



Avancier Methods

Enterprise Business Architecture

Business System Modelling

A simple method with many optional artifacts (cf. TOGAF)

The graphics illustrate this article <https://www.linkedin.com/pulse/brief-eaba-history-graham-berrisford>

Last updated: 1/11/2020



Comments on earlier, shorter, version of this show

- “*... concise material that beautifully connects EA and BA work together.*”
- “*Nicely done.*”
- “*Insightful.*”
- “*I really like it. Well done!*”
- “*Good stuff Graham!*”
- “*This is great. I can use this immediately.*”
- “*Great information. Well done!*”
- “*Great post. Thanks for sharing.*”
- “*Well thought out. Kudos.*”
- “*Oh this is simply brilliant!*”



Business directors do business planning

- respond to business drivers
- declare strategic directions and top-level goals/objectives
- predict demand and direct changes to any of the following.
 - **Constitution:** mergers, acquisitions and divestments, opening/closing outlets.
 - **Market:** industry domain/sector/segment, customers and suppliers.
 - **Products and services:** sales and service channels, prices.
 - **Relationships:** partners, in-sourcing and out-sourcing of operations.
 - **Resources:** people, wages, machines, locations/buildings and other physical asset types.
 - **Management structure:** sacking or appointing CxOs and restructuring the organization.



Enterprise architects do business system planning

- EAs may both stimulate and contribute to business planning (above).
- but their primary responsibility is business system planning
- “EA regards a business as a system of systems” TOGAF
- A business system?
 - human and computer **actors** (people and technologies) play roles in
 - **activities** (in processes or value streams) that create and use **data** to meet
 - **aims** (aka goals or objectives).



EA in a nutshell

- EA
 - extends and optimizes,
 - standardizes and integrates,
 - business roles and processes that create and use
 - business data that is now or could be digitized.
- Extending - implies some innovation.
- Digitizing - implies some automation.
- Standardizing and integrating - implies some cross-organizational effort.
- Optimization - implies managing costs and risks using portfolio management techniques.



“Choose your Operating Model”

Standardize business processes

Integrate business processes

Coordination <ul style="list-style-type: none">• Shared customers, products, or suppliers• Impact on other business unit transactions• Operationally unique business units or functions• Autonomous business management• Business unit control over business process design• Shared customer/supplier/product data• Consensus processes for designing IT infrastructure services; IT application decisions made in business units	Unification <ul style="list-style-type: none">• Customers and suppliers may be local or global• Globally integrated business processes often with support of enterprise systems• Business units with similar or overlapping operations• Centralized management often applying functional/process/business unit matrices• High-level process owners design standardized processes• Centrally mandated databases• IT decisions made centrally
Diversification <ul style="list-style-type: none">• Few, if any, shared customers or suppliers• Independent transactions• Operationally unique business units• Autonomous business management• Business unit control over business process design• Few data standards across business units• Most IT decisions made within business units	Replication <ul style="list-style-type: none">• Few, if any, shared customers• Independent transactions aggregated at a high level• Operationally similar business units• Autonomous business unit leaders with limited discretion over processes• Centralized (or federal) control over business process design• Standardized data definitions but data locally owned with some aggregation at corporate• Centrally mandated IT services

EAs look to improve the efficiency and effectiveness of **business processes**

- standardize business processes
 - which implies standardizing data
- integrate business processes
 - which implies sharing/exchanging data

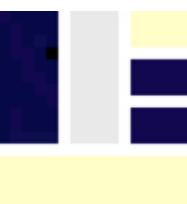
And improve the creation and use of **business data**

- standardize and consolidate data
- improve data qualities (CIA)
- capitalize on data captured
- enable cross-organizational data analysis.



Data and process views

- Cross-organizational understanding of business processes and data is a key to EA.
- Data view - not in focus here
 - But let us assume architects maintain a catalog of "kernel" data entities
 - customer, supplier, employee, product, policy, asset
- Process view – in focus here
 - In the 1970s, people in "operational research" modeled workflows in business systems.
 - What they did was adapted and absorbed into EA modelling.



Core BA in EA concepts



On terminology

- Beware enterprise architects use words drawn from several domains of knowledge
 - business management consulting
 - software engineering
 - IT services management
 - standards like the ArchiMate modelling language
- In which words like **function**, **process**, **capability** and **service** have different meanings
- We try to be consistent in what follows
- Watch out for ambiguities and inconsistencies out there



Core concepts in “Skills Framework for the Information Age” SFIA

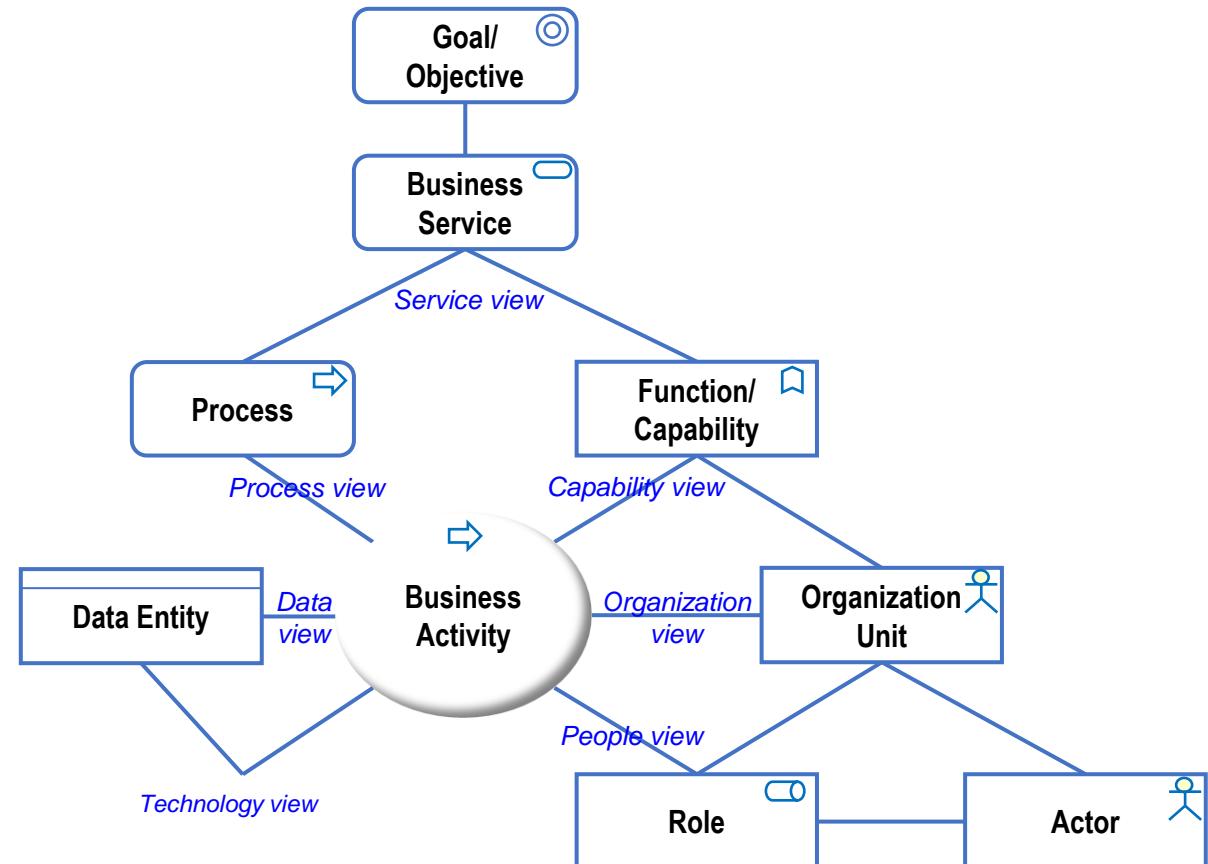
SFIA says **enterprise and business architecture roles** involve:

- interpretation of business **goals** and **drivers**
- translation of business strategy and **objectives** into an "operating model"
- assessment of current **capabilities** and identification of required changes to them;
- description of **relationships between business system elements**:
 - **services** [activities that produce results of value to external actors]
 - **processes** [sequencing activities]
 - **data/information** [created and used by activities]
 - **technologies** [supporting and enabling activities]
 - **people** [actors playing roles in activities]
 - **organizations** [managing people who perform activities]
 - the external environment [notably customers, suppliers, partners, competitors and other stakeholders].



Business architecture in SFIA

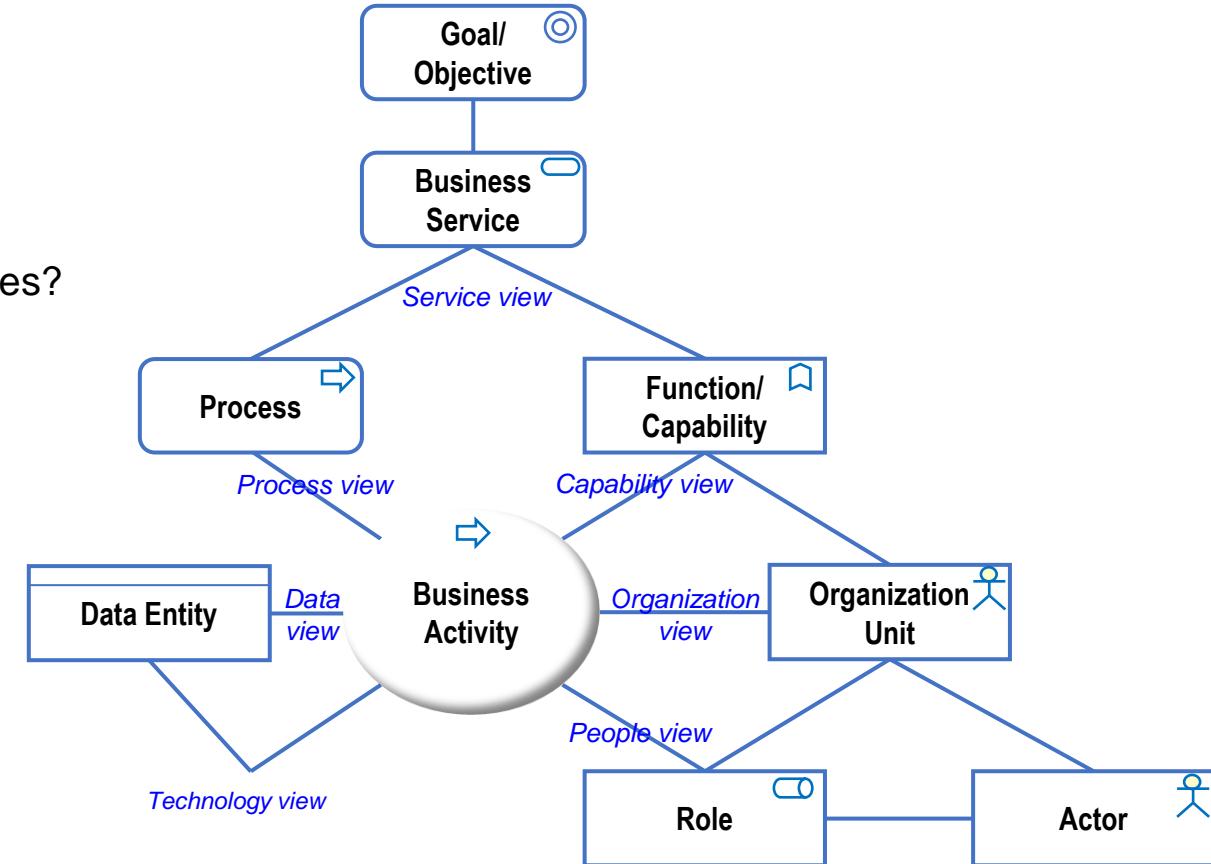
- SFIA implies taking several views of business activities





An example of Business Architecture Q&A

1. Why? What are the **goals** of the business?
 - Attract more customers to the hotel.
2. What **services** will the business provide to those ends?
 - Free valet parking of a car (along with other services)
3. What **processes** must be performed to deliver those services?
4. What **roles** will perform activities in processes?
 - Valet (3 actors)
5. What **data entities** do activities need?
 - Customer, vehicle and location data
6. What **locations** will actors work at?
 - Hotel entrance and car parks
7. What **organization units** will manage the actors?
 - Front desk management





Core BA in EA concepts

- **Goal or Objective**: a target aim for activities.
- **Service**: the external view of an activity or process that produces outputs or state changes (results) of use to some external actor(s).
- **Process** (cf. Value Stream): activities sequenced to complete a service.
- **Function** (cf. Capability): activities grouped for understanding and assignment.
- **Organization unit**: activities and/or actors grouped for management.
- **Role**: activities grouped for assignment to one or more actors.
- **Actor**: an individual that plays one or more roles.
- **Data Flow or Data Store**: information encoded in a message or memory.

Products are defined in Service contracts

Do you need Function? In the short term, will Organization Unit suffice?

Do you need Actor? Will Role suffice?

Capabilities can be associated 1-to-1 with whichever of the above you choose.

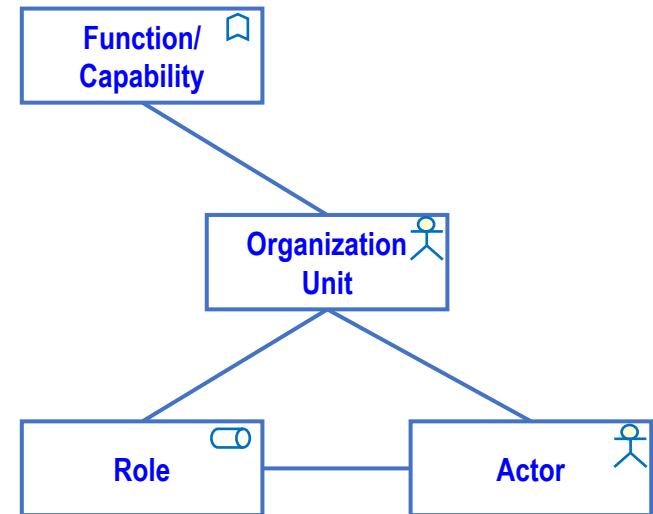


Relating architecture concepts

- Since BA concepts can be composed and decomposed (and for other reasons) entities of different types are generally related N-to-N.

E.g.

- One organization unit can fulfil many functions.
- One function can be fulfilled by many organization units.
- One actor can play many roles.
- One role can be played by many actors.





Business system elements (cf. SFIA)

Elements can be composed and decomposed in hierarchical structures, also generalized and specialized.

Motivations

A **goal/objective** is an outcome to be achieved, declared in response to **drivers**

Behaviors meet motivations

A **service** delivers result(s) that contributes to some goal(s).

A **process** sequences some or all activities needed to complete a service.

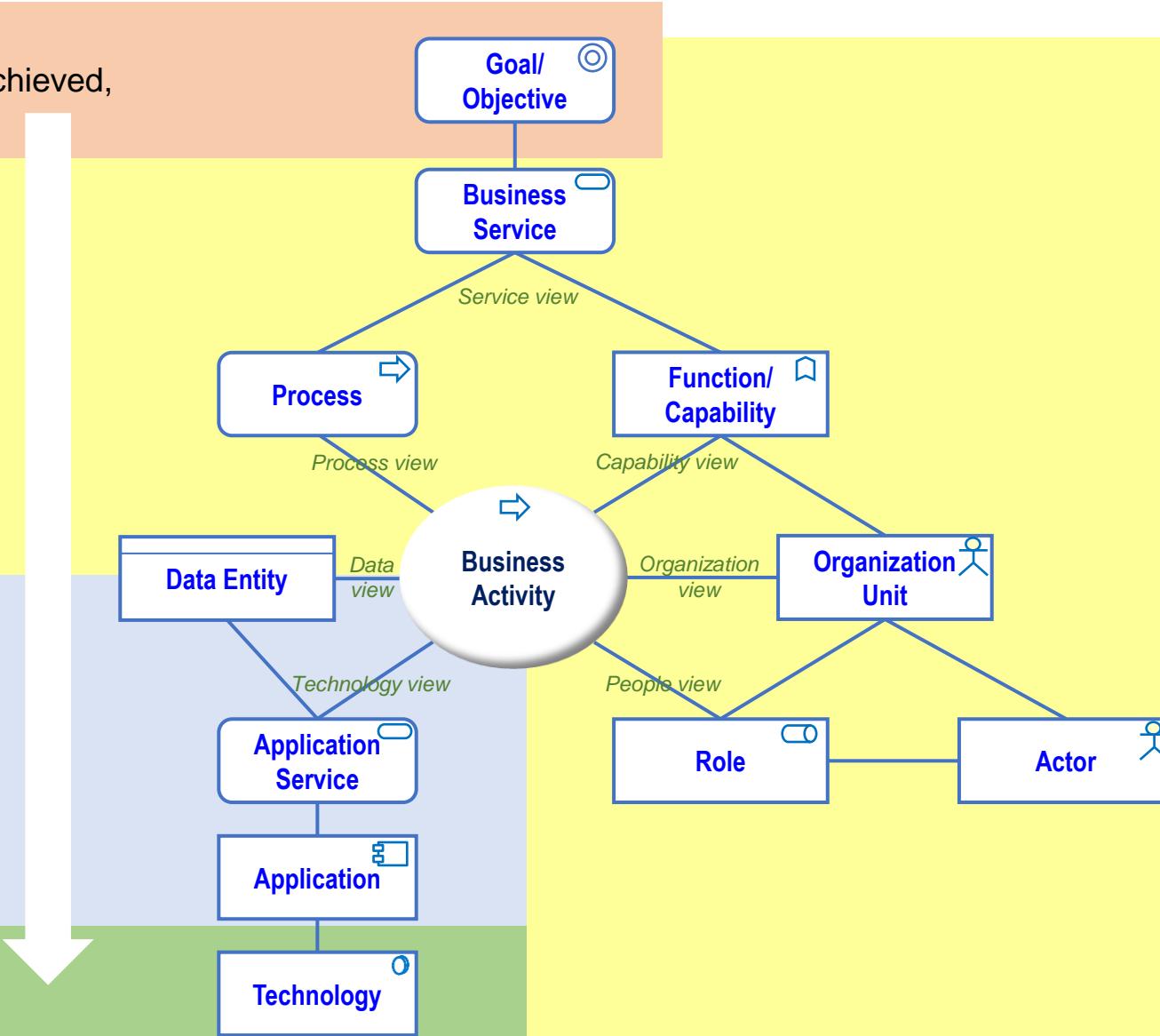
Information is created and used

A **data entity** records something a business must remember.

An **application service** enables business activities

An **application** provides application services

A **technology** provides computing services to enable applications



Logical before physical

To scope a business we divide it into logical divisions - functions or capabilities

A **function** is a logical grouping of lower level functions or activities

A **capability** is a logical grouping lower level capabilities or resources

Structures perform behaviors

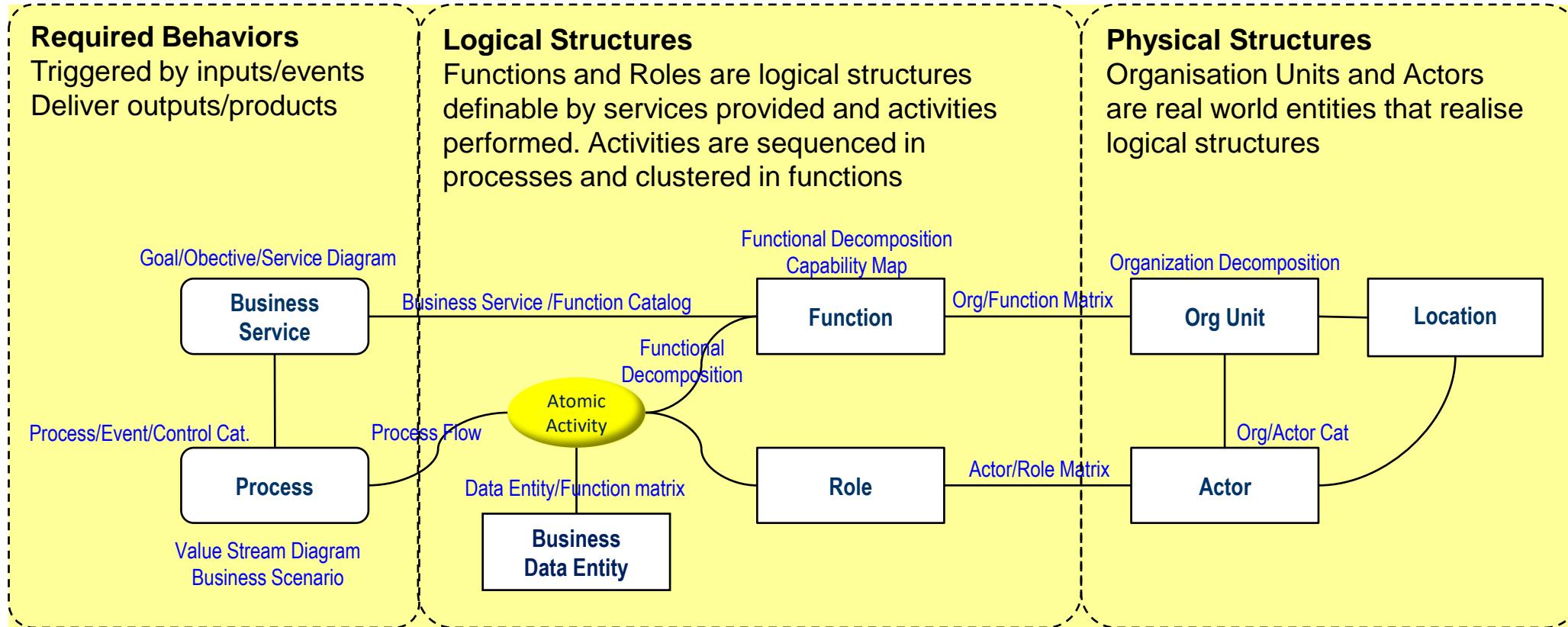
An **organization** unit groups lower level units or roles a manager can manage.

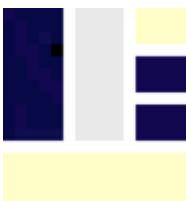
A **role** groups activities an individual actor can be asked to perform

An **actor** is an individual that performs one or more roles.



Business system concepts and artifacts in TOGAF

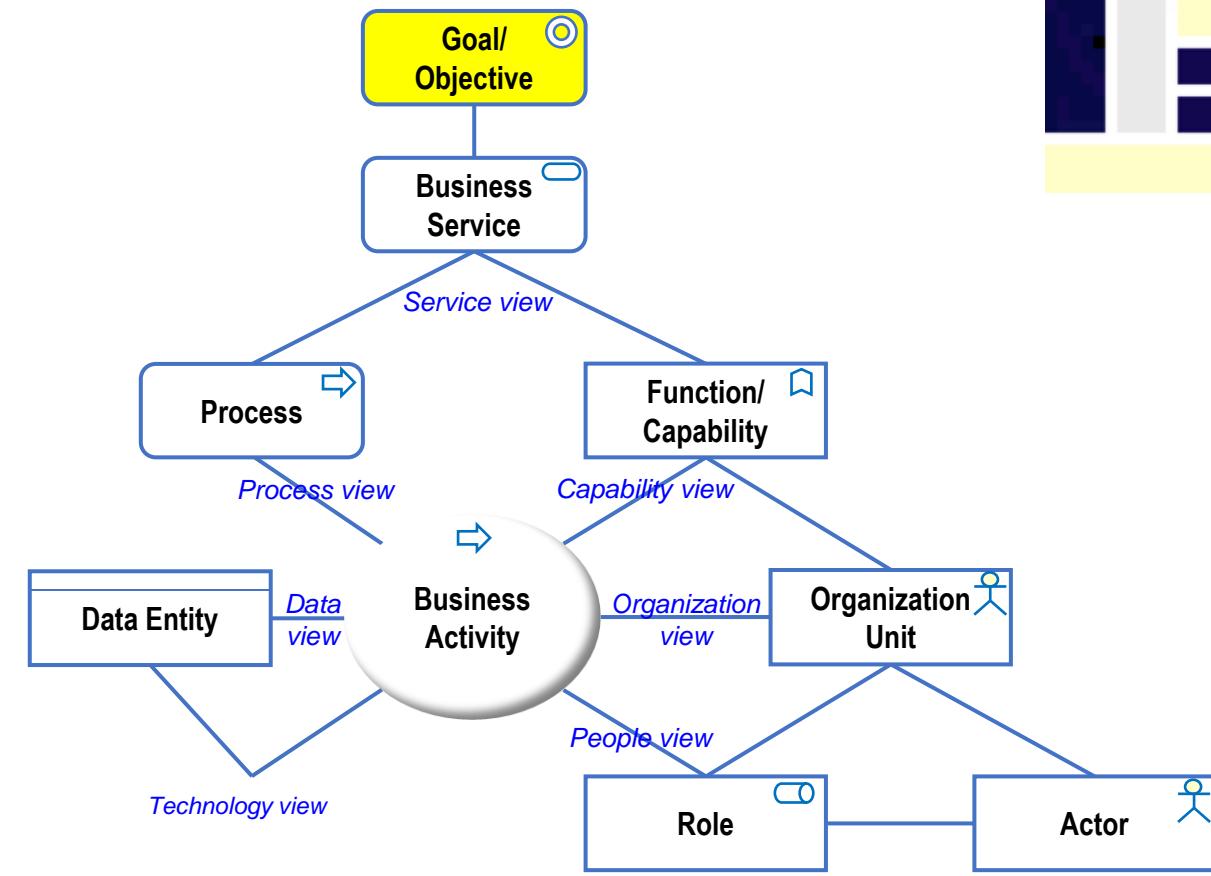




Methodically relating the concepts
To do all this in detail for a whole enterprise is impractical

Simple BA method

1. **Goals** or outcomes of interest to external actors
2. **Services** external actors need to reach goals and outcomes
3. **Processes** to complete or deliver services.
4. **Functions, data** and other structural resources needed to perform processes
5. **Actors** and organizations to perform roles and manage resources.





Step 1. Goals, other precursors

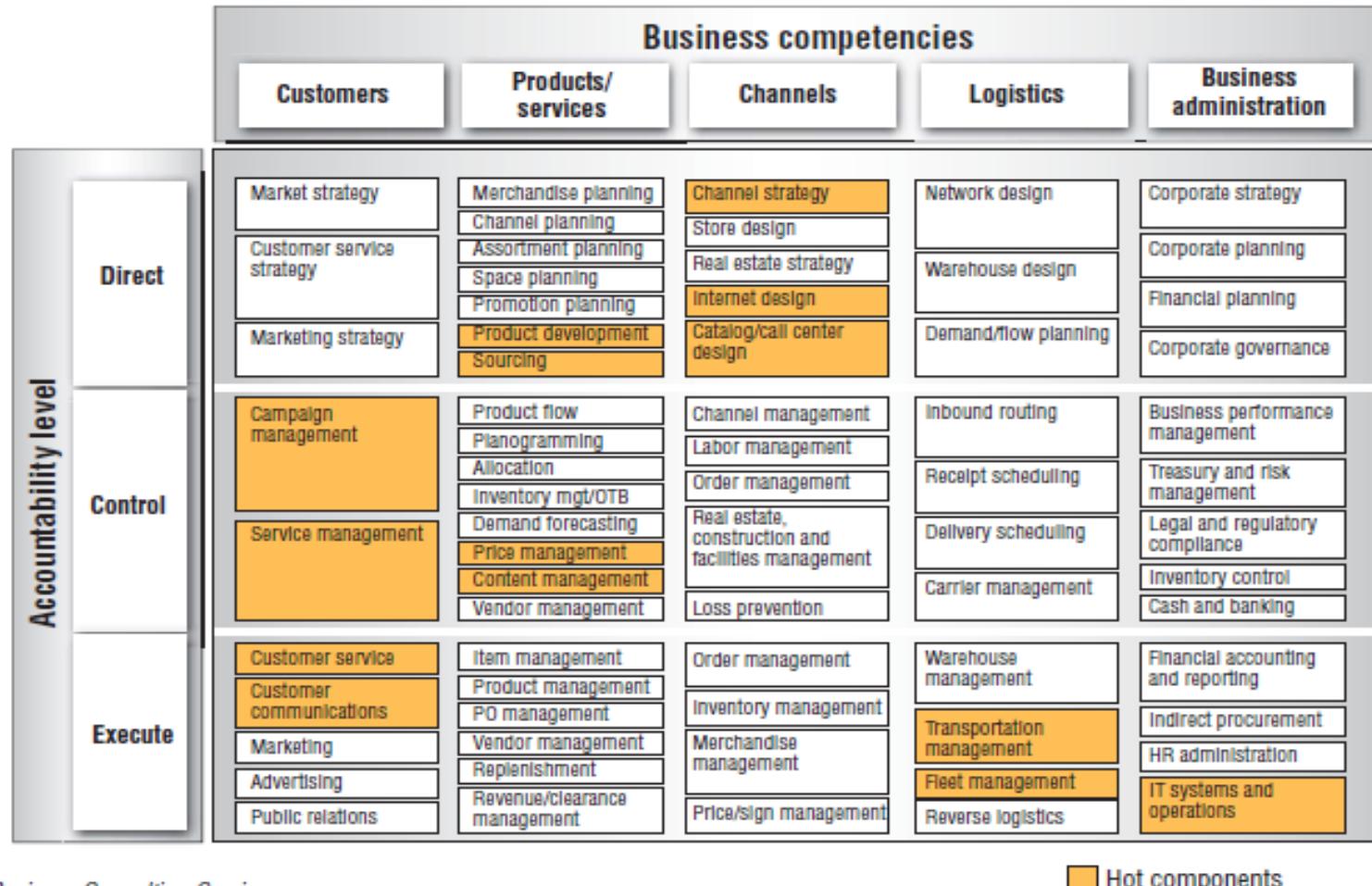
- Study business mission, vision and drivers (SWOT, PESTLE etc.)
- Baseline problems and opportunities
 - Overlaps between services provided by functions
 - Gaps where the provided service is not the truly required service
 - Delays in hand-overs between activities
 - Opportunities to increase parallel processing
- Envision
 - Identify services and processes that distinguish you competitively
 - Envision your customer's experience as it ought to be
 - Envision how the business can grow
 - Envision new/changed services



Draw heat map(s)

- You can apply heat mapping to a functional decomposition or capability map or any other relevant description of the business

Figure 7. Heat maps identify “hot” areas to exploit business value.



Source: IBM Business Consulting Services.



Identify and communicate with stakeholders

- Customers, suppliers, partners, competitors and other actors
- Talk to sponsors and other stakeholders about their aims and concerns.
 - actors who want changes to how the business works,
 - actors who play roles in regular business activities
 - anybody else affected by proposed changes.

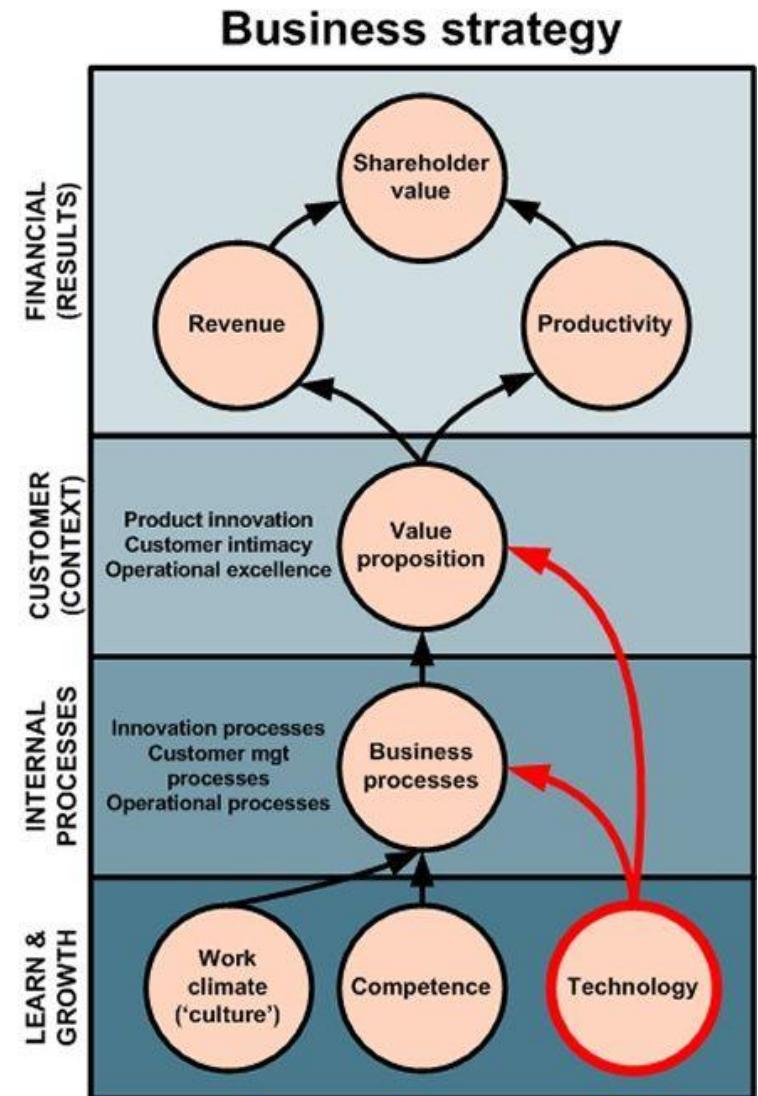


Identify strategic goals

- Director respond to business drivers
- declare strategic directions and
- top-level goals/objectives

Goal/objective (aim) structure

- Typically decomposed from the top down
- May be spread across a “balanced score card”
- May be aligned with the organization structure
- Should be SMART, with quality measures (variables)





Goals

Goal/ 
Objective

- Some goals are more functional.
 - A retailer wants to fill an identified gap in the market.
 - A tank must be designed to traverse rough terrains.
- Some goals are more non-functional.
 - Double sales volume this year.
 - Make a bigger profit.
 - Resolve 90% of complaints to the satisfaction of customers.
- Some goals combine functionality and non-functional qualities.
 - An army wants to put a thousand boots on the ground anywhere within 24 hours.



Other precursors

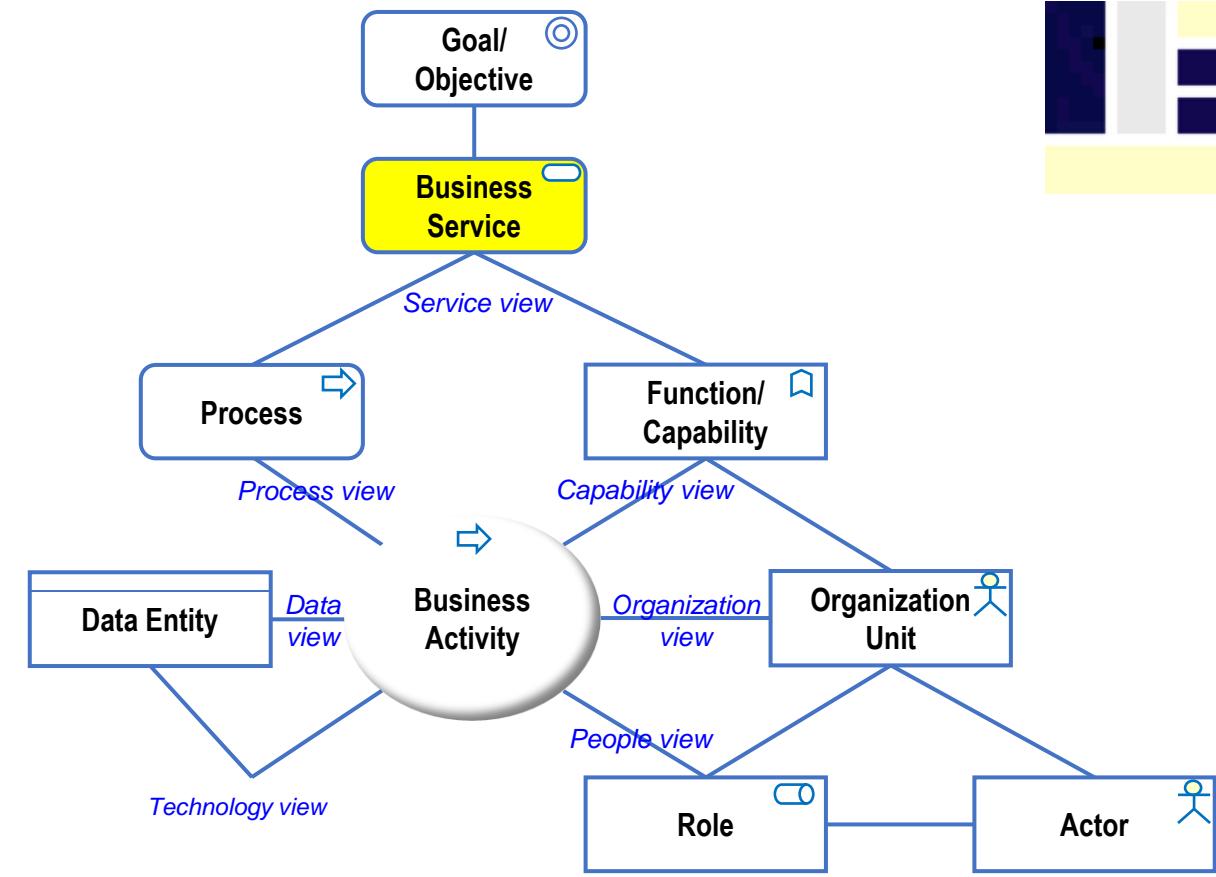
- ArchiMate speaks of *goals* and *outcomes*.
- TOGAF speaks of *goals*, *objectives* and *architecture requirements*
- Consider also
 - risks
 - constraints (time, budget, resources, legislation etc.).
 - principles



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Step 2. Map services/products to goals

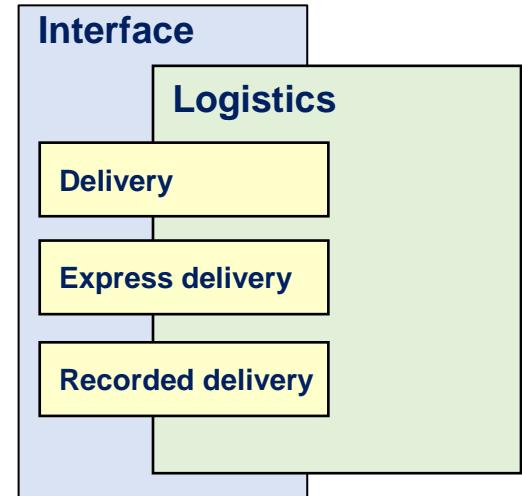
A business provides **services** to external actors

TOGAF's Architecture Requirement Specification includes Business Service Contracts

- "A **service** is a logical representation of a repeatable business activity that has a specified outcome
- e.g. check customer credit, provide weather data, consolidate drilling reports, etc."

In ArchiMate

- "A **business service** represents explicitly defined behavior that a business [role, actor, or collaboration] exposes to its environment."





Name business services

- Name as an activity that yields a result of value to a user/consumer/customer.
- "Polish shoes"
 - gives a customer shiny shoes.
- "Book train ticket"
 - gives customer a paper and/or a digital ticket
- "Turn data into Insights"
 - gives a managers insights into their business

AutoXpress

Services

Fit tyres
Check-up and oil change
Full annual service
Check brakes
Repair brakes
Check exhaust
Replace exhaust
Inspect battery
Replace battery
Align wheels
Replace windscreen wipers
Fit bulbs
Replace shock absorbers



Detail services in service contracts

- TOGAF's Architecture Requirement Specification includes **Business Service Contracts**
- Generic service contract template
 - Service name
 - Entry conditions
 - Inputs and other preconditions
 - Exit conditions (results of value to external actors)
 - Outputs: information, goods
 - Internal state changes
 - Non-functional qualities of service
 - Speed, volume, availability, security etc.

Service: Park guest's car

Entry conditions

Input: Car keys, Room number

Precondition: Check in complete

Exit conditions

Output: Car parked

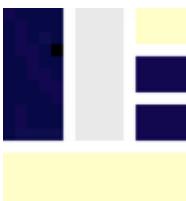
Postcondition: Car location recorded

Quality of Service measures

Time: 5 minutes

Volume: 150 a day

etc.



Defining system performance measures

Specify as "qualities of service" in service contracts.

E.g.

- speed,
- volume,
- availability,
- security,
- scalability,
- usability
- Integrity
- price and cost.

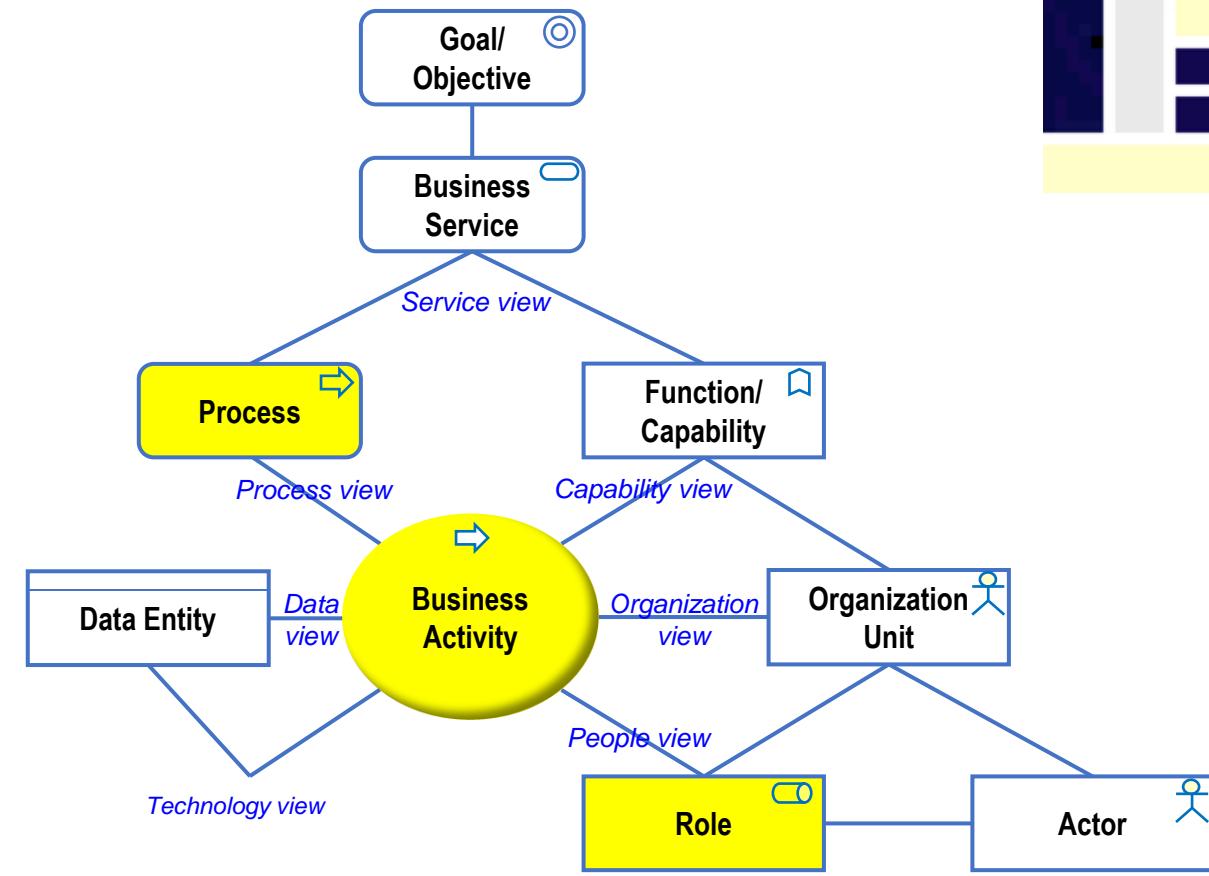
- Performance specification may be simplified by rolling up some service qualities to the system level.
- E.g. all the many services offered by one system are available for the same hours each day.
- The qualities can be measured at run-time against what is declared



Methodically relating the concepts
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Step 3. Map processes (value streams) to services/products

A **service contract** *encapsulates* internal behaviors

	Behavioral view	Structural view
External view	Service contracts	Interface definitions
Internal view	Processes, Value Streams	

"A **value stream** represents a *sequence* of activities that create an overall *result* for a customer, stakeholder, or end user." ArchiMate 3.1

"A business **process** represents a *sequence* of business behaviors that achieves a specific *result*.... ArchiMate 3.1



Processes are sequential

- In line with ArchiMate and TOGAF standards, here are the first four dictionary definitions of *process* I found:
 - a series of actions or steps taken in order to achieve a particular end.
 - a series of progressive and interdependent steps by which an end is reached.
 - a series of actions which are carried out in order to achieve a particular result.
 - a sequence of interdependent and linked procedures which, at every stage, consume one or more resources.
- However, some business management/architecture gurus use the term process to mean what is called a function in the EA tradition.

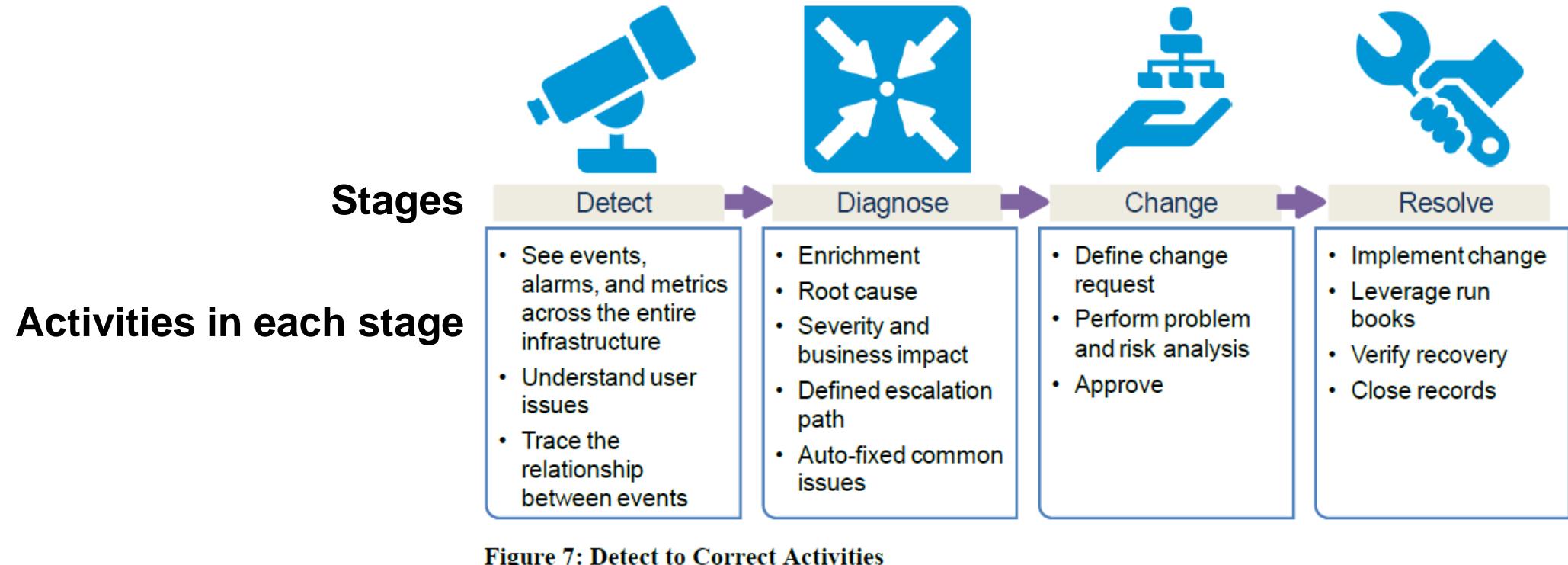


Process in BA

- A sequence of activities, triggered by an event
- terminates in a result or product of value to some actor(s)
 - internal state changes – recorded in data
 - external outputs - data, sometimes associated with goods.
- Name imperatively after the result
 - Advertise a product
 - Accept a payment
 - Receive and stock a product
 - Deliver a product to a customer
 - Bid for a specialist contract.



Value Stream (end to end process)

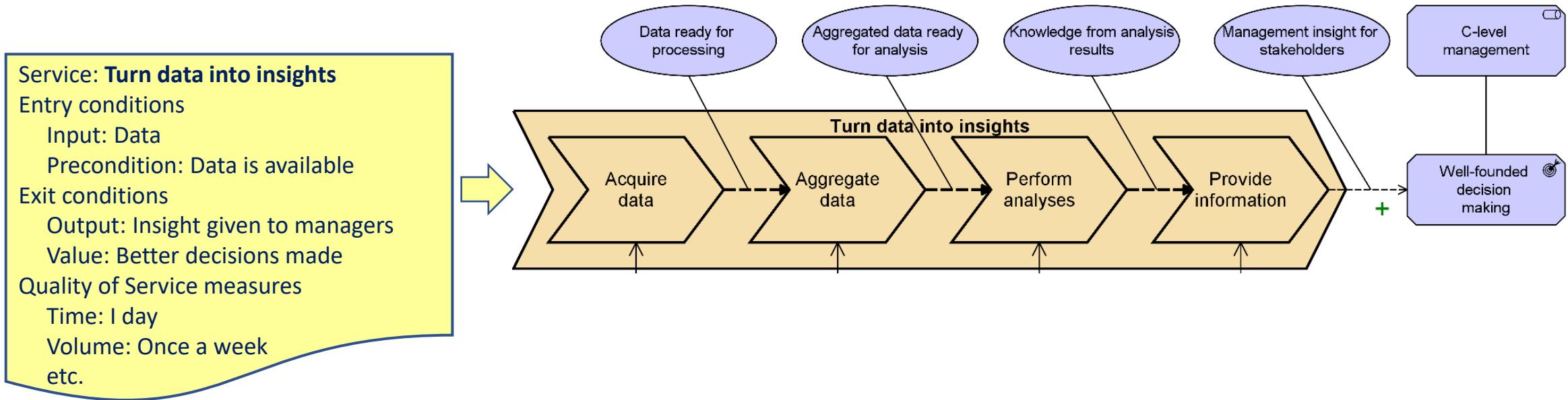


A Value Stream differs from LEAN's **Value Stream Map**, where a goal is to eliminate waste from material processing. A Value Stream that delivers successive Business Services to customers may be called a **Customer Journey**.



You might map processes to services

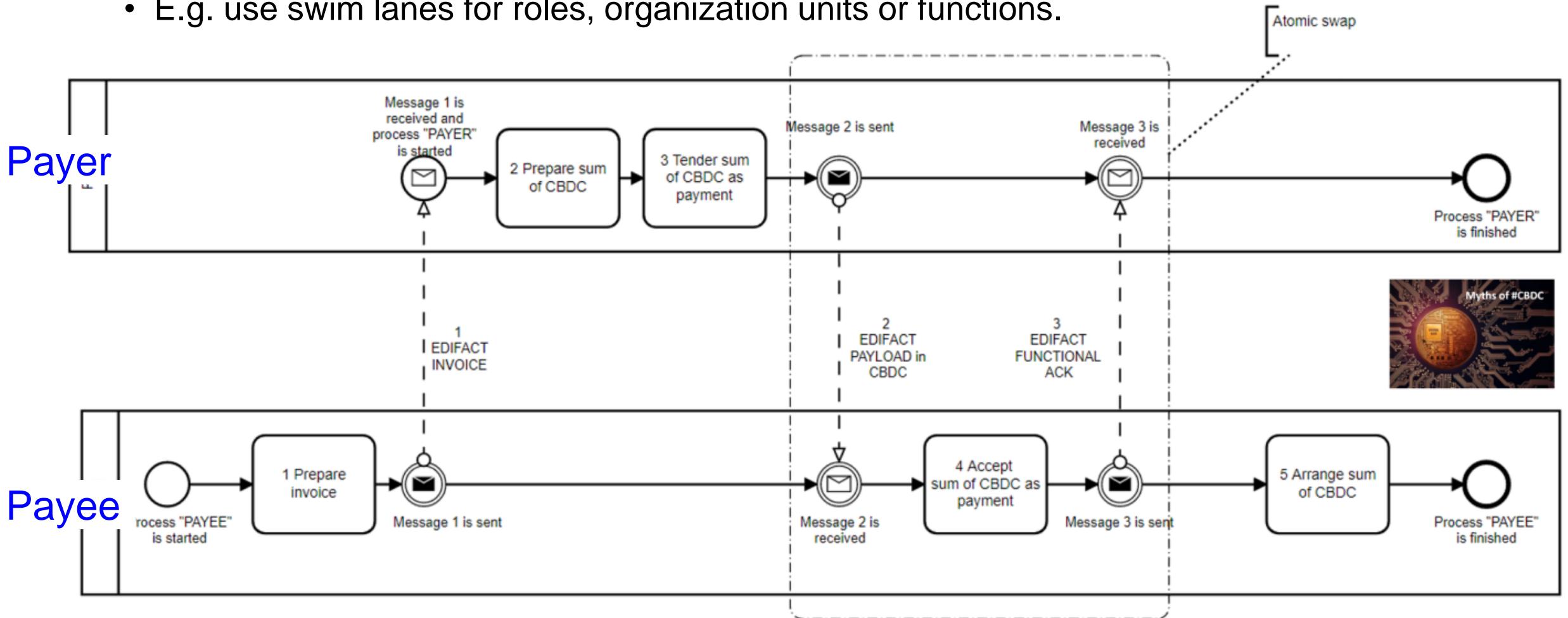
- A **service** contract encapsulates an **end-to-end process** (aka **value stream**) by which a system (if successful) proceeds from the service's entry conditions to its exit conditions.





You might map activities to roles (after Alexander Samarin)

- E.g. use swim lanes for roles, organization units or functions.

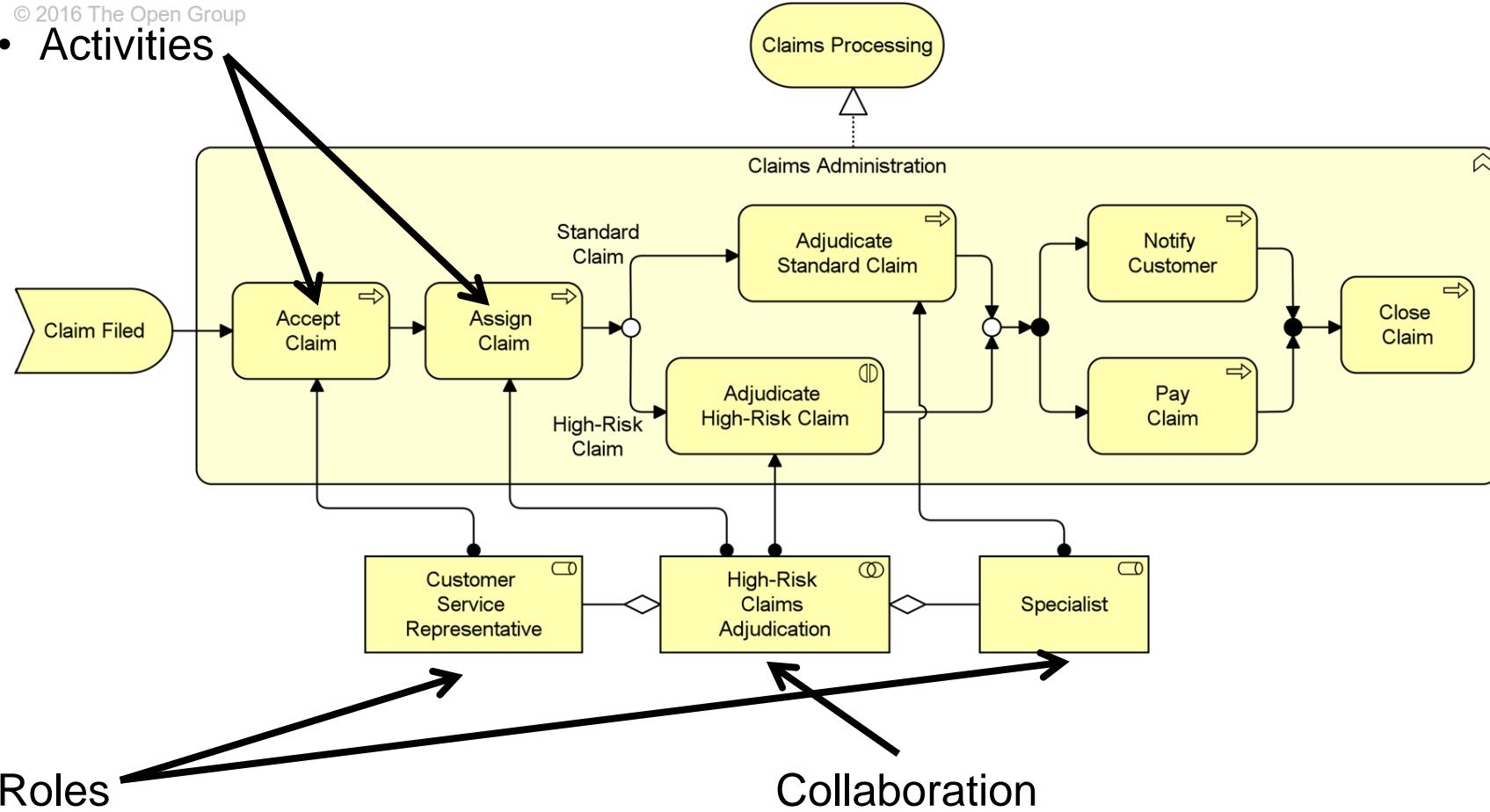




You might map activities to roles

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- Activities





Process engineering

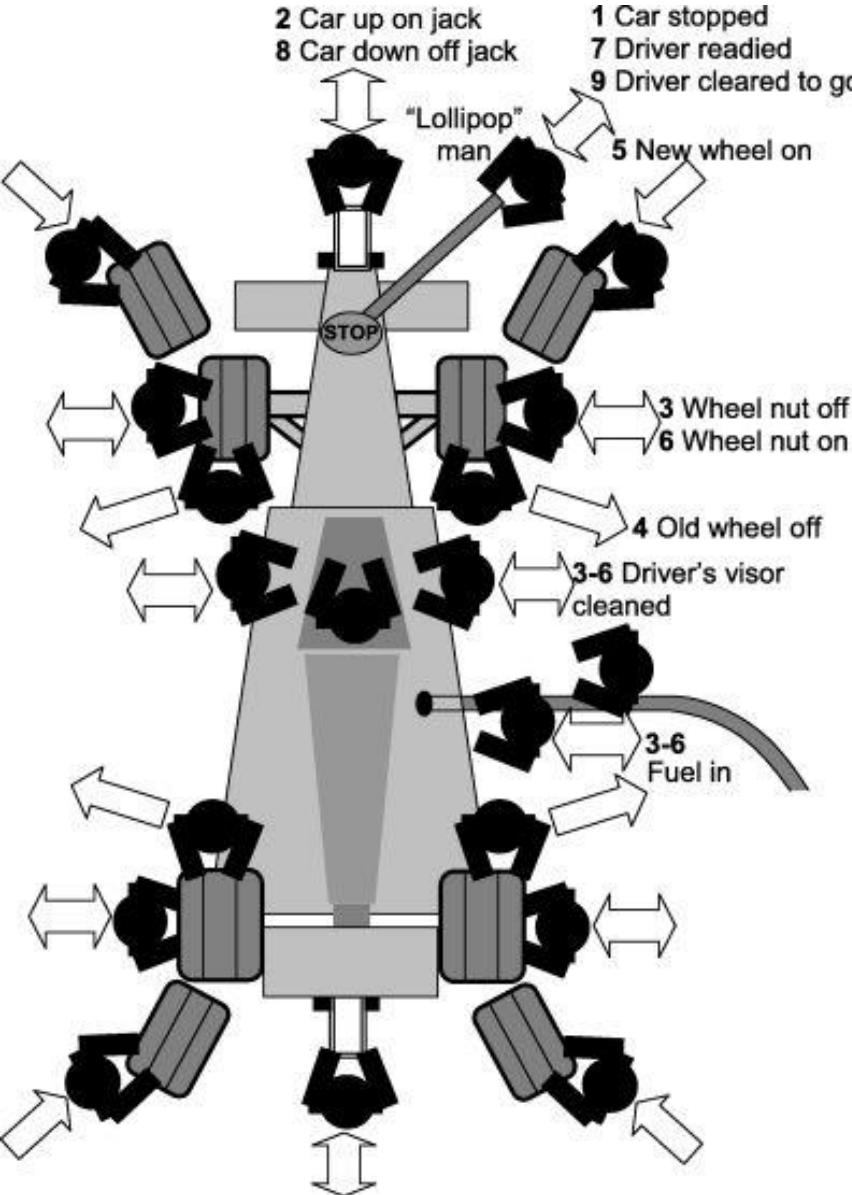
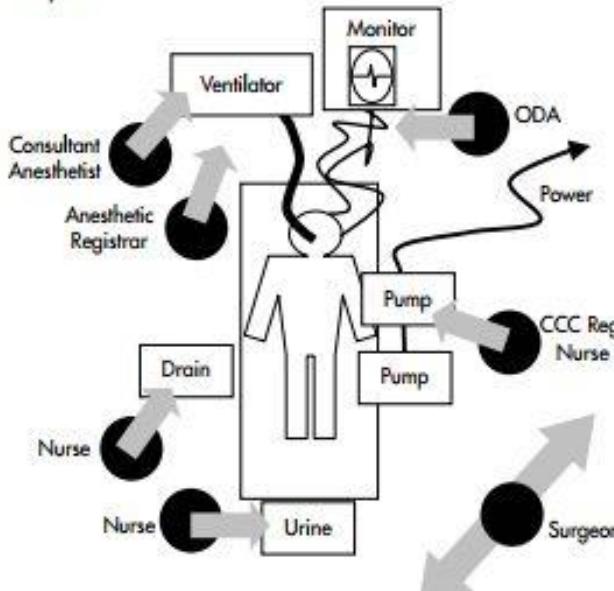


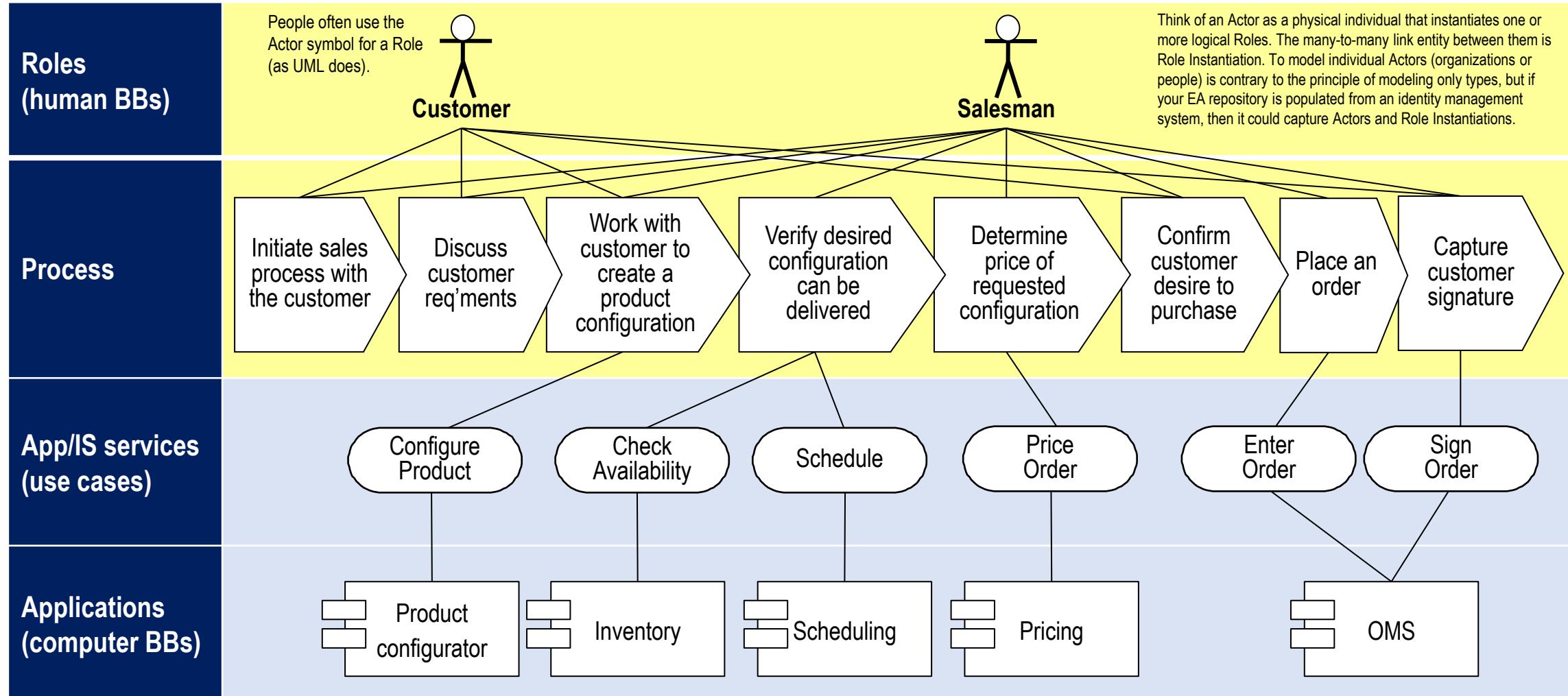
Figure 1 Summary of the new handover protocol.³

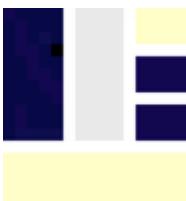
Phase 0: Pre-Handover	<p>The Patient Transfer Form is completed by the anesthetist and collected from theatres at least 30 minutes before the patient is transferred to the ICU.</p> <p>The receiving nurse ensures the bed space is set up according to the monitoring, ventilation, and other requirements specified on the Patient Transfer Form.</p> <p>The receiving doctor ensures that all appropriate paperwork is ready.</p>
Phase 1: Equipment and Technology Handover	<p>On arrival the team transfers the patient ventilation, monitoring and support from portable systems used during the transfer to the ICU systems.</p> 
Phase 2: Information Handover	<p>SAFETY CHECK: The anesthetist checks the equipment and that the patient is appropriately ventilated and monitored and is stable. The receiving nurse and doctor are identified and confirm their readiness.</p> <p>The anesthetist, then the surgeon, speak alone and uninterrupted, providing the relevant information about the case, using the Information Transfer Aid Memoir.</p> <p>SAFETY CHECK: The receiving nurse and doctor should use the Information Transfer Aid Memoir to check that all necessary information has been obtained, and ask appropriate questions.</p>
Phase 3: Discussion and Plan	<p>The surgeon, anesthetist, and receiving team discuss the case as a group. The receiving doctor manages the discussions, identifies anticipated problems, and anticipated recovery is discussed.</p> <p>The ICU Team now has responsibility for patient care and confirms the plans for the patient.</p>

- **Result – safer**
- The new handover procedure broke a link between technical and informational errors.
- Before, c30% of patient errors occurred in both equipment and information.
- After, only 10% occurred in both areas.
- [Read the full case study](#)



You might map human and computer actors to process steps

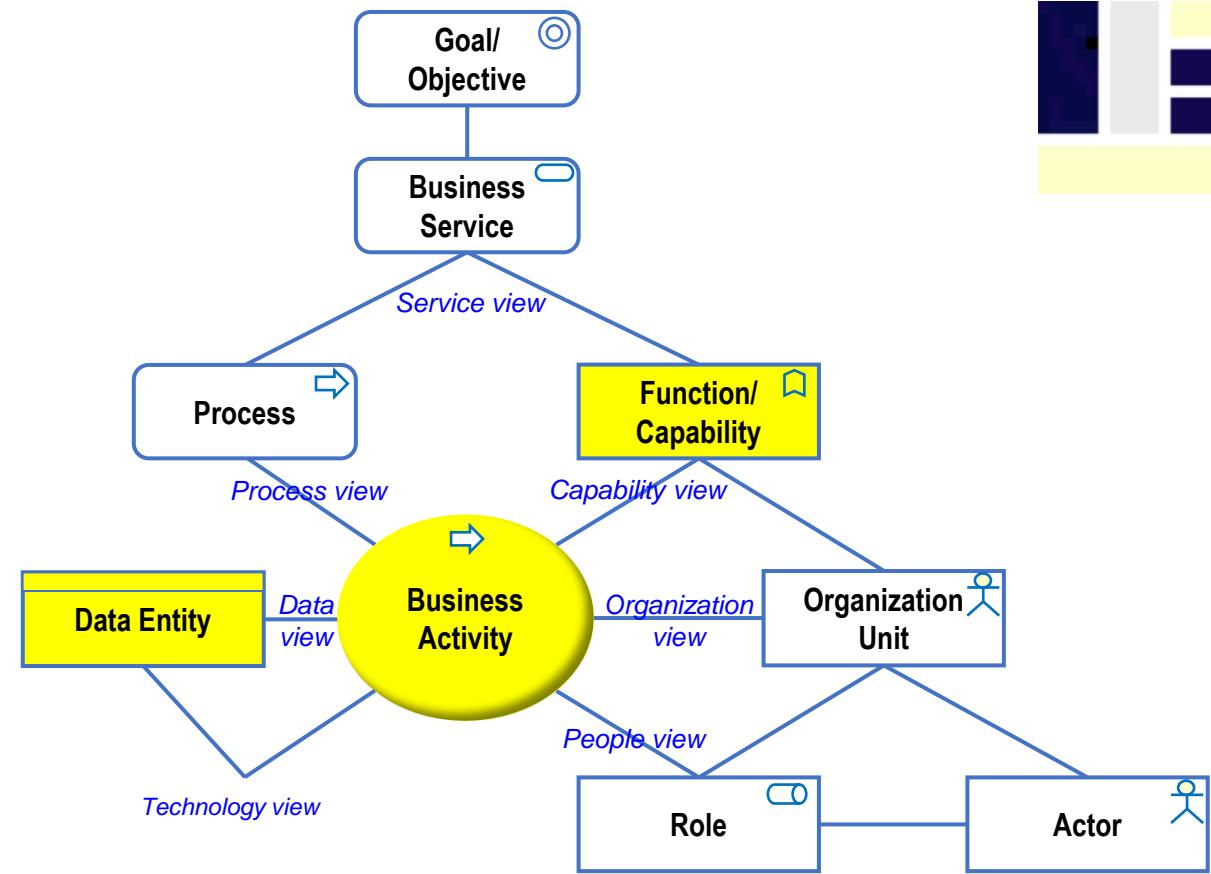




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Simple BA method

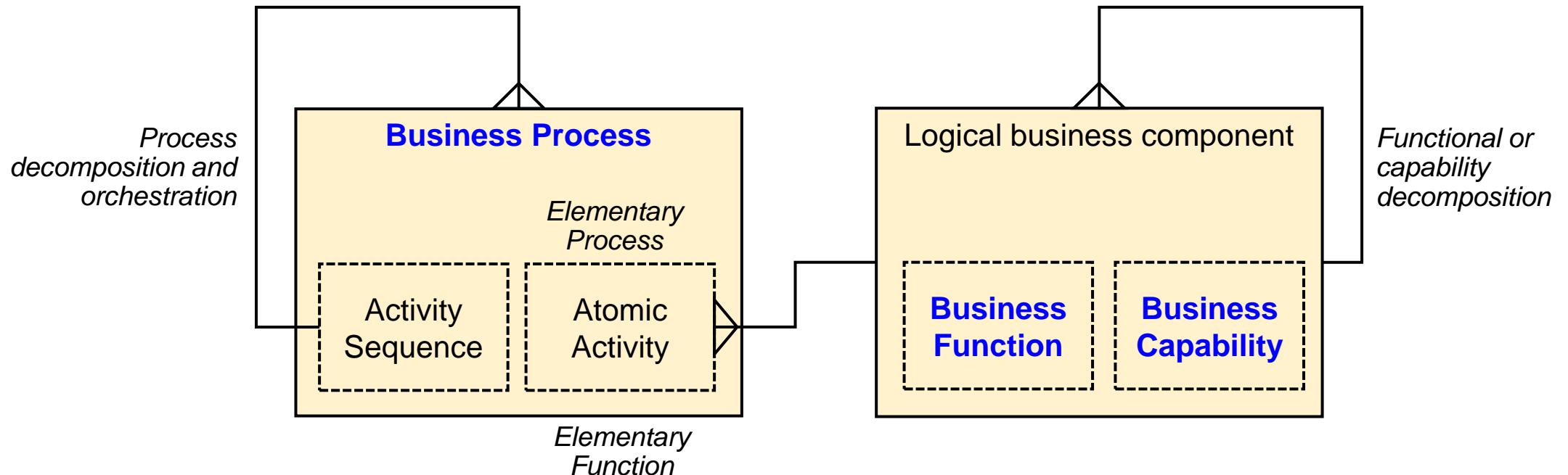
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Step 4. Map functions (or capabilities) to processes

- A process sequences what can or should be done by way of activities.
- A function names what can or should be done in a group of cohesive activities.





Functions

- Processes and functions are orthogonal views of the same activities.
 - A process *sequences* what can or should be done
 - A function names what can or should be done – a group of cohesive activities.
- In the ArchiMate standard: "A business function represents a collection of business behavior based on a chosen set of criteria." E.g.
 - Advertising goods.
 - Accepting payments.
 - Handling goods-in.
 - Organizing logistics.
 - Bidding for contracts.

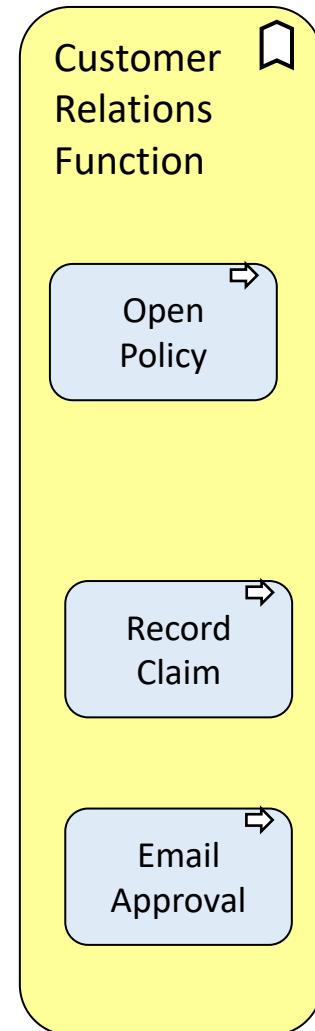


You might map functions to goals, services etc.

- You may relate a function 1-to-1 to another BA concept, such as
 - a goal,
 - a service/product, or
 - a data store;
- but in general the inter-concept relationships are many-to-many.
 - E.g. one coarse-grained function may be encapsulated by many discrete services.

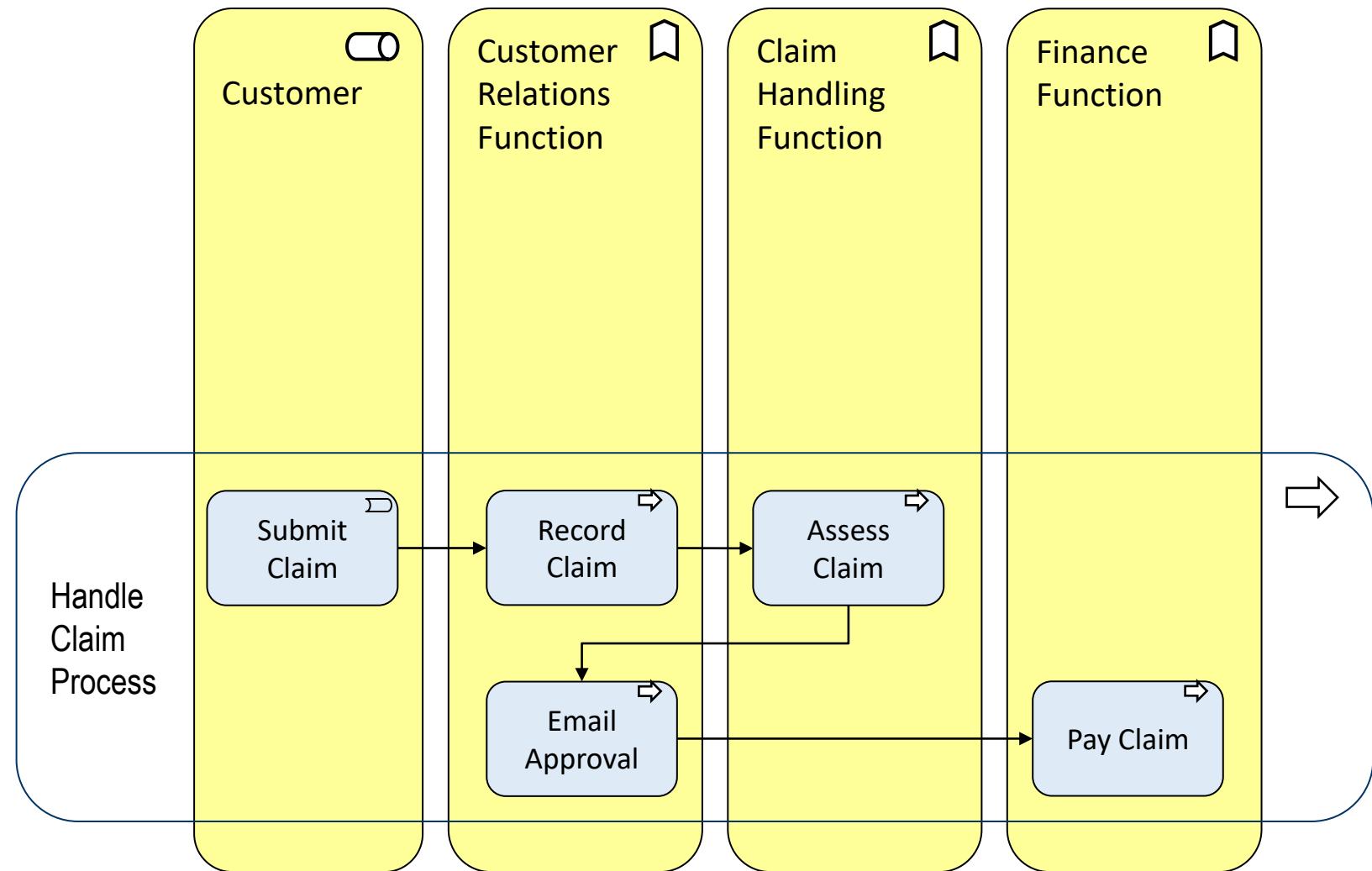


One function may encapsulate several processes





One process may coordinate activities in several functions

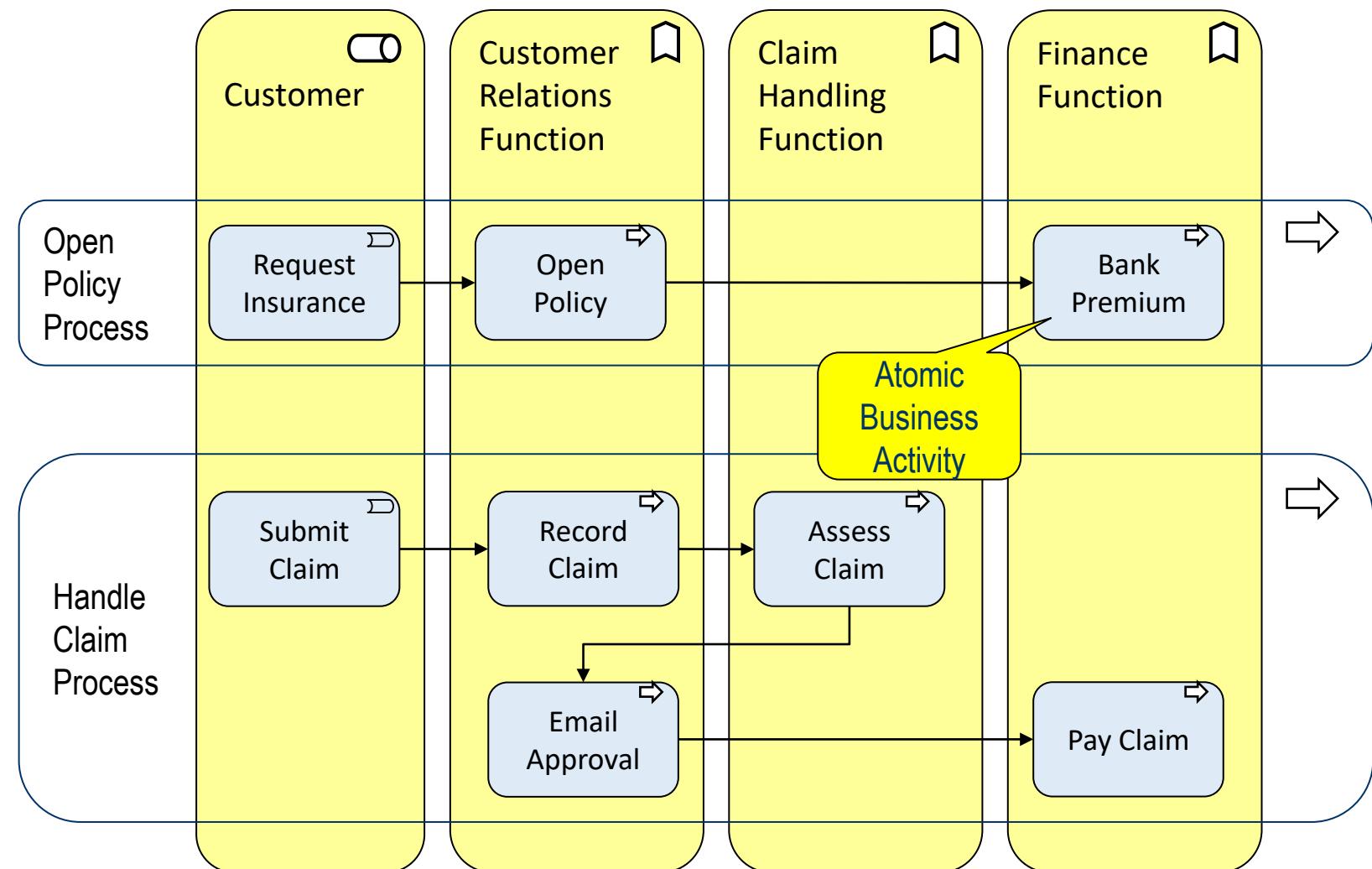




You might map functions to processes

Example after ArchiMate guru Marc Lankhorst

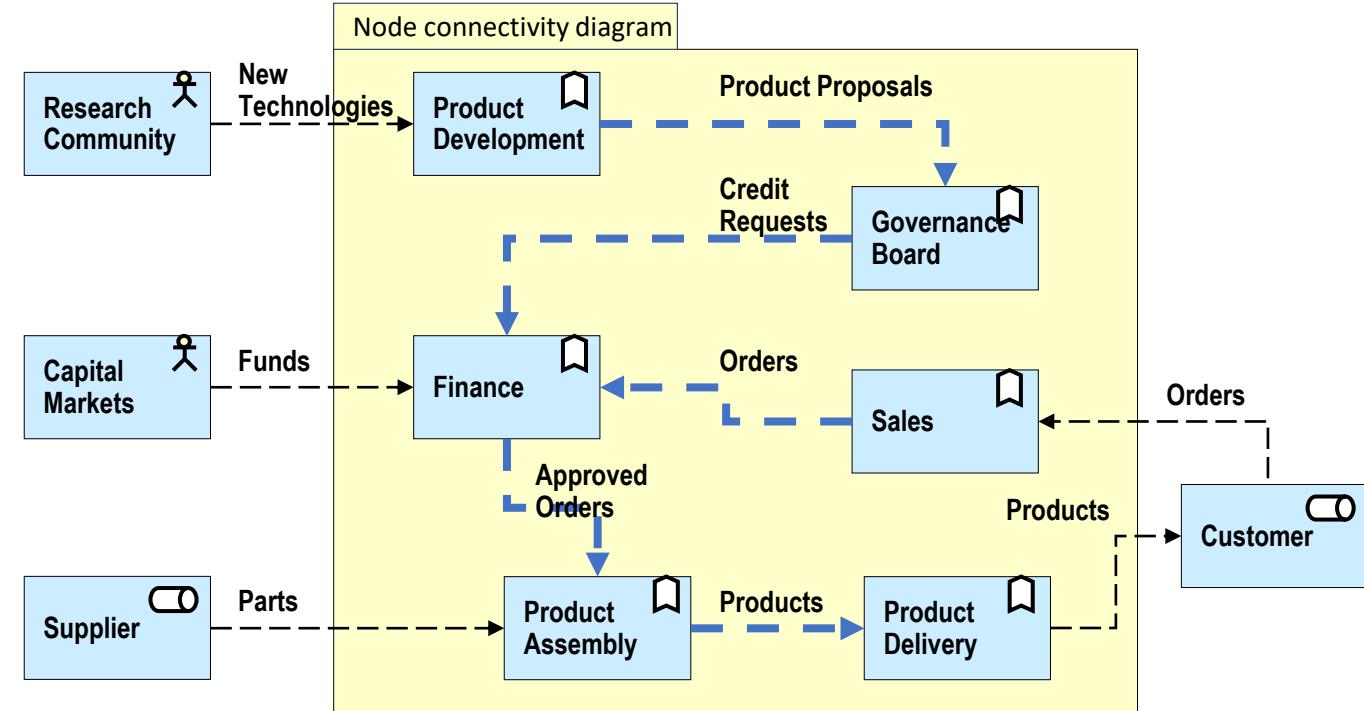
- Functions and processes can be composed and decomposed





You might map functions to functions

- One function may depend on other functions, with which it exchanges one or more messages or data flows
- Document inter-function **dependencies** or **data flows**.
- In ArchiMate, you can represent inter-function dependencies at an abstract level by a **serves arrow** between boxes, or, at a more detailed level, by **data flow arrows**.





You might map activities to data

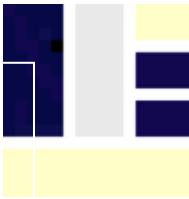
- The data entities may be defined in some kind of enterprise data model or catalog
 - customer,
 - supplier,
 - employee,
 - product,
 - policy,
 - Asset
- This begs questions (not addressed here) about whether named data entities are the same or different in different business contexts.



You might map activities to data

- A data/entity business function matrix maps activities to data entity types

Function Data Entity	Sales	Delivery	Finance
Customer	Create	Use	Use
Order	Create	Use	Use
Invoice		Use	Create



Clustering activities by data created

- The North West corner method sorts the rows and columns of a matrix
- by clustering them on a shared cell entry, such as “create”.

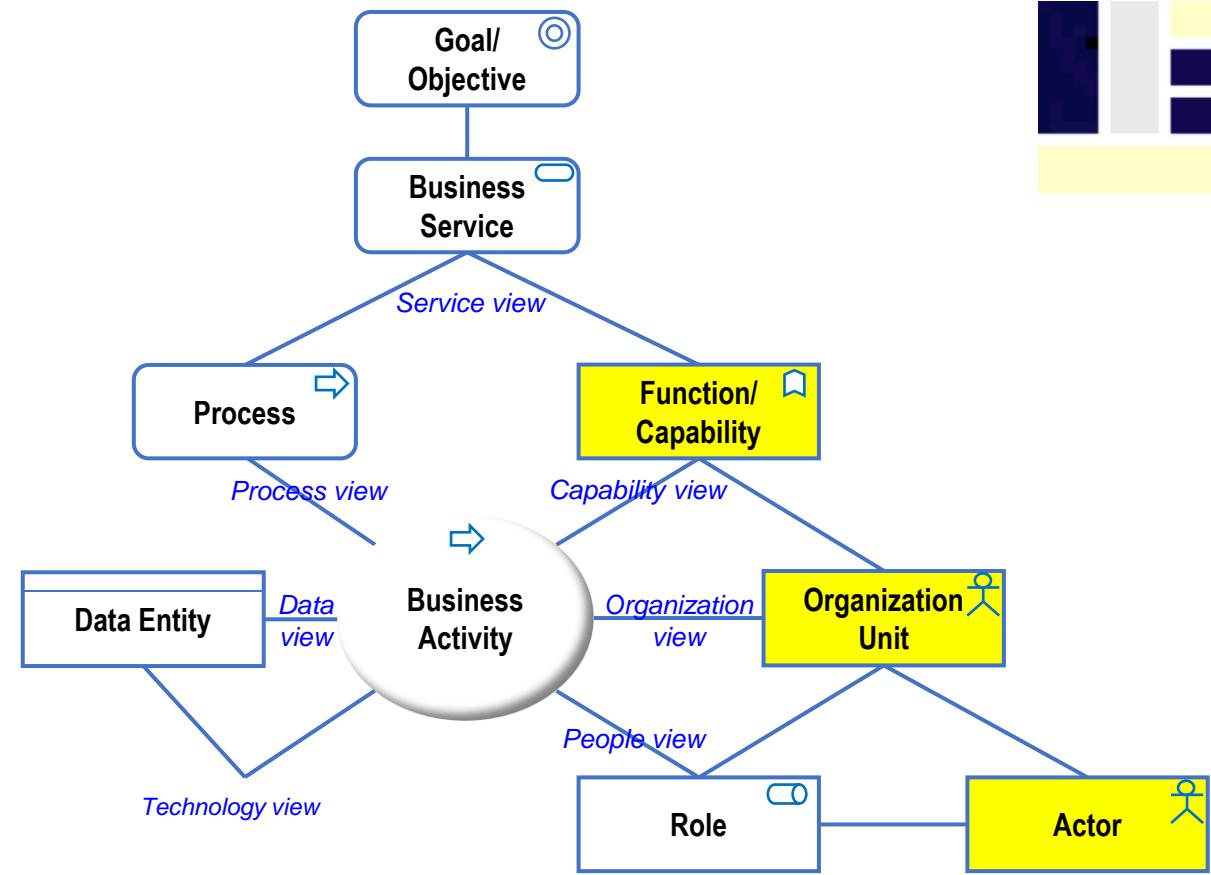
		LOGICAL APPLICATION GROUPS																																									
		DATA CLASSES																																									
		Actual estimates	Agency plans	Budget	Program regts./policy	Admin. regts./policy	Labor agreements	Data standards	Procedures	Automated systems documentation	Educational media	Public agreements	Intergovernmental agreements	Grants	External	Exchange control	Administrative accounts	Program expenditures	Audit reports	Organization position	Employee identification	Recruitment/placement	Complaints/irregularities	Training resources	Security	Equipment utilization	Space utilization	Supplies utilization	Workload schedules	Work measurement	Enumeration I.D.	Enumeration control	Earnings	Employer I.D.	Earnings control	Claims characteristics	Claims control	Decisions	Payments	Collection waiver	Notice	Inquiries control	Quality appraisal
INITIAL	Develop agency plans	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
	Administer agency budget	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
	Formulate program policies	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Formulate admin. policies	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
GENERAL MANAGEMENT	Formulate data policies	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Design work processes	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Manage public affairs	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Manage intragovt. affairs	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
PROGRAM ADMIN.	Exchange data	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Maintain admin. accounts	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Maintain prog. accounts	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Conduct audits	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
SUPPORT	Establish organizations	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Manage human resources	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Provide security	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Manage equipment	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
GENERAL MANAGEMENT	Manage facilities	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Manage supplies	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Manage workloads	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Issue Social Security nos.	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
PROGRAM ADMIN.	Maintain earnings	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Collect claims information	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Determine elig./entitl.	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Compute payments	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
SUPPORT	Administer debt mgt.	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Generate notices	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Respond to prog. inquiries	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									
	Provide quality assessment	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U									



Methodically relating the concepts
To do all this in detail for a whole enterprise is impractical

Simple BA method

1. **Goals** or outcomes of interest to external actors
2. **Services** external actors need to reach goals and outcomes
3. **Processes** to complete or deliver services.
4. **Functions, data** and other structural resources needed to perform processes
5. **Actors** and organizations to perform roles and manage resources.





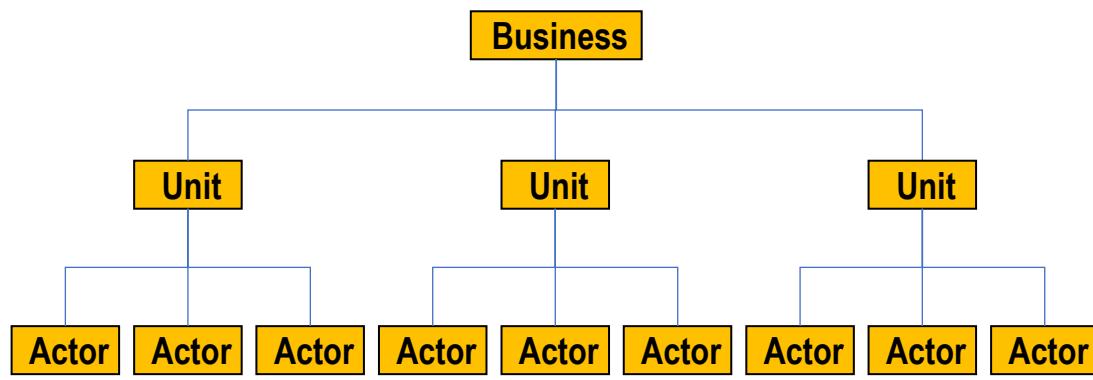
Step 5. Map organization units to functions (or capabilities)

Organization structure

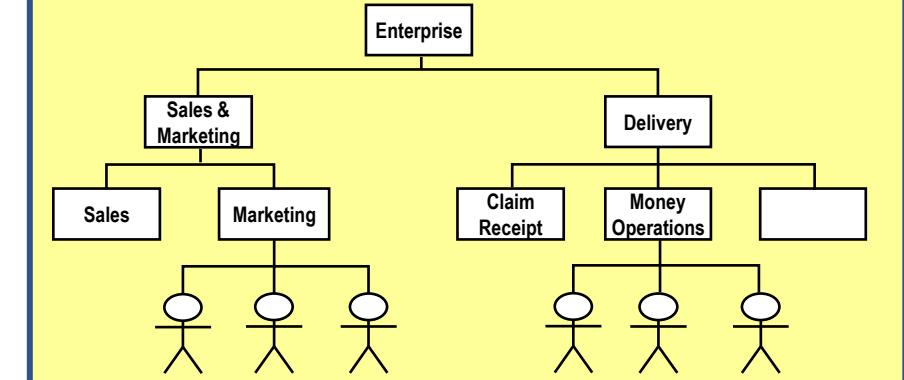
- Typically decomposed from the top down, may be supplemented by some “matrix management”
- Typically, a unit has a manager, responsible for
 - Budget, sociological, psychological and HR matters
 - Monitoring and reporting of actors' activities



Organization (management structure)



Organization Decomposition





You might map functions to organization units

- Functions may be mapped to organization units in a matrix.
- A function or sub function can be
 - implemented within one organization,
 - outsourced to one or more external organizations,
 - acquired from the market, or any combination of those

Functional organization

	Org	Org	Org
Function	x		
Function		x	
Function			x

Other

	Org	Org	Org
Function	x	x	
Function		x	x
Function	x		x



You might map actors to roles

- What if business system change implies significant changes to people's roles?
- Architects work alongside others better placed to address
 - Business managers, HR, a Business Change Function

	Role	Role	Role
Actor	x		
Actor		x	x
Actor			x

- Maintaining human resource details in an EA repository is usually impractical
- Unless it can be populated from an identity management system?



Reorganizations

- A "physical" management hierarchy clusters human actors into organization units according to a more or less clearly defined combination of criteria
 - location, goal, service type, skill and resource type, customer type etc.
- Directors manipulate the management structure in the light of shifts in which cohesion criteria they think most effective, and other factors such as which managers they trust.
- EA methods presume a function or capability hierarchy is more stable



On what you model and communicate

- You don't have to model everything about a business that can be documented.
- You model what you need to understand and explain.
- Then choose what to communicate - simplifying as need be.
- These slides address terms and concepts EAs may use to
 - organize their thinking
 - organize EA data that is documented
 - discuss unambiguously with other trained architects.
- Talk to business leaders and others in *their* terms - translating as need be.



Hierarchical Business Views

Goal, process and functional decomposition



Hierarchical decomposition/composition

- To make sense of a purposeful social entity,
- people impose hierarchies on the networks of
 - aims to be achieved – goal decomposition
 - activities to be performed – process and functional decomposition
 - actors employed – organization decomposition
- Sometimes one hierarchy corresponds closely to another.
- Sometimes the hierarchies differ.



Goal decomposition

- Decomposes grand aims or goals into finer-grained objectives.
- As in a “balanced score card”

Increase market share

Increase marketing

Increase capacity

Reduce prices

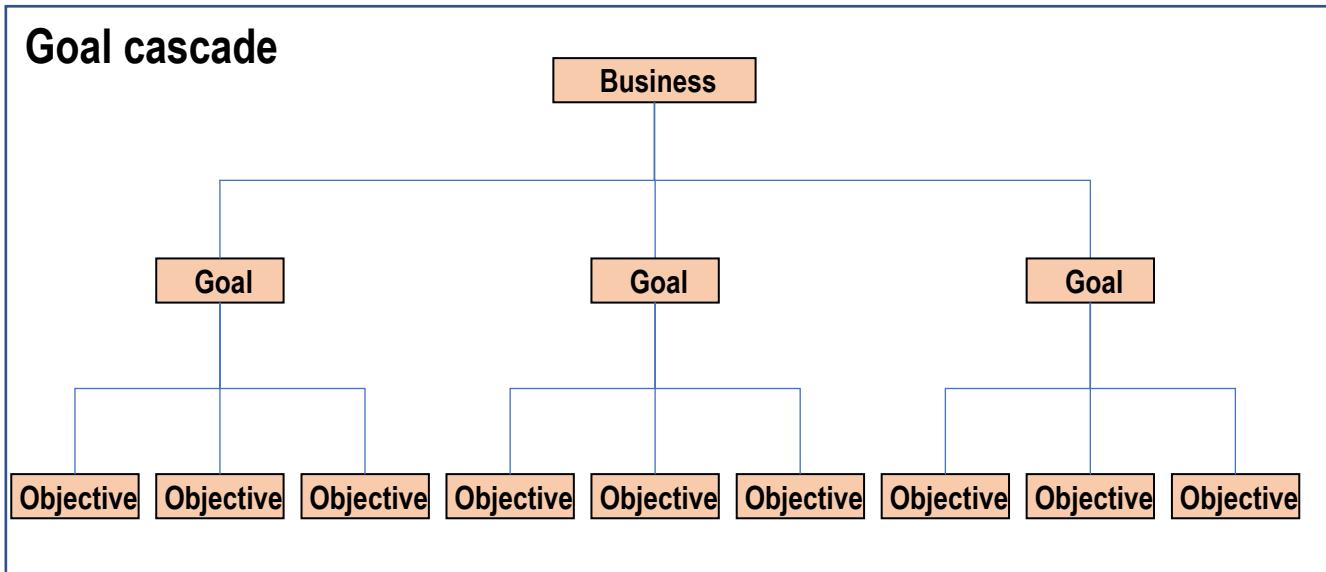
Cut part costs

Reduce number of parts

Use cheaper materials

Cut assembly costs

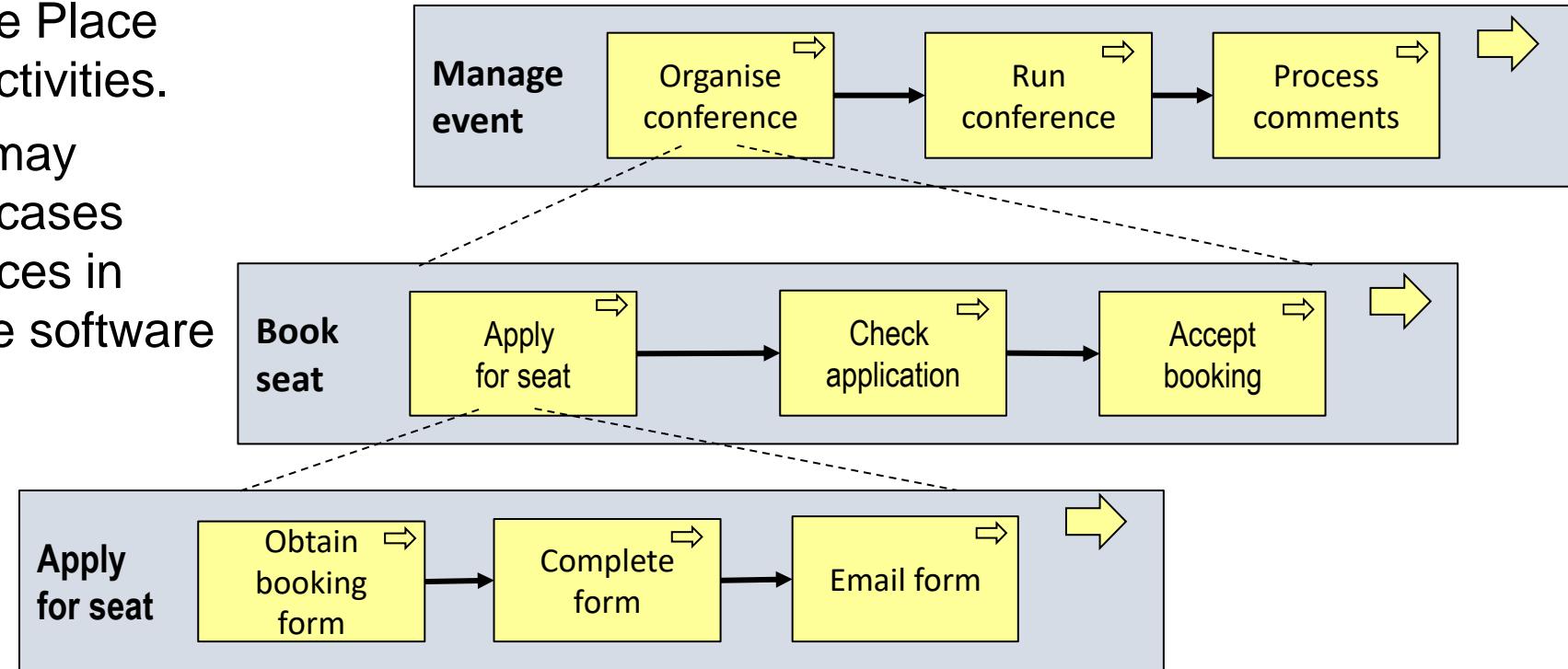
Reduce number of parts





Process decomposition

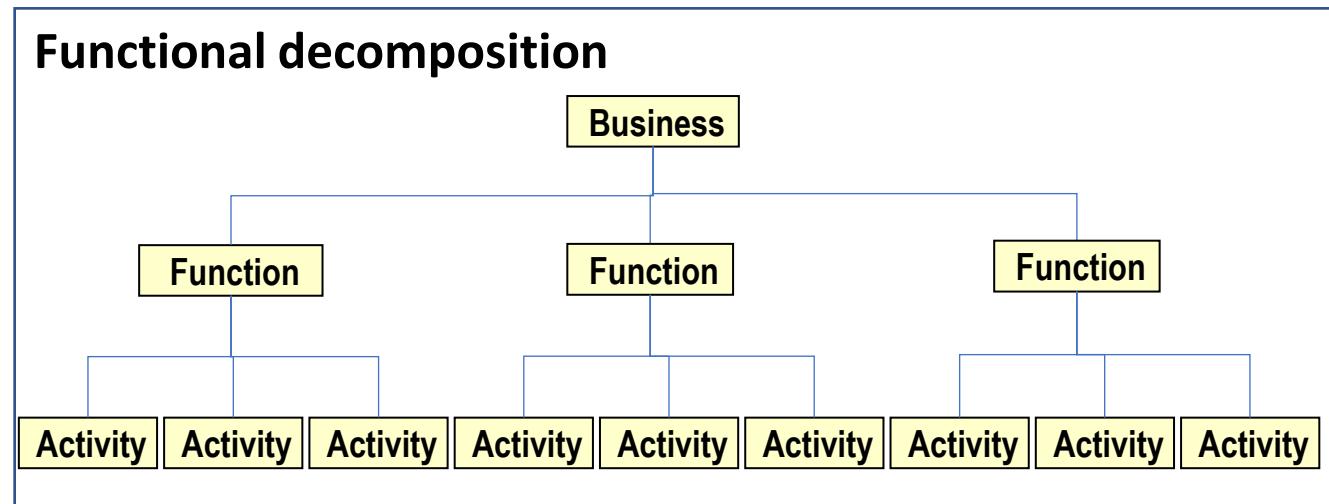
- Stop at One Person One Place One Time (OPOPO) activities.
- The level at which you may identify application use cases (called application services in TOGAF, or epics in agile software development).





Functional decomposition

- In BA in EA. a **function** clusters activities using one or more cohesion criteria (e.g. goals, data or resources needed).



- A function does not realize the activities; they are realized or performed by actors playing roles in the business.



Functional decomposition

- Functions can be thought of as logical business components.
- They can be nested in a composition hierarchy, from large down to small.
- The hierarchy can be used to
 - scope work to be done (heat maps)
 - classify other system elements

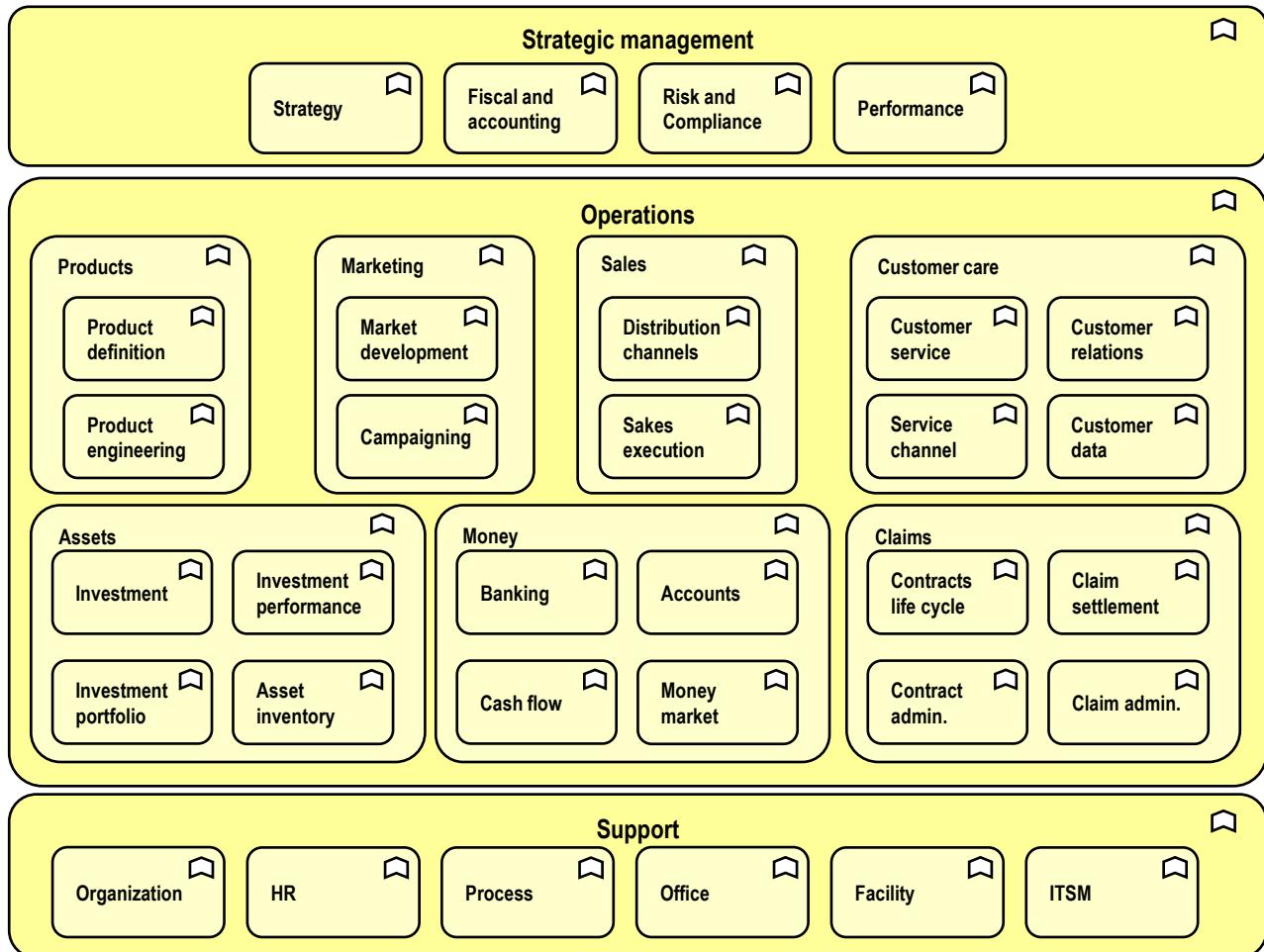


Diagram adapted from an ArchiMate example



Functional decomposition diagram (TOGAF)

“Shows on a single page the **capabilities** of an organization relevant to the consideration of an architecture.

By examining the **capabilities** of an organization from a functional perspective, it is possible to quickly develop models of what the organization does without being dragged into extended debate on how the organization does it.

Once a basic diagram has been developed, it becomes possible to layer heat maps on top of this diagram to show scope and decisions (e.g. the **capabilities** to be implemented in different phases of a change program.)” TOGAF 9.2

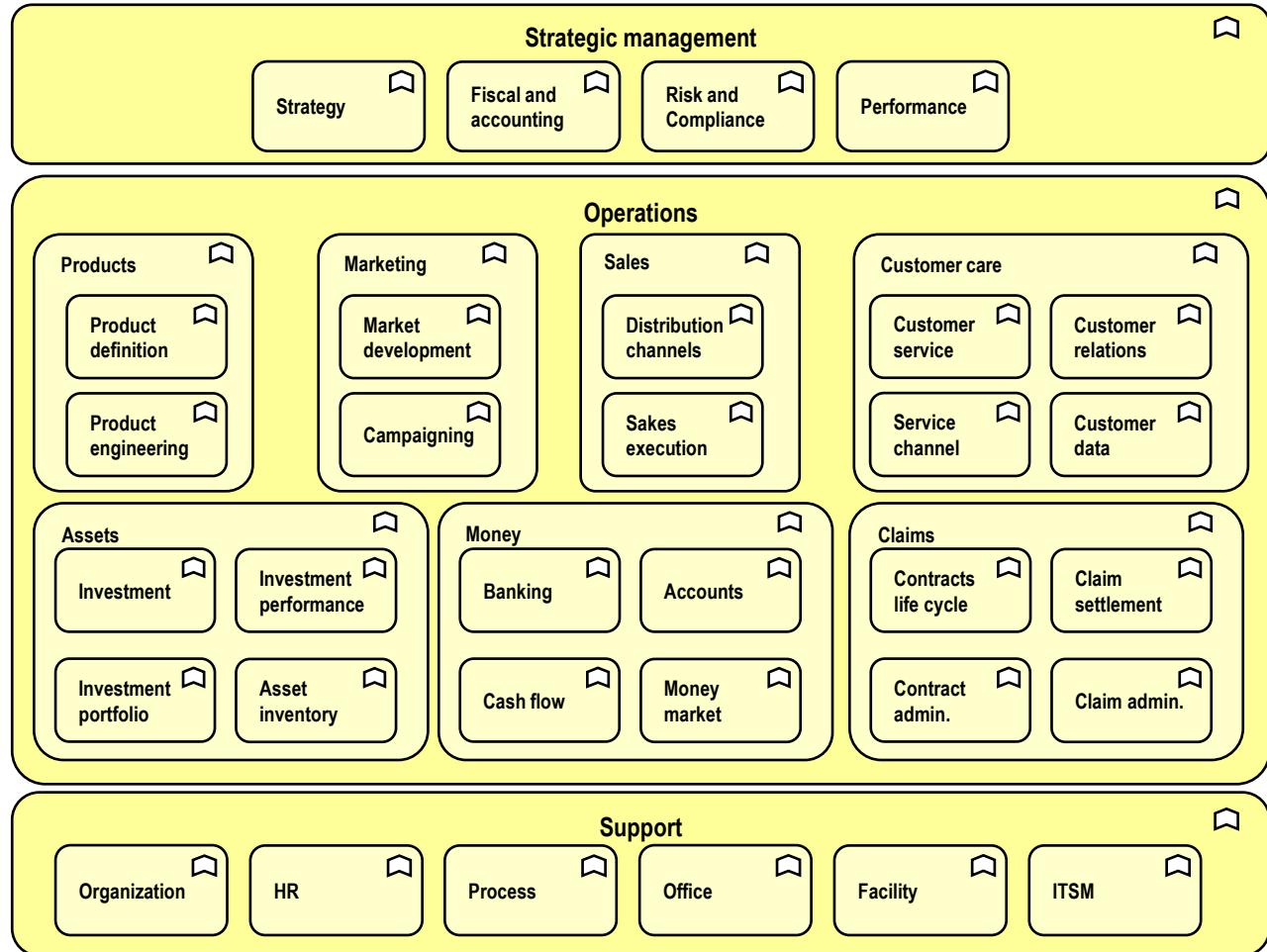


Diagram adapted from an ArchiMate example



Naming functions

- Name the function after the aim of the activity (or having the capability to do it)
- Use gerunds
 - Advertising goods.
 - Accepting payments.
 - Handling goods-in.
 - Logistics.
 - Bidding for contracts.
- Try not to tag "management" onto the end of the name.

Generic building blocks

You may find a logical hierarchy in the form of *generic reference model* for a business of your kind - then tailor it to fit your business.

TOGAF catalogs the **Services** provided by each **Function**.

Defined thus, a Function might be a candidate for outsourcing.

Better,
Function or
Capability!

The BIAN Service Landscape V2.5





A few notes on technique

- Top down, separate activities that are loosely coupled.
- Bottom up, **cluster activities** that are cohesive in some way.
- You might cluster activities that
 - meet an aim, goal or objective
 - conform to a directive or principle such as "compliance to privacy legislation"
 - create the same data
 - need the same knowledge and skills
 - need the same resources

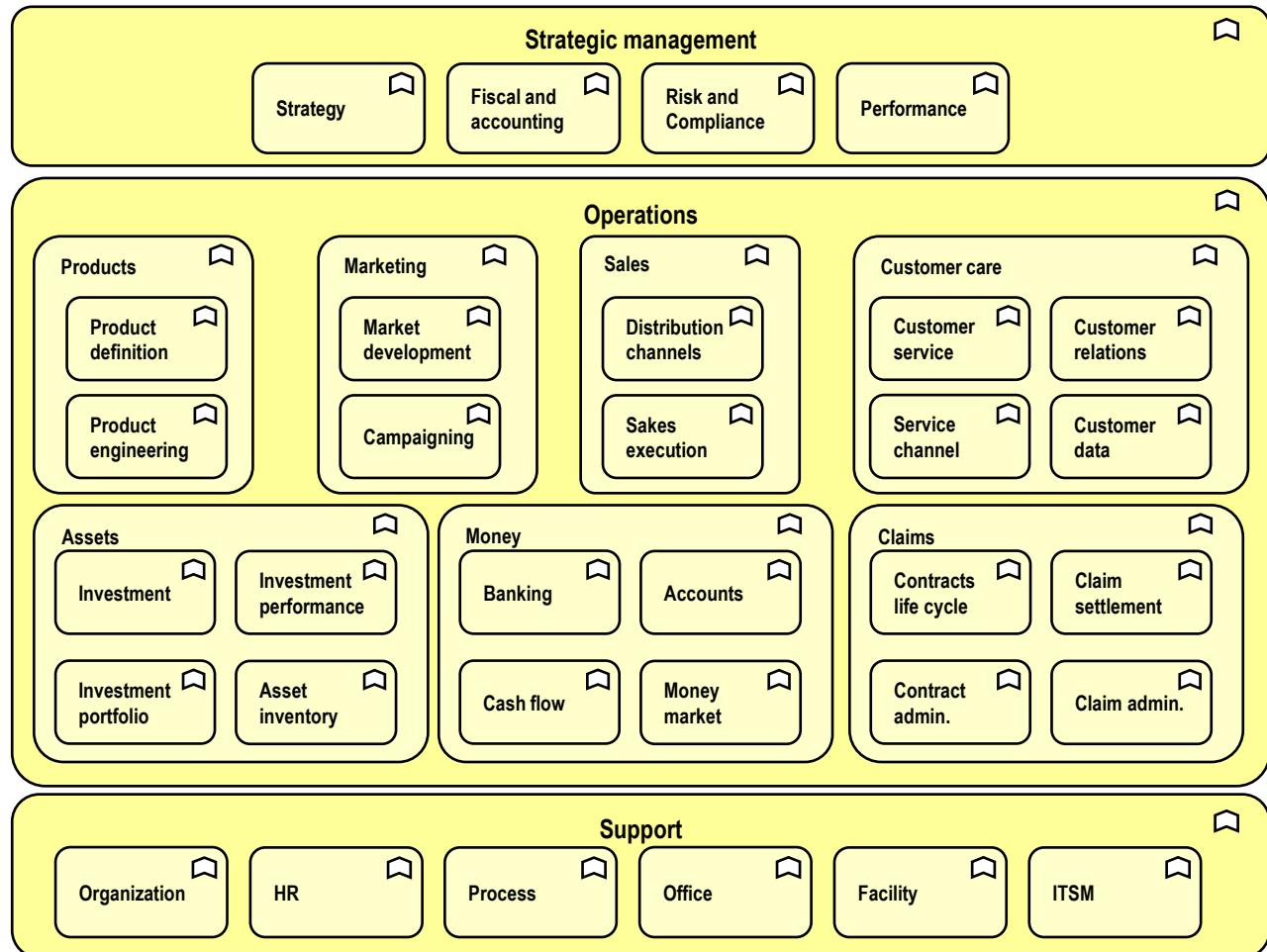


Diagram adapted from an ArchiMate example



Common functions

- No activity is duplicated under different branches of a function hierarchy.
- To achieve that, you must stop decomposition when you reach a common function and document it separately, or else in a "common functions" leg of the hierarchy.

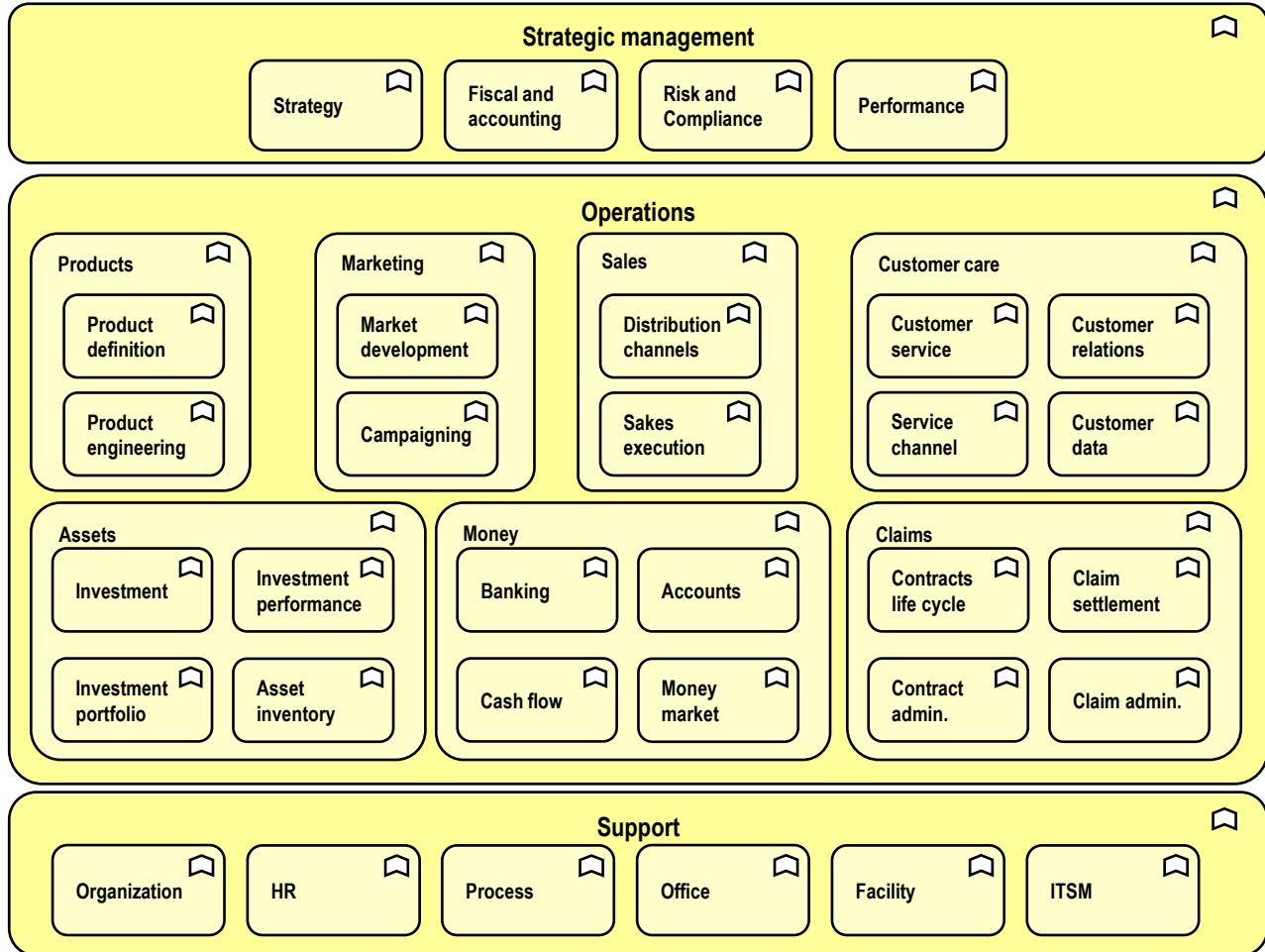
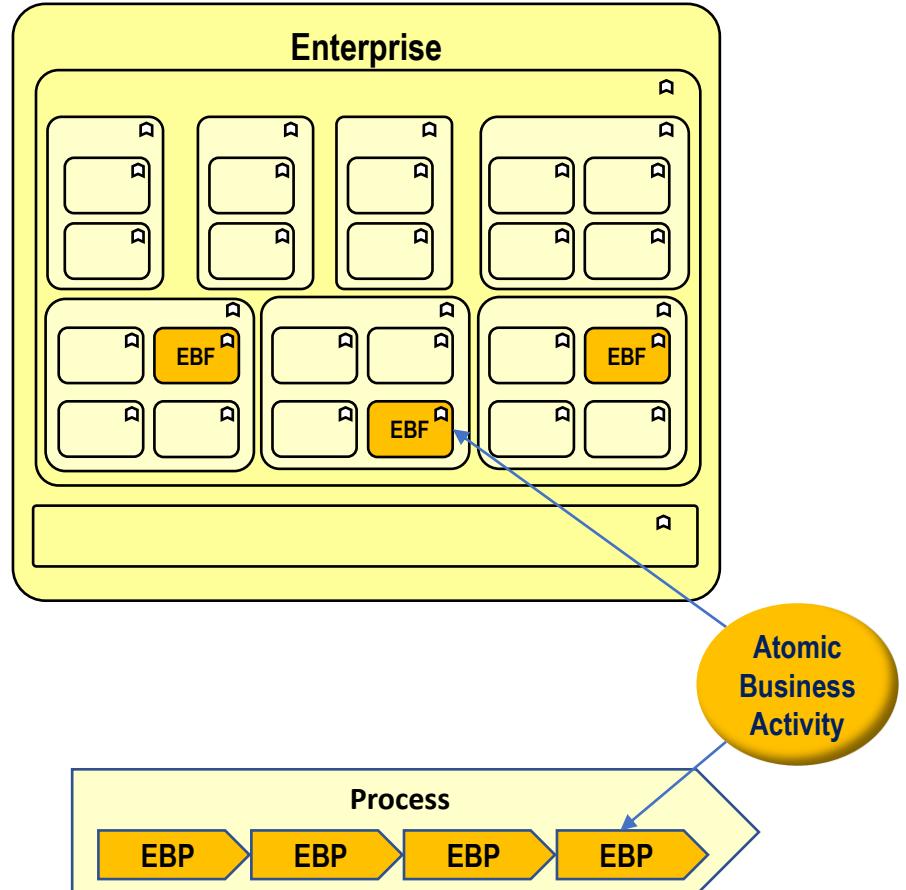


Diagram adapted from an ArchiMate example



Following the consistency principle

- Functions and processes come together at the bottom level where "activities" are defined.
- It seems nobody has the time and resources to complete both functional and process decompositions;
- but still, the principle holds
- every activity in a process should be locatable under a function
- else the function hierarchy is incomplete.





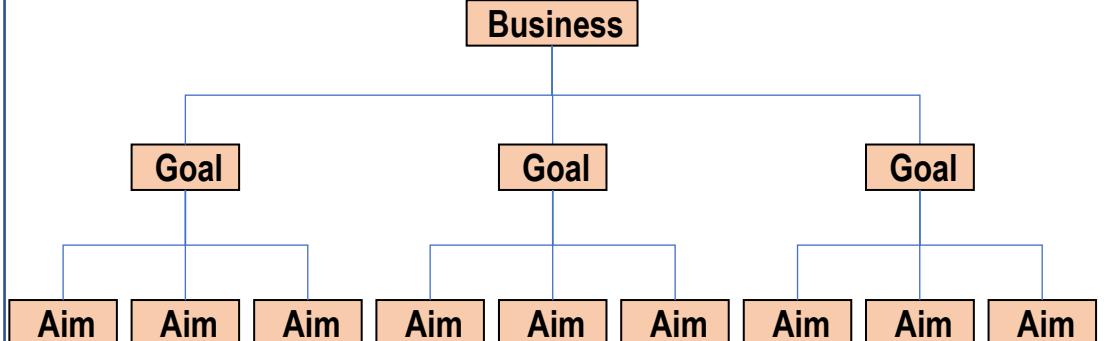
Function forests

- Any number of different function trees (a "function forest") can be drawn for one business.
- Most people draw only one.
- But every attempt to impose a hierarchical structure on a business
 - (on its networks of aims, actors and activities or abilities)
- is an artificial compromise.
- Different stakeholders may prefer different hierarchical views of a business

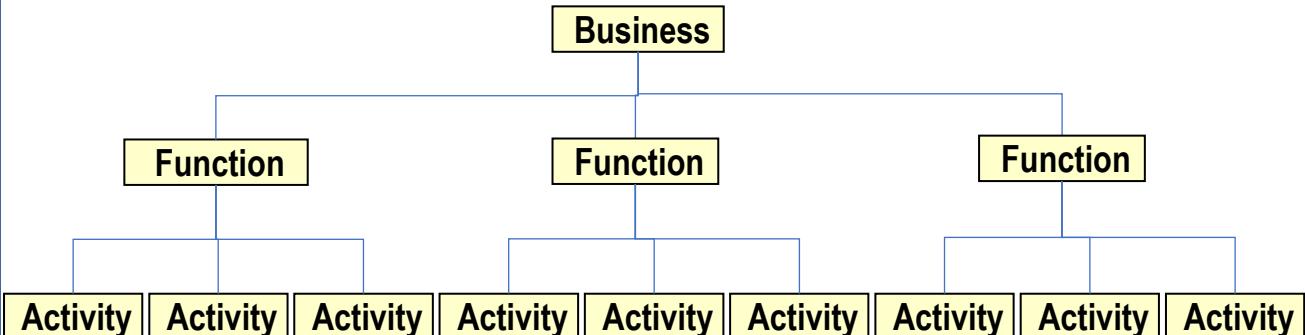


Four hierarchical views (not systems) people draw to understand and manage social entities

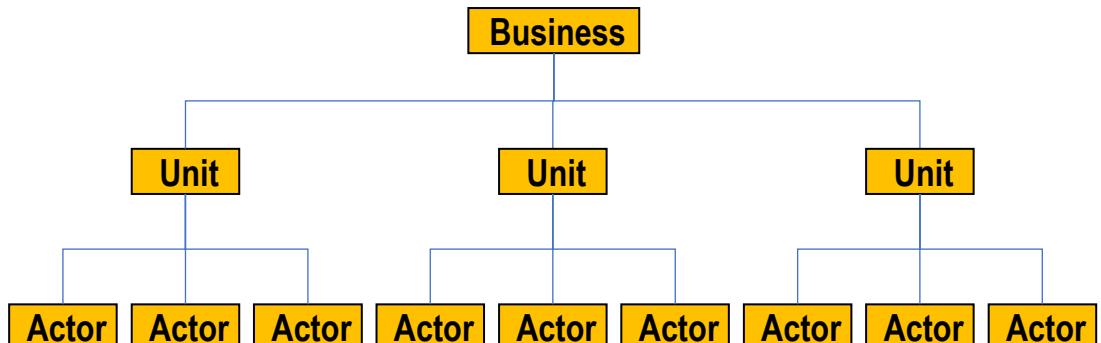
Goal cascade



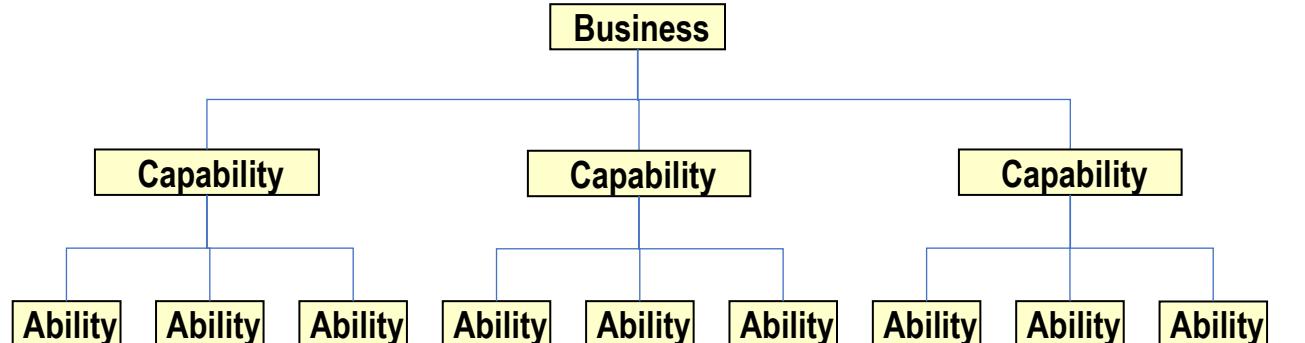
Functional decomposition



Organization (management structure)



Capability map (some match capabilities to goals or functions)



A Function or Capability hierarchy can be used to show a simple overview of a whole business, and categorise other things.

When we speak of the Capability to meet a Goal, perform a Function, deliver a Service, complete a Process or Project, we are speaking of the system to do it.



Capabilities?



On the terminology torture

- Beware that words like **function**, **process**, **capability** and **service** have different meanings in different domains.
 - Functions are called Services in the BIAN hierarchy,
 - Functions are called Processes in the APQC PCF hierarchy,
 - Some refer to Organization Units as Functions



The need for a logical organization structure

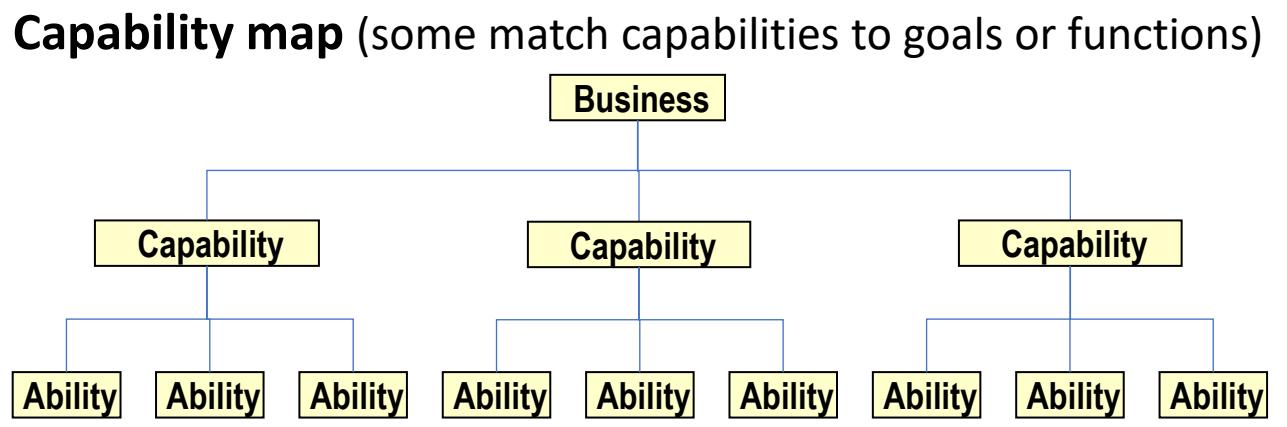
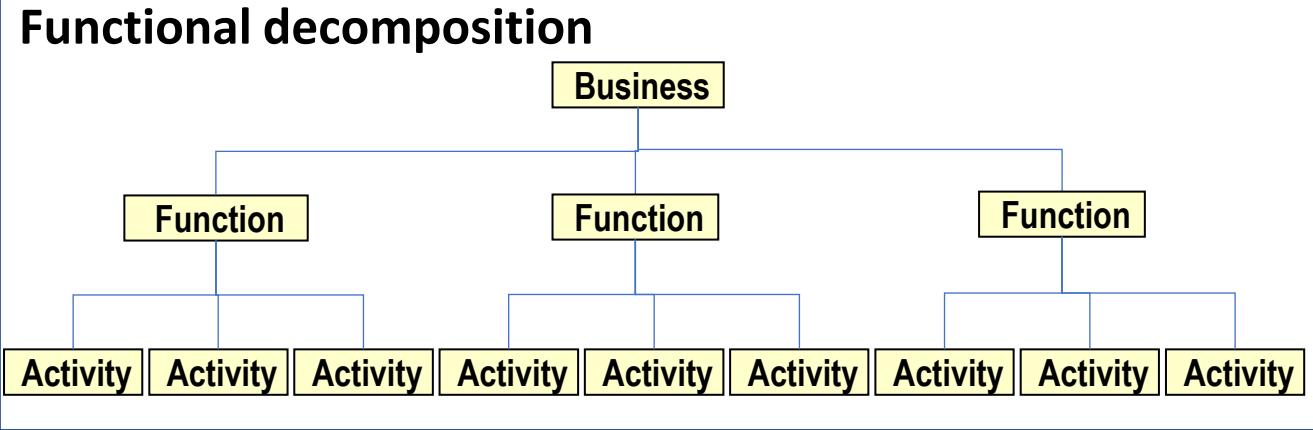
- EA is supposed to be cross-organizational
- The organization's physical management structure is often volatile/fluid
- It may be restructured (say by region, customer type or product type).

- Whereas the nature of the business (services, processes and data) is more stable.
- So, EAs often start by building a logical organization structure, called
 - **A Functional Decomposition Diagram**, or
 - **A Capability Map**



Purposes of an activity/ability hierarchy

- A logical and stable picture of what a business is able to do.
- Decomposes broad-ranging activities or abilities into finer-grained ones.
- Show and describe the scope of a business, or of a specific initiative
- Highlight where problems or opportunities exist and where changes are to be made
- Categorize other EA elements to facilitate impact analysis when changes are agreed.





Capabilities?

- A capability is the ability to
 - **do something** (implies activities are known) or
 - **achieve something** (implies aims are known)
- A capability usually corresponds to one or more of
 - A goal
 - An outcome
 - A function



Business capabilities

"A **capability** represents an *ability* that an active structure element, such as an organization, person, or system, possesses." ArchiMate 3.1

It is hard to make practical use of that definition, but the standard goes on...

"*Capabilities* are expressed in general and high-level terms and are typically realized by a combination of *organization, people, processes, information, and technology*. For example, marketing, customer contact, or outbound telemarketing."

The named examples could as well be the names of functions.



How do capabilities relate to functions?

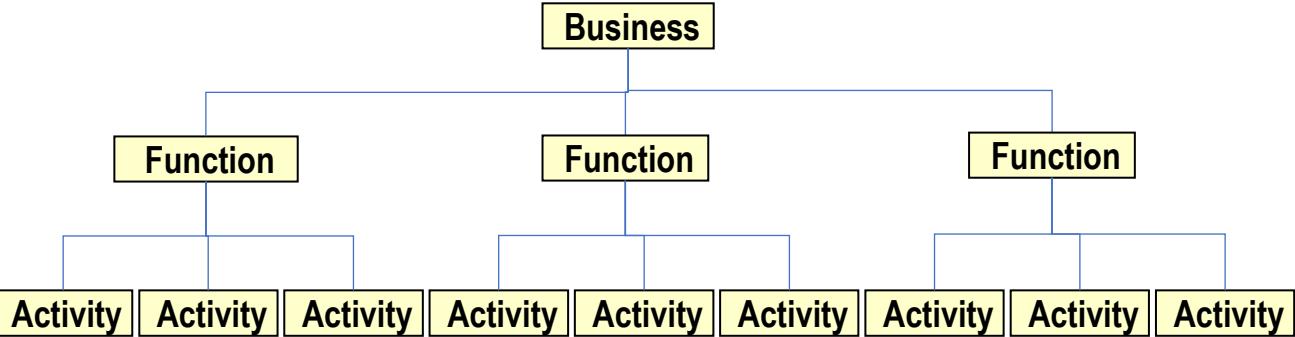
- A **function** *groups activities* that are logically cohesive in some way.
- A **capability** *groups the abilities or resources* needed to perform activities that are cohesive in some way.
- Simply put, to perform any **function** we name, we need the corresponding **capability**.



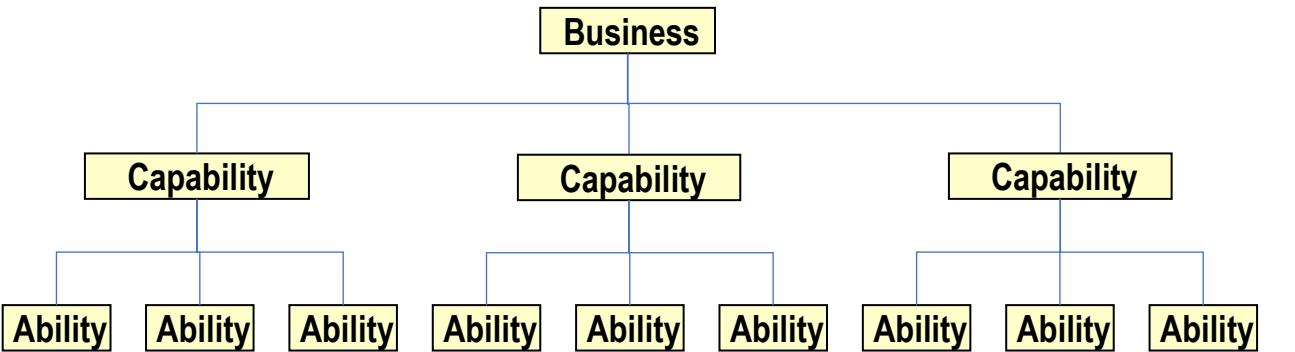
The elephant in the room?

- In building a logical hierarchy, unless we choose different cohesion criteria for functions and capabilities (and why should we?), every capability will correspond to a function.
- Function and capability are not synonyms, but to build two hierarchies of elements that are in 1-to-1 correspondence is futile

Functional decomposition



Capability map (some match capabilities to goals or functions)



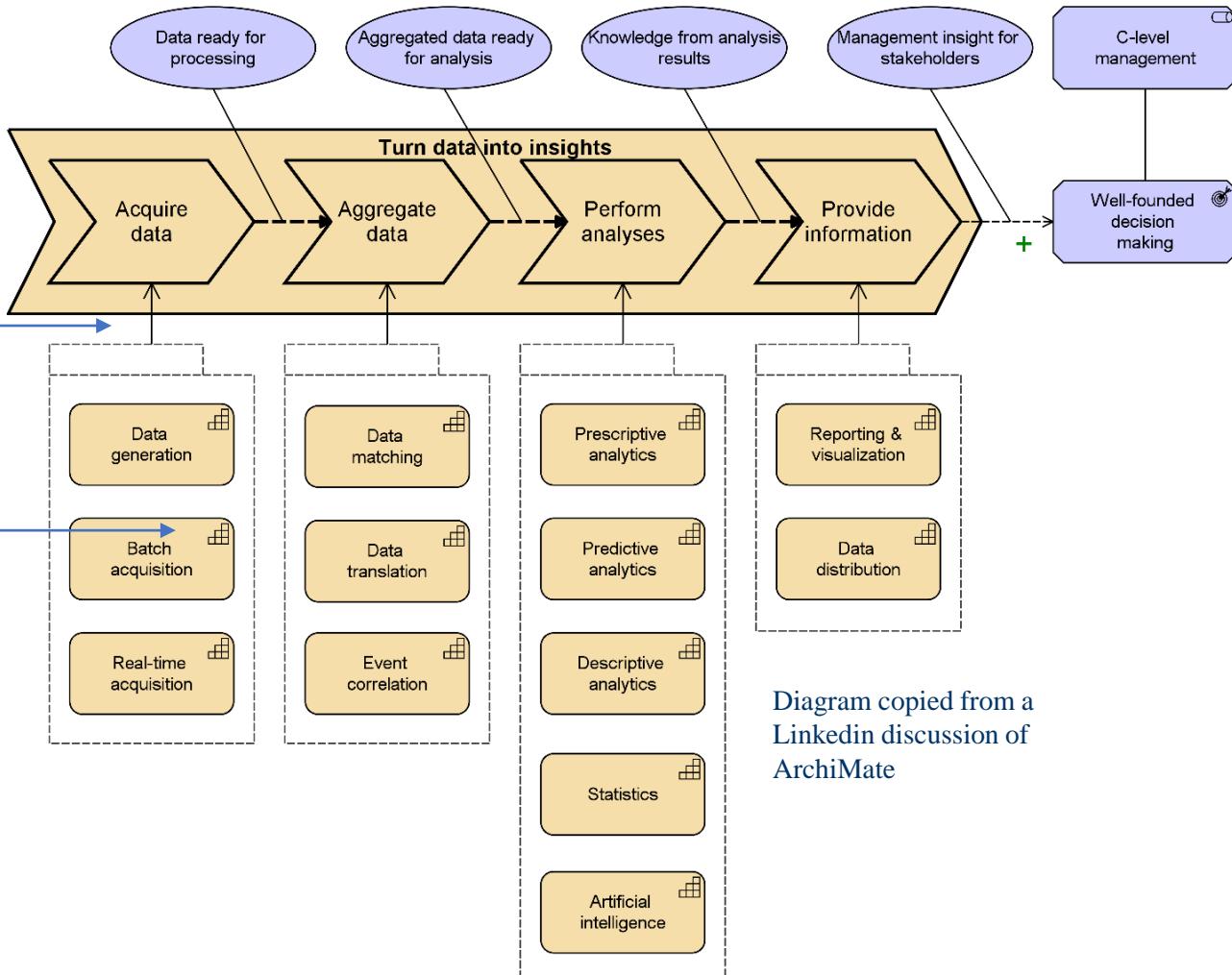


You might map capabilities to processes

Three building blocks *<serve>* this process stage
Serve means *<provide functionality to>*.

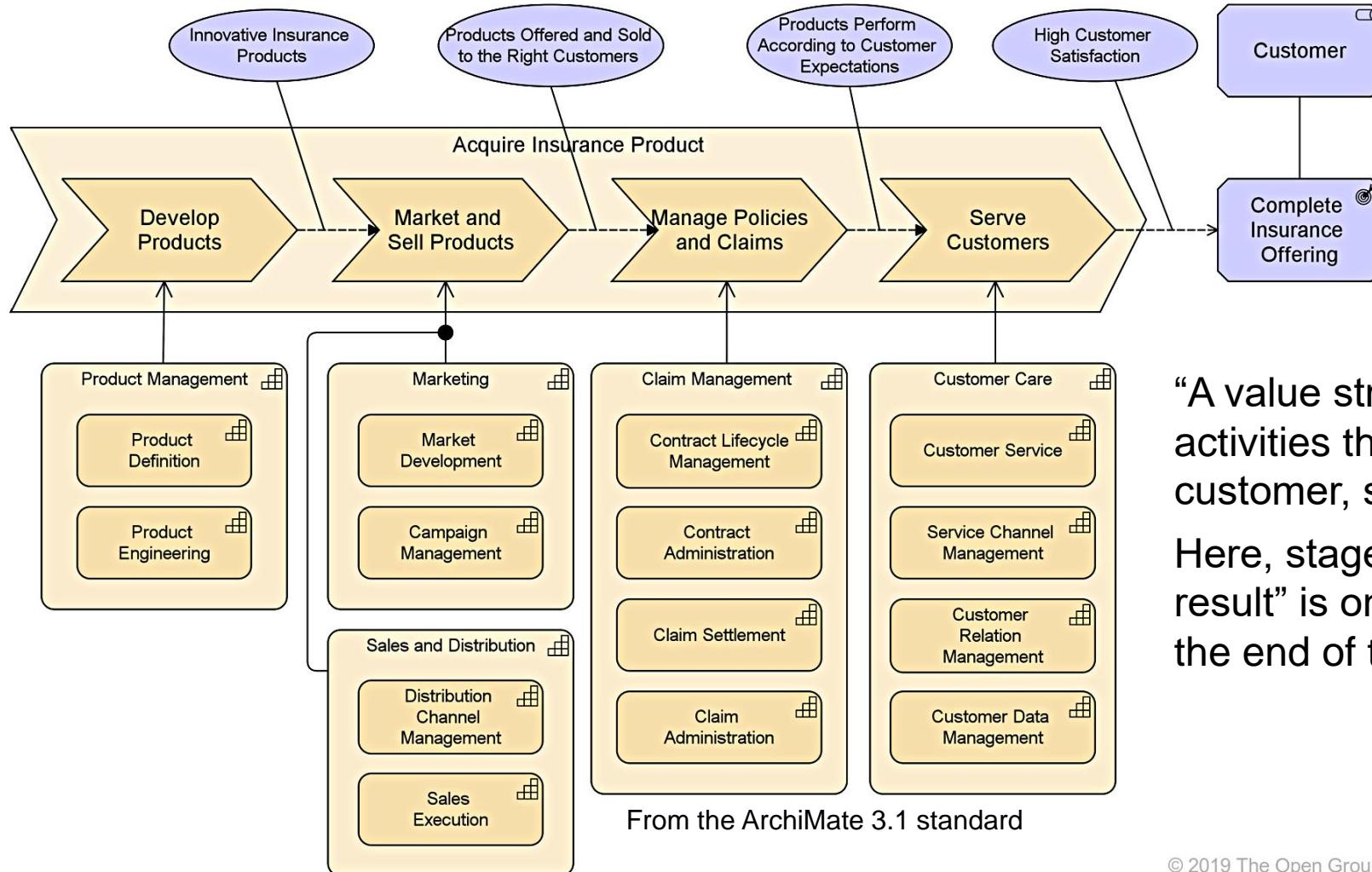
These “building blocks” could be **functions** or **organization units** or (here) **capabilities**.

Such a coarse-grained process may be decomposed into shorter processes with shorter steps, and at that lower level you may link steps to **roles** played by individual actors.





Value stream diagrams that aren't really processes



“A value stream represents a sequence of activities that create an overall result for a customer, stakeholder, or end user.”

Here, stages run in parallel and the “overall result” is ongoing rather than delivered at the end of the process.



Further reading

This slide show distills concepts behind the terminology torture of BA and EA

It accompanies this article <https://www.linkedin.com/pulse/brief-eaba-history-graham-berrisford>

In this series of articles <https://www.linkedin.com/in/grahamberrisford/detail/recent-activity/posts/>

Other research on business architect roles in the job market and in industry standards.

- “The practice of business architecture” <https://bit.ly/2DRbCC0>

Other research on making sense of TOGAF’s concepts <https://lnkd.in/gTAh9iW> .



A few notes for TOGAF and ArchiMate users



In ArchiMate's generic model of a business system

- Behaviors are performed by active structure elements
- The behavioral elements are called services, processes and functions.
- Arguably, functions may be classified as logical structures

	Behaviors	Structures	
External view			
Internal view			Logical
			Physical



Active structures as building blocks

- TOGAF defines a building block as a “package of functionality” definable by its interface, which fits Functions and Roles (as well as Applications and Components)

	Behaviors	Structures	
External view			
Internal view			Logical
			Physical

How to map TOGAF's business architecture value stream to its ADM?

This diagram maps activities and/or building blocks to process stages

And maps process stages to the phases (A to G) of the ADM

The first three stages might done as “free standing exercise” in the Preliminary Phase, before an ADM cycle.

The first two stages include things business managers may do.

Business management consulting?

