Avancier Methods (AM)

EA-level Business Architecture

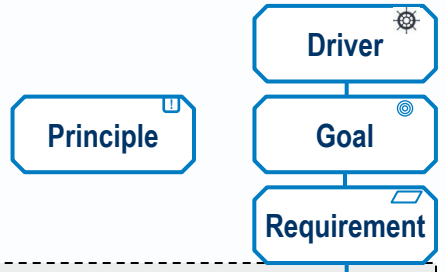
The structured approach to business architecture that underpins TOGAF and its artefacts

You may show this slide show without the written permission of the copyright holder, provided you also show you are opening it from the relevant avancier.website page.

Copyright Avancier Limited 2008 - 2015

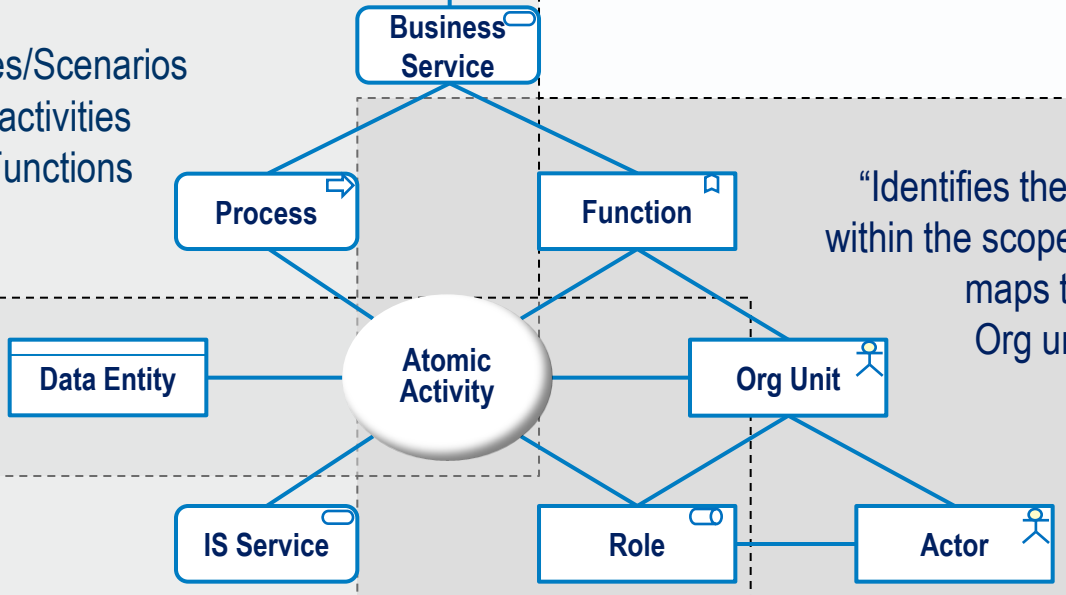
TOGAF suggests 3 approaches to Business Architecture

Avancier



"The level and rigor of decomposition needed varies from enterprise to enterprise"

Process Modelling
Define high-level Processes/Scenarios
Decompose Processes to activities
Map activities to Roles & Functions



Structured Analysis
"Identifies the key business Functions within the scope of the architecture, and maps those Functions onto the Org units within the business."

Use-case Analysis
Identifies where Roles use Applications in performing Process steps, and defines the required App/IS Services

Copyright Avancier Limited 2008 - 2015

This slide show clarifies

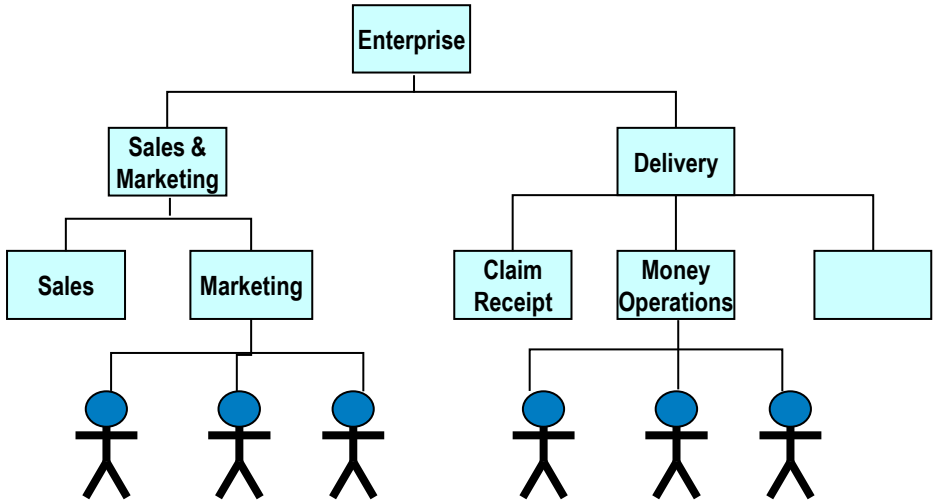
- What Structured Analysis means
- Principles that underpin TOGAF and its artefacts, and relate Functions to Capabilities

1. Functions are independent of Organisation structure (8.4.1, 8.5).
2. Functions impose a structure on Activities sequenceable in Processes (34.2.1).
3. Functions/Capabilities are defined by Services provided (35.6.3)
4. Functions are used to describe Capabilities (34.2.1).

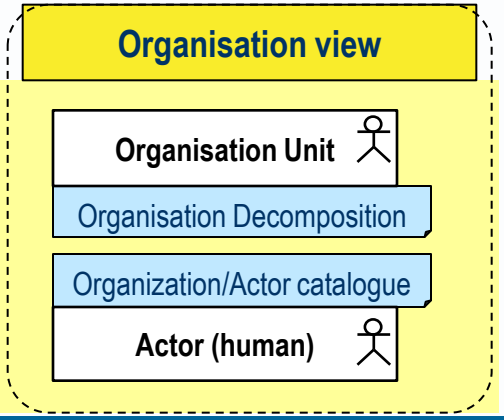
Copyright Avancier Limited 2008 - 2015

1. Form an Organisation view

- Classical Structured Analysis starts from the Organisation chart - in the area of interest.
- This management structure may show the people employed in each Org unit.
- (Target design may leave the Organisation structure until last.)



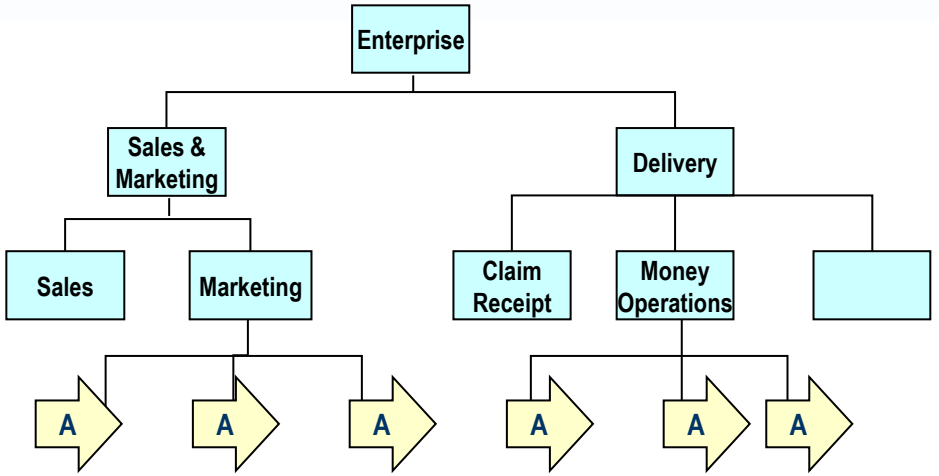
"Organization Unit:
A self-contained unit of resources with goals, objectives, and measures."
TOGAF 34.2.1



Copyright Avancier Limited 2008 - 2015

List Atomic Activities performed in each Organisation Unit

- Focus on the essential activities and services.
- People come and go; what they do is what matters.
- List the major activities that each Org unit (in the area of interest) performs



Organisation Activities	Unit A	Unit B
Activity A	Performed in	Performed in
Activity B		Performed in

Copyright Avancier Limited 2008 - 2015

A trouble is: human social structures evolve continually

- Org units, managers and employees are frequently shuffled.
- It would be impractical to maintain an EA repository in which many entities are mapped to today's Organisation chart.

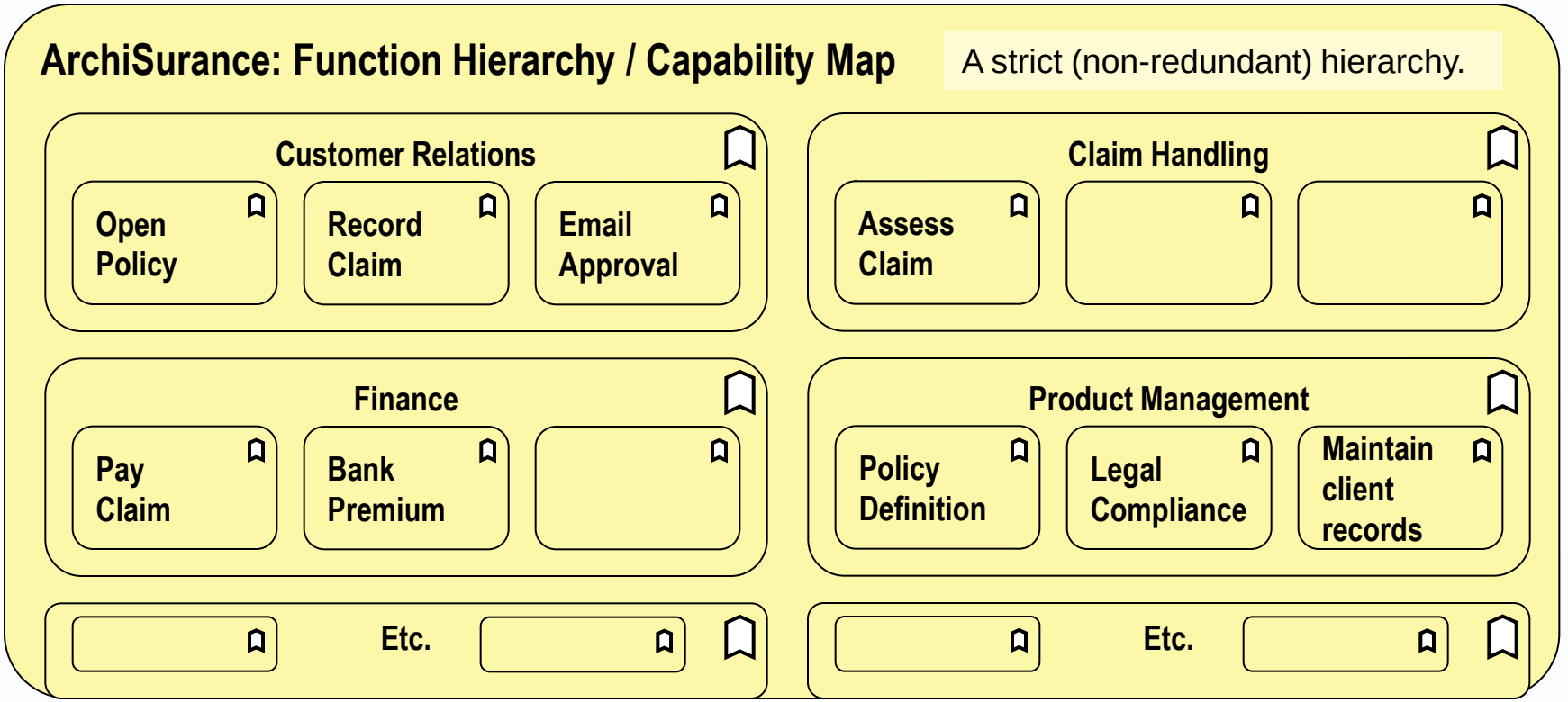
- Q) how to insure the bulk of the EA repository against reorganisations that redistribute and perhaps duplicate activities between Org units?

- A) Buy or build a *logical* Organisation structure over activities of interest

Copyright Avancier Limited 2008 - 2015

2. Form a Capability overview

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

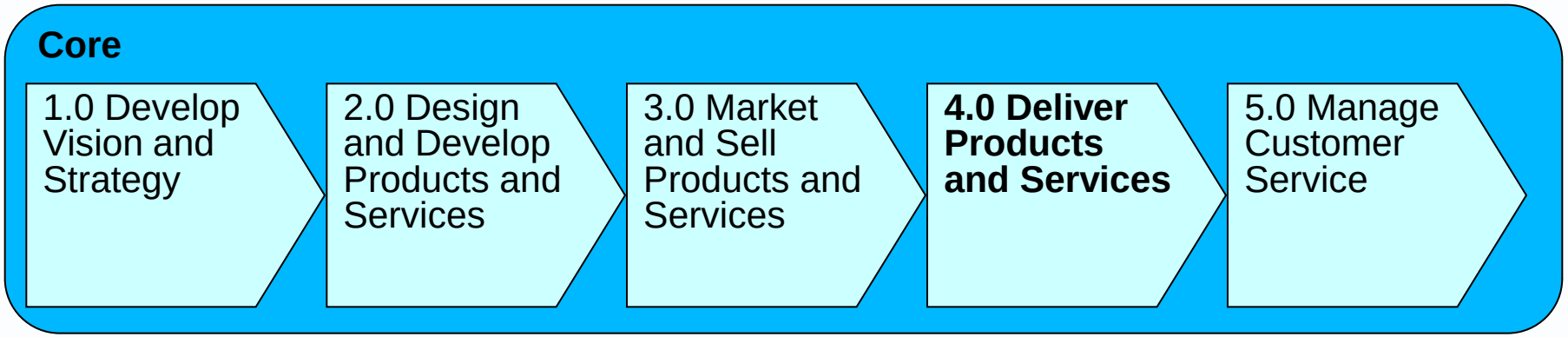


Copyright Avancier Limited 2008 - 2015

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**

Copyright Avancier Limited 2008 to 2015

Buy one? E.g. a business Function/Capability hierarchy for a bank

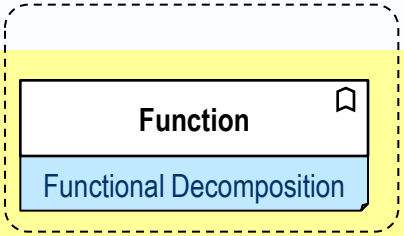
Avancier

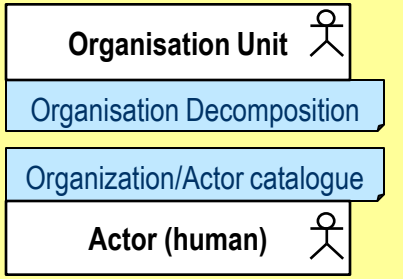
The BIAN Service Landscape V2.5

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





Copyright Avancier Limited 2008 - 2015

Capabilities as Functions

Avancier

- Function describes units of business Capability at all levels of granularity (TOGAF 34.2.1)
- Capabilities are typically expressed in general and high-level terms and typically require a combination of Organization, people, Processes, and technology to achieve. For example, marketing, customer contact, or outbound telemarketing. [cf. Function Names] (TOGAF 3.26)
- This Functional decomposition can be used to identify new Capabilities required to support business change.
- The purpose of the Functional Decomposition diagram is to show on a single page the Capabilities of an Organization…. (TOGAF 35.6.3)

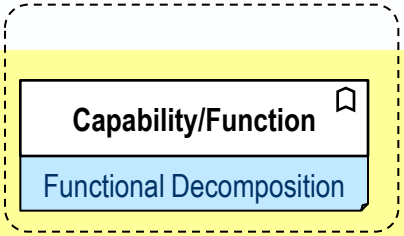
- Implication: Functions have all the attributes Capabilities have - including target qualities

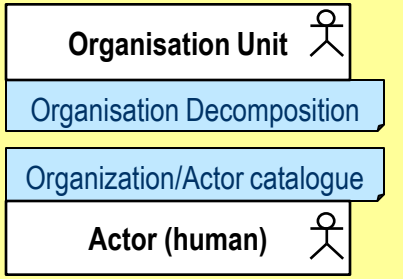
Copyright Avancier Limited 2008 - 2015

Capability-Based Planning

- Chapter 32 on Capability-Based Planning has 10 (ten!) references to Capabilities being cross-organisational.
- It not about improving an Organisation Unit
- It is about improving a named Function (say, HR) regardless of where it is carried out in the Organisation
- Both Structured Analysis and CBP encourage architects to
  - discuss Functions/Capabilities independently of Org Units.
  - examine business objectives, services and processes *before* mapping those to Organisation Units.

"Function describes units of business Capability at all levels of granularity"
TOGAF 34.2.1





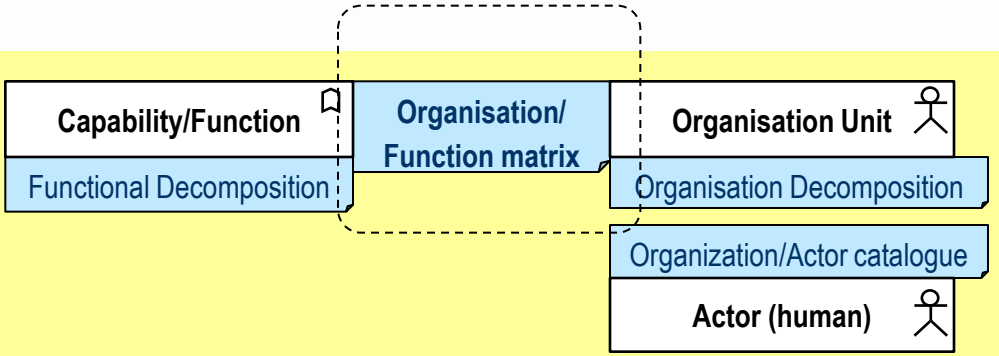
Copyright Avancier Limited 2008 - 2015

Map Functions to Organisation Units

- 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

Function Organisation	Cust. Relat;ns	Claims	Finance
Sales	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



Copyright Avancier Limited 2008 - 2015

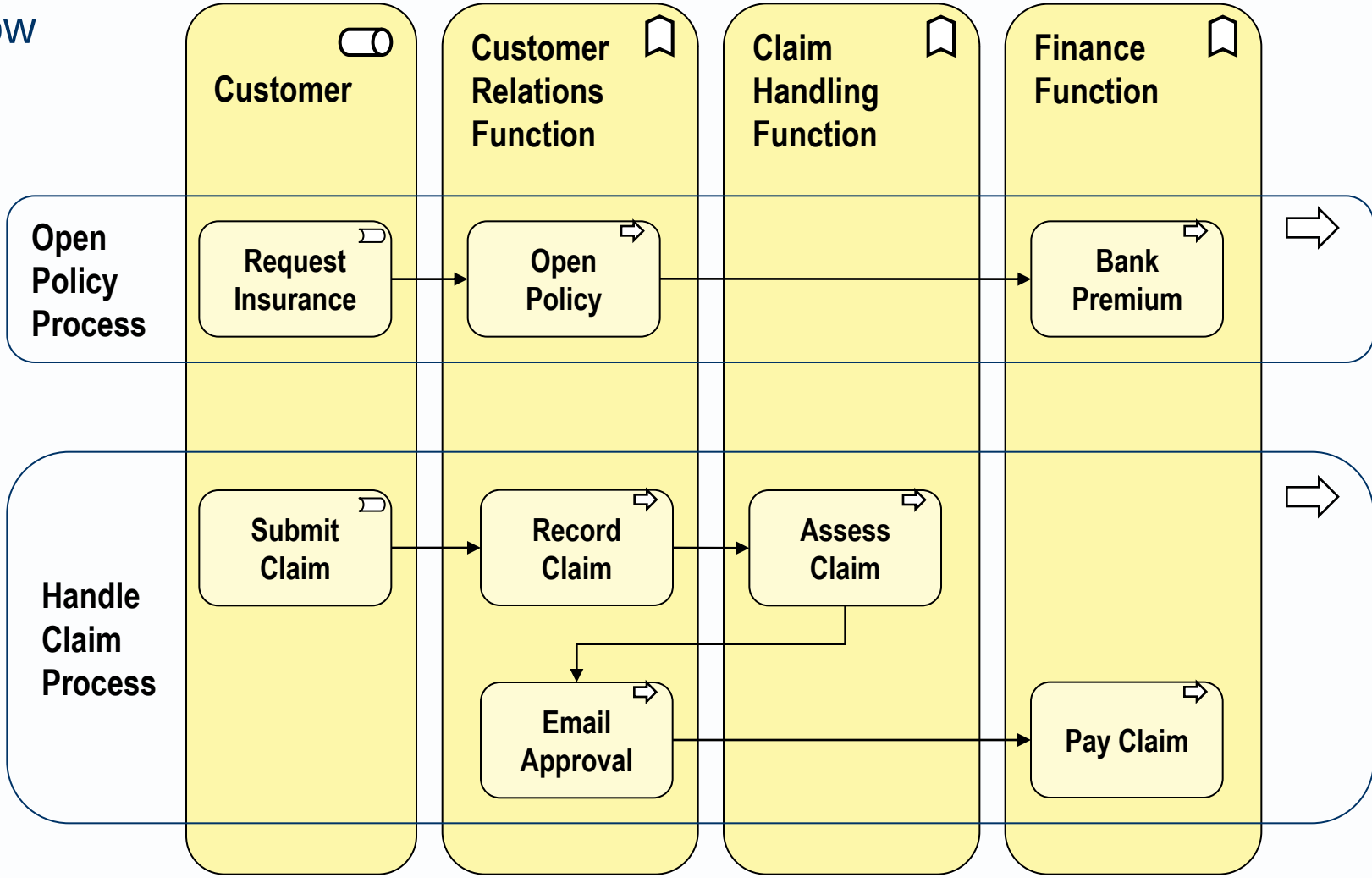
3. Form a Process view

Swim lanes show Structure

- Actor
- Role or
- Function

Arrows show Behaviour

- Event
- Trigger
- Activity

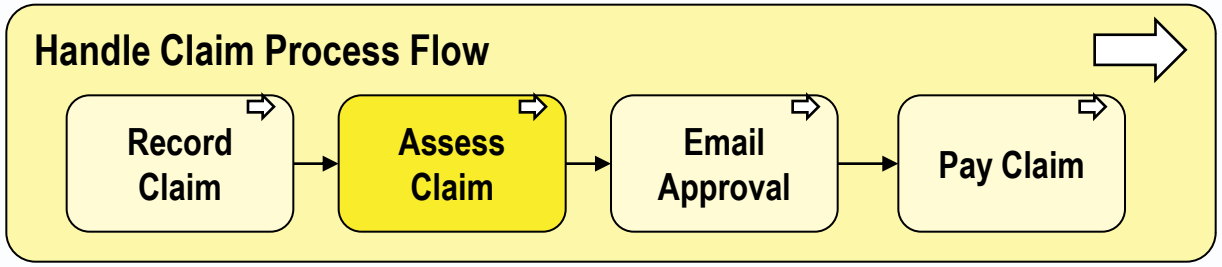


Copyright Avancier Limited 2008 - 2015

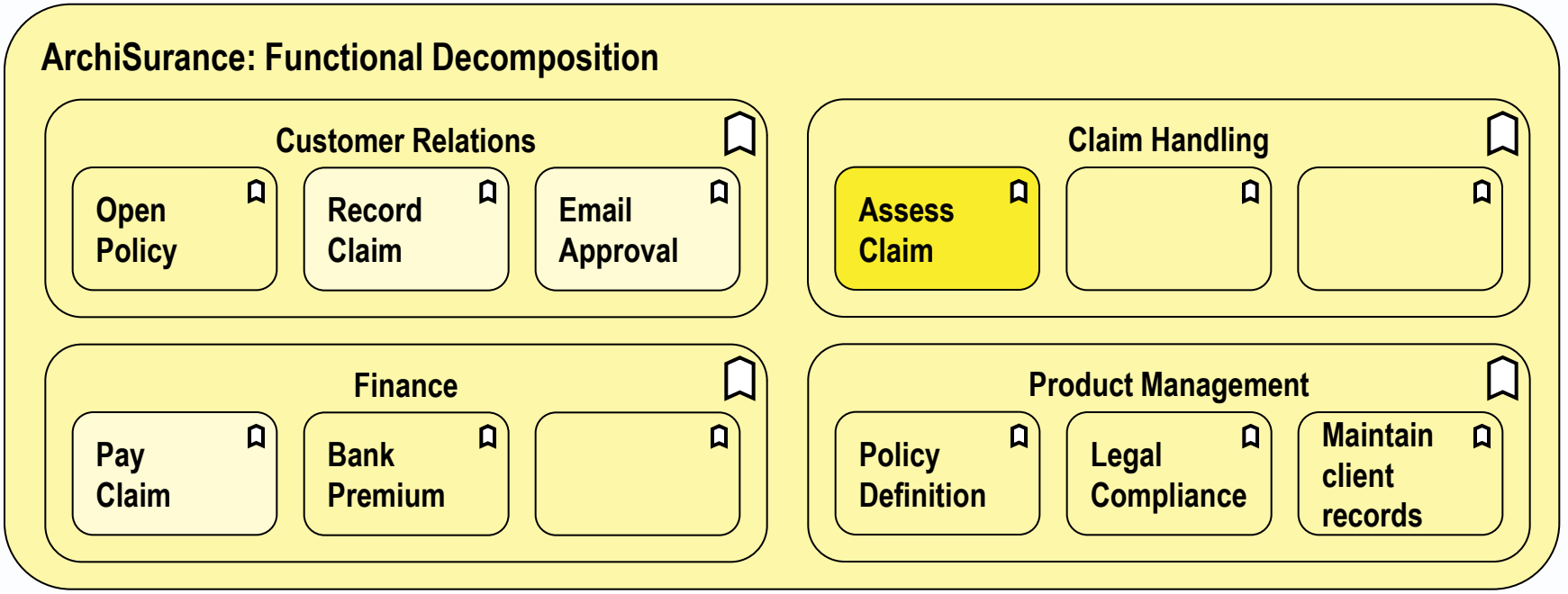
Map atomic process steps to business functions

Avancier

Atomic Business Processes



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



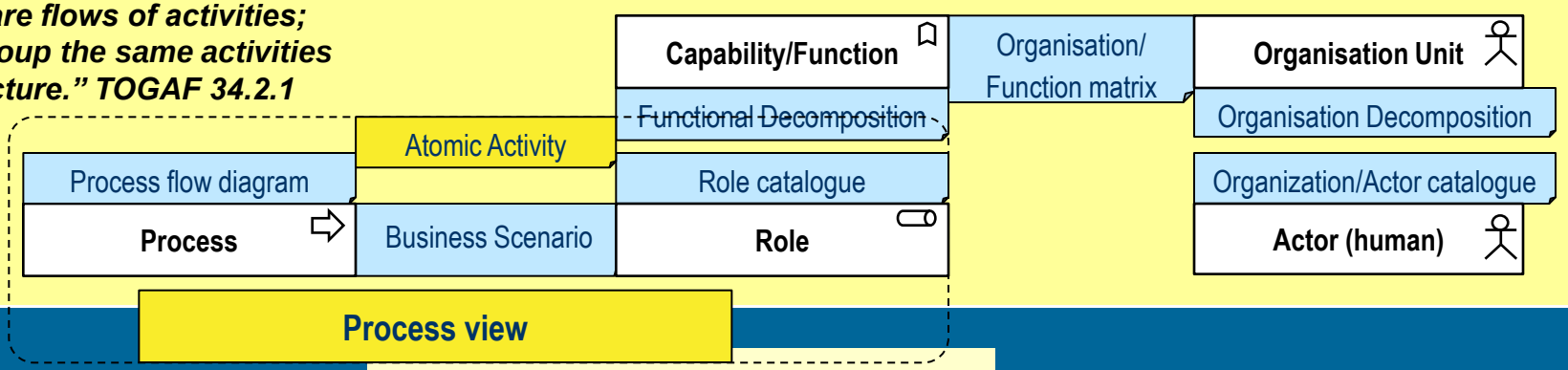
Copyright Avancier Limited 2008 - 2015

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



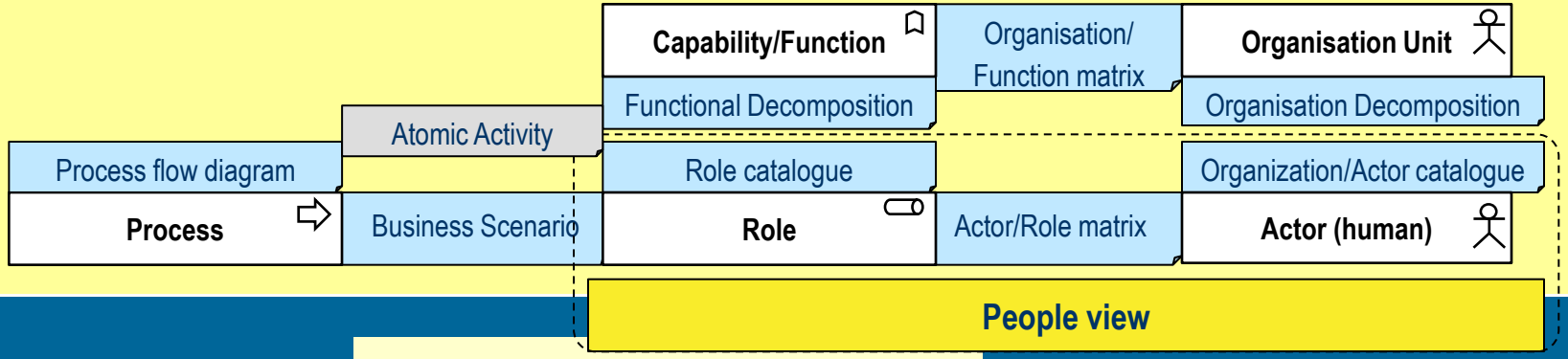
Copyright Avancier Limited 2008 - 2015

4. 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	A	B
Acttivity		Accountable
Activity	Responsible	Consulted
Activity		Involved

Role / Actor	A	B	C
P			
Q			

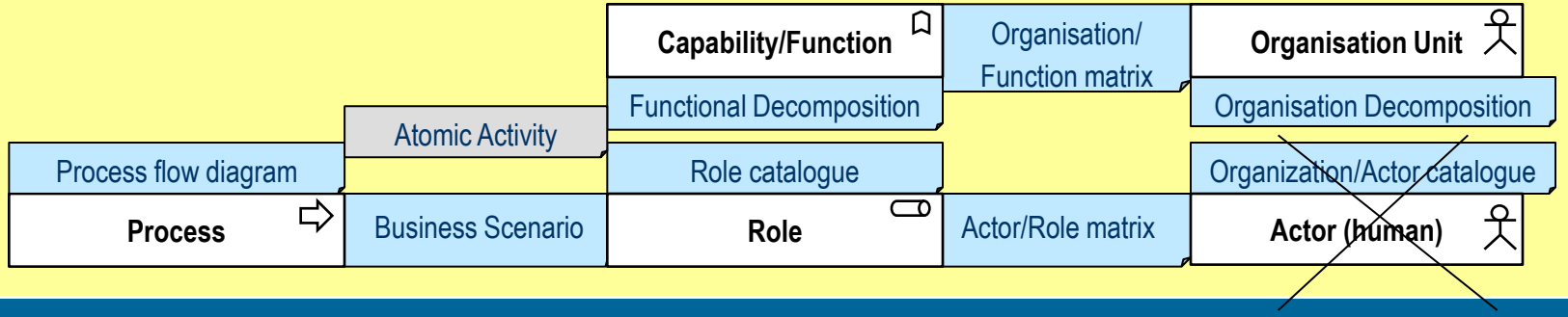


Copyright Avancier Limited 2008 - 2015

Aside: modelling Roles rather than Actors

- EA usually records Roles rather than individual human Actors.
- Except where a Role is performed by only one Actor

- Of course, a human Actor can do more than any Role they are asked to play.
- But what each individual human might do outside the system (in addition to or in conflict with Role definitions) is not documented.

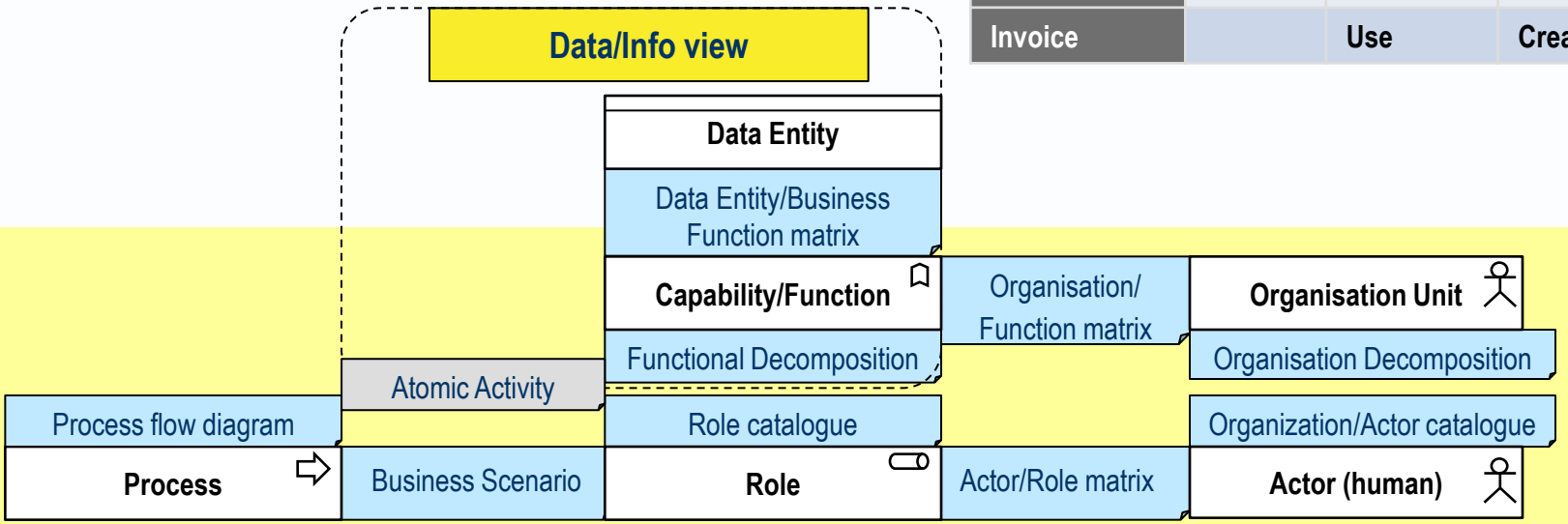


Copyright Avancier Limited 2008 - 2015

5. Form a data 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



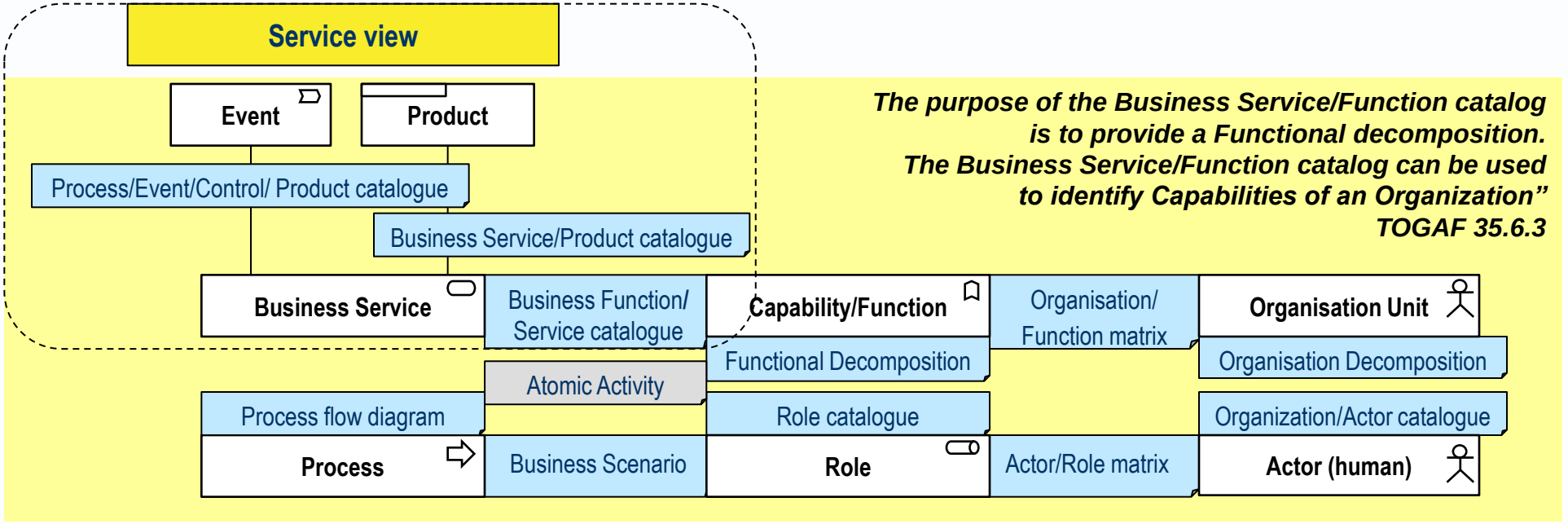
Copyright Avancier Limited 2008 - 2015

6: Form a service view

- A raison detre of a business is to provide services
- Services can be defined at any level of Process or Function definition

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

Logistics Services
Delivery
Express delivery
Recorded delivery



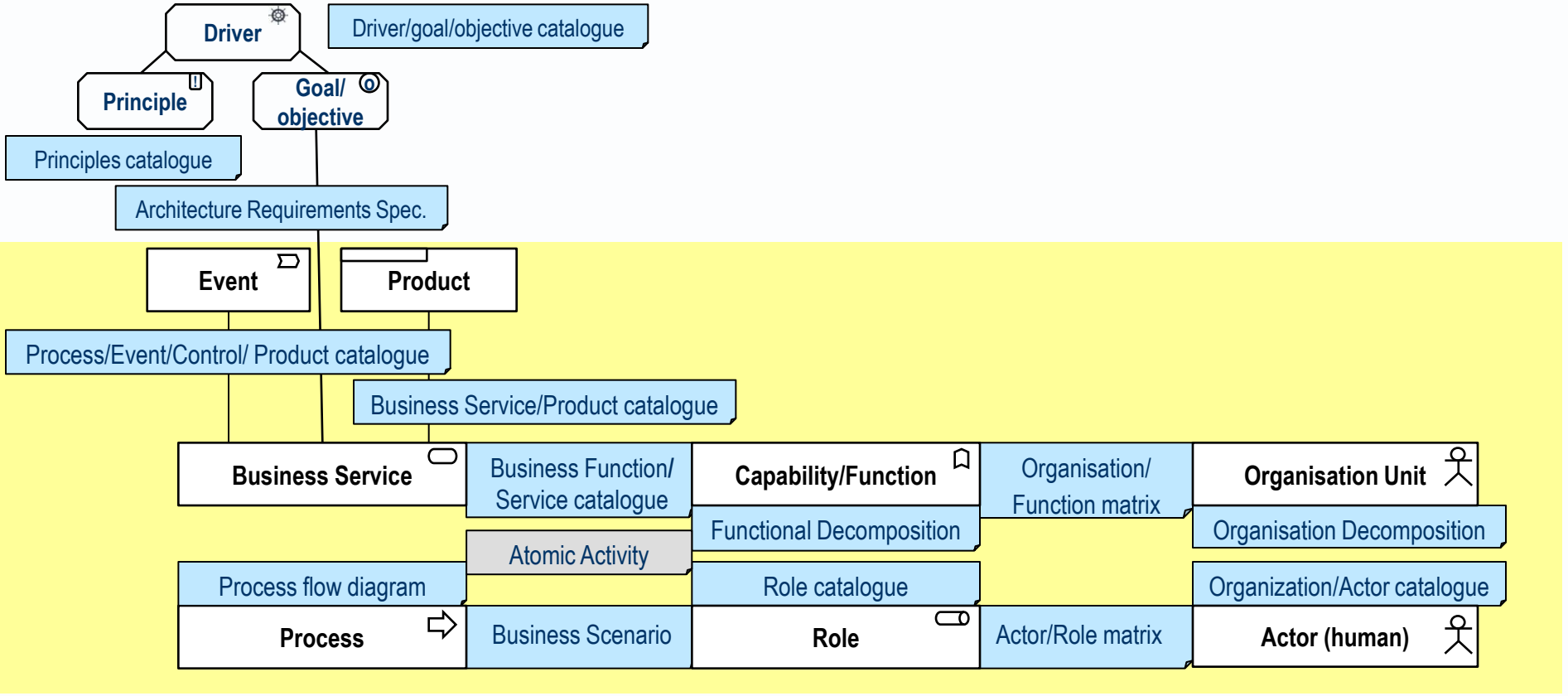
The purpose of the Business Service/Function catalog is to provide a Functional decomposition. The Business Service/Function catalog can be used to identify Capabilities of an Organization" TOGAF 35.6.3

Copyright Avancier Limited 2008 - 2015

Mapping Services to Motivations

Avancier

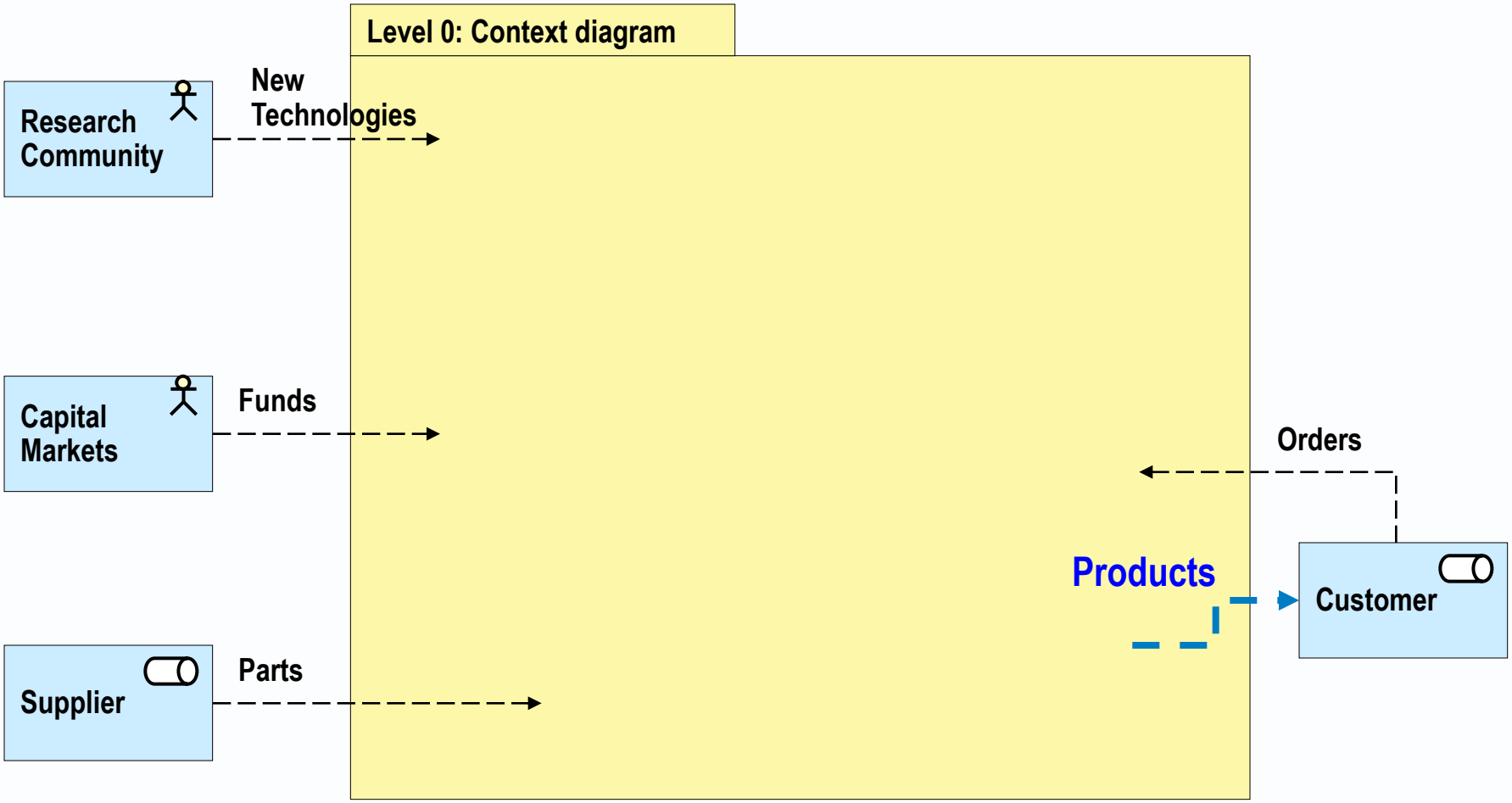
- TOGAF relates Services to Requirements



Copyright Avancier Limited 2008 - 2015

Level 0: Define external services

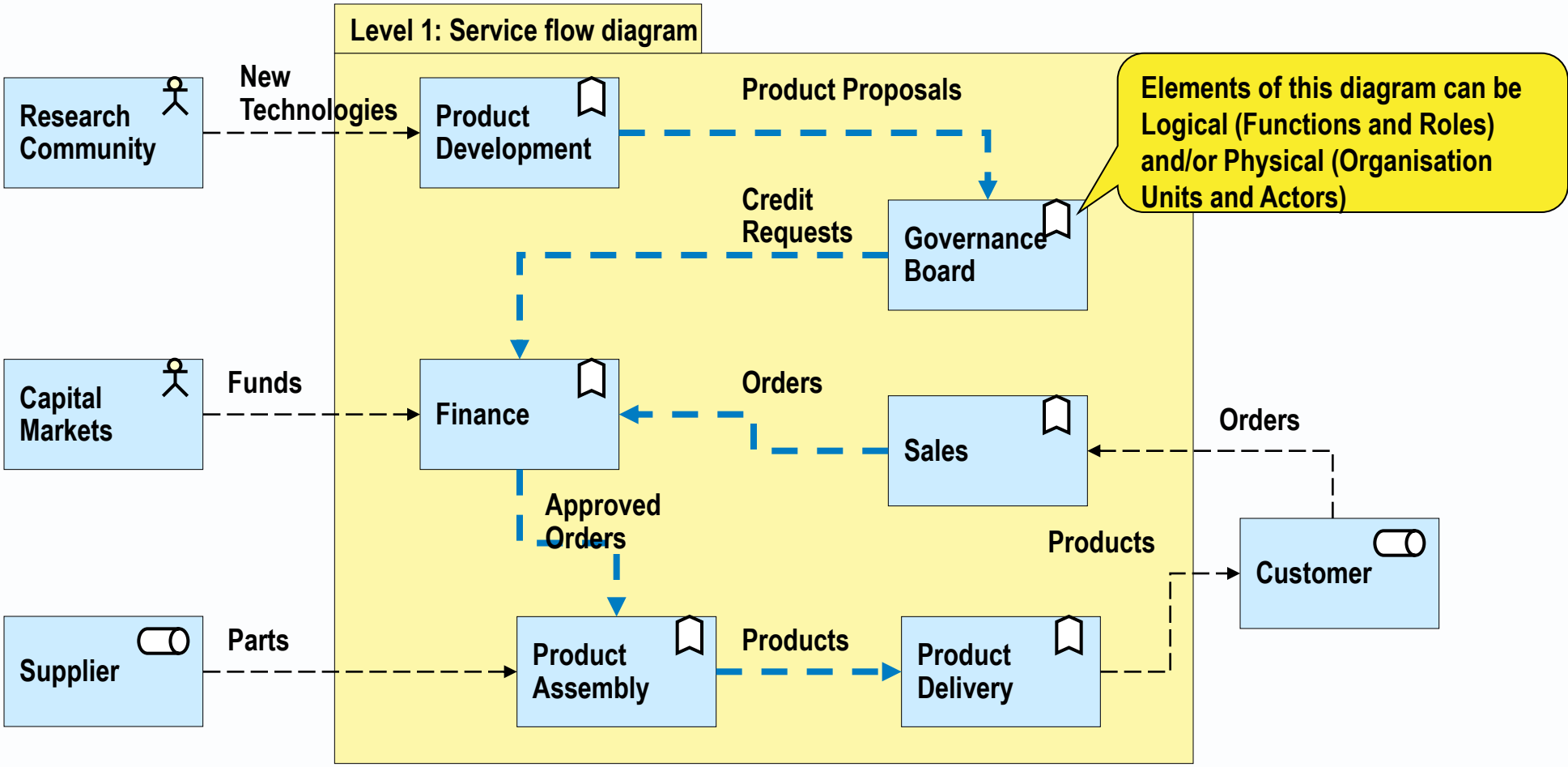
- Identify your customers and what services they want.
- Identify your suppliers



Copyright Avancier Limited 2008 - 2015

Level 1: Define internal services

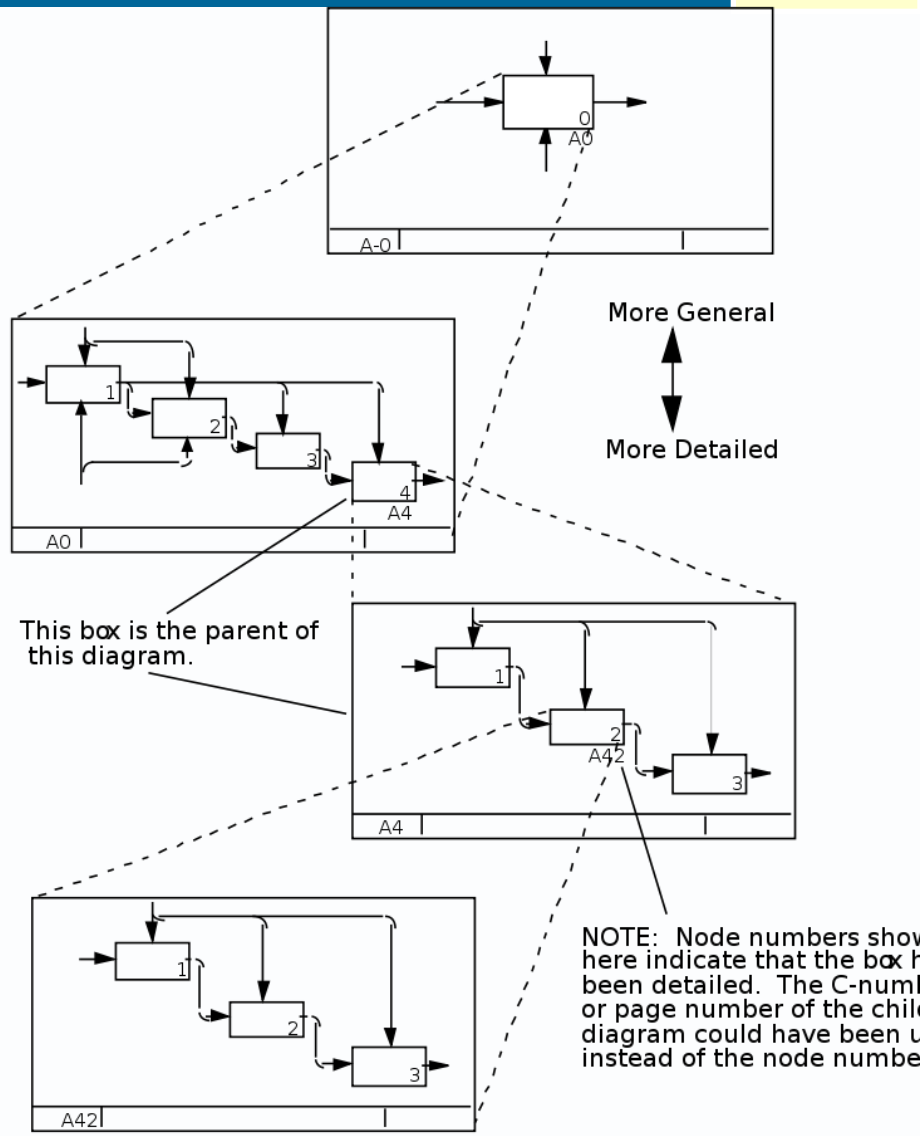
- Link nodes - differentiating material and information flows.
- What flows between nodes within the system and to/from external entities?



Copyright Avancier Limited 2008 - 2015

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.

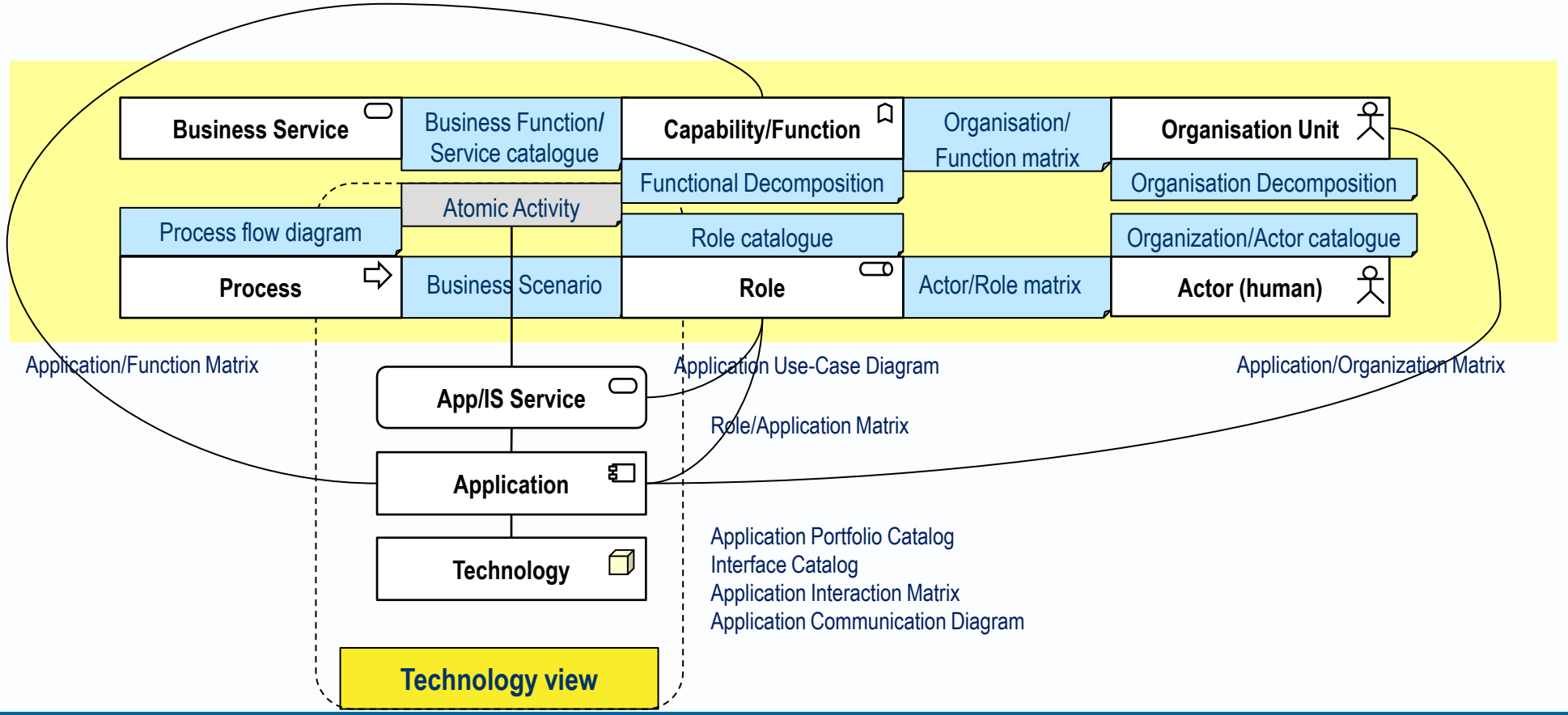


- "6 Decomposition Structure" by itl.nist.gov - FIPS Publication 183. Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:6_Decomposition_Structure.svg#/media/File:6_Decomposition_Structure.svg

Copyright Avancier Limited 2008 to 2015

7. Form a “technology” view

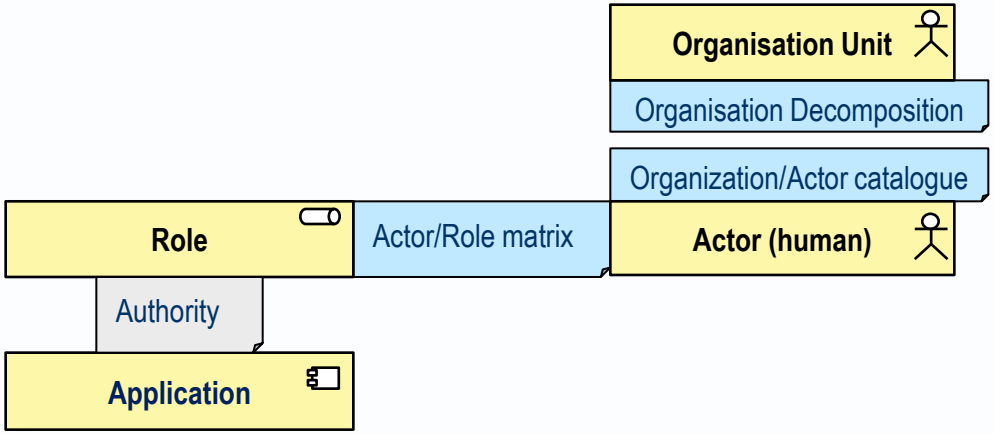
- Relate Business elements to IS Services (App Use cases) and Applications
- TOGAF offers several artefacts (the App/Function matrix could list atomic activities included also in Process flow diagrams).



Copyright Avancier Limited 2008 - 2015

What might you find already documented?

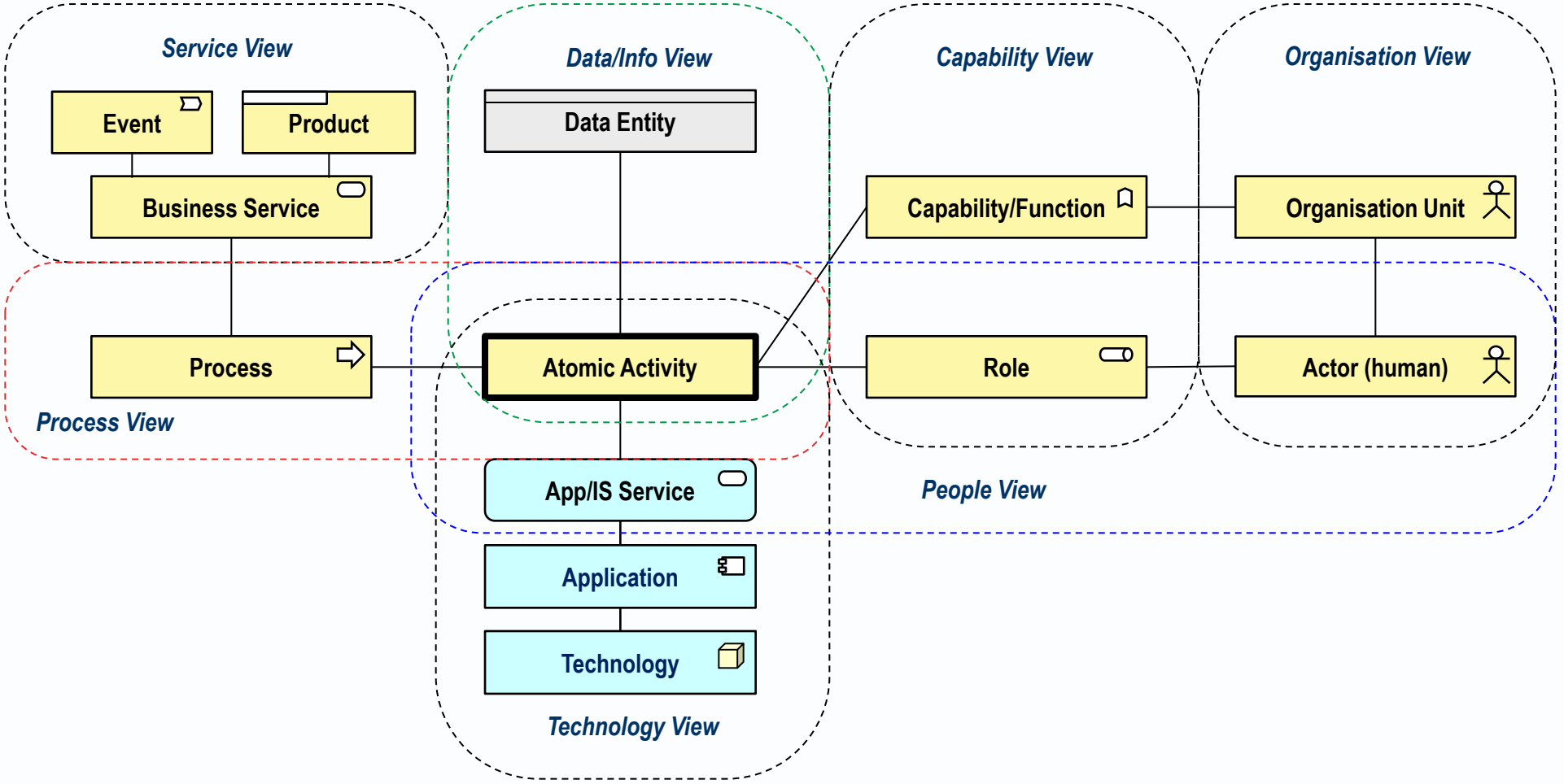
- A company directory, identity management or access control system may already record and relate some of the entities below



Copyright Avancier Limited 2008 - 2015

Taking different views of a human activity system

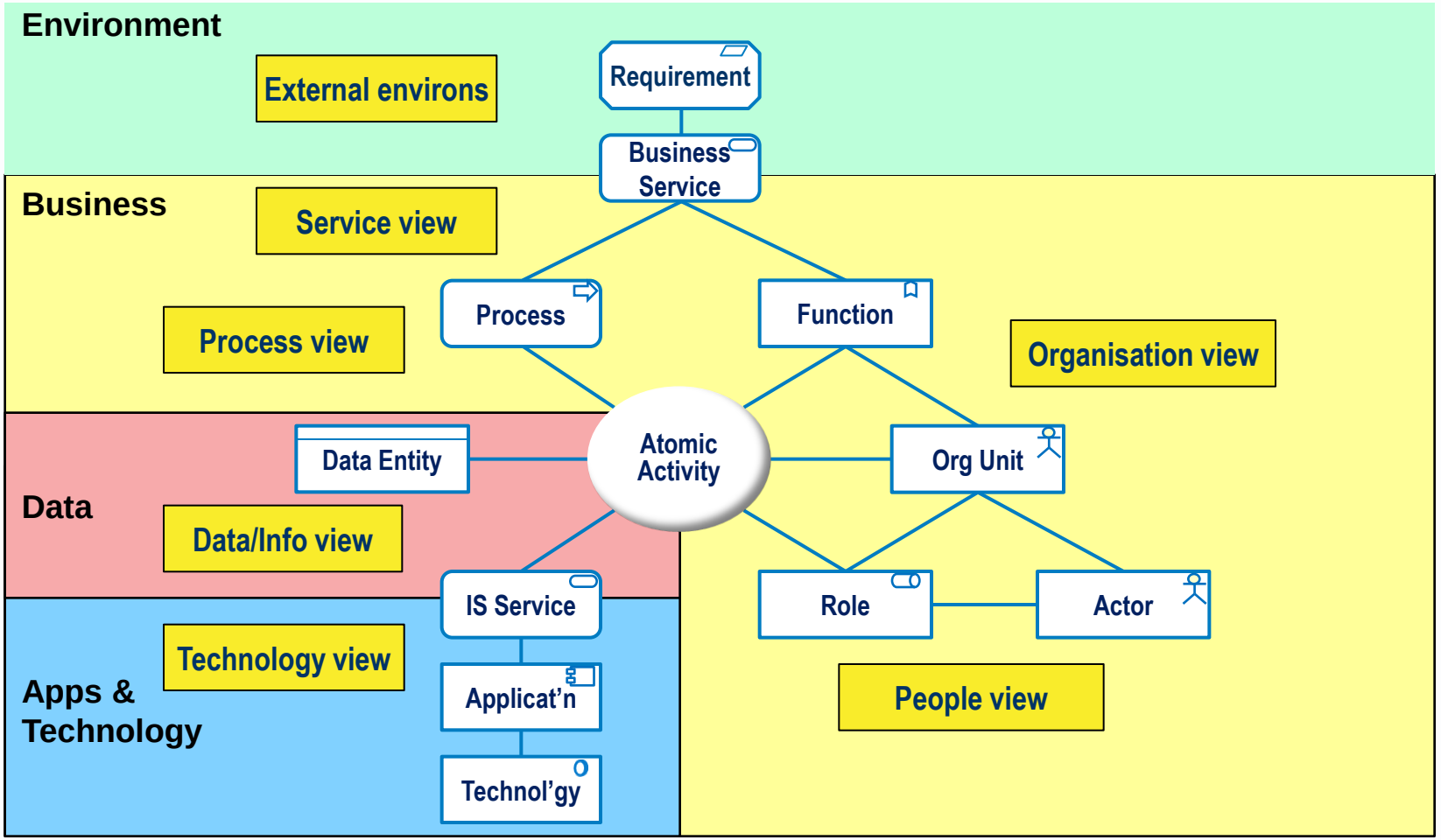
- Different Views are related via the Atomic Activities



Copyright Avancier Limited 2008 - 2015

Skills Framework for the Information Age suggests 7 views

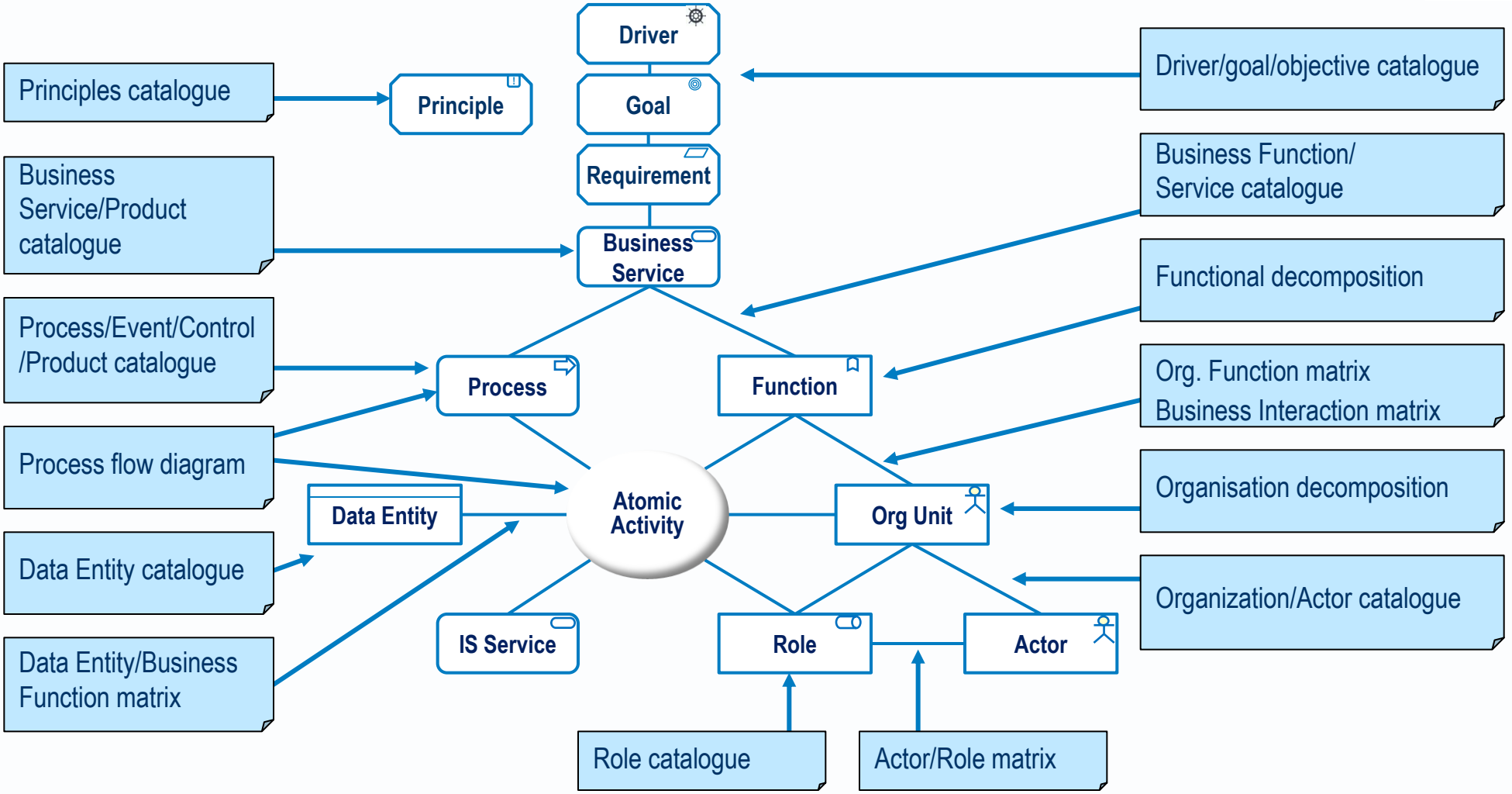
- The 7 views can be centered on the Atomic Activities



Copyright Avancier Limited 2008 - 2015

How TOGAF's artifacts document a Business Architecture

Avancier



Copyright Avancier Limited 2008 - 2015

Avancier Methods (AM)

Heat mapping

You may show this slide show without the written permission of the copyright holder, provided you also show you are opening it from the relevant avancier.website page.

Copyright Avancier Limited 2008 - 2015

A 2-dimensional Business Function/Capability Model

Avancier

- The activities within a Function may be mapped to (for example) levels of management

Function / Level	Sales	Delivery	Finance
Direct	Activity	Activity	Activity
Manage	Activity	Activity	Activity
Perform	Activity	Activity	Activity

- Any Business Function/Capability hierarchy or matrix may be used as a heat map, to highlight areas of concern

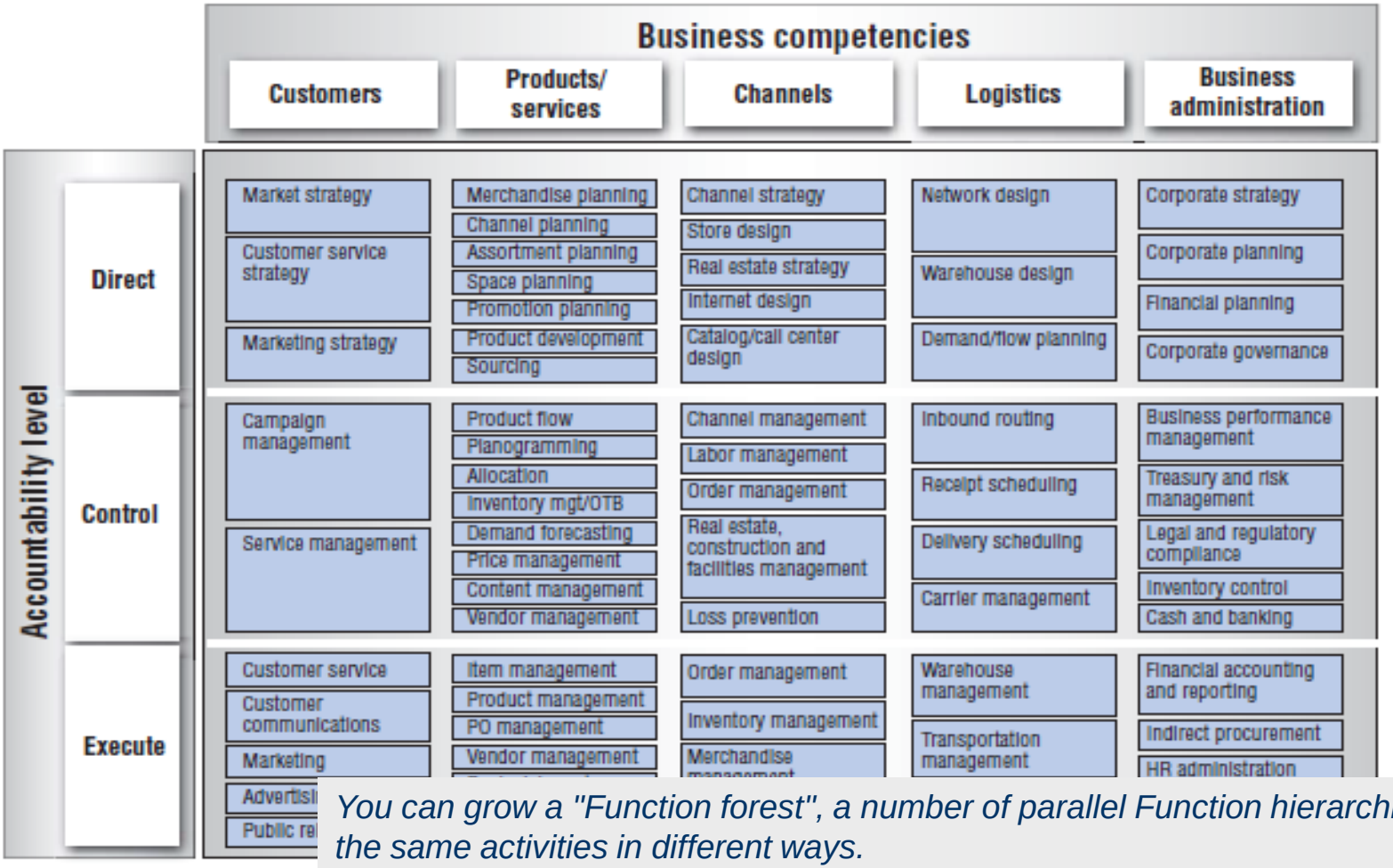
Function / Level	Sales	Delivery	Finance
Direct	Activity	Activity	Activity
Manage	Activity	Activity	Activity
Perform	Activity	Activity	Activity

Copyright Avancier Limited 2008 - 2015

An IBM “Component Business Model”

Avancier

Figure 6. Mapping the enterprise as a network of business modules: an example from the retail industry.



Source: IBM Business Consulting Services.

You can grow a "Function forest", a number of parallel Function hierarchies that group the same activities in different ways.

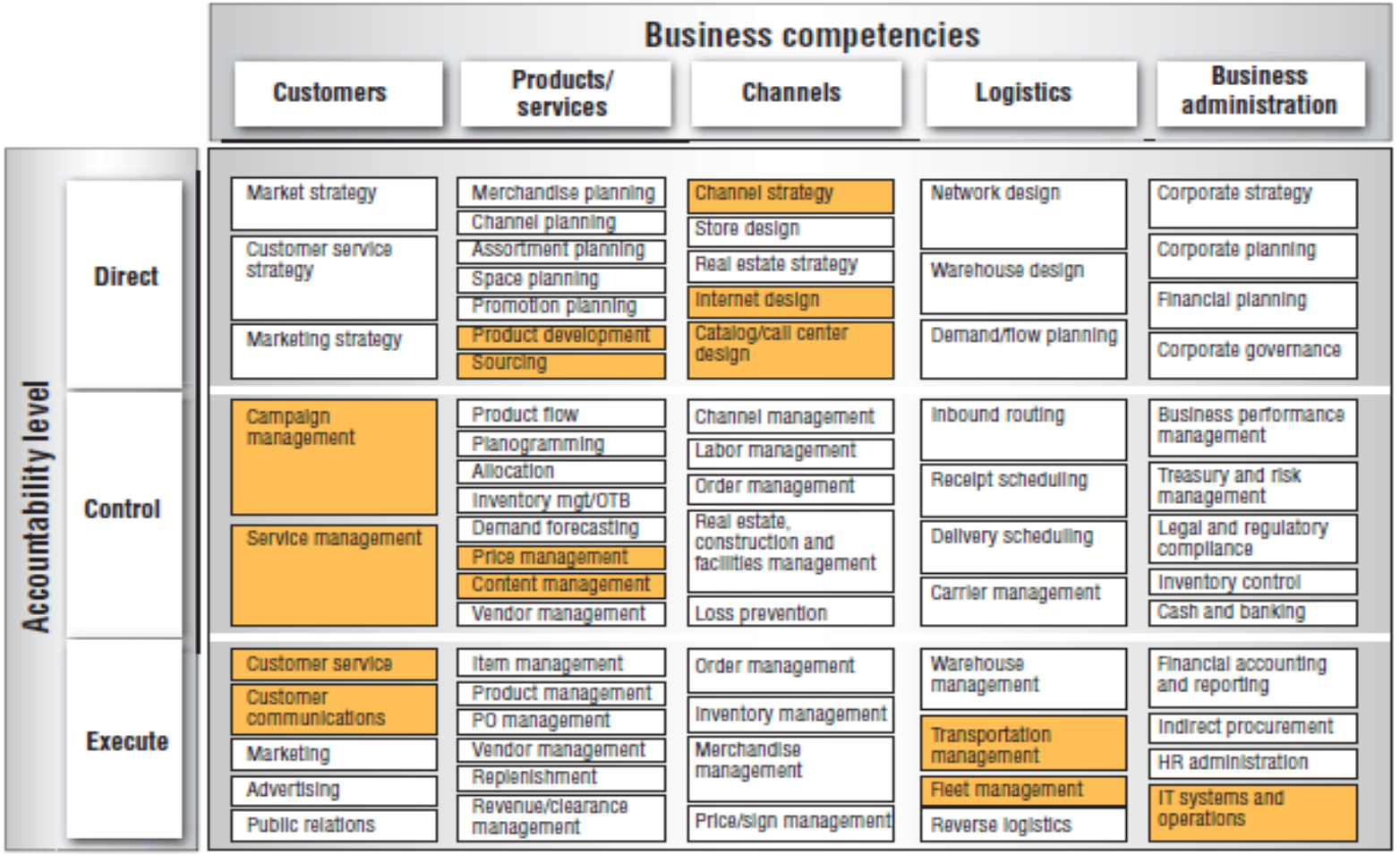
(E.g. I gather the UK national police body EA have 9 parallel Function hierarchies.)

Copyright Avancier Limited 2008 - 2015

Used as a “Heat map”

Avancier

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



Source: IBM Business Consulting Services.

Copyright Avancier Limited 2008 - 2015

Avancier Methods (AM)

Business Capability = Function ++

Capability = Function + Target Qualities + Resources Needed

You may show this slide show without the written permission of the copyright holder, provided you also show you are opening it from the relevant avancier.website page.

Copyright Avancier Limited 2008 - 2015

Hmm…

Avancier

- EA is about human and computer activity systems in which Actors/components achieve desired effects by playing Roles in Processes.

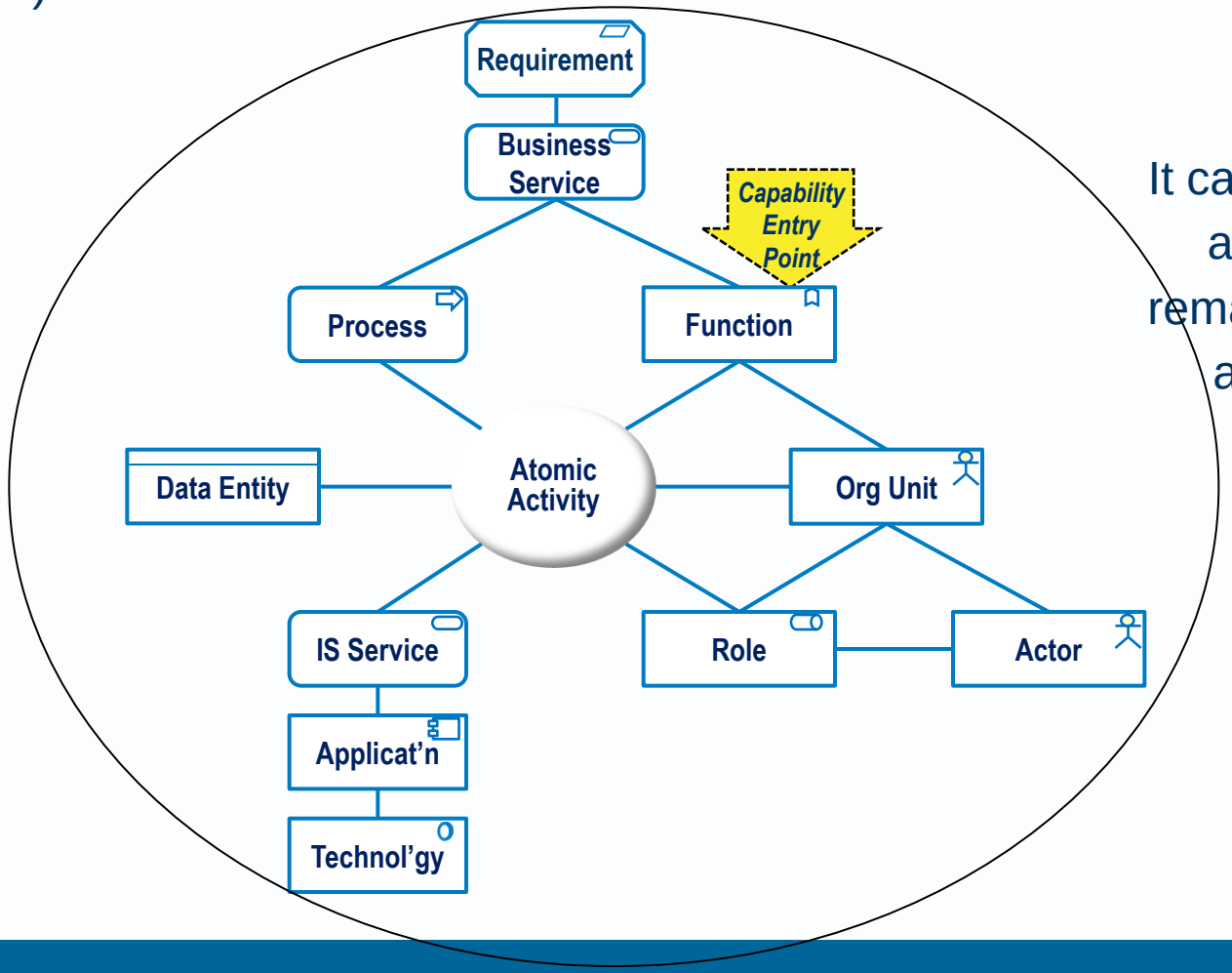
- A required **Capability** (say Sales, or Disaster Recovery) can be specified as a group of
  - required products or **Services** resulting from **Processes** performed by
  - **Actors/components**

- A required **Function** (say Sales, or Disaster Recovery) can be specified as a group of
  - required products or **Services** resulting from **Processes** performed by
  - **Actors/components**

Copyright Avancier Limited 2008 - 2015

Capability = Function + Target Qualities + Resources Needed

- A Capability is a **view** rooted in a Function (at whatever level of granularity is chosen)



It can encompass as many of the remaining entities as you choose

Copyright Avancier Limited 2008 - 2015

So, Capability = Function ++

- In business architecture documentation

- Capability (say Marketing) =
- Function (Marketing) + quality targets + resources needed

Copyright Avancier Limited 2008 - 2015

Reader's challenge 1: What makes Disaster Handling a Capability?

- An enterprise may not formalise disaster handling
  - It may rely on the ad hoc responses of intelligent human Actors when a disaster happens.
  - It may do little or nothing other than encourage Actors to think about disasters and what they can do about them.

- Or, it may set out to develop a disaster handling Capability
- Which is to formalise and systemise
  - Nominate a DR Function
  - Define what kinds of disaster are to be anticipated
  - Define targets for recovery from those disasters
  - Define Roles and Processes needed to achieve DR
  - Acquire resources (Actors, components etc.) needed perform DR Roles and Processes
  - Testing
  - Etc.

Copyright Avancier Limited 2008 - 2015

Reader's challenge 2: What makes Innovation a Capability?

Avancier

- You may perceive an enterprise as being innovative
- But so far, innovations have been down to human inspiration and motivation to follow them up.

- How to develop a tangible innovation "Capability"?
- The EA concept of Capability implies a degree of systemisation
  - Nominate an innovation Function
  - Define where innovation is sought
  - Define targets for innovation success (e.g. income from new products)
  - Define Roles (if not Processes) needed to achieve innovation
  - Acquire resources (Actors) needed perform the Roles and Processes
  - Etc.

Copyright Avancier Limited 2008 - 2015

Capability = Function + Target Qualities + Resources Needed

Avancier

- Variations of "Capability" appear in “Capability maturity models” and “Capability based planning”, and in TOGAF (with various meanings)
- DoDAF is built around Capability-based planning. It does not have the concept of a business Function, because Capability takes its place.

- Some Capabilities may correspond to a Function in a primary business-as-usual Functional decomposition hierarchy (usually but not inevitably a high-level Function).
- Other Capabilities (e.g. “Disaster Handling”) might not appear in the primary Function hierarchy. But you can define other Function hierarchies.
- And you can define a Function independently of any hierarchical decomposition structure, as a free-standing structural component, a grouping of any activities you choose.
- So, whether your Capability is named in a Function hierarchy or not, it is always representable as a Function + target qualities + resources needed.

Copyright Avancier Limited 2008 - 2015

Avancier Methods (AM)

Abstracting a meta from EA artefacts

Based on the structured approach to business architecture
that underpins TOGAF and its artefacts

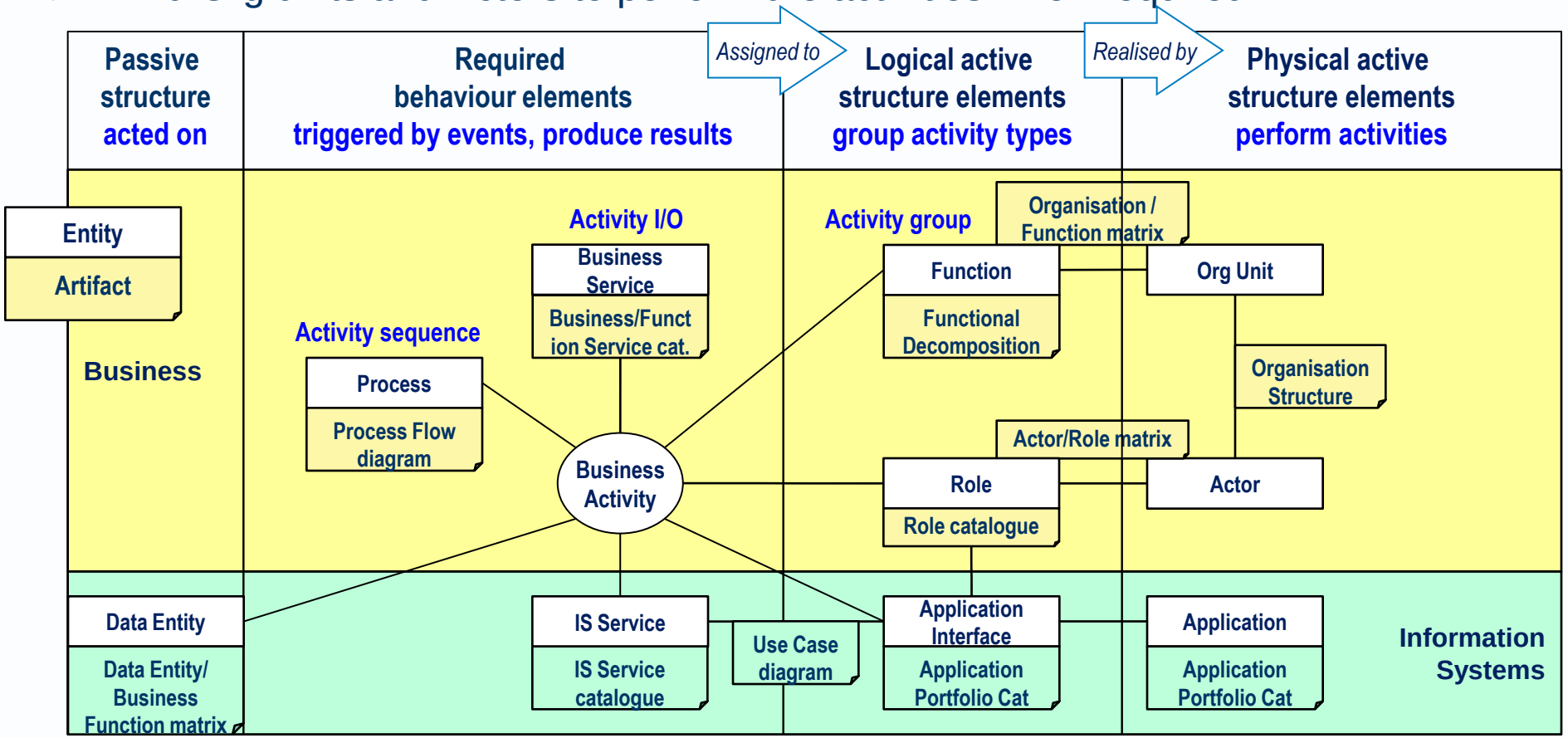
You may show this slide show without the written permission of the copyright holder,
provided you also show you are opening it from the relevant avancier.website page.

Copyright Avancier Limited 2008 - 2015

Designing activity systems

Avancier

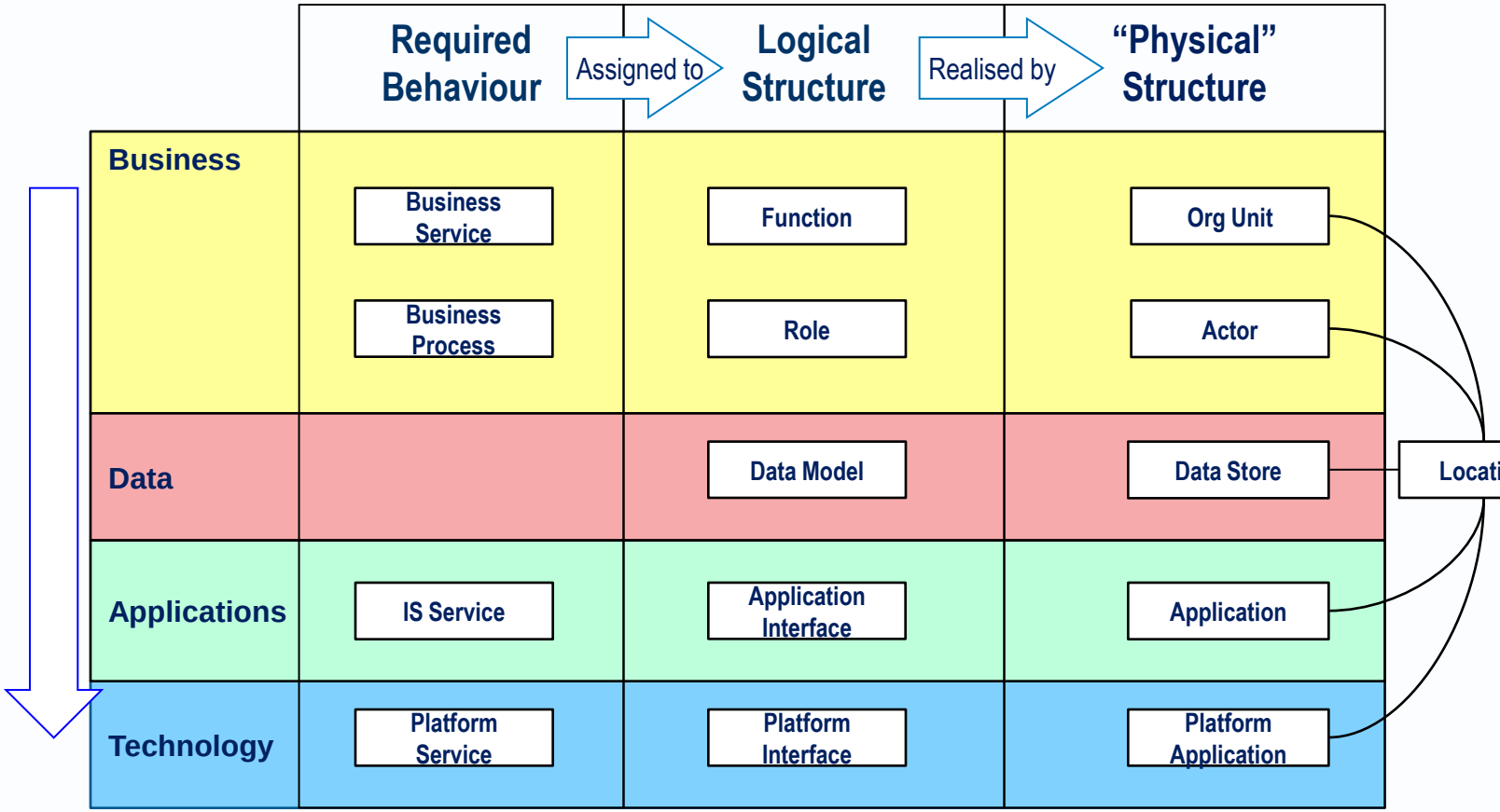
- Define required Processes
- Assign activities in Processes to Functions and Roles
- Find Org units and Actors to perform the activities when required



Copyright Avancier Limited 2008 - 2015

Design sequences used in EA

Function: externally, a group of service types; internally, a group of activity types
Role: externally, a group of service types; internally, a group of activity types



Nothing is really physical in EA, but when implemented, a physical element must be addressable

Copyright Avancier Limited 2008 - 2015

Core artifacts: describe architectural entities and relations between them

Avancier

2 Context / Precursors

Driver/Goal/Objectives cat.
Principles catalogue
Stakeholder catalogue
Requirements catalogue
Business Scenario diagram
Solution Vision diagram

4 Business Architecture

Business Function/Service catalogue
Functional Decomposition diagram
Organisation/Function matrix
Organization/Actor structure
Actor/Role matrix
Process catalogue
Process Map diagram
Process Flow diagram
Role/Information Service catalogue

5 Data Architecture

Data Entity catalogue
Data Entity/Business Function matrix
Data Store catalogue
Logical Data Model diagram
Data Dissemination diagram
CRUD diagram

7 Applications Architecture

Information Services catalogue
Application Portfolio catalogue
Data Flow catalogue
Application/Data Entity matrix
Application/Function matrix
Application Communication diagram
Application Use Case diagram
Application Platform Service catalogue

9 Infrastructure (Tech) Architecture

Technical Reference Model
Technology Standards catalogue
Technology Portfolio catalogue

Application Technologies diagram
Deployment diagram
Networked Computing Hardware diagram
Communications Engineering diagram

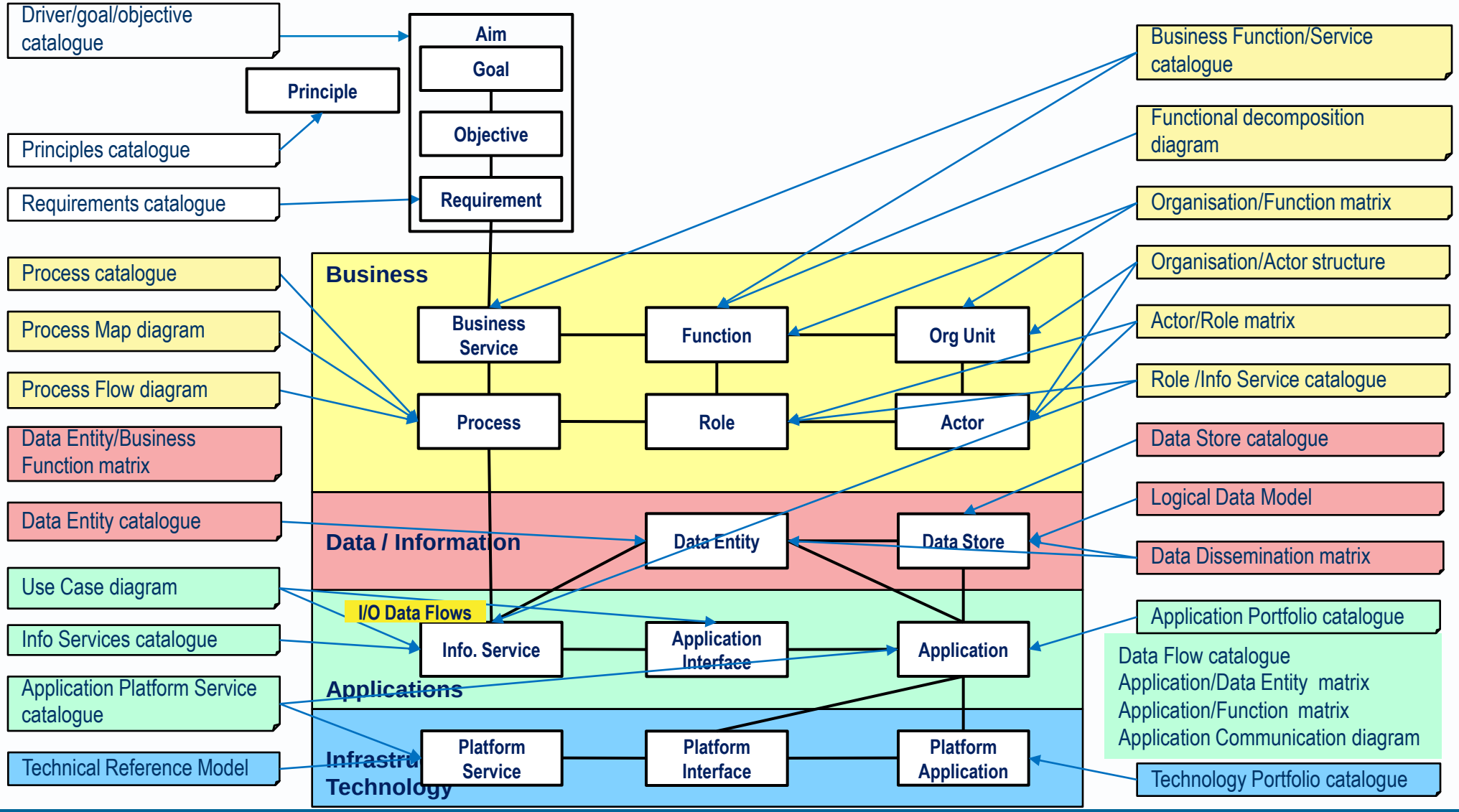
10 Migration Planning

RAID catalogue
Value/Cost/Risk Grid
Migration Path
Road Map

Copyright Avancier Limited 2008 - 2015

Abstracting a meta model from the artifacts

Avancier

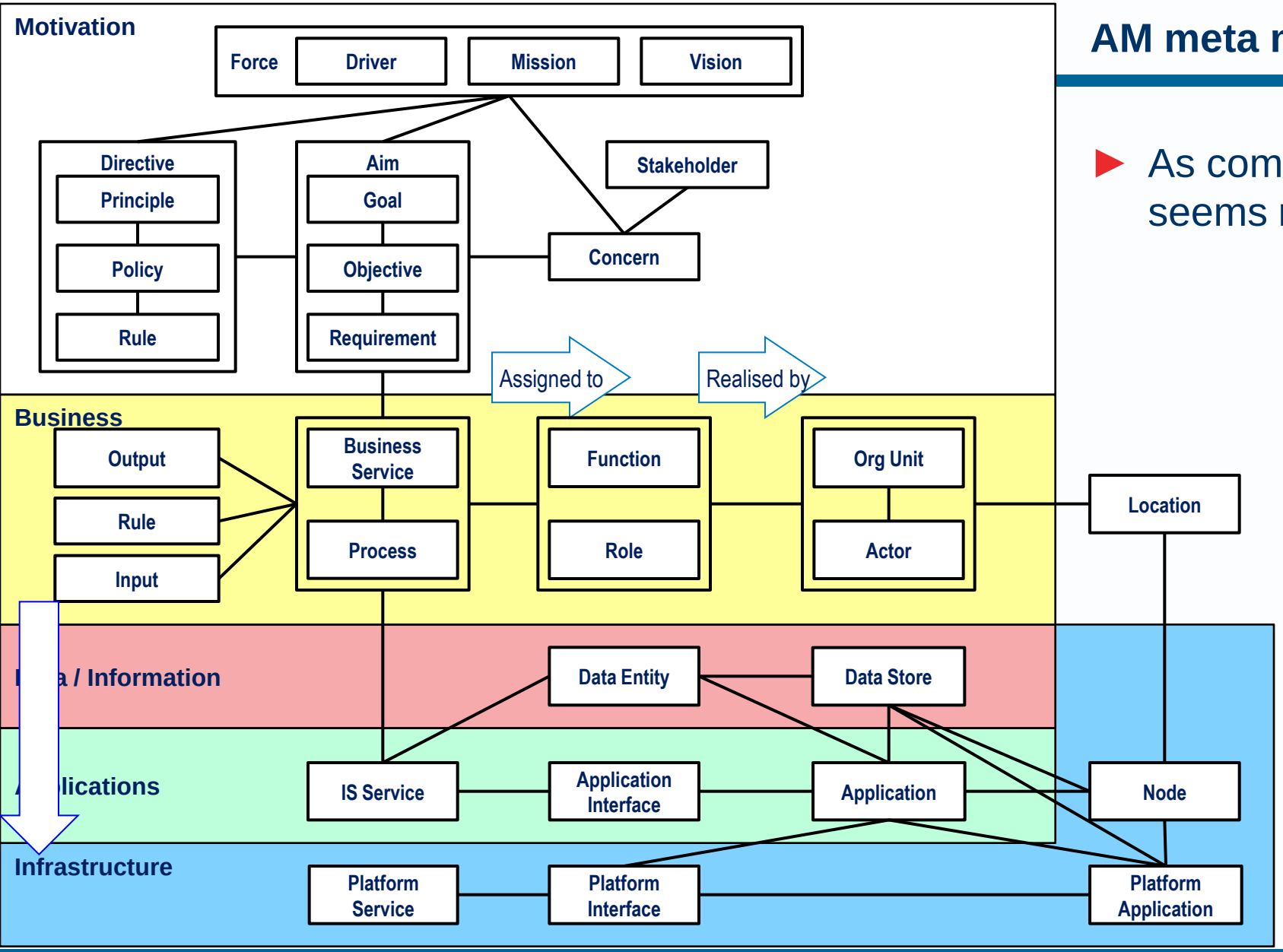


Copyright Avancier Limited 2008 - 2015

AM meta model

Avancier

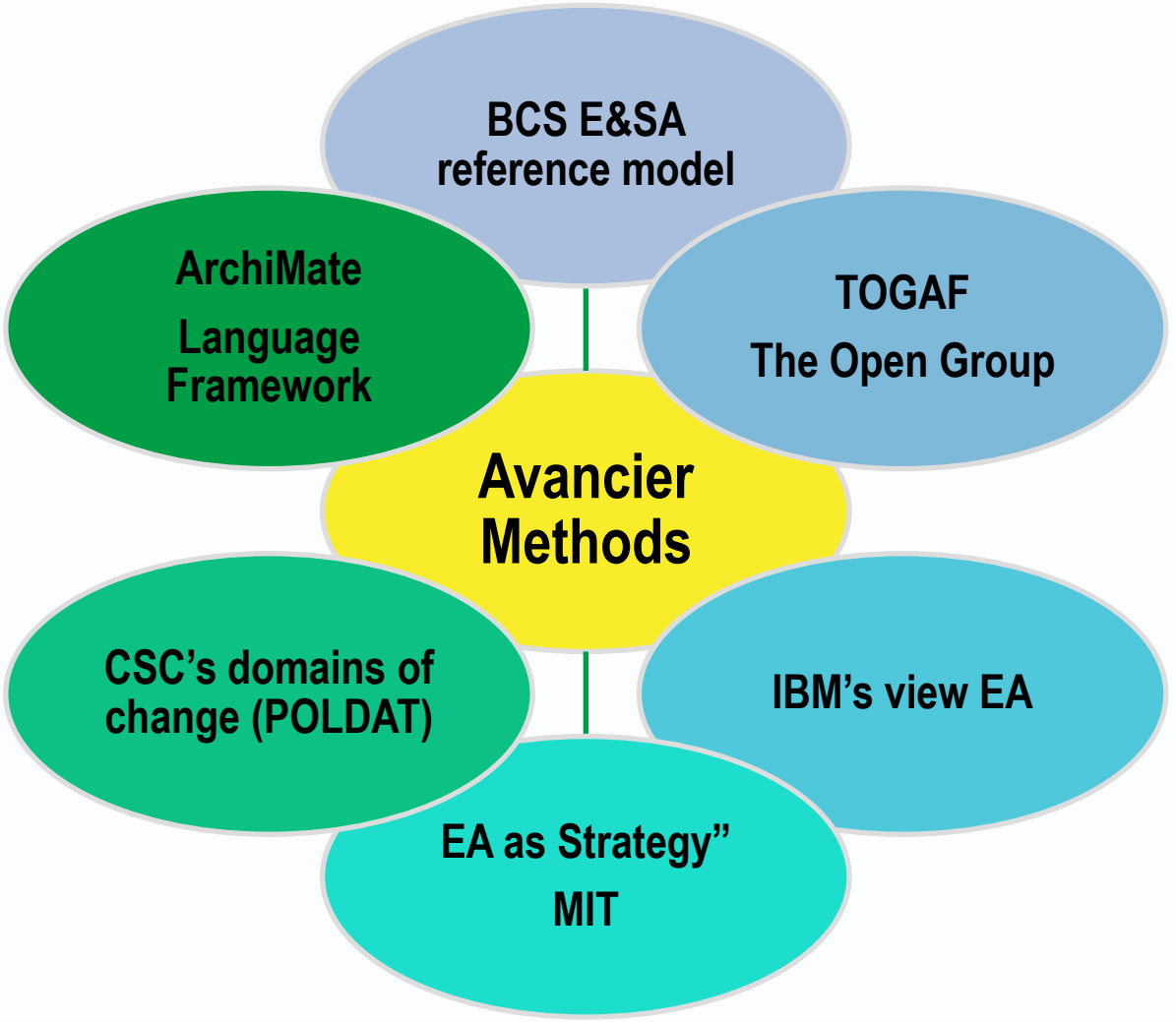
- As complete as seems reasonable



Copyright Avancier Limited 2008 - 2015

Methods and resources at http://avancier.website

- **Avancier Methods** are useful with all architecture frameworks that share similar ends and means



Copyright Avancier Limited 2008 - 2015