

TOGAF artifacts for Business Capabilities

TOGAF artifacts for Value Streams

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This document updates and extends research done by Avancier Ltd for the British Computer Society into harmonisation of different enterprise architecture standards and sources.

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Aims

1. Compare Function and Capability
2. Suggest how Capability-Based Planning may be documented using existing TOGAF artifacts
3. Compare Business Scenario and Value Stream
4. Suggest how Value Streams may be documented using existing TOGAF artifacts

BA in TOGAF as it is: Functions and Scenarios

- Given an enterprise–wide **function hierarchy** *along with* a Request for Architecture Work.
- In phase A, you target selected **functions** and **business scenarios**.

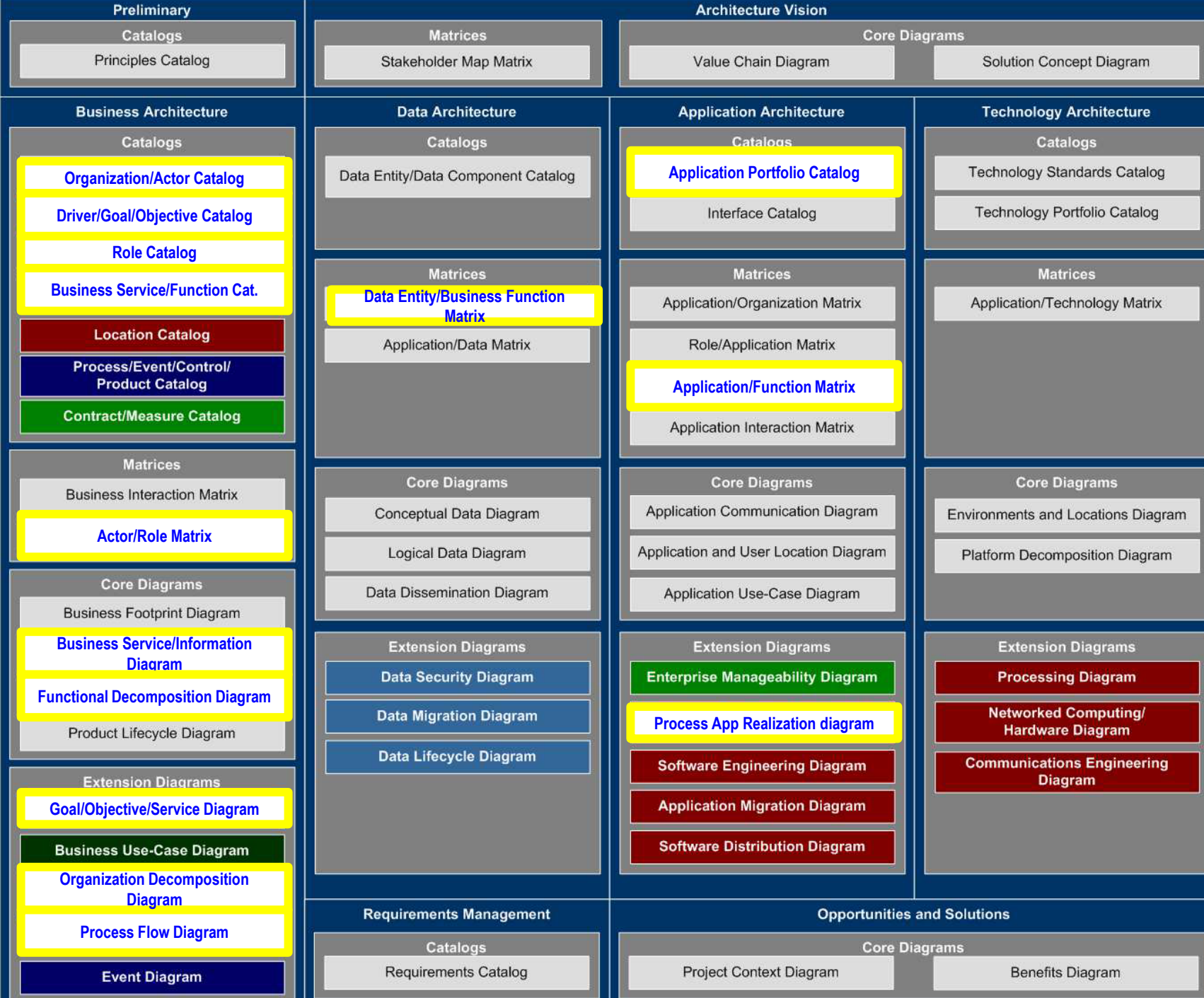
ADM Deliverable	Enterprise Continuum Enterprise Repository	Services & Building Blocks	Business domain entities	Applications domain entities	Data domain entities	Technology domain entities
EA/Strategic Architecture			Function and Organization Hierarchies	Application portfolio catalog	Business data entity catalog	
Architecture Req'ments Specification	Req'ments & Context Req'ments Repository	Business & Application Service Contracts	Business Services Business Scenarios	App/IS Services		
Architecture Definition Document	Architecture Continuum & Repository	Architecture Building Blocks	Roles			
Architecture Road Map	Solutions Continuum & Repository	Solution Building Blocks				
Architecture Change Requests	Deployed Solutions		Identity Management	IT Configuration Management (CMDB)		
			Business & IT Operations			

TOGAF adapted to BA terms: Capabilities and Value Streams

- Given an enterprise-wide **capability map** *along with* a Request for Architecture Work.
- In phase A, you target selected **capabilities** and **value streams**.

ADM Deliverable	Enterprise Continuum Enterprise Repository	Services & Building Blocks	Business domain entities	Applications domain entities	Data domain entities	Technology domain entities
EA/Strategic Architecture			Business Capability and Organization Hierarchies	Application portfolio catalog	Business data entity catalog	
Architecture Req'ments Specification	Req'ments & Context Req'ments Repository	Business & Application Service Contracts	Business Services Value Streams	App/IS Services		
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			Business & IT Operations			

Some artefacts relevant to BA



1 A comparison of Function and Capability

Function and Capability Hierarchies

Functional Decomposition Diagram (as in TOGAF 9.1)	Capability Map
<p data-bbox="111 554 1002 696">Shows on a single page the organization capabilities relevant to the architecture to be defined and governed.</p> <p data-bbox="103 739 1013 882">Helps to quickly model the organization's capabilities without being dragged into debate on how the organization does it.</p> <p data-bbox="89 925 1027 1011">Given a basic diagram, it is possible to layer heat-maps on top of it to show scope and decisions.</p> <p data-bbox="120 1053 996 1146">For example, the capabilities to be implemented in different phases of a change program.</p>	<p data-bbox="1083 554 1974 696">Shows on a single page the organization capabilities relevant to the architecture to be defined and governed.</p> <p data-bbox="1075 739 1984 882">Helps to quickly model the organization's capabilities without being dragged into debate on how the organization does it.</p> <p data-bbox="1060 925 1999 1011">Given a basic diagram, it is possible to layer heat-maps on top of it to show scope and decisions.</p> <p data-bbox="1091 1053 1968 1146">For example, the capabilities to be implemented in different phases of a change program.</p>

ArchiMate Functional Decomposition

A strict (non-redundant) hierarchy.

Strategic management functions

Strategy

Fiscal and
accounting

Risk and
Compliance

Performance

Operational functions

Products

Product
definition

Product
engineering

Marketing

Market
development

Campaigning

Sales

Distribution
channels

Sales
execution

Customer care

Customer
service

Customer
relations

Service
channel

Customer
data

Assets

Investment

Investment
performance

Investment
portfolio

Asset
inventory

Money

Banking

Accounts

Cash flow

Money
market

Claims

Contracts
life cycle

Claim
settlement

Contract
admin.

Claim admin.

Support functions

Organization

HR

Process

Office

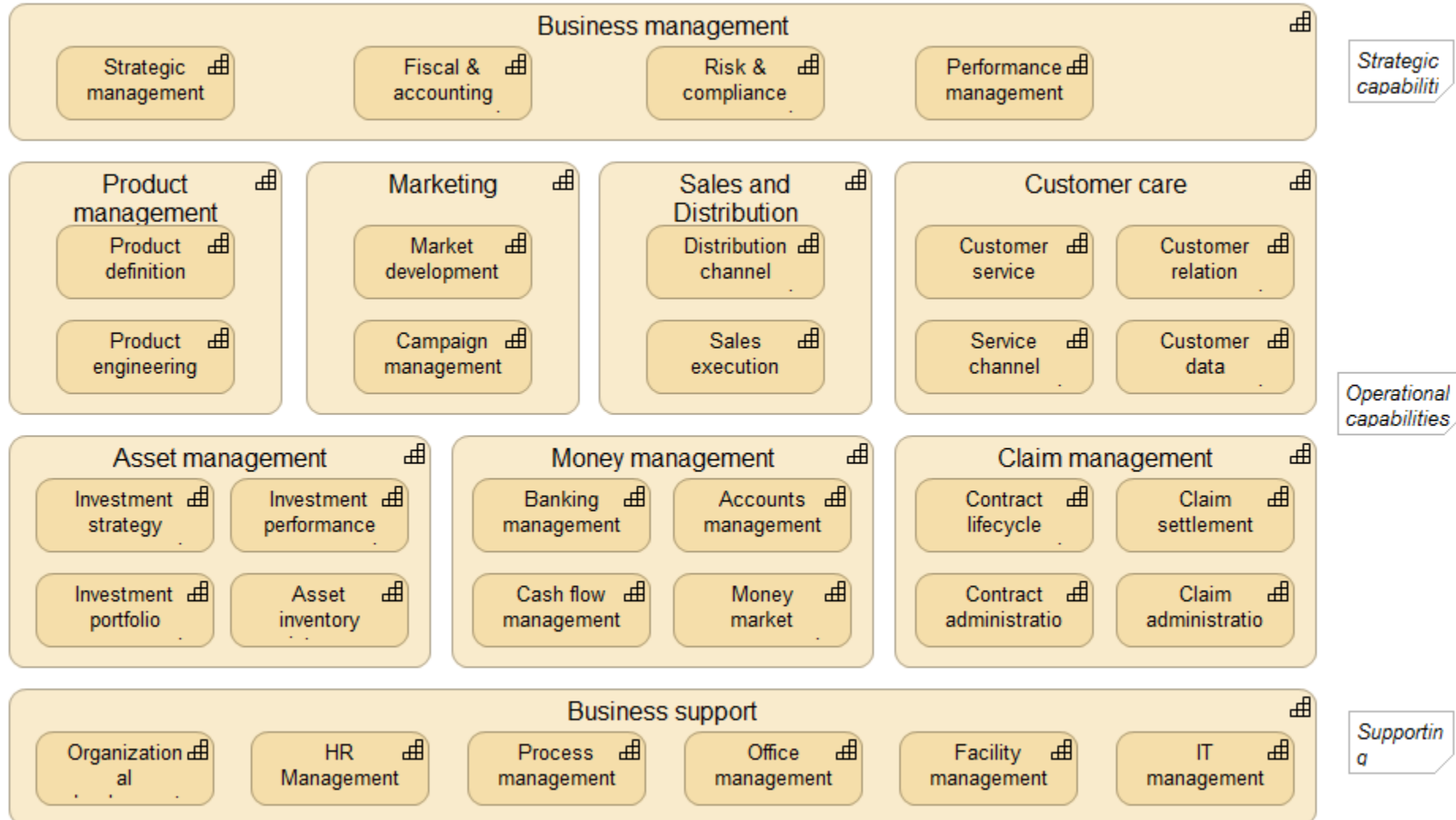
Facility

ITSM

ArchiMate Capability Map

- Capability map

A strict (non-redundant) hierarchy.

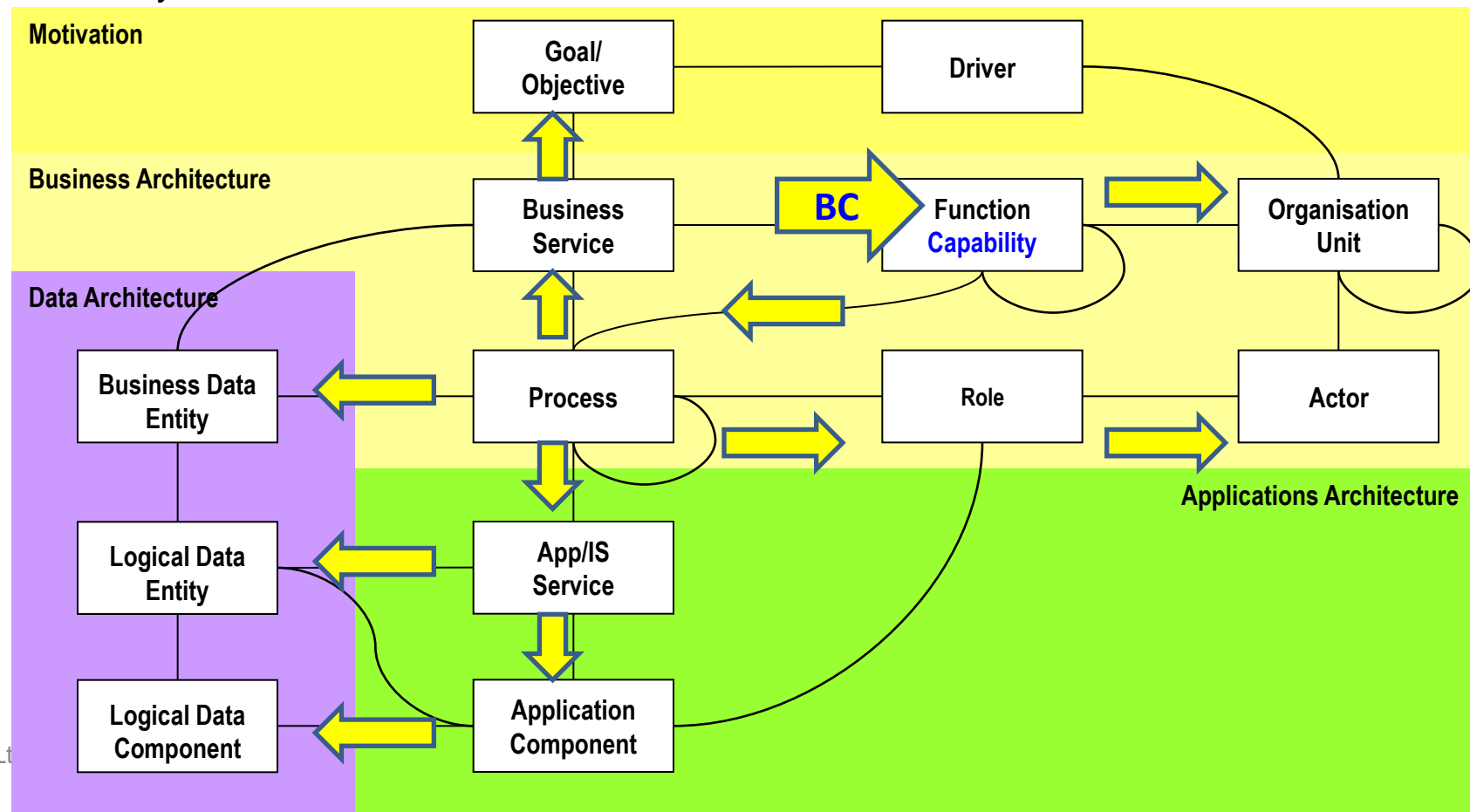


Function and Capability

- A function is a grouping of *activities*
 - to meet some aims.
- A capability is a grouping of *abilities*
 - to perform the activities needed meet some aims.
- There is a natural 1-1 alignment of the concepts
 - the techniques and their purposes are much the same
 - the relationships from the concept to other concepts are much the same
 - the artifacts are much the same

Business Capability in the meta model

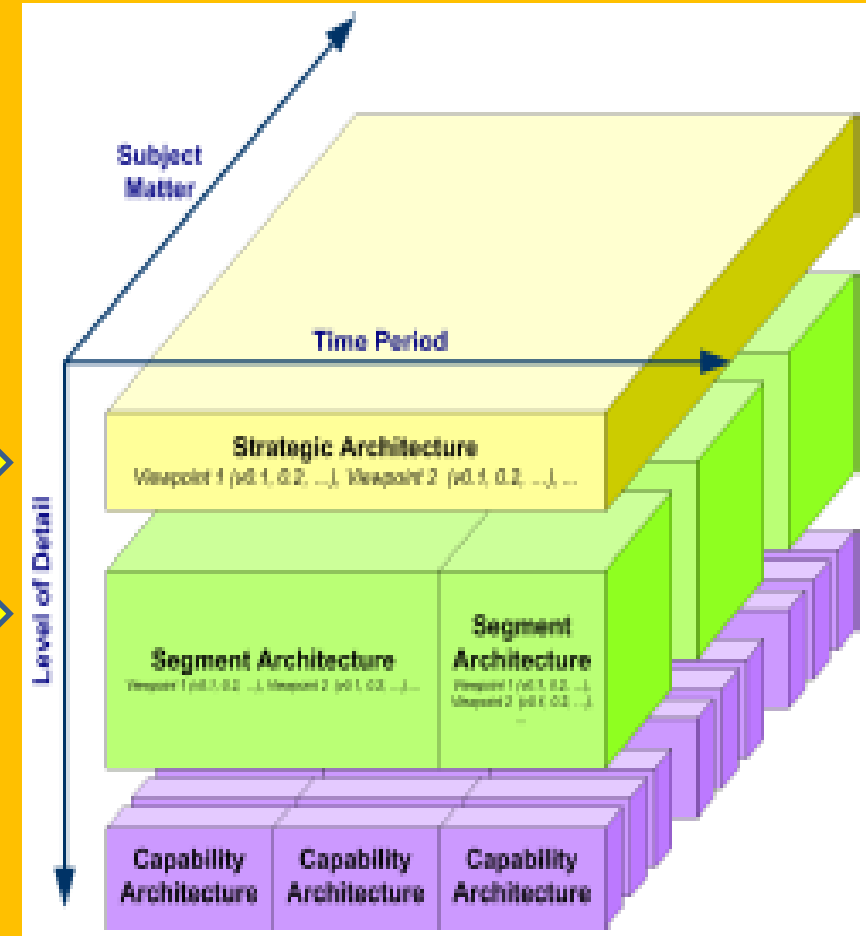
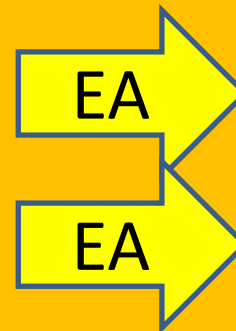
- In implementation, a business capability can be seen as an aggregate of all that is required to deliver some business service(s) and meet some business aim(s)
- To begin with, it can be named and defined as corresponding (1 to 1) to a high-level function in TOGAF.
- The capability is not the function alone, it is the function along with all human and computer resources necessary to fulfil the aims of that function.



2 Suggestions for how Business Capabilities may be documented using existing TOGAF artifacts

1st the EA Strategic Planning level

- TOGAF features **catalogs and matrices** that enable portfolio level
 - Gap analysis
 - Cluster analysis
 - Impact analysis
 - Traceability analysis



TOGAF artifact: **Driver/Goal/Objective Catalog**

- Driver/Goal/Objective catalog
 - provides a cross-organizational view of how an organization responds to drivers through the setting of goals, objectives, and any measure associated with them.
 - Helps to identify synergies (e.g. organizations with similar or related objectives) allowing stakeholders to be identified and change initiatives to be aligned or consolidated.

Organization Unit	Driver	Goal	Objective

TOGAF artifact: **Organization Decomposition Diagram**

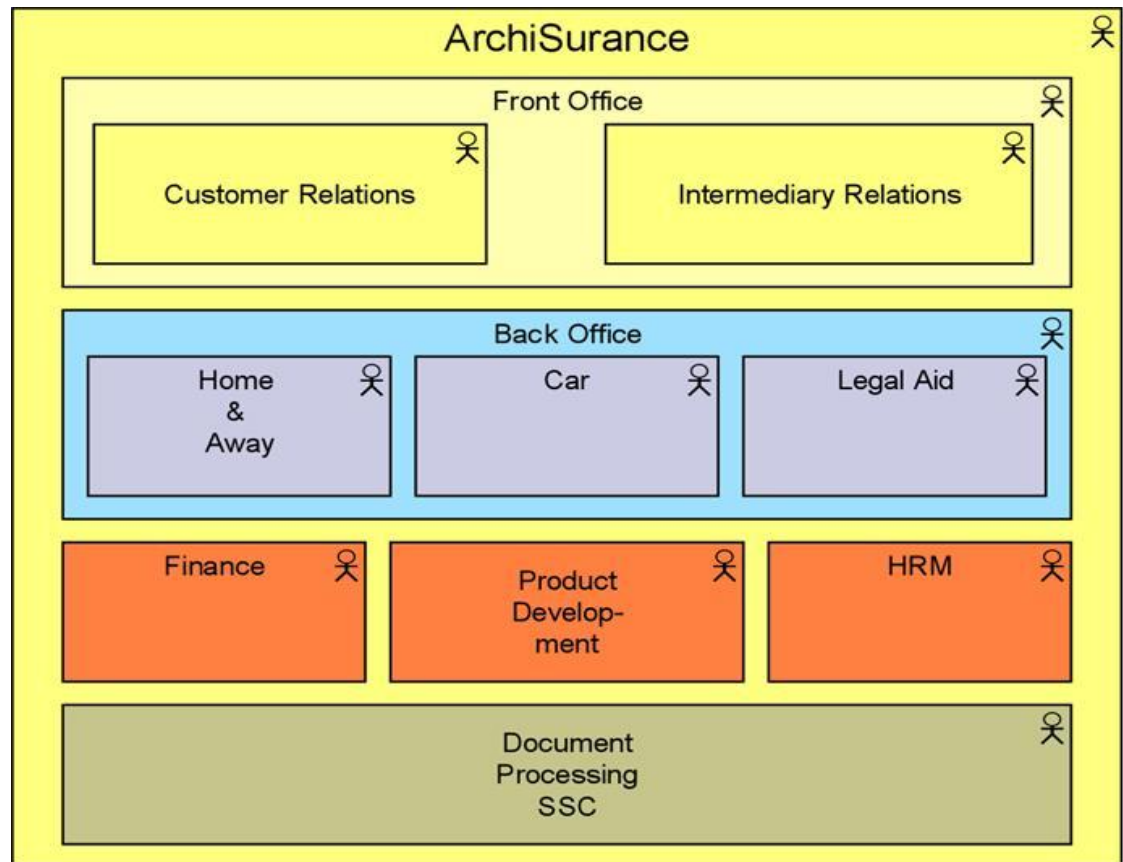
- Organization Decomposition diagram
 - The base artifact for physical / strategic-level business architecture
 - provides the foundation for some other artifacts
 - relates actors and/or roles to organization units in an organization tree.
 - may indicate locations
 - indicates owners, decision-makers and a chain of command
 - helps to identify which stakeholders are concerned with which business drivers, goals and objectives.

The real-world, physical organization

Reasonable match in ArchiMate

Actor = Org Unit

- An organization view

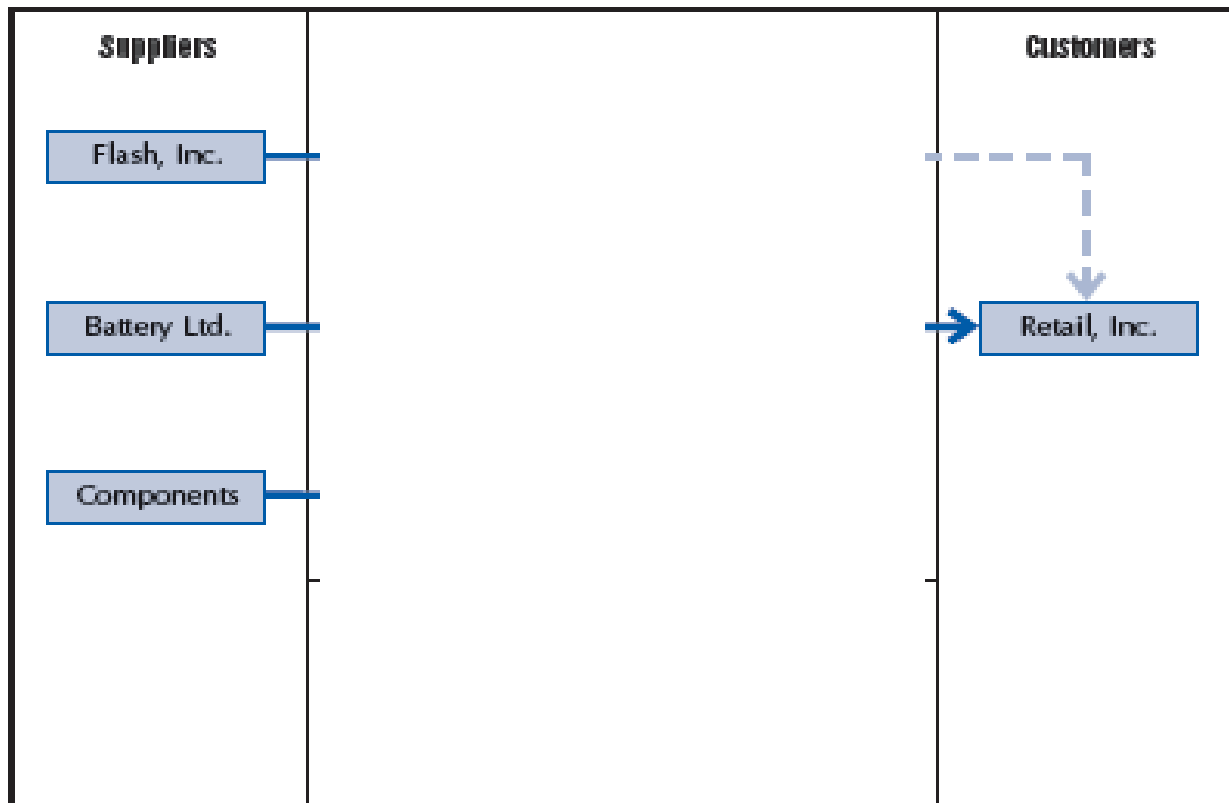


TOGAF artifact: Node Connectivity Diagram

- The Organization Network
 - A node: an organization unit
 - A needline: shows the need of one organization for information from another.
 - An arrow: shows information flow direction
 - A flow can be named and annotated to describe the data carried
 - content
 - transport mechanism/media
 - security or other classification level,
 - timeliness
 - interoperability requirements.

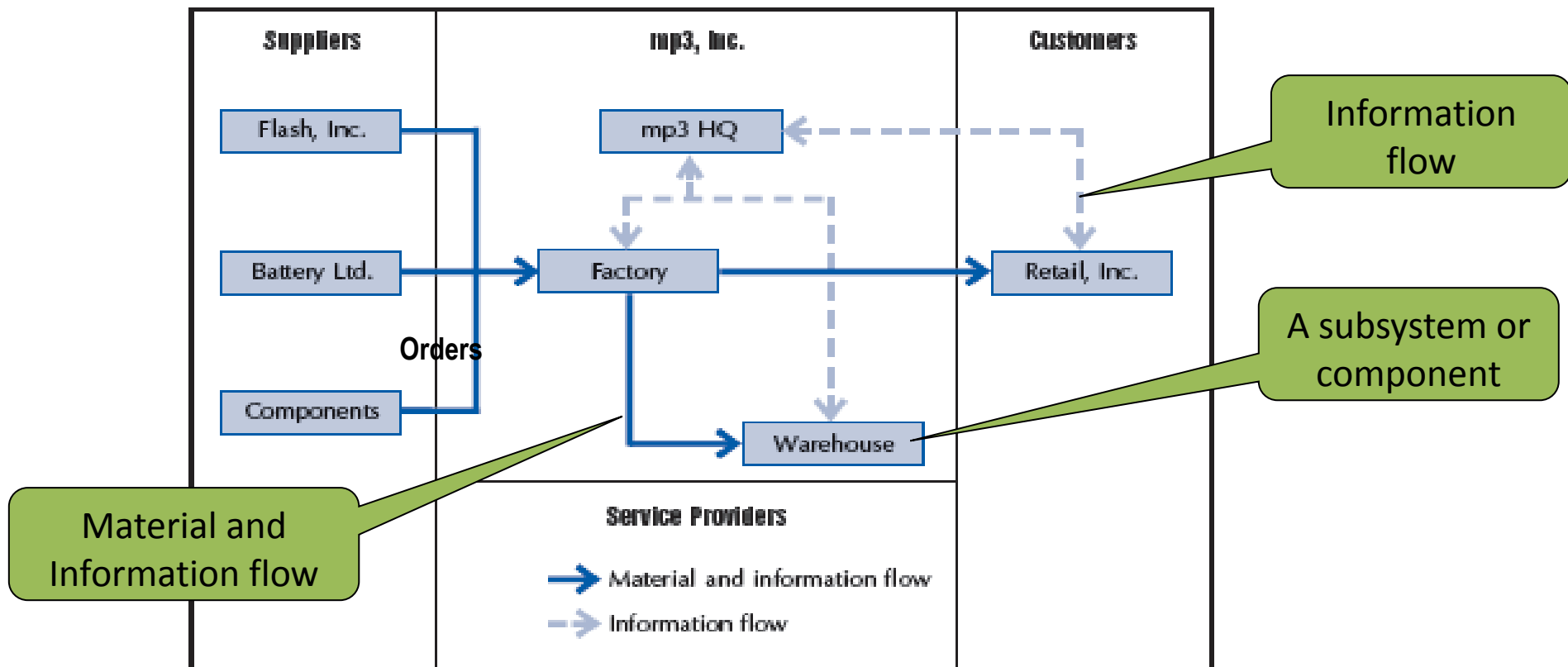
Organization Network: SCOR technique

- Identify your customers
- Identify your suppliers



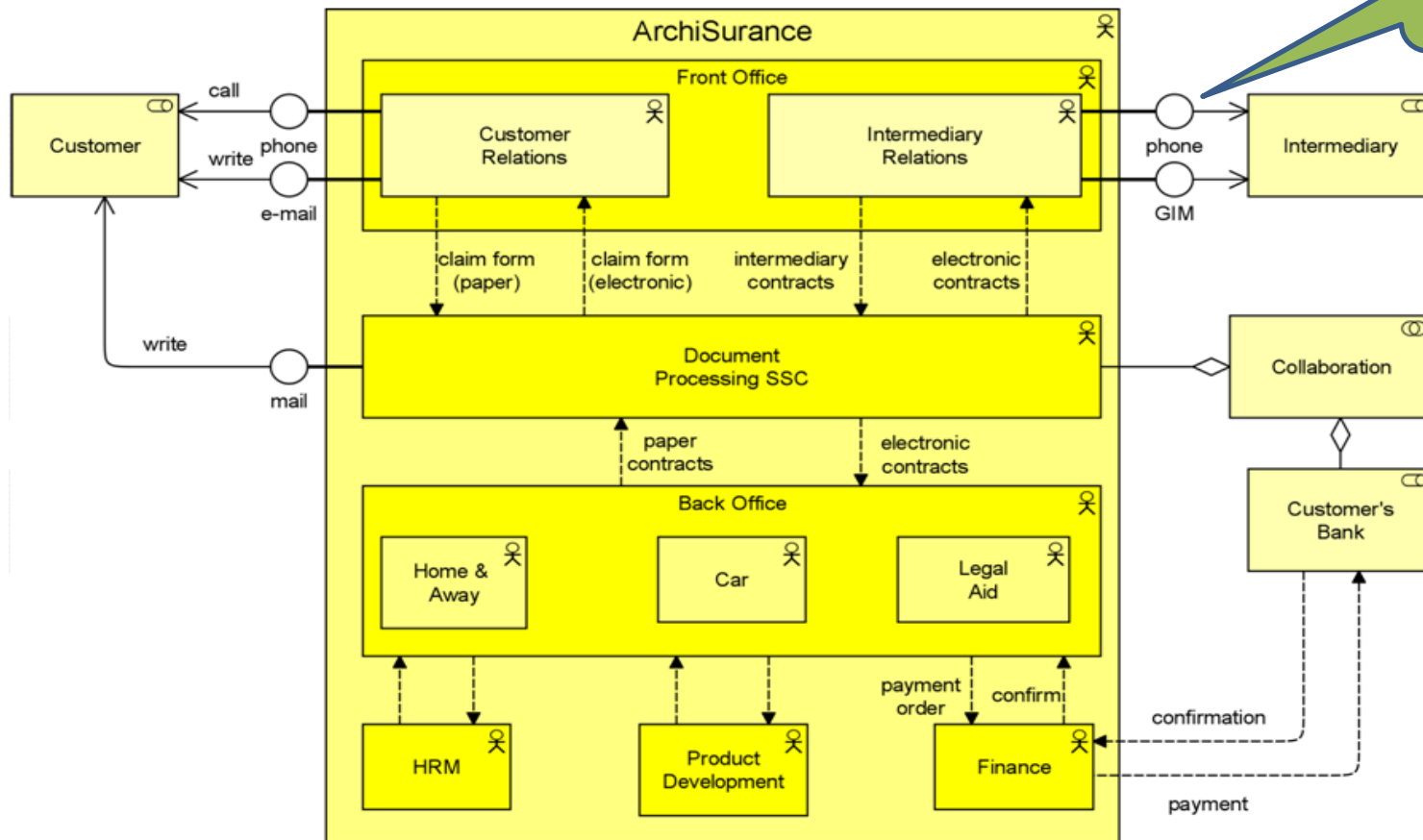
Organization Network: SCOR technique

1. Identify your customers
2. Identify your suppliers
3. Identify the key nodes (entities in the supply chain)
4. Link nodes by flows.



Reasonable match in ArchiMate

- An Organization View - Nodes are physical Actors



Surely communication path rather than interface?

Reverse engineering principles (1)

- Reverse engineer from
 - physical structure to logical structure



TOGAF artifact: **Functional Decomposition Diagram**

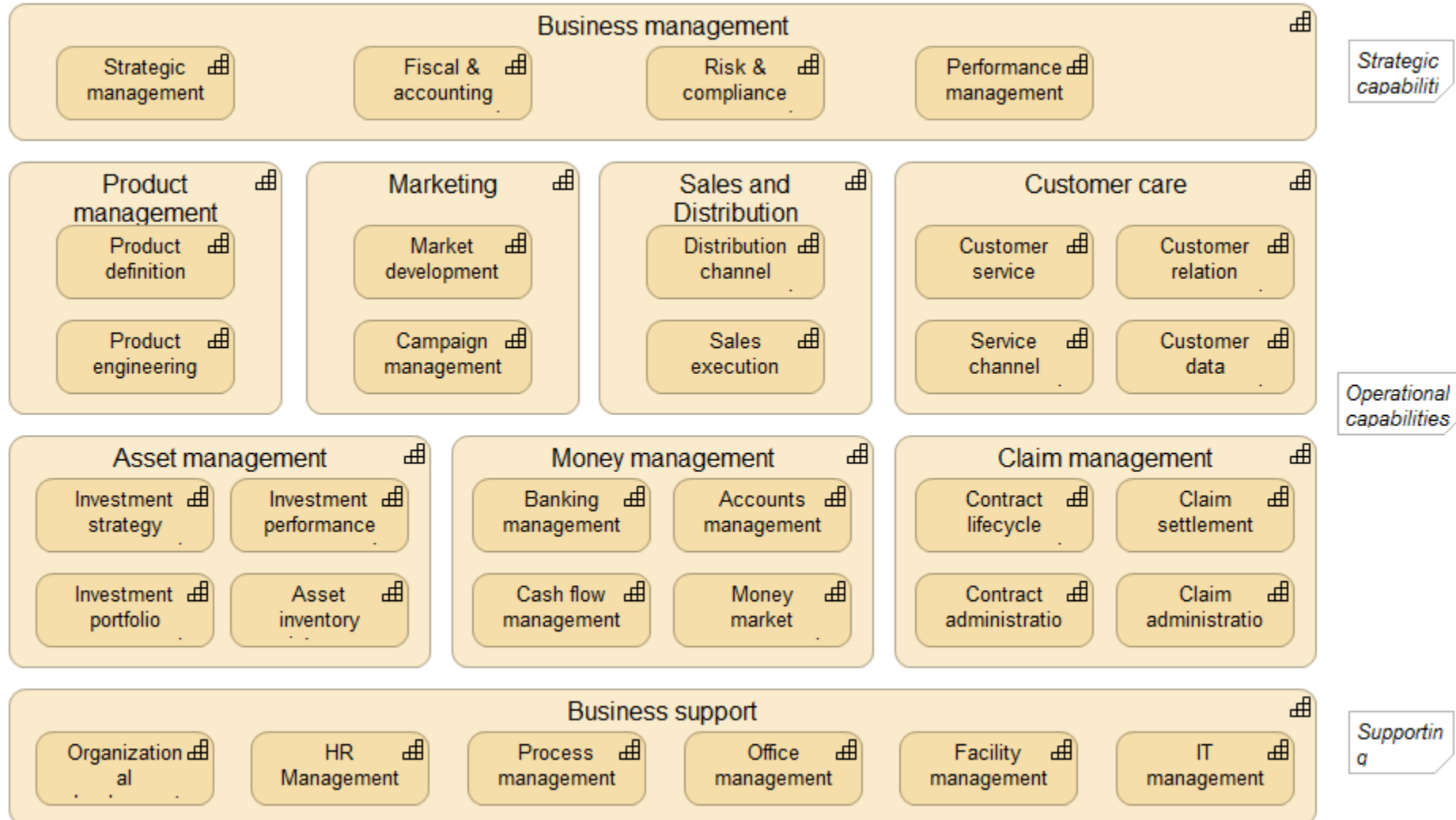
- Capability Map
 - The base artifact for logical / strategic-level business architecture
 - provides the foundation for other artifacts
 - shows on a single page the organization capabilities relevant to the architecture to be defined and governed.
 - helps to quickly model the organization's capabilities without being dragged into debate on how the organization does it.
 - given a basic diagram, it is possible to layer heat-maps on top of it to show scope and decisions. For example, the capabilities to be implemented in different phases of a change program.

can be composed or decomposed - from wide/top to narrow/bottom.
"the level and rigor of decomposition varies" (TOGAF)

Match in ArchiMate

- Capability map

A strict (non-redundant) hierarchy.

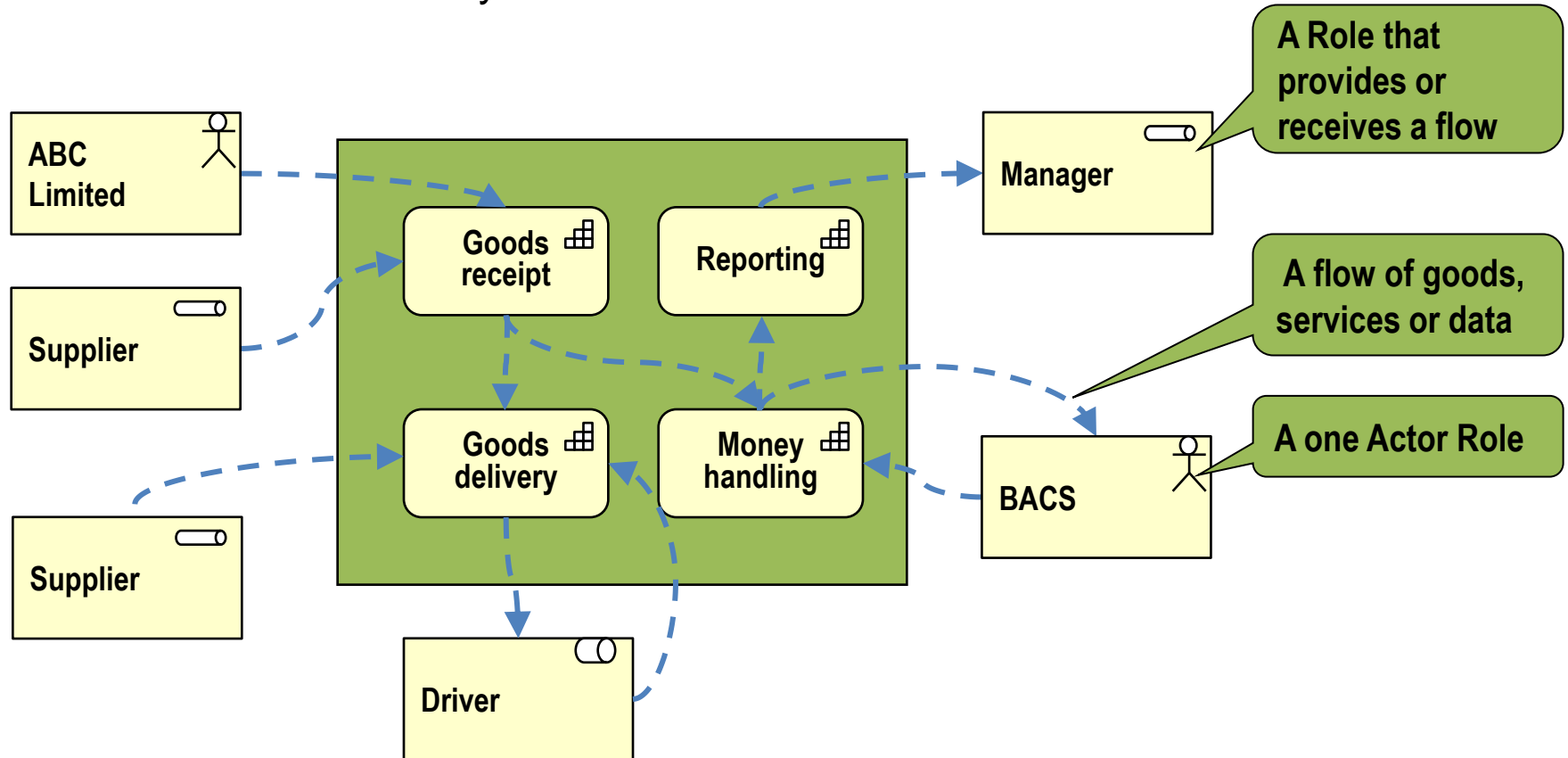


TOGAF artifact: Node Connectivity Diagram

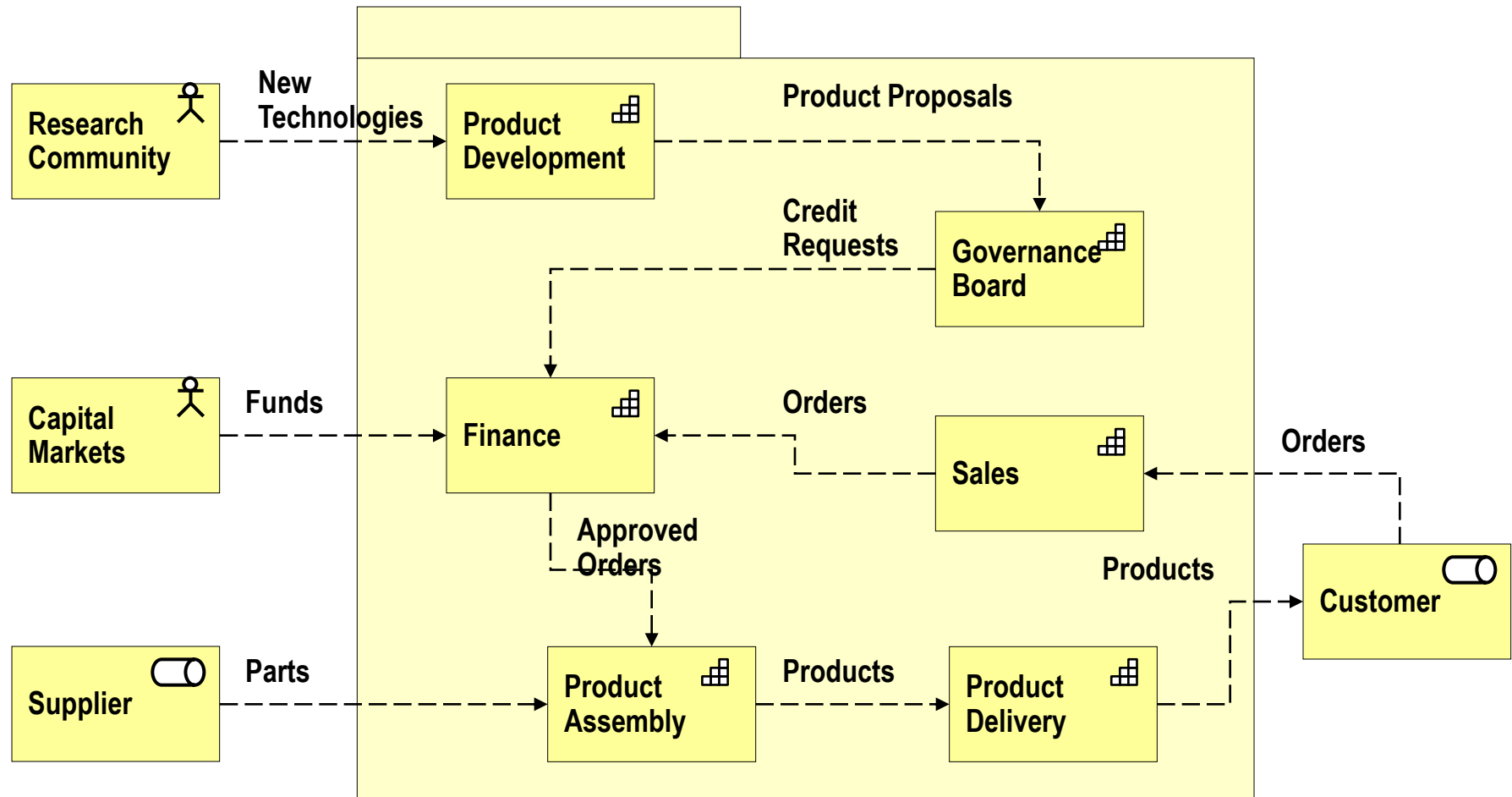
- The Capability Network
 - A node: a Capability
 - A needline: shows the need of one Capability for information from another.
 - An arrow: shows information flow direction
 - A flow can be named and annotated to describe the data carried
 - content
 - transport mechanism/medium
 - security or other classification level,
 - timeliness
 - interoperability requirements.

Capability Network drawn using ArchiMate notation

- Shows services offered by nodes to external entities and to each other



Capability Network drawn using ArchiMate notation



Capability Realization

- Identify the key business Capabilities within the scope of the architecture, and map those Capabilities onto the organizational units within the business.

Organization Capability	Marketing	Sales	Delivery
Marketing	Activity		
Sales		Activity	
Delivery			Activity

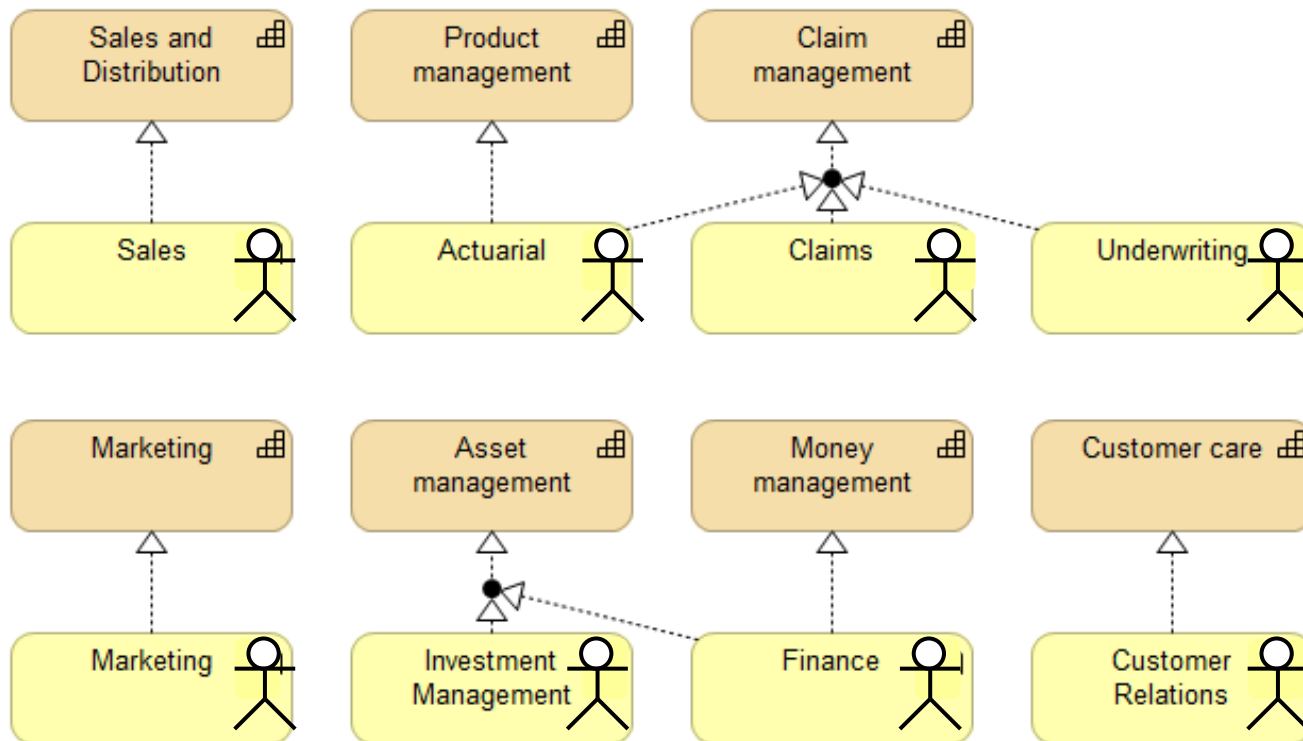
- Might reveal a 1-1
- “Capability organization”

Organization Capability	Petrol	Paints	Plastics
Marketing	Activity	Activity	Activity
Sales	Activity	Activity	Activity
Delivery	Activity	Activity	Activity

- Or else an N-N realization

In ArchiMate

- A Capability realization (by Organization units) view



Reverse engineering principles (2)

- Reverse engineer from
 - physical structure to logical structure



- structure to behavior



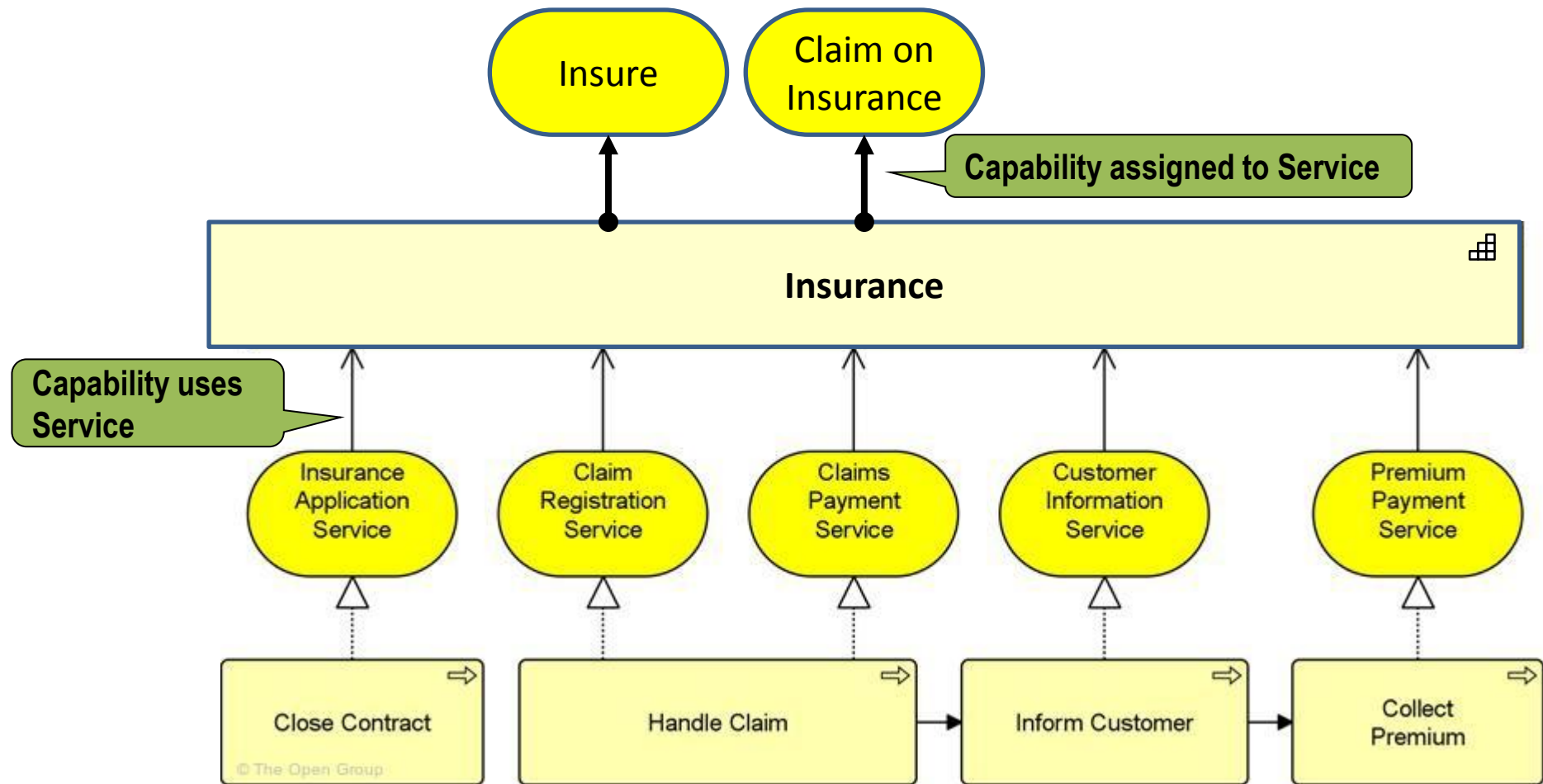
TOGAF artifact: **Business Service/Function Catalog**

- Business Capability/Service catalog
 - provides a capability decomposition in a form that can be filtered, reported on, and queried. It can be used to
 - identify capabilities of an organization
 - understand the level that governance is applied to the capabilities of an organization.
 - identify new capabilities required to support business change
 - determine the scope of change initiatives, apps, or technology components.

Capability level 1	Capability level 2	Business Service	Organization Unit

Partial match in ArchiMate

- Hand made view?



TOGAF artifact: **Role Catalog**

- Role catalog
 - The base artefact for people-oriented views
 - Provides a foundation for mapping roles to value streams, applications and data
 - Lists roles by authorization level and/or zone .
 - Helps to prevent difficulties when different local security standards are combined, ensuring both a more seamless user experience and more secure applications.
 - Supports change impact analysis for role definition and user training

TOGAF artifact: **Application Portfolio Catalog**

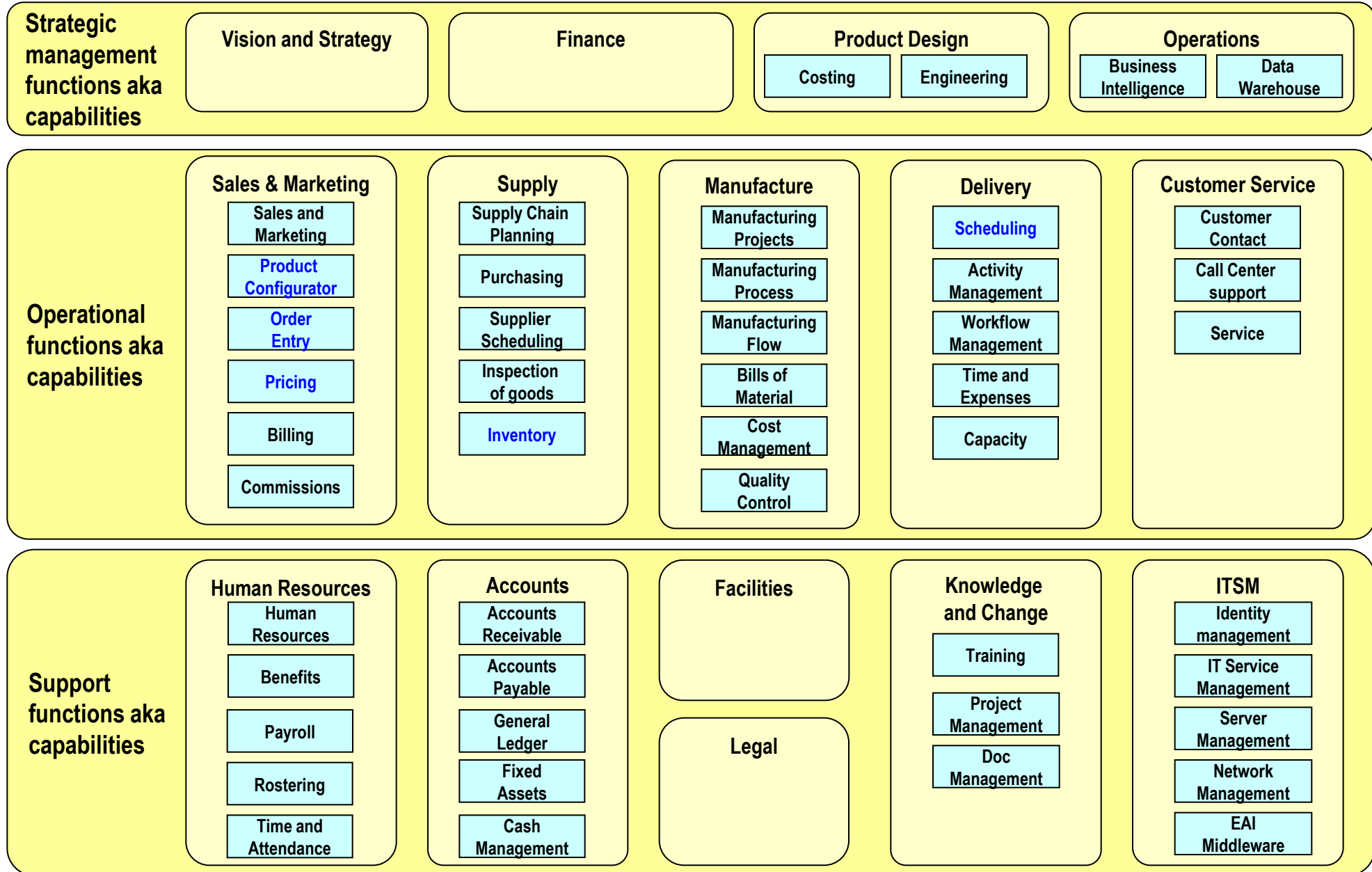
- App Portfolio catalog
 - The base artefact in strategic applications architecture
 - provides the foundation for other artifacts.
 - lists all (logical and/or physical) applications in the enterprise that are to be defined and governed
 - helps to scope change initiatives that impact applications.
 - may be extended to name IS Services provided

TOGAF artifact: **Application/Function Matrix**

- App/Capability matrix
 - Enables gap, cluster and impact analysis of a portfolio.
 - Asking which business Capabilities use an app reveals where the same app supports different Capabilities, which apps are essential and those little used.
 - Asking which apps are used by a business Capability may reveal requirements for interoperability and support.

App Capability	CRM	ERP	Billing	Data warehouse
Sales	Place order Register customer			
Invoicing			Post invoice	

App/Capability matrix as a diagram



TOGAF artifact: Data Entity/Business Function Matrix

- Data Entity/Business Capability matrix
 - Shows which business Capabilities create and use which data
 - Enables gap, cluster and impact analysis of a portfolio.
 - Asking which Capabilities create and use a data entity reveals data entities that are essential or appear unused, and indicates where Capabilities do or might exchange/share data.
 - Asking which entities a business Capability creates and uses reveals Capabilities that used little data and might be better supported.
 - Supports data governance by data steward against data standards.

Figure 12-1 is a Data Entity/Business Function Matrix. It maps various business processes to the data entities they create or use. The matrix is organized into four main sections: PLANNING, GENERAL MANAGEMENT, PROGRAM, and SUPPORT. Each section contains a list of processes on the left and a list of data entities on the top. The cells in the matrix contain letters (C, U) indicating the type of relationship between a process and a data entity. A key at the bottom explains the notation: C = creation of data, U = users of data.

KEY
C = creation of data U = users of data

3 A comparison of Business Scenario and Value Stream

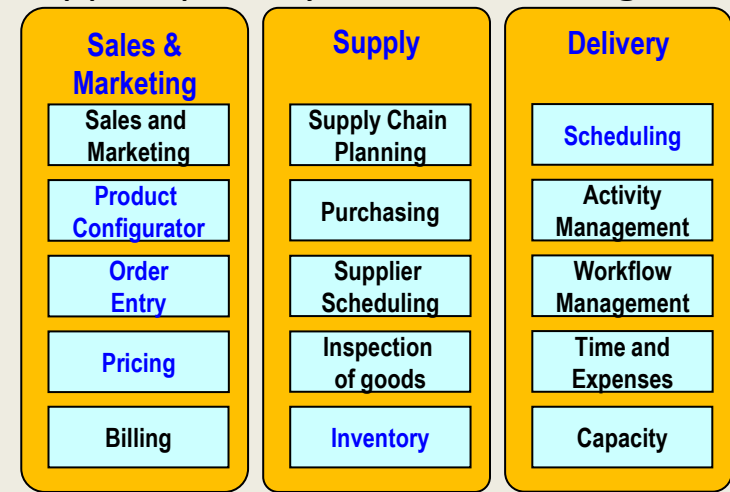
Process and Value Stream diagrams

Process Flow Diagram (as in TOGAF 9.1)	Value Stream Diagram
<p>Given a product or service of value to be delivered, this presents the necessary activities/steps in sequence.</p> <p>It may show for the process and each step:</p> <ul style="list-style-type: none">• Trigger events• Outputs, and• Controls/rules (pre and post conditions). <p>It may use swim lanes to represent owners, roles or resources associated with process steps.</p> <p>It can help subject specialists to describe “how the job is done” for a particular function.</p>	<p>Given a product or service of value to be delivered, this presents the necessary activities/stages in sequence.</p> <p>It may show for the stream and each stage:</p> <ul style="list-style-type: none">• Objectives and Roles involved• Entry criteria: including trigger events• Exit criteria: including products that are generated. <p>It may associate owners, roles and capabilities with each value stage.</p> <p>It can help subject specialists to describe “how the job is done” for a particular capability.</p>

Example business scenario/value stream

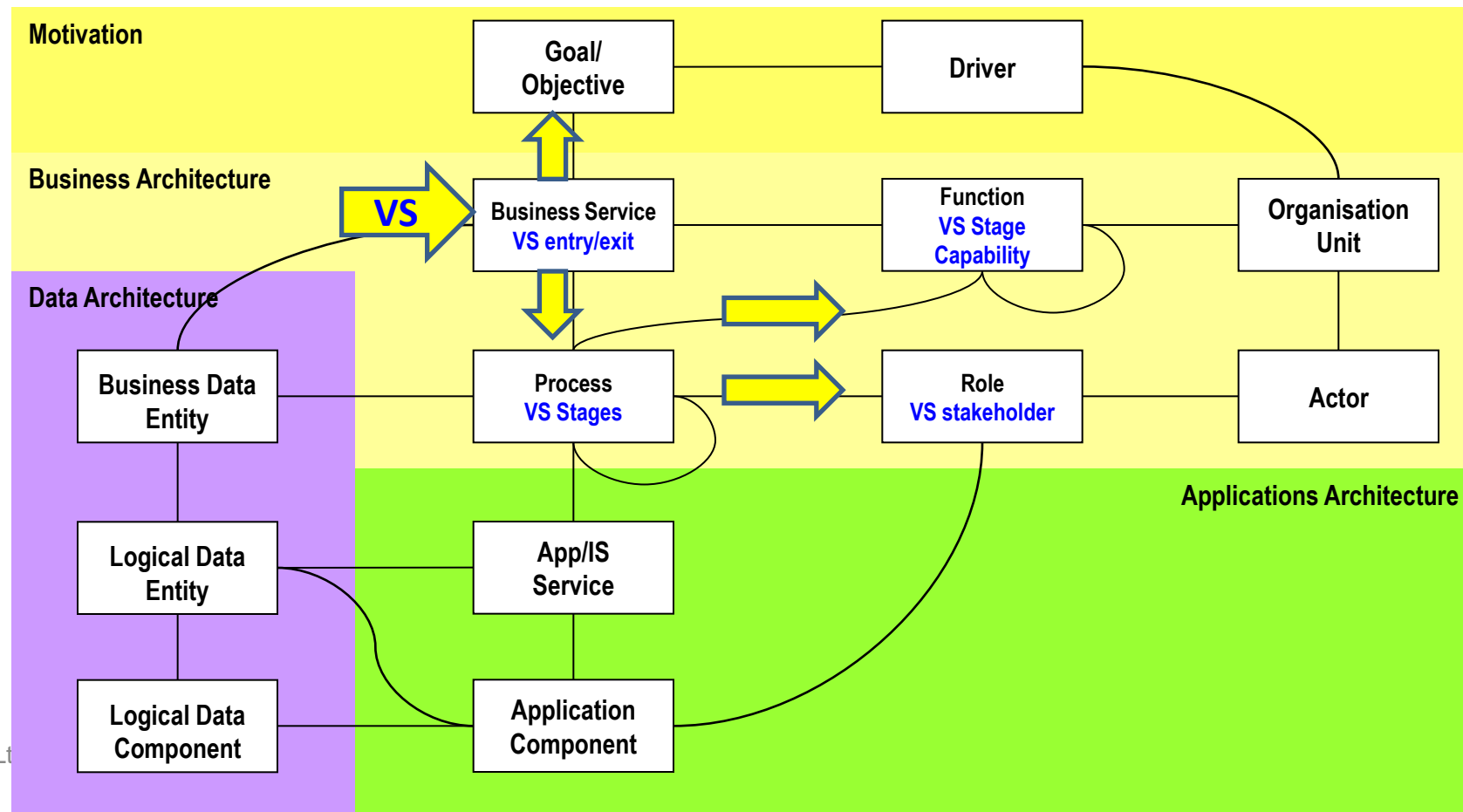
Name	Capture order
Goal, purpose, value added	As implied by the name above and exit facts below
Roles	Customer Sales person
Entry criteria	Trigger: Visit customer at scheduled time Input: Customer details Preconditions: Sales visit agreed and scheduled
Exit criteria	Outputs or products: Signed order Post conditions: Order captured and recorded
Activities	Human activities
	1 Initiate sales process with the customer
	2 Discuss customer requirements
	3 Work with customer to create a product configuration
	4 Verify that the desired configuration can be delivered
	5 Determine price of requested configuration
	6 Confirm customer desire to purchase
	7 Place an order
8 Capture customer signature	
Non-functional qualities	Duration: 1 hour Throughput: 2 per day per salesman Availability: Working hours

App/Capability matrix as a diagram



Value Stream

- A value stream delivers an output/product/service result of value.
- To begin with, it can be named and defined as corresponding (1 to 1) to a high-level business service in TOGAF.
- The value stream is not the business service alone, it is the process steps (value stages) needed to deliver the service and the capabilities (or rather, the parts of those capabilities) that each value stage requires.

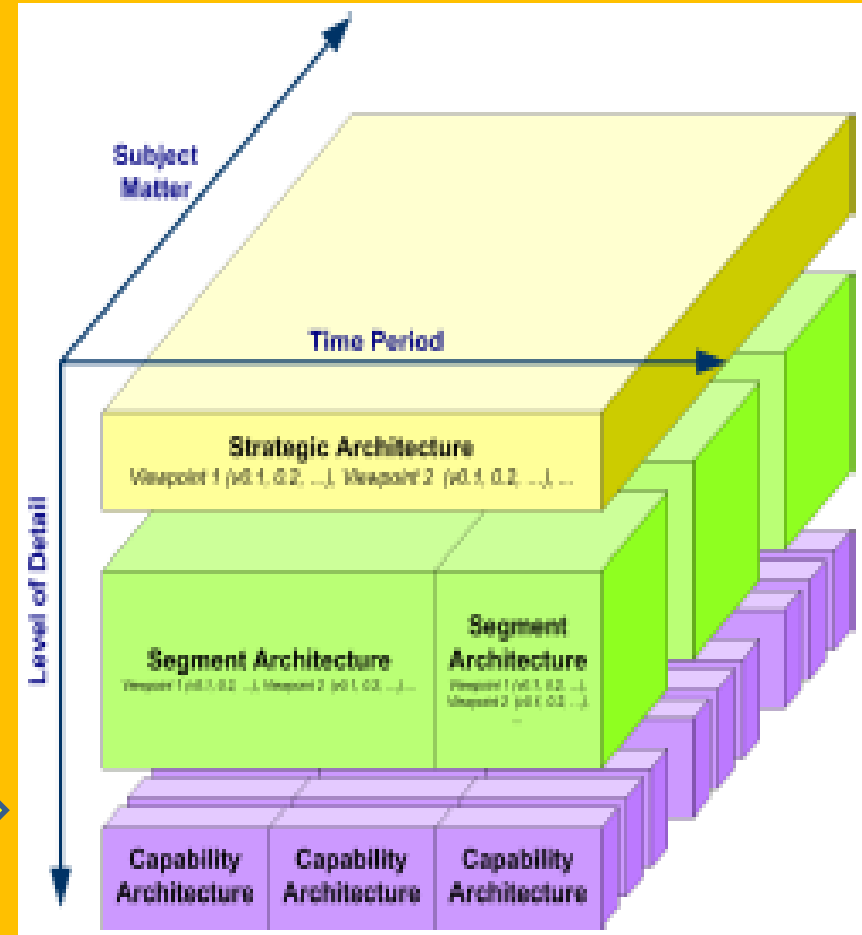


4 Suggestions for how Value Streams may be documented using existing TOGAF artifacts

The Solution Architecture / Capability change level

- TOGAF defines more **diagram** artifacts at this level

SA



Identify priorities for change

- Identify
 - Problems
 - Opportunities
- Envisage
 - New/changed business services
- Apply heat mapping techniques to the
 - Capability map
 - Capability network
 - Application Portfolio Catalog
- Produce one or more “Requests for architecture Work”

Forward engineering principles

- Forward engineer from
 - aims to behaviors



- behaviors to structures



- logical structures to physical structures



How do aims, structures and behaviors relate?

- In particular methods and cases, you might say (e.g.)
 - 1 Capability meets 1 Goal/Objective
 - 1 Capability provides 1 Service
 - 1 Value Stream meets 1 Goal/Objective
 - 1 Value Stream provides 1 Service
- In general, and so in TOGAF
 - All architectural entities may be recursively composed and decomposed,
 - All relationships are many to many. E.g.
 - 1 Capability may provide several Services, and be one of several Capabilities that cooperate to provide 1 coarse-grained Service
 - 1 Value Stream may coordinate activities in several fine-grained Capabilities, and be one of several Value Streams that enable 1 coarse-grained Capability.

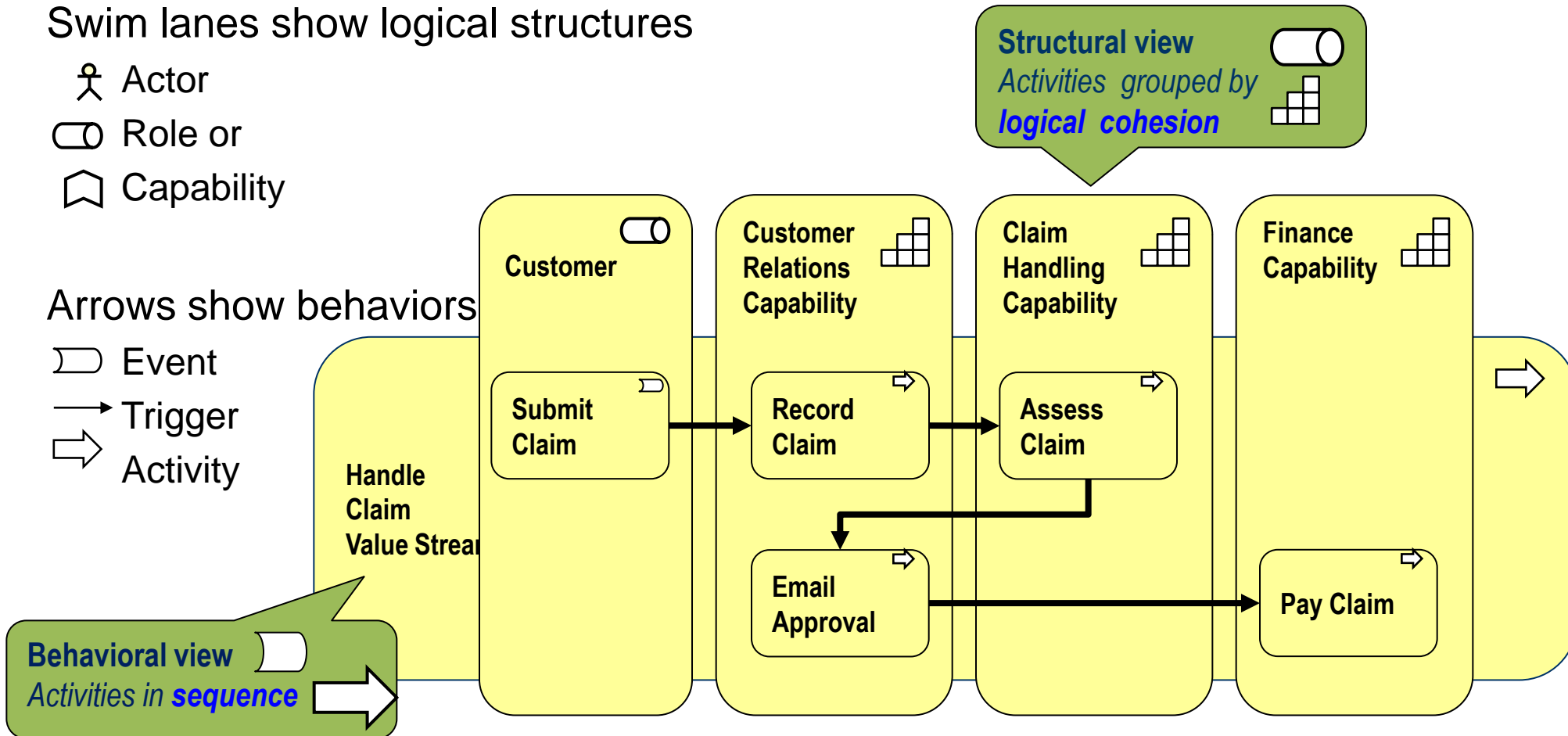
1 Value Stream may coordinate several fine-grained Capabilities

Swim lanes show logical structures

- 🧑 Actor
- 🔑 Role or
- 📁 Capability

Arrows show behaviors

- 📁 Event
- Trigger
- ➡ Activity



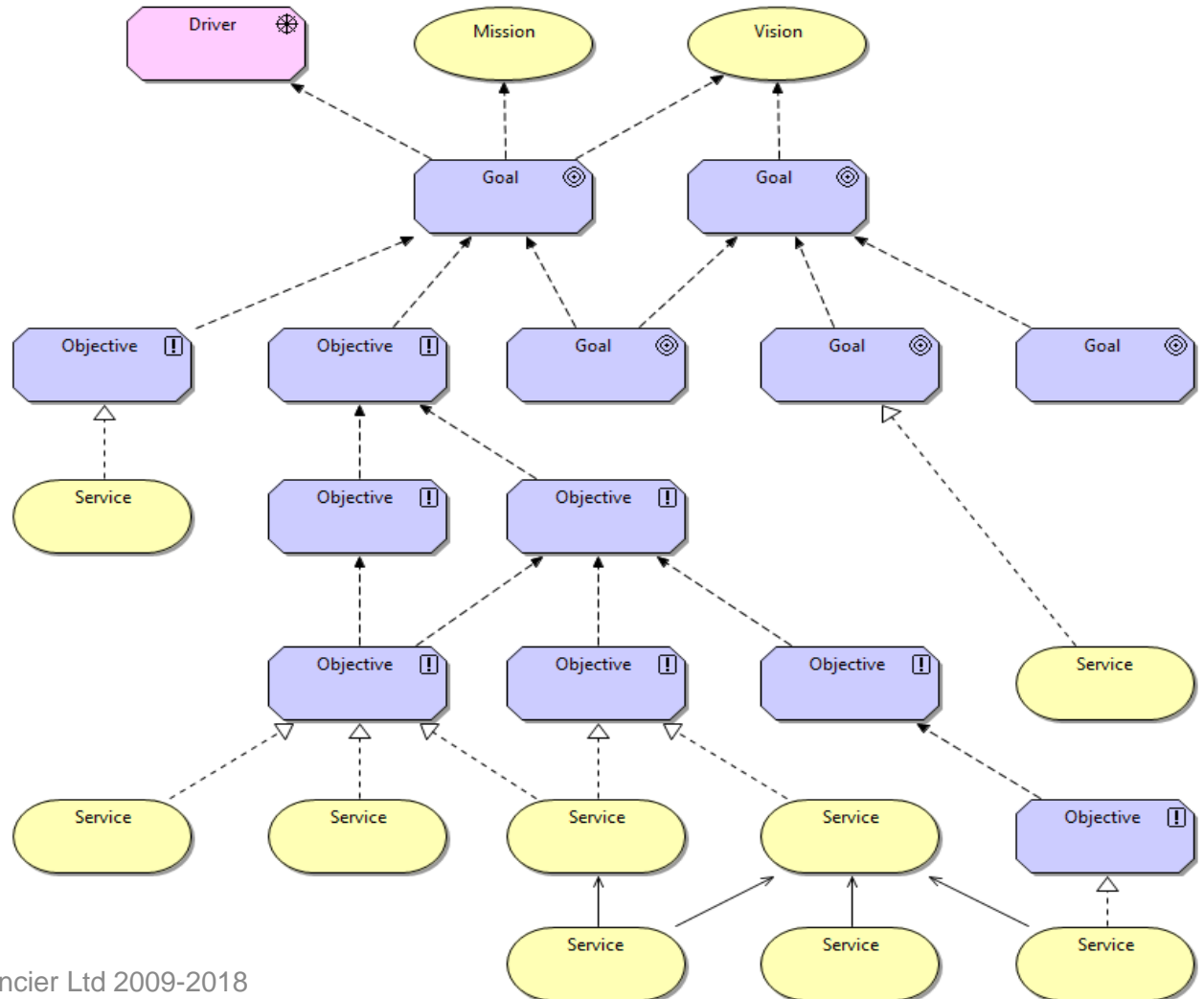
TOGAF artifact: **Goal/Objective/Service Diagram**

- **Goal/Objective/Service diagram**
 - Given a vision of new/changed business services
 - this diagram shows which drivers, goals and objectives they support
 - It may group services supporting similar or related aims.
 - It indicates, at least qualitatively, what constitutes success for a service.

Driver	Goal	Objective	Service

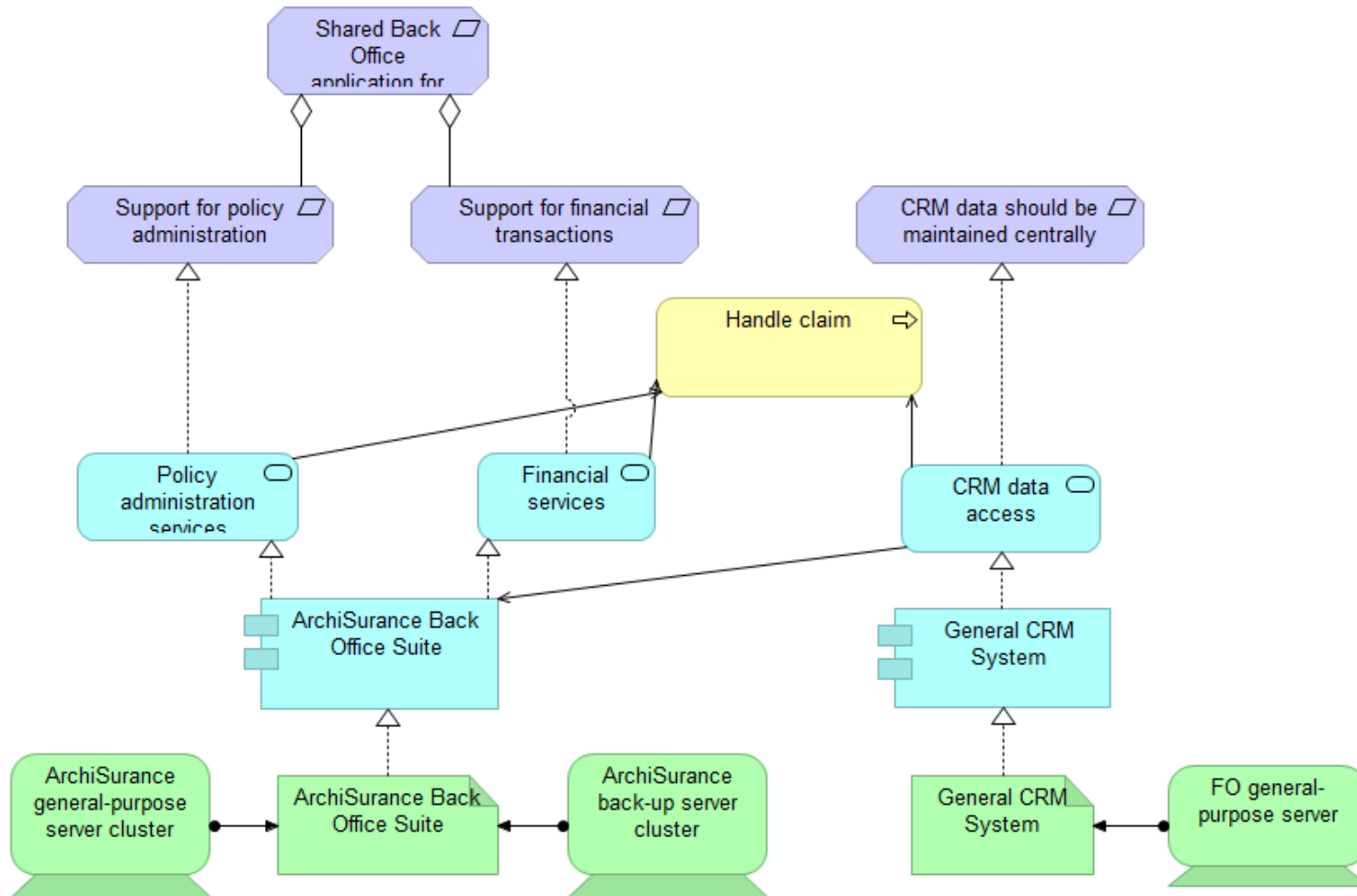
Reasonable match in ArchiMate

- Hand made by Pieter Van Ostaeyen



Partial match in ArchiMate

- A lower-level requirements realization view



TOGAF artifact: **Business Service/Information Diagram**

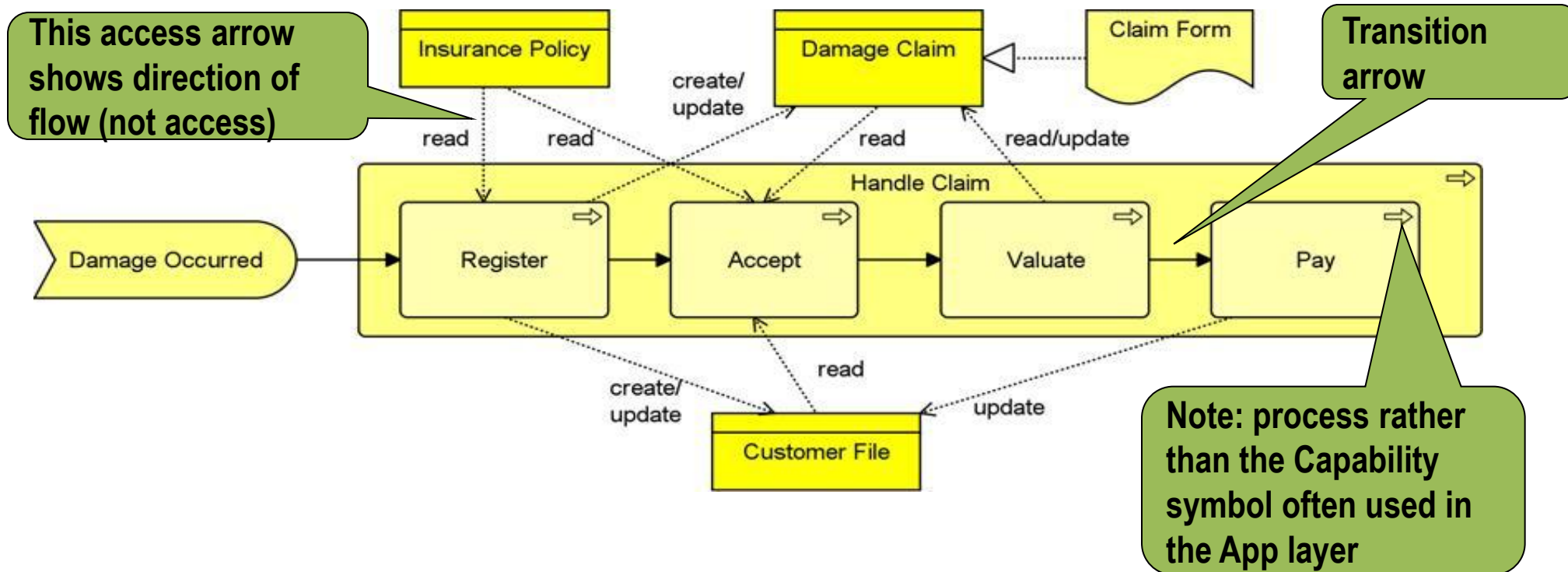
- **Business Service/Information diagram**
 - shows the information needed by one or more business services.
 - shows what data is consumed or produced by a business service and may also show the source of information.
 - shows an initial representation of information created and used, which can be elaborated and refined in Phase C: Data Architecture

Information needed	Customer account	Sender address	Receiver address	Depot address	Package description	Package status	Journey route
Business services							
Order delivery	Use	Create	Create	Use	Create	Initialise	
Collect from sender		Use	Use	Use	Use	Update	Use
Deliver to depot					Use	Update	
Sort in depot			Use			Update	
Collect from depot						Update	Use
Deliver to receiver						Update	

Partial match in ArchiMate

A Business Process View

Here, maps data to process, rather than the service

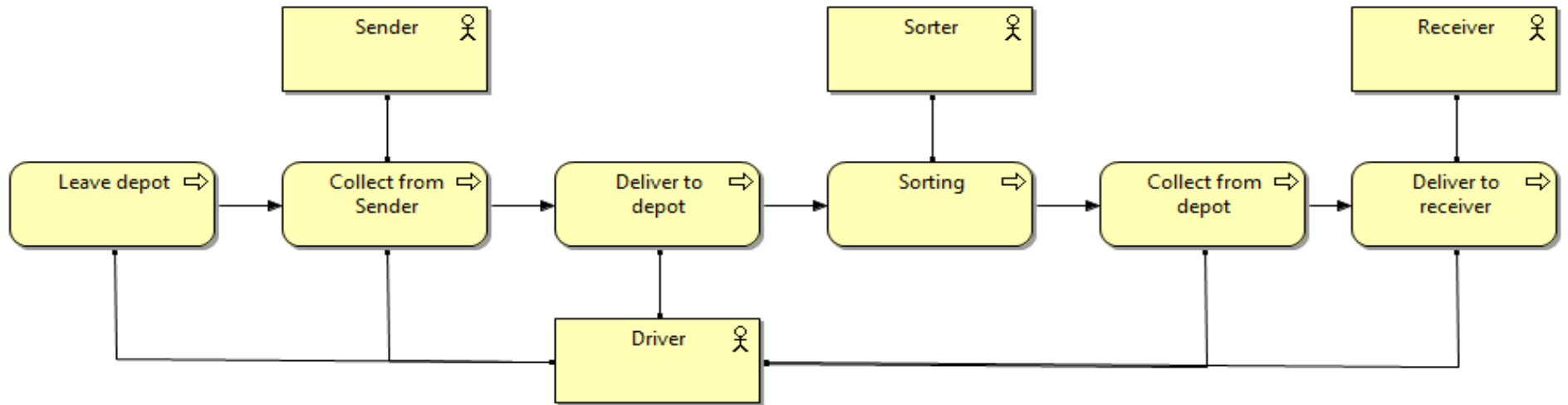


TOGAF artifact: **Process Flow Diagram**

- Value Stream diagram
 - Given a product or service of value to be delivered, this presents the necessary activities/stages in sequence.
 - It may show for the stream and each stage
 - Objectives and Roles involved
 - Entry criteria: including trigger events
 - Exit criteria: including products that are generated.
 - It may associate owners, roles and capabilities with each value stage.
 - It can help subject specialists to describe “how the job is done” for a particular Capability.

“the level and rigor of decomposition varies” (TOGAF)

ArchiMate-style value stream diagram



- Value stages can be defined in terms of
 - Objectives
 - Roles involved
 - Entry criteria: including events that trigger the state
 - Exit criteria: including products that are generated.

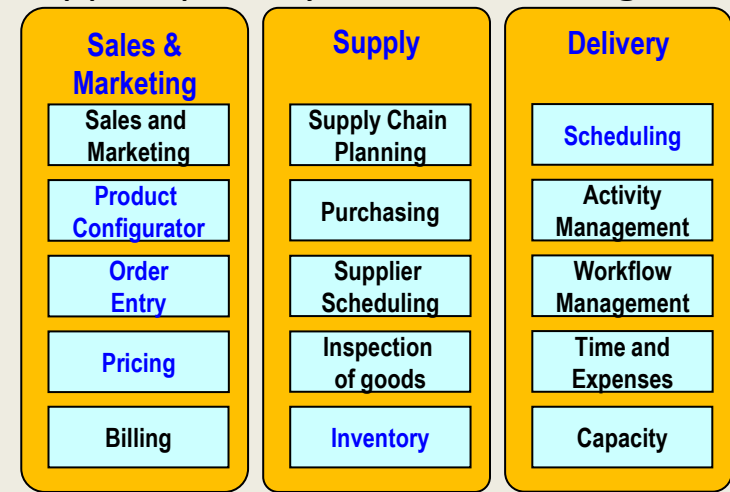
TOGAF promotes definition of business scenarios

- **Business Scenario**
 - documents the **roles** of
 - **human and computer actors** in a
 - **process** that leads to a measurable
 - **business goal** - a product or service of value to be delivered

Example business scenario/value stream

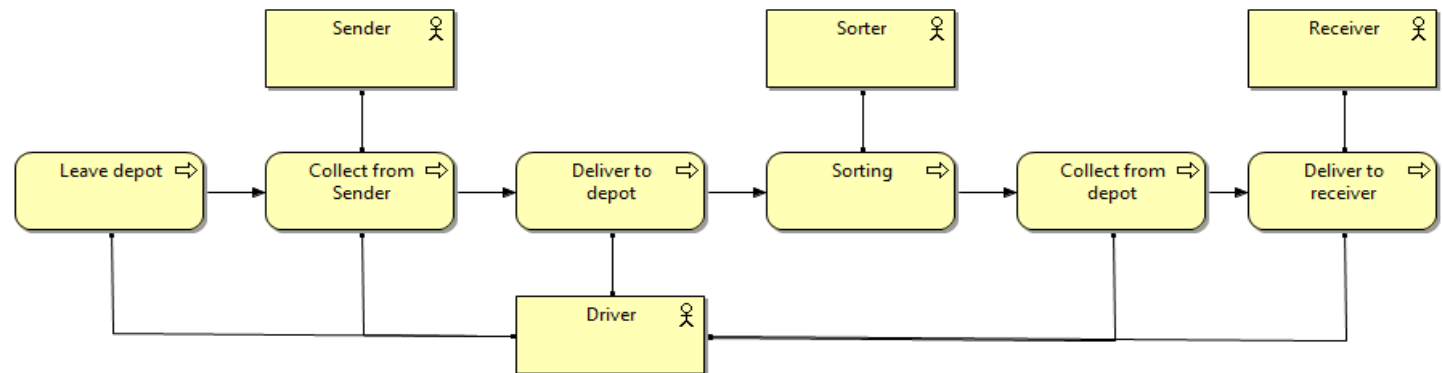
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App/Capability matrix as a diagram



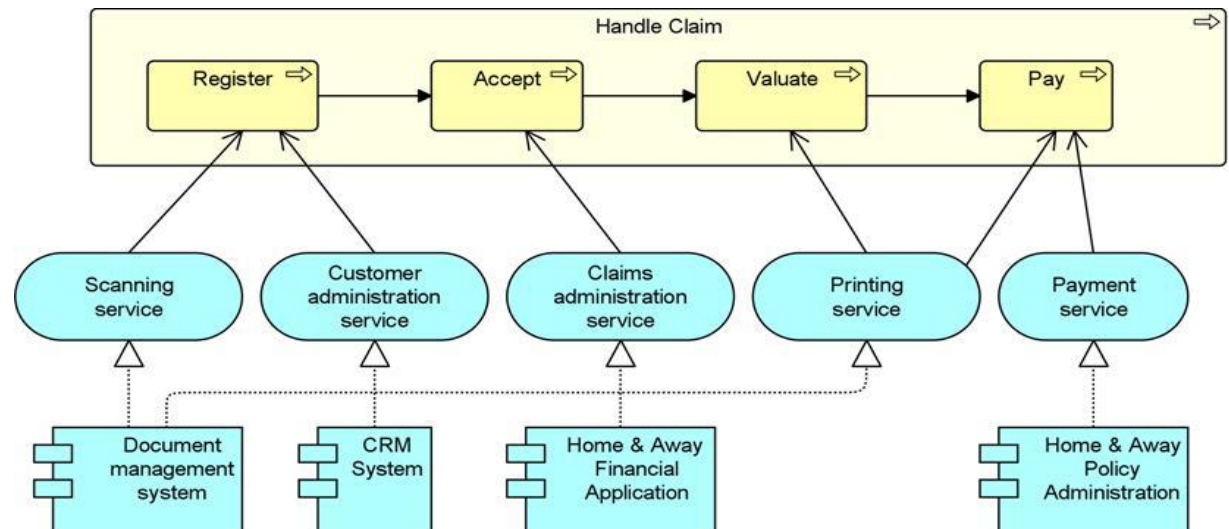
Partial match in ArchiMate

Imagine combining this value stream



With this app usage view

Process App Realization diagram

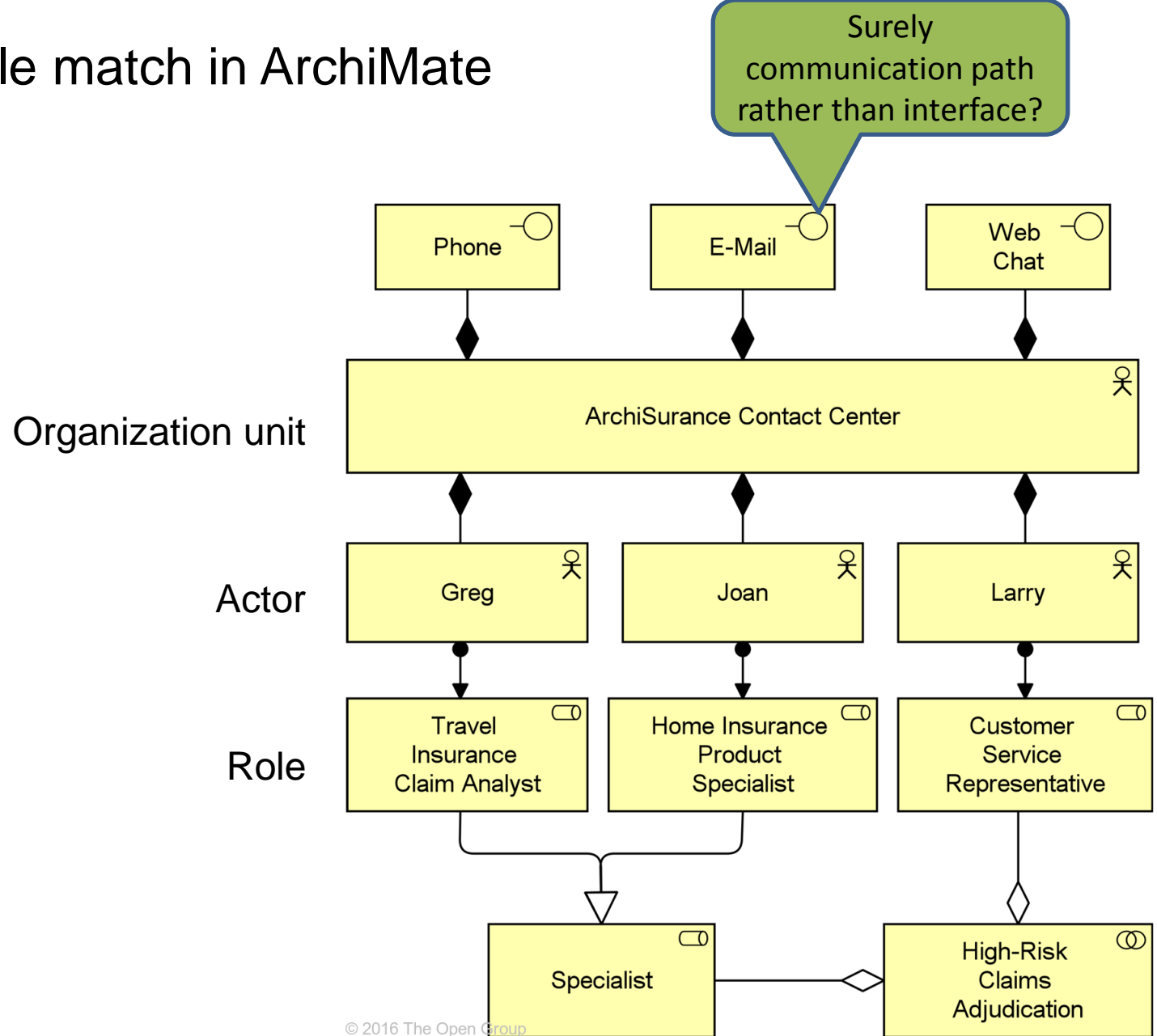


TOGAF artifact: **Actor/Role Matrix**

- Actor/Role matrix
 - shows which actors perform which roles
 - supports the definition of security and skills requirements.
 - supports the definition of training needs, user security settings
 - helps in business change management.

Actor	Role		
	A	B	C
P	Performs	Performs	
Q		Performs	Performs

Reasonable match in ArchiMate



TOGAF artifact: **Organization/Actor Catalog**

- Organization/Actor catalog
 - Lists participants in business systems
 - Includes users and owners of IT systems.
 - Can be useful in testing requirements for completeness. For example, to identify which customer types need to be supported and any requirements for or restrictions on user types.

Org level 1	Org level 2	Org level 3	Location	Actor *

Aims

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