Avancier Methods
Enterprise Architecture

Analyse baseline business architecture
using TOGAF artefacts

Understand the baseline

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Initiate	Architect	Plan	Govern
Identify requirements and constraints, agree the vision	Develop a target architecture	Plan migration from baseline to target state	Govern delivery of what has been planned

Understand the baseline

Review initiation products

Clarify NFRs

Design the target

1. **Understand the baseline business architecture**

2. **Understand the baseline data architecture**

3. **Understand the baseline applications architecture**

4. **Understand the baseline technology architecture**

5. **Look for reuse**

6. **Assess constraints and opportunities**
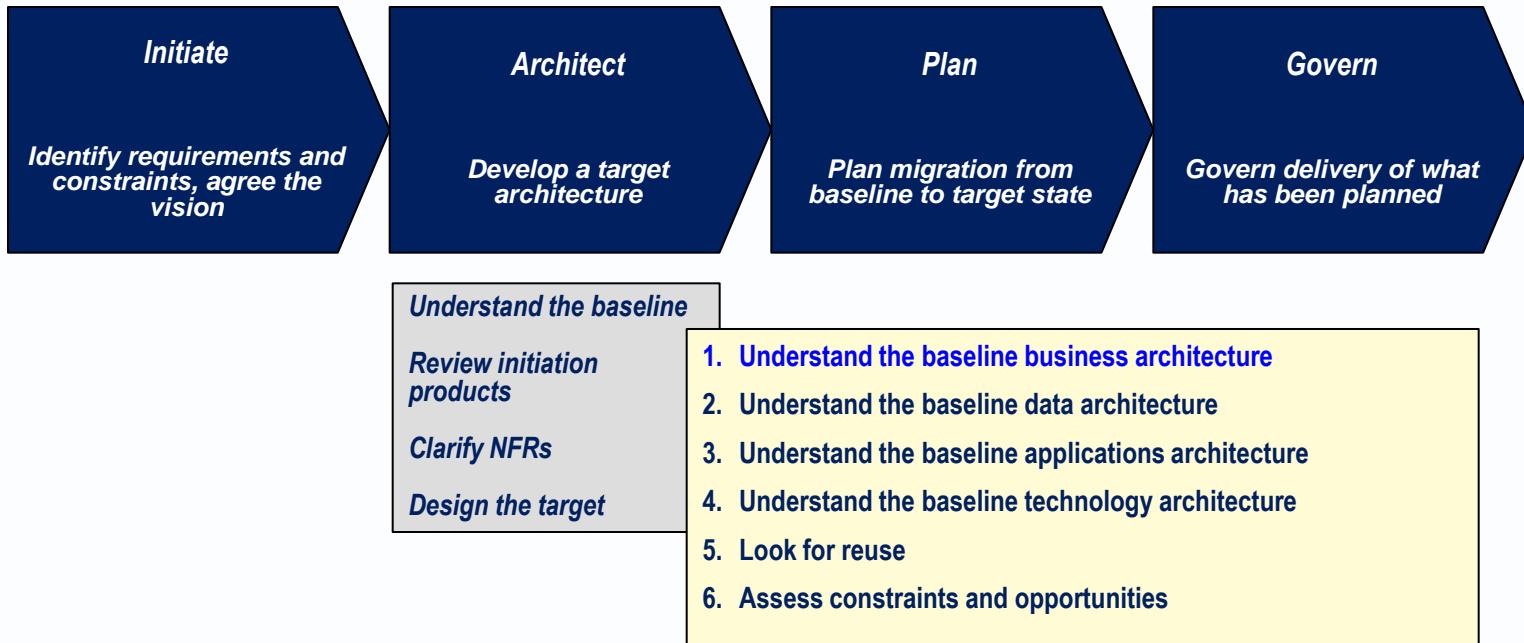
► The foundation of any activity system model is the

► **Atomic activity:** a process that is not further decomposed.

► Some recommend modeling down to the level of one-person, one-place one-time (OPOPOT) activities, but the initial analysis may stop short of that.

Four views of activities

► **A process** groups activities in sequence over time
► **A function or capability** groups activities using some other logical cohesion criteria
► **An organisation unit** groups activities performable by one managed team
► **A role** groups activities performable by an actor with the requisite ability

EA and BA in Skills Framework for the Information Age

Business

Service view — **Business Service**

Seven views based on SFIA slightly adapted to fit TOGAF

Process view — **Process**

Function — Capability view

Data/Info view — **Data Entity**

Atomic Business Activity

Org Unit — Organization view

IS view — **App Service**

Data

Role

Actor

People view

Application

Apps & Technology

Technology

# 4th level: Understand the business architecture (EA)

1. Form a motivation view
2. Form an organisation view
3. Form a capability view
4. Form a service view
5. Form a process view
6. Form a people view
7. For a data/information view
8. Form an applications view

Business Service

Process

Function

Data Entity

Atomic Business Activity

Org Unit

IS Service

Role

Actor

Application

Technology
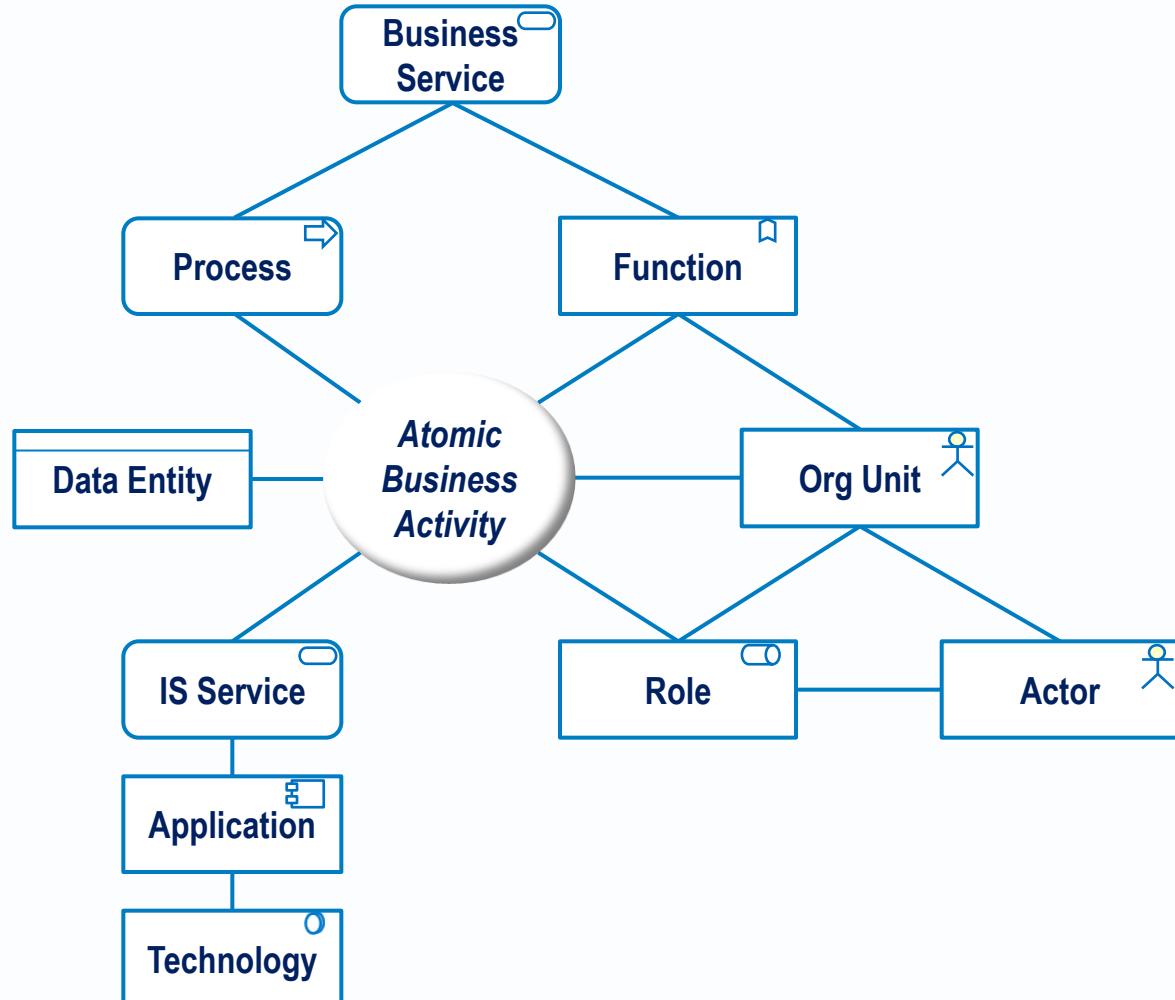
Form a motivation view

1. Form a motivation view
   - Document goals and objectives
2. Form an organisation view
3. Form a capability view
4. Form a service view
5. Form a process view
6. Form a people view
7. For a data/information view
8. Form an applications view

Form a motivation view

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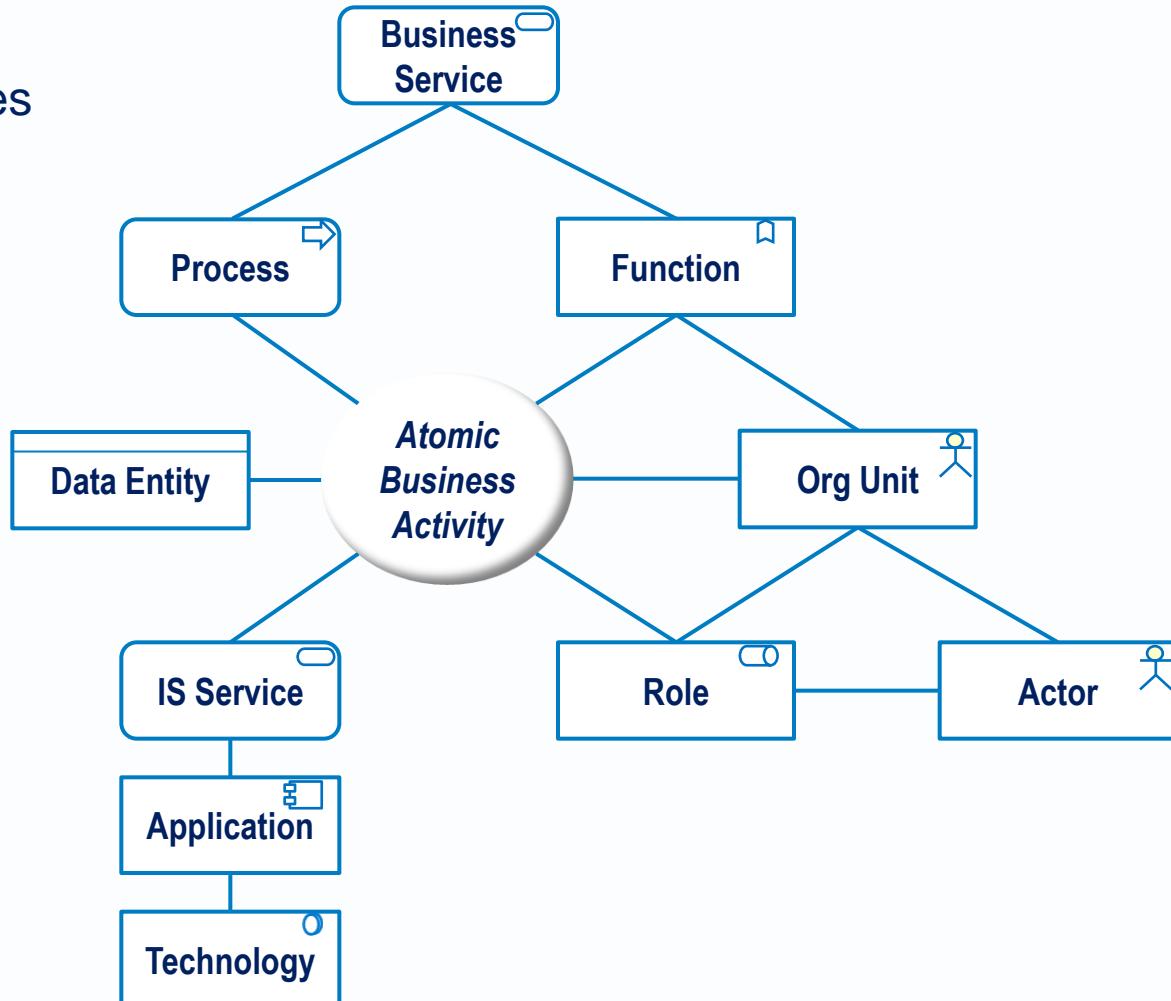
Decompose top-level goals into finer-grained
objectives (not a strict hierarchy)

Aim hierarchy
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
Simplify interfaces
Increase profit…
Improve working conditions…
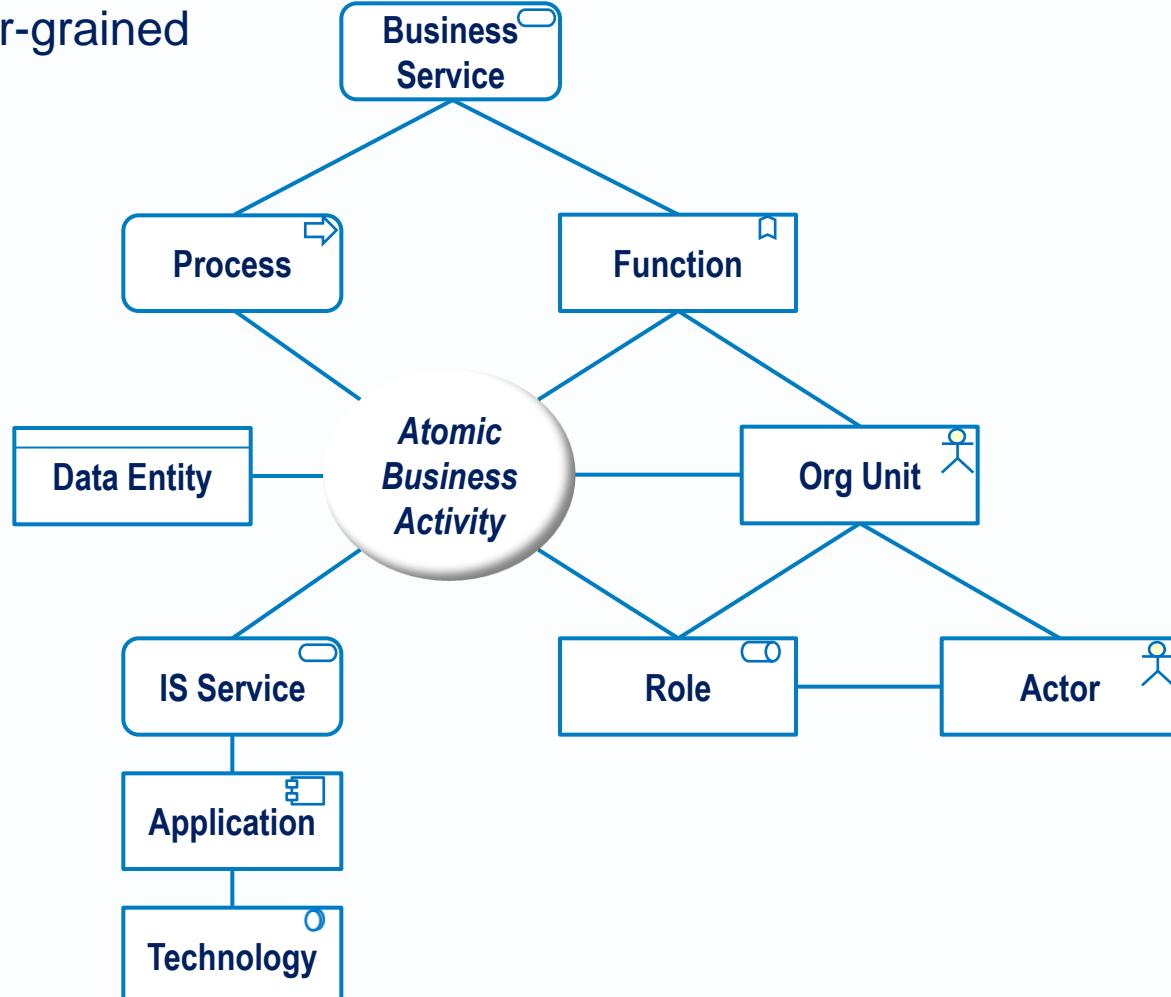
Form an organisation view

1. Form a motivation view
2. Form an organisation view
   - Document the organization structure
3. Form a capability view
4. Form a service view
5. Form a process view
6. Form a people view
7. For a data/information view
8. Form an applications view
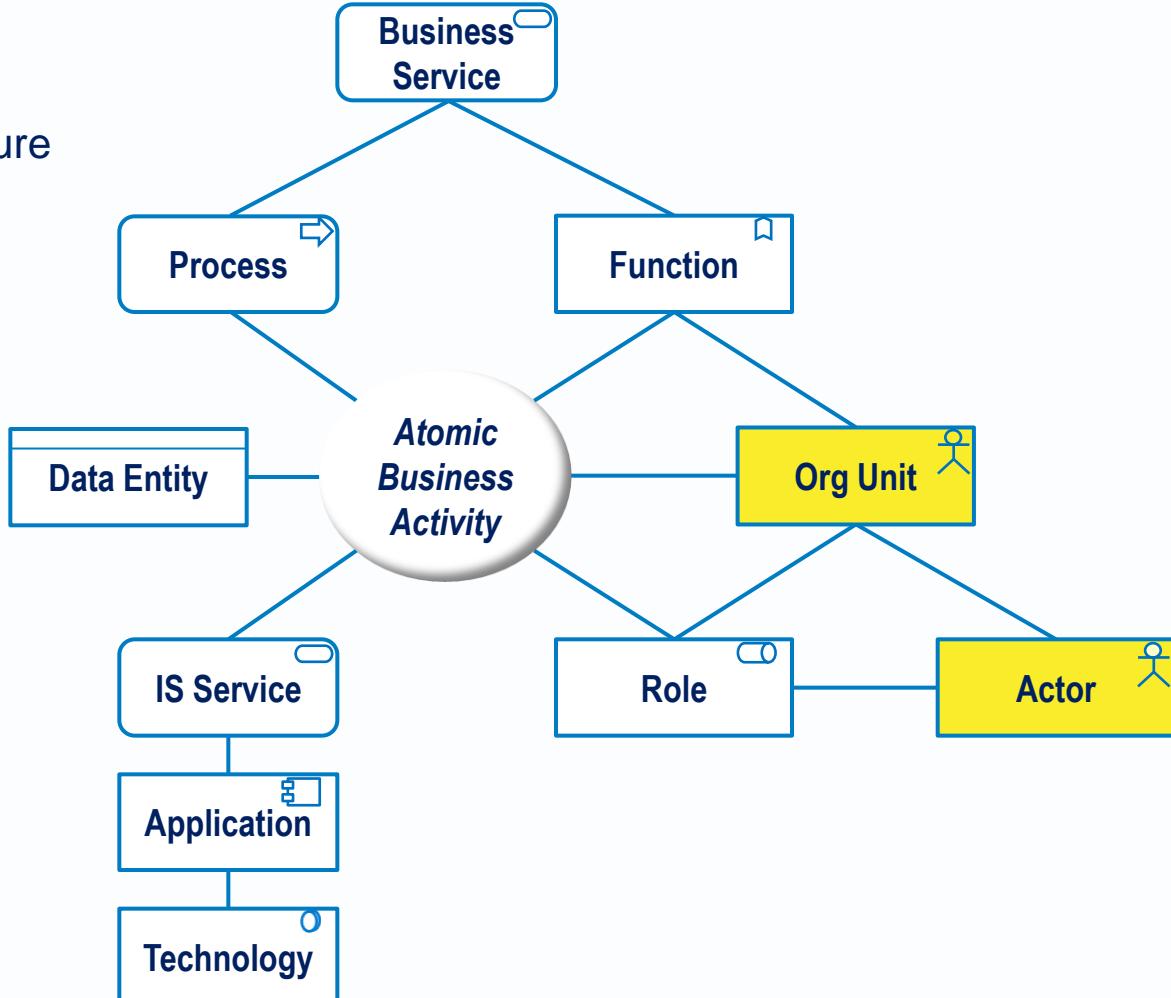
Form Organisation view

► Why study the Organisation Decomposition.

► Because the politics, problems and possibilities are much affected by it.

► So first, find or form an organisation *chart covering the area of interest*.
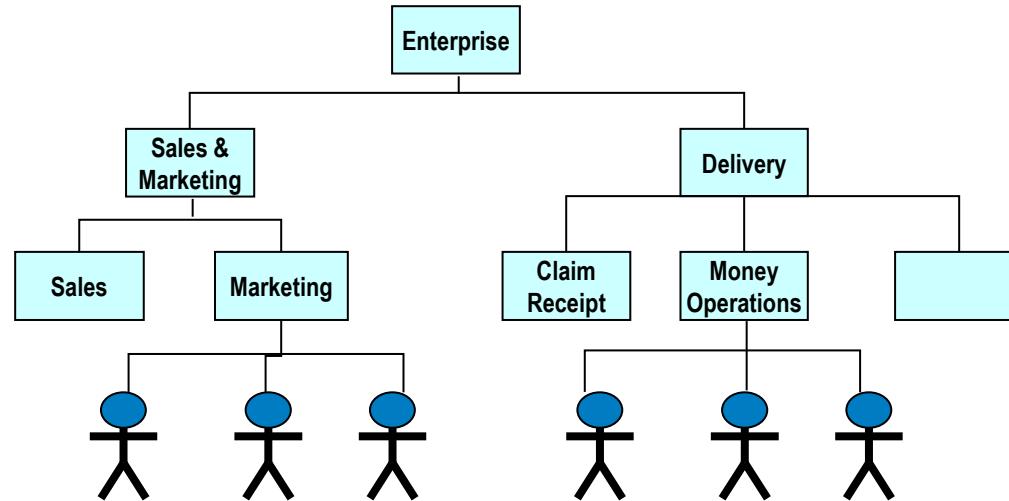
► An organization unit should be a self-contained unit of resources with measurable goals and objectives; it should also have a manager.

TOGAF with ArchiMate

► Organisation Decomposition Diagram + Organization/Actor Catalog
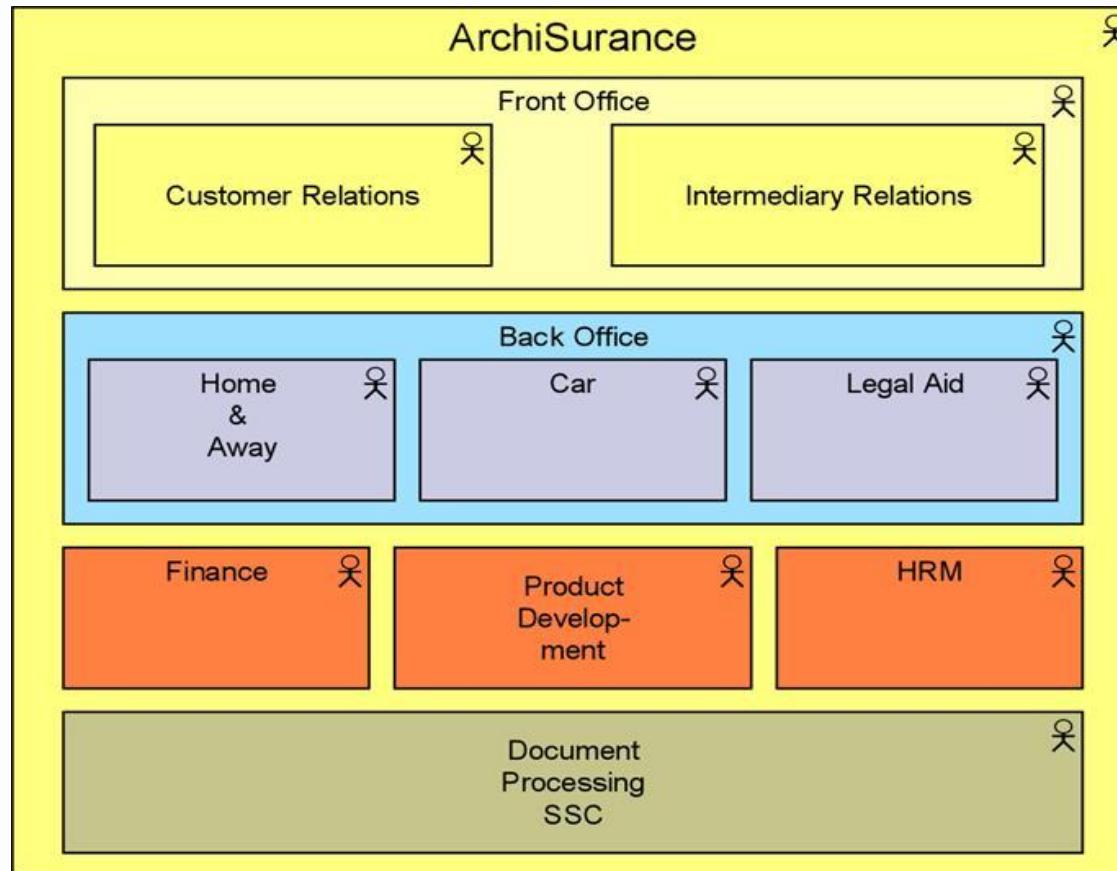
What might you find already documented?

► A company directory, identity management or access control system may record and relate some or all of these entities

Organization Decomposition

```
                                  ┌──────────┐        ┌──────────┐
                                  │ Org Unit │────────│ Location │
                                  └──────────┘        └──────────┘
                                       │
                                 *Org/Actor Cat*
                                       │
  ┌──────┐   *Actor/Role Matrix*  ┌──────────┐
  │ Role │───────────────────────│  Actor   │
  └──────┘                        └──────────┘
     │
*Role/Application Matrix*
     │
┌──────────────┐
│ Logical App  │
│  Component   │
└──────────────┘
```
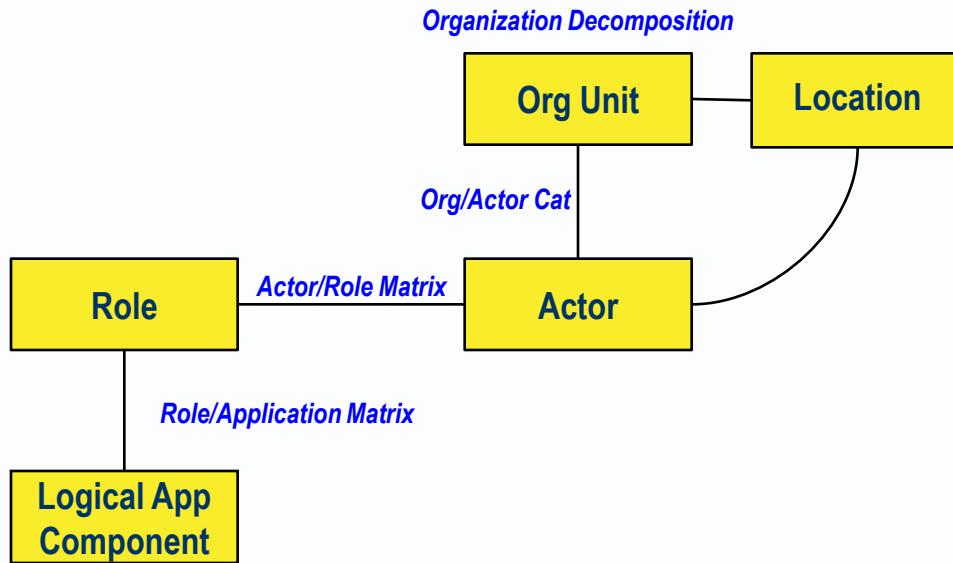
► RBAC Role-Based Access Control (as in AWS, Azure, etc.)
► "Principle of Least Privilege"

Form a capability view

1. Form a motivation view
2. Form an organisation view
3. Form a capability view
   - Define a logical org. hierarchy
   - Map to organization units
4. Form a service view
5. Form a process view
6. Form a data/info view
7. Form an applications view
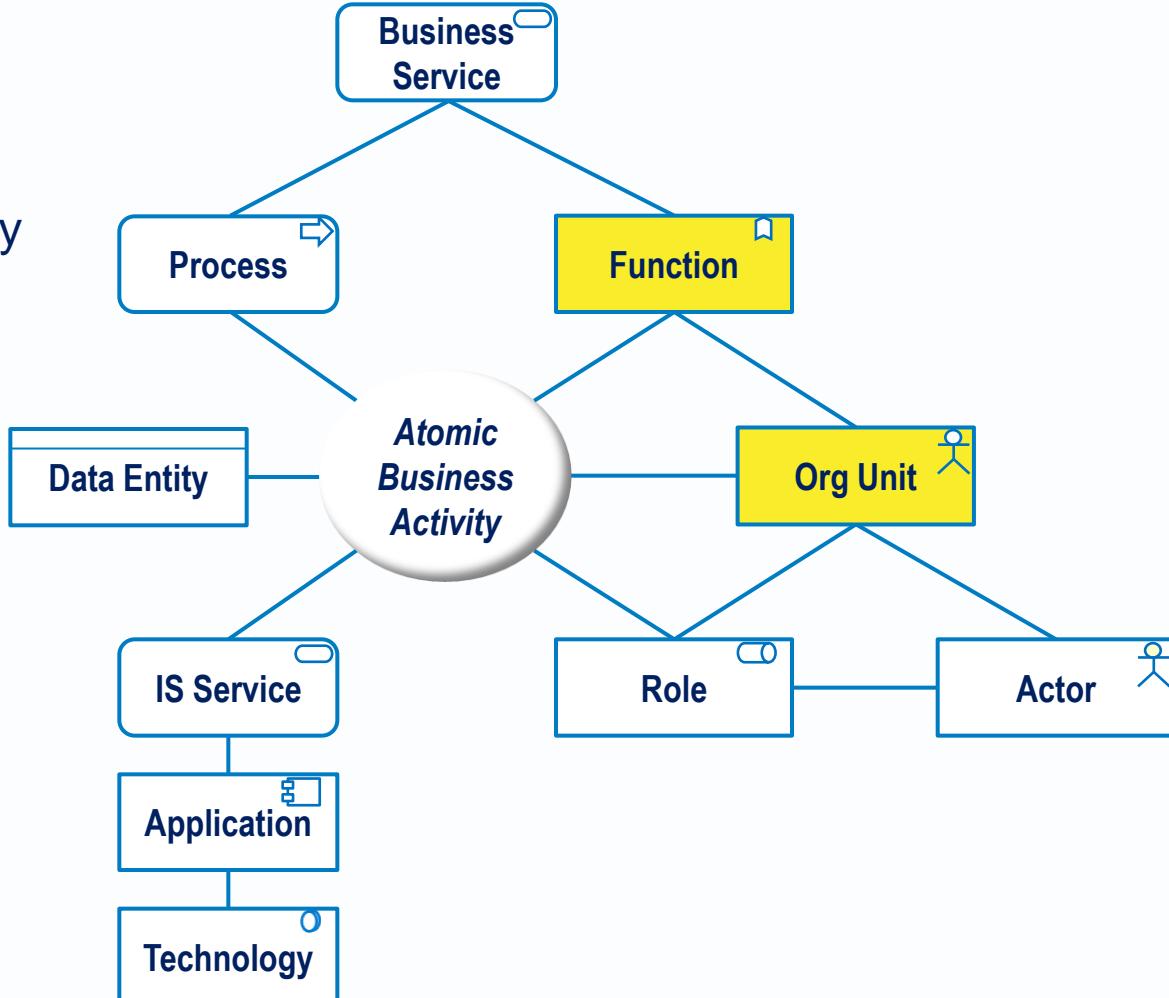
Form a capability view

► How to insure the EA model against
  - staff turn over and
  - reorganisations
► that change the organisation structure?

► The convention is to
  - Decouple the architecture from the management structure
  - Find or build a *logical* organisation structure
  - Use it to engage business managers and map other architecture elements to it.
  - The level and rigor of decomposition varies from enterprise to enterprise.

Form a capability view – buy one?

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► You may be able to find a logical structure in the form of a reference model that nearly fits your business – then tailor it

The BIAN Service Landscape V2.5

The BIAN Service Landscape V2.5

Reference Data

Party
- Party Data Management
- Party Profile

External Agency
- Information Provider Admin
- Syndicate Management
- Correspondent Bank Rel Mgmt
- Sub Custodian Agreement
- Product Service Agency
- Product Broker Agreement
- Contractor/Supplier Agreement

Market Data
- Information Provider Operation
- Market Information Mgmt
- Financial Market Analysis
- Financial Market Research
- Quantitative Analysis
- Market Data Dissemination Adm
- Market Data Dissemination Ops
- Financial Instr Ref Data Mgmt
- Counterparty Administration
- Reference/Directory Mgmt
- Location Data Management

Product Management
- Product Design
- Product Combination
- Product Deployment
- Product Training
- Product Quality Assurance
- Product Pricing Facility

Sales & Service

Channel Specific
- Branch Location Management
- Call Center Management
- Branch Network Mgmt
- E-Branch Management
- PBX Management
- ATM Network Management
- Call Center Operations
- Branch Location Operations
- E-Branch Operations
- PBX Operations
- ATM Network Operations
- Branch Currency Management
- Branch Currency Distribution
- Product Inventory Item Mgmt
- Product Inventory Distribution

Cross Channel
- Party Authentication
- Transaction Authorization
- Servicing Position
- Servicing Event History
- Servicing Activity Analysis
- Contact Routing
- Contact Dialogue
- Interactive Help

Marketing
- Business Development Portfolio
- Business Development
- Brand Management
- Advertising
- Promotional Events
- Prospect Campaign Mgmt
- Prospect Campaign Design
- Customer Campaign Mgmt
- Customer Campaign Design
- Customer Surveys

Sales
- Prospect Campaign Execution
- Prospect Management
- Customer Campaign Execution
- Offer Management
- Sales Planning
- Underwriting
- Commission Agreement
- Commission Transaction
- Product Matching
- Product Expert Sales Support
- Sales Product

Customer Mgmt
- Customer Relationship Mgmt
- Customer Agreement
- Sales Product Agreement
- Customer Access Entitlement
- Customer Behavioral Insights
- Customer Credit Rating
- Account Recovery
- Customer Event History

Servicing
- Servicing Issue
- Case Management
- Case Resolution Analysis
- Customer Case
- Card Case
- Customer Order
- Payment Order

Operations & Execution

Consumer Products

Consumer Loans & Deposits
- Loan
- Leasing
- Current Account
- Deposit Account

Cards
- Card Facility
- Card Authorization
- Card Capture
- Card Billing & Payments
- Merchant Relations

Consumer Services
- Trust Services
- Remittance Services
- Currency Exchange
- Bank Drafts & T Checks
- Brokered Product
- Consumer Investments

Financial Markets

Investment Management
- Investment Portfolio Planning
- Investment Portfolio Analysis
- Investment Portfolio Mgmt
- eTrading

Wholesale Trading
- Trading Book Oversight
- Dealer Workbench
- Quote Management
- Suitability Checking
- Credit Risk Operations
- Market Making
- Assisted Trading
- Program Trading
- Trade Management
- Order Management
- Order Execution

Market Operations
- Mutual Fund Administration
- Hedge Fund Administration
- Unit Trust Administration
- Trade Confirmation Matching
- Order Allocation
- Settlement Obligation Mgmt
- Settlement Delivery Mgmt
- Securities Fails Processing
- Trade/Price Reporting
- Custody Administration
- Customer Entitlement Admin
- Financial Instrument Valuation

Corporate Products

Trade Finance
- Letter of Credit
- Bank Guarantee
- Trade Finance Services

Corporate Banking Products
- Credit Management
- Credit Facility
- Corporate Current Account
- Project Finance Services
- Limit & Exposure Management
- Syndication Management
- Cash Mgmt & Account Svs
- Direct Debit Mandate Mgmt
- Direct Debit Fulfilment
- Cheque Lock Box
- Factoring

Corporate Financing & Advisory Services
- Corporate Finance Services
- M&A Advisory Services
- Corporate Tax Advisory Svs
- Public Offering
- Private Placement

Cross Product Operations

Payments
- Payments Execution
- Financial Message Gateway
- Correspondent Bank Fulfilment
- Cheque Processing
- Central Cash Holding

Collateral Administration
- Collateral Management
- Collateral Asset Administration
- Collections

Account Management
- Position Keeping
- Reward Points Account
- Accounts Receivable
- Account Reconciliation
- Counterparty Risk
- Position Management
- Fraud Detection
- Transaction Engine

Operational Services
- Token Inventory
- Token Tracking
- Disbursement
- Open Item Management
- Leasing Item Administration
- Dunning
- Billing Services
- Rewards Points Administration
- Consolidated Customer Activity

Risk & Compliance

Bank Portfolio & Treasury
- Treasury Management
- Treasury Administration
- Asset Securitization
- Asset & Liability Management
- Bank Portfolio Analysis
- Bank Portfolio Administration
- Stock Lending/Repo

Models
- Market Risk Models
- Financial Inst Valuation Models
- Gap Analysis
- Credit Risk Models
- Liquidity Risk Models
- Economic Capital
- Business Risk Models
- Customer Behavior Models
- Fraud Models
- Credit Margin Policies
- Production Risk Models
- Operational Risk Models
- Contribution Models

Business Analysis
- Segment Plan
- Product Portfolio
- Customer Portfolio
- Branch Portfolio
- Channel Portfolio
- Competitor Analysis
- Market Research
- Market Analysis
- Contribution Analysis

Regulations & Compliance
- Guideline Compliance
- Regulatory Compliance
- Compliance Checks
- Compliance Reporting
- Fraud/AML Resolution
- Financial Accounting

Business Support

IT Management
- IT Policies & Plan
- IT Arch Stds & Guidelines
- Systems Administration
- Development Environment
- System Development
- Production Release
- System Deployment
- Systems Operations
- Platform Operations
- Systems Help Desk
- Systems Assurance
- Internal Network Operations

Non IT and HR Enterprise Services
- Legal Assurance
- Internal Audit
- Security Services
- Security Assurance
- Supplier Management
- Procurement
- Company Billing & Payments
- Fixed Asset Register

Buildings, Equipment and Facilities
- Property Portfolio
- Site Operations
- Site Administration
- Equipment Administration
- Equipment Maintenance
- Utilities Administration
- Building Maintenance

Business Command & Control
- Organizations Model
- Business Unit Budget
- Business Unit Financial Analysis
- Business Unit Financial Ops
- Business Unit Accounting
- Business Unit Management
- Business Unit Operations

Finance
- Financial Statements
- Financial Control
- Financial Compliance Resolution
- Tax Administration

Human Resource Management
- HR Policies & Plan
- Employee Assignment
- Employee Record
- Employee/Contractor Contract
- Employee Certification
- Employee Assessment
- Employee Payroll & Incentives
- Travel & Expenses
- Employee Access Profile
- Employee Benefits
- Workforce Training
- Recruitment

Knowledge & IP Management
- Knowledge Manual
- Intellectual Property Portfolio
- Knowledge Exchange

Corporate Relations
- Corporate Communications
- Corporate Alliance/Stakeholder
- Corporate Relationship
- Regulatory & Legal Authority
- Investor Relations

Business Direction
- Corporate Strategy
- Corporate Policies
- Product & Service Policies
- Business Architecture
- Continuity Planning

Document Mgmt & Archive
- Document Services
- Archive Services
- Correspondence

Form a capability view – build one? (ArchiMate)

Strategic management functions

- Strategy
- Fiscal and accounting
- Risk and Compliance
- Performance

Operational functions

Products
- Product definition
- Product engineering

Marketing
- Market development
- Campaigning

Sales
- Distribution channels
- Sakes execution

Customer care
- Customer service
- Customer relations
- Service channel
- Customer data

Assets
- Investment
- Investment performance
- Investment portfolio
- Asset inventory

Money
- Banking
- Accounts
- Cash flow
- Money market

Claims
- Contracts life cycle
- Claim settlement
- Contract admin.
- Claim admin.

Support functions

- Organization
- HR
- Process
- Office
- Facility
- ITSM

Map business functions to organizational units

► <u>An Organisation/Function matrix</u> shows which organisation units realise which functions - at any chosen level of granularity.

► Functional organisation

Organisation Function	Marketing	Sales	Delivery
Marketing	Activity		
Sales		Activity	
Delivery			Activity

► Non-functional organisation
  ■ Product? Customer? Location?

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

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Form a service view

1. Form a motivation view
2. Form an organisation view
3. Form a capability view
4. Form a service view
   - Define services that meet the goals
5. Form a process view
6. Form a people view
7. For a data/information view
8. Form an applications view
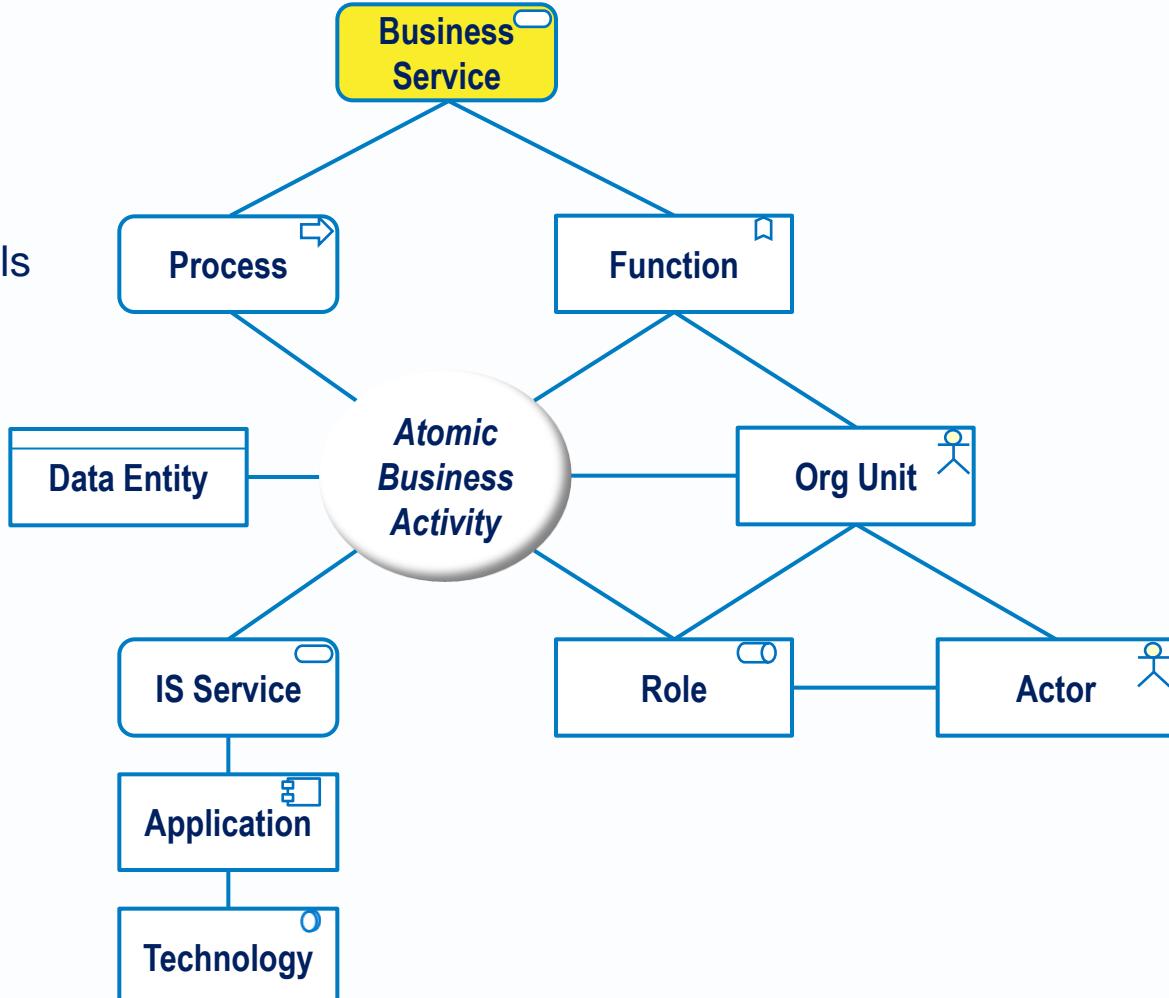
Form a service view

► Looked at from the outside, a business or function within it can be described in terms of the services it offers.

► Akin to how we define an application
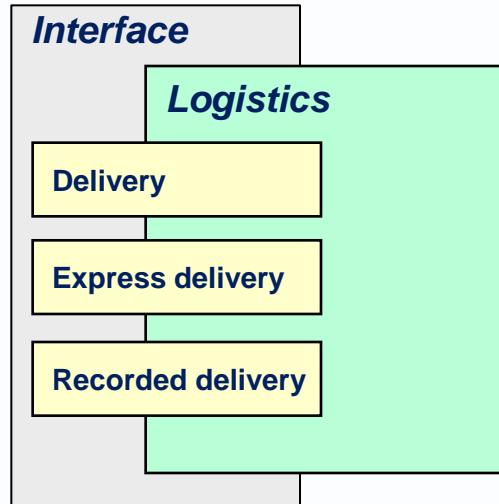
Detail business services to the extent necessary

► Name only

► Signature
- Name
- Trigger
- Inputs and outputs

► Rules
- Pre-conditions
- Post conditions

► Non-functional qualities
- duration
- frequency
- availability,
- etc

► Name

► Entry Conditions
- Trigger
- Inputs
- Pre-conditions

■ Exit Conditions
- Outputs
- Post conditions

► Non-functional qualities
- duration
- frequency
- availability,
- etc

Form a process view

1. Form a motivation view
2. Form an organisation view
3. Form a capability view
4. Form a service view
5. Form a process view
   - Sequence activities in processes
   - that deliver products/services of value
6. Form a people view
7. Form a data/information view
8. Form an applications view

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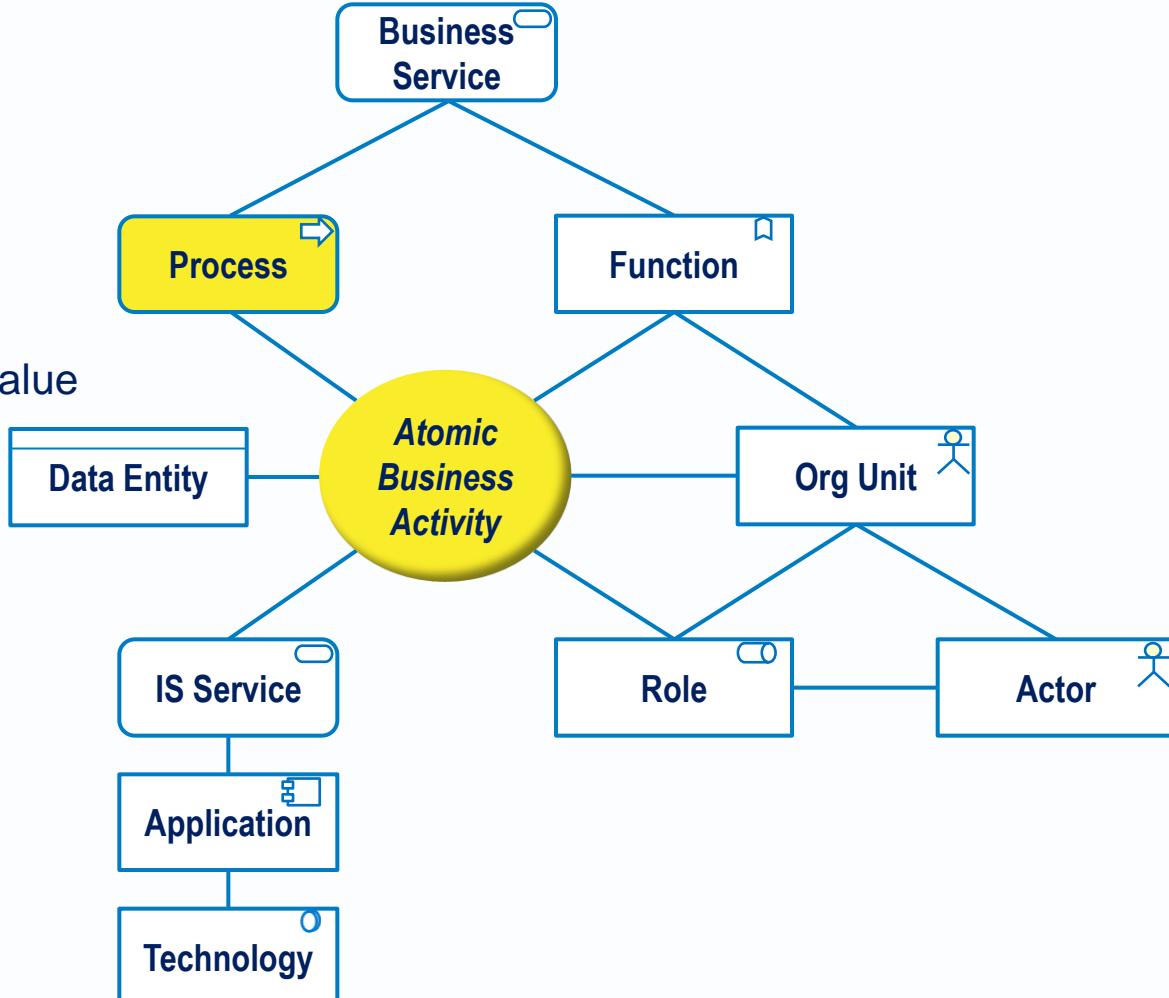
Form a process view

► Decompose "end-to-end" processes
► into shorter sub processes.

Manage a day's business

| Open Shop | → | Serve Customer | → | Close Shop |

Schedule visit

| Answer telephone call | → | Make appointment |

Serve Customer

| Complete hair cut | → | Operate cash register |

Complete hair cut

| Shampoo, condition and rinse hair | → | Talk to client about requirements | → | Cut hair using clippers, scissors | → | Dry hair and style |
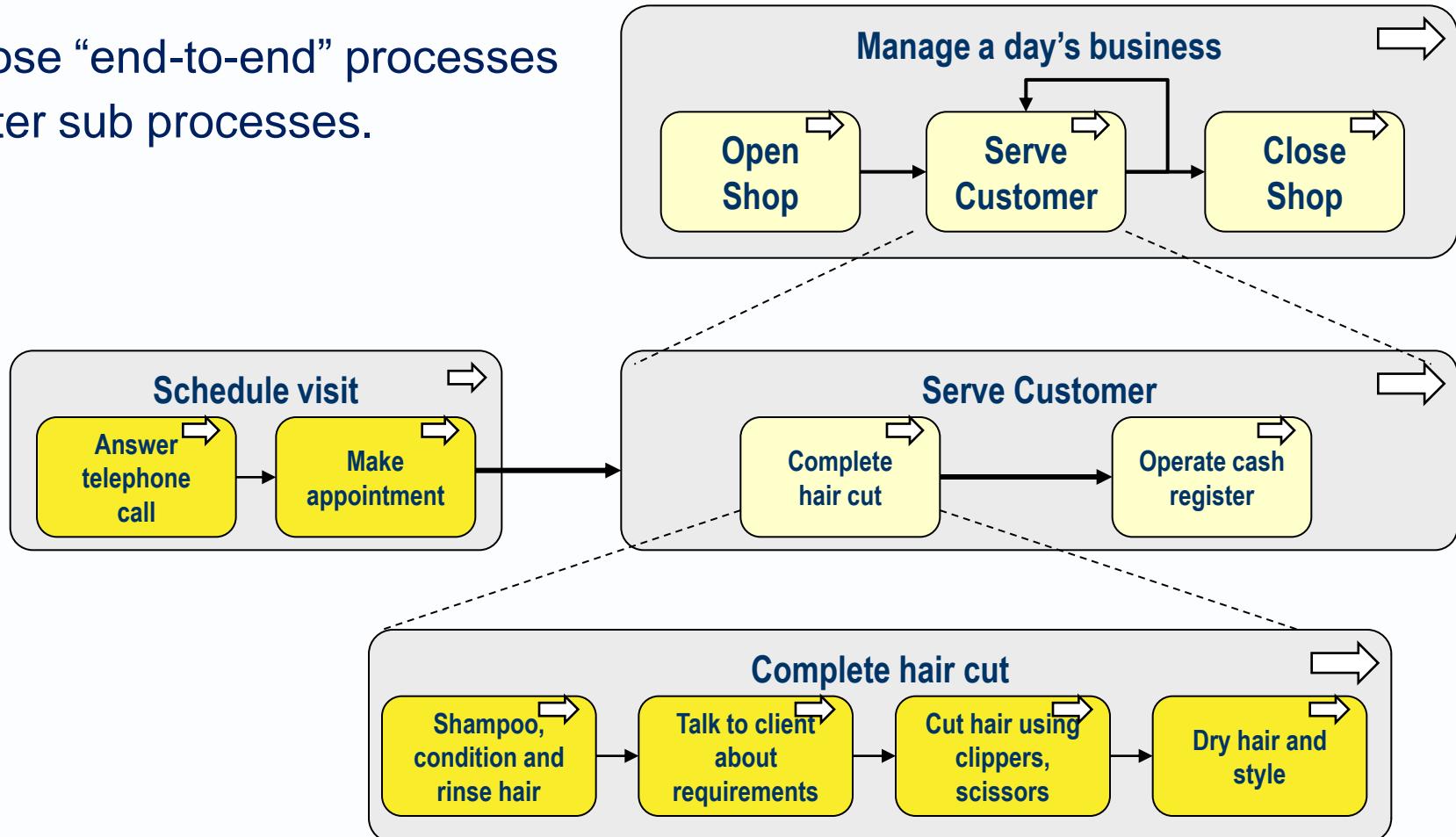
► Stop at One Person One Place One Time (OPOPOT) activities.

Detail business processes to the extent necessary

► Boxes show activities, events
► Arrows show flow of control

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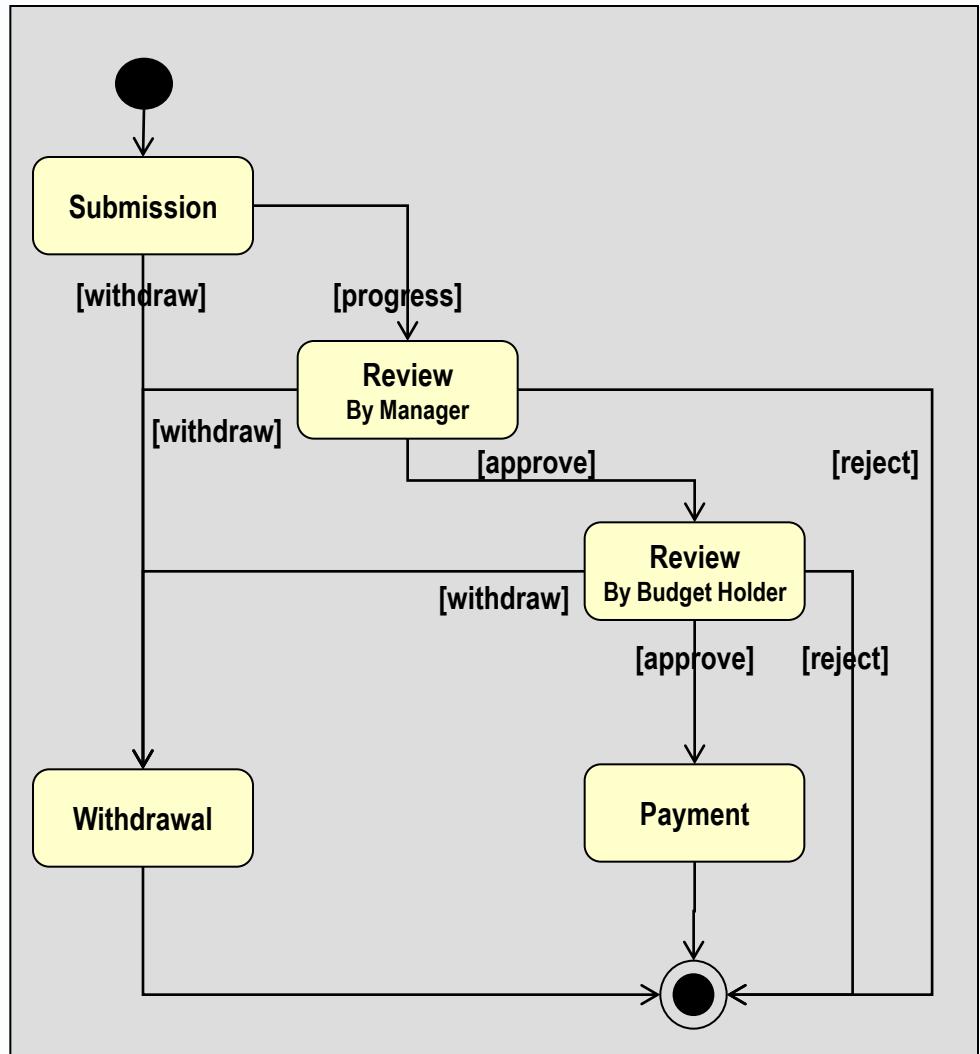
Map activities to functions/capabilities

Example after ArchiMate guru Marc Lankhorst
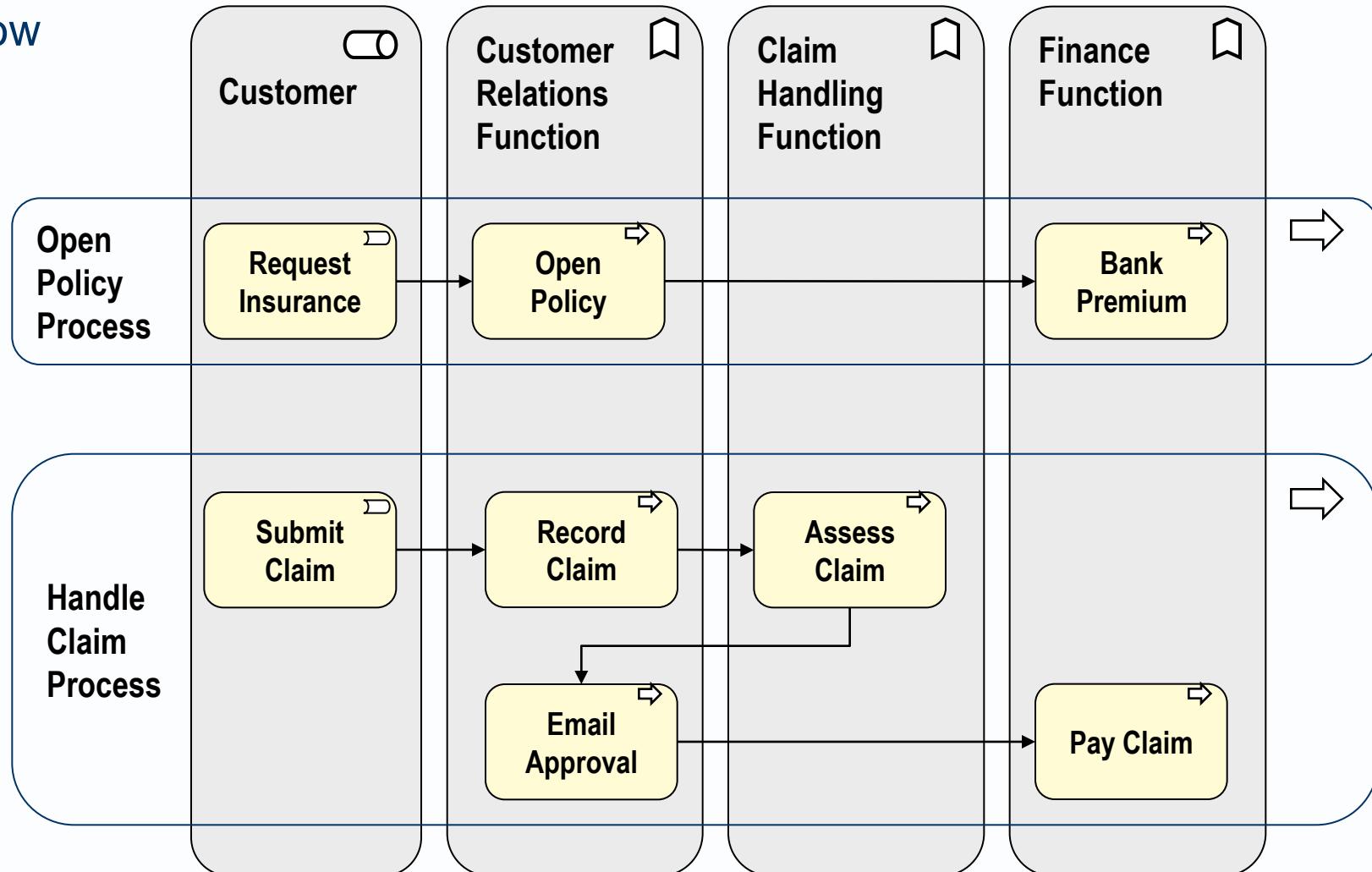
Swim lanes show Structure
- 👤 Actor
- 🔲 Role or
- 🔖 Function

Arrows show Behaviour
- ⊐ Event
- → Trigger
- ⇨ Activity

Customer	Customer Relations Function	Claim Handling Function	Finance Function

Open Policy Process
- Request Insurance → Open Policy → Bank Premium

Handle Claim Process
- Submit Claim → Record Claim → Assess Claim
- Email Approval → Pay Claim

Complete correspondence is a theoretical possibility

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► Complete correspondence is a theoretical possibility,

► but almost nobody gets complete their models.

► The functional decomposition usually stops at a high (3rd or 4th) level

► whereas some process models descend to a lower (5th or 6th) level.

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

Atomic Activities

Form a people view

1. Form a motivation view
2. Form an organisation view
3. Form a capability view
4. Form a service view
5. Form a process view
6. Form a people view
   - Map activities in processes
   - to roles
7. Form a data/info view
8. Form an applications view
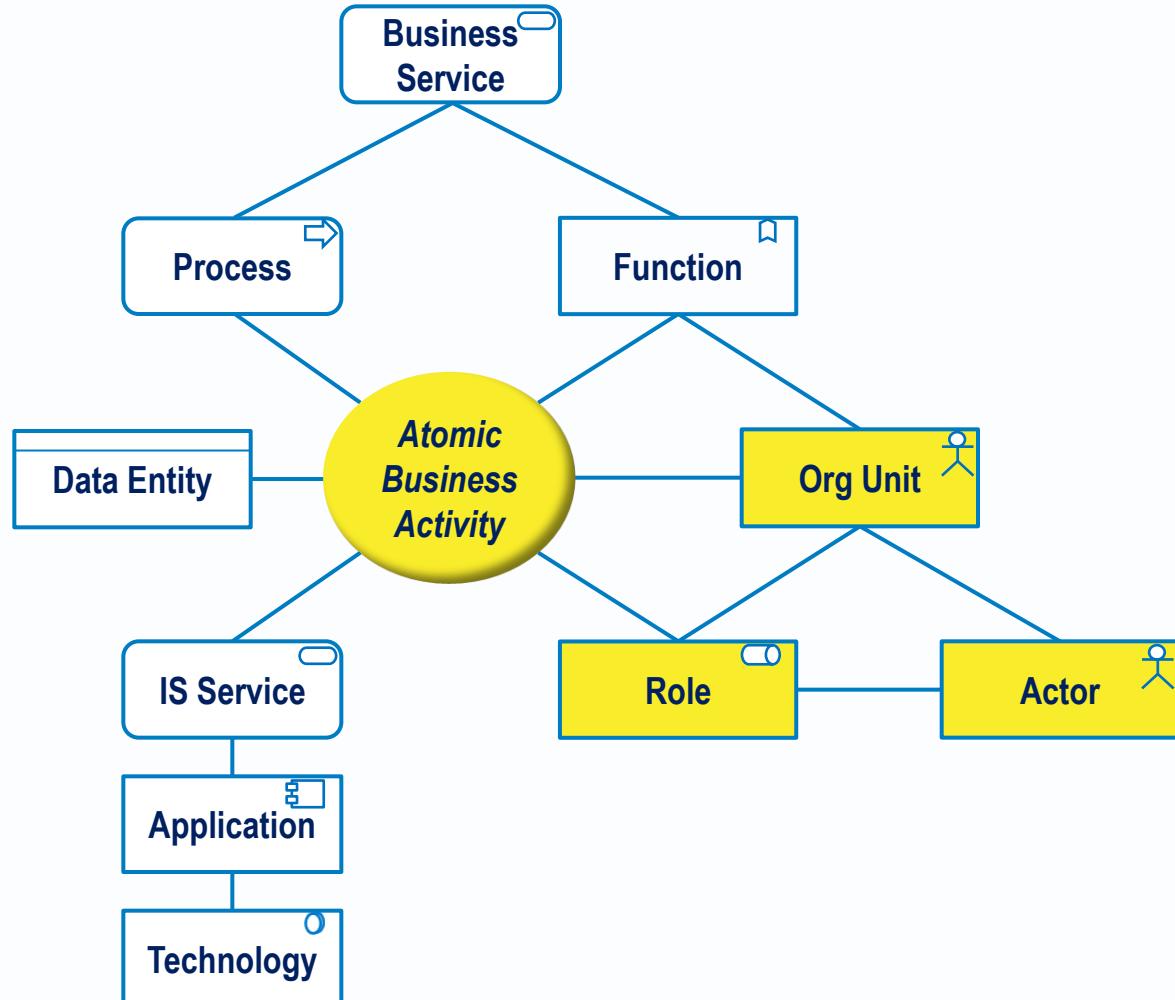
List Roles (and Actors?)

► <u>A Role-Activity catalogue</u> can list the activities expected of each role, perhaps along with the abilities the actor needs to play that role.

► <u>An Actor/Role matrix</u> shows which actors play which roles.

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

► Architects usually model roles rather than actors
► Occasionally name actors where a role is performed by only one actor.

Map roles to activities in processes – swim lanes

► Swim lanes can show
  - Roles
  - Organizations
  - Functions or Capabilities
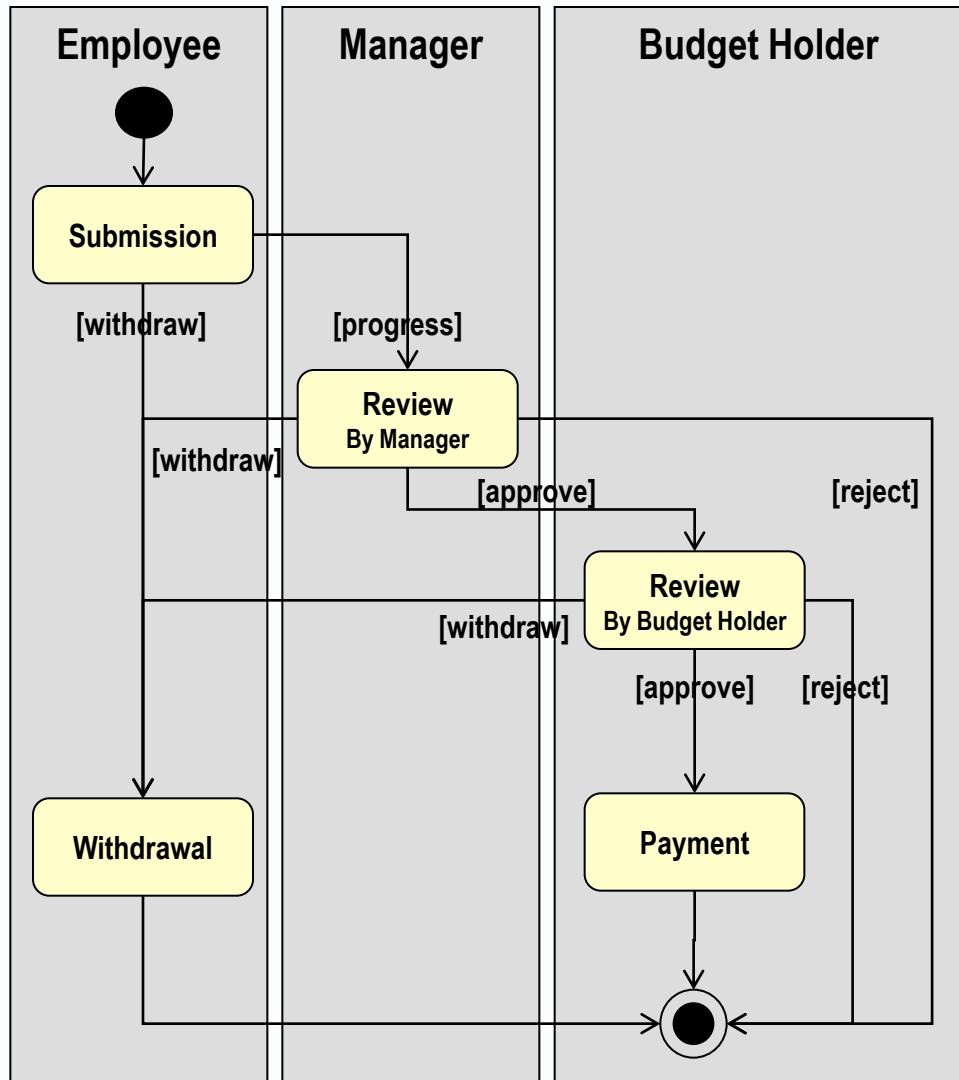
Map roles to activities in processes - ArchiMate

► Activities

Roles

Collaboration

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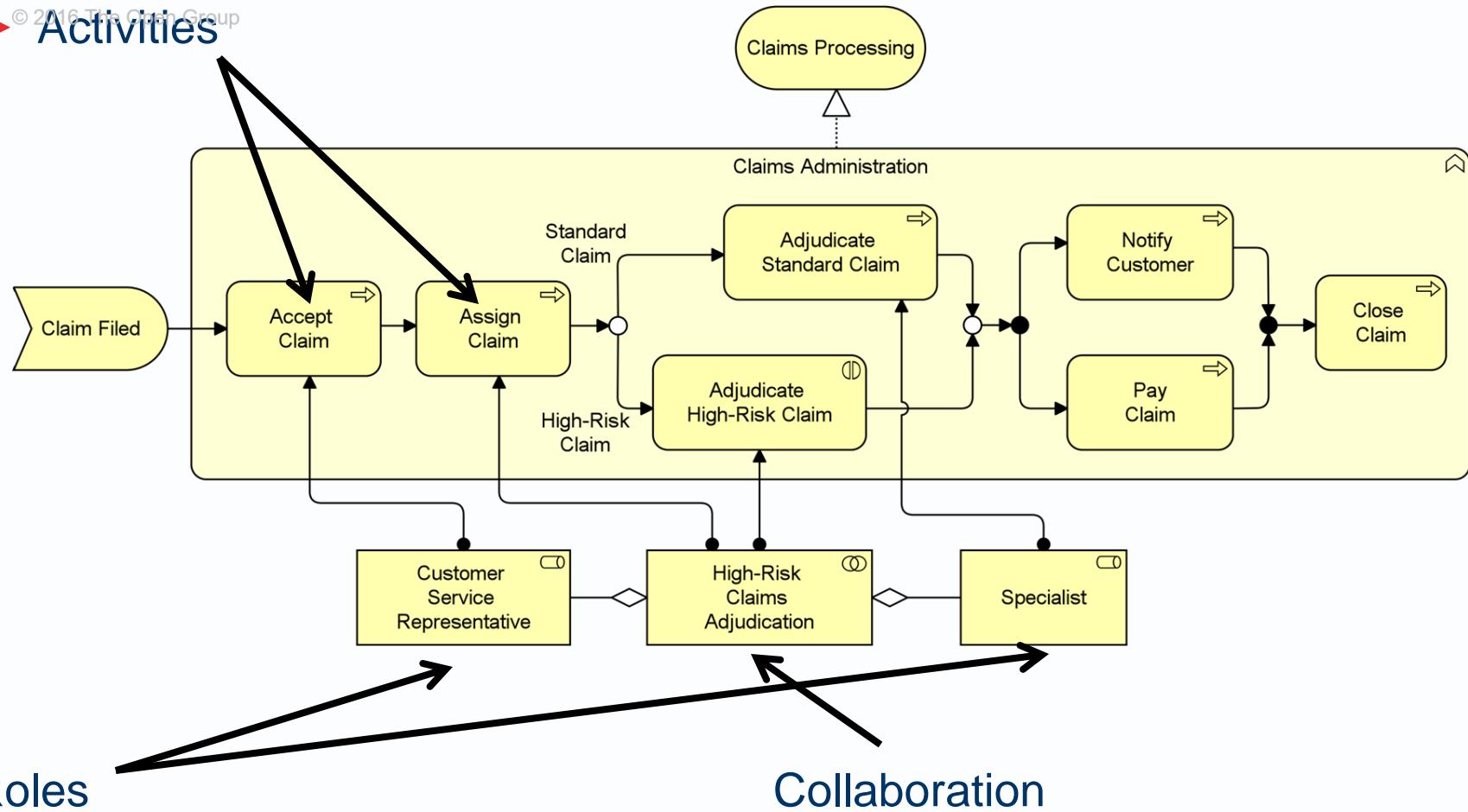
Map activities to organisation units

► Map activities from the processes to the organisation units

► Focus on activities that are
- essential to provision of services,
- frequent
- carried out by many actors
- create or use business data.
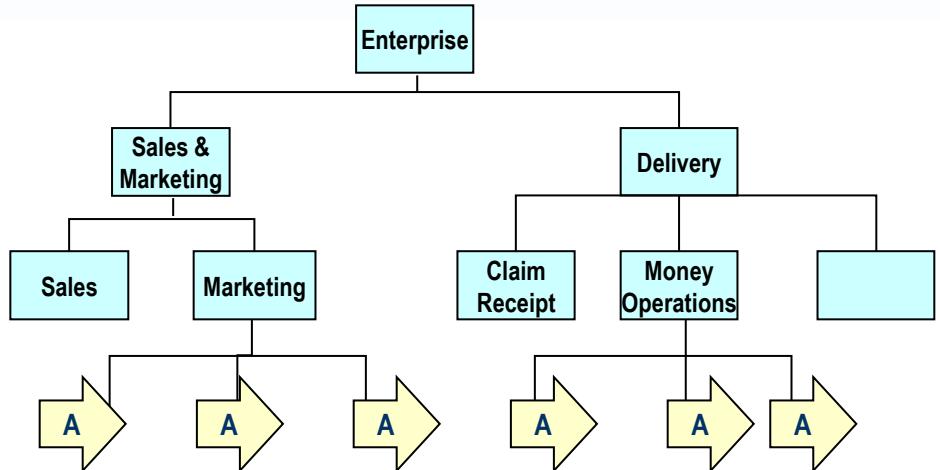
Organisation Activities	Sales	Marketing	Claim Receipt
Activity A	Performed in	Performed in	
Activity B	Performed in		Performed in

Form a data/information view

1. Form a motivation view
2. Form an organisation view
3. Form a service view
4. Form a management view
5. Form a process view
6. Form a capability view
7. Form a people view
8. Form a data/info view
   - Show flows between functions
   - Cluster activities by data created
9. Form an applications view
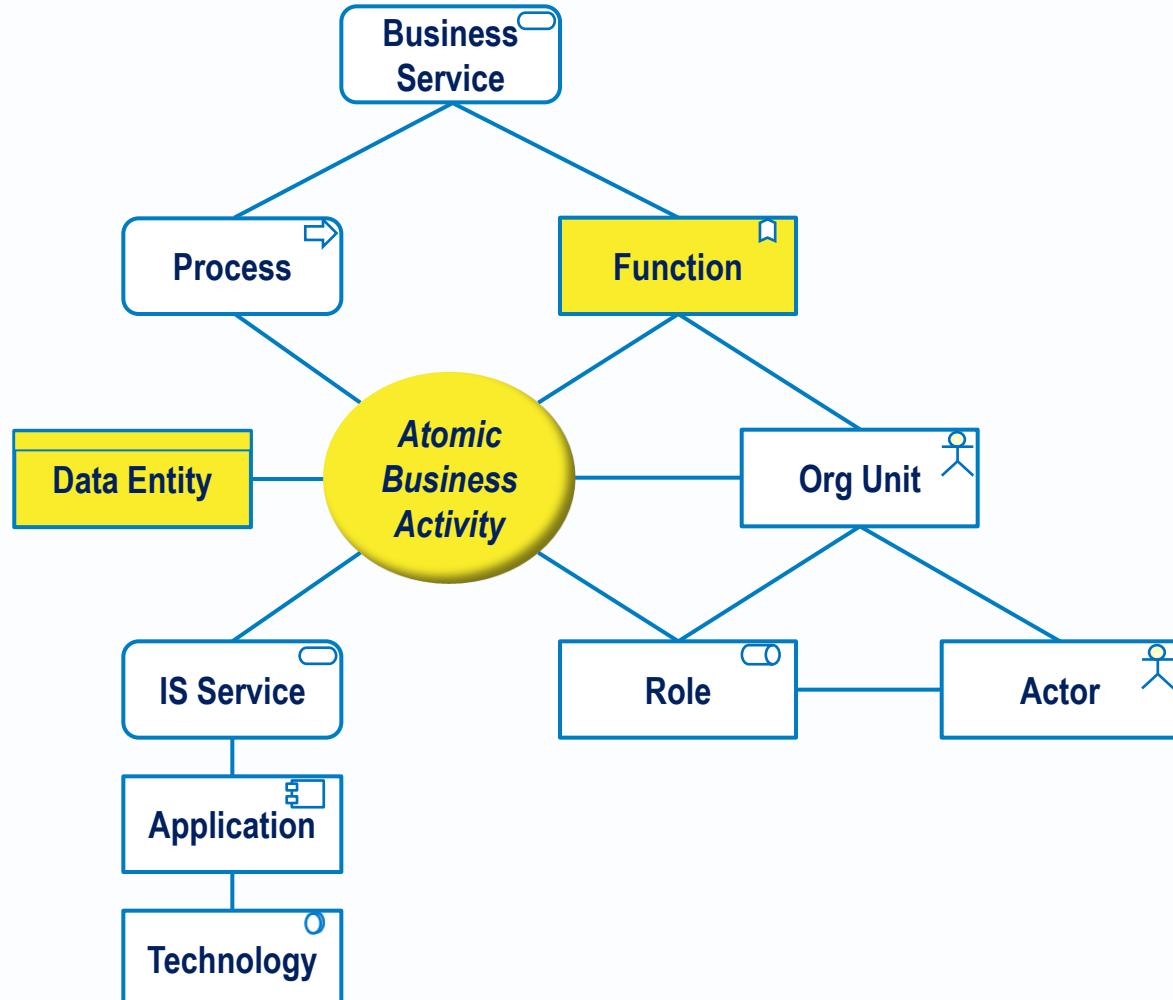
Map data entities to business functions

► <u>A data/entity business function matrix</u> usually maps atomic activities to data entity types (e.g. Customer, Order, Product Type, Product Instance) that those activities create or use.

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".

KEY
C = creators of data   U = users of data

© Minder Chen, 1997-2008   **Figure 12-1**   **Enterprise Architecture**

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Form a data/information view: Level 0: Context diagram

► Identify customers and the services / information they consume
► Identify suppliers and the services / information they supply
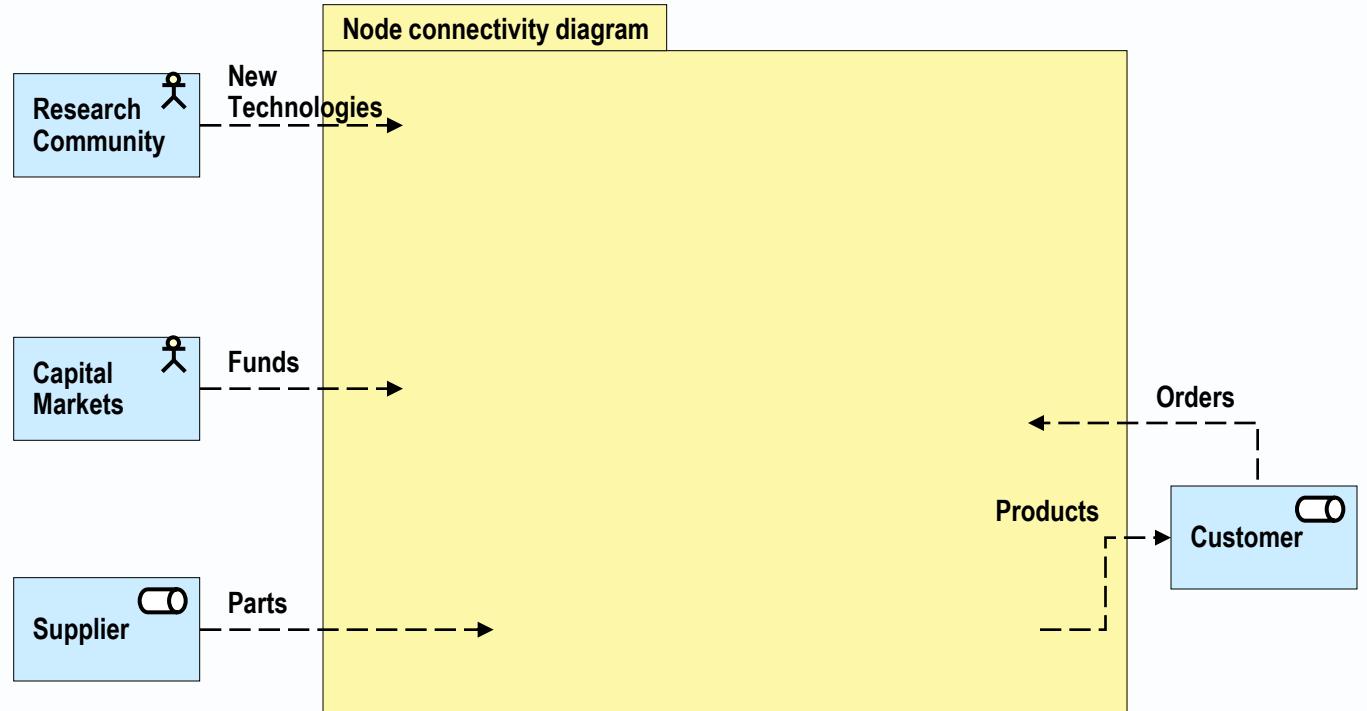
Form a data/information view: Level 1 Decomposition

► Identify information created and used by activities
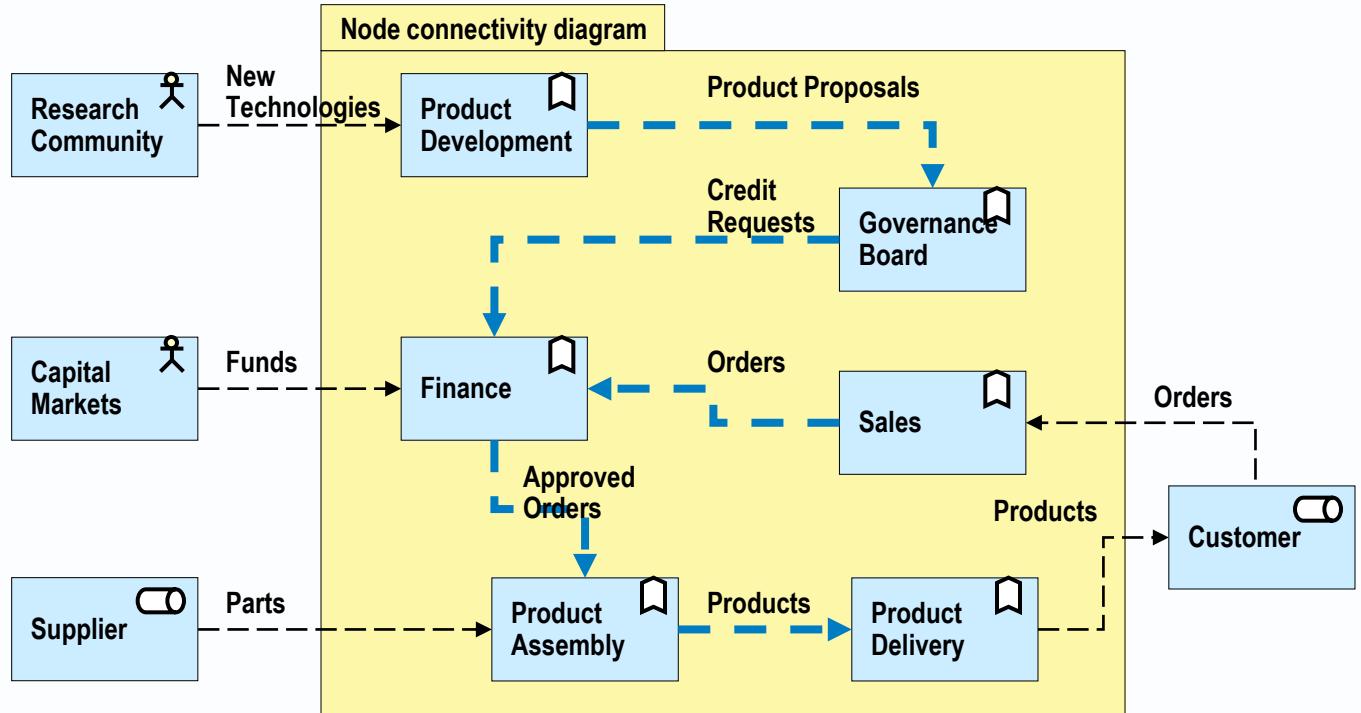
Example from Bas van der Raadt, PhD

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► Similar to a Data Flow Diagram. Non standard use of ArchiMate symbols

business Event-chain view

Event-chain view: Business Capabilities producing and consuming Events
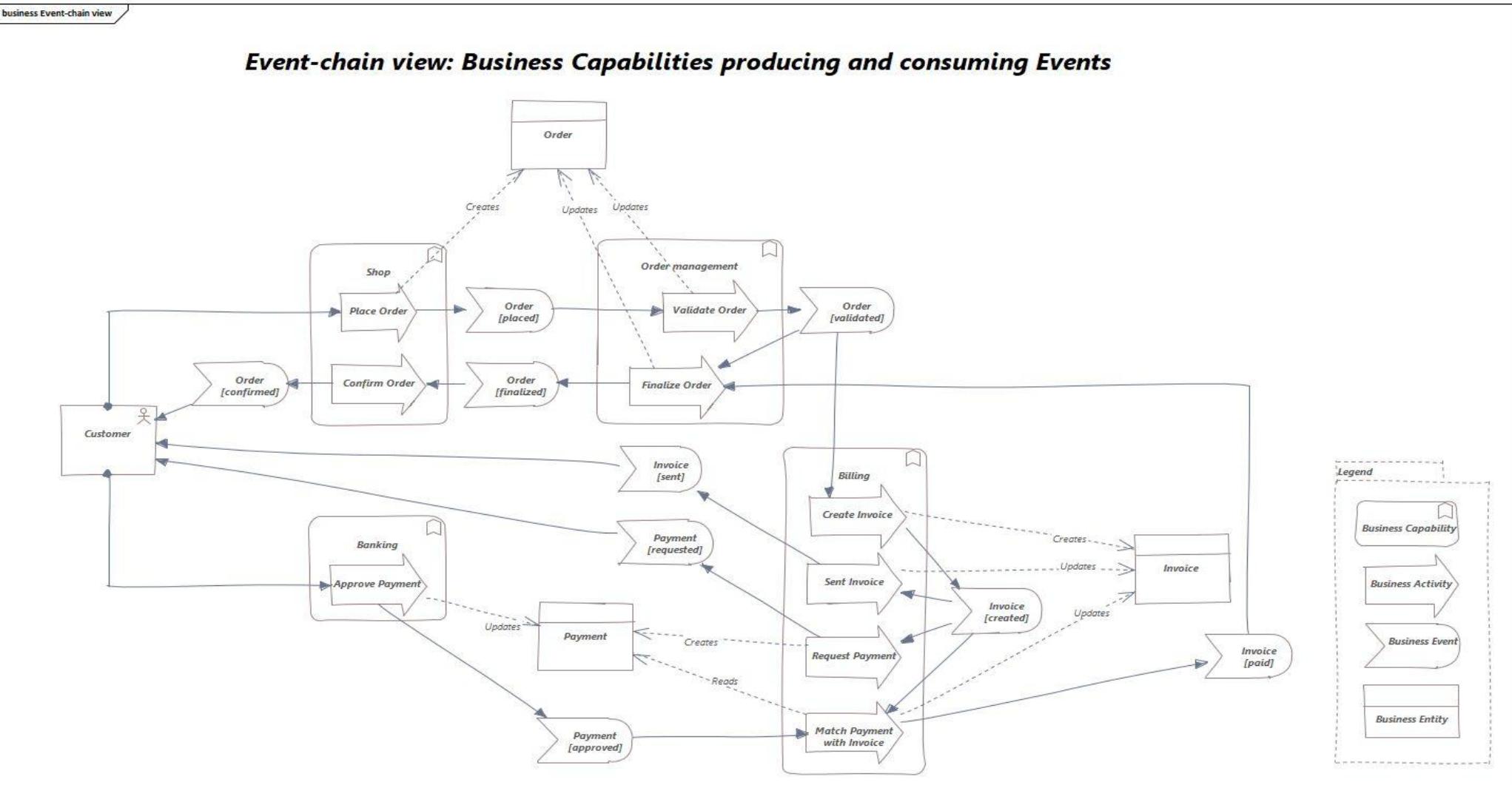
TOGAF with ArchiMate

► Node Connectivity Diagram (ADM phase B)

► Organization Viewpoint (ArchiMate 3)
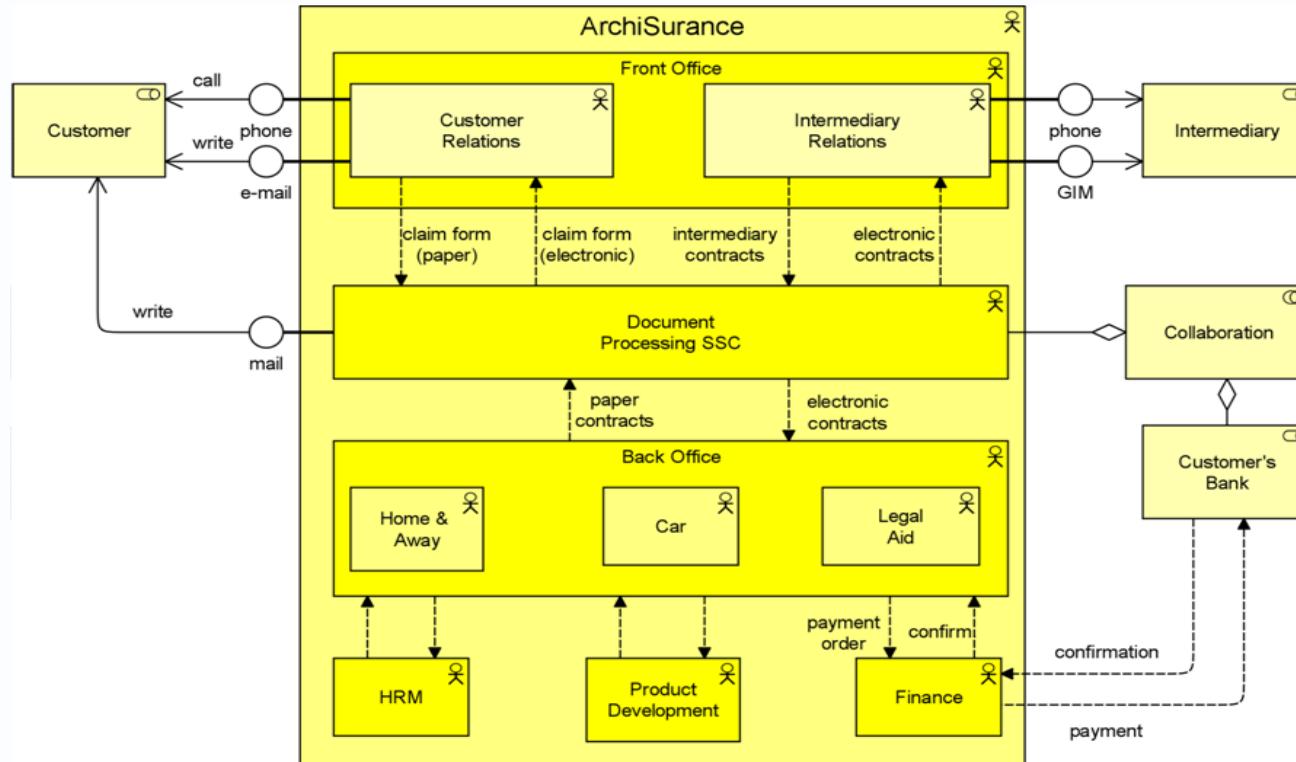
Copyright The Open Group, All Rights Reserved. ArchiMate is a registered trademark of The Open Group

Form an applications view

1. Form a motivation view
2. Form an organisation view
3. Form a capability view
4. Form a service view
5. Form a management view
6. Form a process view
7. Form a people view
8. Form a data/info view
9. Form an applications view LATER

Business Service

Process

Function

Data Entity

Atomic Business Activity

Org Unit

App Service

Role

Actor

Application

Technology

Avancier

Business system concepts and artifacts in TOGAF

Required Behaviors
Triggered by inputs/events
Deliver outputs/products

Logical Structures
Definable by services provided and activities performed. Activities are sequenced in processes and clustered in functions

Physical Structures
Organisation Units and Actors are real world entities that realise logical structures

Goal/Obective/Service Diagram

Business Service

Business Service /Function Catalog

Functional Decomposition
Capability Map

Functional Decomposition

Function

Org/Function Matrix

Organization Decomposition

Org Unit

Location

Process/Event/Control Cat.

Process

Process Flow

Activity

Data Entity/Function matrix

Data Entity

Role

Actor/Role Matrix

Org/Actor Cat

Actor

Value Stream Diagram
Business Scenario

Business system concepts and artifacts in TOGAF

Avancier

Required Behaviors
Triggered by inputs/events
Deliver outputs/products.

Logical Structures
Definable by services provided and activities performed. Activities are sequenced in processes and clustered in functions.

Physical Structures
Organisation Units and Actors are real world entities that realise logical structures.

How to address the size problem?

► Enterprise architects very rarely
 ■ have the time and resources to model a whole business
 ■ use all the products that follow

> **20 people for 18 months?**

► They usually
 ■ model only **part of a business relevant to a request for architecture work**
 ■ use only a **selection of the products that follow**

► So first, identify the **organisation of interest**
► And then, **select which products** will help analysis and design