

Harmonising two conceptual frameworks for EA

Mapping TOGAF® to ArchiMate®

AKA Terminology Torture

Including some slides from Avancier's training to
BCS Enterprise and Solution Architecture Certificates

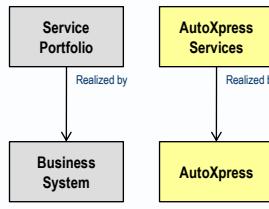
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And three diagrams edited from ArchiMate standards, Copyright © The Open Group, All Rights Reserved.
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The Open Group's general principle

- ▶ Standards should be based on “executable specification”.
- ▶ Specify a system by defining the behaviors it is required to perform, and their results.
- ▶ TOGAF applies this principle to the specification of business systems as well as IT systems.



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

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The unit of behavior - a service

- ▶ a required behavior or unit of work
- ▶ defined as a service requester sees it.
 - a logical representation of a repeatable behavior with a specified result. A service contract hides how a system works.
- ▶ may be short (retrieve customer address) or long (deliver a package).
 - The scope depends on what the requester wants and the resources available to the service performer.
- ▶ is realised by one or more components performing one or more processes.

AutoXpress Services

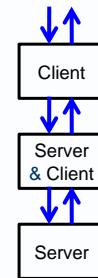
- Fit tyres
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The unit of structure - a “building block” (or component)



- ▶ a subsystem or actor of any kind, including human and computer actors.
- ▶ may be coarse-grained or fine-grained.
- ▶ can realise one or more services, either on its own or in collaboration with others
- ▶ can play the
 - client role of service requester and/or
 - server role of service performer.
- ▶ requests a service by sending a message that identifies the service to be performed.
 - (Less commonly, it pushes a service when triggered by a time event or system state change event.)

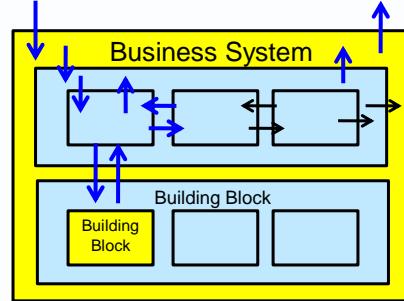


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Recursive architecture description



- ▶ Both building blocks and services are recursively composed
- ▶ One building block perform many services
- ▶ One service may require many building blocks (be they nested or sequential).



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The general approach in TOGAF

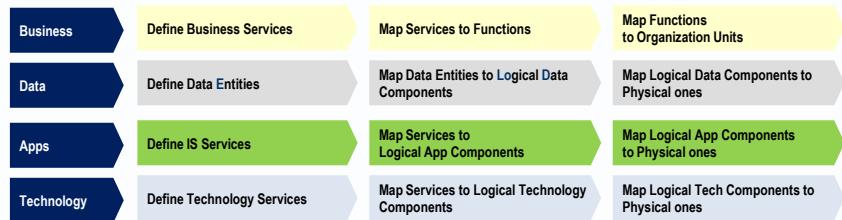


Baseline analysis abstracts *performed services* from building blocks

Identify performed Services

Study Physical SBBs

Target design starts from the *required services*



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TOGAF's generic relation

TOGAF 7 and 8	Required behaviors	<are clustered and assigned to>	Logical ABBs	<are realised by>	Physical SBBs
Cap Gemini TOGAF 9	Services	<are clustered and assigned to>	Logical Components	<are realised by>	Physical Components
Business Service/Function catalog	Business Services		Functions		Organization Units
Role catalog + Actor/Role matrix	Activities		Roles		Actors
Application portfolio catalog	IS Services		Logical Application Components		Physical Application Components
Technology portfolio catalog	Technology Services		Logical Technology Components		Physical Technology Components

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TOGAF 9.2 artifact types – including diagram types to follow



PRELIMINARY	VISION	REQUIREMENTS	PLANNING
Principles Catalog Driver/Goal/Objective Catalog Value Chain Diagram Business Model Diagram	Stakeholder Catalog Solution Concept Diagram Business Footprint Diagram	Requirements Catalog Requirements Traceability Matrix	Project Context Diagram Benefits Diagram
BUSINESS			
Capability view	People view	Process view	Business data view
Goal/Objective/Service Diagram Contract Measure Catalog Functional Decomposition Diagram Business Service/Function Catalog Business Interaction Matrix Node Connectivity Diagram	Organization Decomposition Diagram Function/Organization Matrix Role Catalog Organization/Role Catalog Actor/Role Matrix Location Catalog	Process Catalog Business Use Case Diagram Process Flow Diagram Event Diagram Product Lifecycle Diagram	Conceptual Data Diagram Data Entity/Business Function Matrix Business Service/Information Dgrm
Business Capabilities Catalog Strategy/Capability Matrix Business Capability Map	Organization Map Capability/Organization Matrix	Value Stream (Stages) Catalog Value Stream/Capability Matrix Value Stream Map	
DATA	APPLICATIONS	TECHNOLOGY	IMPLEMENTATION
Data Entity/Data Component Catalog Application/Data Matrix Logical Data Diagram Data Dissemination Diagram Data Security Diagram Data Migration Diagram Data Lifecycle Diagram	Application Portfolio Catalog Interface Catalog Application/Func/Org/Role Matrices Information Exchange Matrix Application Communication Diagram Process Application Realization Diagram Application and User Locations Diagram Application Use Case Diagram Application Migration Diagram	Technology Portfolio Catalog Technology Standards Catalog Application/Technology Matrix Environment and Locations Diagram Platform Decomposition Diagram	Software Engineering Diagram Software Distribution Diagram Enterprise Manageability Diagram Processing Diagram Networked Computing Hardware Dgrm Communications Engineering Dgrm

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A Business Architecture approach in TOGAF 8 and 9

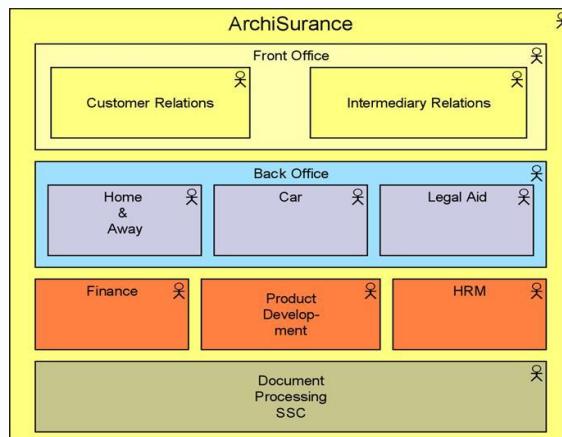
Business architecture approach in TOGAF 8	Corresponding artifacts in TOGAF 9
1 Define organization structure and locations	Organization Decomposition Diagram, Organization/Actor Catalog
2 Document business goals and objectives for each organizational unit	Driver/Goal/Objective Catalog
3 Identify business functions	Functional Decomposition Diagram
4 Define the services each enterprise unit performs, internally and externally	Goal/Objective/Service Diagram Business Service/Function Catalog Business Interaction Matrix or Diagram
5 Define business processes, inc. measures and deliverables	Process Catalog Business Scenario, Process Flow Diagram
6 Define business roles, inc. skills requirements.	Role Catalog
7 Define business data model	Conceptual Data Diagram
8 Relate business functions to organizational units	Function/Organization Matrix

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1 Define organization structure and locations

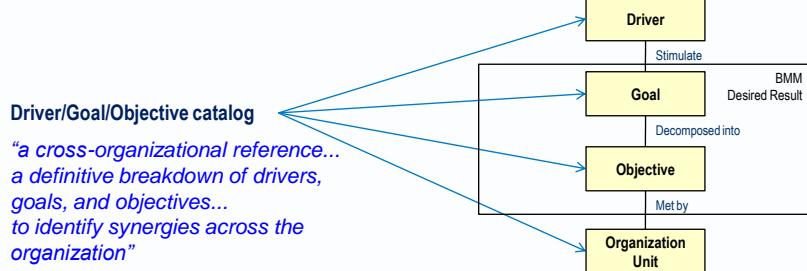


- ▶ Organisation Decomposition Diagram + Organization/Actor Catalog



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2 Document business goals & objectives for each organizational unit



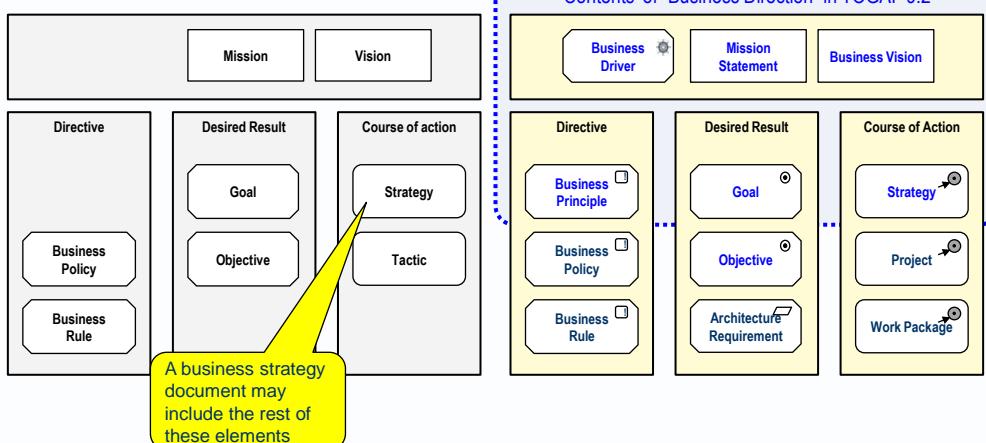
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Mapping the BMM to TOGAF



"Means" and "End" words in the Business Motivation Model from the OMG

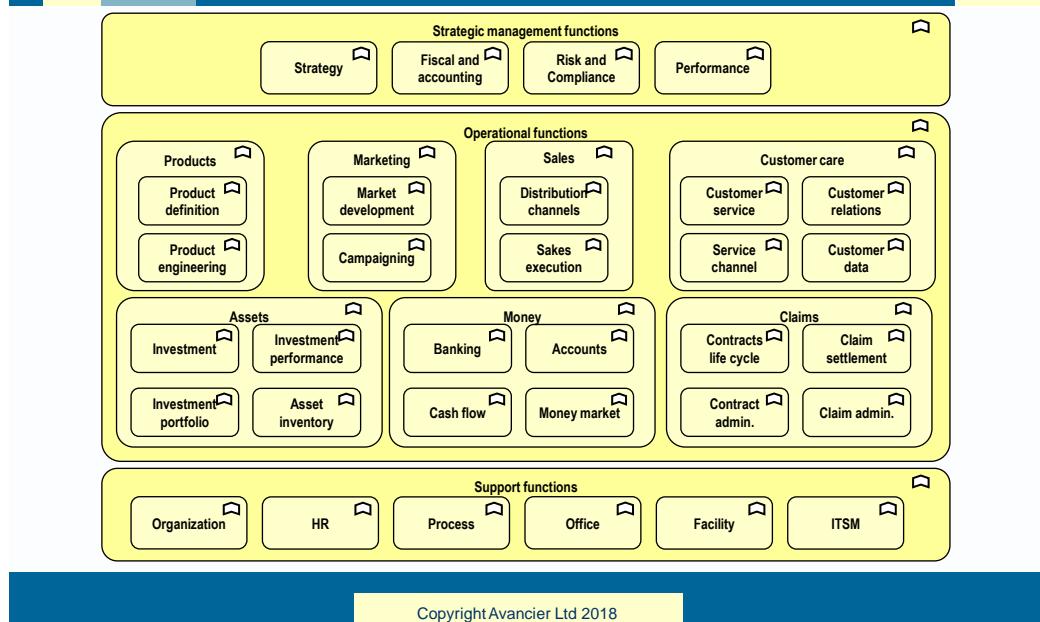
Contents of "Business Direction" in TOGAF 9.2



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3 Identify and define business functions

Functional Decomposition Diagram (logical organization structure)

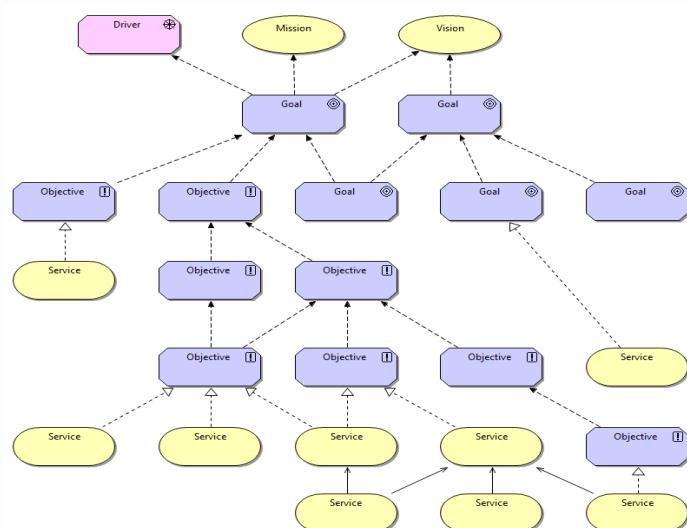


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4 Define the services (first identify them)



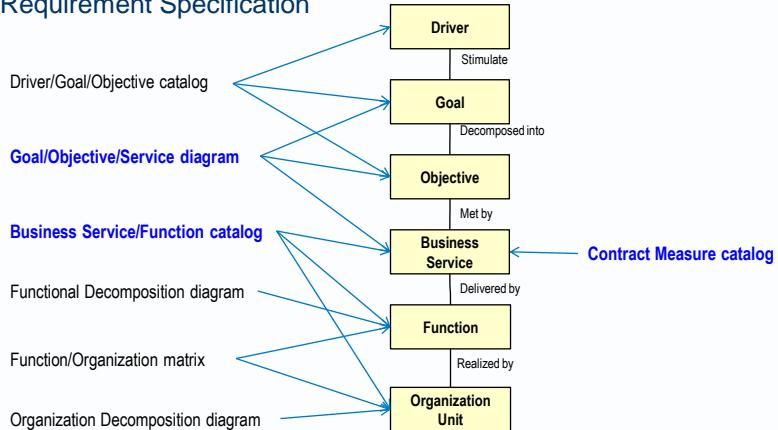
Goal/Objective/Service Diagram



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4 Define the services each enterprise unit performs, internally and externally

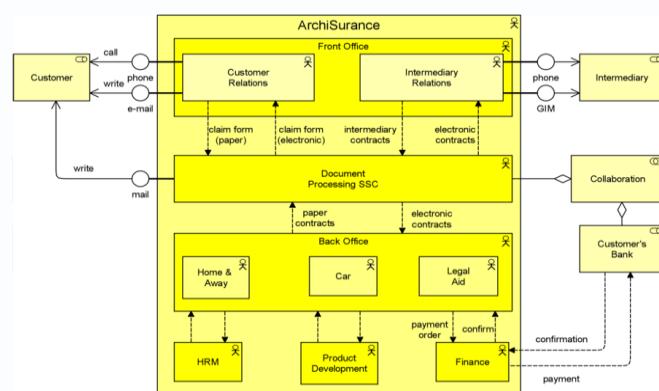
- ▶ Map business services to logical business functions
- ▶ Document business service contracts in the Architecture Requirement Specification



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At step 4, diagram types used may include

- ▶ Node Connectivity Diagram (ADM phase B), or
- ▶ Organization Viewpoint in ArchiMate 3



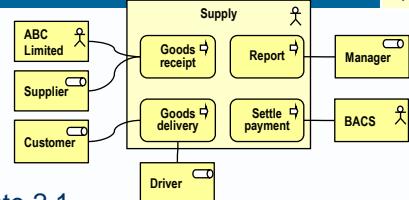
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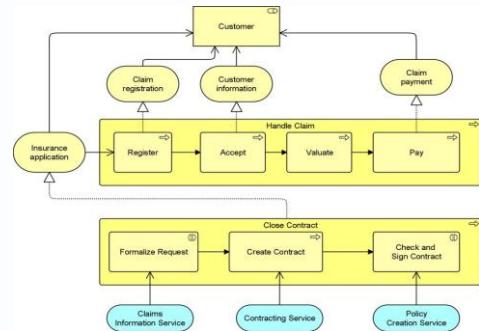
5 Define business processes (first identify them)



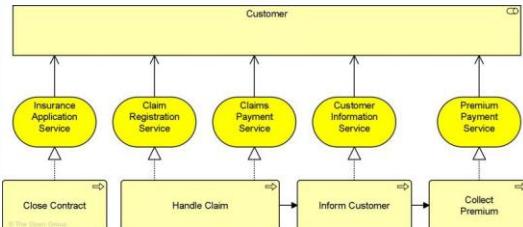
Business Use Case Diagram (Some prefer UML)



Business Process Co-operation in ArchiMate 2.1



Service Realization in ArchiMate 3



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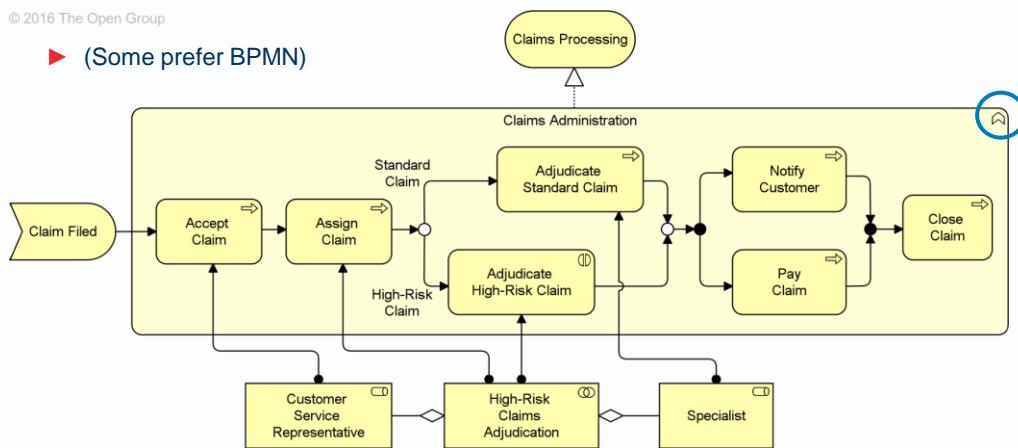
At step 5, diagram types used may include



- ▶ Process flow diagram (measures might be in a service contract)

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- ▶ (Some prefer BPMN)

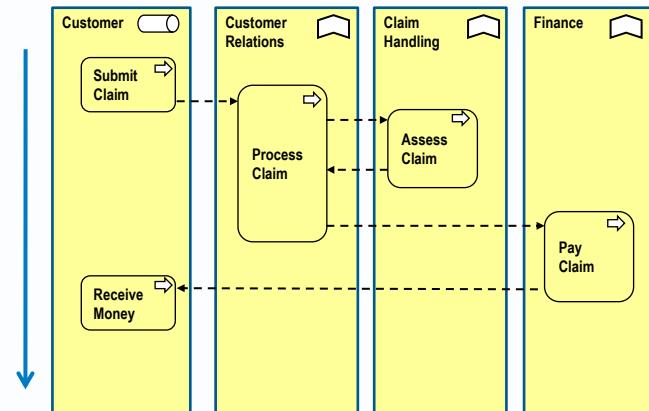


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At step 5, diagram types used may include

- ▶ Event diagram (measures might be in a service contract)



- ▶ (Some prefer UML)

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Remaining Business Architecture Definition Steps

6 Define **business roles**, including skills requirements

- Roles are assigned to activities/steps in processes

7 Define **business data model**

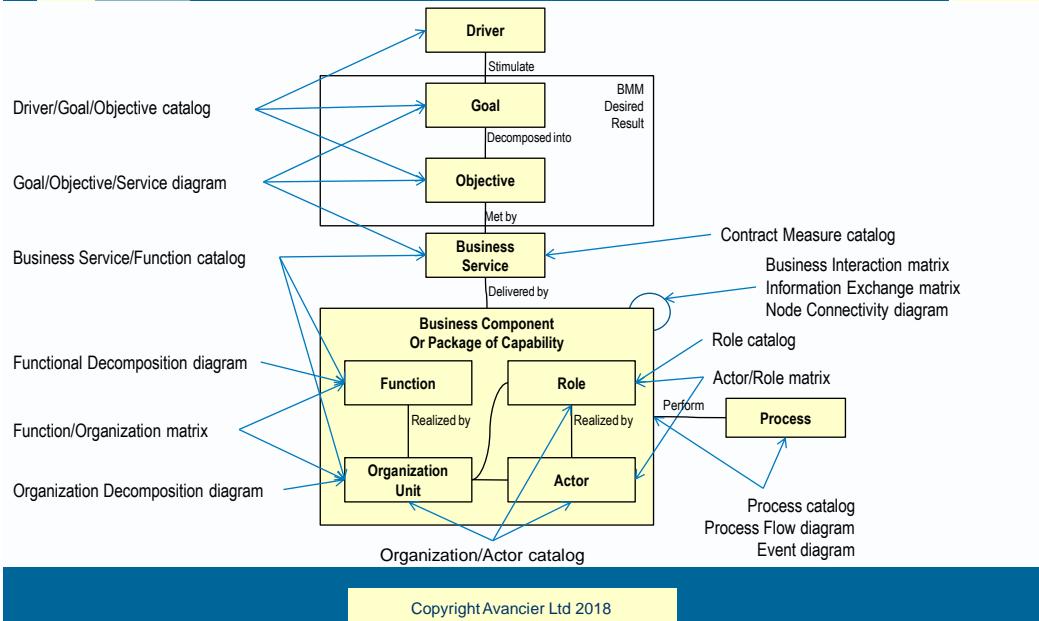
- ArchiMate's data modelling symbology is very thin
 - People draw 1 to many associations as aggregations
 - Which either turns all associations into "part of" relationships
 - Or stretches the concept of aggregation to vacuity
- Many prefer a data modelling notation standard

8 Relate **business functions** to **organizational units** in a matrix.

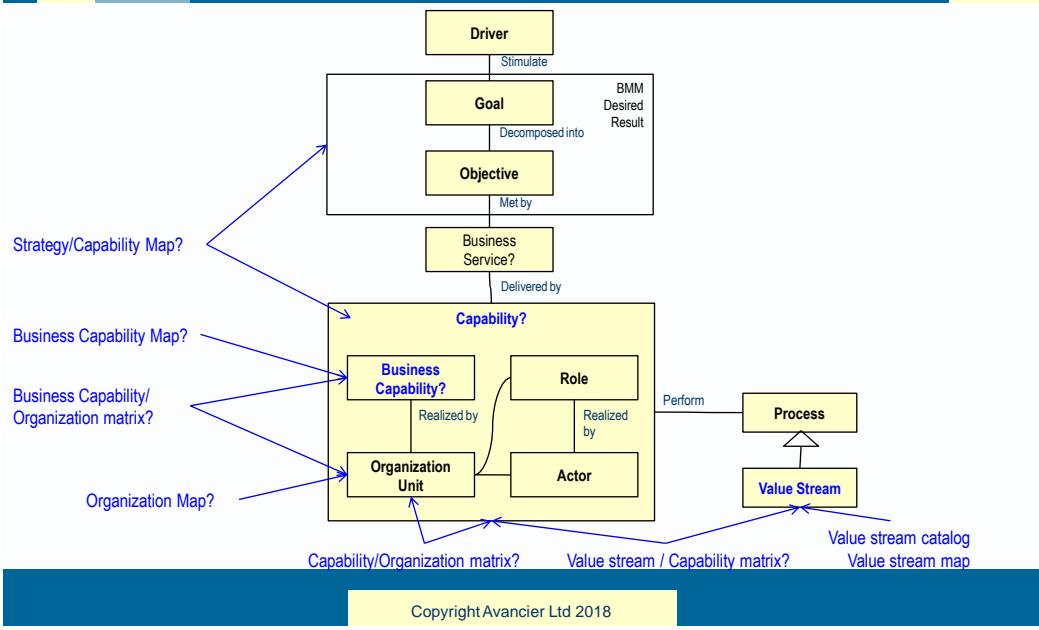
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A Business Architecture artifact map for TOGAF 9.1 and 9.2



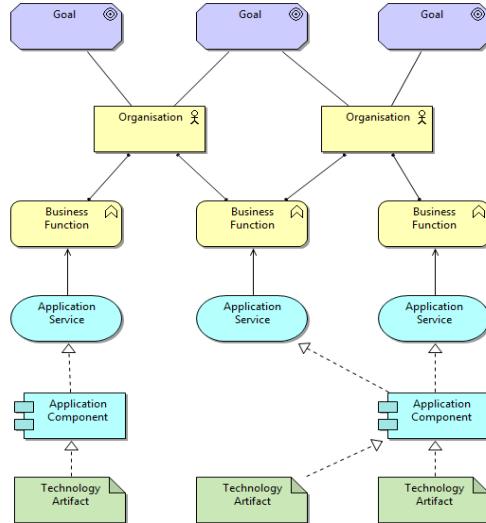
An alternative Business Architecture approach



Business Footprint Diagram

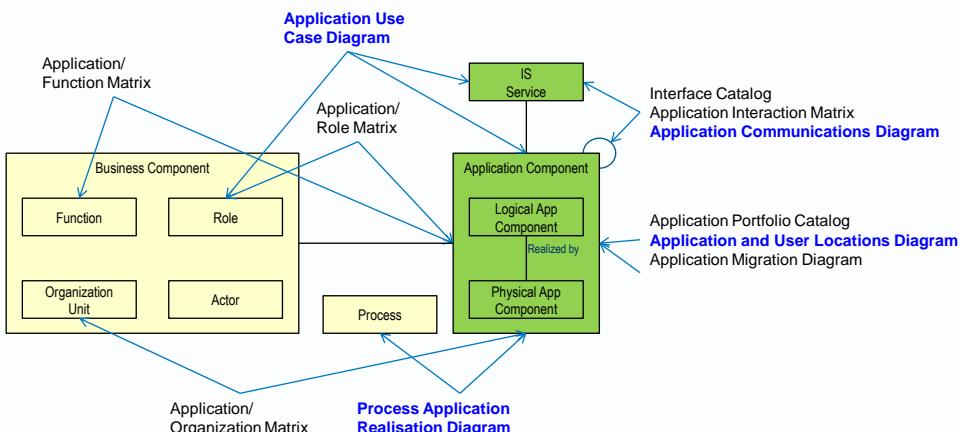


Pictures the scope of the “architecture project” from phase B to F



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An applications architecture artifact map inc.

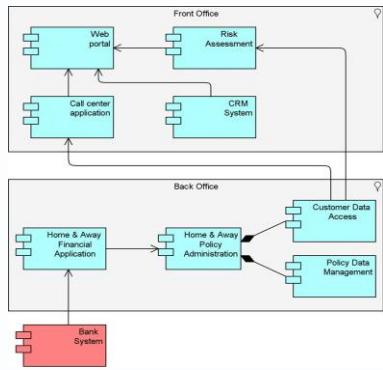


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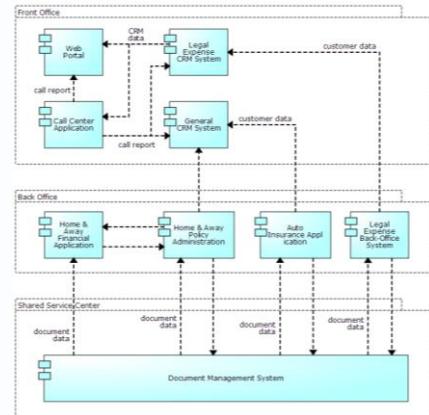


Application Communication Diagram

► Serves arrows



Flow arrows

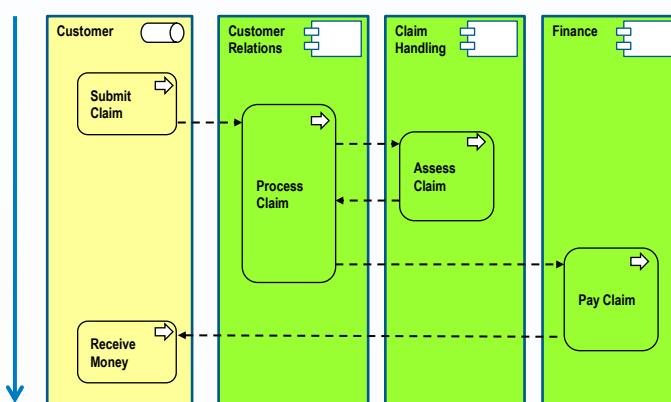


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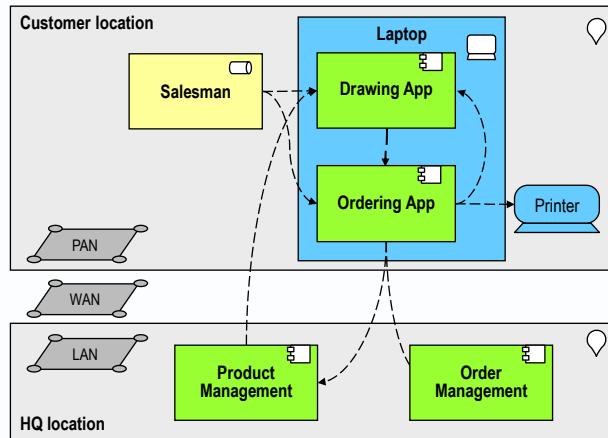
Process Application Realisation Diagram



(Some prefer UML)

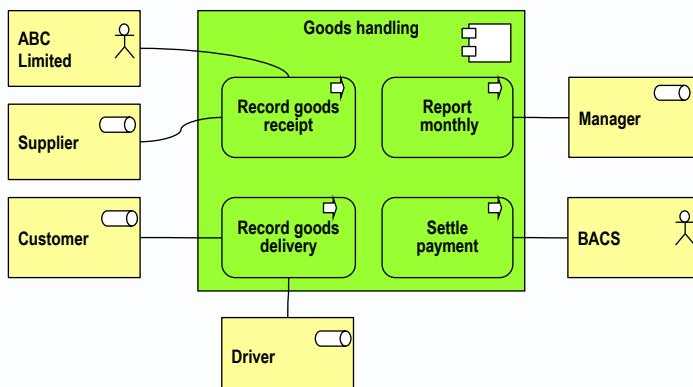
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Applications and User Locations Diagram



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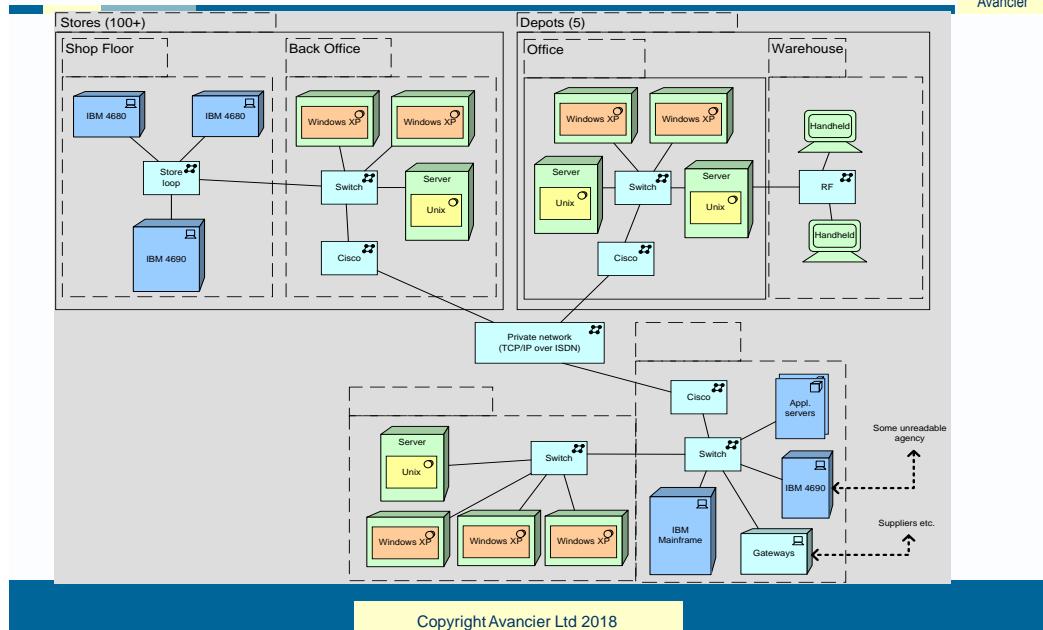
Application Use-Case Diagram



(Some prefer UML)

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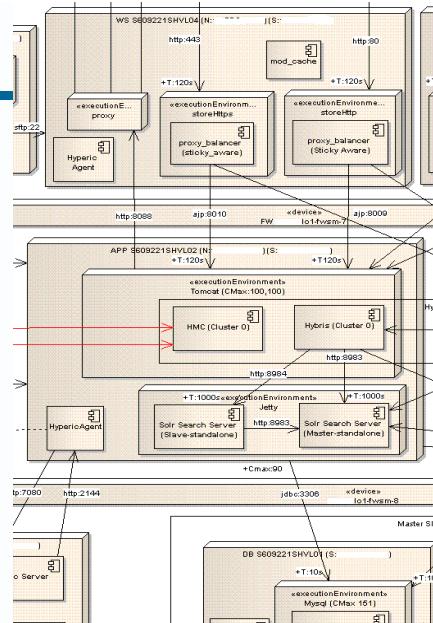
Environment and Locations Diagram / Technology Viewpoint in ArchiMate



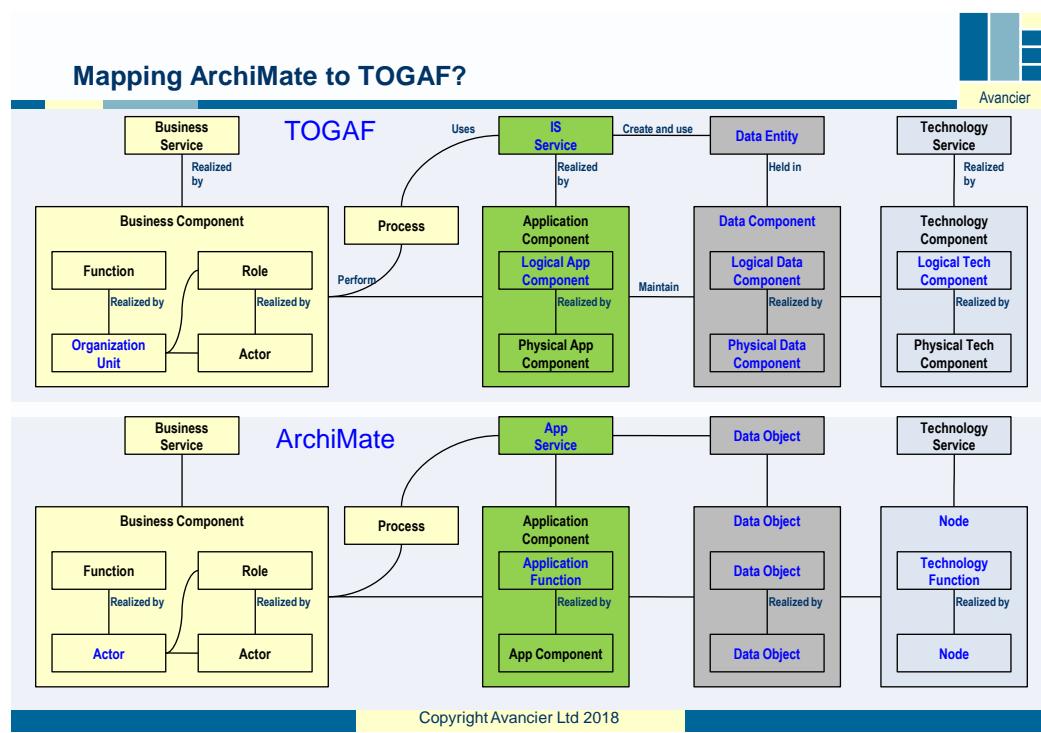
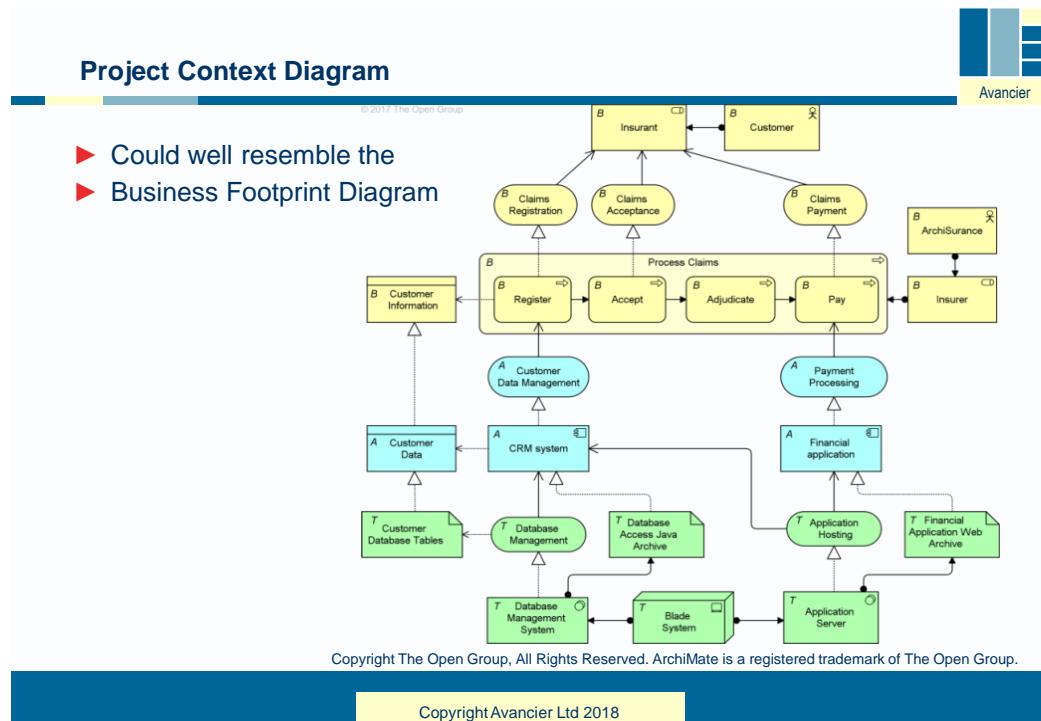
Technology architecture diagram varieties

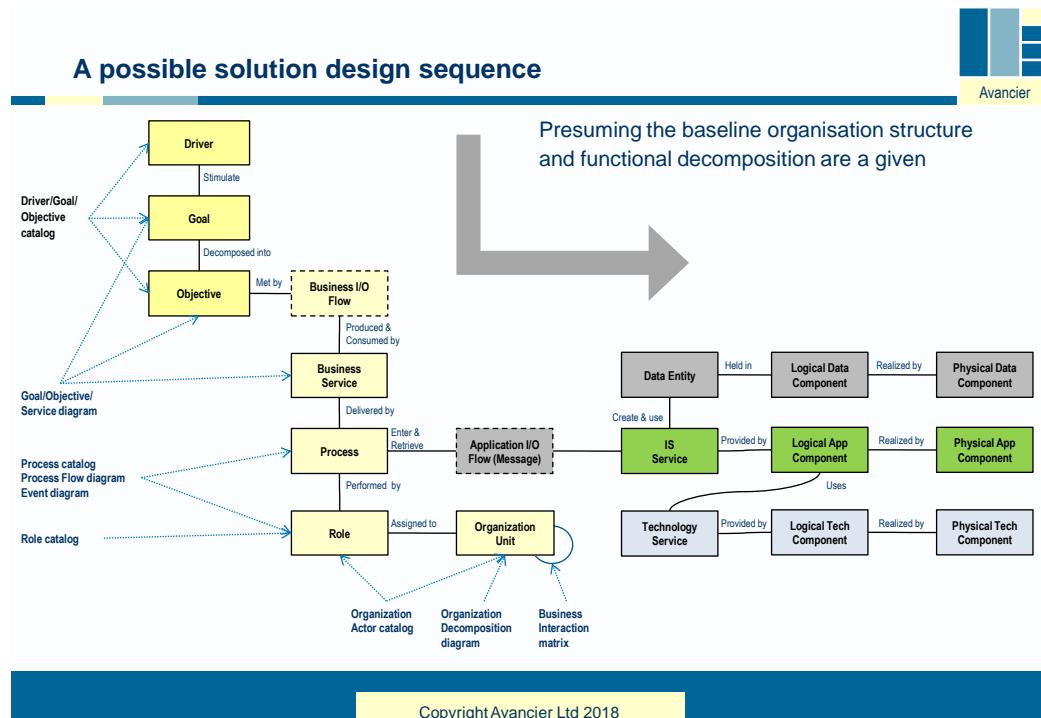
1. Platform Decomposition Diagram
2. Software Distribution Diagram
3. Enterprise (Application) Manageability Diagram
4. Processing Diagram
5. Networked Computing/Hardware Diagram
6. Network and Communications Diagram

Overlapping variations of the same thing
(Some prefer UML, or Visio)



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Read the associated paper for discussion of

- ▶ In TOGAF
 - Services and building blocks
 - Architecture building blocks v solution building blocks
 - Recursive architecture description
 - The general approach and the generic relation

- ▶ In ArchiMate
 - Service v Process
 - Interface v Component
 - Actor v Role
 - Process v Function
 - Structure v Behavior
 - Data Object v Business Object