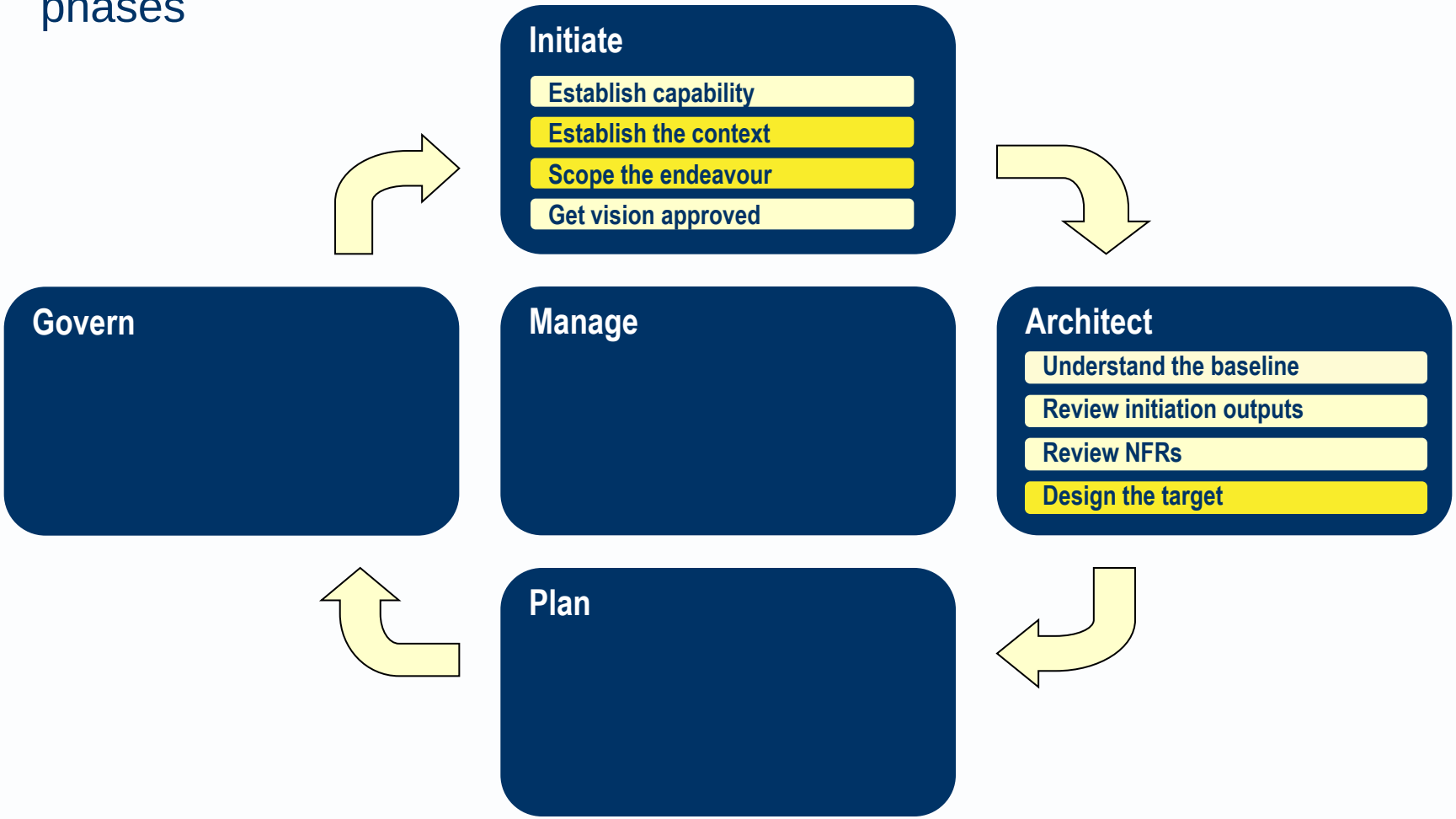
Very few attempt to design a business from the top down. But people do use these ideas and techniques in a piecemeal fashion

Avancier Methods
Enterprise Architecture

Design target business architecture
(using TOGAF artefacts)

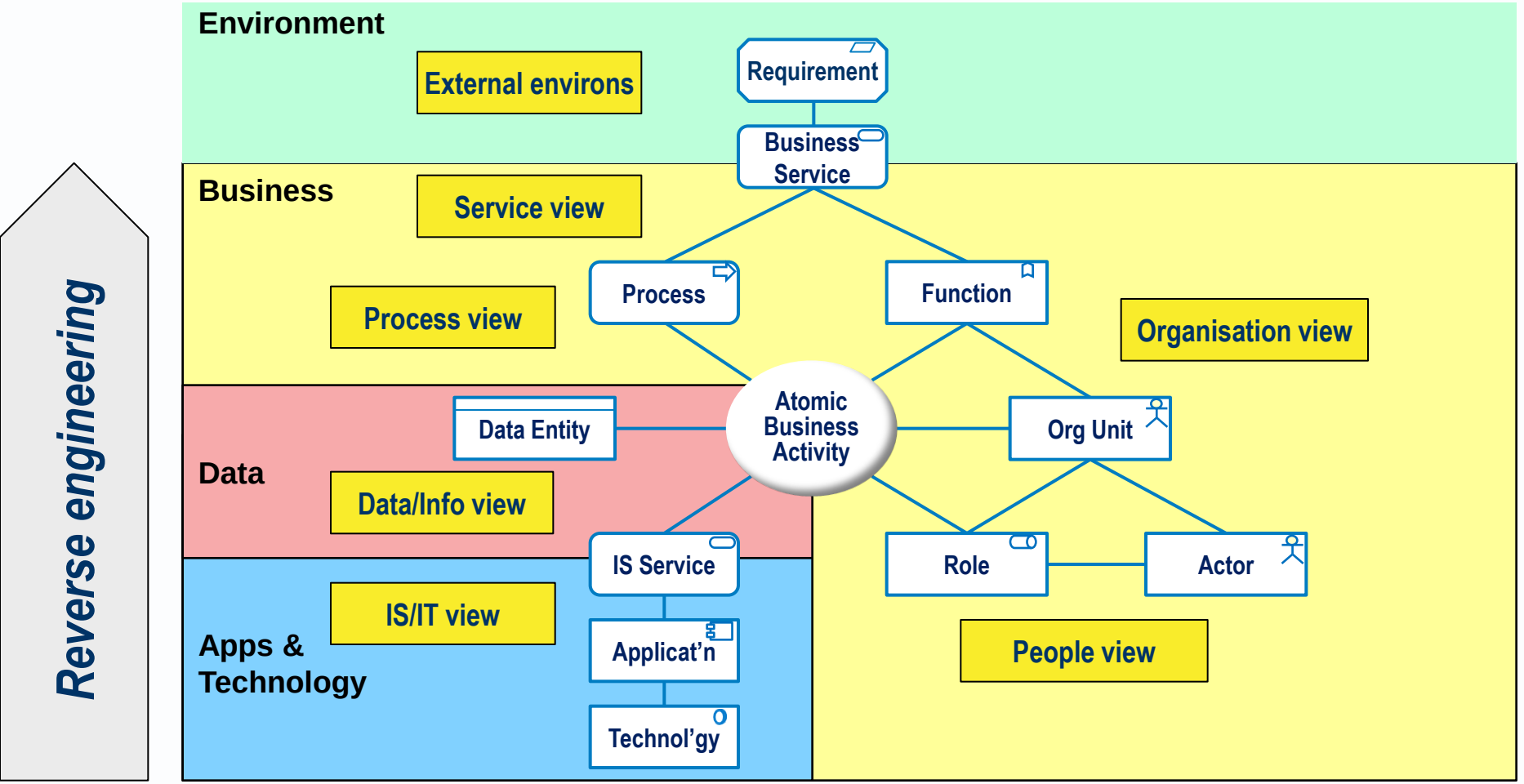
Design the target architecture

- May be started in Initiate phase and completed in the Architect phases



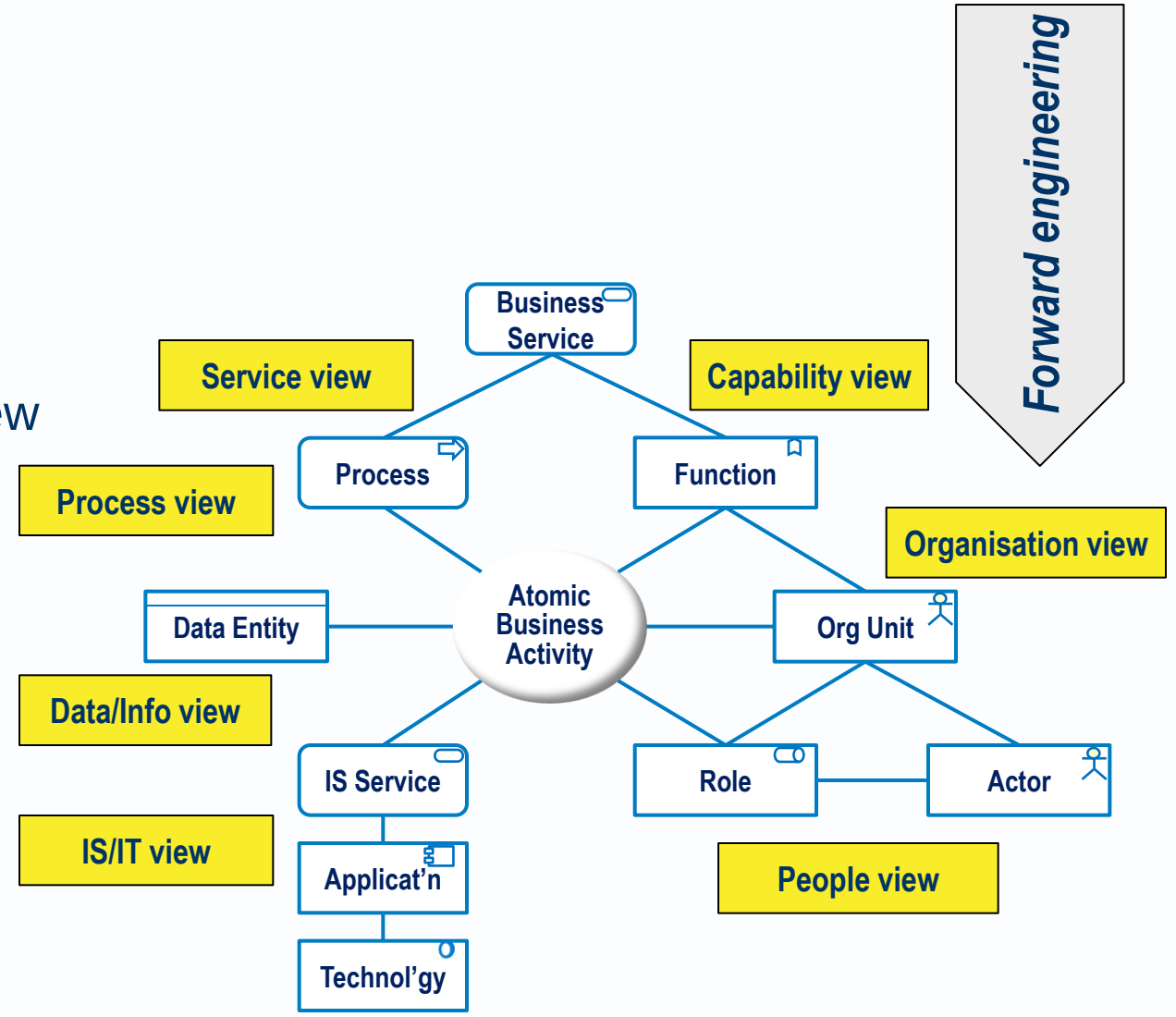
Skills Framework for the Information Age suggests 7 views

- The 7 views can be centered on the Atomic Business Activities



Design the target architecture

1. Agree the motivations
2. Form a service view
3. Form a process view
4. Form a capability view
5. Form a people view
6. Form an organisation view
7. Map to data/info view
8. Map to IS/IT view

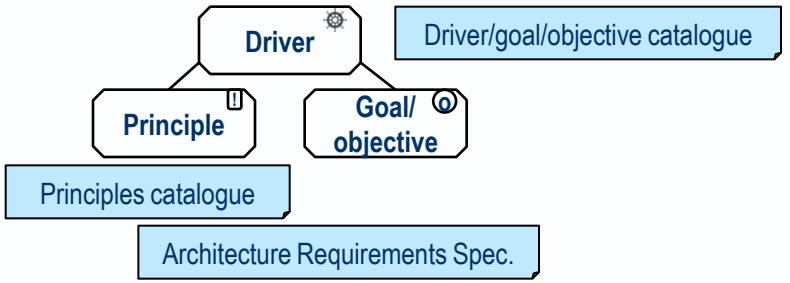


1. Agree the motivations

Avancier

Study motivations

- Drivers: SWOT, PESTLE
- Directives: Principles, Policies, Rules
- Aims: Goals, Objectives, Requirements



Baseline problems and opportunities

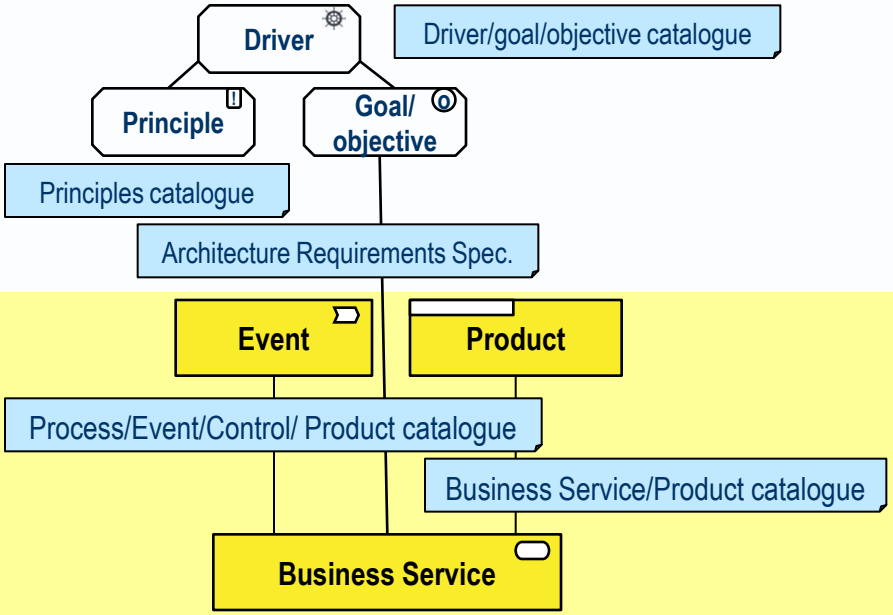
- Overlaps between services provided by functions
- Gaps where the provided service is not the truly required service
- Delays in hand-overs between activities
- Opportunities to increase parallel processing

And target requirements

- Identify the processes that distinguish you competitively
- Envision your customer's experience as it ought to be
- Decide how you would like your company to grow
- Define services to be provided by the new business

2: Form a service view

- A raison detre of a business is to provide services
- Services can be defined at any level of business system decomposition



Barber Services

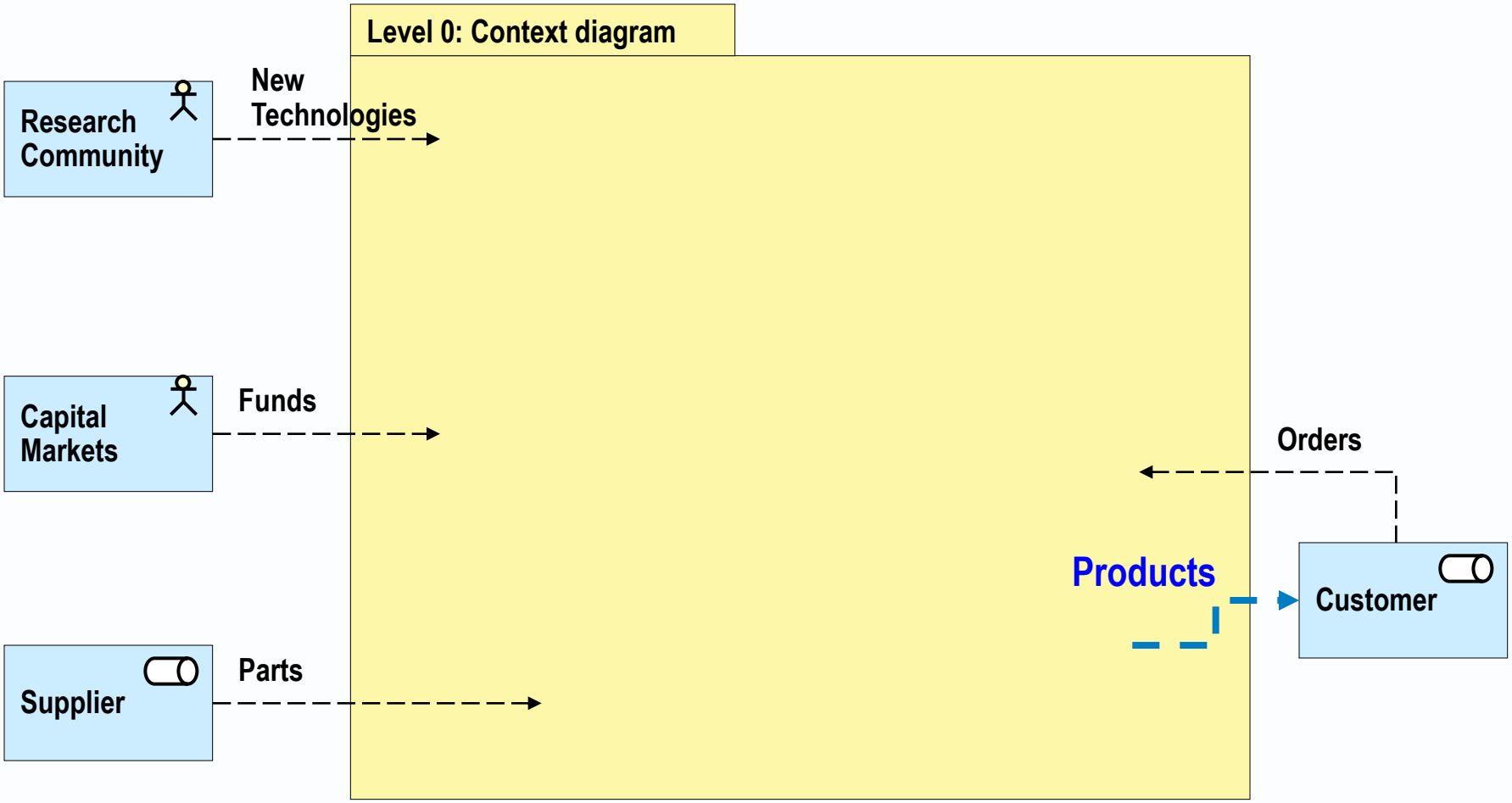
Hair cut – £20
Shave - £5
Manicure - £10

Logistics Services

Delivery
Express delivery
Recorded delivery

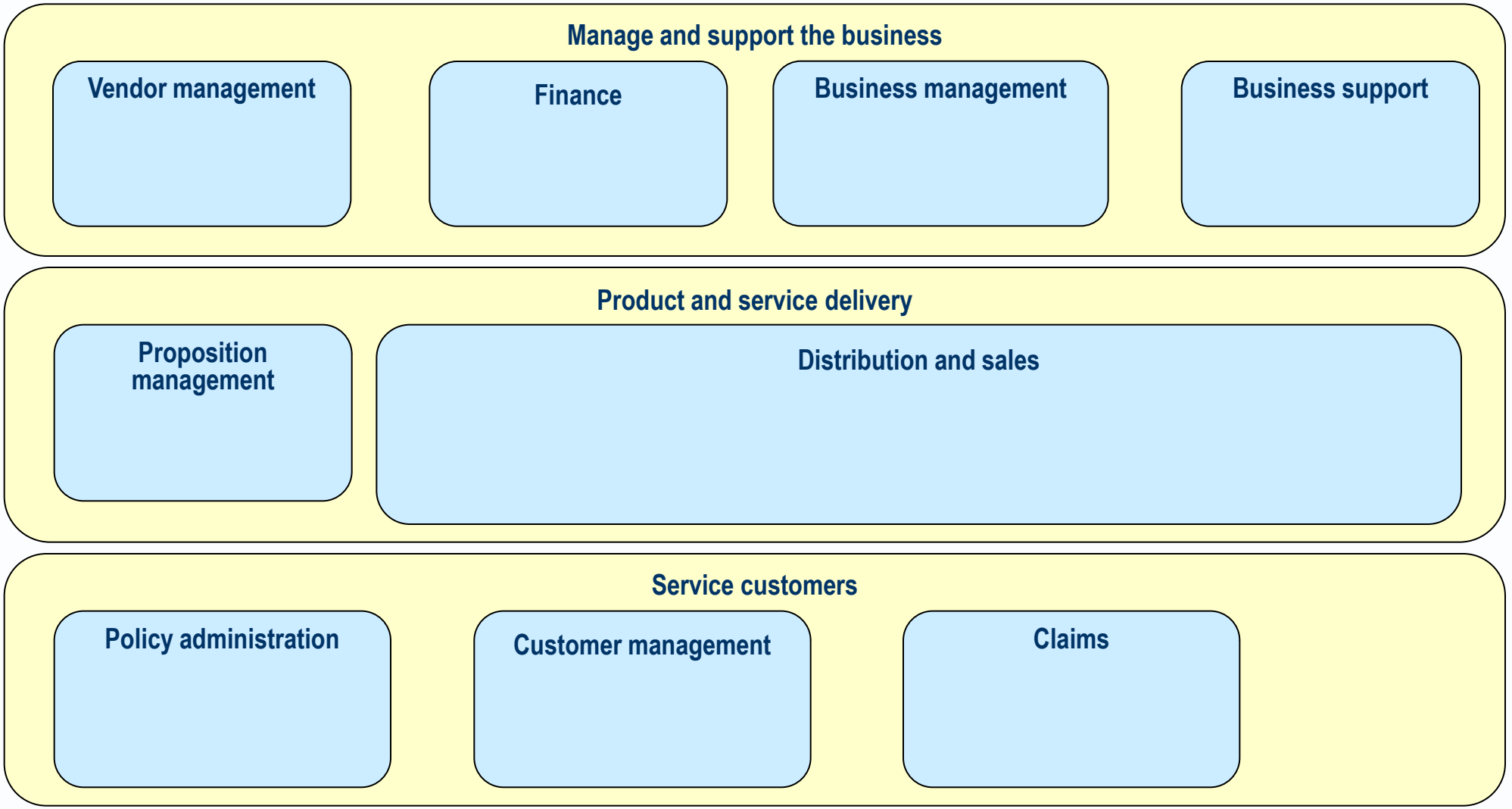
Level 0: Define external services

- Identify your customers and what services they want.
- Identify your suppliers



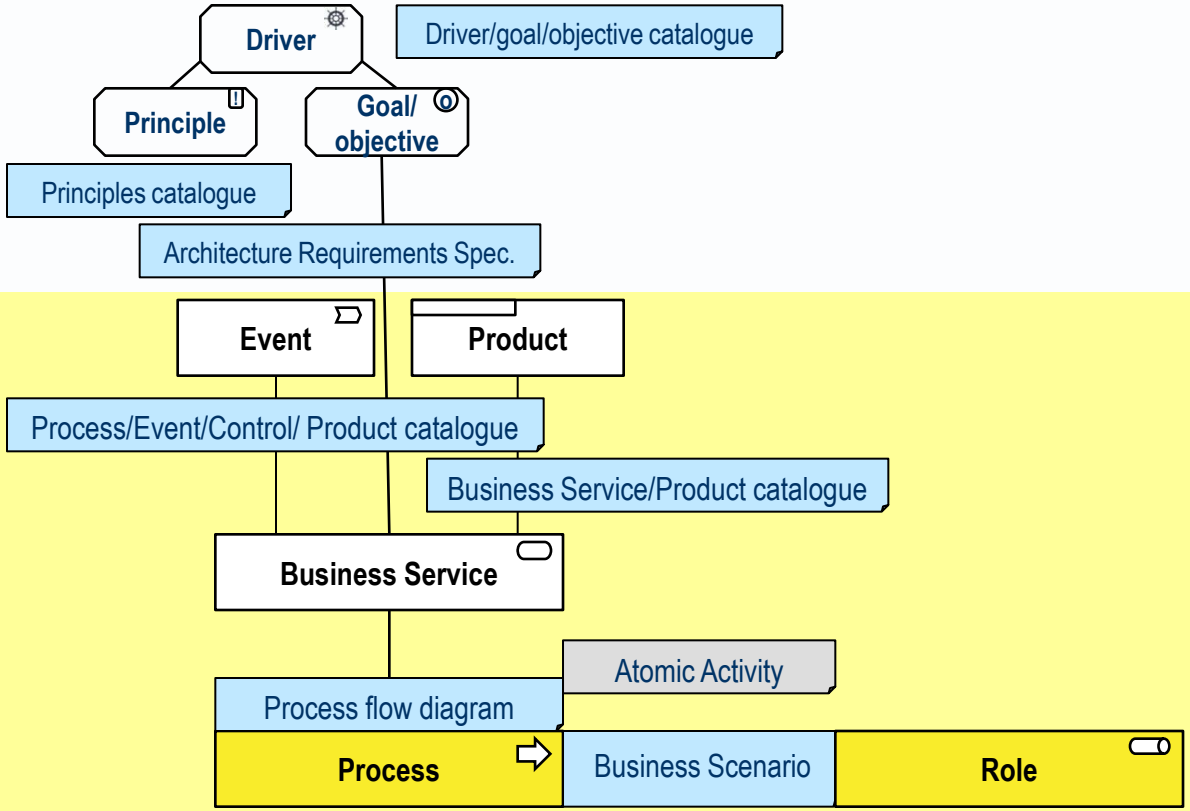
Form a level 1 capability map

Avancier



3. Form a Process view

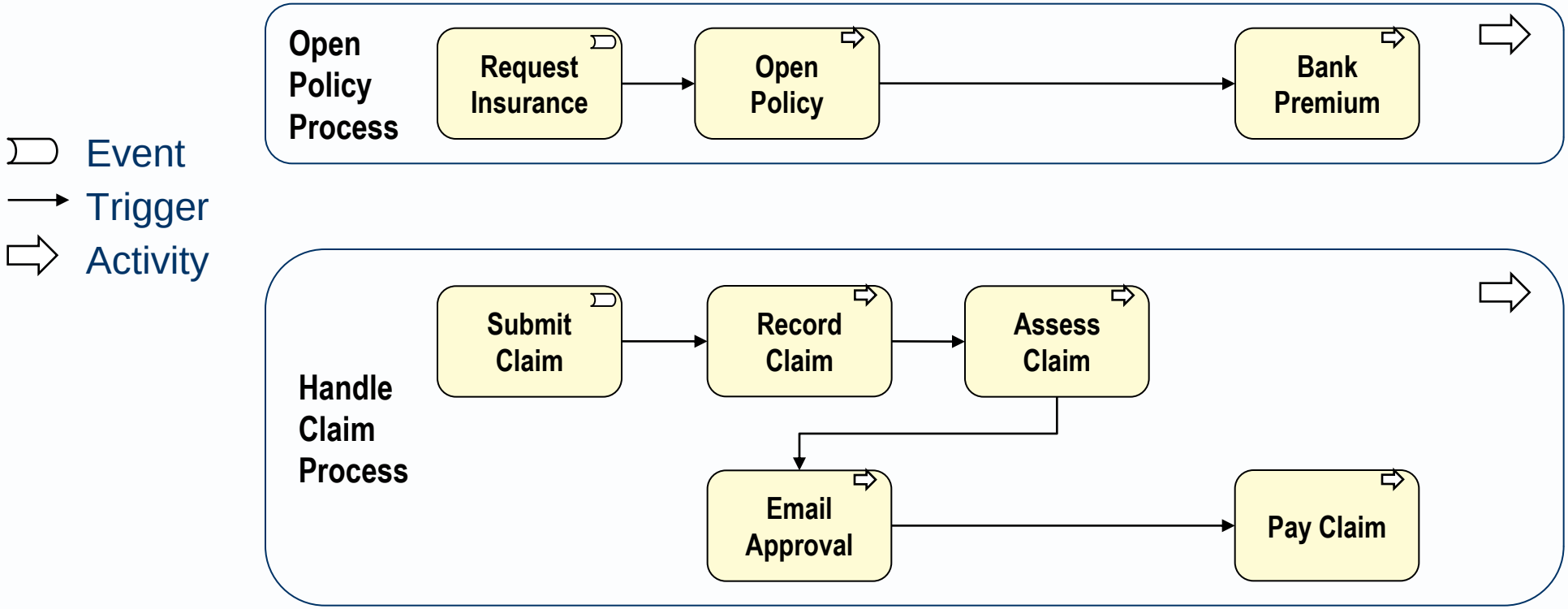
- Define the Processes to yield the products and services, with reference to the Roles involved (Scenario Design)



Avancier

Form a Process view

- For each business service
- Define the business process that results in that service
- Define activities in a sequence leading to the delivery of a required service



Process design is a creative activity

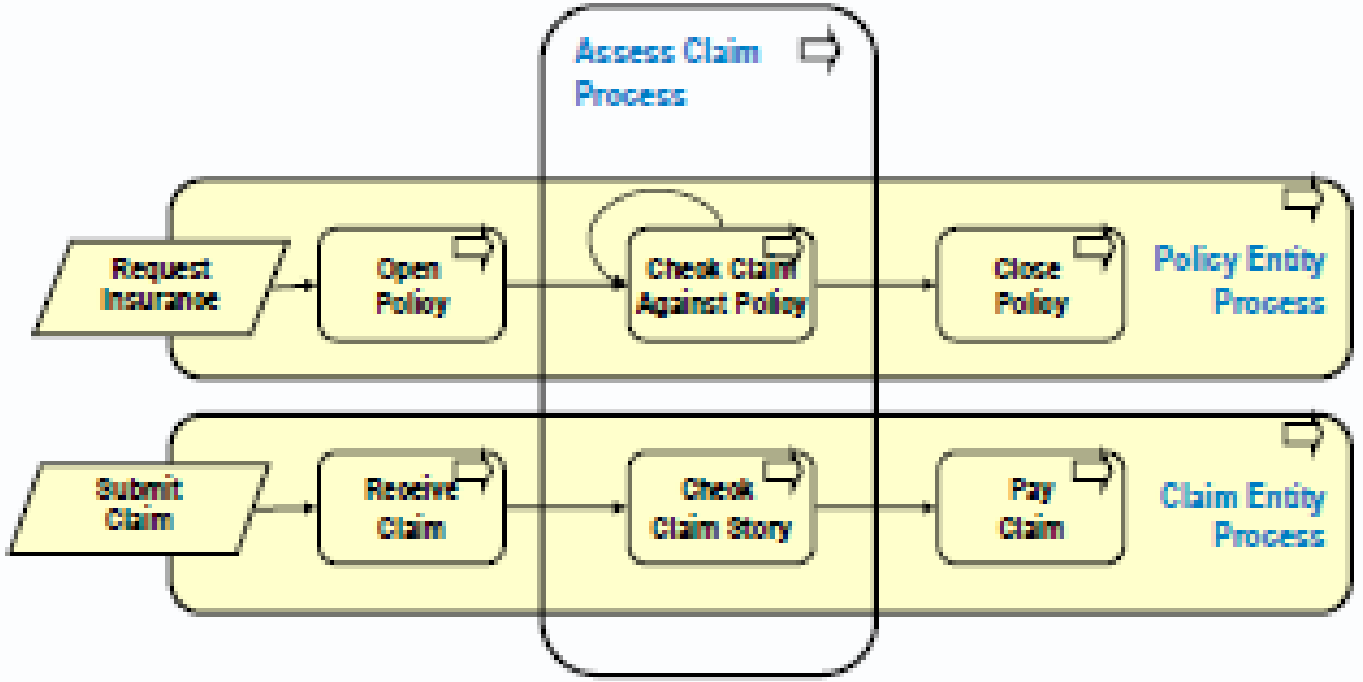
Avancier

- To deliver a required service,
- You design the required business process(es),
- You might copy and tailor a similar process
- But invention is needed and choices must be made

- Who will do what?
- Where will the process be supported by IT?
  - What technologies can be used?
- Where will the automation boundary be?
  - Where will applications be used to store or retrieve data?
  - Where will applications automate tasks (e.G. Route planning)
- How will exceptions be handled?
- How will governance processes monitor and control the essential business process activities?

Coordinating long-running process

- Processes are related not only by hierarchical composition
- Long-running processes (aka workflows, cases or entity life histories)
- Are coordinated by short-running event-triggered processes

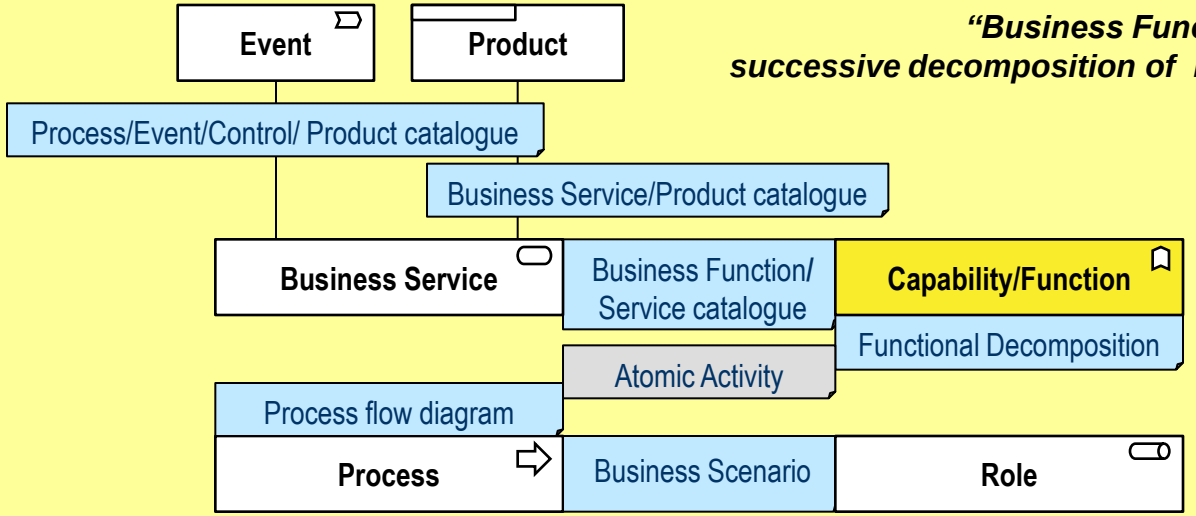


When to stop?

- Nobody completes a functional decomposition structure to the level of executable instructions!
- The function hierarchy usually stops at a high (3rd or 4th) level
  - It is rare to define more than 800 bottom level activities
- Some process models descend to a lower (5th or 6th) level
  - It is common to stop when you reach activities that
    - are one-person, one place, one time (OPOPOT) activities.
    - can be mapped to the data created and used
- Stop at a higher level if analysis and design effort is constrained

4. Form a Capability/Function View

- **Buy or build** a *logical* structure over Atomic Activities
- "The level and rigor of decomposition needed varies from enterprise to enterprise" TOGAF

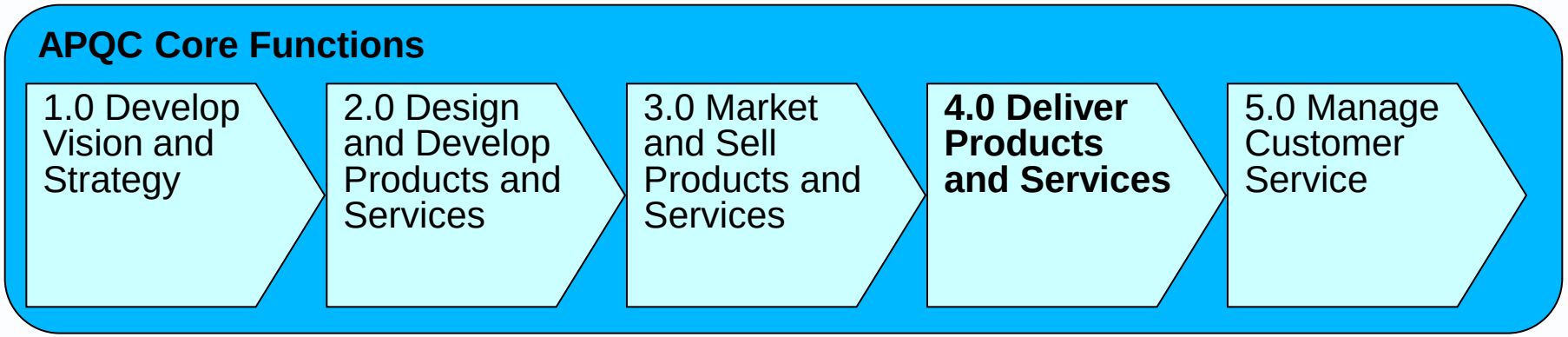


"Business Functions — a detailed, recursive step involving successive decomposition of major Functional areas into sub-Functions."
TOGAF 8.5

Buy and adapt a reference model to suit your business?

Avancier

- APQC – for a commercial enterprise (below)
- BIAN – for a bank (next slide)
- SCOR – for a supply chain business
- Proact – for a retail business



4.0 Deliver Products and Services

- 4.1 Plan for and acquire resources (Supply Chain Planning)
- 4.2 Procure Technology and services
- 4.3 Produce/Manufacture/Deliver product
- 4.4 Deliver product service to customer
- 4.5 Manage logistics and warehousing

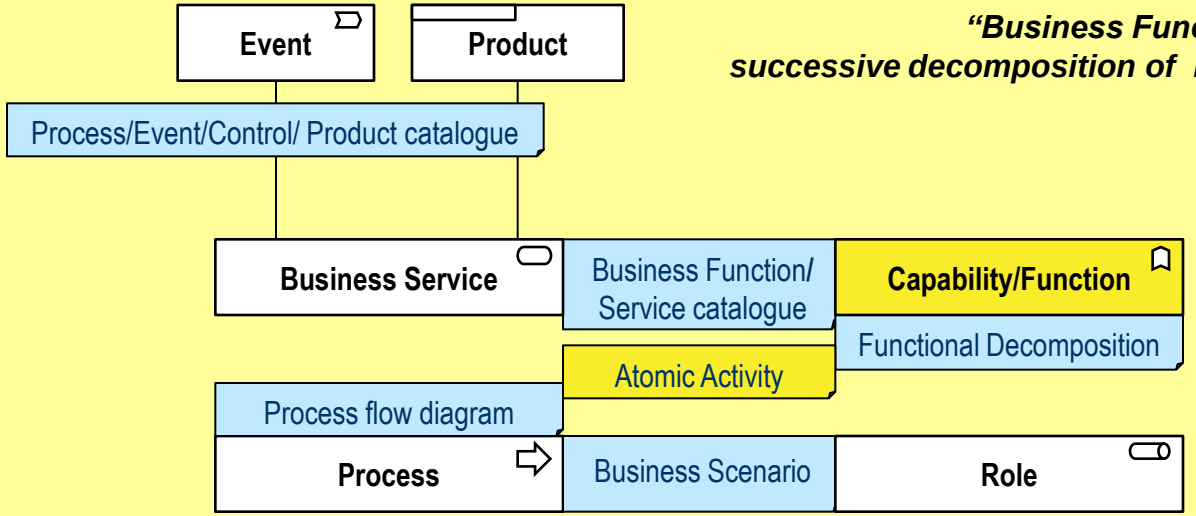
Buy one? E.g. a business function/capability hierarchy for a bank

Avancier

The BIAN Service Landscape V2.5

Build one? Cluster activities into business Functions

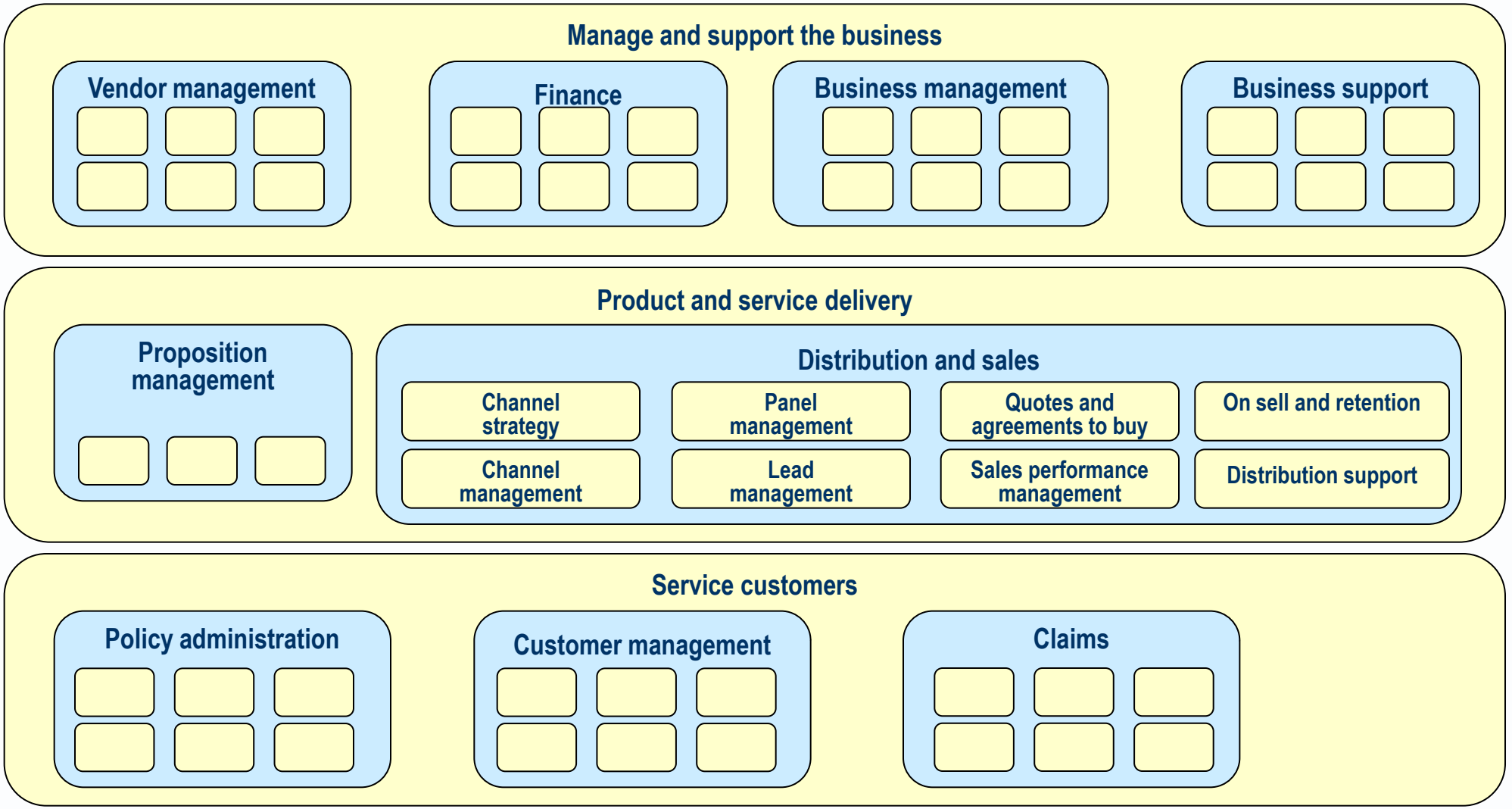
- Group Atomic Activities into logical Functions using some affinity criterion.
- Group lower level Functions into higher level Functions
- So each Function a logical subdivision an enterprise's capability
  - Definable externally by the services it provides
  - Definable internally by the activities required to deliver those services



"Business Functions — a detailed, recursive step involving successive decomposition of major Functional areas into sub-Functions."
TOGAF 8.5

Function Decomposition OR Capability Map

Avancier



Managing large structures with many elements

Avancier

- What if the structure is or would be too large to manage?

- Narrow the focus to activities that
  - Are frequent
  - Are carried out by many actors
  - Create or use business data

- Relax the OPOPOT rule
  - List composite activities
  - Model lower-level activities only in process flow models

Improving a top-down decomposition structure

- High level abstract models are never right first time.

- Alternately elaborate and abstract
- To ensure that a higher level model is well formed
  - a manageable and accurate abstraction of lower levels
  - contains elements at a consistent level of granularity
  - shows what is more important to the viewer
  - hides what is less important to the viewer

Bottom-up composition

- When you group activities into higher-level business functions
- Since there are several possible cohesion criteria
  - Data created
  - Skills required
  - Materials or technology needed
- You could end up with what some call a *multi-archy*
  - A forest of different hierarchical tree structure

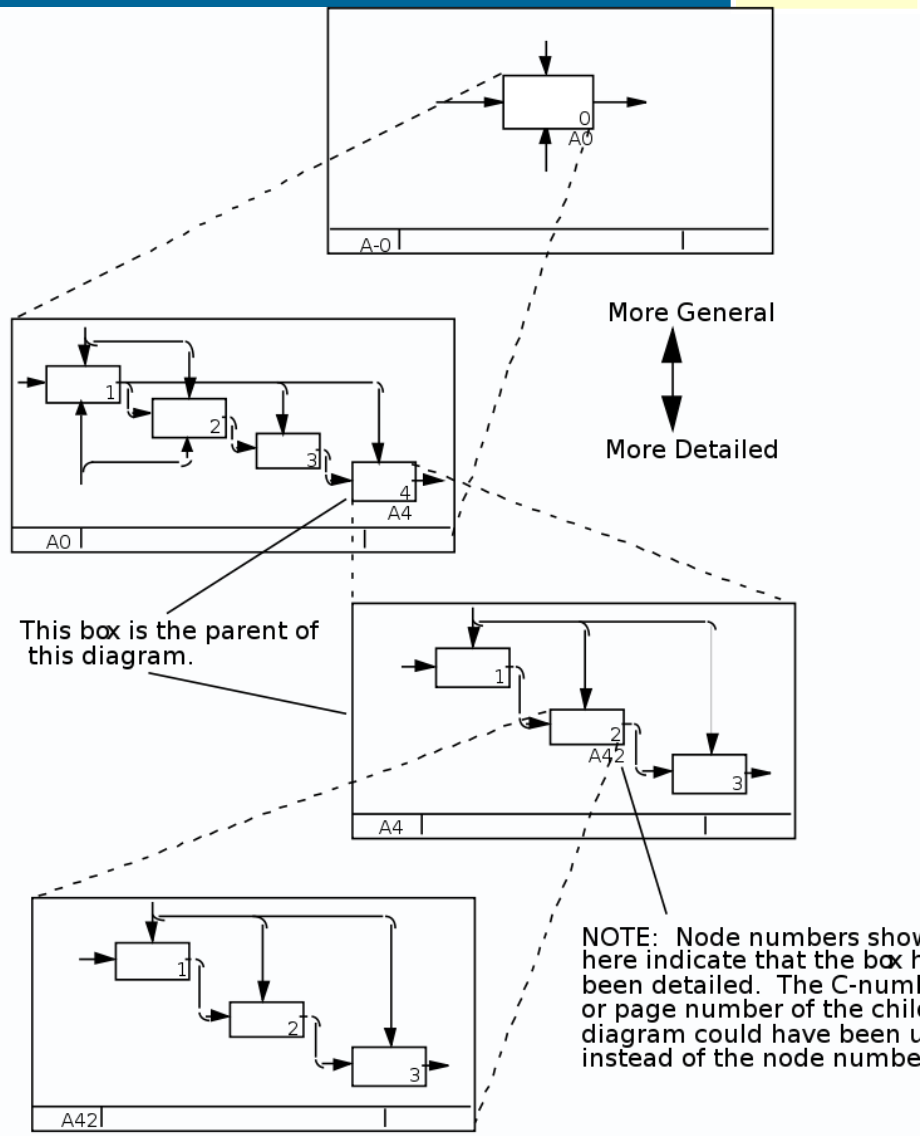
What if there is more than one candidate hierarchy?

Avancier

- That is normal
- You can maintain several logical hierarchies if stakeholders want to see the business classified in several ways
- But choose one as your ***primary hierarchy*** that
  - speaks to most people
  - is stable enough
  - can be used catalogue other things (e.g. applications)

Clasical top-down decomposition

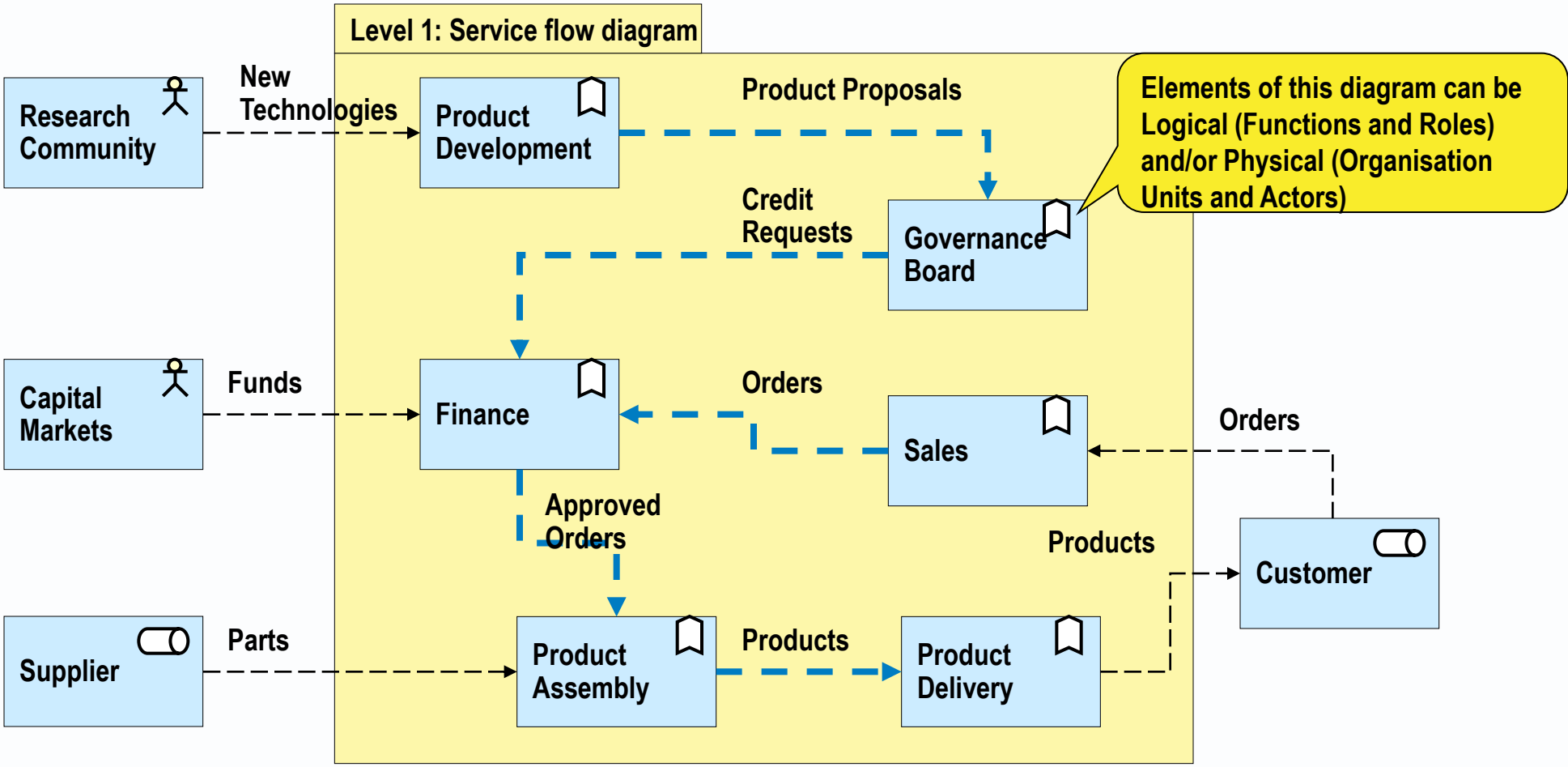
- Decompose level 0 into level 1 capabilities/functions
- Define inter-function services and flows
- Decompose level 1 capabilities/functions into level 2
- Define inter-function services
- Etc.



- "6 Decomposition Structure" by itl.nist.gov - FIPS Publication 183. Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:6_Decomposition_Structure.svg#/media/File:6_Decomposition_Structure.svg

Level 1: Define internal services

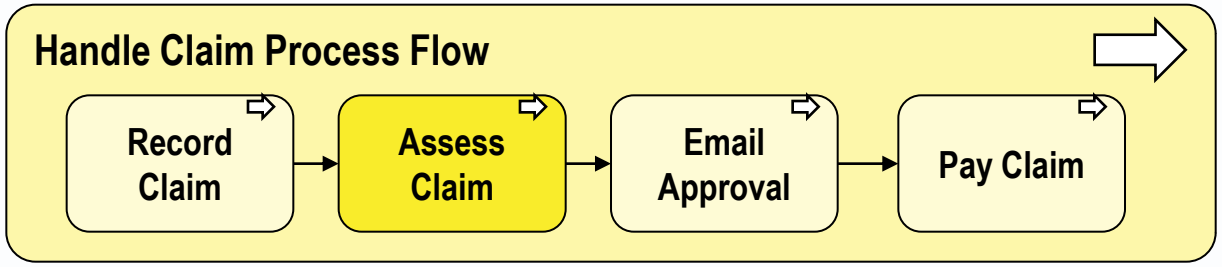
- What flows between nodes within the system and to/from external entities?
- Link the nodes - differentiating material and information flows.



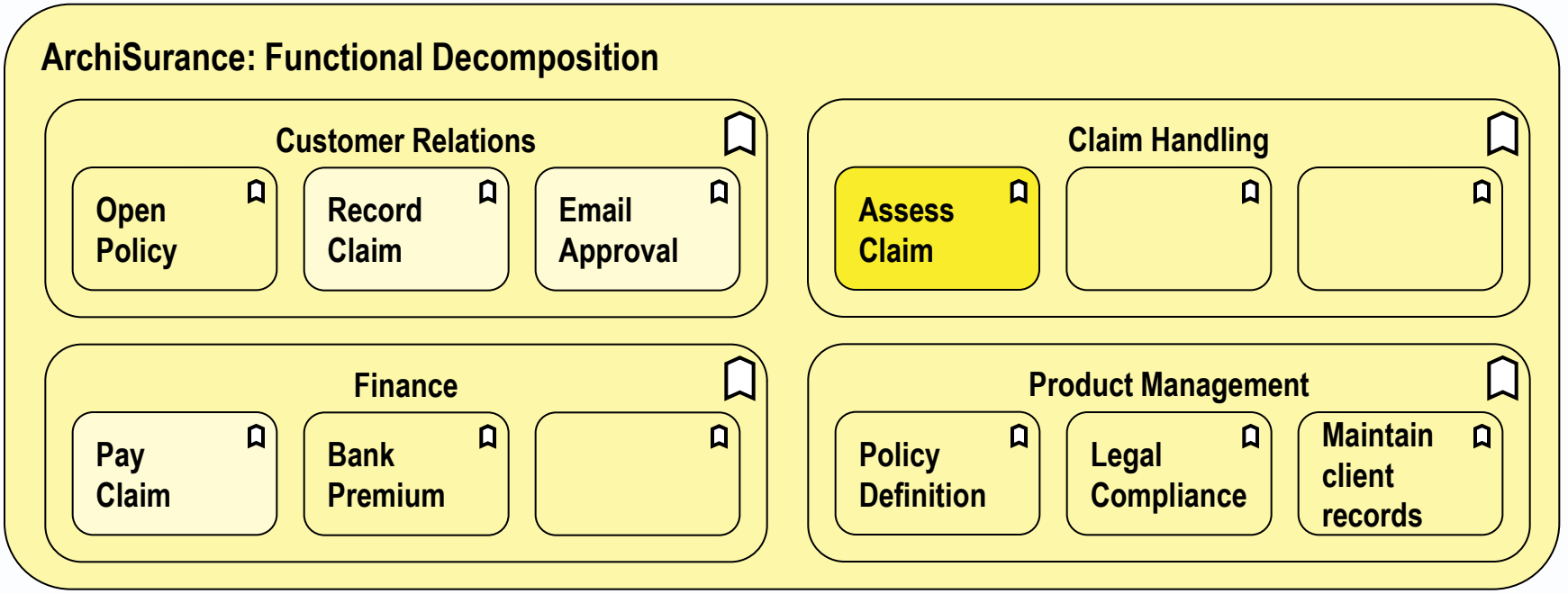
Map atomic process steps to business functions

Avancier

Atomic Business Processes



May be placed under a Functional Decomposition as *Atomic* Business Functions



Avancier

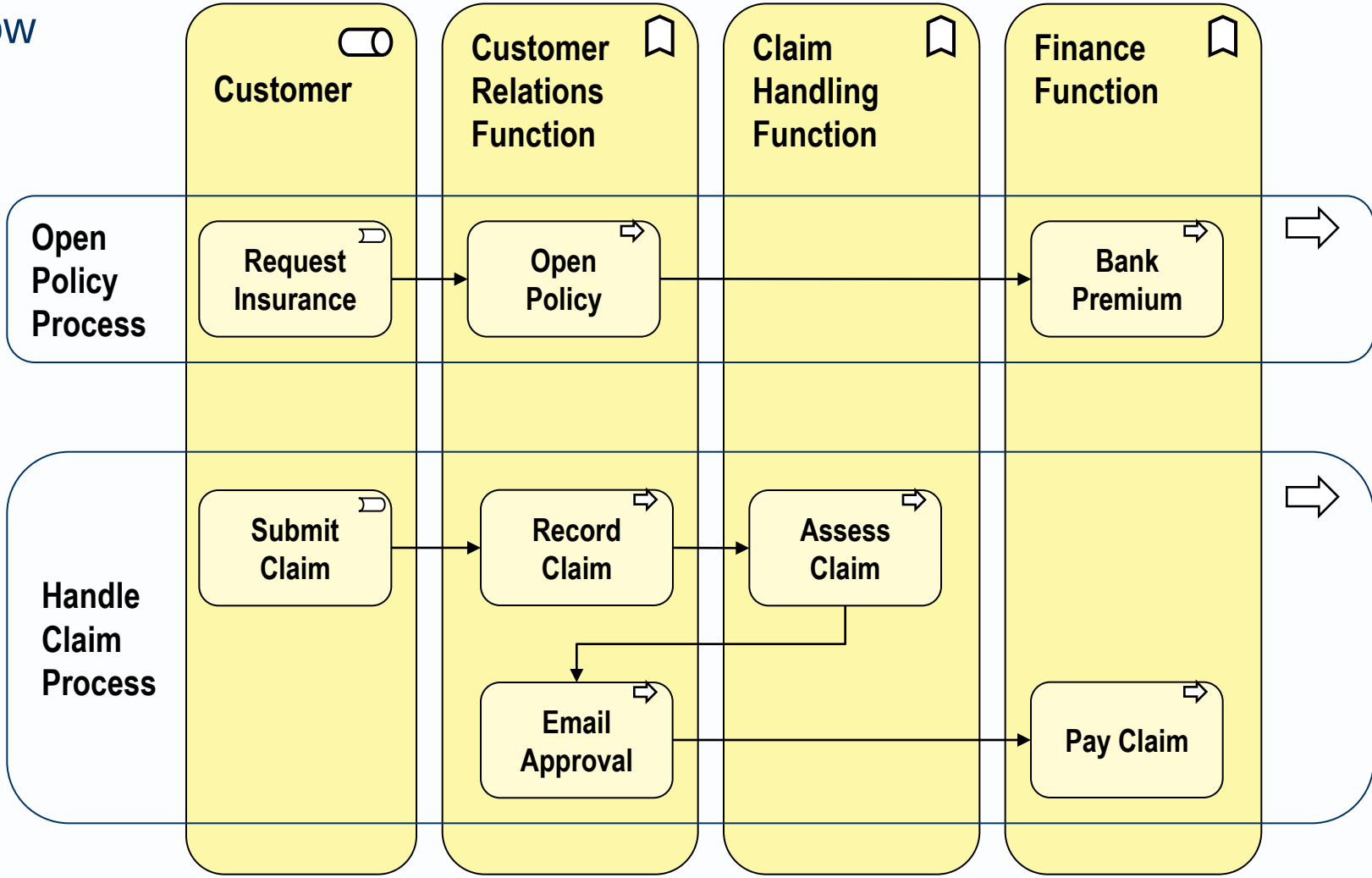
Map Processes to Capabilities/Functions

Swim lanes show Structure

- Actor
- Role or
- Function

Arrows show Behaviour

- Event
- Trigger
- Activity

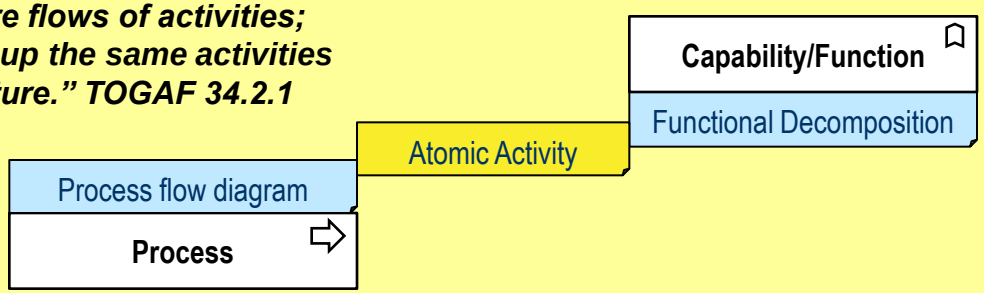


Complete correspondence is a theoretical possibility

- Each atomic Process could be placed as an atomic Function
- **But almost nobody gets complete their models.**
- The Function hierarchy usually stops at a high (3rd or 4th) level
- Some Process models descend to a lower (5th or 6th) level.
  - one-person, one place, one time (OPOPOT) activities.
  - can be mapped to the data created and used

Function / Process	Cust. Relat'ns	Claims	Finance
Open Policy	Open Policy		Bank Premium
Handle Claim	Receive Claim	Assess Claim	Pay Claim

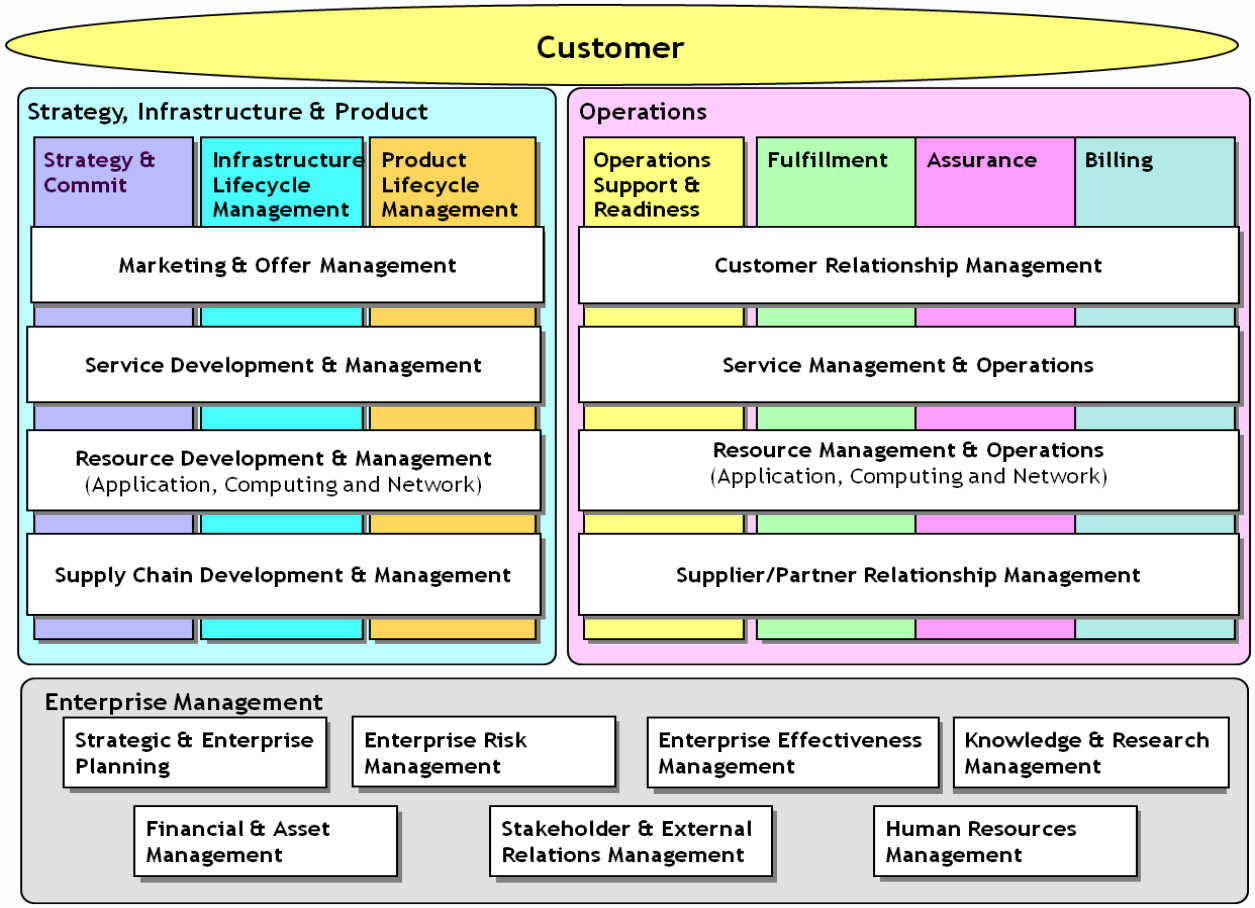
"Processes are flows of activities; Functions group the same activities under a structure." TOGAF 34.2.1



Build a top-level business process map

- Shows the main Processes supported or executed by the business system
- May be arranged in swim lanes – by phase, Function/Capability or organisation unit

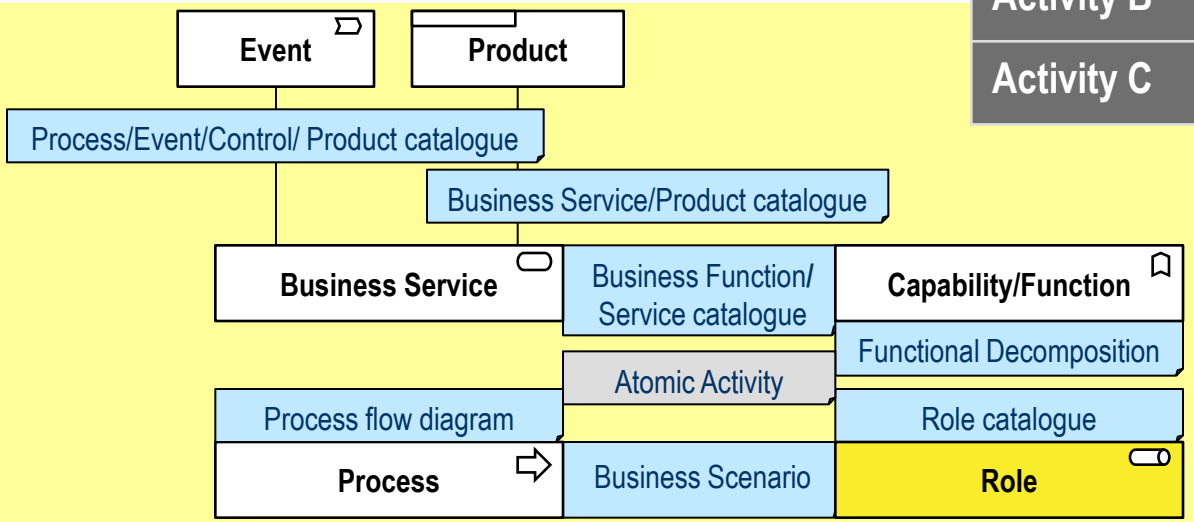
- E.g. TMF eTOM



5. Form a people view

- A Role is a group of activities that is performable by one Actor - by virtue of the abilities required.

Role / Process	Role A	Role B
Activity A		Accountable
Activity B	Responsible	Consulted
Activity C		Involved

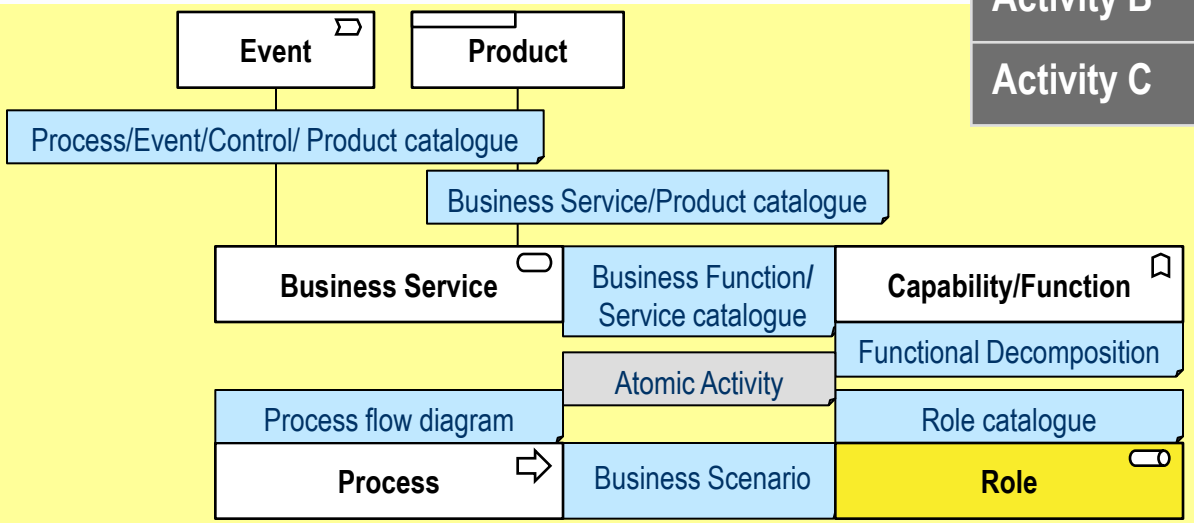


Map Atomic Activities to Roles

Avancier

- Consider all the Roles involved in Process steps

Role / Process	Role A	Role B
Activity A		Accountable
Activity B	Responsible	Consulted
Activity C		Involved



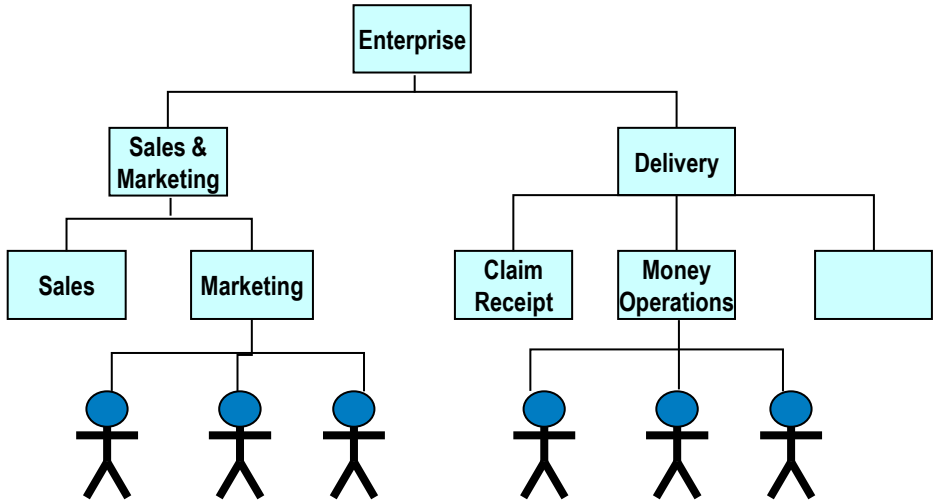
Clustering Activities by responsible Role

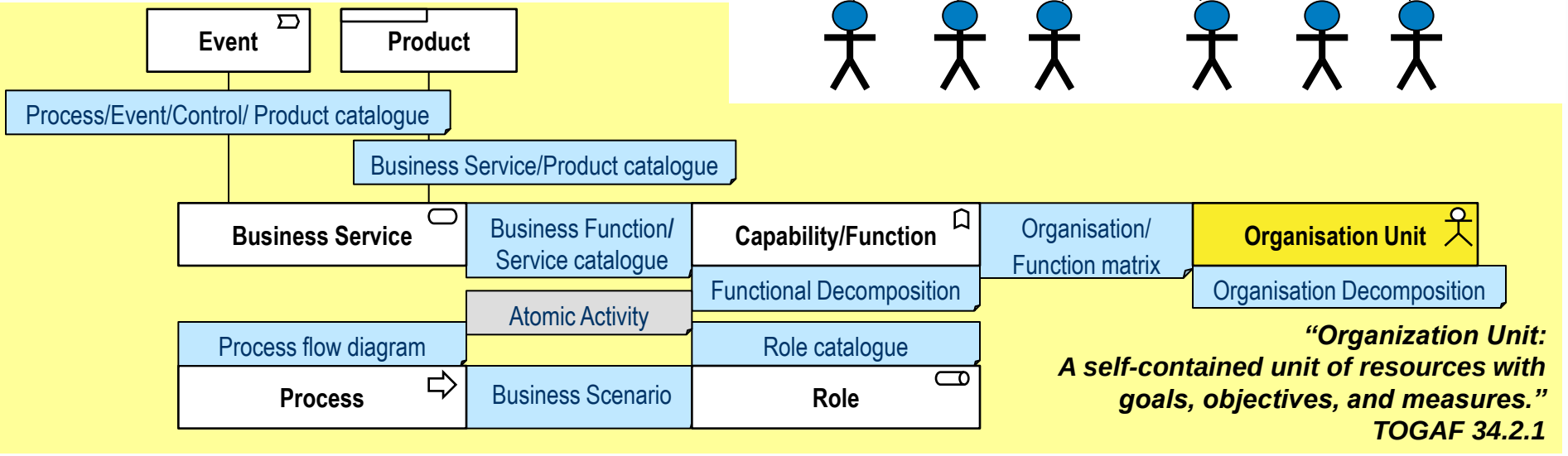
- Bob Jarvis clustered this Role-Activity RACI matrix by responsibility (R)

Role \ Activity	General Accounting	Cost Planning	Budget Accounting	Financial Planning	Risk Management	Planning	Business Planning	Organisation Analysis	Review and Control	Purchasing	Receiving	Inventory Control	Shipping	Equipment Performance
Controller	R	R	R	R	R	C	C	C	C	I	I	I	I	
Division Lawyer					R		C	C						
Planning Director		C		C	C	R	R	R	R					
Purchasing Manager		C	C							R	R	R	R	R
Plant Operations Director		C	C			I				R	R	R	R	R
Production Planning Director		C	C			C				C	C	R	C	R
Facilities Manager						C	C			C	C	C	C	R
Materials Control Manager		C	C							C	R	R	R	
Treasurer	C	C		C	C									

6. Form an Organisation view

- The documented management structure may well stop short of the people employed .





"Organization Unit:
A self-contained unit of resources with goals, objectives, and measures."
TOGAF 34.2.1

Designing an organisation structure

Avancier

- Devise a target organisation that will
  - Manage the roles that
  - Perform the activities that
  - Provide the business services,
  - Meeting long-term cost and non-functional requirements

- Cluster Activities that
  - Deliver the same Product or Service
  - Serve the same Customer Type
  - Need the same Inputs (goods, services)
  - Need the same Resources (data, skills or equipment)
  - Work in the same place (Region or Location)
  - Can be managed by a single Manager

Three issues

- Functional Decomposition versus Functional Organisation
- Hierarchical versus Matrix Management
- The impact of non-Functional Organisation structures on EA

Functional *Decomposition* versus Functional *Organisation*

Avancier

- Functional Decomposition is supposed to be independent of the Organisation Decomposition management, *even if they have the same structure.*

Organisation Function	Marketing	Sales	Delivery
Marketing	Activity		
Sales		Activity	
Delivery			Activity

- The two structures may be same or very similar where the enterprise adopts what is called a Functional Organisation structure, in which
  - Employees are grouped in a hierarchy under headings such as Marketing, Sales, Delivery, Accounting and IT.
  - Each Functional department manager controls a budget.
  - Each employee has one clear reporting line upwards.
  - Cross-department projects are possible, but much communication in such a project must pass through the department heads.
- The two structures are more likely different where the management hierarchy is divided according to region, or customer type, or product type, or project.

Hierarchy versus Matrix Management

- The term Organisation Decomposition term implies a hierarchy.
- Many modern enterprises appear to have a matrix management structure.
- The classic matrix management structure is Function against Product.

Function Product	Marketing	Sales	Production
Petrol			
Paints			
Plastics			

- You might replace Product by Project, Service, Customer Type or Region.

- How do we define “Organisation Units” in such a case? Do we need to define them at all?

The impact of non-Functional Organisation structures on EA

Avancier

- It isn't the job of the EA team to shape the organisation structure
- But the politics, problems and possibilities of EA are much affected by it.

Project characteristics	Organizational structure				
	Functional	Matrix			Projectized
		Weak	Balanced	Strong	
Project manager's authority	little or none	limited	low or moderate	moderate to high	high to near total
Resource availability	little or none	limited	low or moderate	moderate to high	high to near total
Who controls the project budget	functional manager	functional manager	mixed	project manager	project manager
Project manager's role	part time	part time	full time	full time	full time
Project manager's administrative staff	part time	part time	part time	full time	full time

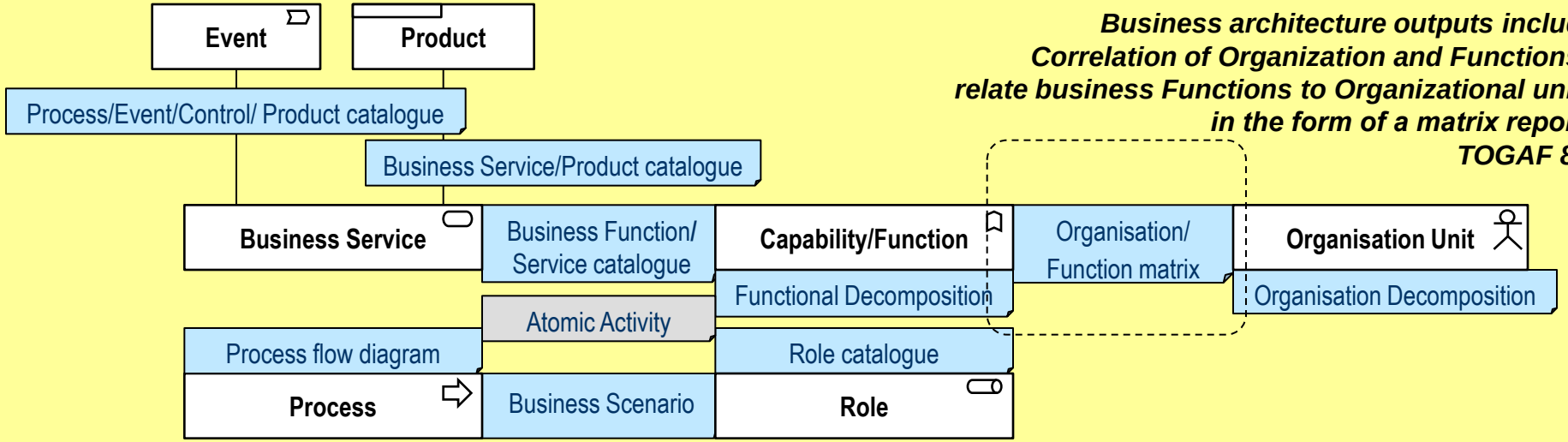
- http://www.managementtutor.com/difference-between/difference-between-functional-projectized-matrix-organization-structure.html

Map Functions to Organisation Units

Avancier

- Structured Analysis: “Identifies the key business Functions within the scope of the architecture, and maps those Functions onto the Org units within the business.” TOGAF 8.4.1

Organisation / Function	Petrol	Paints	Plastics
Marketing	Activity	Activity	Activity
Sales	Activity	Activity	Activity
Delivery	Activity	Activity	Activity

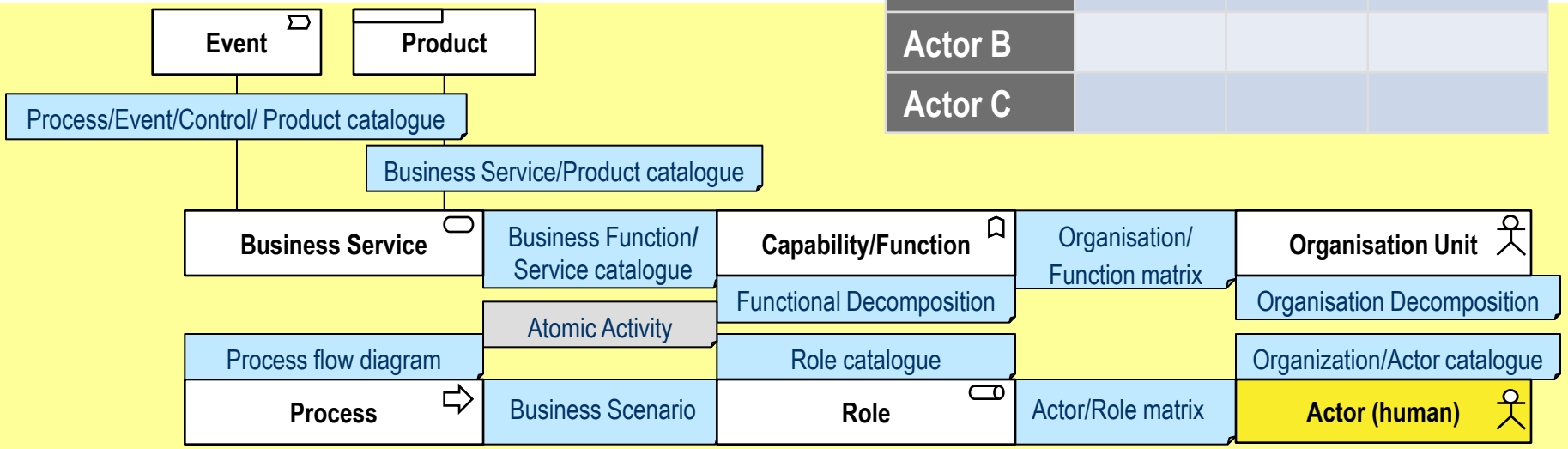


Business architecture outputs include Correlation of Organization and Functions - relate business Functions to Organizational units in the form of a matrix report” TOGAF 8.5

EA usually models Roles rather than Actors

- Model Roles rather than individual Actors, except perhaps where a Role is performed by only one Actor.
- The recruitment and deployment of actors is usually outside the remit of EA, perhaps the responsibility of a Business Change team

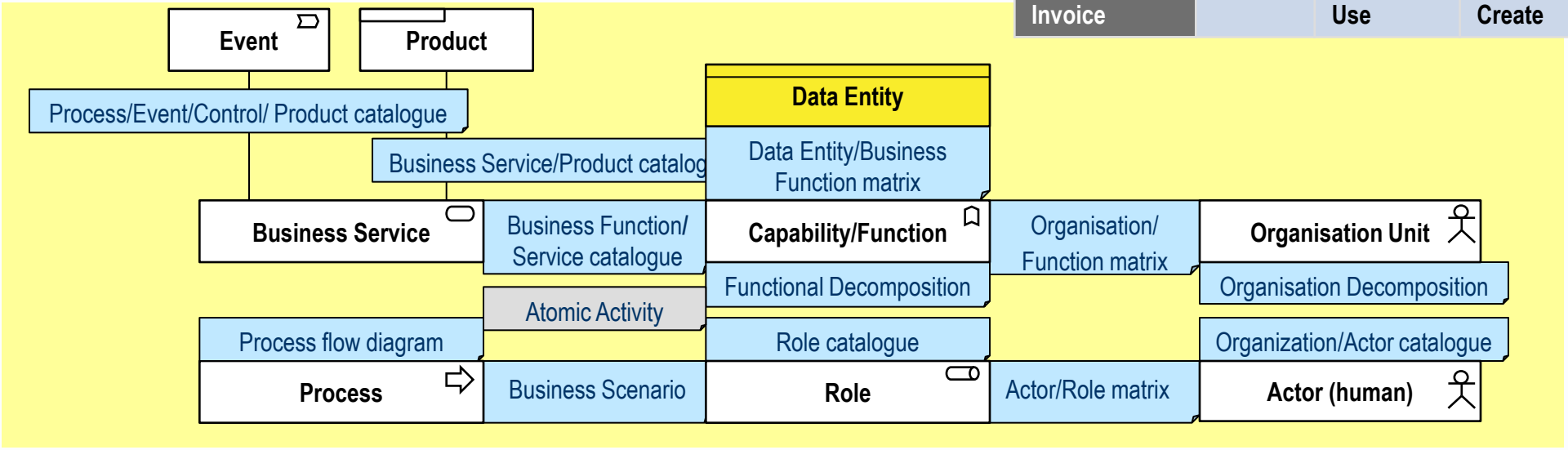
Role / Actor	Role A	Role B	Role C
Actor A			
Actor B			
Actor C			



7. Map to data/info view

- EA is concerned with Processes that **create and use data**
- Atomic Activities can be mapped to data entity types. E.g.
  - Product Type (SKU, Description, Unit Price, Warranty Period, Delivery Fee)
  - Product Instance (SKU, Instance Number, Supplier Id, Purchaser Id, Delivery Date).

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



Clustering activities by Data created

Avancier

- You can (for example) use data creation as a way to group activities performed by humans and/or computers

Activity / Data	Billing	Delivery	Sales	Reporting
Customer	Read	Read	Create	Read
Order	Read	Read	Create	Read
Delivery	Read	Create		Read
Invoice	Read	Create		Read
Payment	Create			Read
Report				Create

- The NW corner method sorts rows and columns by clustering them on a shared cell entry (here, Create)

Activity / Data	Sales	Delivery	Billing	Reporting
[illegible]	Create	Read	Read	Read
Order	Create	Read	Read	Read
Delivery		Create	Read	Read
Invoice		Create	Read	Read
Payment			Create	Read
Report				Create

Where is I/O data?

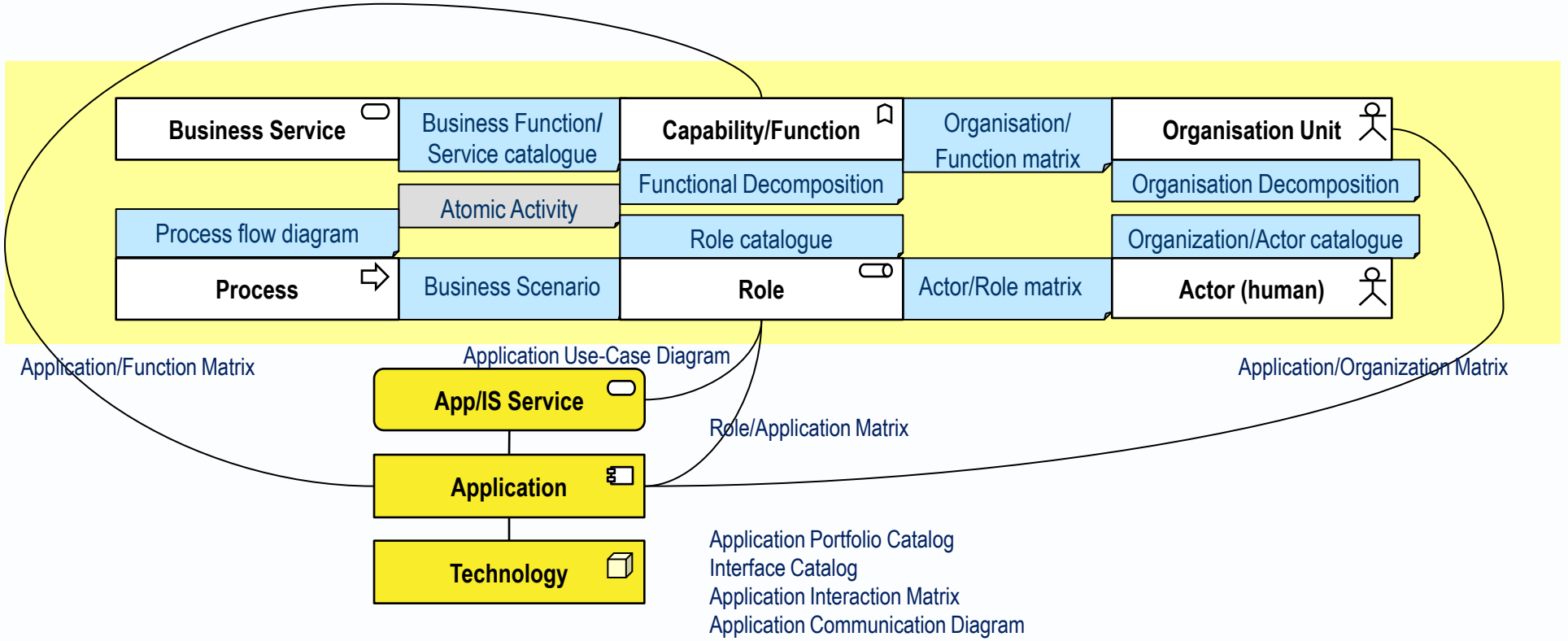
Avancier

- I/O data is defined in service contracts

Service Contract	Business Service	999
Signature	Name	Train seat booking
	Input	Journey details
	Output	Train ticket
Semantics or rules	Preconditions	Seat available
	Post conditions	Booking Payment authorised
Non-Functional Requirements	Response time	5 minutes
	Throughput	1,000 per second
	Availability	99.95%

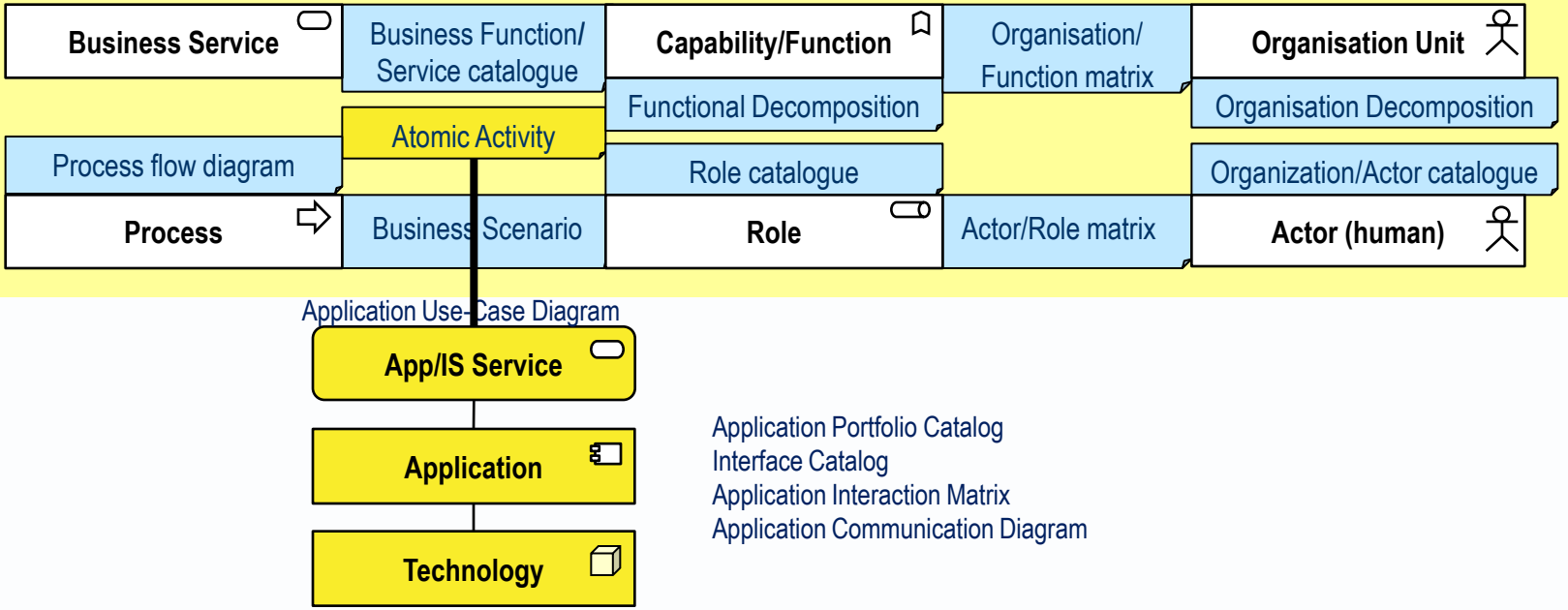
8. Map to IS/IT view

- Relate Business elements to IS Services (App Use cases) and Applications
- TOGAF offers several artefacts



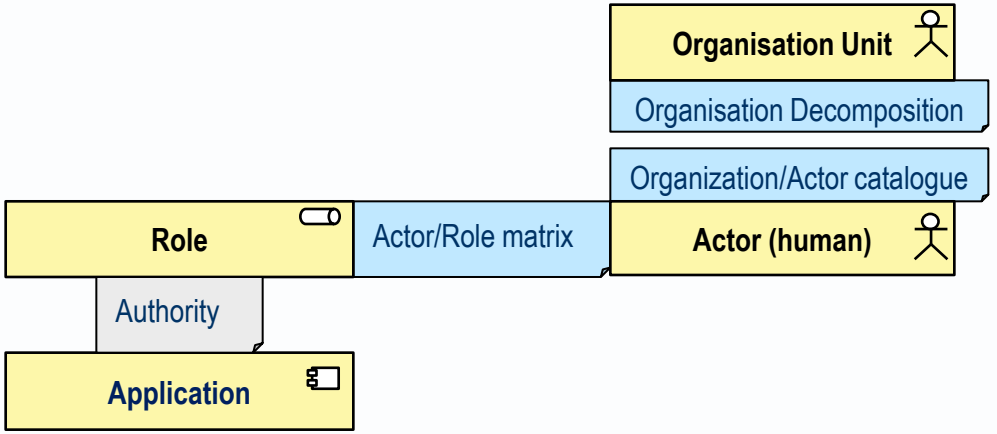
Alternative

- The "Atomic (Business) Activity" is central to the human and computer activity systems of interest to EA. Suppose it were agreed that a Process sequences Atomic Activities, a Capability/Function groups Atomic Activities needed to provide that Capabilty/Function's Services, a Role groups Atomic Activities performable by Actors with the abilities required for the Role? Then other architectural elements can be all related to Atomic Activity.



What can you realise in operational systems?

- A company directory, identity management or access control system may record and relate some of the entities below



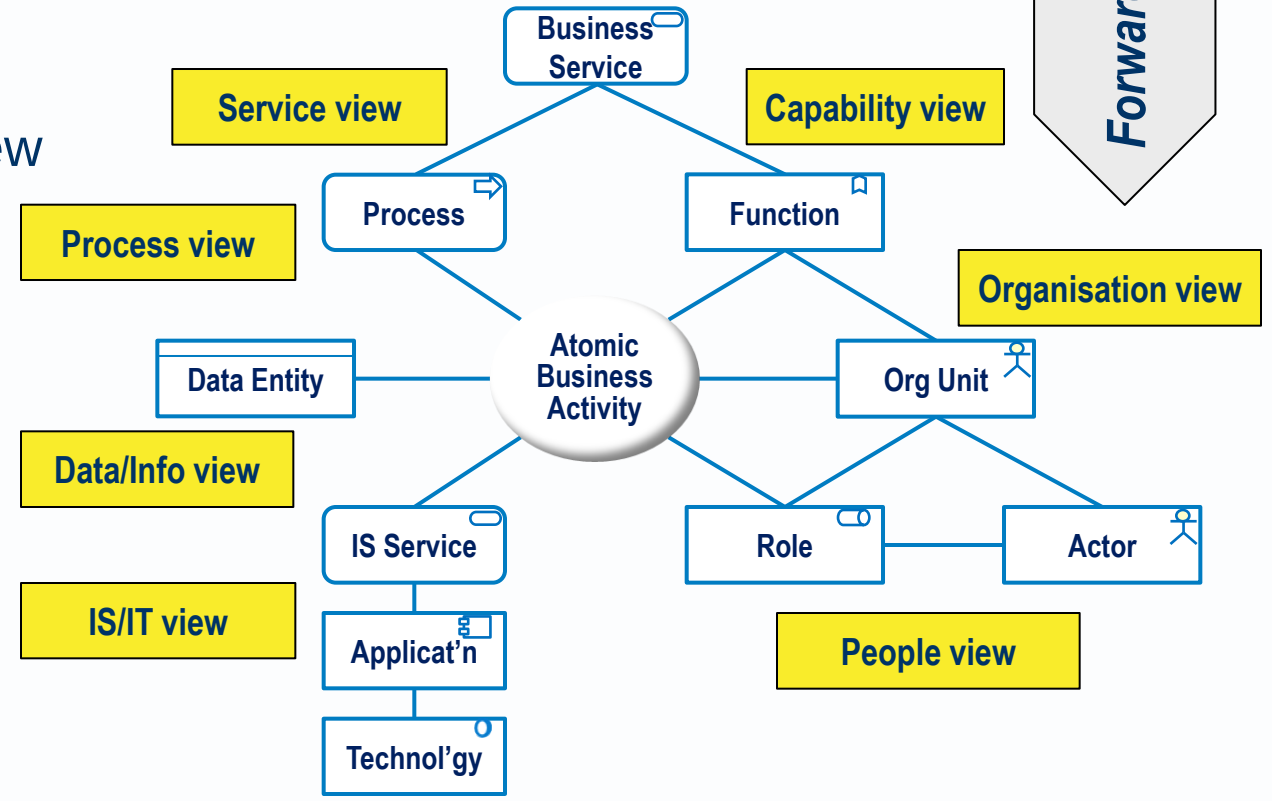
Design the target business architecture

Avancier

1. Agree the motivations
2. Form a service view
3. Form a process view
4. Form a capability view
5. Form a people view
6. Form an organisation view
7. Map to data/info view
8. Map to IS/IT view

Very few attempt to design a whole business from the top down. But people do use these ideas and techniques in a piecemeal fashion

Forward engineering



Note

- This is a convoluted Process that involves juggling:
  - The requirements of old and new customers
  - Baseline Organisation Units that cannot be changed
  - Generic business services available in the market place
  - Overarching business principles and strategies
  - Time, cost and resource constraints on change

- Where you find Organisation Units that
  - Don’t provide all required services
  - Provide more than required services
- The mapping of Functions to Organisation Units may be elaborate

Enhancing TOGAF with Avancier Methods

Avancier

TOGAF's ADM is a management framework that promotes the role of architects

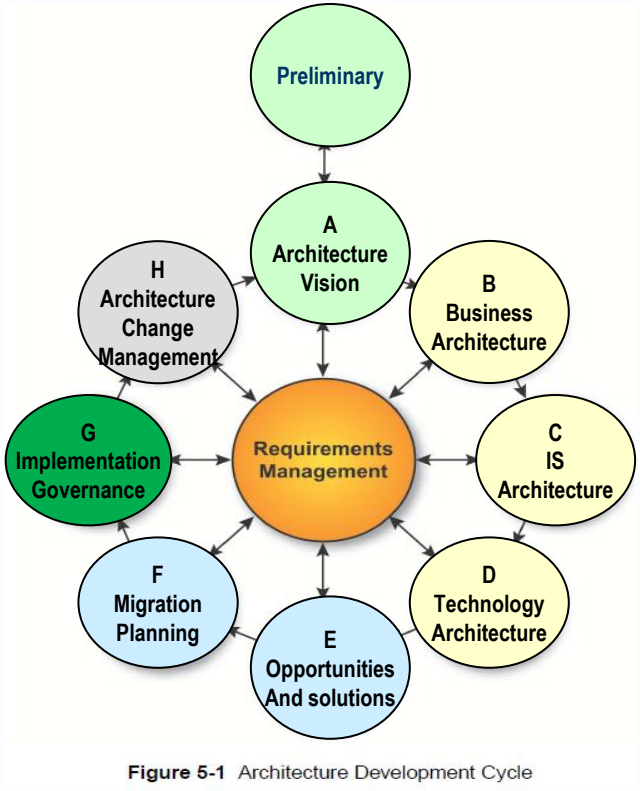


Figure 5-1 Architecture Development Cycle

AM gives architects more specific processes and documentation artefacts