

# Strategy & Enterprise Architecture

## What we have learned so far

December 13th, 2019

University of Namur

# Alain De Preter



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## Career Summary

### ► Labnaf

- YPTO (Railroad) - BE
- Brussels Airlines - BE
- Deutsche Bank – UK
- Deutsche Bank – BE
- Microsoft/Unisys Alliance – USA
- Unisys - BE
- Comedia – BE
- Ariane II - BE
- SWIFT - BE
- Borland – USA
- CPU2I - FR
- UCB - BE

## Expertise Summary

### Enabling

- Language Engineering
- Method Engineering
- Tool Engineering
- Modeling Coach

### Applying

- Strategy
- Enterprise Architecture
- Solution Architecture
- Analysis, Design & Implementation
- Pharmaceutical, Cinema, Legal, Banking, Transportation...

# Alain Garsoux



## Career Summary

- Enterprise Architect @ KBC
- Enterprise Architect @ NMBS/SNCB IT (Ypto)
- Enterprise Architect @ ING
- Solution Architect @ ING BE, Finance & Risk.
- Team Leader @ ING BE
- Portfolio Manager @ ING BE, Finance & Risk
- Business Analyst @ ING BE
- Project Leader @Carrefour NV
- Account Manager @ Cognos
- Inside Sales @ Merant
- Inside Sales, Marketing @ Progress Software.

## Expertise Summary

- Enterprise Architect.
  - Special attention to some value chains : IT, FMD, Finance & Risk, Procurement, Safety & Security, Station.
- People Coaching
- Business Intelligence
- Business Process

[LinkedIn url](#)

## Education/ Certification

- Commercial Ingeneer (UCL - IAG)
- TOGAF 9 certified

# Agenda

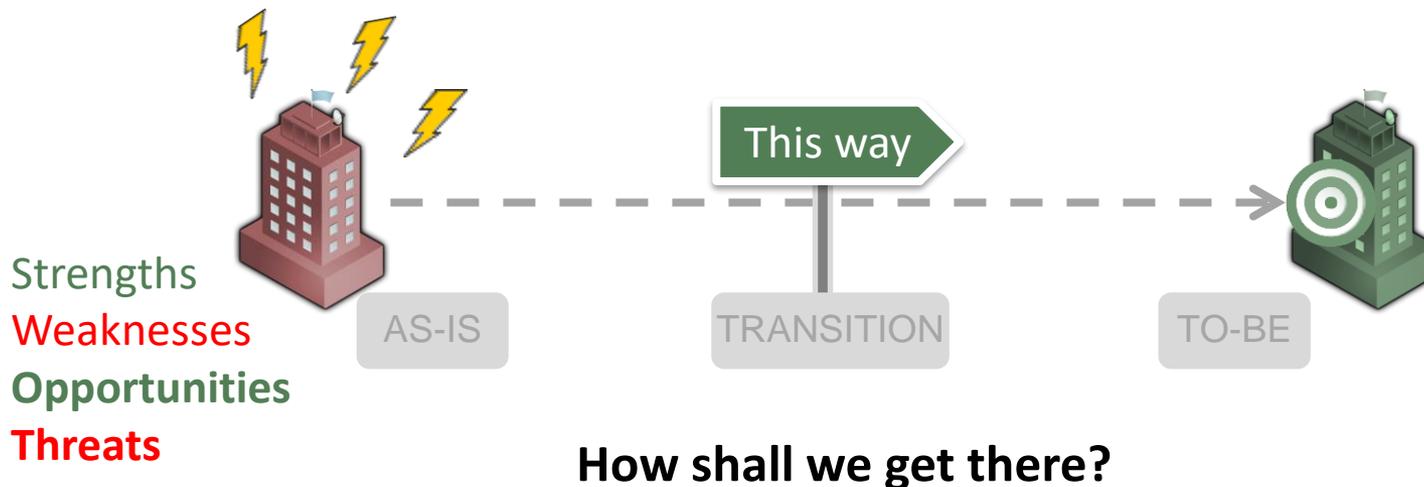
1. Transformation Challenges
2. Architecture Framework Overview
3. Architecture Tools & Repository

# General Challenge for Strategy and Enterprise Architecture

Identify and drive the required changes to the organization's business and IT

Where are we today?

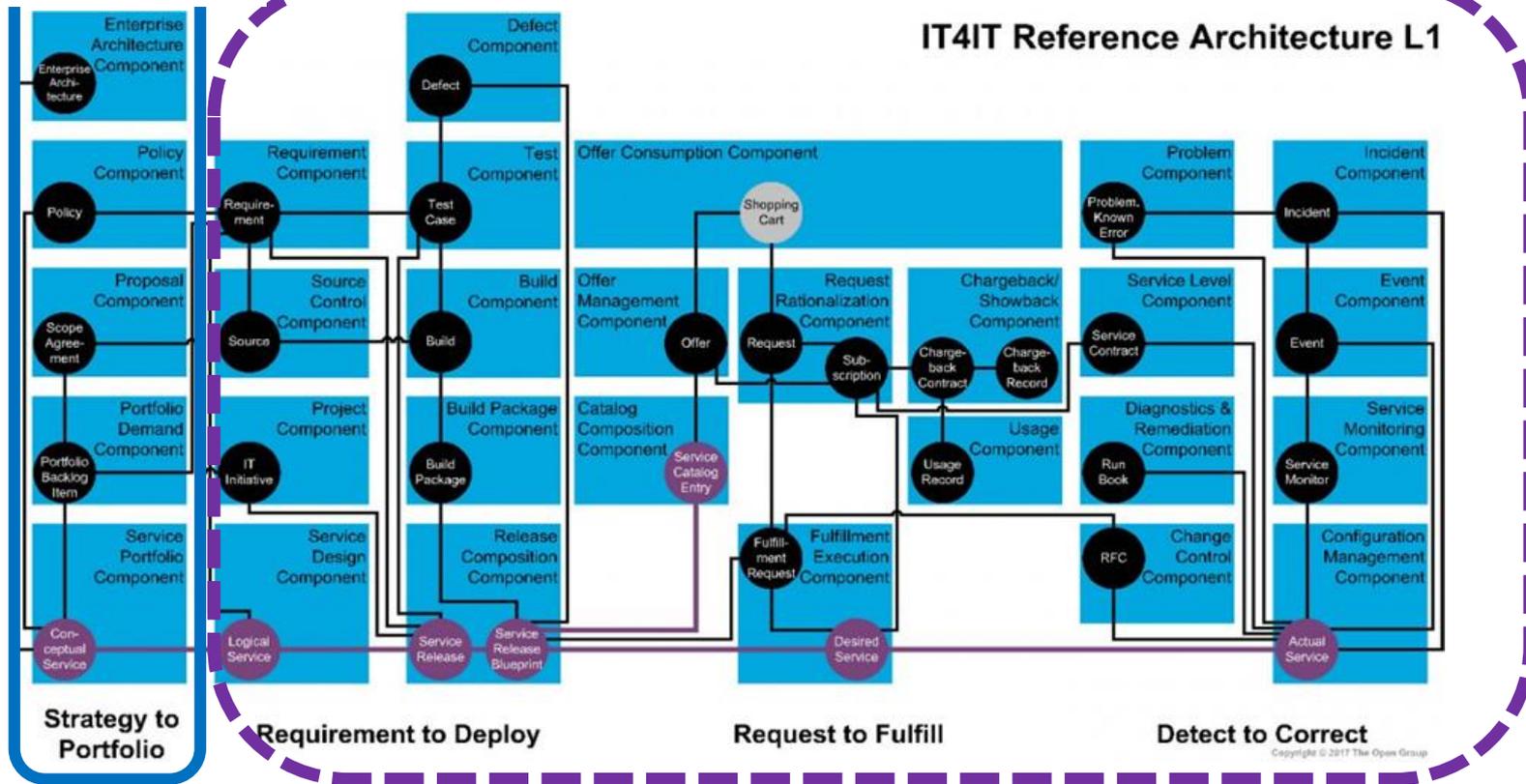
Where do we want to be in the future?



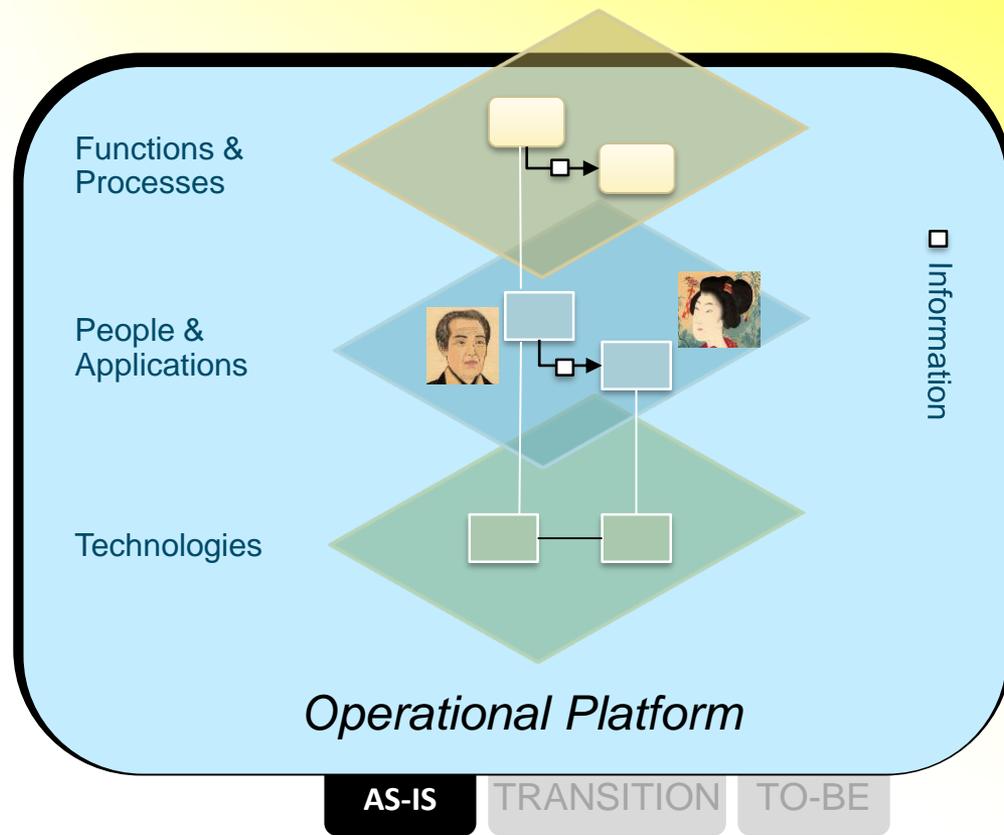
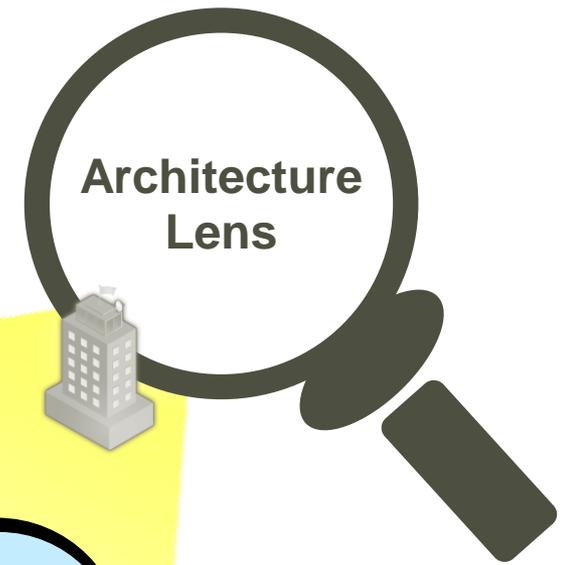
# Labnaf value proposition : 1 source of information to support an outsourcing decision @ SNCB



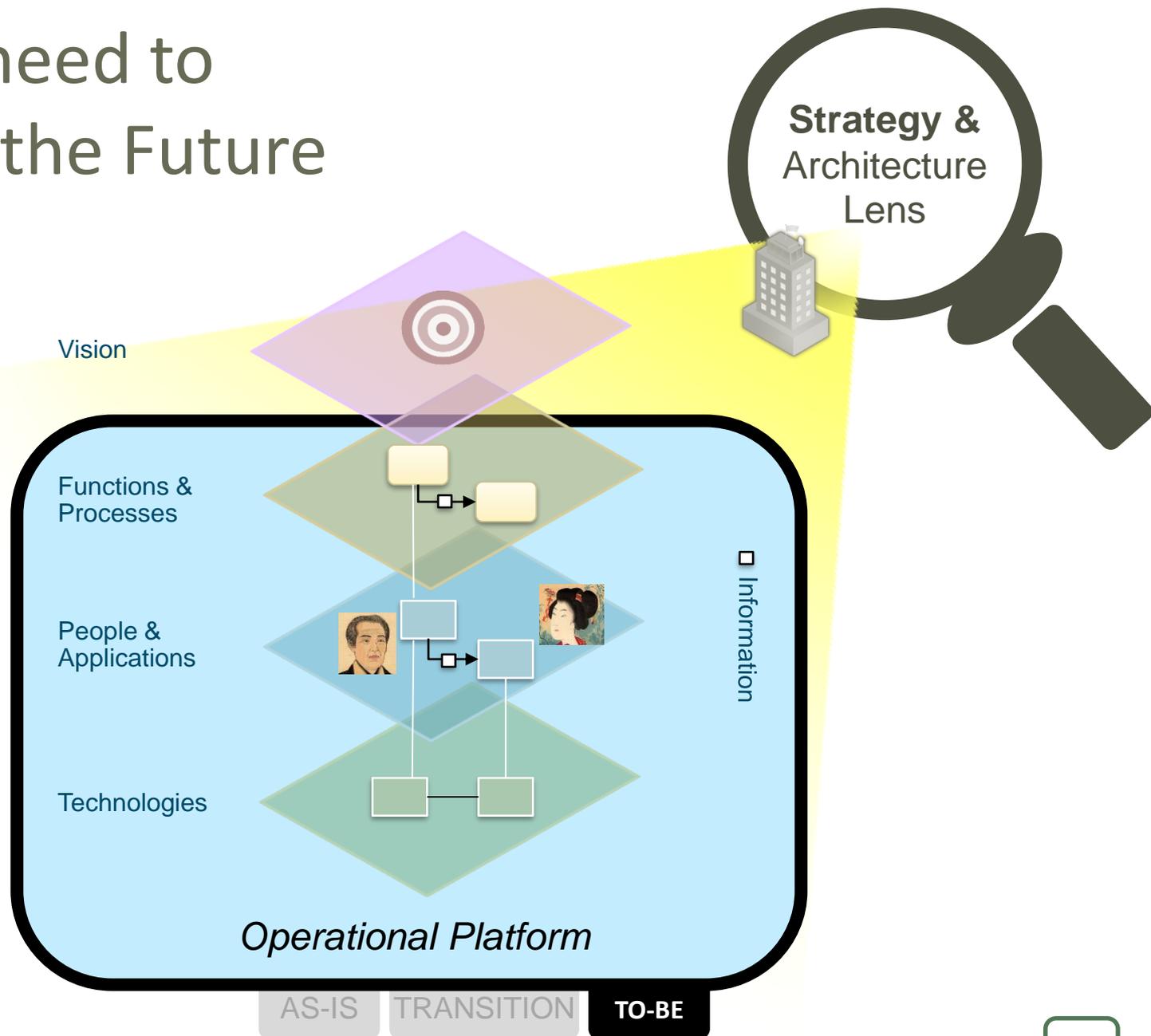
## Outsourced



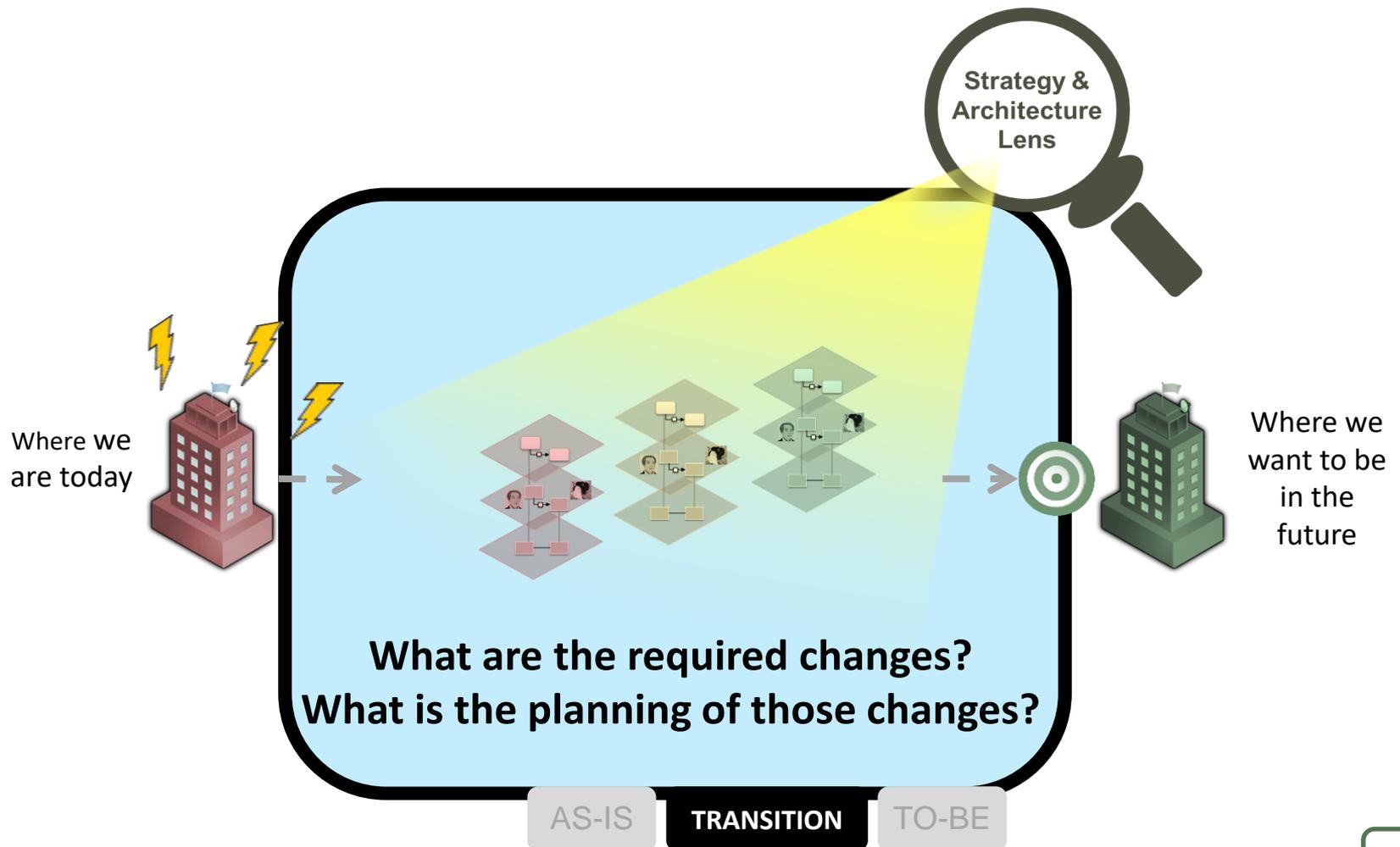
# Decisions Require Visibility on Where we are Today



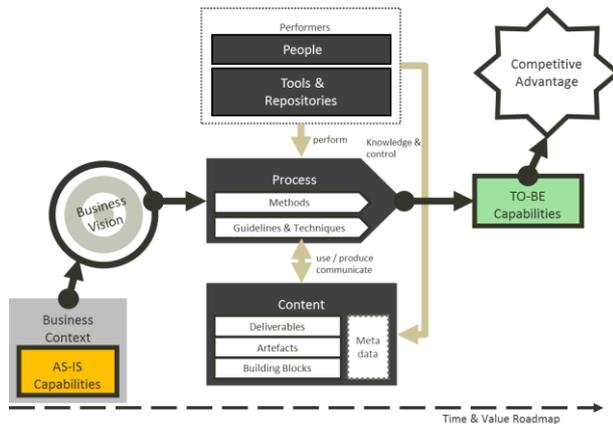
# We also need to Describe the Future



# And we need to Describe the Required Changes and Planning to get there



# We need a **Framework** as a vehicle to **Effectively Drive Transformations**



**A Framework**

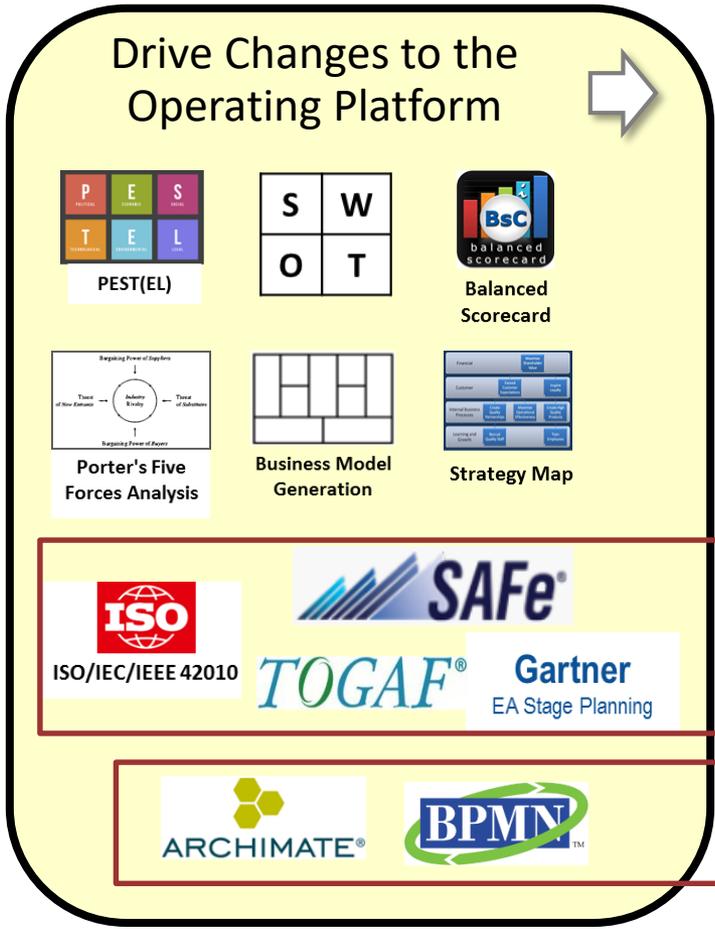
**for**

**Driving Transformations**

# We need a Framework for Driving Transformations...

Standards & Best Practices are very useful, but they are not actionable as a whole

Cross-discipline collaboration is not easy!



- Complementary but disconnected
- No common process
- No common metamodel
- Inconsistent terminology

- Too high-level to be actionable out of the box

- Disconnected; Redundancies;
- Archimate: Poor Semantics; 1 level of detail

# Agenda

1. Transformation Challenges

2. Architecture Framework Overview

3. Architecture Tools & Repository

Integrated

# Merged Standards & Best Practices

IT4IT™

TOGAF®

SAFe®

Gartner  
EA Stage Planning

ISO  
ISO/IEC/IEEE 42010

Systems Semantics

ARCHIMATE®

BPMN™

PEST(EL)

Porter's Five Forces Analysis

Business Model Generation

Strategy Map & Balanced Scorecard

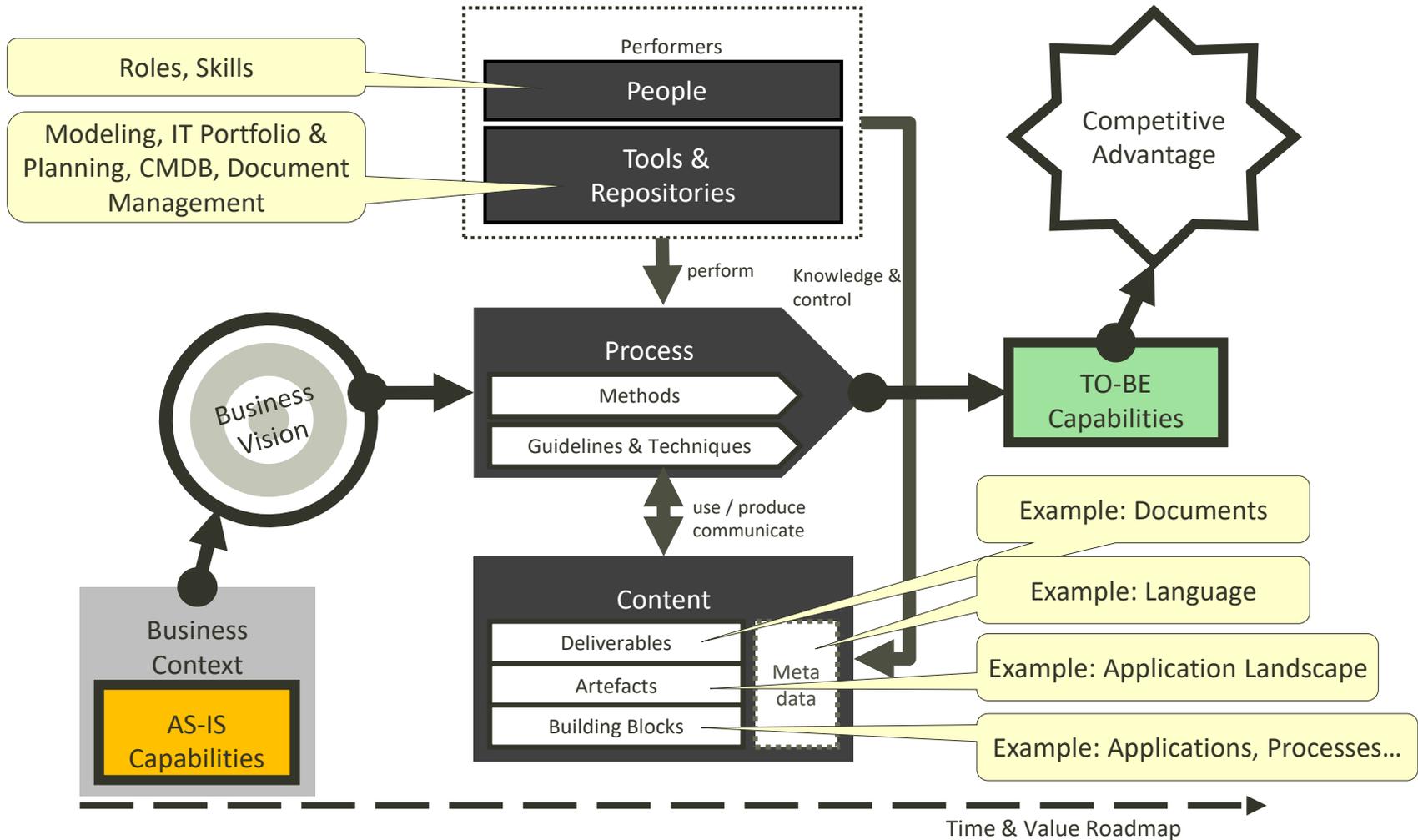
1

Links: [TOGAF](#), [SAFe](#), [Gartner EA Stage Planning](#), [ISO/IEC/IEEE 42010](#), [Archimate](#), [BPMN](#), [UML](#), [PESTEL Analysis](#), [Porter's Five Forces Analysis](#), [Balanced Score Cards](#), [Strategy Map](#), [Business Model Generation](#)

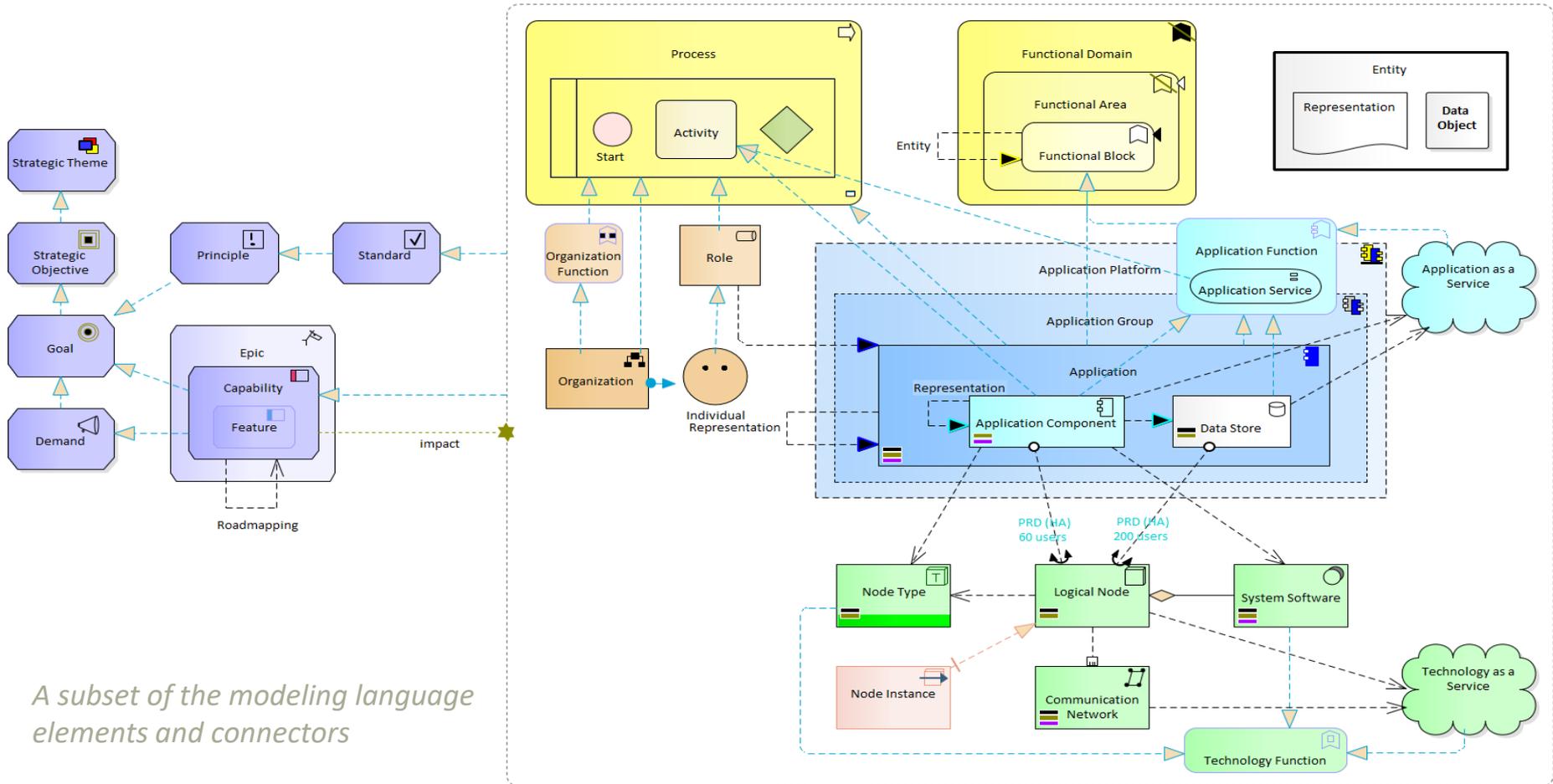
## Here “merging” means

- Identify common concepts and gaps
- Define **one** end to end process
- Create **one** single language
- Implement the whole thing in **one** single tool  
*that is already used by 750 000 users worldwide*

# All In One Architecture Framework



# One Common Language Eases Collaboration Between Many Different Roles



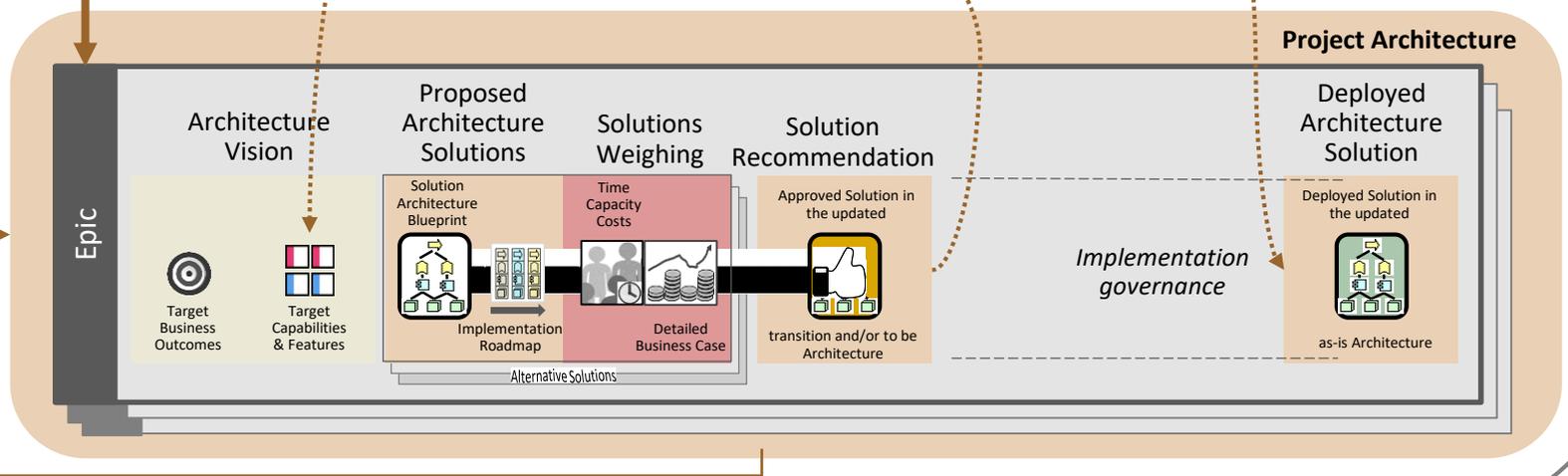
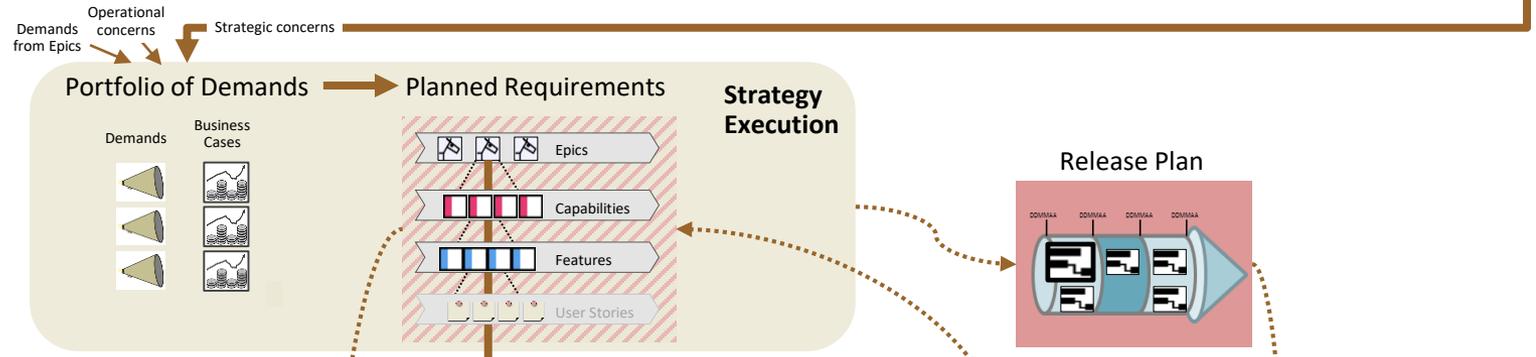
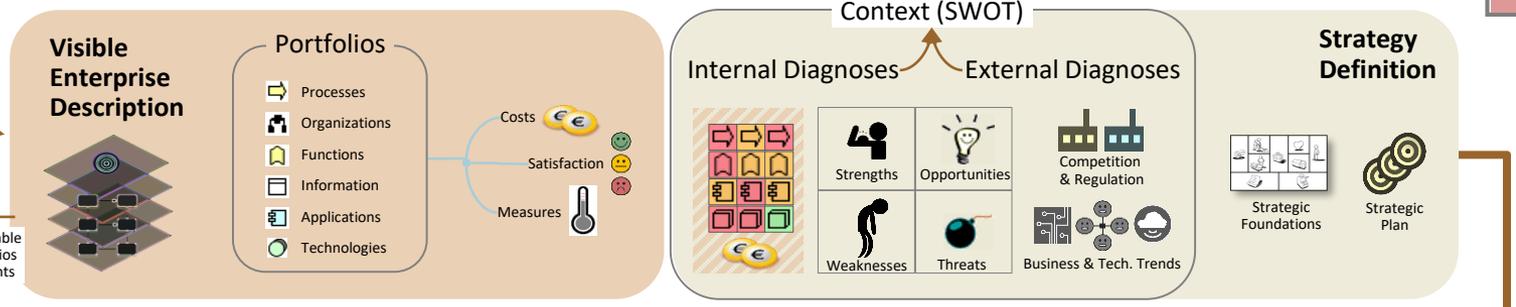
*A subset of the modeling language elements and connectors*

[You can navigate and zoom-into the metamodel details on-line...](#)

# Drive Changes to the Operating Platform

**Legend**

- Envisioning
- Architecture
- Planning



Re-useable Portfolios Contents

Architecture Solution Contents



# Viewpoints and Views (ISO/IEC/IEEE 42010)

The purpose of viewpoints and views:

1. Enable humans to comprehend complex systems
2. Separate concerns
3. Organize the elements of the problem and the solution around domains of expertise

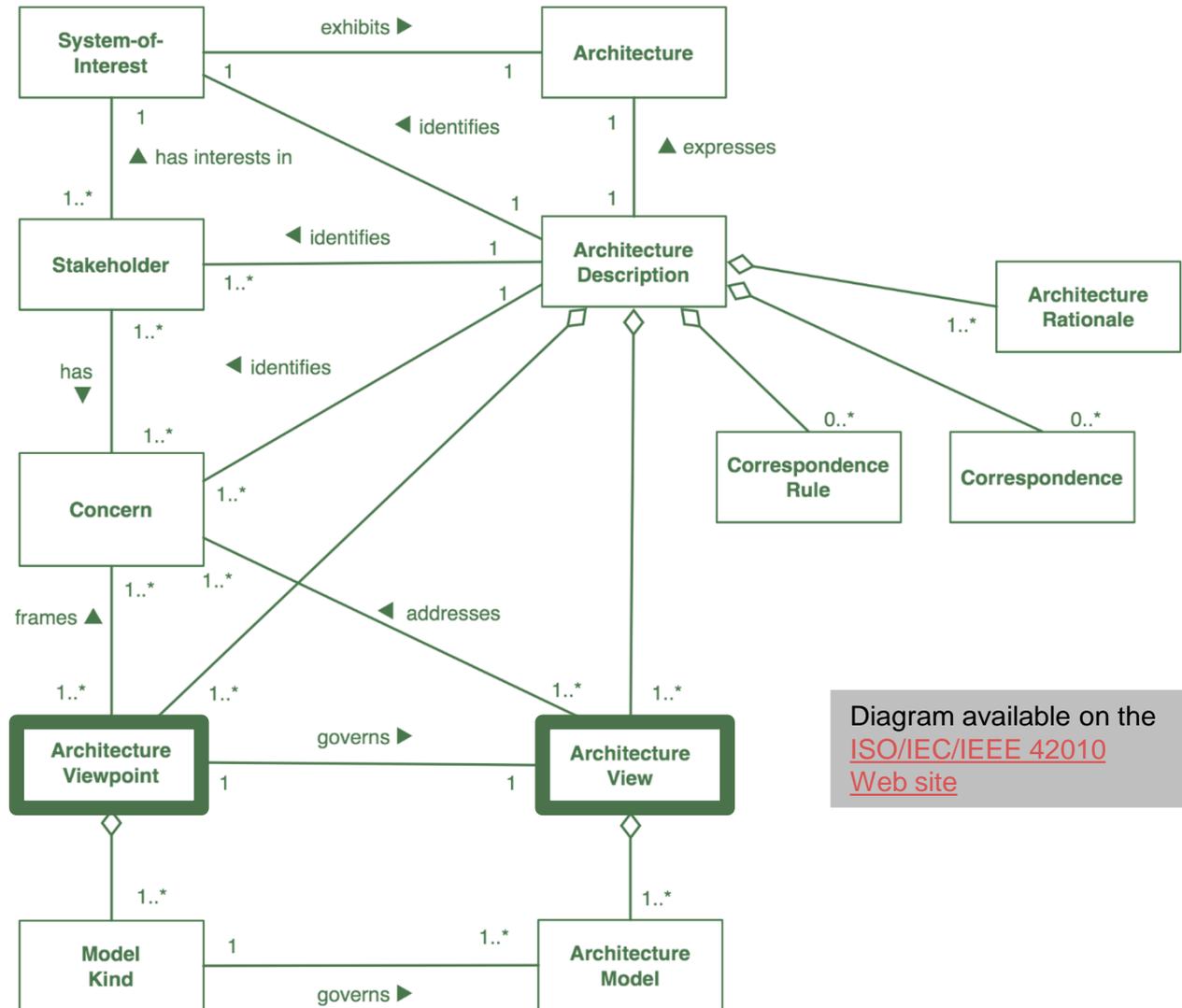
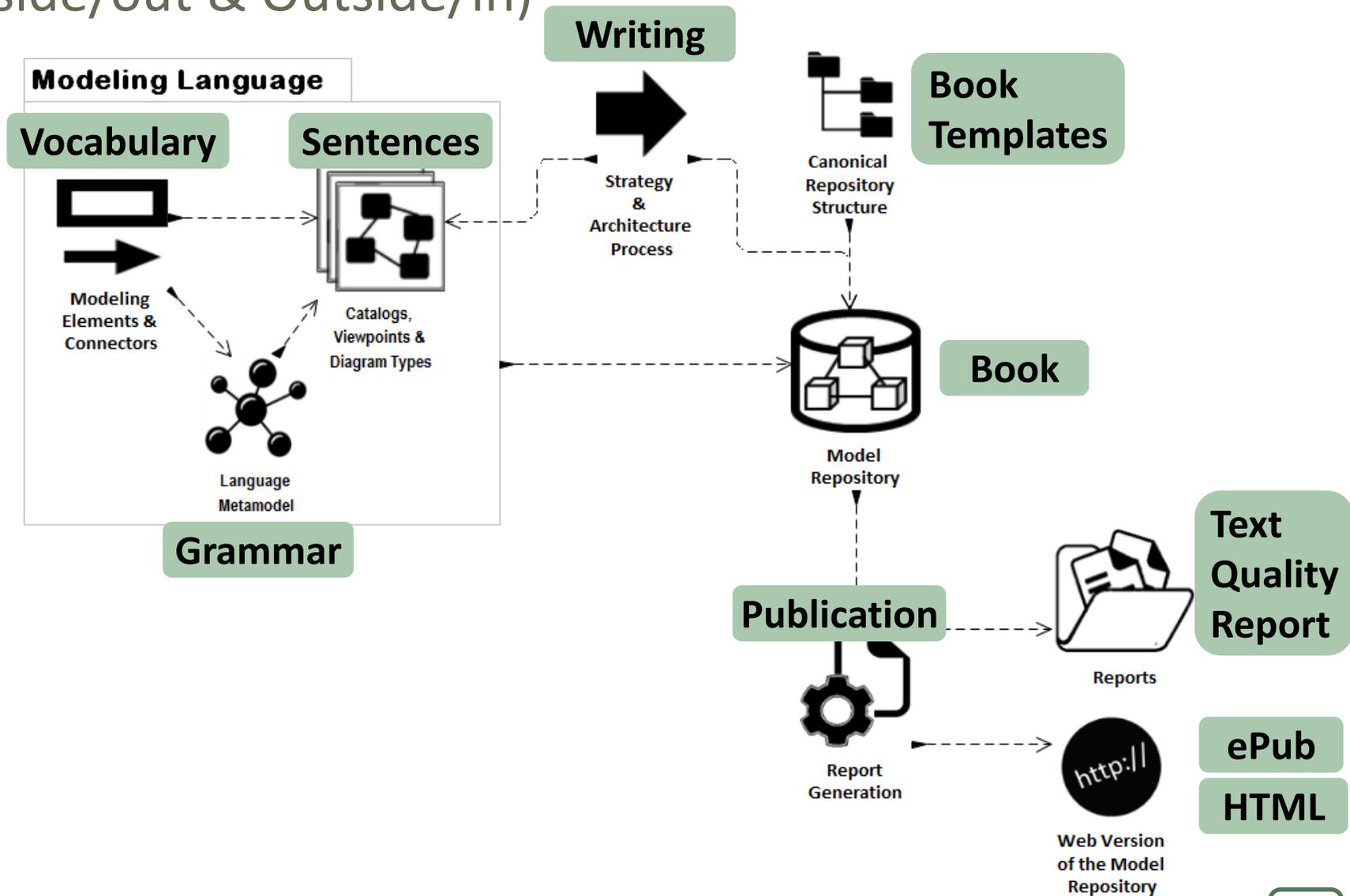


Diagram available on the [ISO/IEC/IEEE 42010 Web site](http://www.iso.org/iso/iec/ieee_42010)

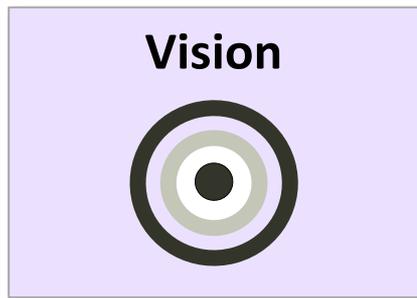


# Labnaf : a coherent content, Fit4Purpose (Inside/out & Outside/in)



# The model repository is organized into 3 main sections...

- ▷! 📁 Vision
- ▷! 📁 Visible Enterprise
- ▷! 📁 Projects

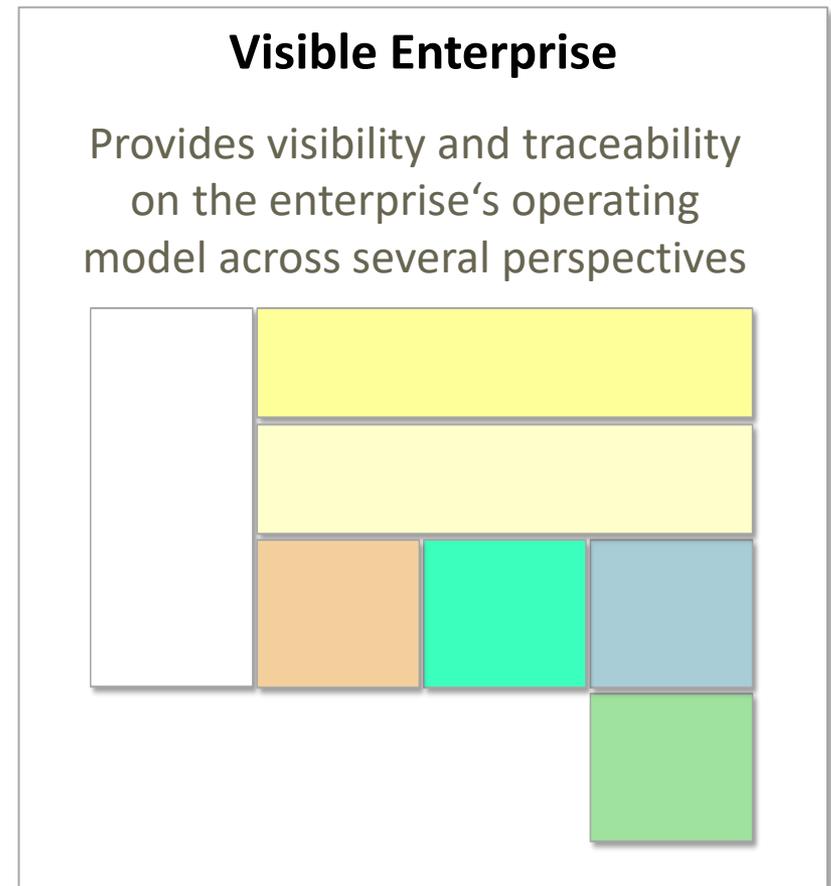


Changes to the enterprise are envisioned

↑ Projects/epics realize vision

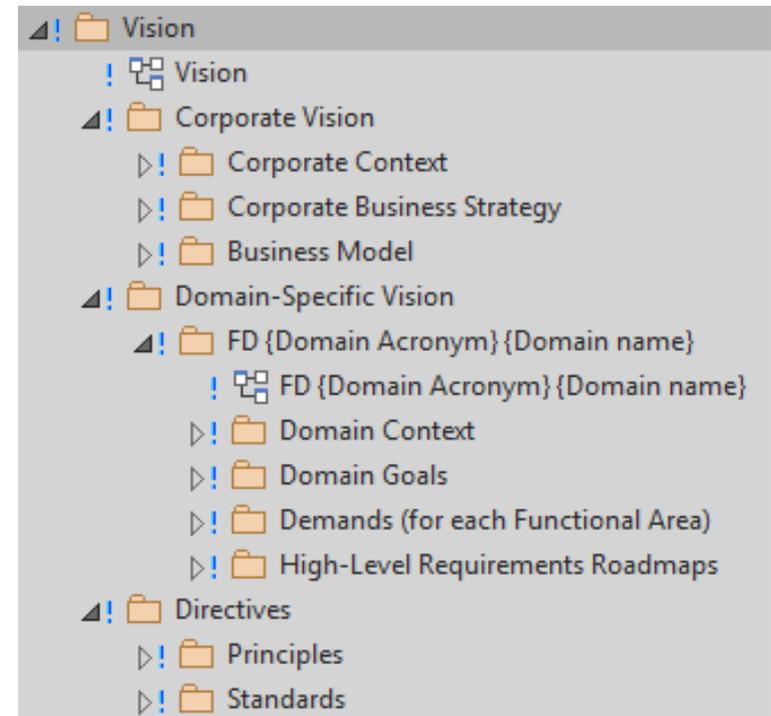


Projects/Epics change the enterprise following vision



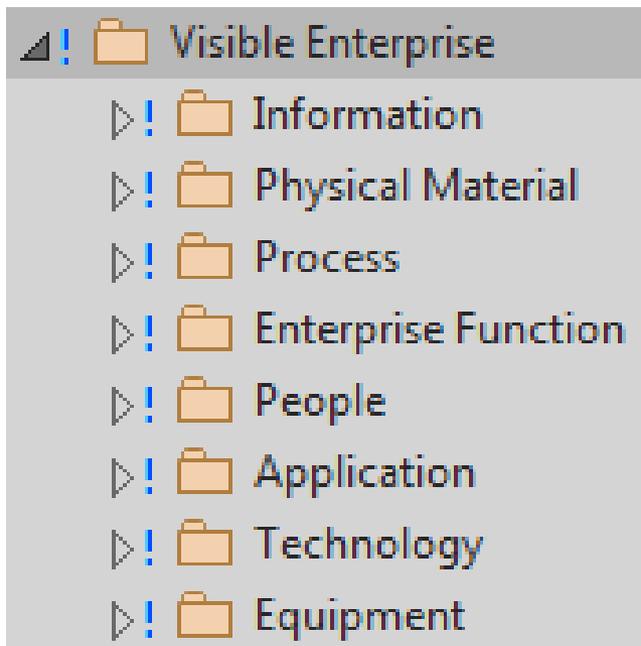
# The **Vision** folder contains...

- The **Corporate Vision** describing the internal and external context, the corporate objectives and the business model
- The **Domain-Specific Vision** describing how the Corporate Vision cascades into functional domains in terms of goals, demands and target capabilities roadmaps
- **Directives** i.e. Principles and Standards

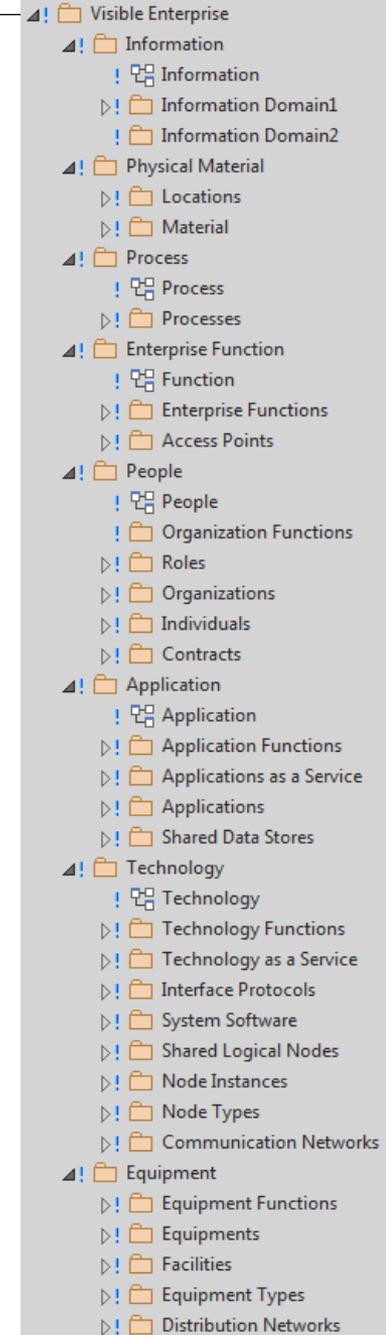


# The Visible Enterprise Description folder contains...

- A set of architecture **portfolios**, each describing the enterprise following a specific perspective

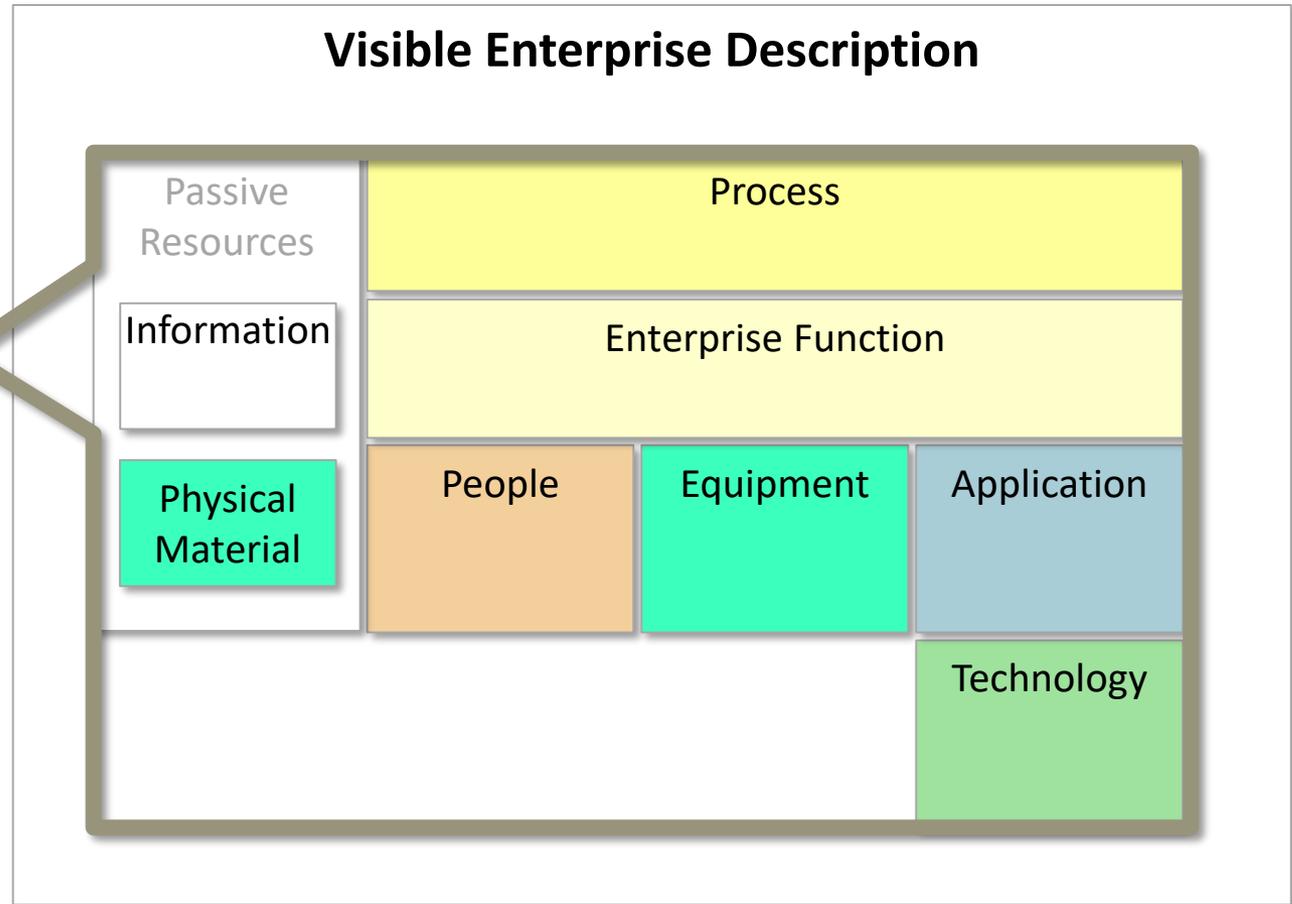


- Each portfolio in turn contains **catalogs** that contain elements and views =>



# The Visible Enterprise Portfolios folders represent architecture perspectives

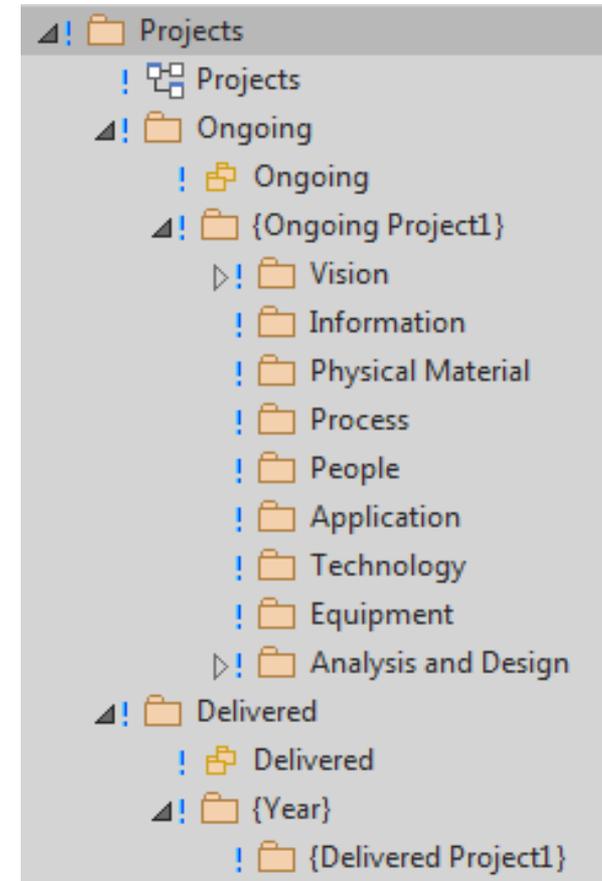
## Architecture Perspectives



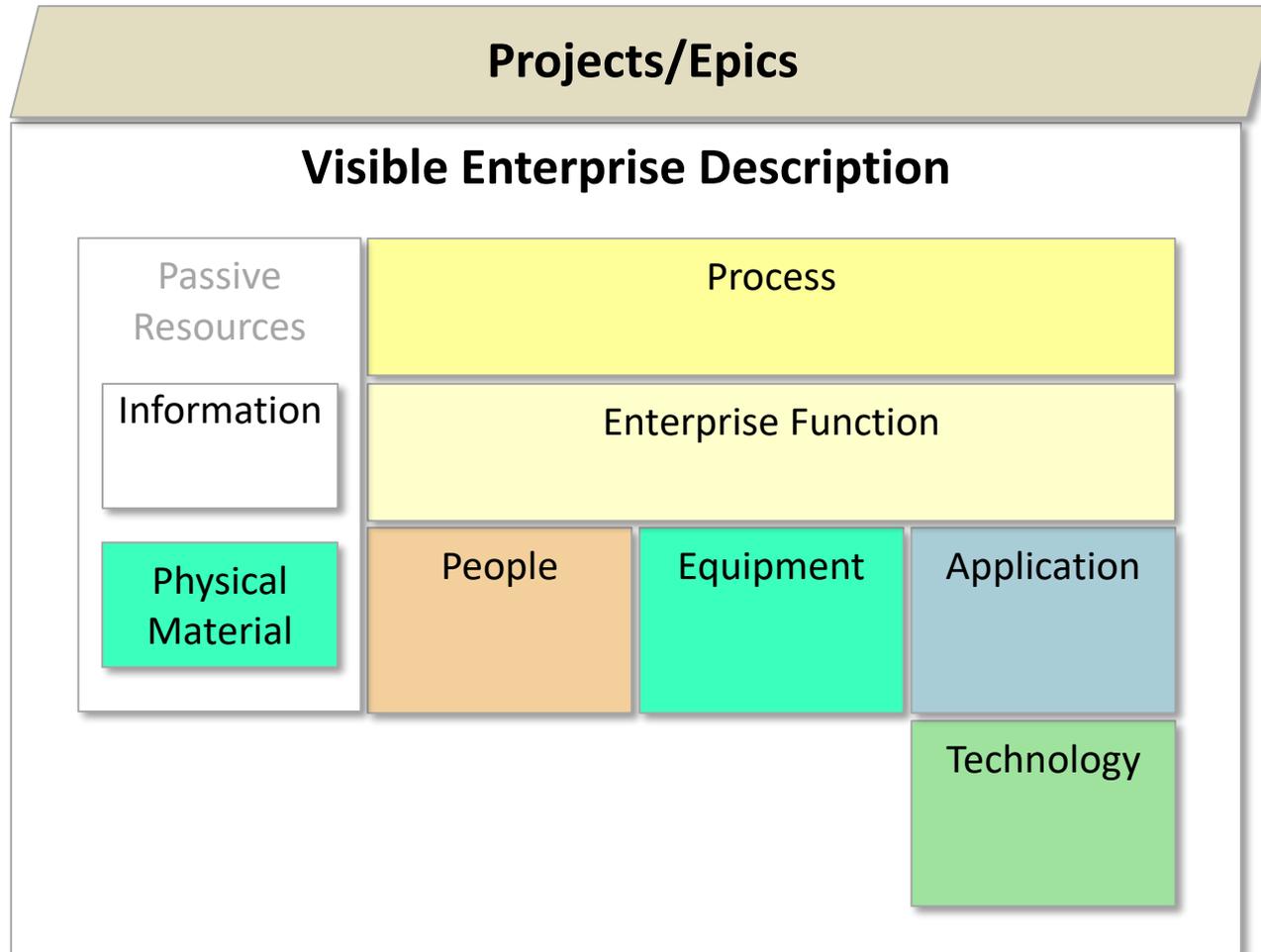
# The **Projects** folder contains...

- Proposed and ongoing changes to the enterprise architecture models

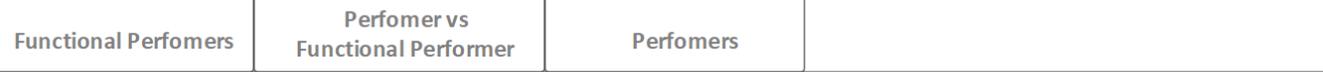
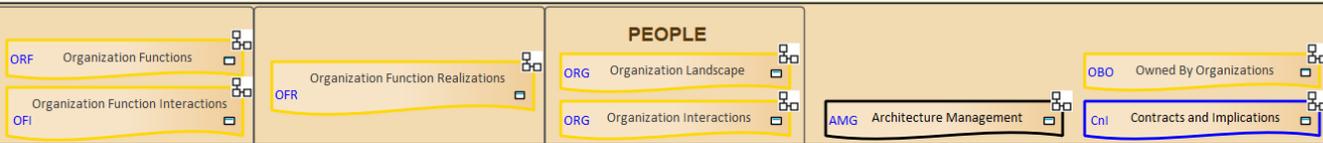
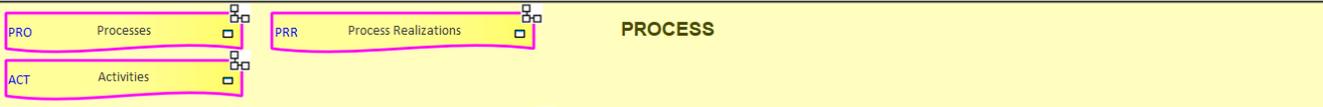
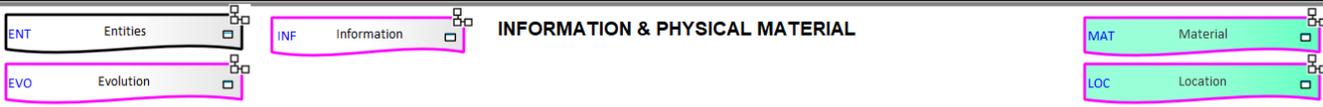
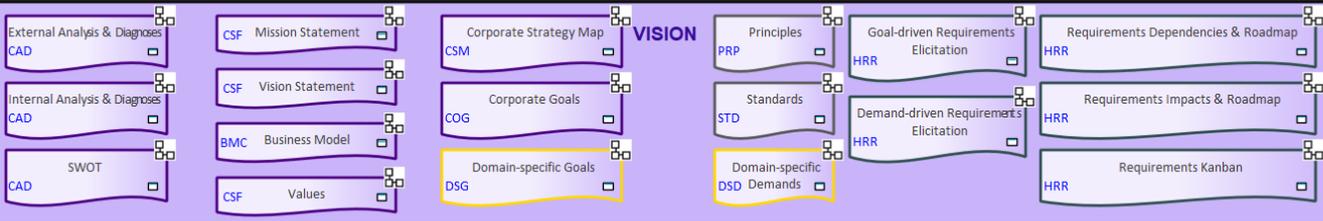
*The folder structure is similar to the structure of portfolios that are used to describe the enterprise as a whole*



# Project architecture work changes the content of the visible enterprise description

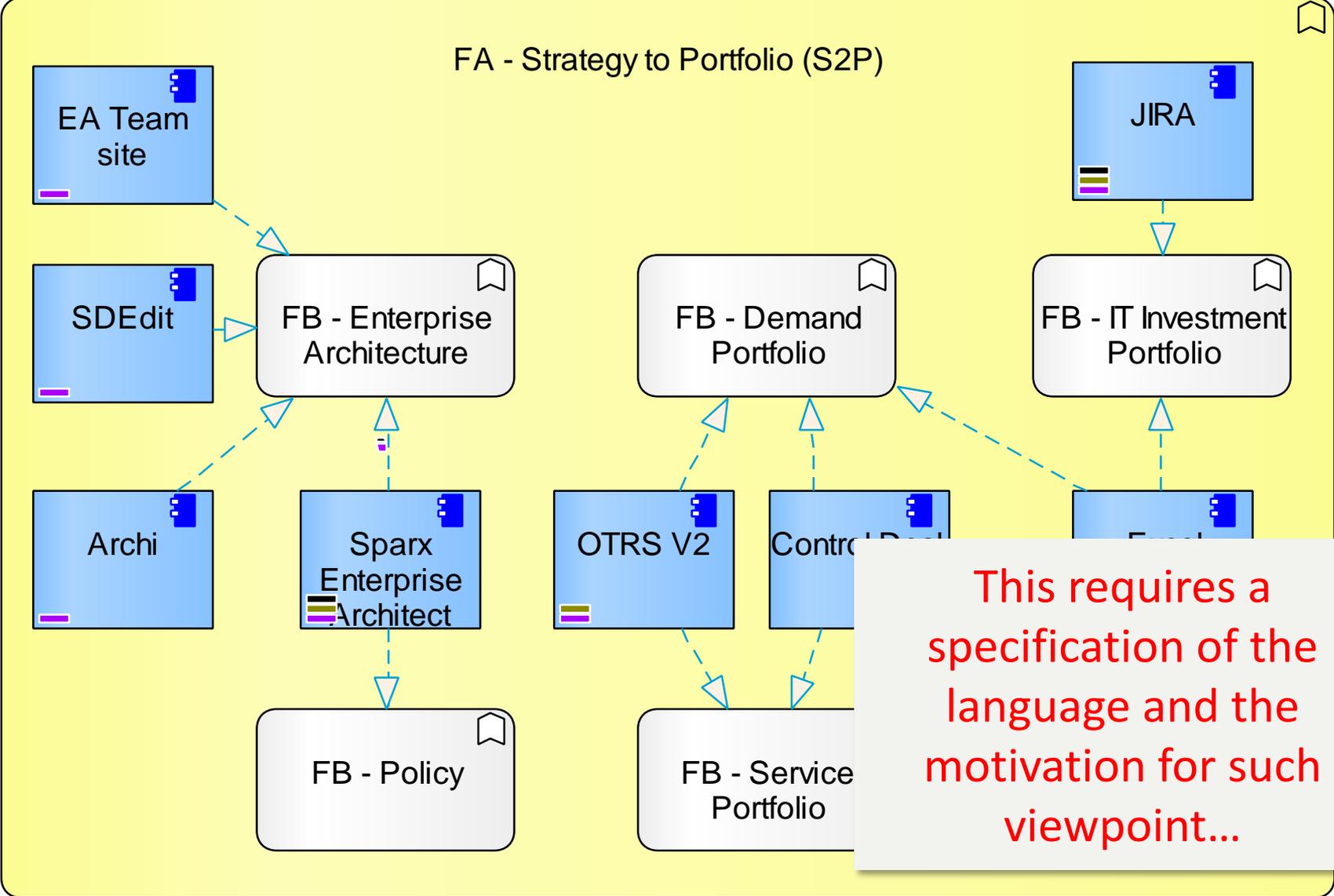


# All Level 3 Viewpoints (Diagram Types)

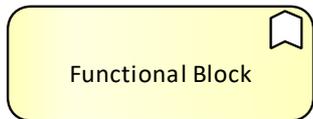


The different types of views (**viewpoints**) are also organized following architecture perspectives

# Sample “Functional Application Landscape” View



# Prescriptive language for “Functional Application Landscape” views



A Functional Block is a level 3 business function that belongs to some functional area.

The granularity and scope of a Functional Block is defined by identifying

- some homogenous set of information that the Functional Block is mastering
- a group of activities that fulfill the purpose of the functional block, that belong to some processes of same nature and that produce and use the information mastered by that Functional Block

*A business function is a behavior element that groups behavior based on a chosen set of criteria e.g. required business resources and/or skills, competencies, knowledge, etc.*

Inspired by Archimate



An application

- Is a self-contained unit of functionality as perceived by end-users
- Can be clearly mapped to some functional blocks
- Has its own specific set of application attribute values
- Is used by and billable to one or several Organizations
- Is owned by a single Organization
- Can be part of an Application Platform or an Application Group
- Encapsulates Applications Components and Application Interfaces
- Can exist at one or many specific points in time called "plateaus". Possible plateaus are AS-IS, TRANSITION and TO-BE.

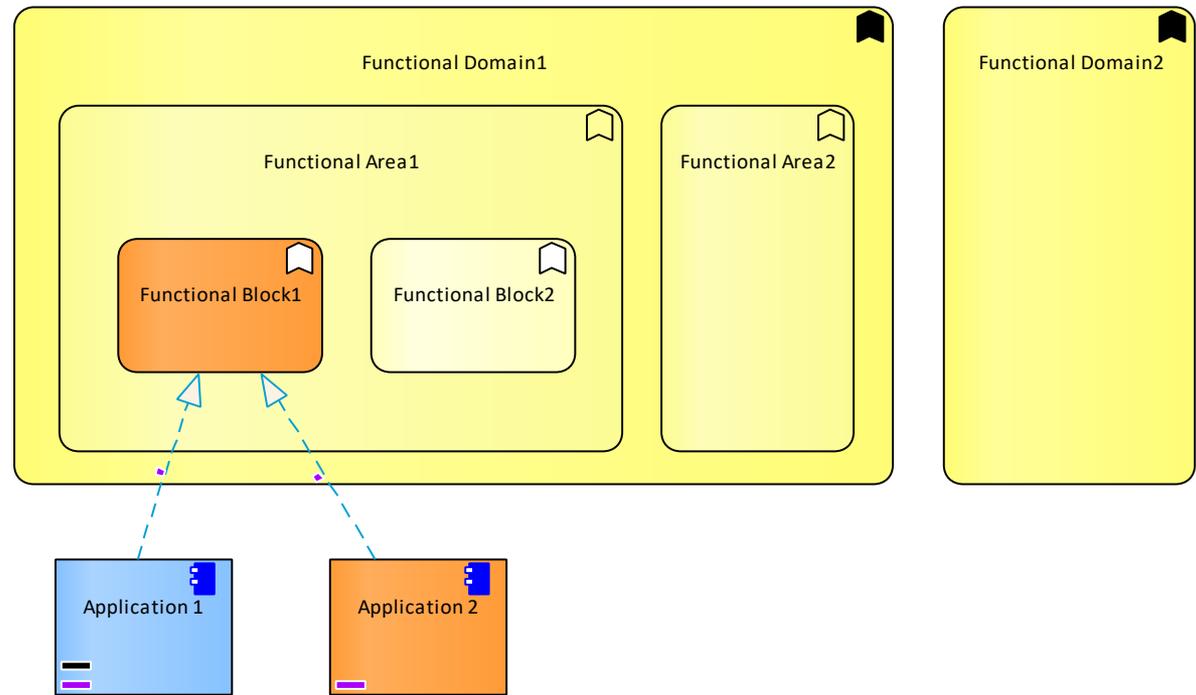
The name of an application component should preferably be a noun.



A **Realization** relationship indicates which concrete entities (“how”) realize which abstract entities (“what”). The realization relationship is used in a business operational sense (e.g., a role realizes a swim-lane of activities), but also in an IT context (e.g., an application realizes a functional block).

Inspired by UML & Archimate

# Motivation for creating “Functional Application Landscape” views



## This answers the following questions

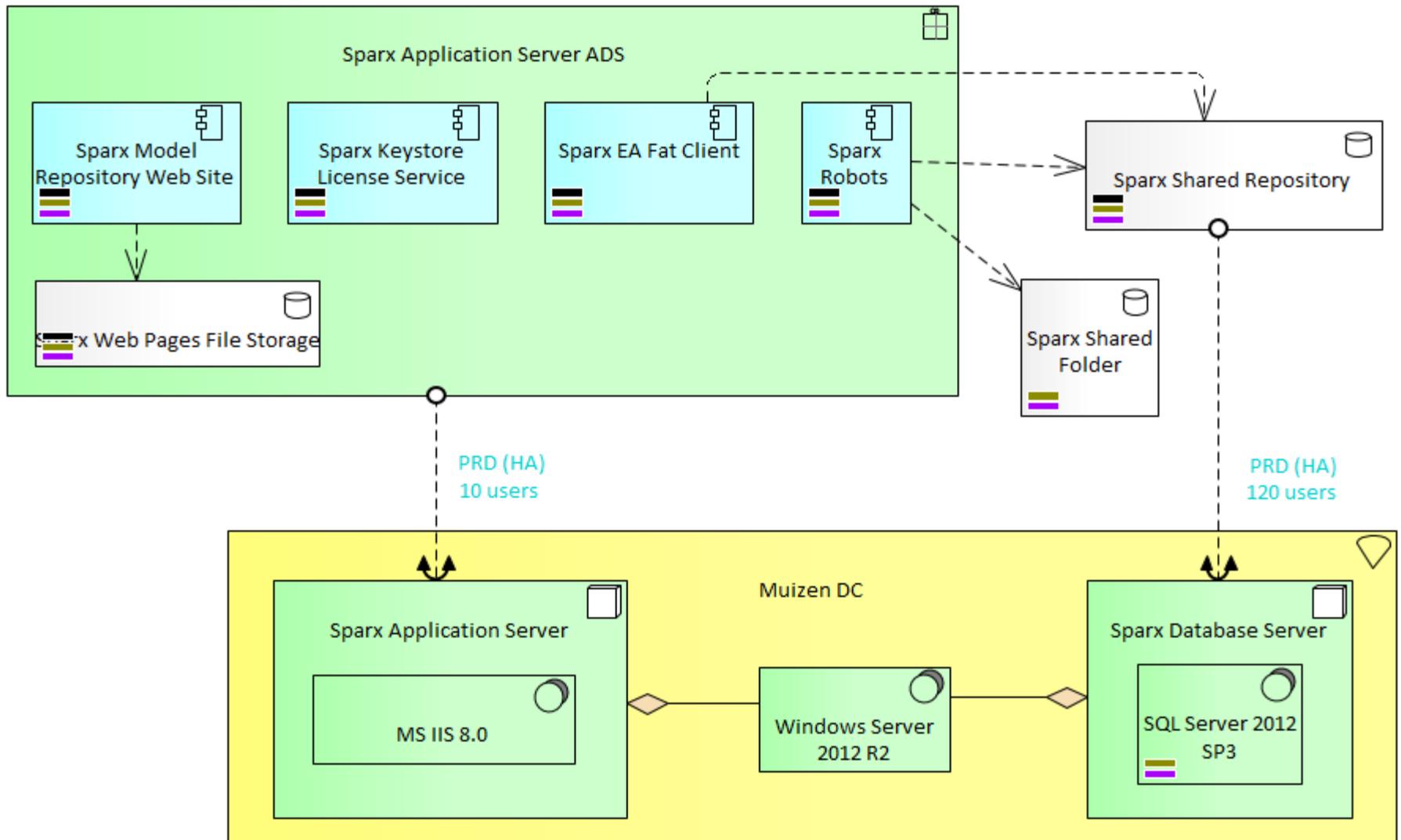
When used as part of the **Visible Enterprise Description**

- Which **applications** support which **functional blocks**?

When used as part of a **Project Architecture**

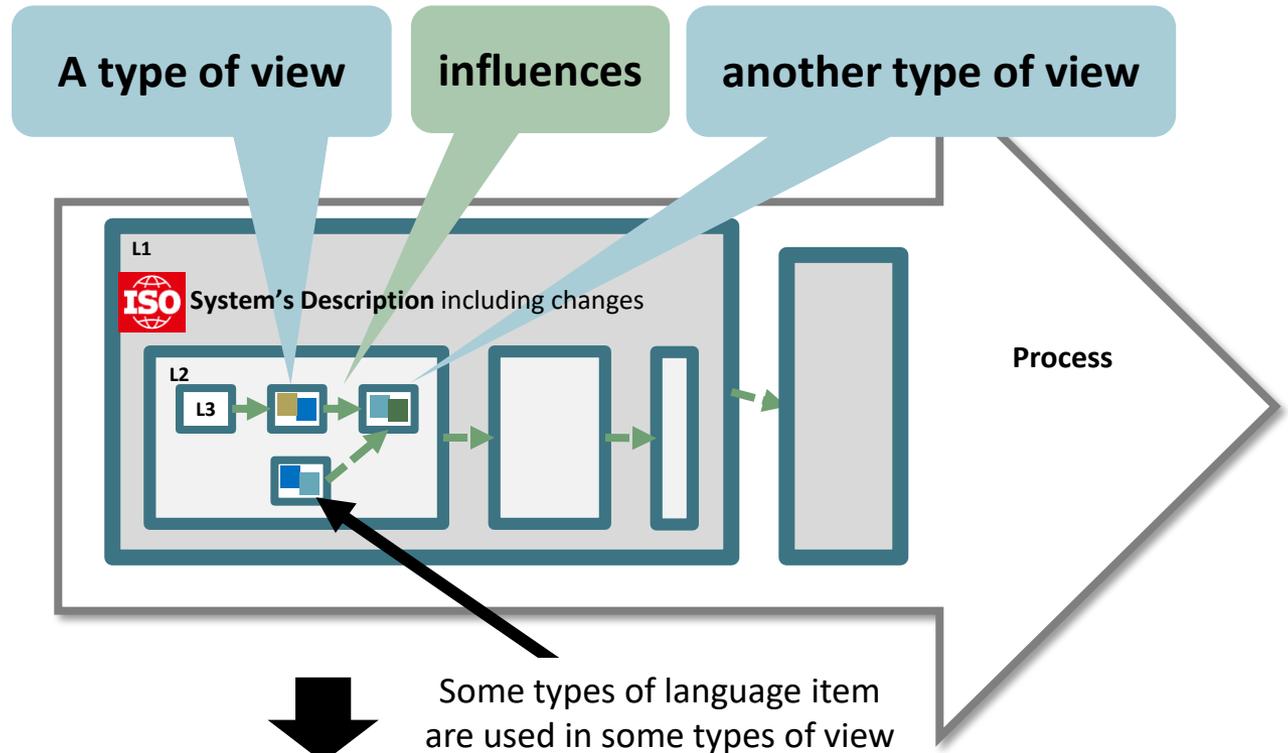
- Which **applications** are/will automate the **functional blocks** inside the scope of this project?

# Sample "Application Deployment" View

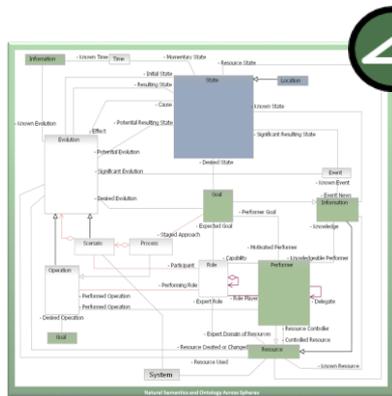


Views are created throughout the Process.

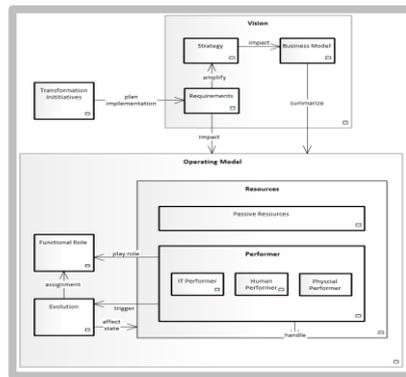
Each view uses some language items.



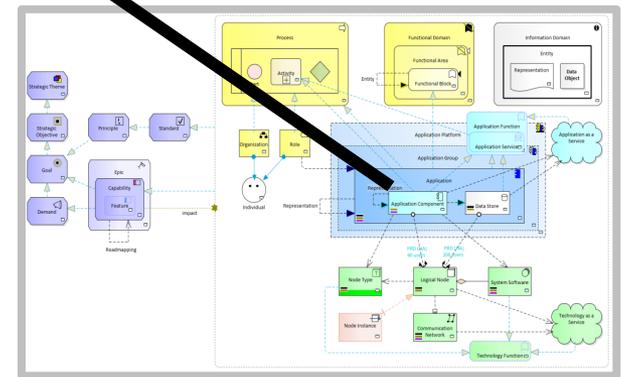
Some types of language item are used in some types of view



Systems Semantics (Automation By Nature)

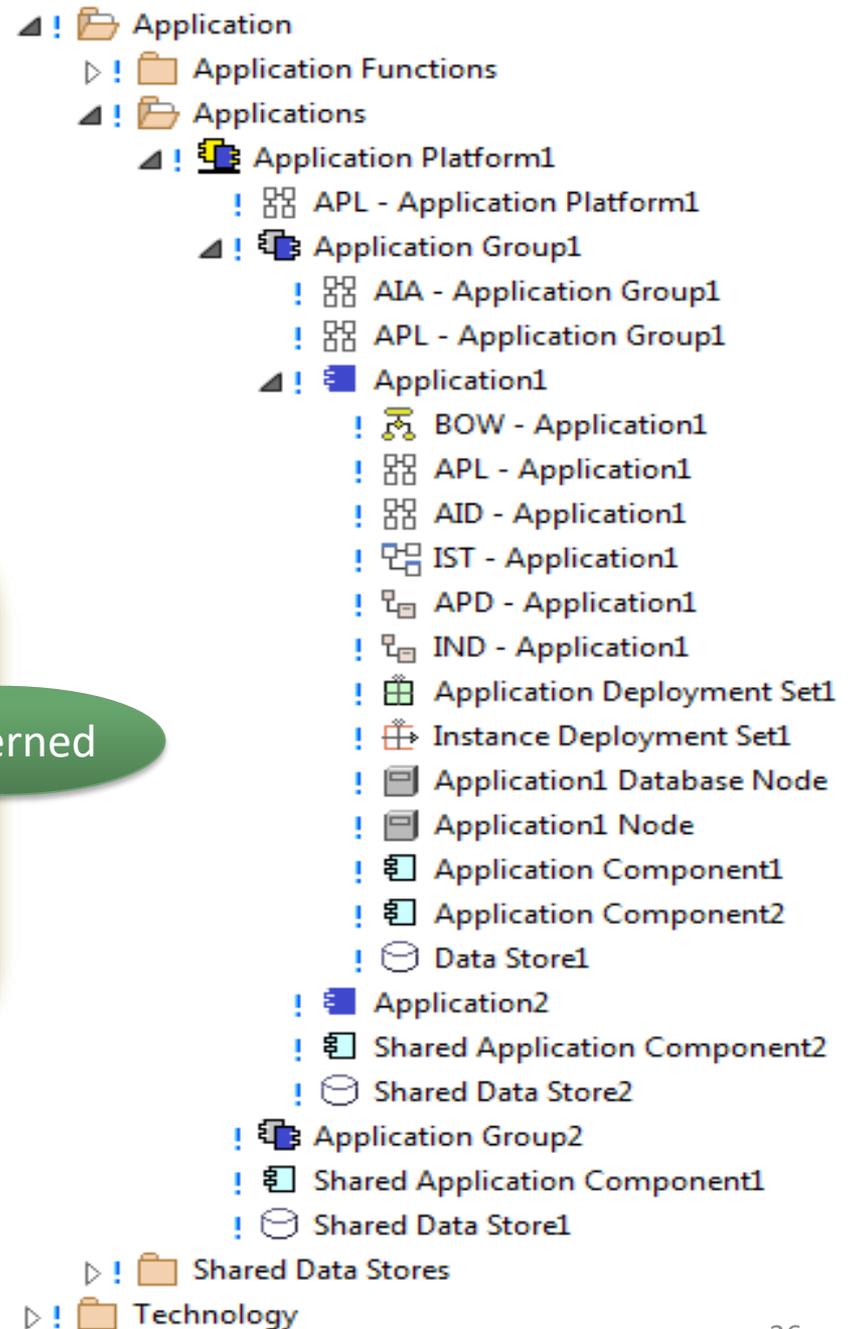
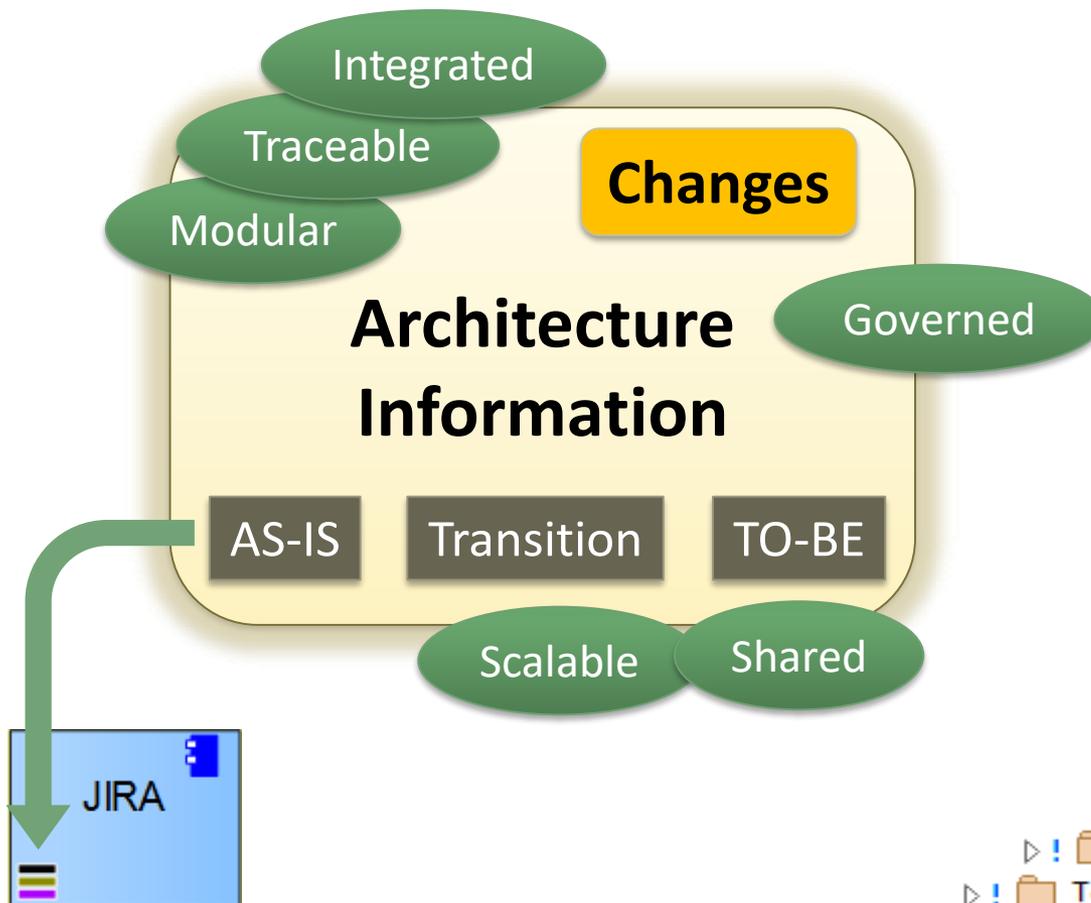


Conceptual Metamodel



Language Metamodel

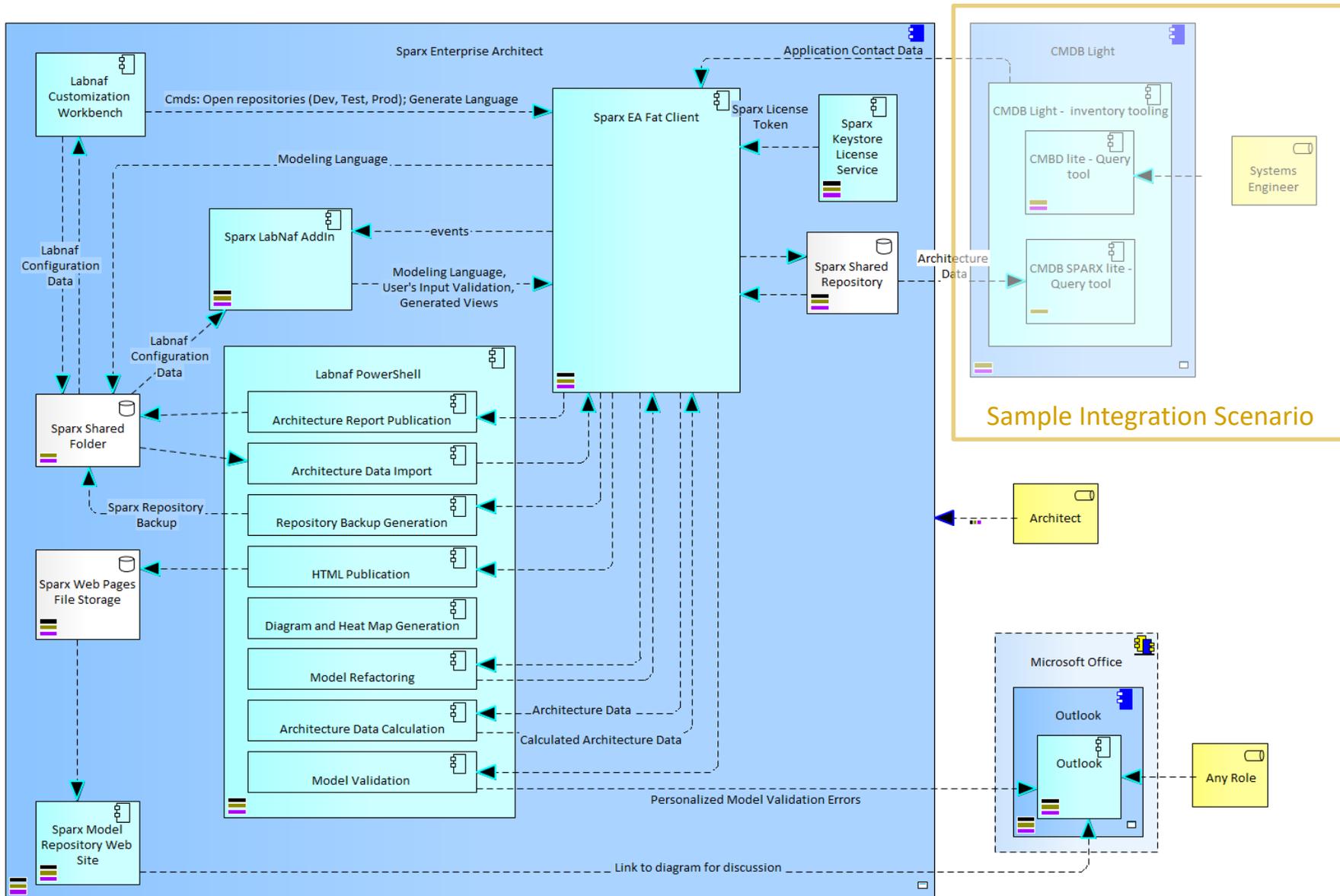
Elements and diagrams are altogether organized in the repository following a **prescribed tree structure**



# Agenda

1. Transformation Challenges
2. Architecture Framework Overview
3. Architecture Tools & Repository

# Sparx in the Application Portfolio



# The Customization Workbench guides you throughout the customization lifecycle

The screenshot displays the Labnaf Customization Workbench interface. At the top, there are buttons for 'Save', 'Reload', and 'About'. Below these is a 'Load MDG from:' section with radio buttons for 'Files' (selected) and 'AddIn'. The main area is titled 'Software Development Lifecycle Environment' and contains three rows of configuration fields: 'Development folder' (C:\ALT\SparxDev\Distributed\Labnaf\Environments\1\_Dev), 'Testing configuration folder' (C:\ALT\SparxDev\Distributed\Labnaf\Environments\2\_Test), and 'Production configuration folder' (H:\Tools\LabnafConfig). Each row has a 'Select Folder' button, and the production row also has an 'Activate' button. Below this is a yellow highlighted section titled 'Active Runtime Configuration on this PC:' with a 'PROD' status. It lists 'Load MDG file from folder' (H:\Tools\LabnafConfig), 'MDG file expected in this folder' (H:\Tools\LabnafConfig\Labnaf\_Custom\_MDG.xml) with a timestamp of 2019-03-05 11:59:12, and 'Connectors Definition used (always from PROD):' (H:\Tools\LabnafConfig\Labnaf\_Custom\_QuickLinks.xml) with a timestamp of 2019-03-04 17:36:25. The bottom section, 'Software Development Lifecycle', is organized into three categories: 'MDG Development' (with buttons for 'Edit MDG Source Model (EAP)', 'Edit MDG Deployment File (MTS)', and 'Generate MDG => Testing'), 'MDG Testing' (with buttons for 'Activate Testing Configuration', 'Open Testing Repository', and 'Copy MDG from Testing => Production'), and 'Configuring Production' (with buttons for 'Activate Production Configuration', 'Open Production Repository & Edit Metamodel', and 'Generate Connectors Definition => Production'). Each button in the bottom section is accompanied by a file path and a 'Time Last Changed' timestamp.

Software Development Lifecycle		Time Last Changed
MDG Development		
Edit MDG Source Model (EAP)	C:\ALT\SparxDev\Distributed\Labnaf\Environments\1_Dev\Labnaf_Custom	2019-03-05 12:50:36
Edit MDG Deployment File (MTS)	C:\ALT\SparxDev\Distributed\Labnaf\Environments\1_Dev\Labnaf_Custorr	2019-03-05 11:24:02
MDG Testing		
Activate Testing Configuration	C:\ALT\SparxDev\Distributed\Labnaf\Environments\2_Test\Labnaf_Custorr	2019-03-05 11:59:12
Open Testing Repository	C:\ALT\SparxDev\Distributed\Labnaf\Environments\2_Test\Labnaf_Test_Re	2019-03-05 11:41:16
Configuring Production		
Activate Production Configuration	H:\Tools\LabnafConfig\Labnaf_Custom_MDG.xml	2019-03-05 11:59:12
Open Production Repository & Edit Metamodel	H:\Tools\LabnafConfig\Labnaf_Prod_Repository.eap	2019-02-28 18:01:07
Generate Connectors Definition => Production	H:\Tools\LabnafConfig\Labnaf_Custom_QuickLinks.xml	2019-03-04 17:36:25

# Each type of architecture view has its toolbox with element and connector types

## Elements & Connectors

- Some come from standards
- Some were adapted
- Some are proprietary

**Examples**

The screenshot displays a software architecture toolbox with two main sections: **Activities** and **Application Deployment**. The **Activities** section includes icons for Activity, Gateway, Intermediate Event, End Event, Role, Start Event, Swimlane, Data Object, Representation, Application Function, Application Component, and Location. Below this is the **Activities Connectors** section with icons for Activity Trigger, Realizes, and Access. The **Application Deployment** section includes icons for Application as a Service, Technology as a Service, Application Deployment Set, Application Component, Data Store, Logical Node, System Software, and Location. Below this is the **Application Deployment Connectors** section with icons for Is deployed on, Is part of, Realizes, Is dependent on, and Flow allowed by firewall. A yellow callout box points to the 'Examples' text, and a light green callout box at the bottom right explains the connector naming convention.

**Activities**

- Activity
- Gateway
- Intermediate Event
- End Event
- Role
- Start Event
- Swimlane
- Data Object
- Representation
- Application Function
- Application Component
- Location

**Activities Connectors**

- Activity Trigger
- Realizes
- Access

**Application Deployment**

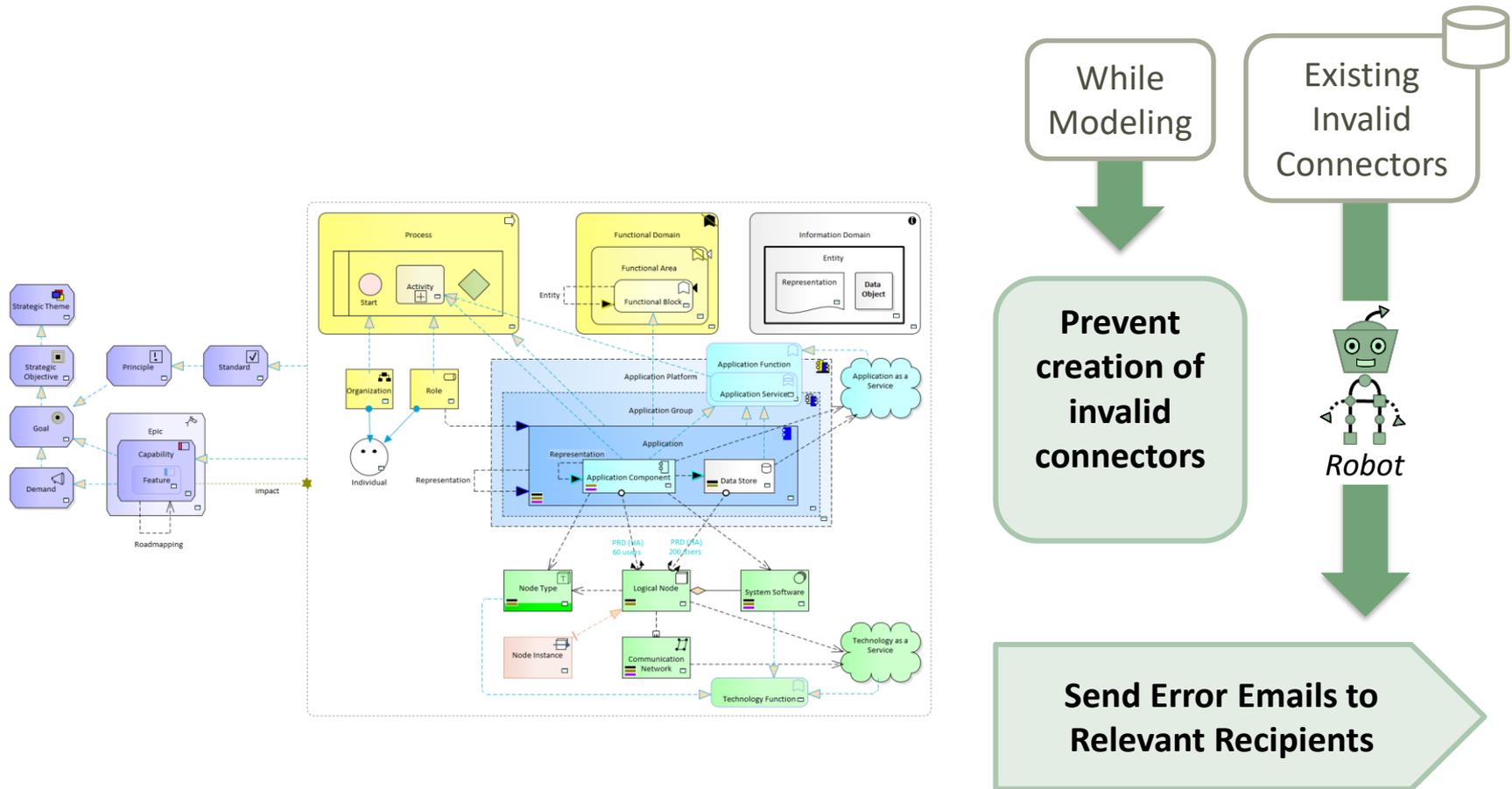
- Application as a Service
- Technology as a Service
- Application Deployment Set
- Application Component
- Data Store
- Logical Node
- System Software
- Location

**Application Deployment Connectors**

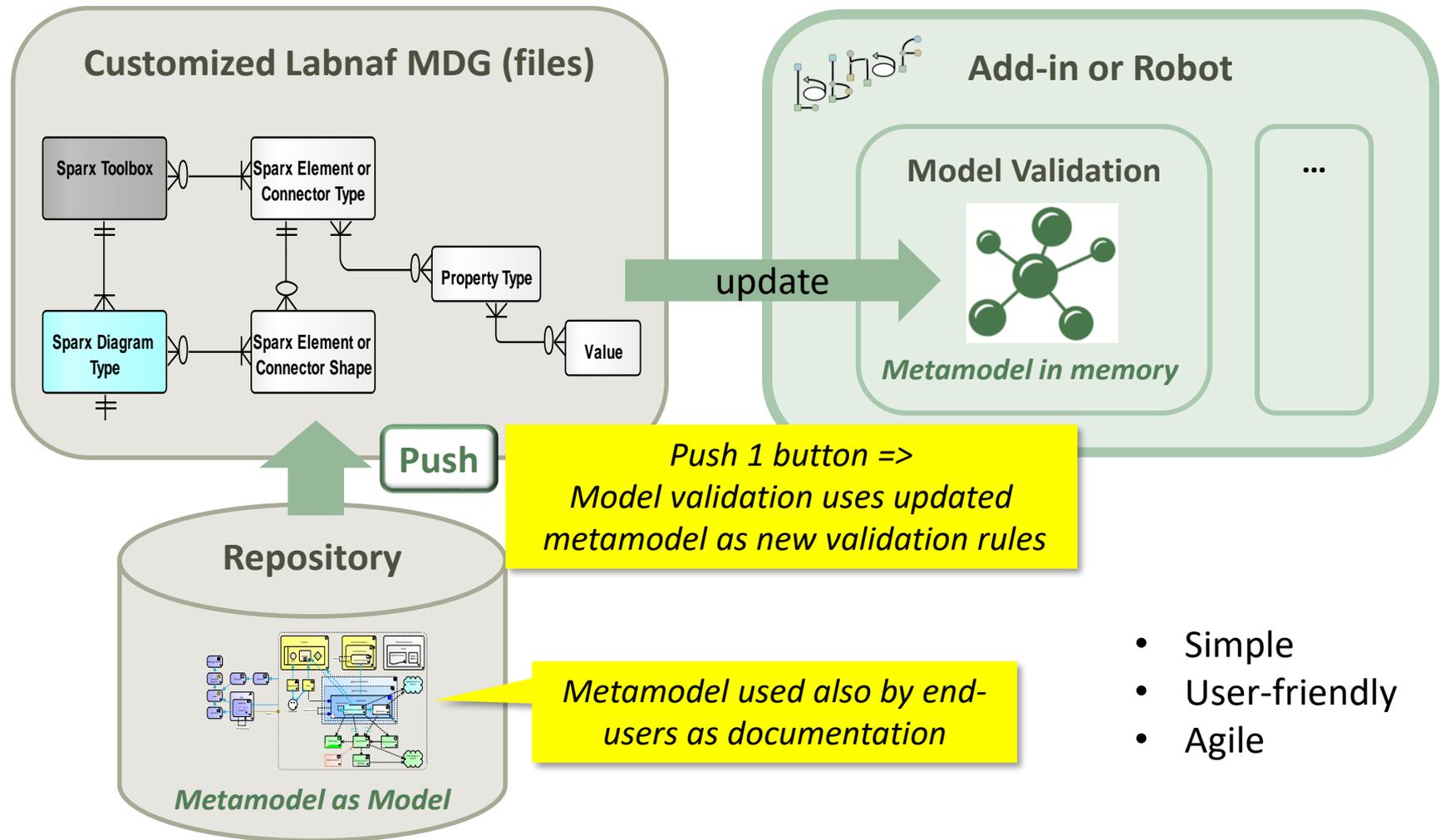
- Is deployed on
- Is part of
- Realizes
- Is dependent on
- Flow allowed by firewall

We use verbs instead of nouns to indicate the meaning of the connector's directions

# The Language Metamodel is used both for documentation & automatic model validation



# The default metamodel (stored in the Labnaf Addin and used for validation) can be very easily updated



- Simple
- User-friendly
- Agile

# Many key diagrams are generated every night following diagram templates

The screenshot displays a domain diagram for 'Sales'. It is organized into hierarchical sections: B2B Sales, B2C Sales, B2I Sales, and Sales Channel. Each section contains specific business functions, some of which are color-coded (yellow, grey, or teal) and have small icons (like a red dashed line or a yellow arrow) indicating their status. To the right of the diagram is a table titled 'List of applications supporting the domain.' which lists various applications such as 'Athena Cash Desk' and 'Customer Mobile Application'. Further right is a 'Legend for Business Functions' table that explains the color coding and externalization status. Below the legend is a 'Nb of Applications / Business function' legend with a color key (pink for 0, grey for 1, yellow for 2 or more). At the bottom right, there is a link to 'List of other Functional Domain diagram(s) as hyperlink(s)' and a small icon labeled 'EUI\_Sales'.

**Sales**

**B2B Sales**

- B2B Indirect Sales

**B2C Sales**

- B2C Order Management
- B2C Pricing Management
- B2C Self-Service Channel

**B2I Sales**

- Bulk Distribution
- Face-to-Face Distribution

**Sales Channel**

**List of applications supporting the domain.**

'Application Name'
Ares
Athena Cash Desk
Customer Mobile Application
Demeter
Hera
Janus
Jupiter Cash Desk
LOGIN B2B
Neptune
Venus Cash Desk
Zeus Common Pricing

**Legend for Business Functions**

Differentiator = ?	
= Y	
= N	

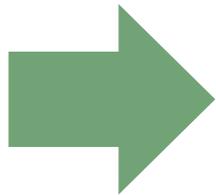
Externalized = Y	Entirely externalized
= P	Partially externalized
= N	Not externalized (default)

**Nb of Applications / Business function**

- 0
- 1
- 2 or more

List of other Functional Domain diagram(s) as hyperlink(s)

[EUI\\_Sales](#)



- Time Savings
- Cost savings
- Diagram completeness
- Consistent diagram layout

# Generated Application Portfolio Reports

Recently Created Applications

**Application Portfolio Reports**

### List of Applications and Components in Excel (Nightly Generated)

**Applications and Relationships**  
 All applications with all attributes including cross-references to organizations using the applications and to functional domains  
 Audience: Project Managers, Architects

**Application List for Release Management**  
 All applications with only the attributes needed for Release Management.  
 Audience: IT Operations

**Application Components**  
 All application components along with their parent application.  
 Audience: Project Managers, Architects

### Functional Coverage and Heatmaps (Dynamic Diagrams)

3 types of generated diagrams:

- 1) **Functional domain overview diagram** including
  - A heat map illustrating, for each functional area in the functional domain, which functional block is supported by 0, 1 or more than 1 applications
  - A list of all applications supporting the functional domains
- 2) **Functional area overview diagram** including
  - A heat map illustrating which functional block is supported by which applications
- 3) **Functional block overview diagram** including
  - A heat map illustrating which applications are supported by that functional block

Audience: Business Area Leads, Project Managers, Architects

### Categorized Applications

**Top Applications**  
 Dynamic chart illustrating most important applications.  
 Audience: IT Management, Project Managers, Architects

**Critical Applications (to be reviewed)**  
 Dynamic lists of applications that are critical for business operations  
 Audience: IT Management, Project Managers, Architects, Business Area Leads

**Criticality Applications by OS (to be reviewed)**  
 Applications using outdated OS  
 Audience: IT Management, Project Managers, Architects, IT Operations

**C# applications and components**  
 Lists of applications and components developed in C#  
 Audience: IT Management, Project Managers, Architects

**C++ applications and components**  
 Lists of applications and components developed in C#  
 Audience: IT Management, Project Managers, Architects

### Quality of Application Information (Completion Rates)

**Q - Application and Component Interaction Flows**  
 Dynamic list showing the completion rates of application interaction (AIA) and application interaction details (AID) diagrams

**Q - Application Contact Information**  
 Dynamic lists and charts illustrating the completion rate of some specific application attribute values.  
 Audience: IT Management, Project Managers, Architects

**Q - Application Properties @ IT Organizations**  
 Dynamic lists showing the completion rates of application contact information completeness per IT organization

**Q - Application Properties @ BAs - Business Area's**  
 Dynamic lists showing the completion rates of application contact information completeness per Business Area

**Q - Application Properties @ TCCs - Technology Competence Centers**  
 Dynamic lists showing the completion rates of application contact information completeness per Technology Competence Center

# Value proposition



**We play many different roles, but...**

We speak the same language

We share the same information in the same repository

We follow the same process and we use the same tool

**We collaborate effectively**

For further information ...

**Educational material and trial version of the software are available here:**

**[www.Labnaf.one](http://www.Labnaf.one)**

Thank you!

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