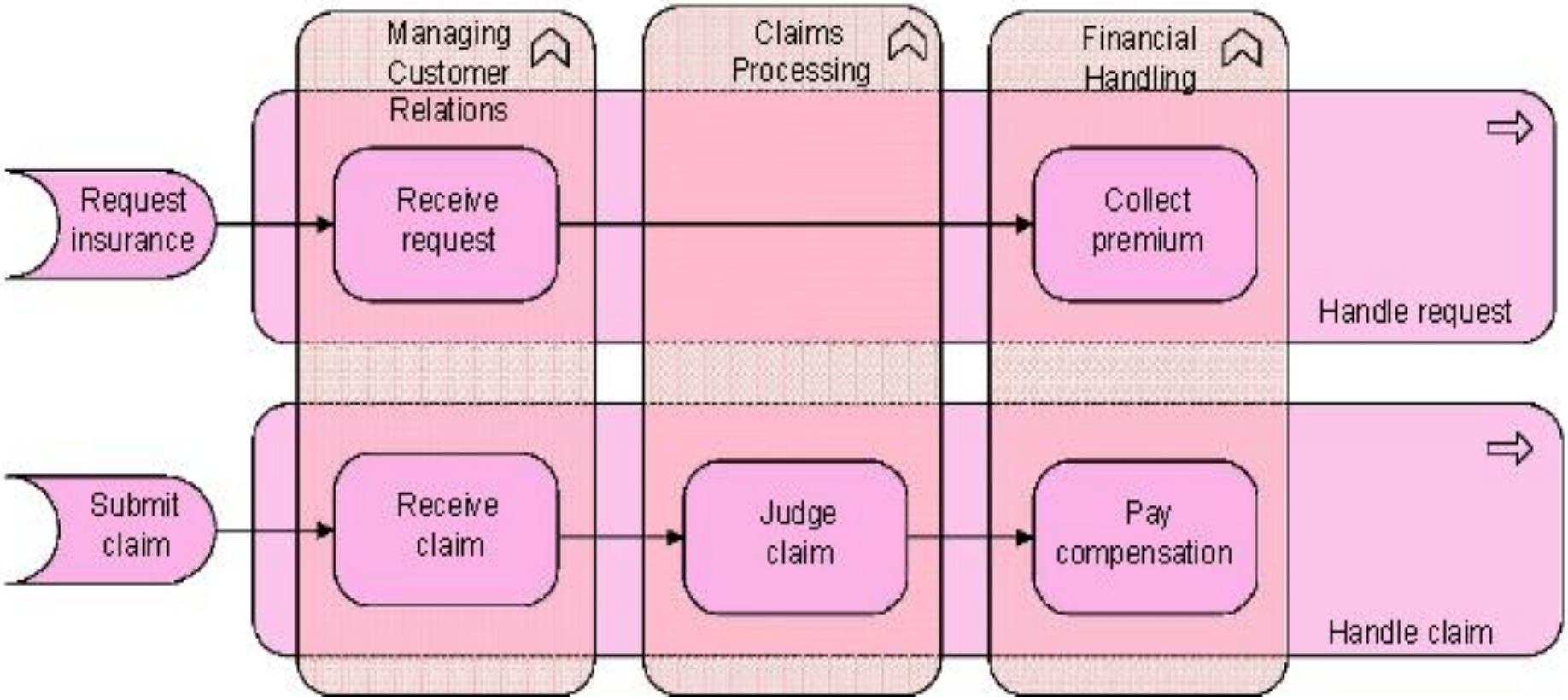
Business Structure Concepts

- ***Business process:*** a unit of internal behavior or collection of causally- related units of internal behavior intended to produce a defined set of products and services.

- ***Business function:*** a unit of internal behavior that groups behavior according to (for example) required skills, knowledge, resources, etc.

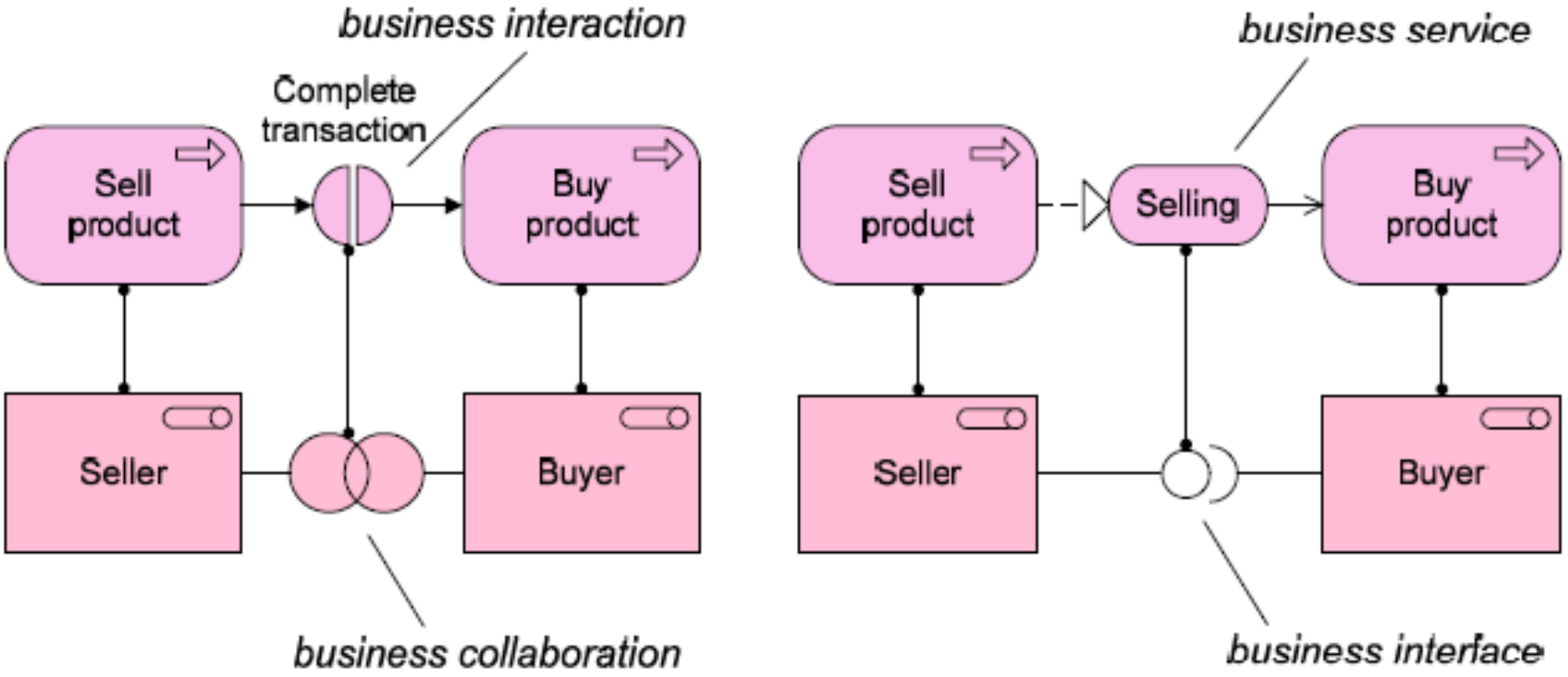
- ***Business service:*** the externally visible ('logical') functionality, which is meaningful to the environment and is realized by business behavior (business process, business function or business interaction)

Business Structure & Behavior Concepts in ArchiMate

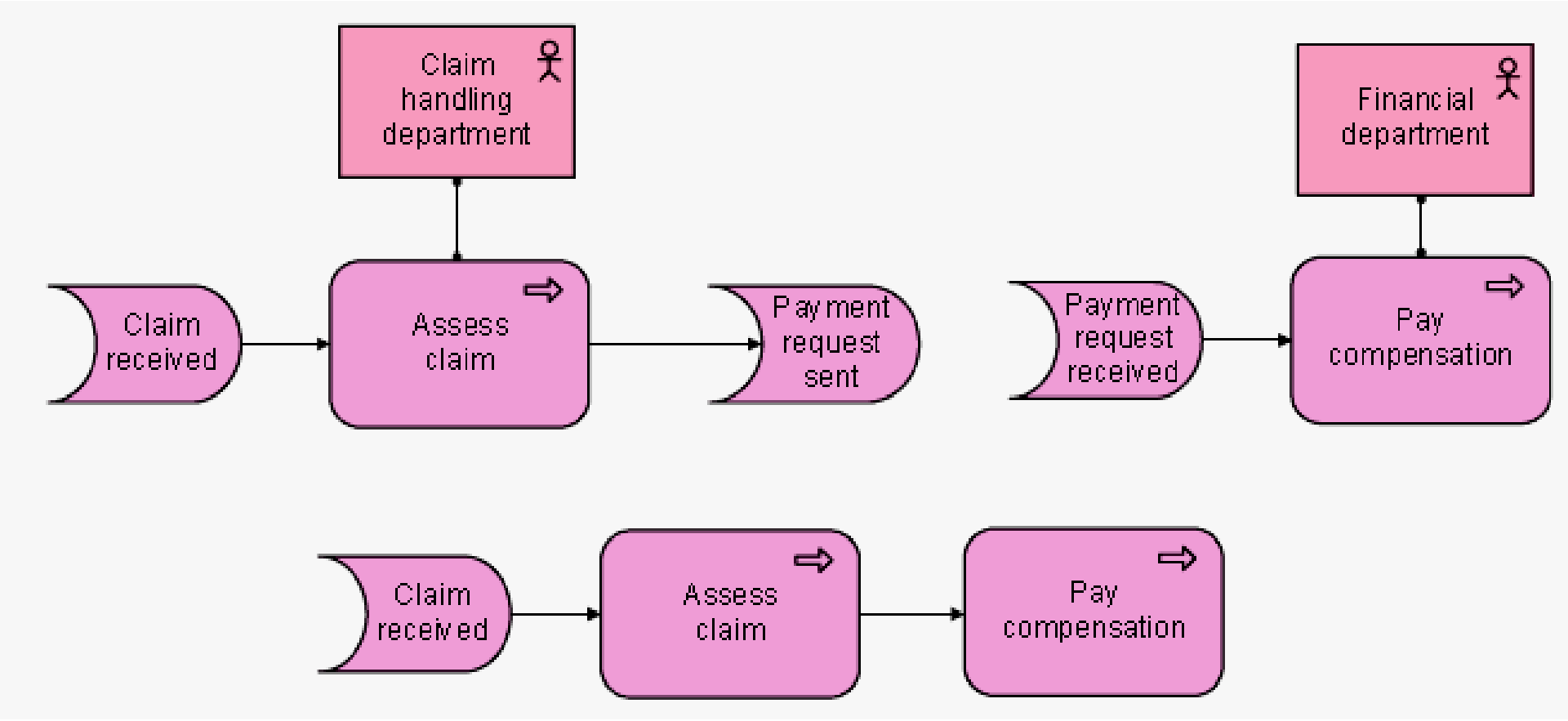


- Illustration of Business processes versus business functions

Interaction versus service use, in ArchiMate



Events to decouple processes, in ArchiMate



Higher-Level Business Concepts

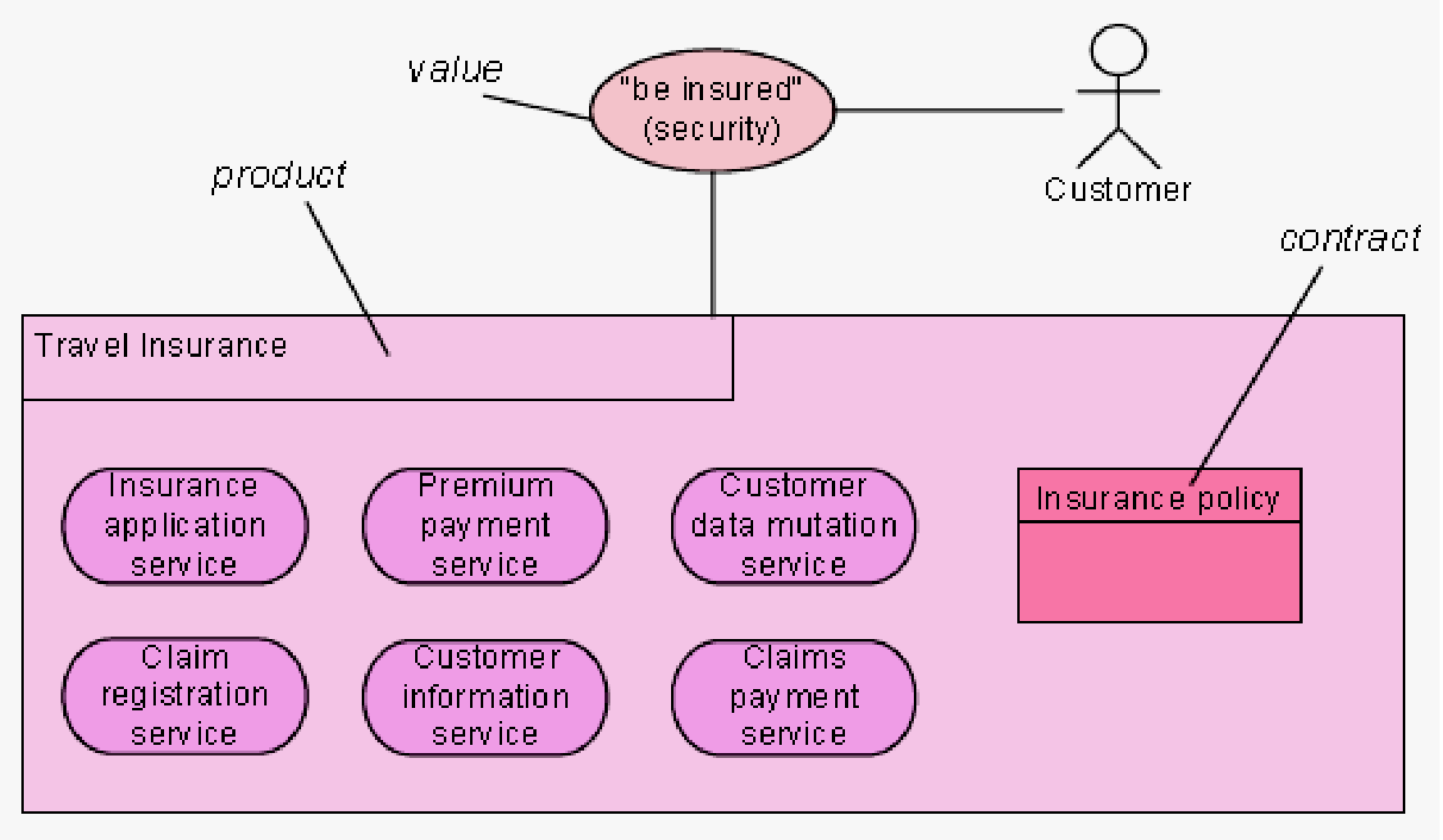
- The higher-level business concepts provide a way to link the operational side of an organization to its business goals.

- These concepts are also concerned with the products or services that an organization offers to its customers.

- We define a (financial or informational) product as of a collection of services, together with the rules for their use

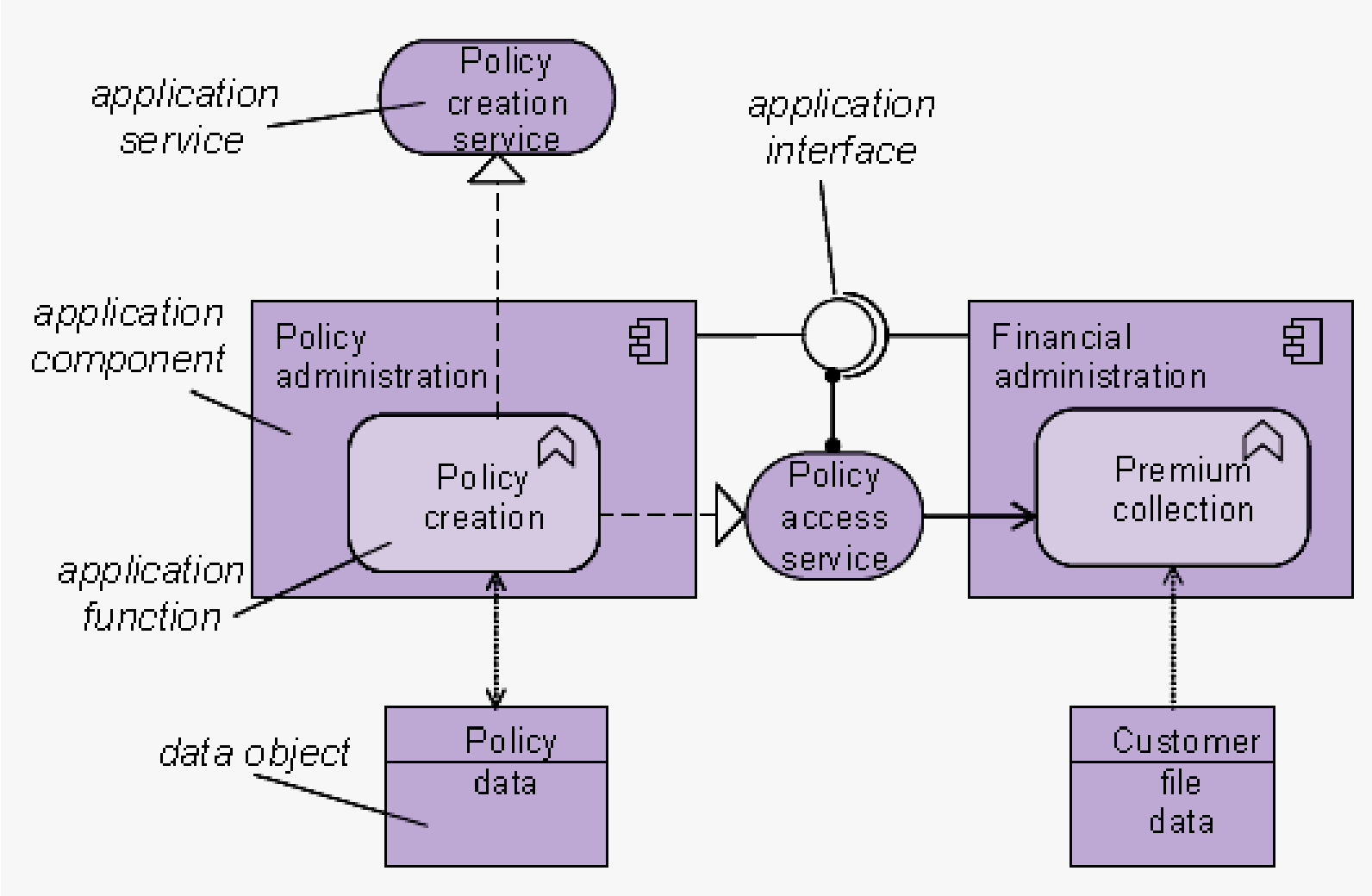
Product: a coherent collection of services accompanied by a *contract*/set of agreements, which is offered as a whole to (internal or external) customers.

Higher-Level Business Concepts



Services grouped into a product

Application Layer Concepts



Example of an application layer model

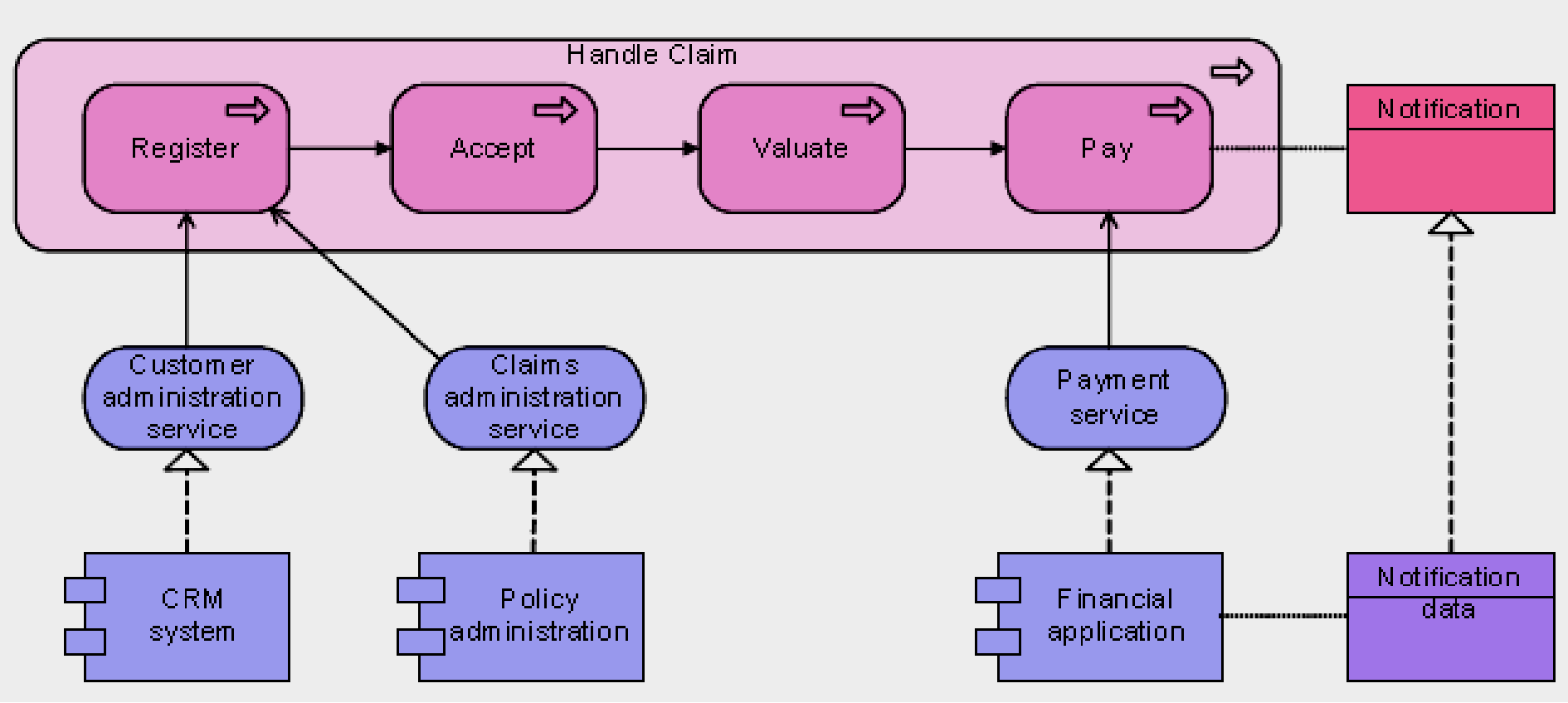
Business–Application Alignment

The application layer and the business layer can be easily linked in ArchiMate . Two types of relations provide this link:

1. Application services can be *used by business behavior and application* interfaces are *used by business actors roles, i.e., there is a support relation* between the application and business layers.

2. Data objects can *realize business objects; this means that a data object is* an electronic *representation of the business object, i.e., there is an implementation* relation between the application and business layers.

Business–Application Alignment

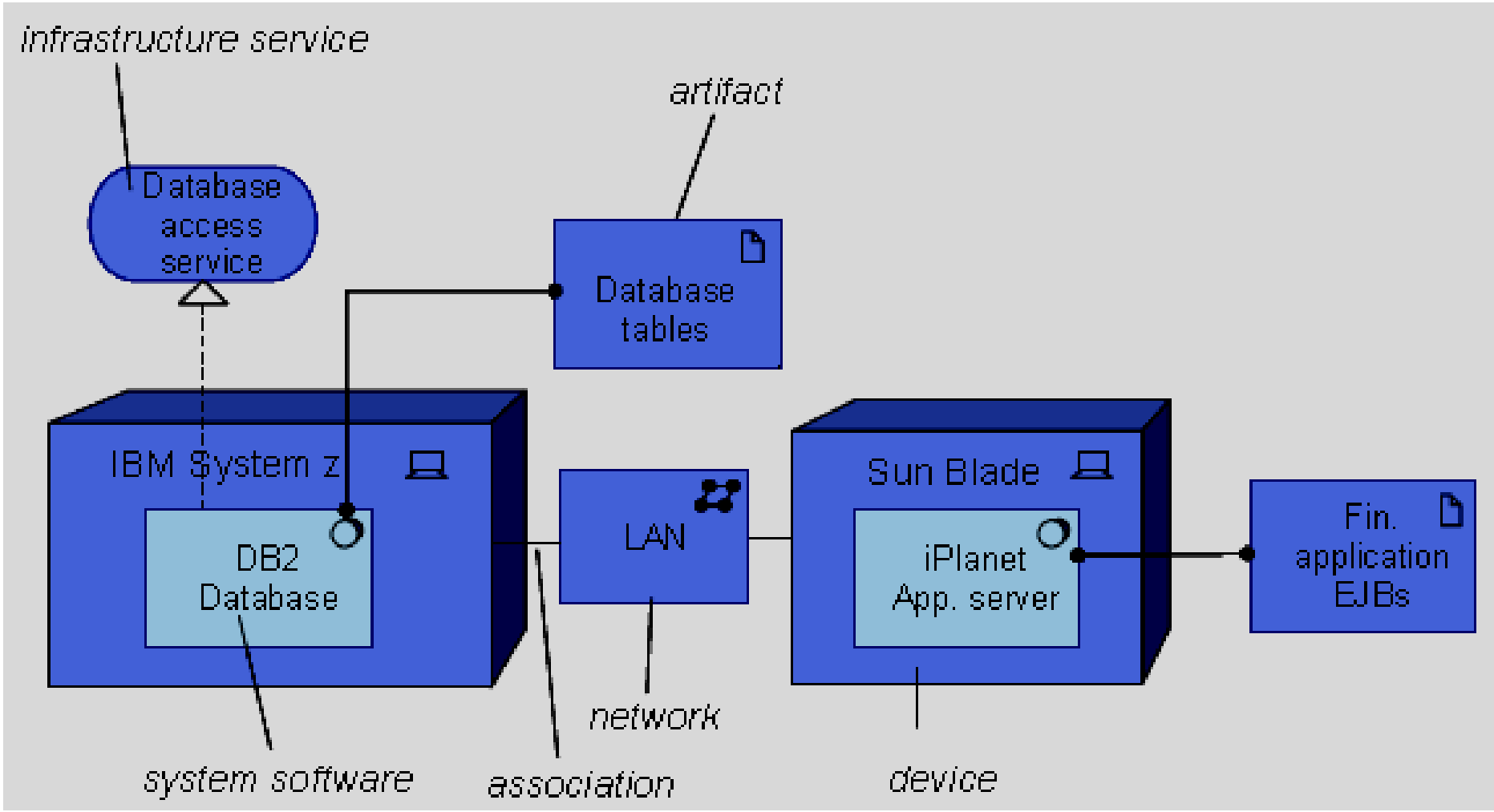


Example of a business–application alignment model

Technology Layer Concepts in ArchiMate

A typical example of a technology layer model is shown in Fig., illustrating the use of the central concepts. In the following subsections, we explain the technology layer concepts in more detail. Also, we show how the relations between the technology layer and the application layer can be modeled.

Technology Layer Concepts - Illustration



Technology Structure Concepts in ArchiMate

Node: a (logical) computational resource upon which artifacts may be deployed for execution.

Infrastructure interface: a point of access where the infrastructural services offered by a node can be accessed by other nodes or by application components.

Device: a physical computational resource upon which artifacts may be deployed for execution.

Communication path: a logical link between two or more nodes, through which these nodes can exchange information.

Network: a physical communication medium between two or more devices.

Artifact: a physical piece of information that is used or produced in a software development process, or by deployment and operation of a system.

Technology Behavior Concepts in ArchiMate

System software: *a software environment for specific types of application components and data objects that are deployed on it in the form of artifacts.*

Infrastructure service: *externally visible unit of functionality, provided by one or more nodes, exposed through well-defined interfaces, and meaningful to the environment.*

Application-Technology Alignment

The technology layer and the application layer can also be linked very easily. Similar to business-application alignment, two types of relations provide this link:

1. Infrastructure services can be used by application functions and infrastructure interfaces are used by application components, i.e., there is a support relation between the technology and application layers (as in following Fig).

2. Artifacts can realize data objects and application components, i.e., there is an implementation relation between the technology and application layers (Fig).

Application-Technology Alignment