Views in ArchiMate

Knut Hinkelmann, Source: ArchiMate 3 – Chapter 14 and Appendix B

Frankfurt am Main, Hochhausrahmenplan © Jourdan & Müller

Architecture Views and Viewpoints

- Not everyone is interested in everything.
- Views and Viewpoints are a means to specify which part of an Architecture Description is of relevance
  - *View*: Part of an architecture description that
    - addresses a set of related *Concerns*
    - and is tailored for specific *Stakeholders*
  - *Viewpoint* specifies a view
    - prescribes the concepts, models, analysis techniques, and visualizations that are provided by the view
    - a characterisation of stakeholders and their concerns

A *view* is what you see and
a *viewpoint* is where you are looking from

ArchiMate 3, section 14.3

Comparison to Databases

- The concept of views is well-known from databases
  - A view is a subset of a database
  - A view can be characterized by a query
- Thus
  - a *query* corresponds to a *viewpoint*: it characterizes what should be in a view
  - an *answer* to a query corresponds to a *view*: it is a table, which represents the part of the databases specified by the query

Views and Viewpoints in ArchiMate

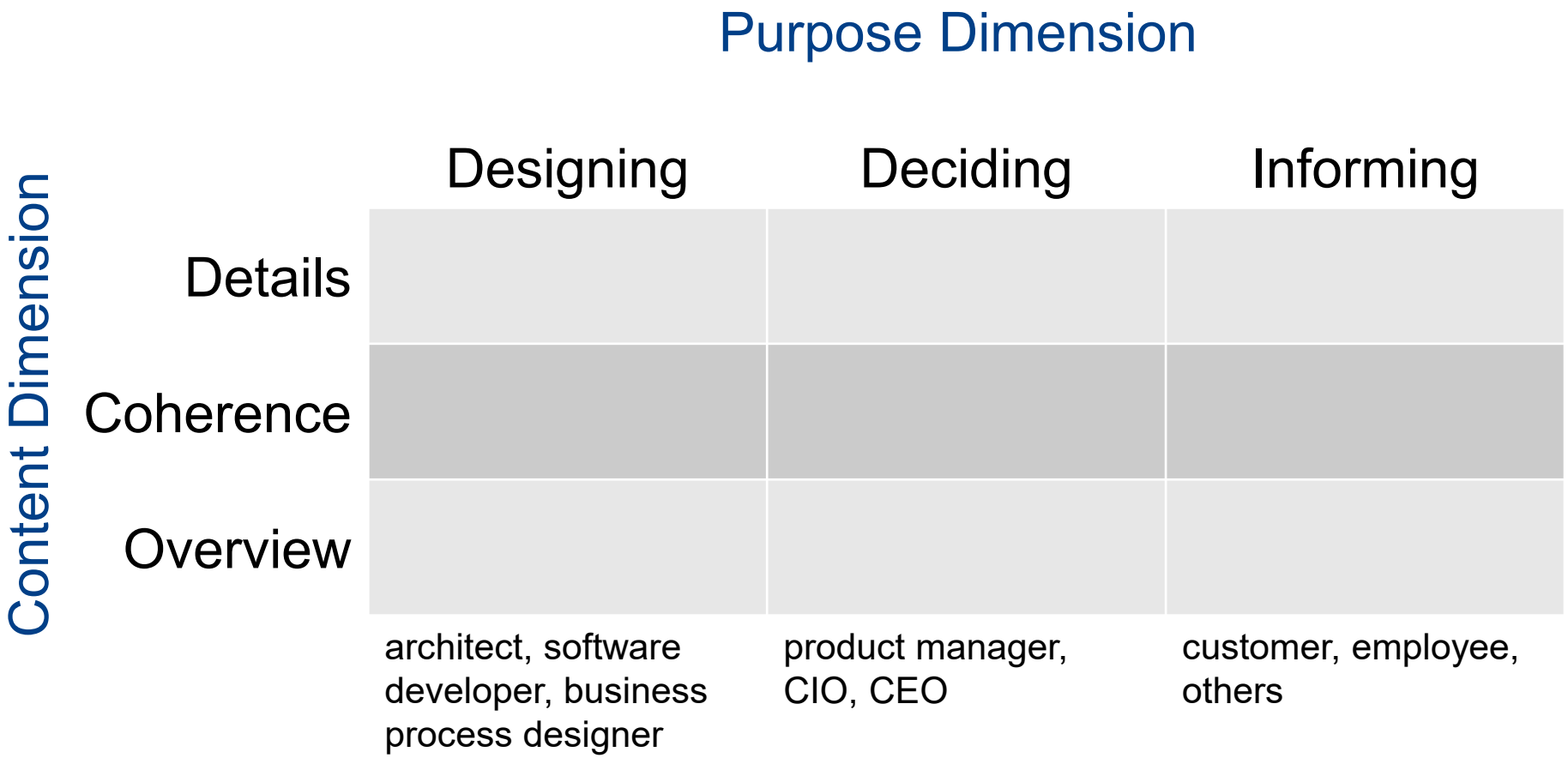
- In ArchiMate, architects and other stakeholders can define their own views on the enterprise architecture
- A viewpoint in ArchiMate is a selection of
  - a relevant subset of ArchiMate concepts and relationships
  - a representation that is adequate for the stakeholder's concerns
- A view is (a set of) models
  - covering a part of an architecture
  - using the appropriate concepts and relationships
  - in an adequate representation

Governed by the viewpoint

Stakeholder and Concerns

- *Stakeholders* are individuals, groups or organizations holding concerns for the System, i.e.
  - **Examples of Stakeholders**: business analyst, CEO, CIO, CxO, business architect, information architect, application architect, enterprise architect, process manager, product manager, auditor, …
- A *Concern* is any interest in the system, i.e. the objective for which a model is used
  - **Examples of Concerns**: optimisation, efficiency, quality of service, automation, agility, behavior, flexibility, maintainability, regulatory compliance, security.

Two-Dimensional Classification of Enterprise Architecture Viewpoints



Two-Dimensional Classification of Enterprise Architecture Viewpoints

Purpose dimension:

Designing: support architects and designers in the design process from initial sketch to detailed design..

Deciding: assist managers in the process of decision-making by offering insight into cross-domain architecture relationships. Typical examples: cross-reference tables, landscape maps, lists, and reports.

Informing: help to inform any stakeholder about the Enterprise Architecture, in order to achieve understanding, obtain commitment, and convince adversaries. Typical examples are illustrations, animations, etc.

Content dimension:

select relevant aspects and layers from the ArchiMate Core Framework.

Details: one layer and one aspect. Typical stakeholders: a application manager or a process owner responsible for a specific application or process.

Coherence: multiple layers or multiple aspects. Enables to focus on architecture relationships like process-uses-system (multiple layer) or application-stores-object (multiple aspects).

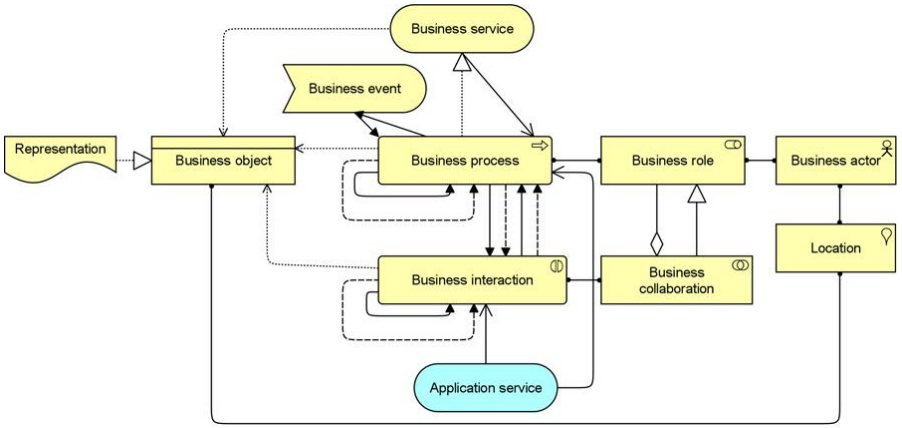
Overview: multiple layers and multiple aspects. Addressed to Enterprise Architects and decision-makers, such as CEOs and CIOs.

Examples of Viewpoints

A viewpoint is just a «thought construct». It is not made explicit.

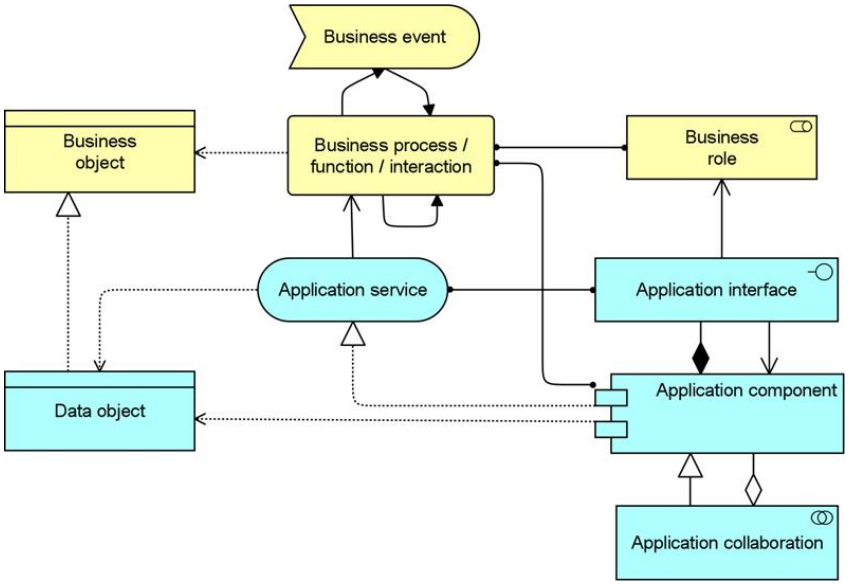
Business Process Cooperation Viewpoint

- Focus on one or more business processes and the relations with each other and/or the environment
- Used concepts and relations:



Applications Usage Viewpoint

- Focus on how applications are used to support one or more business processes, and how they are used by other applications



Creating an ArchiMate View

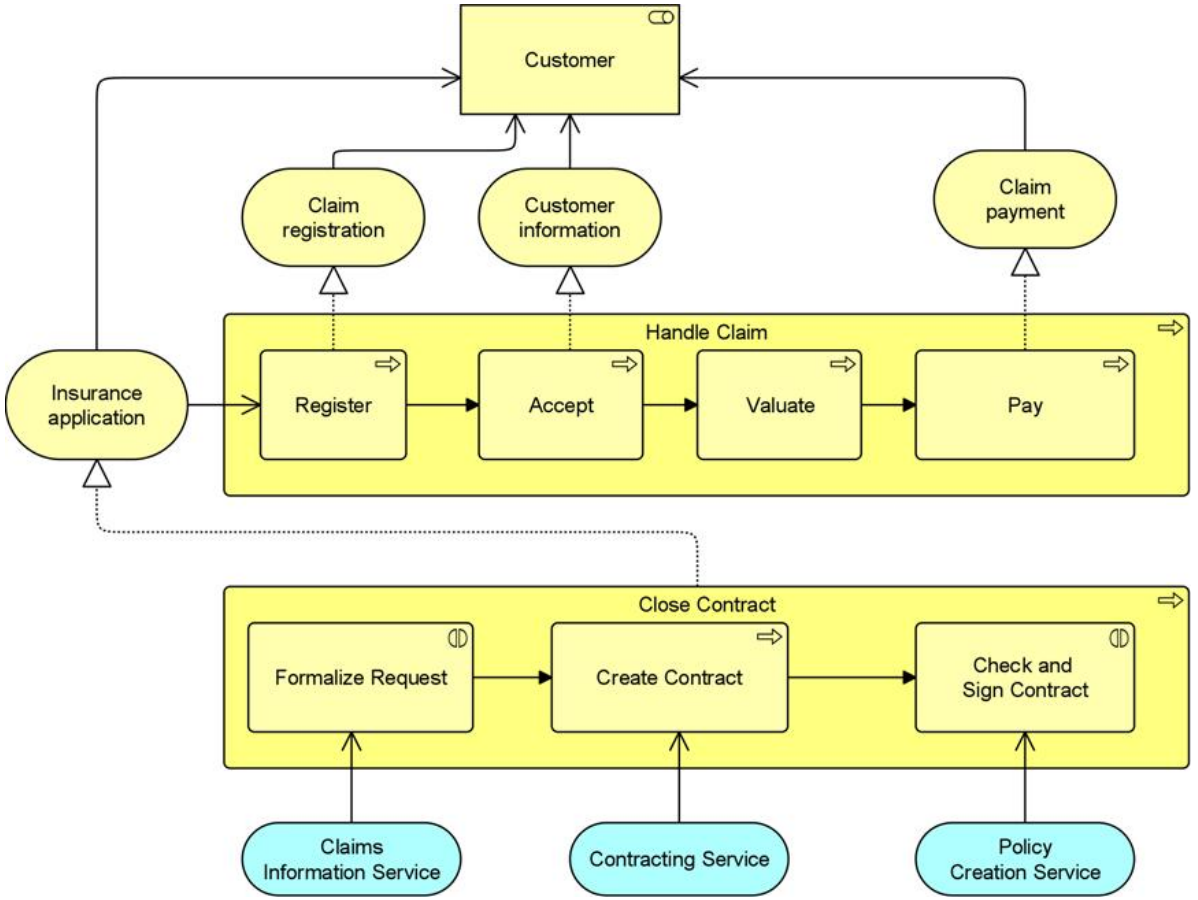
Creating an ArchiMate viewpoint consists of two steps:

1. Selecting a *subset of relevant elements and relationships* that is appropriate to address the stakeholder's concerns (governing a viewpoint)
2. Determine the *part of the enterprise architecture* that is of the concern of the stakeholder (e.g. specific processes or applications)
3. Defining a *representation* to depict these view in a way suitable for the stakeholder(s) and concern(s).

   This can be a diagram that uses standard or customized ArchiMate notation, a color-coded heat map, a matrix/landscape showing the relationships between groups of elements, or even non-graphical representations (e.g. tables)

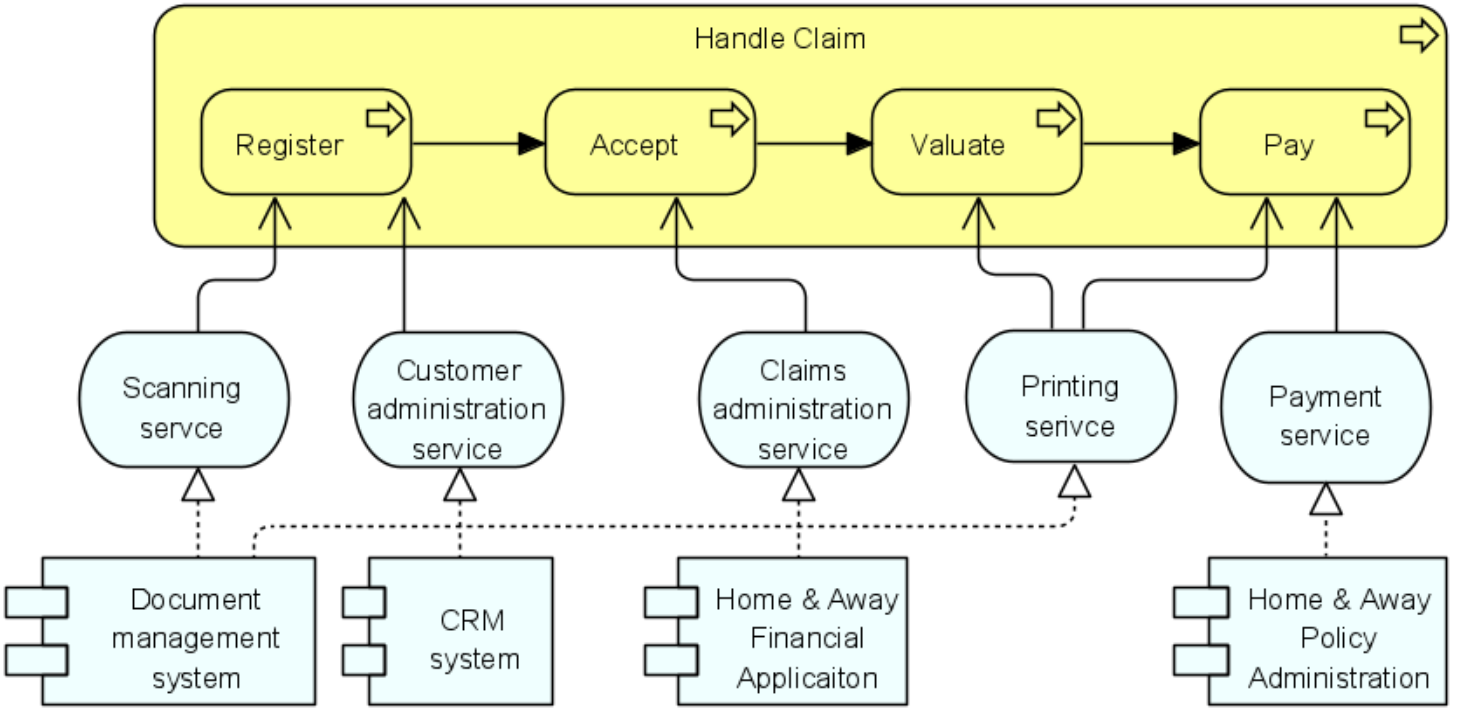
Example View: A Model governing the Business Process Co-operation Viewpoint

This model shows the business process co-operation for the Handle Claim process

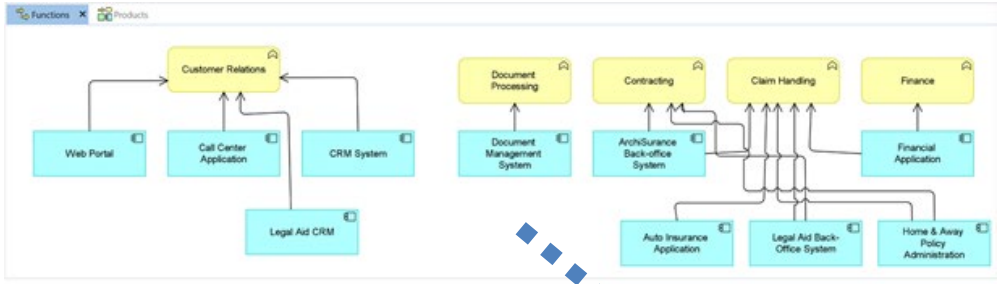


Example View: A Model governing the Application Usage Viewpoint

This model shows the applications used in the Handle Claim process:



Views can have different Representations (1)



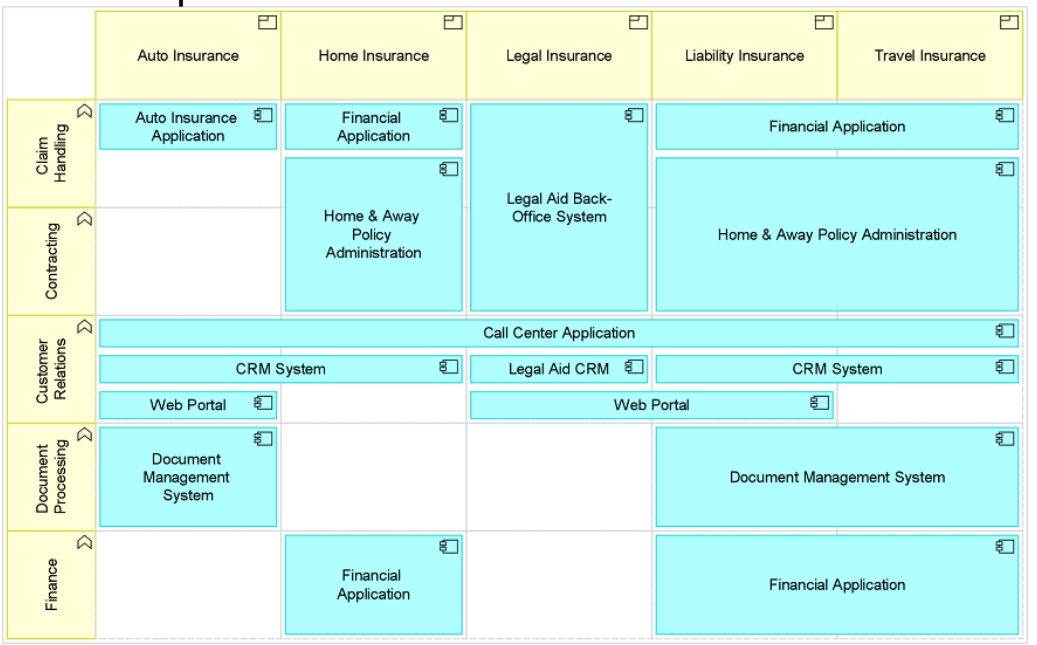
In this landscape diagram

- Application Components (cells of the matrix)

are assigned to

- Business Functions (y-axis)
- Products (x-axis)

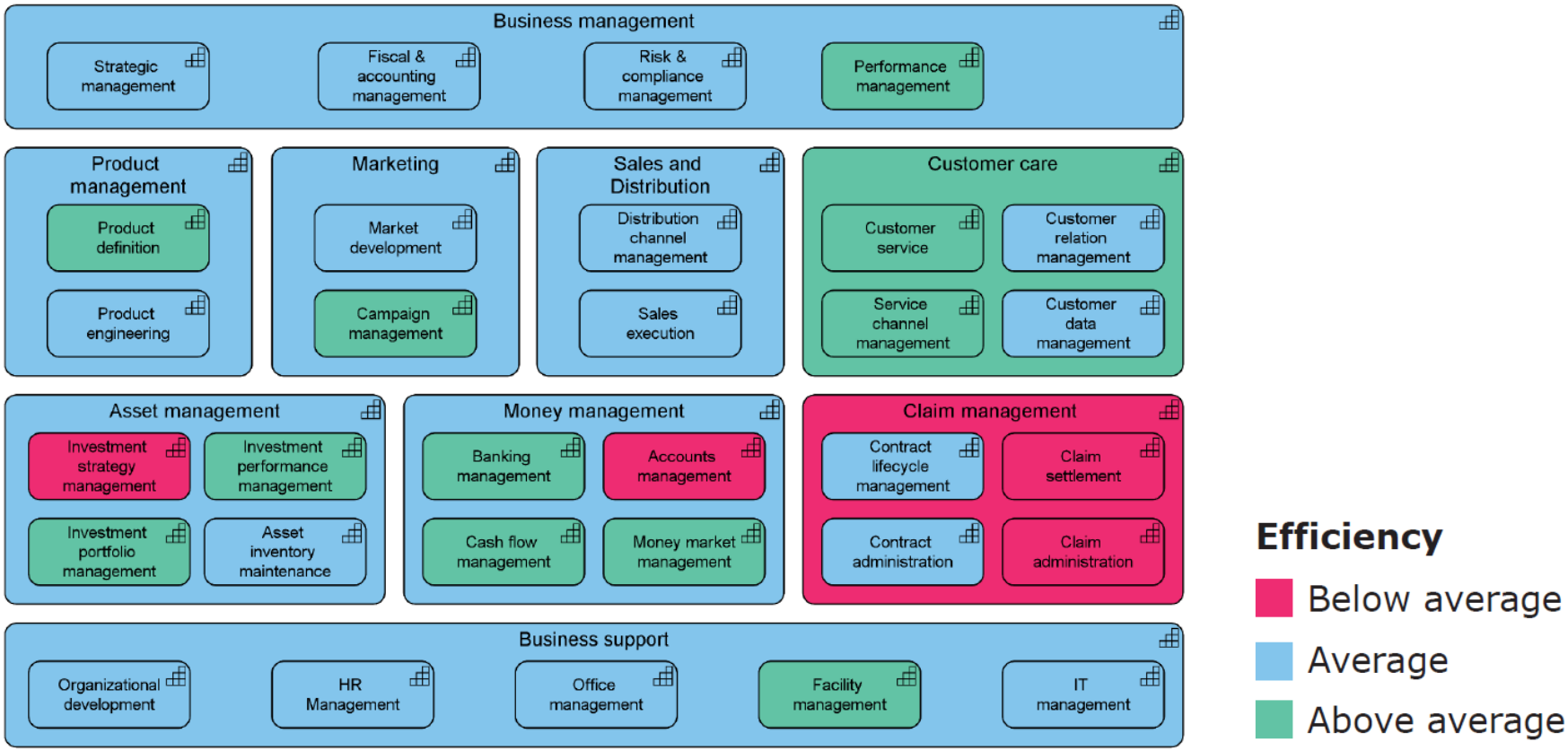
Landscape View



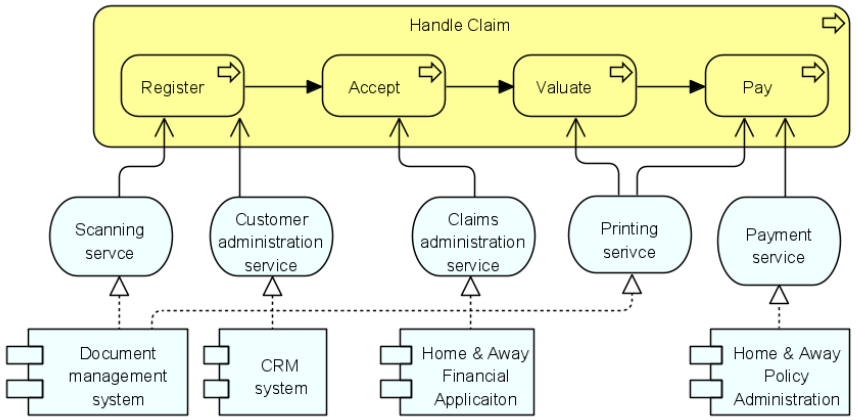
https://support.bizzdesign.com/display/knowledge/Modeling+an+ArchiMate+Landscape+map

Views can have different Representations (2)

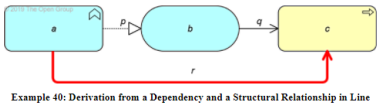
In this Capability Heat Map colors are used to emphasize, which capabilites are below average and need attention



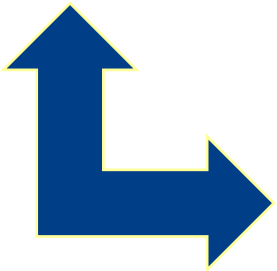
Views can differ by level of Abstractions

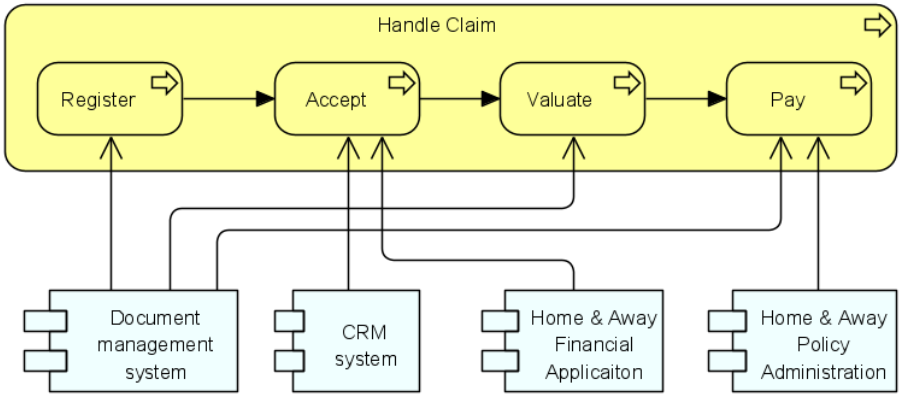


Model 2 abstracts from details of the Application Services. The relation between Application Components and Business Processes are derived with Derivation Rule DR3 (see Appendix B.2.3)



Example 40: Derivation from a Dependency and a Structural Relationship in Line

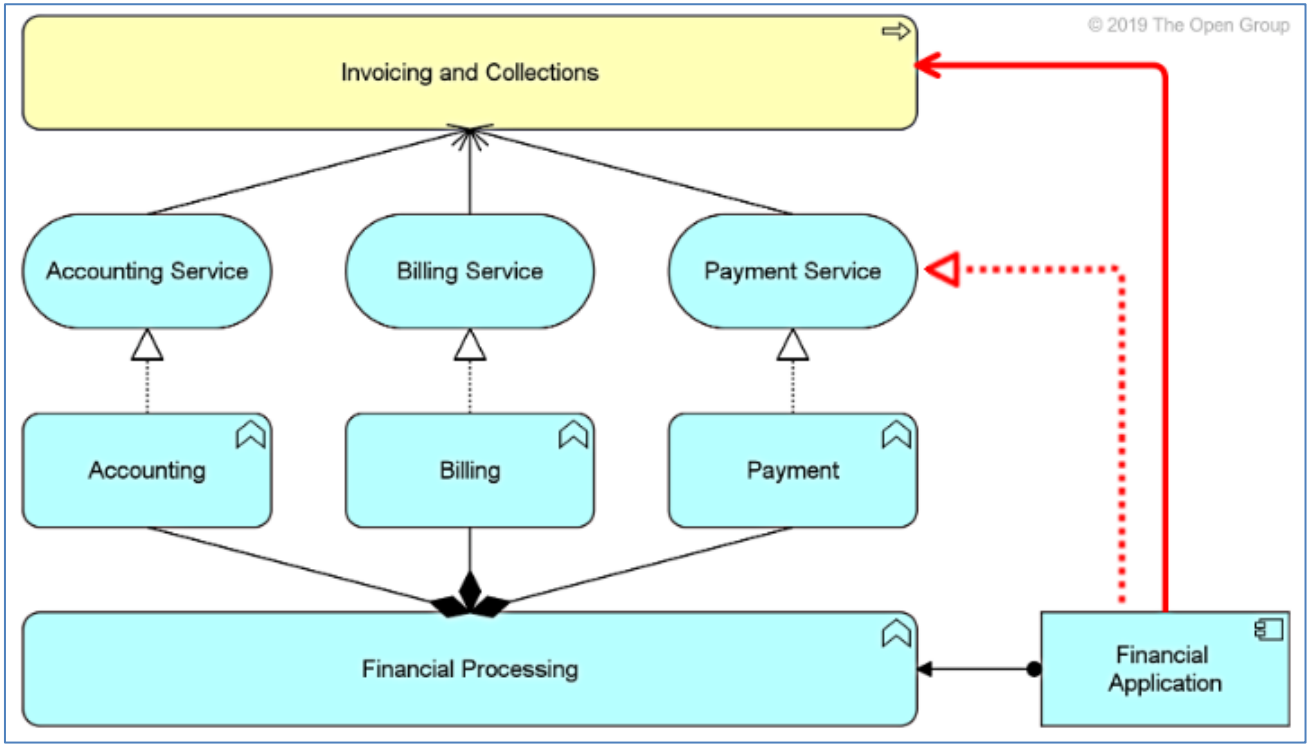




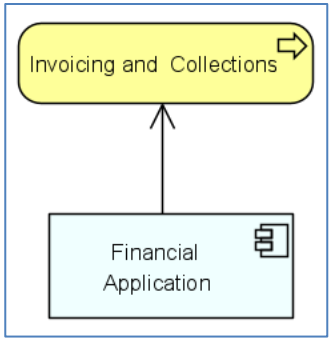
Derivation of Relationships

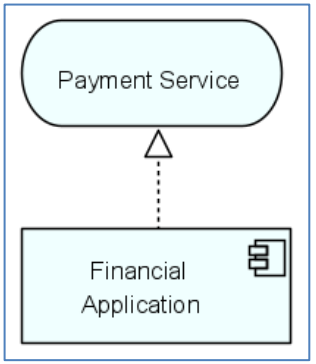
- Derivation of relationships is intended as a way to create abstractions of detailed models by removing details.
- This can be used to make models for stakeholders (e.g. managers) that do not need the details.

Detailed Model:



Abstracted Models:

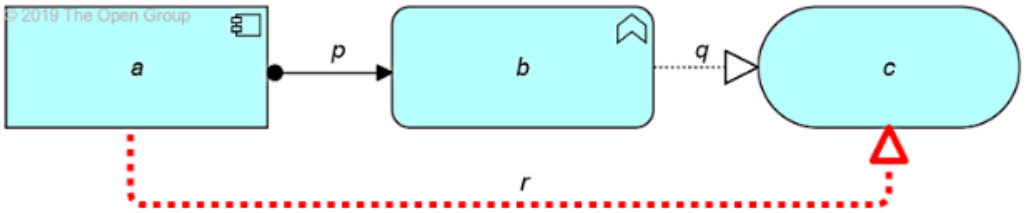




(Archimate 3, Appendix B)

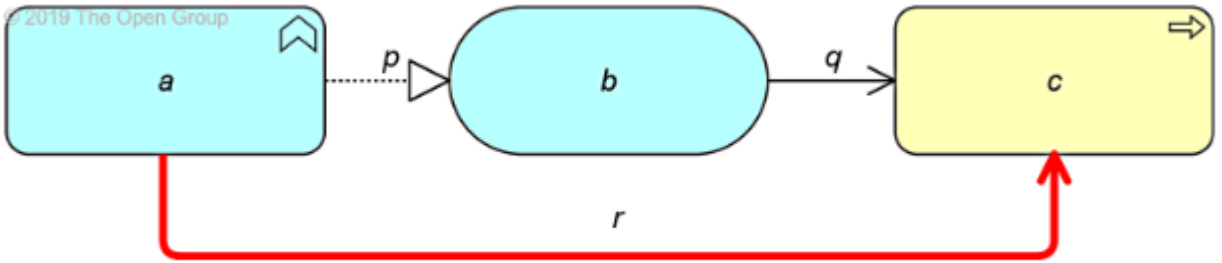
Derivation Rule for Structural Relationships

- Two structural relationships that join at an intermediate element under specific conditions can be combined and replaced by the weaker of the two.
  - Realization (weakest)
  - Assignment
  - Aggregation
  - Composition (strongest)



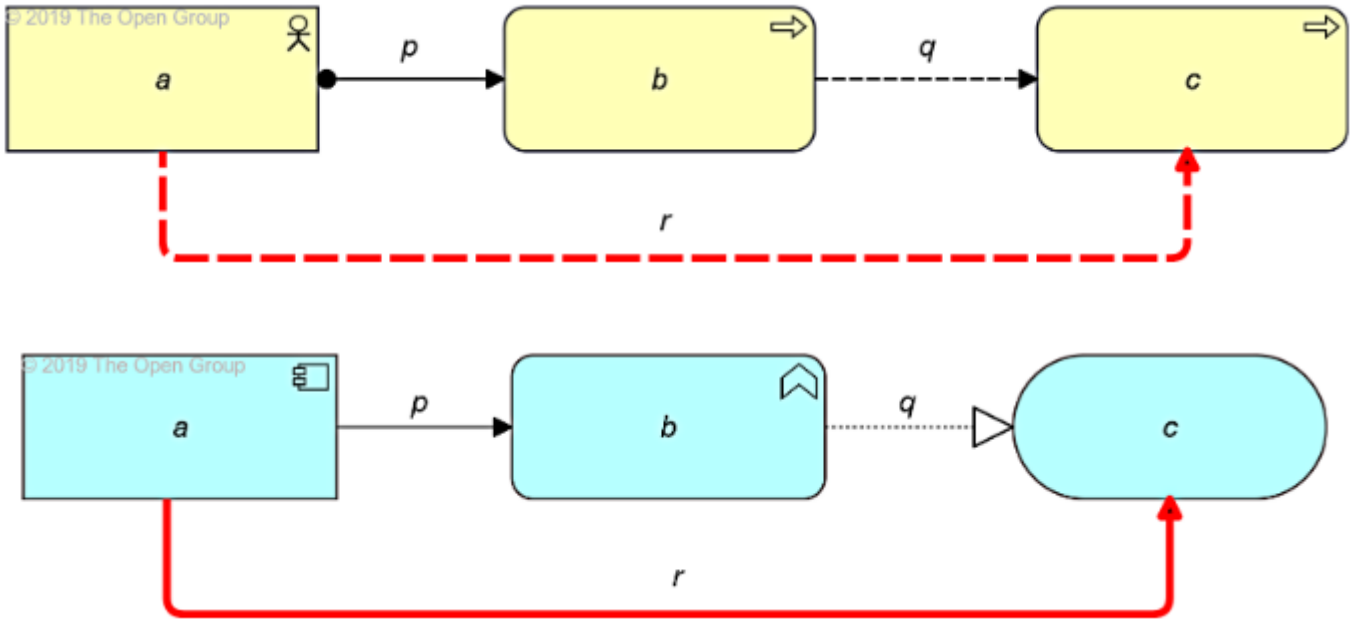
Derivation Rule for Dependency Relationships

- A structural relationship and a dependency relationship that join at an intermediate element under certain conditions can be combined and replaced by the dependency relationship



Derivation Rule for Dynamic Relationships

- A structural relationship and a dynamic relationship that join at an intermediate element under certain conditions can be combined and replaced by the dynamic relationship.



Examples of Views and Viewpoints in ArchiMate

Source: ArchiMate 3, Appendix C

Basic Viewpoints (1)

Category: Composition		
Name	**Perspective**	**Scope**
Organization	Structure of the enterprise in terms of roles, departments, etc.	Single layer/ Single aspect
Application Platform	Shows structure of a typical application platform and how it relates to supporting technology.	Multiple layer/ Multiple aspect
Information Structure	Shows the structure of the information used in the enterprise.	Multiple layer/ Single aspect
Technology	Infrastructure and platforms underlying the enterprise's information systems in terms of networks, devices, and system software.	Single layer/ Multiple aspect
Layered	Provides overview of architecture(s).	Multiple layer/ Multiple aspect
Physical	Physical environment and how this relates to IT infrastructure.	Multiple layer/ Multiple aspect

Basic Viewpoints (2)

Category: Support		
Name	**Perspective**	**Scope**
Product	Shows the contents of products.	Multiple layer/ Multiple aspect
Application Usage	Relates applications to their use in, for example, business processes.	Multiple layer/ Multiple aspect
Technology Usage	Shows how technology is used by applications.	Multiple layer/ Multiple aspect
Category: Cooperation		
Business Process Cooperation	Shows the relationships between various business processes.	Multiple layer/ Multiple aspect
Application Cooperation	Shows application components and their mutual relationships.	Multiple layer/ Multiple aspect
Category: Realization		
Service Realization	Shows how services are realized by the requisite behavior.	Multiple layer/ Multiple aspect
Implementation and Deployment	Shows how applications are mapped onto the underlying technology.	Multiple layer/ Multiple aspect

Layered Viewpoint

The Layered viewpoint pictures several layers and aspects of an enterprise architecture in one diagram.

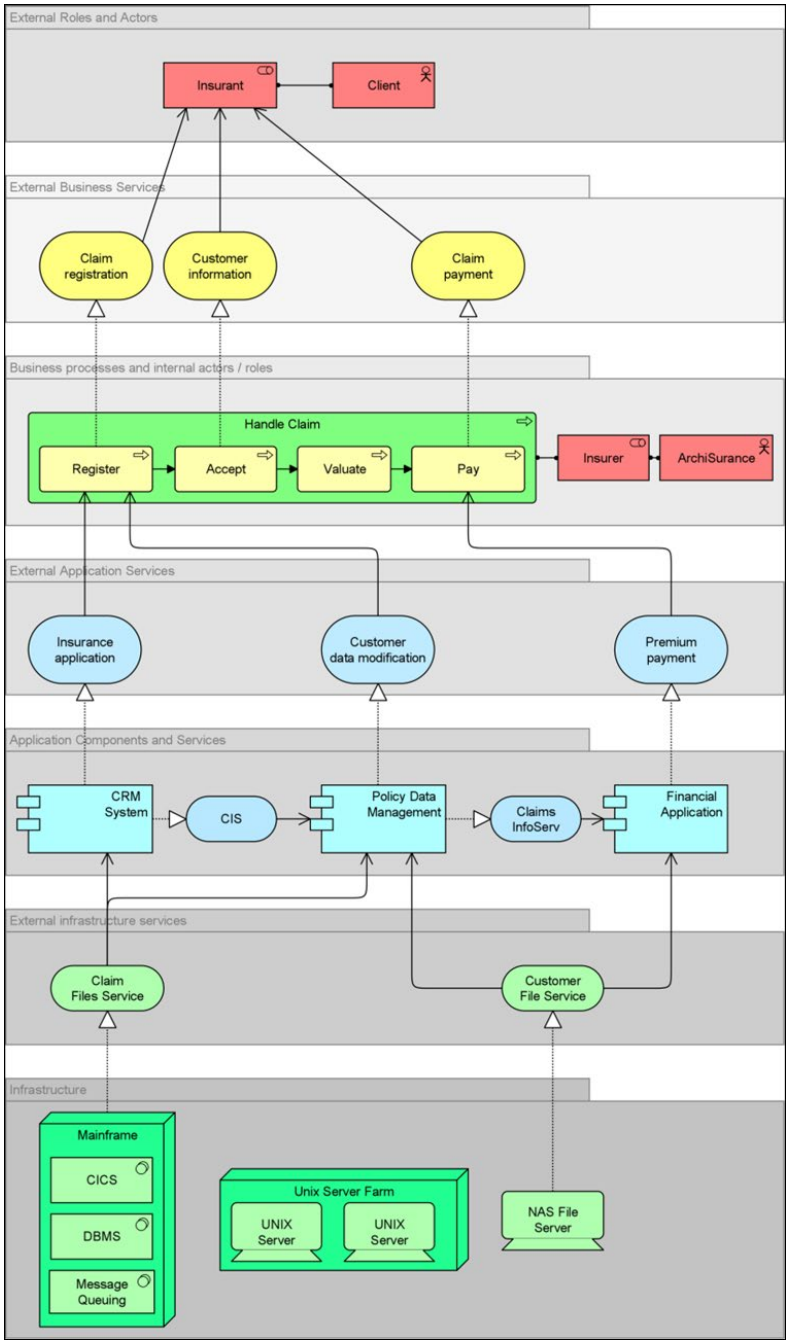
The layers are the result of the use of the “grouping” relation for a natural partitioning of the entire set of objects and relations that belong to a model.

Each dedicated layer exposes, by means of the “realization” relation a layer of services, which are further on “used by” the next dedicated layer.

Layered Viewpoint	
Stakeholders	Enterprise, process, application, infrastructure, and domain architects
Concerns	Consistency, reduction of complexity, impact of change, flexibility
Purpose	Designing, deciding, informing
Scope	Multiple layer/Multiple aspect

Concepts and Relationships: **all core elements**

Example of a Model from the Layered Viewpoint

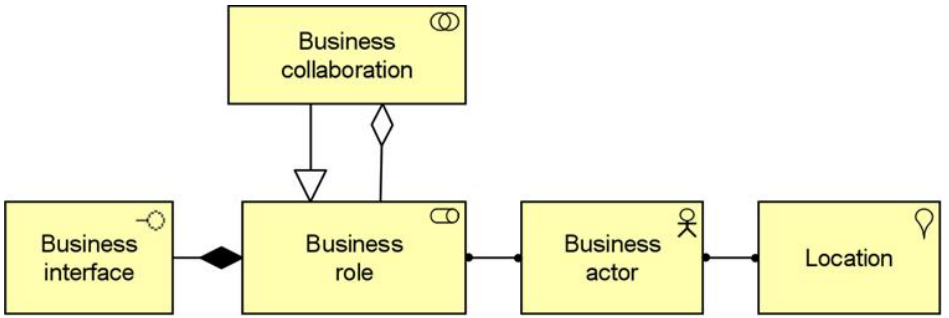


Organization Viewpoint

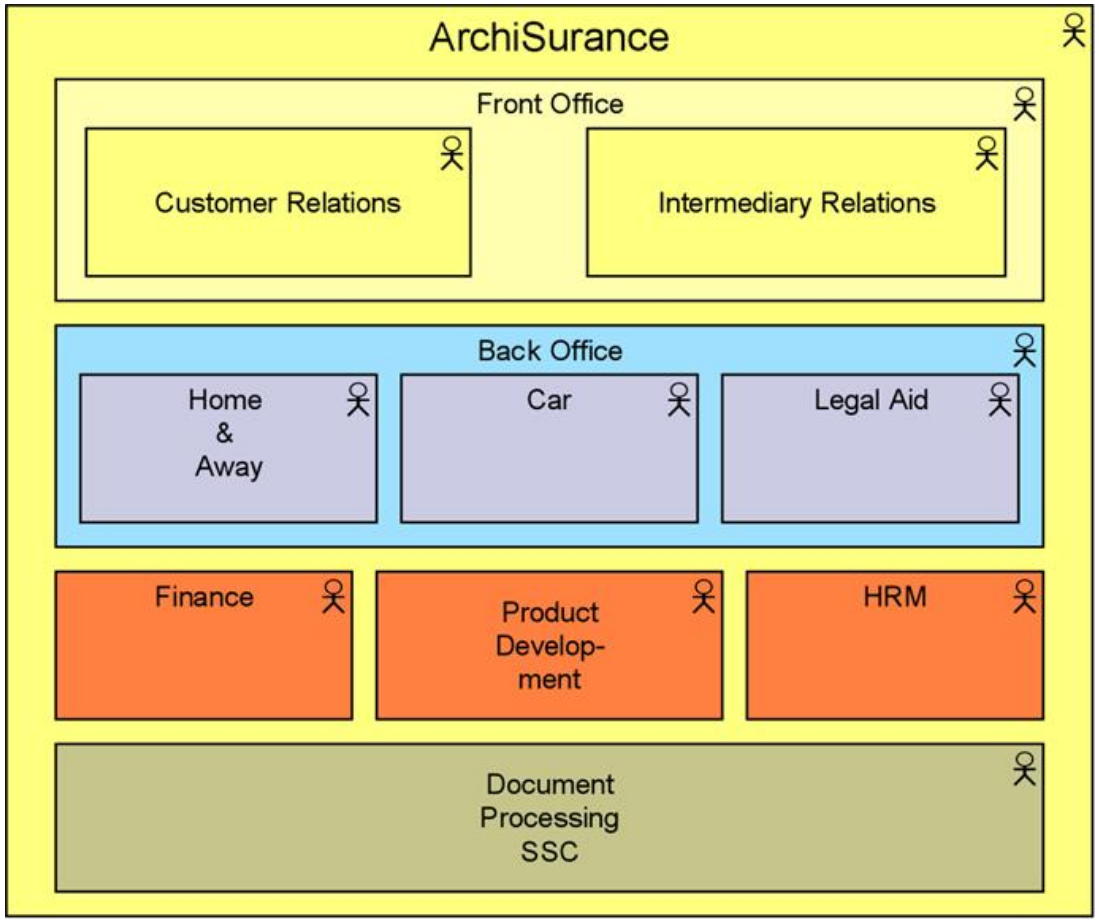
- (Internal) organization of a company, a department, a network of companies. Could be modeled as nested diagrams or as organizational charts.
- Useful in identifying competencies, authority, and repsonsibilities

Organization Viewpoint	
Stakeholders	Enterprise, process and domain architects, managers, employees, shareholders
Concerns	Identification of competencies, authority, and responsibilities
Purpose	Designing, deciding, informing
Scope	Single layer/Single aspect

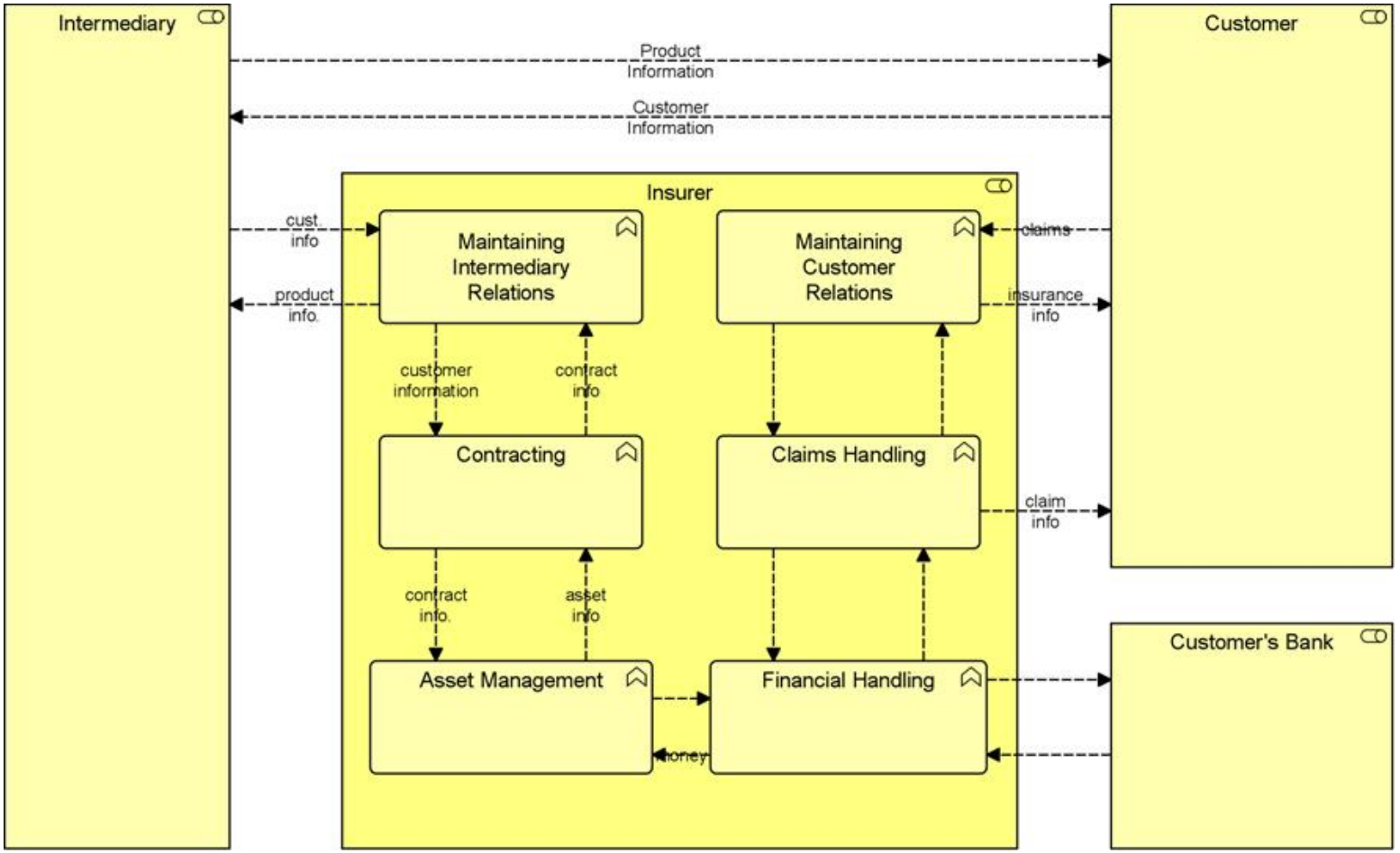
Concepts and Relations:



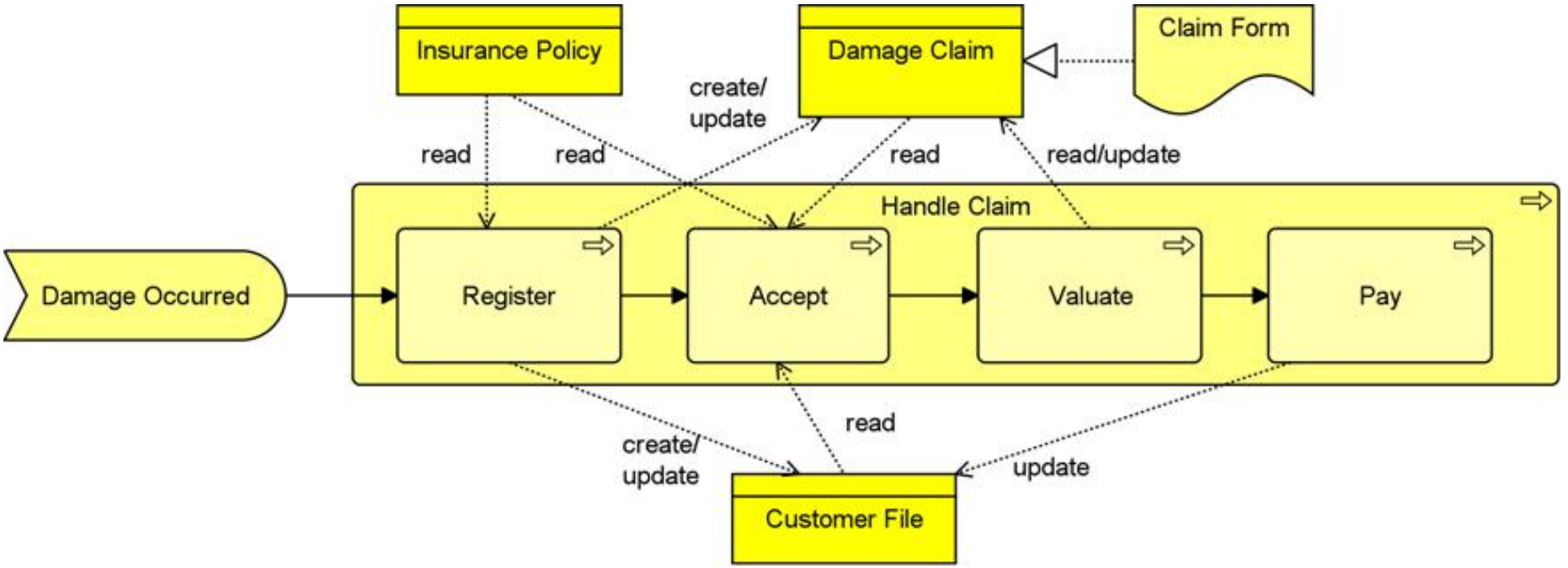
Example of a Model from the Organization Viewpoint



Example of a Model from the Business Function Viewpoint



Example of a Model from the Business Process Viewpoint

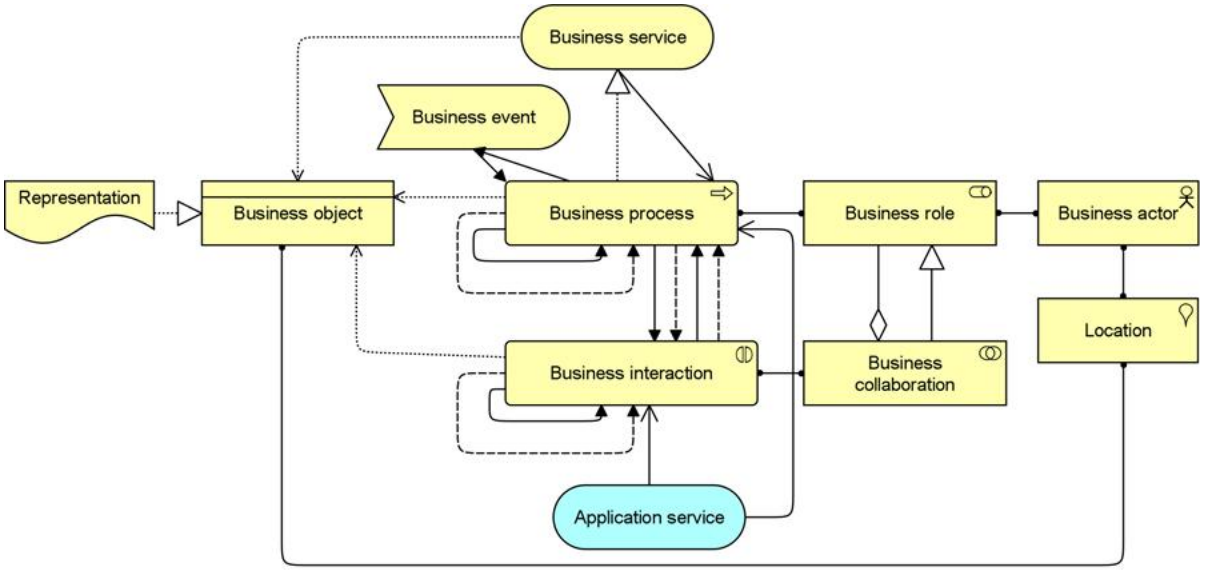


Business Process Co-operation Viewpoint

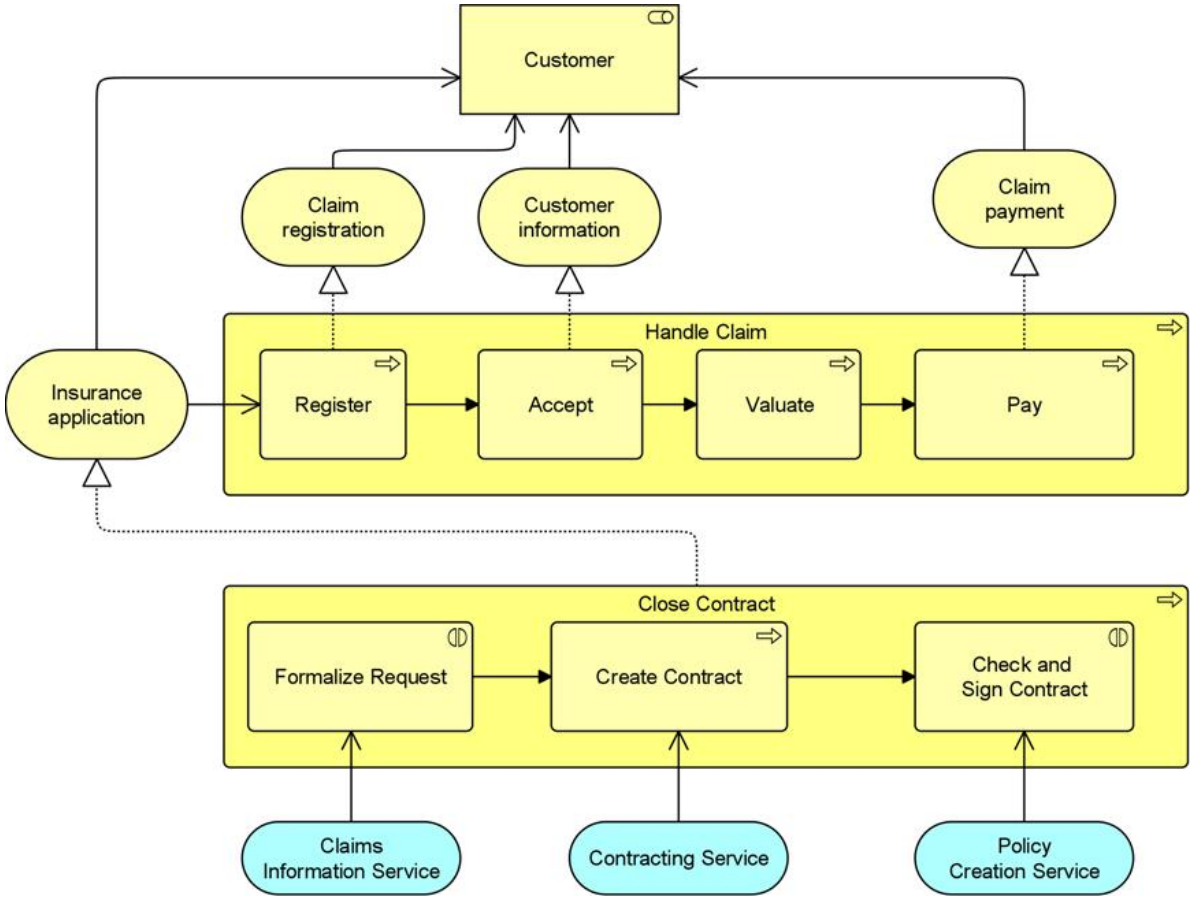
Relations of one or more business processes with each other and/or the environment.

Business Process Cooperation Viewpoint	
Stakeholders	Process and domain architects, operational managers
Concerns	Dependencies between business processes, consistency and completeness, responsibilities
Purpose	Designing, deciding
Scope	Multiple layer/Multiple aspect

Concepts and Relationships:



Example of a Model from the Business Process Co-operation Viewpoint

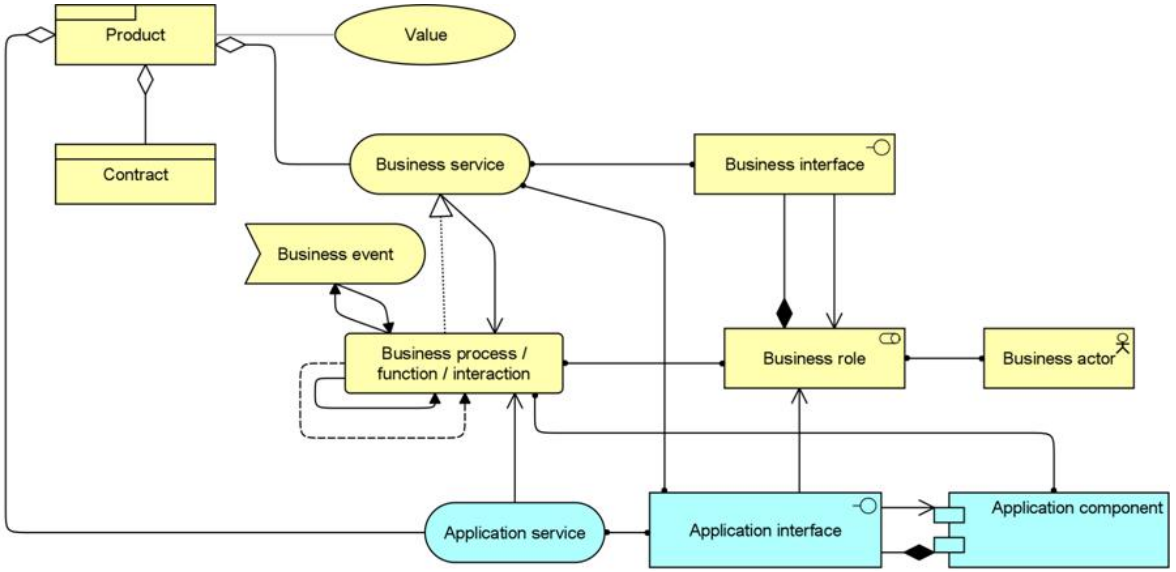


Product Viewpoint

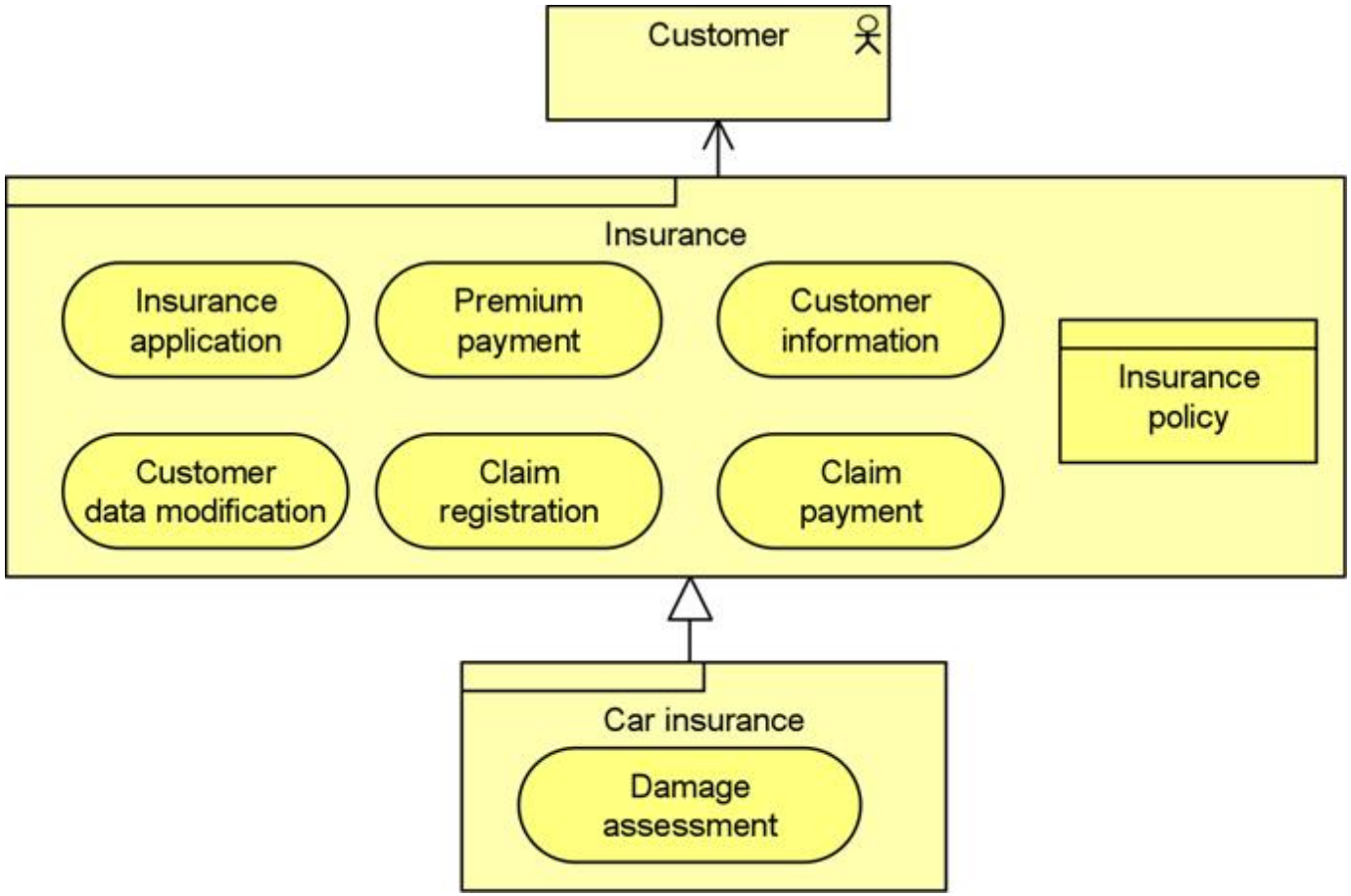
Composition of products, the associated contract(s) or agreements, and the products' value to customers and other external parties..

Product Viewpoint	
Stakeholders	Product developers, product managers, process and domain architects
Concerns	Product development, value offered by the products of the enterprise
Purpose	Designing, deciding
Scope	Multiple layer/Multiple aspect

Concepts and Relationships:



Example of a Model from the Product Viewpoint

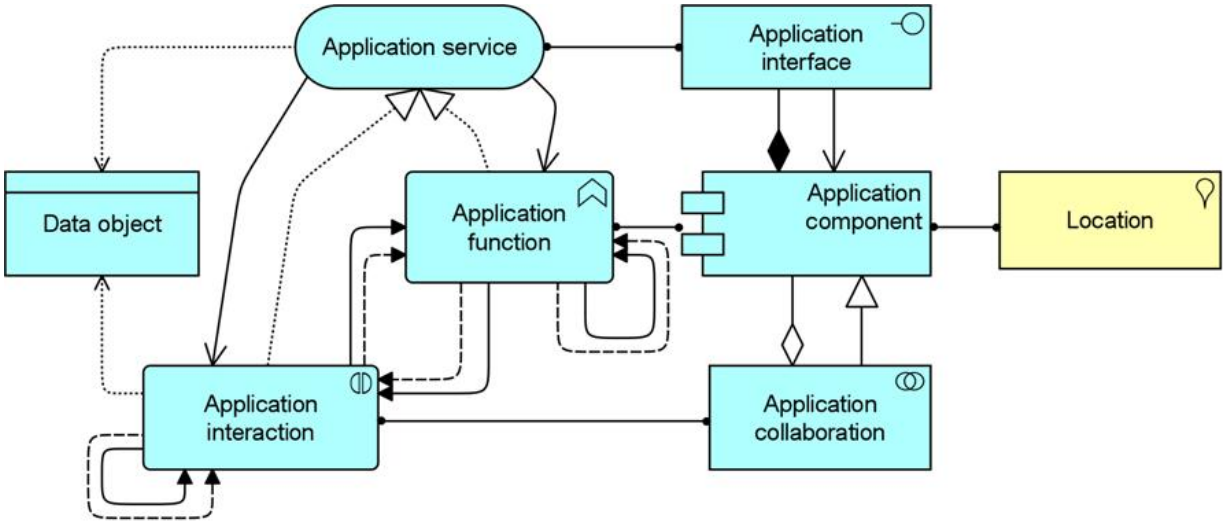


Application Cooperation Viewpoint

Relations between applications components in terms of the information flows between them, or in terms of the services they offer and use.

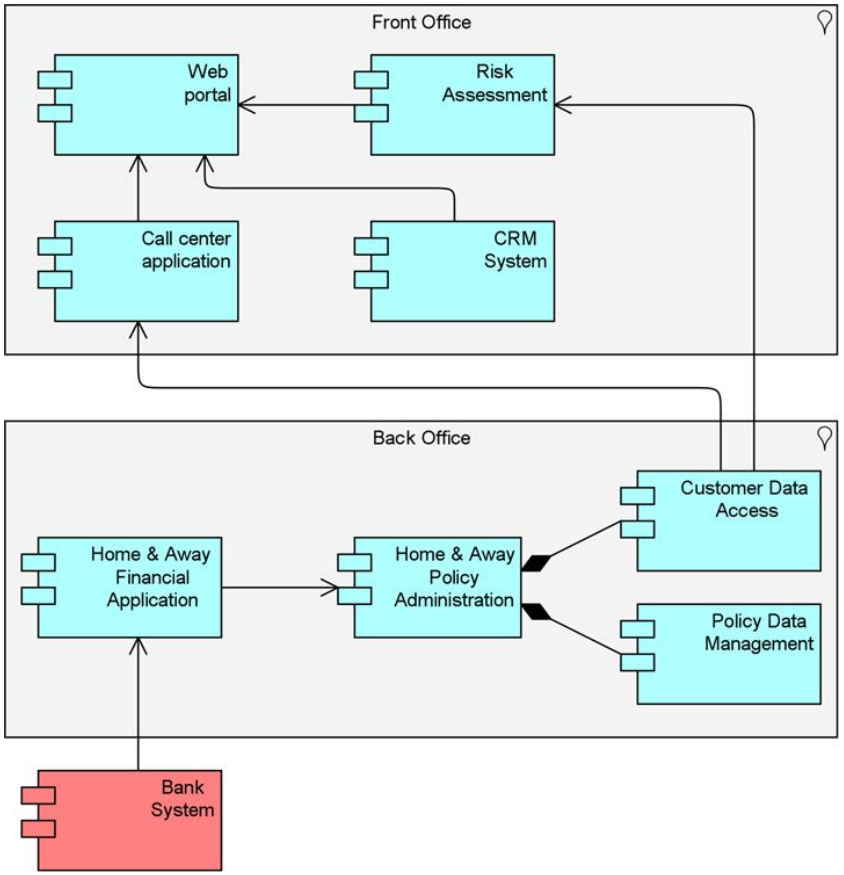
Application Cooperation Viewpoint	
Stakeholders	Enterprise, process, application, and domain architects
Concerns	Relationships and dependencies between applications, orchestration/choreography of services, consistency and completeness, reduction of complexity
Purpose	Designing
Scope	Multiple layer/Multiple aspect

Concepts and Relationships:



Example of a Model from the Application Co-operation Viewpoint

Relations between applications components in terms of the information flows between them, or in terms of the services they offer and use.

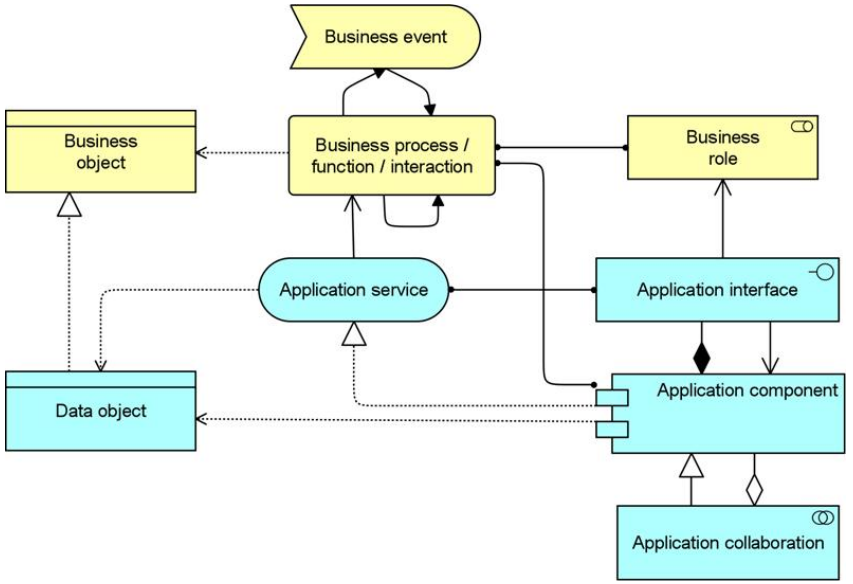


Application Usage Viewpoint

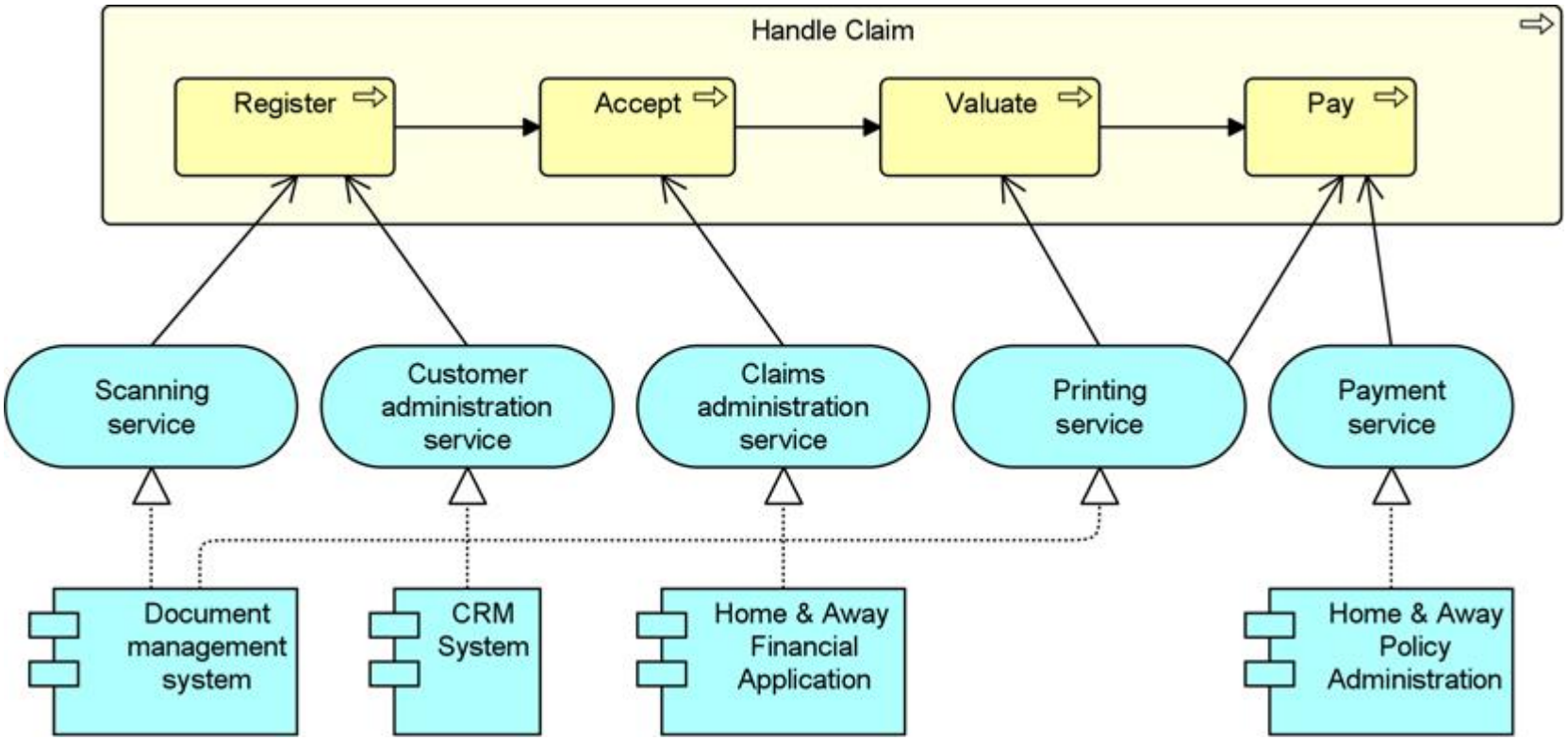
Describes how applications are used to support one or more business processes, and how they are used by other applications

Application Usage Viewpoint	
Stakeholders	Enterprise, process, and application architects, operational managers
Concerns	Consistency and completeness, reduction of complexity
Purpose	Designing, deciding
Scope	Multiple layer/Multiple aspect

Concepts and Relationships:



Example of a Model from the Application Usage Viewpoint

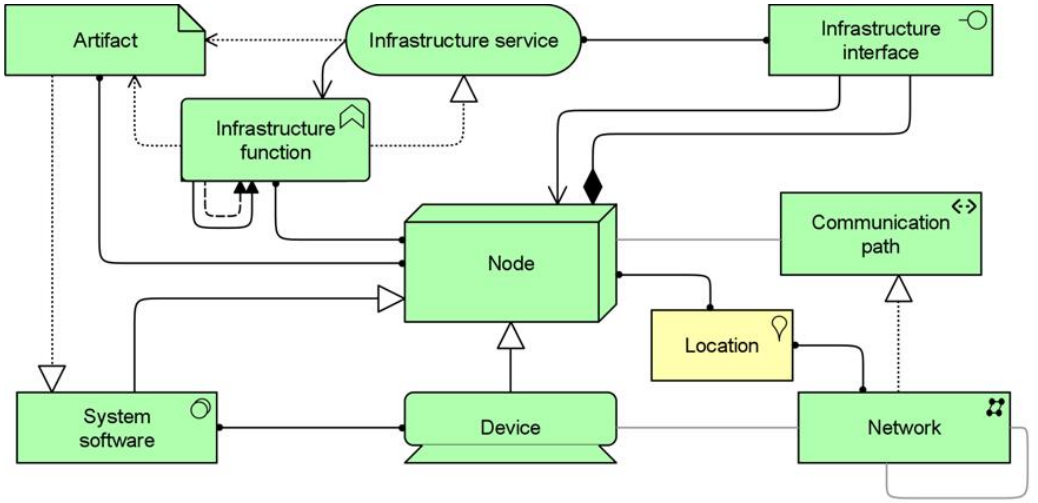


Technology Viewpoint

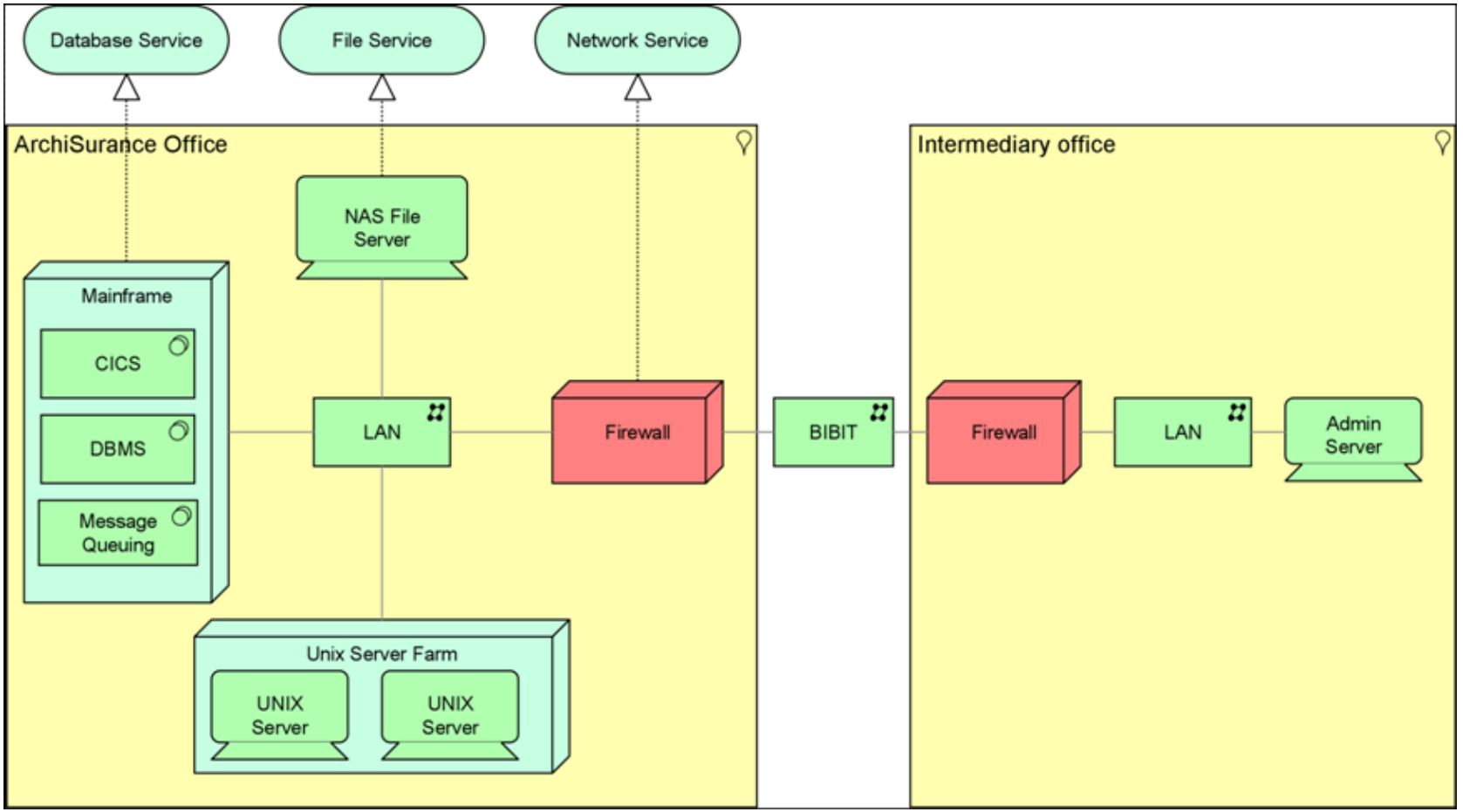
Software and hardware infrastructure elements supporting the application layer, such as physical devices, networks, or system software (e.g., operating systems, databases, and middleware).

Technology Viewpoint	
Stakeholders	Infrastructure architects, operational managers
Concerns	Stability, security, dependencies, costs of the infrastructure
Purpose	Designing
Scope	Single layer/Multiple aspect

Concepts and Relationships:



Example of a Model from the Technology Viewpoint

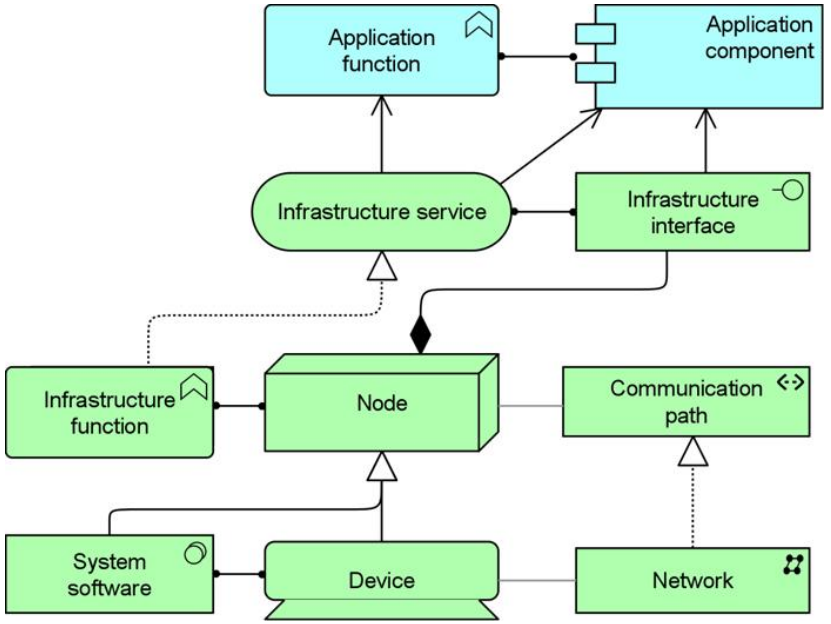


Technology Usage Viewpoint

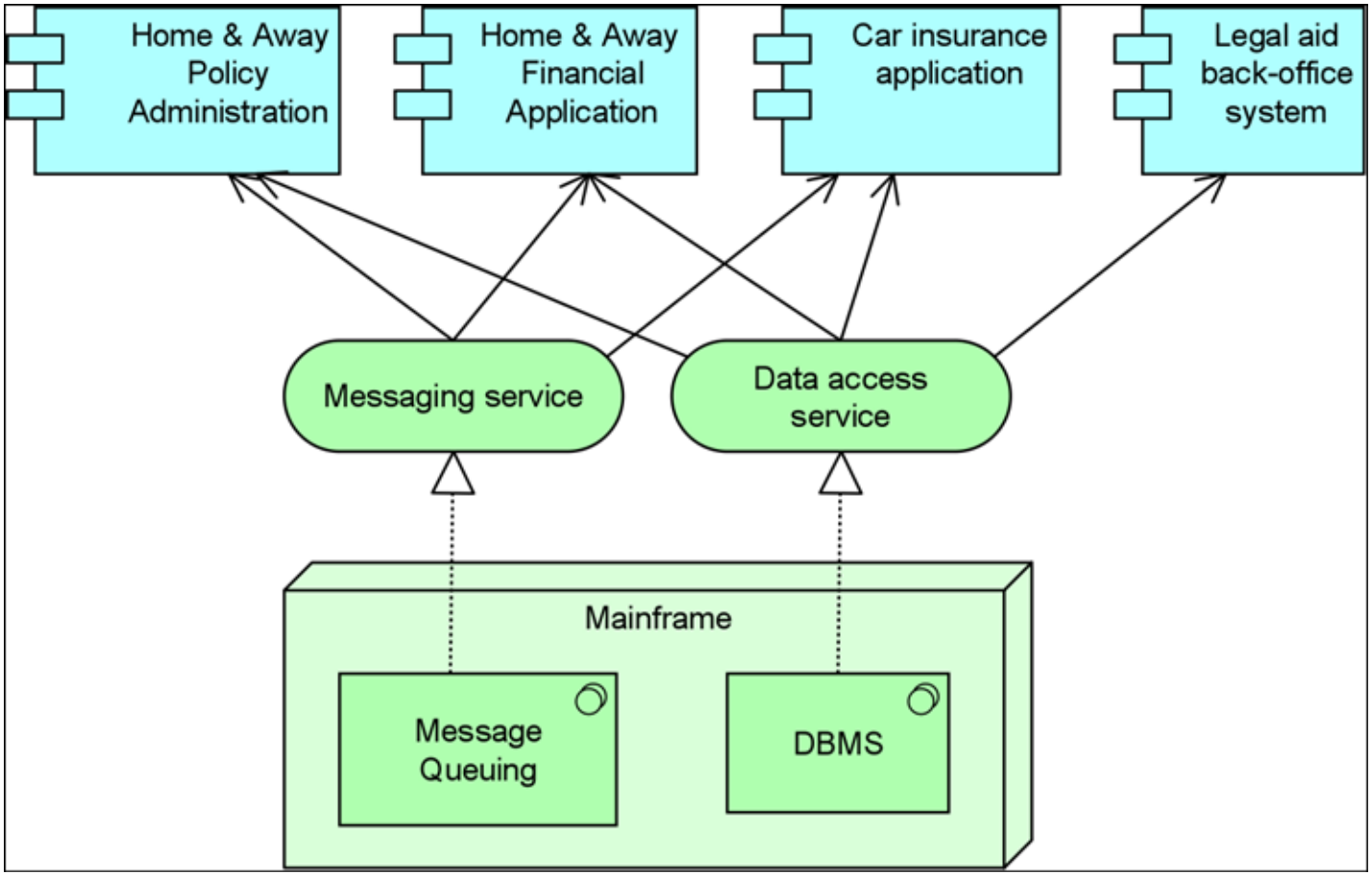
How applications are supported by the software and hardware infrastructure: the infrastructure services are delivered by the devices; system software and networks are provided to the applications

Technology Usage Viewpoint	
Stakeholders	Application, infrastructure architects, operational managers
Concerns	Dependencies, performance, scalability
Purpose	Designing
Scope	Multiple layer/Multiple aspect

Concepts and Relationships:



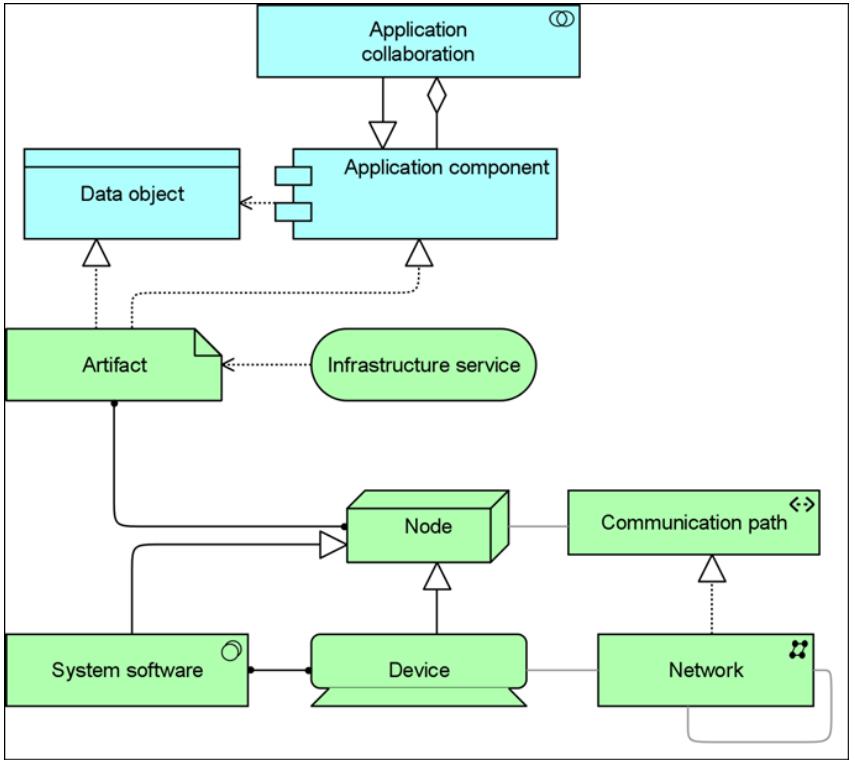
Example of a Model from the Technology Usage Viewpoint



Implementation and Deployment Viewpoint

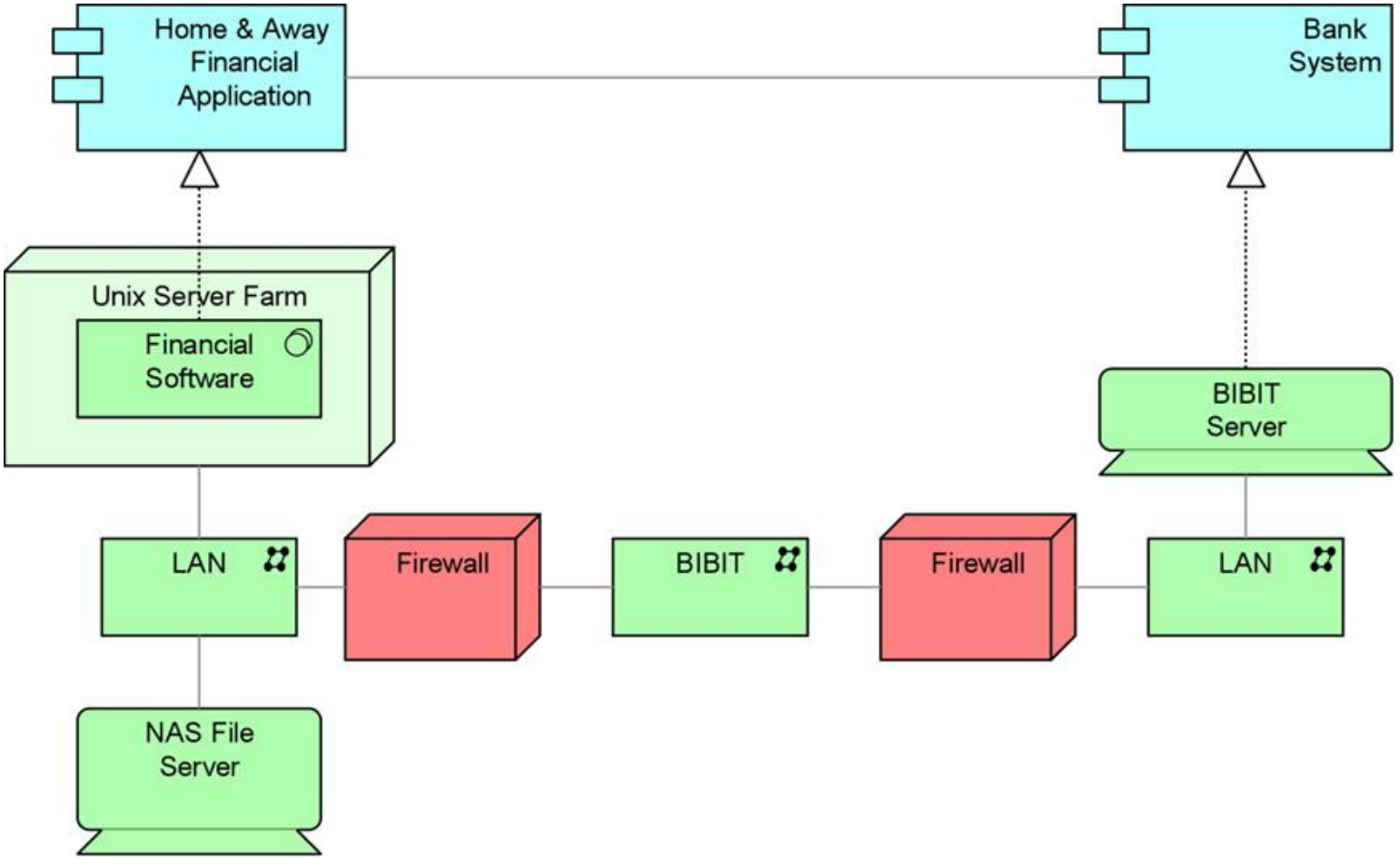
How one or more applications are realized on the infrastructure. This comprises the mapping of (logical) applications onto (physical) artifacts, such as Enterprise Java Beans, and the mapping of the information used by these applications onto the underlying storage infrastructure; e.g., database tables or other files.

Concepts and Relationships:



Implementation and Deployment Platform Viewpoint	
Stakeholders	Application and domain architects
Concerns	Structure of application platforms and how they relate to supporting technology
Purpose	Designing, deciding
Scope	Multiple layer/Multiple aspect

Example of a Model from the Implementation and Deployment Viewpoint

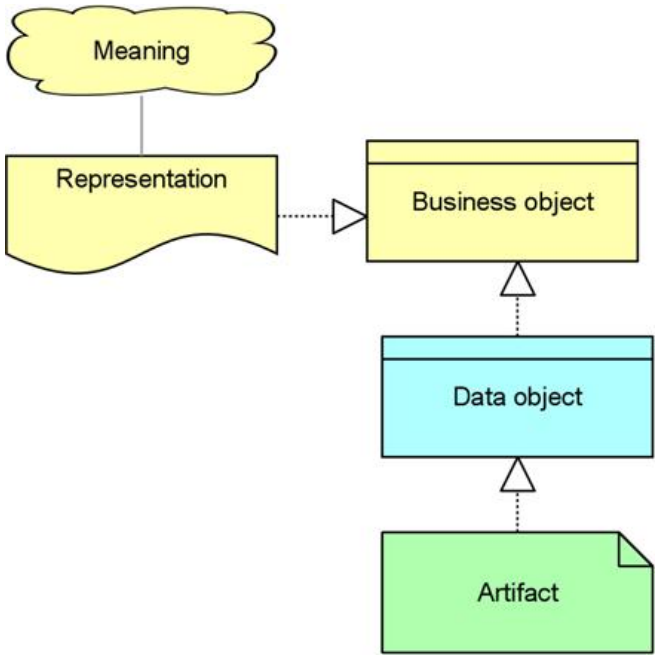


Information Structure Viewpoint

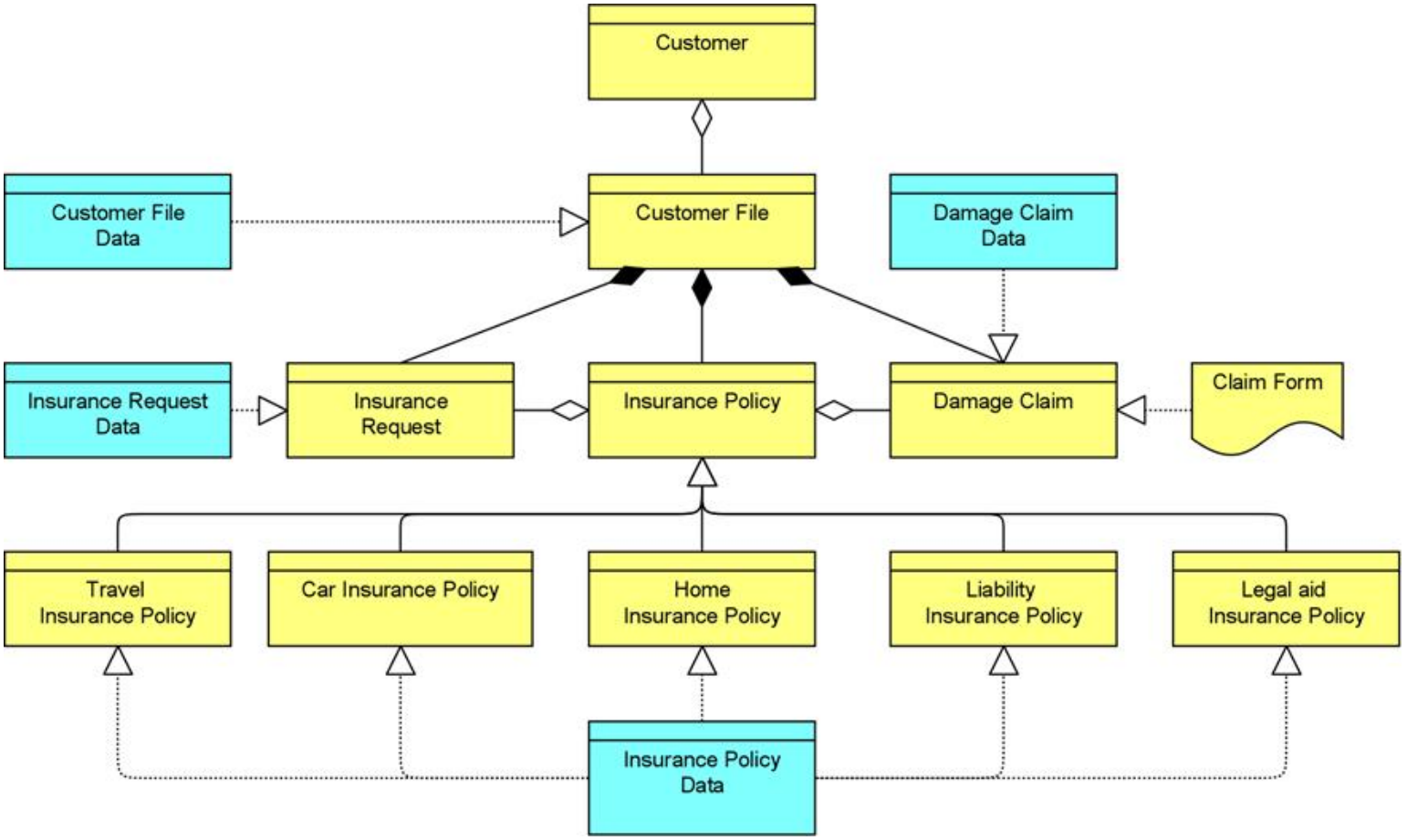
It shows the structure of the information used in the enterprise or in a specific business process or application, in terms of data types or (object-oriented) class structures. It is comparable to the traditional information models created in the development of almost any information system.

Information Structure Viewpoint	
Stakeholders	Domain and information architects
Concerns	Structure and dependencies of the used data and information, consistency and completeness
Purpose	Designing
Scope	Multiple layer/Single aspect

Concepts and Relationships:



Example of a Model from the Information Structure Viewpoint

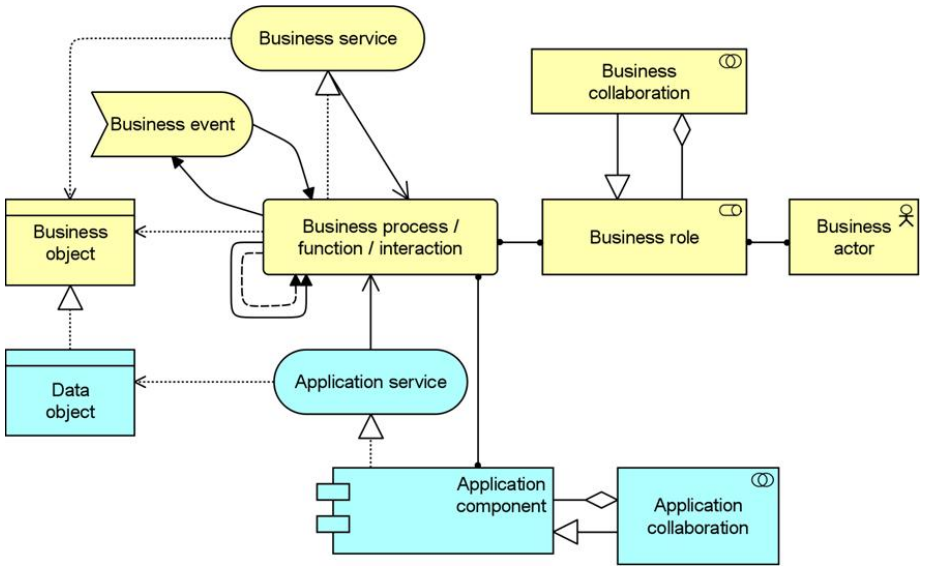


Service Realization Viewpoint

How one or more business services are realized by the underlying processes (and sometimes by application components). Thus, it forms the bridge between the business products viewpoint and the business process view.

Service Realization Viewpoint	
Stakeholders	Process and domain architects, product and operational managers
Concerns	Added-value of business processes, consistency and completeness, responsibilities
Purpose	Designing, deciding
Scope	Multiple layer/Multiple aspect

Concepts and Relationships:



Example of a Model from the Service Realization Viewpoint