The Labnaf Architecture Framework

What is it?

1. Merged Standards & Best Practices

One Strategy & Architecture Process

One Modeling Language

One Tool & One Repository

Extensive On-line Documentation

Alain De Preter

https://www.linkedin.com/in/alain-de-preter/

alain.depreter@outlook.com

Career Summary

- 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

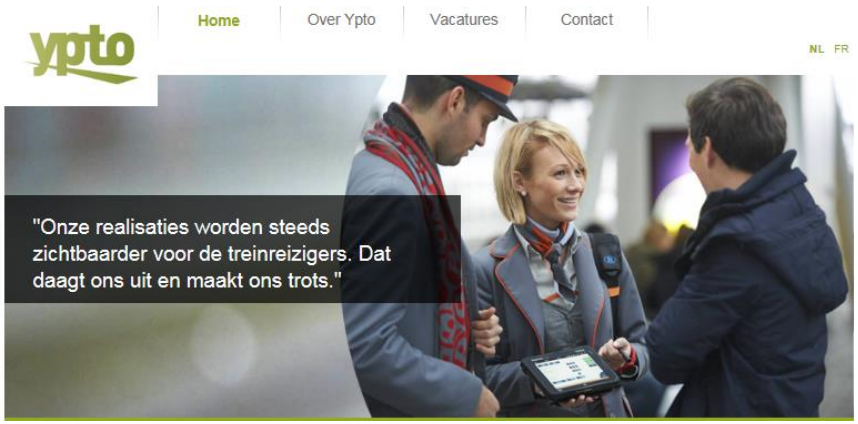
- Strategy
- Enterprise Architecture
- Solution Architecture
- Analysis, Design & Implementation
- Pharmaceutical, Cinema, Legal, Banking, Transportation…

Agenda

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

Is 100% owned by **Belgian Railways**

Delivers IT Services for



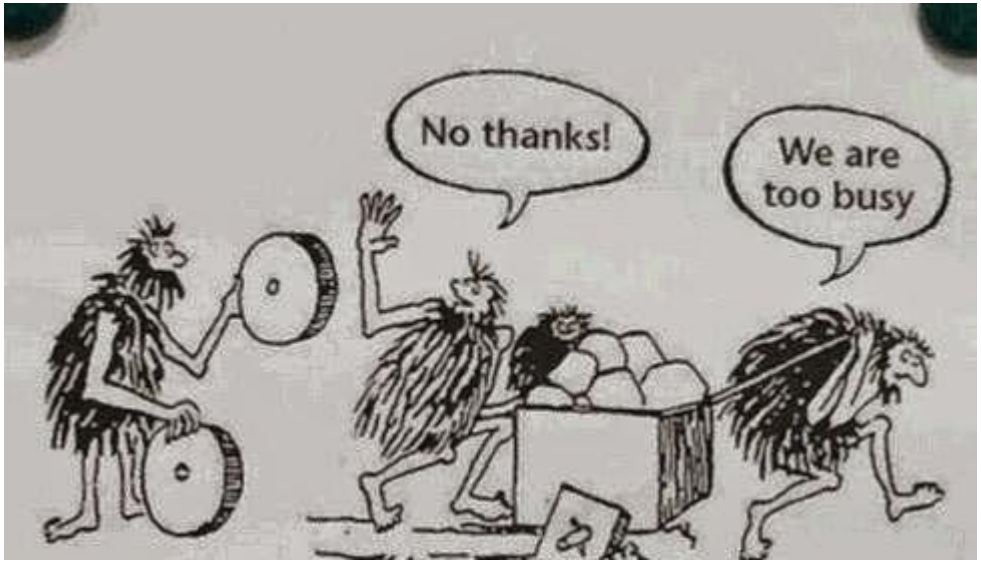
2016*	Millions
Income	€ 2 371
Total balance	€ 11 975
Investments	€ 702

YPTO's burning platform

We believe that we can NOT fix on time and on budget the current way of working.

We do not have the skills (soft & hard) to support such changes.

For sure, we have to reduce the IT TCO, right now !



We expect a reduction of the IT budget in the coming years.

We must increase our IT productivity.

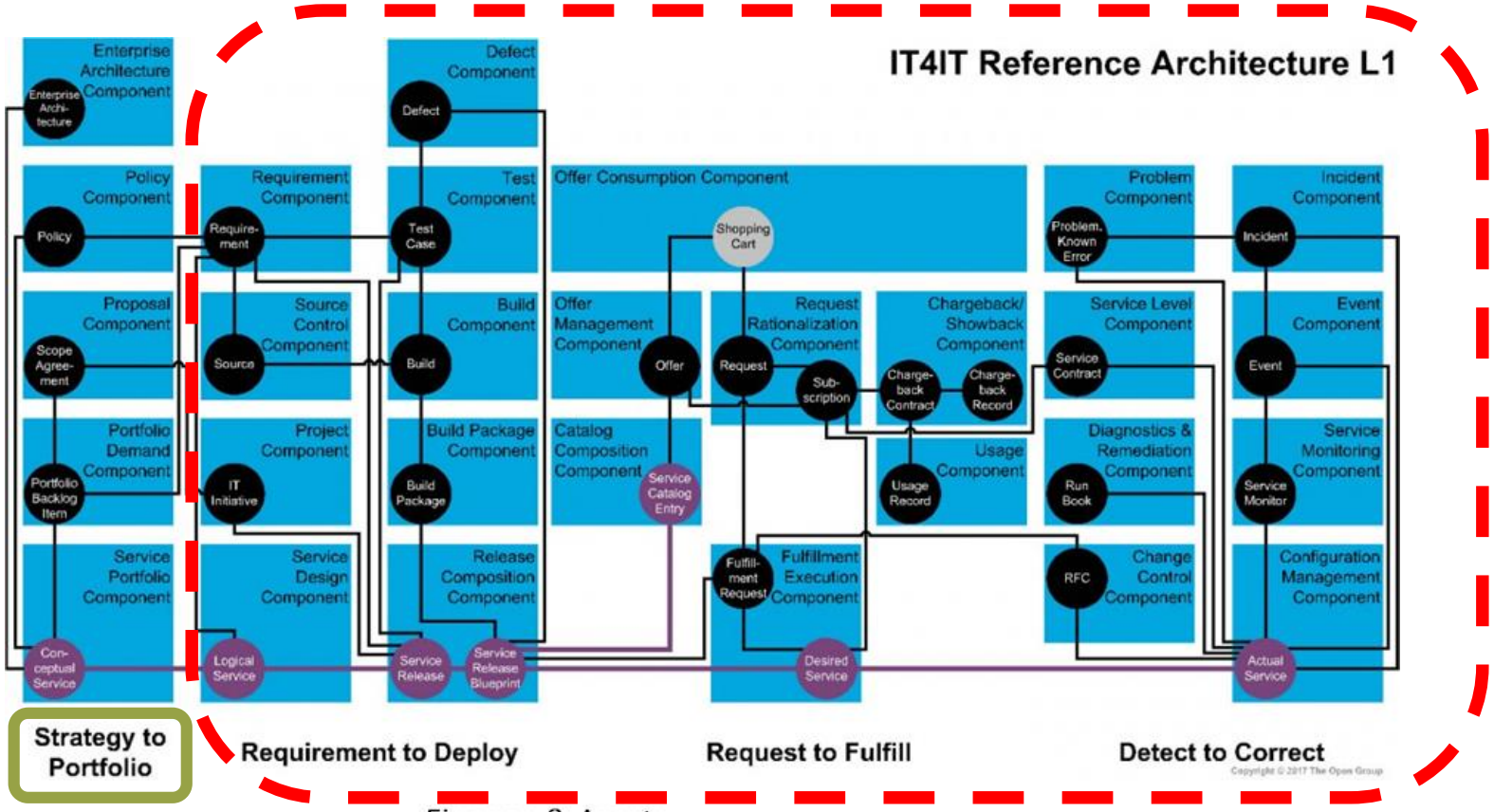
We must build a SNCB network (with or without Infrabel) by 2021.

We must close 2 data centres by 2020.

...
...
...
...

Outsourcing of SNCB's business of IT

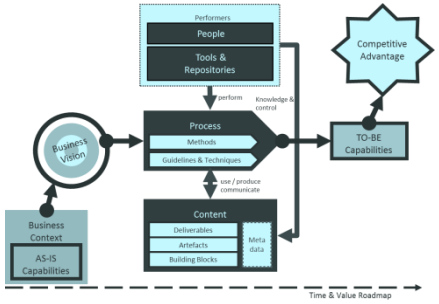
Starting in October 2018



- Finance & Assets
- Sourcing & Vendor
- Intelligence & Reporting
- Resource & Project
- Governance, Risk & Compliance

- **Scope of the outsourcing**
- Period of 5 years + 1 +1.
- (This is a summary view !)

YPTO (SNCB's IT) decided to create its Architecture Framework based on industry standards



Key aims

- Architecture Modeling & Portfolio Management
- Enterprise visibility and traceability
- Productivity and consistency
- Ease architecture planning and communication

Decision to adopt

- TOGAF, SAFe, Archimate, BPMN and UML

TOGAF, SAFe, ArchiMate, BPMN, …

All are great and very useful but…

- Not integrated
- Not actionable as a whole (disconnected sets)
- Redundant semantics & terms (Data Object, Role, Process…)
- Not embedded in our way of working

YPTO's conclusion

- Adopting each and every standard is not ideal
- Need a **single integrated company standard** to bring productivity, consistency and cross-discipline collaboration

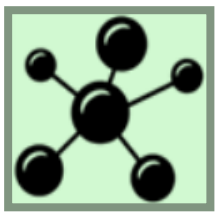
⇒ SNCB decided to go for **a single integrated framework** that is inspired by market standards and to **embed** it into the business of IT

Tailoring a framework inspired by market standards

TOGAF, SAFe,
ArchiMate, BPMN, UML …

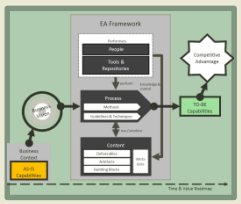
Merge

The Process of Driving Changes



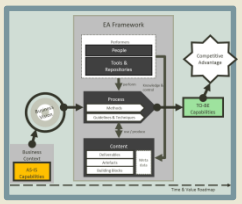
Reference Systems Semantics
Automation By Nature

Use for **normalizing semantics**



Reference Framework

Tailor to customer needs



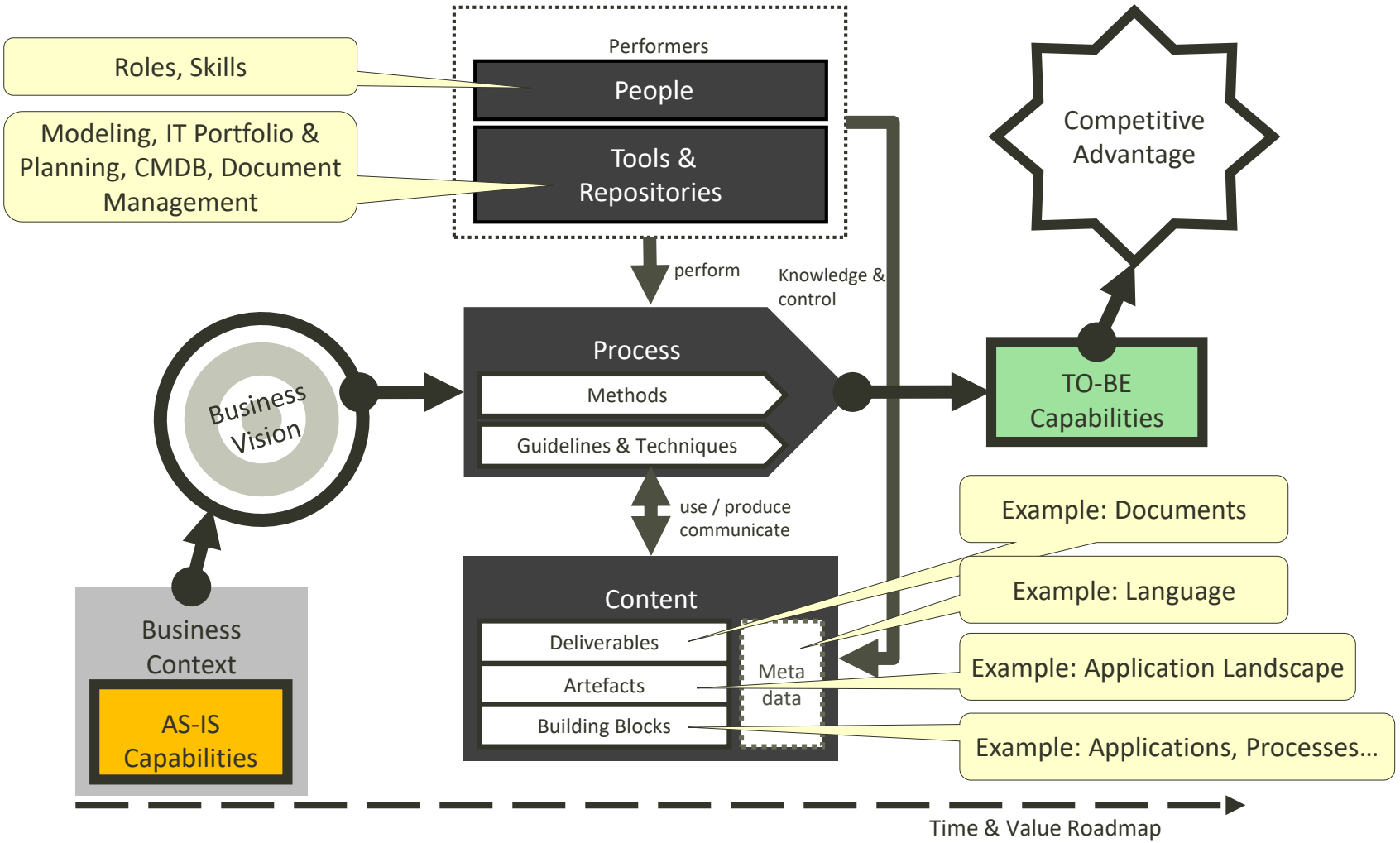
Framework embedded in the organization

4 => 60 architects + many other stakeholders/roles

Agenda

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

All In One Architecture Framework

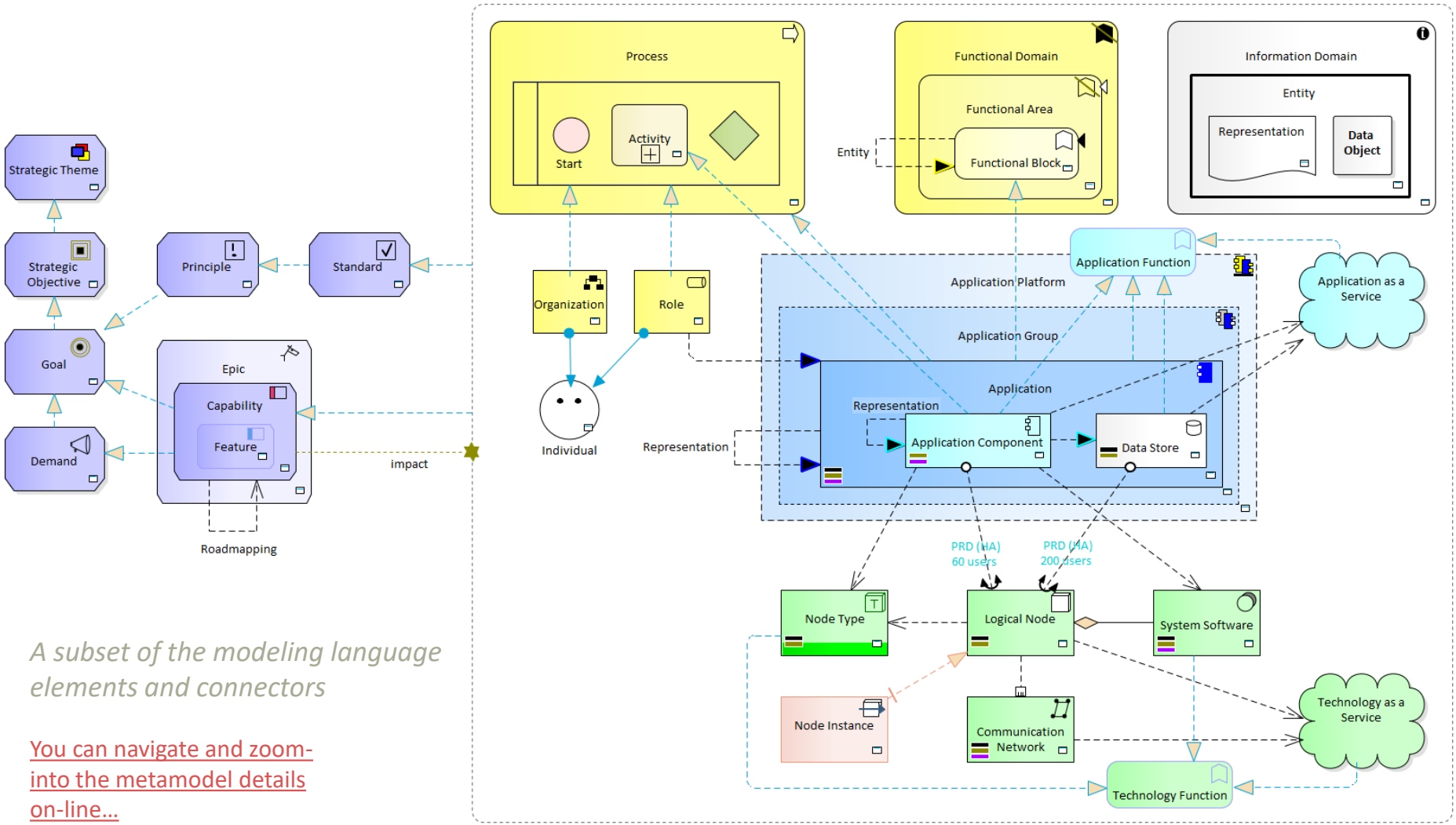


~~Integrated~~

Merged Standards & Best Practices

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

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…

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

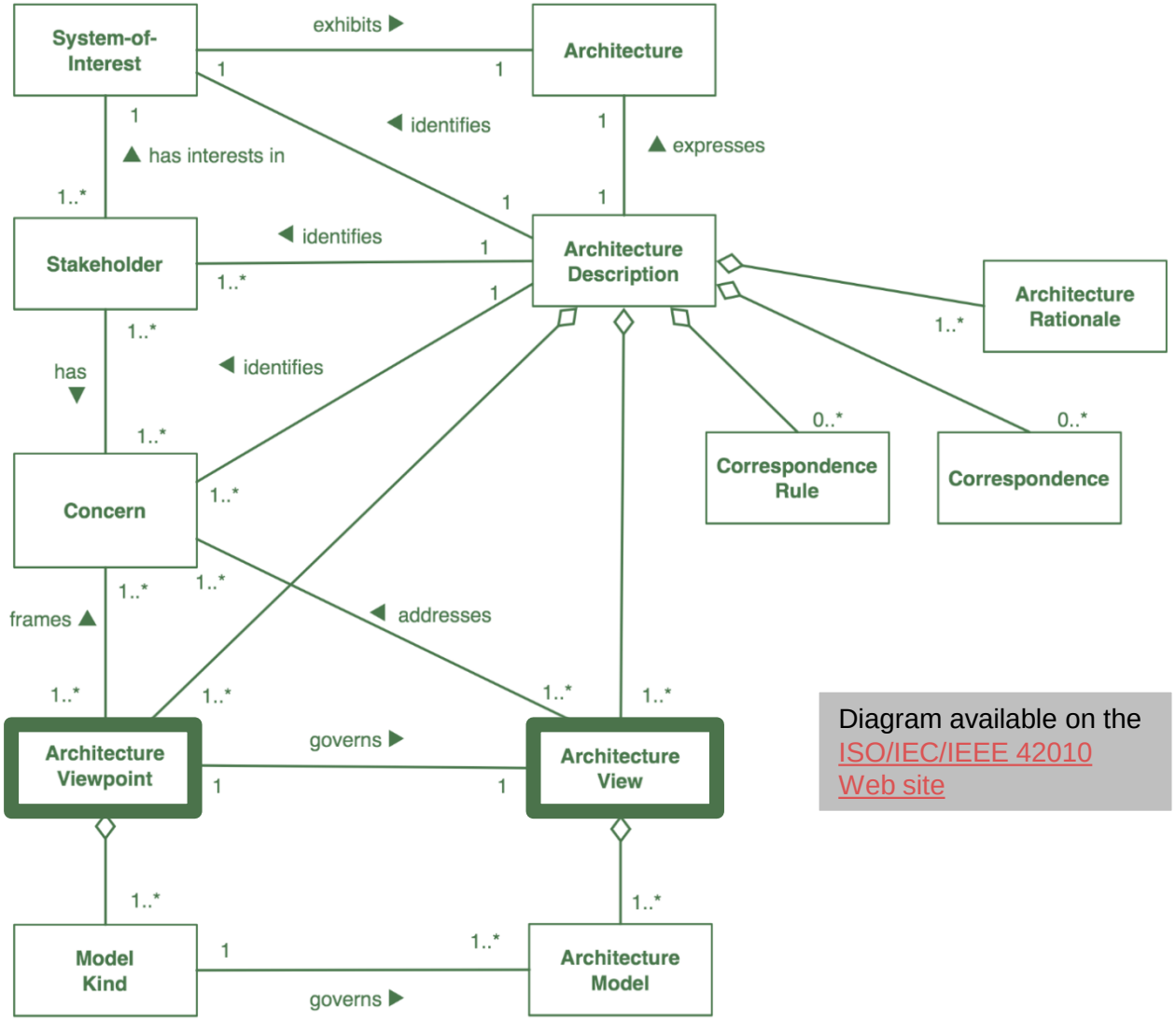
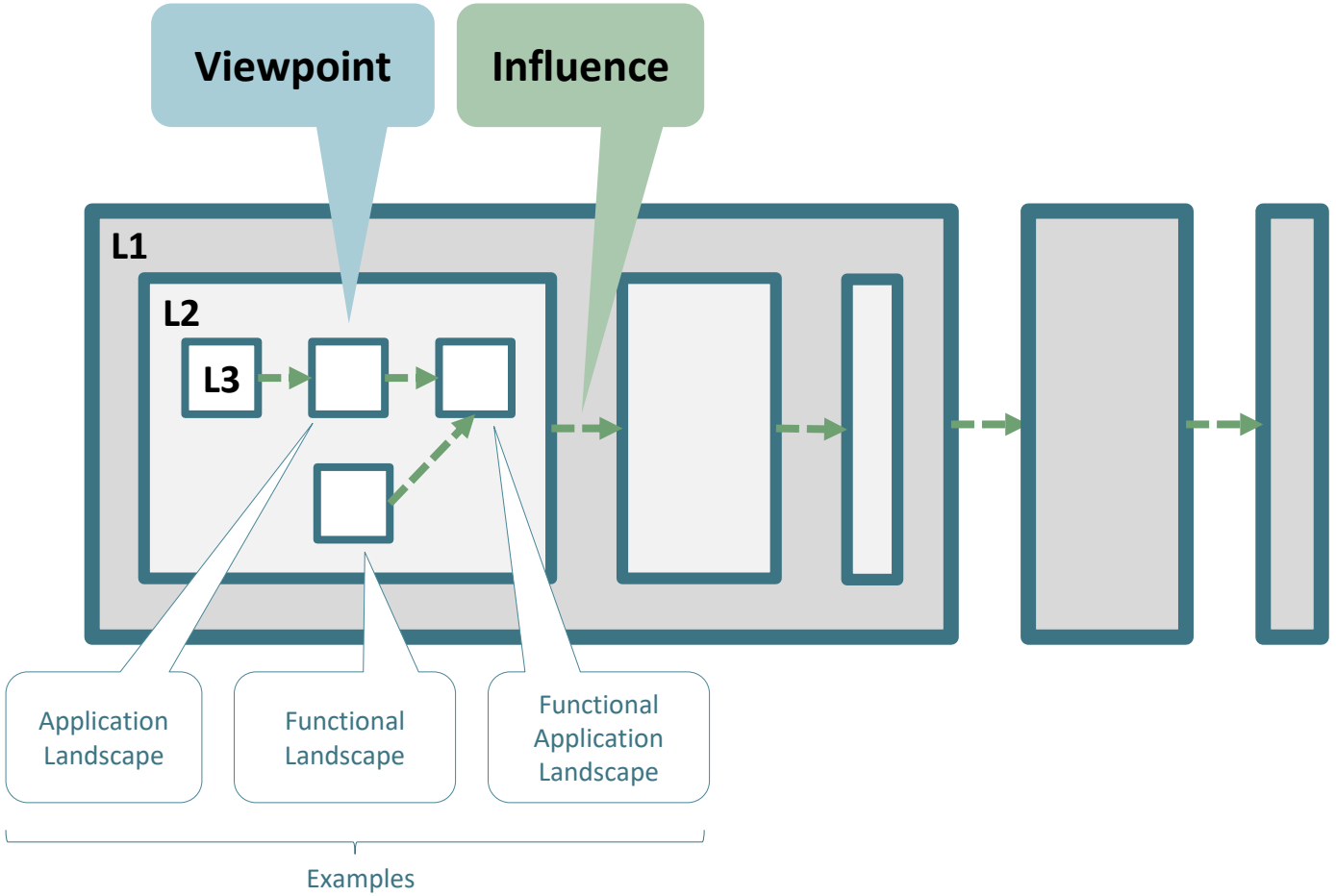
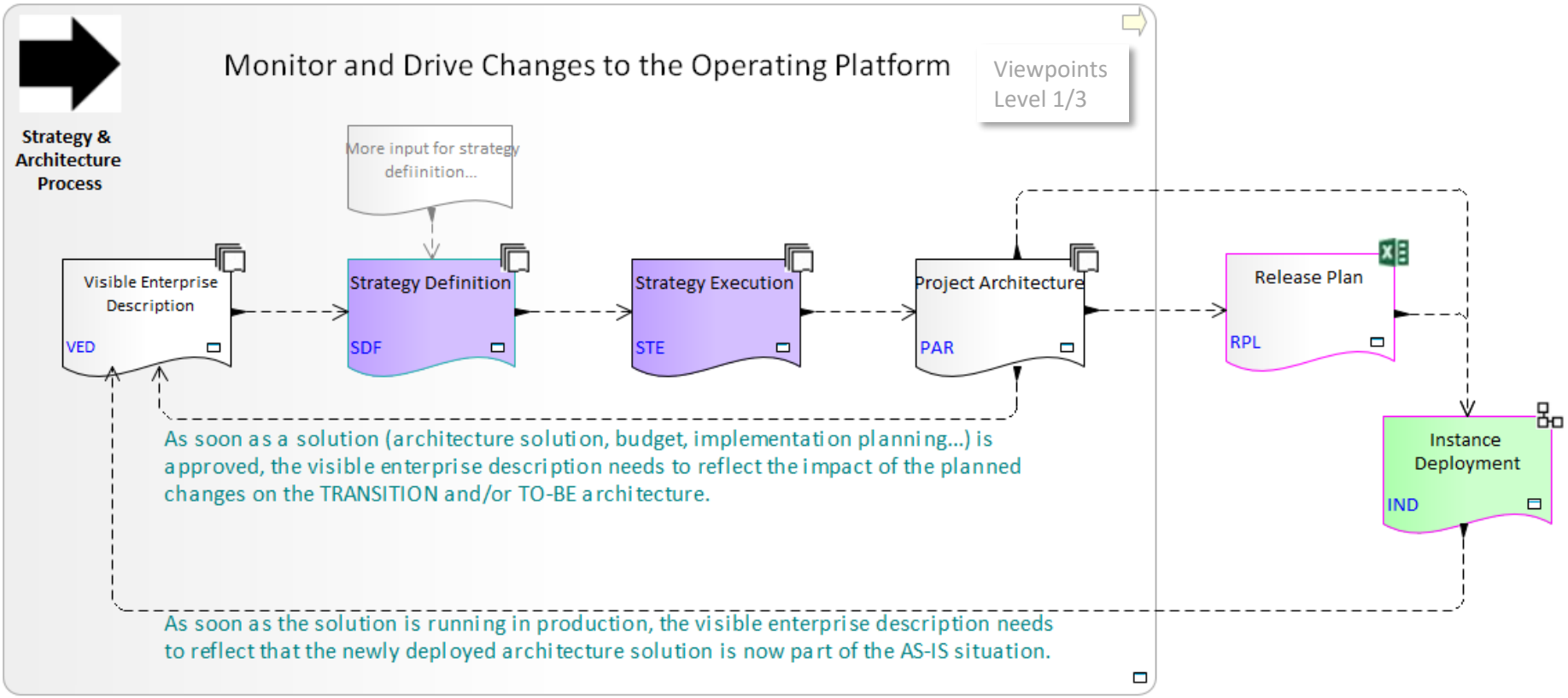


Diagram available on the ISO/IEC/IEEE 42010 Web site

The Framework is mainly organized as hierarchies and flows of viewpoints

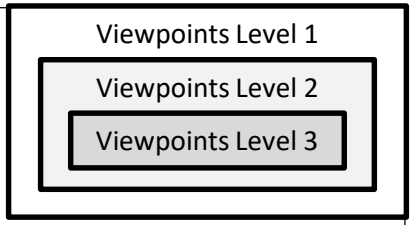


The Strategy & Architecture Process is Expressed as a **Flow of Viewpoints**



You can navigate and zoom into the viewpoints on-line…

Standard Catalogs & Level 3 Viewpoints (diagram types)



See also: Vertical View

Catalogs

Vision	Business	Information	Application	Technology
Corporate Vision	Business Functions	Information Objects	Application Functions	Interface Protocols
Domain-Specific Vision	Organizations	Contracts	Applications as a Service	Technology as a Service
Principles	Processes		Applications	System Software
Standards	Roles		Shared Data Stores	Node Types
	Individuals			Logical Nodes (Shared)
	Locations			Node Instances
	Access Points			Communication Networks

Architecture Management Viewpoint — **Level 3 Viewpoints** — Diagram Naming Conventions — **L3 Viewpoint Relationships**

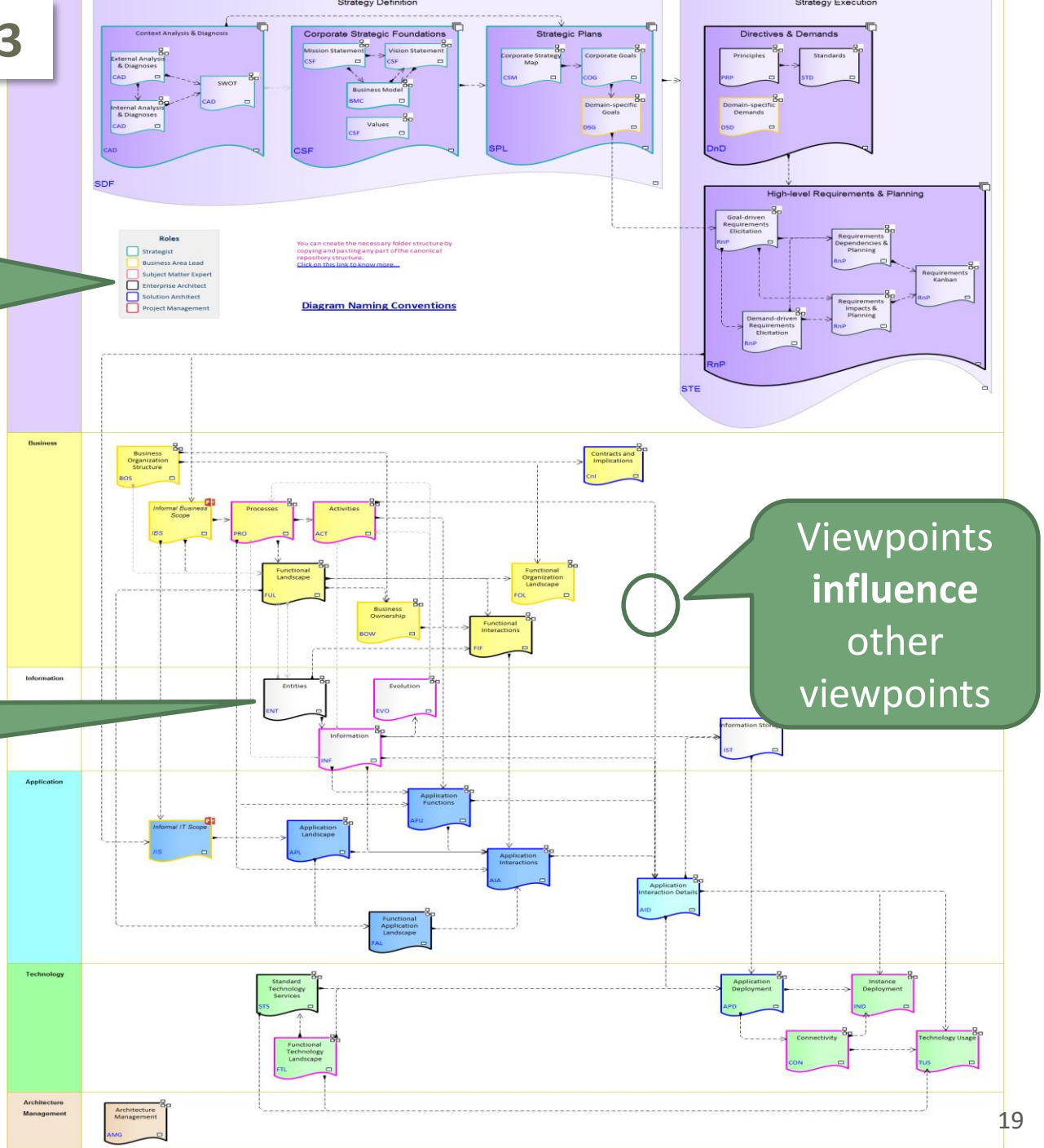
Vision	Business	Information	Application	Technology
Viewpoints	Viewpoints	Viewpoints	Viewpoints	Viewpoints
External Analysis & Diagnoses	Business Organization Structure	Entities	Informal IT Scope	Standard Technology Services
Internal Analysis & Diagnoses	Informal Business Scope	Information	Application Landscape	Application Deployment
SWOT	Processes	Evolution	Functional Application Landscape	Connectivity
Mission Statement	Activities	Information Storage	Application Functions	Instance Deployment
Vision Statement	Functional Landscape		Application Interactions	Technology Usage
Business Model	Business Ownership		Application Interaction Details	
Values	Functional Interactions			
Corporate Strategy Map	Functional Organization Landscape			
Corporate Goals	Contracts and Implications			
Domain-specific Goals				
Domain-specific Demands				
Principles				
Standards				
Goal-driven Requirements Elicitation				
Demand-driven Requirements Elicitation				
Requirements Dependencies & Planning				
Requirements Impacts & Planning				
Requirements Kanban				

Viewpoints Level 3/3

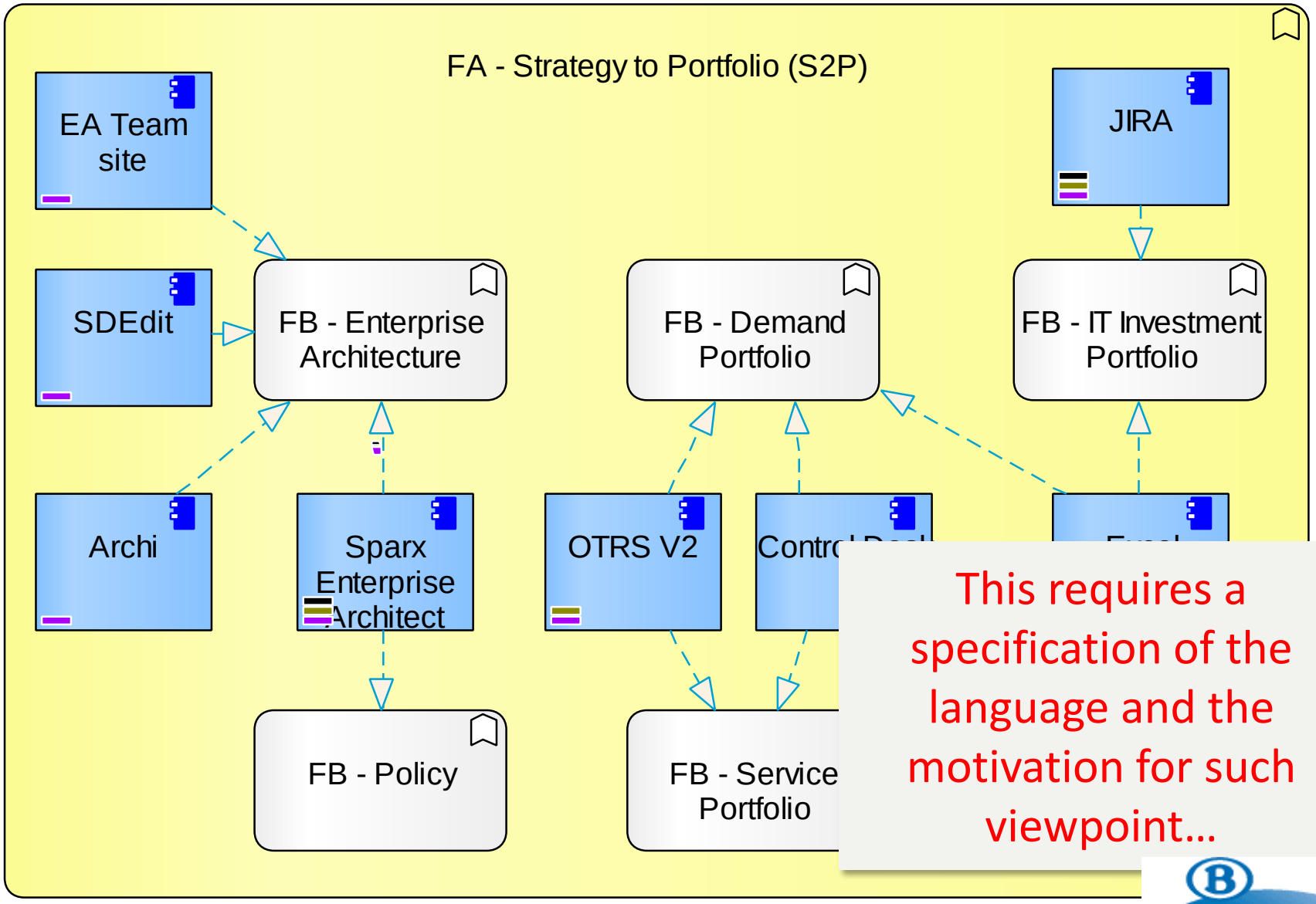
Roles responsible to deliver the views

A pre-defined viewpoint

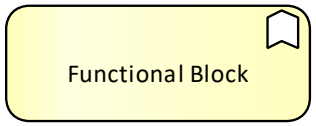
Viewpoints **influence** other viewpoints



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

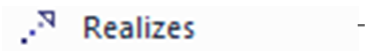
A business function is a behavior element that groups behavior based on a chosen set of criteria e.g. required business resources and/or skills, competencies, knowledge, etc.

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.

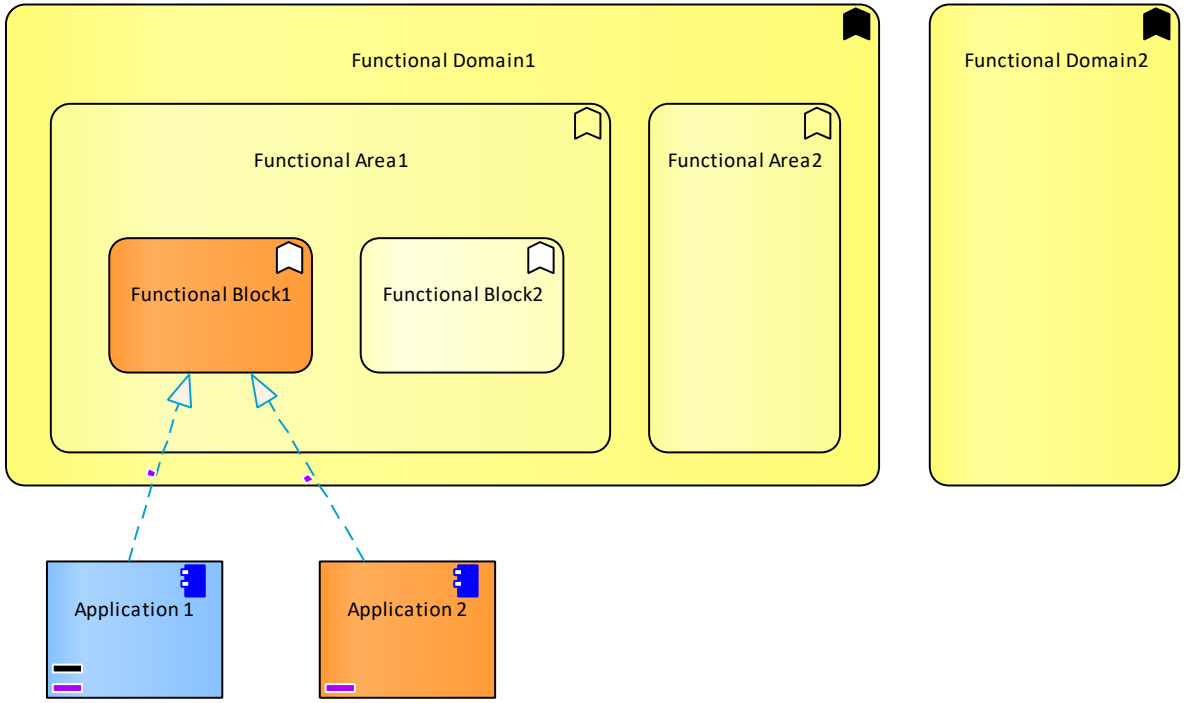
The name of an application component should preferably be a noun.



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

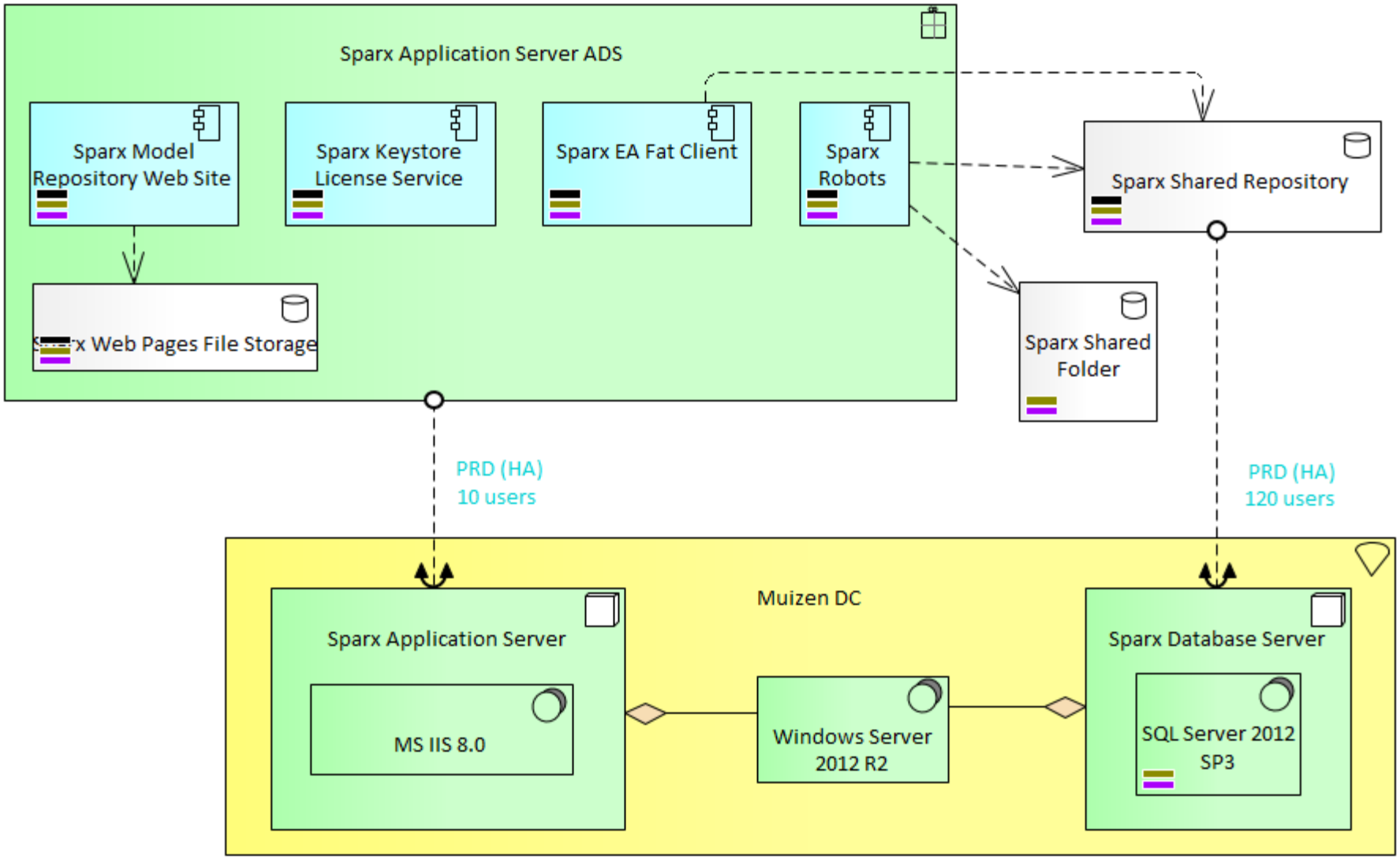
When used as part of the **Visible Enterprise Description**

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

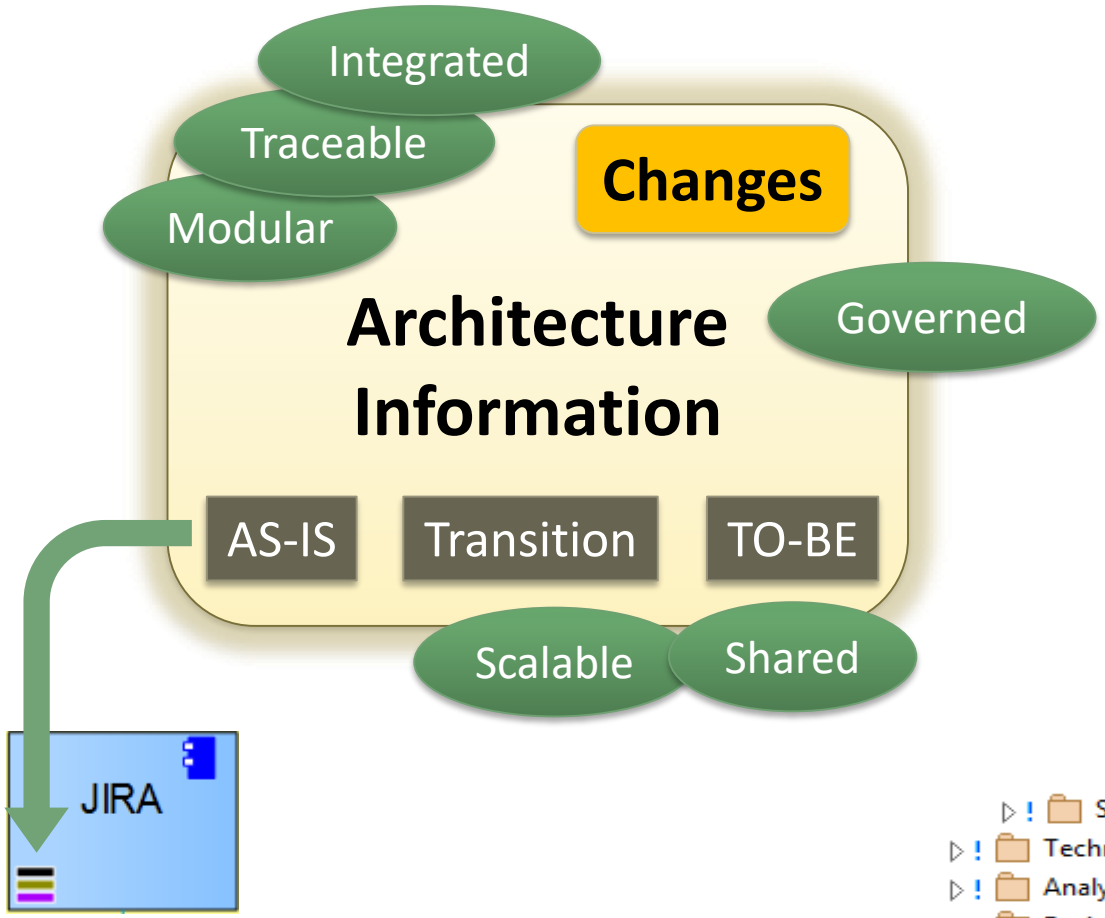
When used as part of a **Project Architecture**

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

Sample “Application Deployment” View



Architecture building blocks are organized in the repository following a **prescribed tree structure**



- Summary Views
- Vision
- Business
- Information
- Application
  - Application Functions
  - Applications
    - Application Platform1
      - APL - Application Platform1
      - Application Group1
        - AIA - Application Group1
        - APL - Application Group1
        - Application1
          - BOW - Application1
          - APL - Application1
          - AID - Application1
          - IST - Application1
          - APD - Application1
          - IND - Application1
          - Application Deployment Set1
          - Instance Deployment Set1
          - Application1 Database Node
          - Application1 Node
          - Application Component1
          - Application Component2
          - Data Store1
        - Application2
        - Shared Application Component2
        - Shared Data Store2
      - Application Group2
      - Shared Application Component1
      - Shared Data Store1
  - Shared Data Stores
- Technology
- Analysis
- Design
- Projects

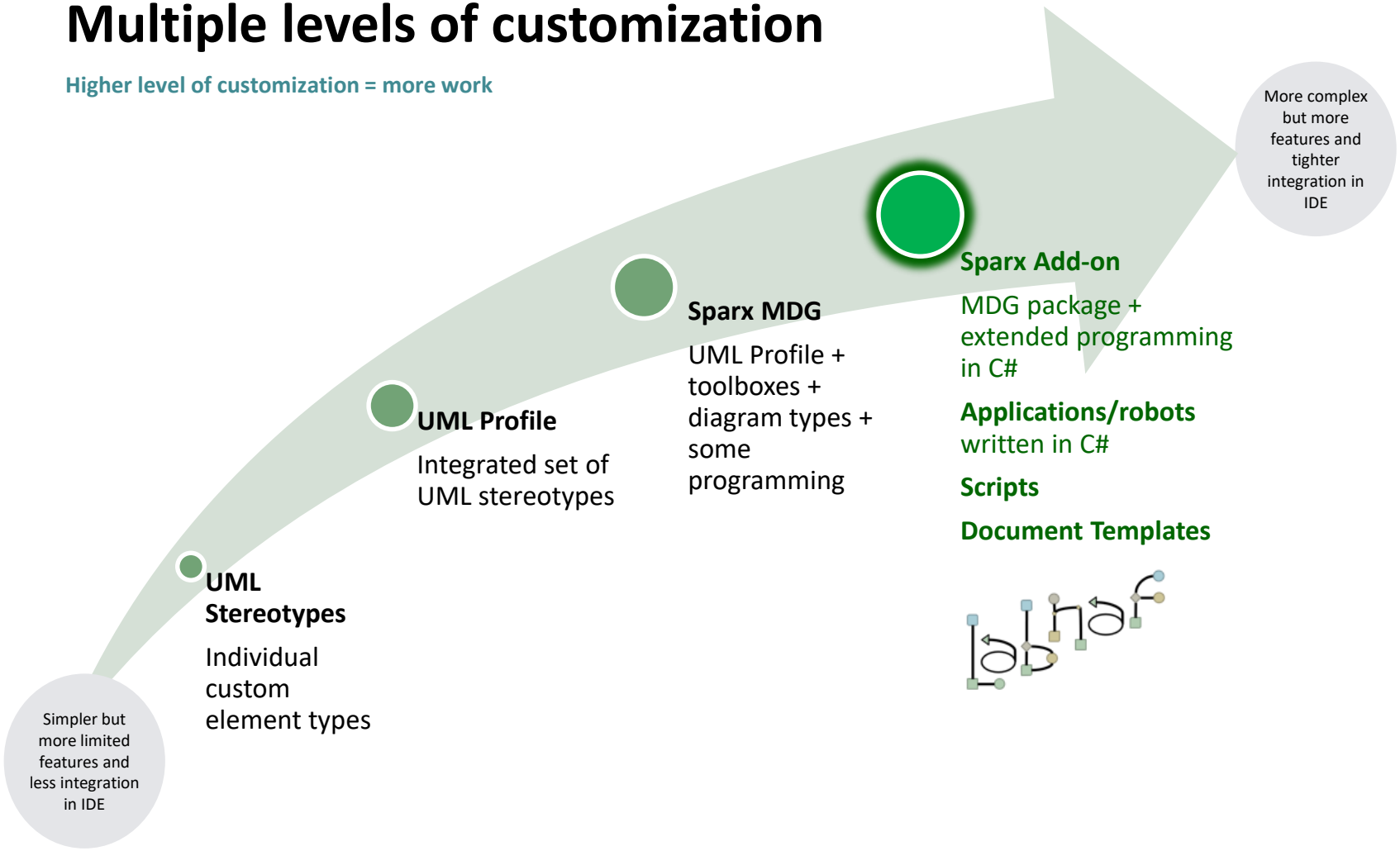
Agenda

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

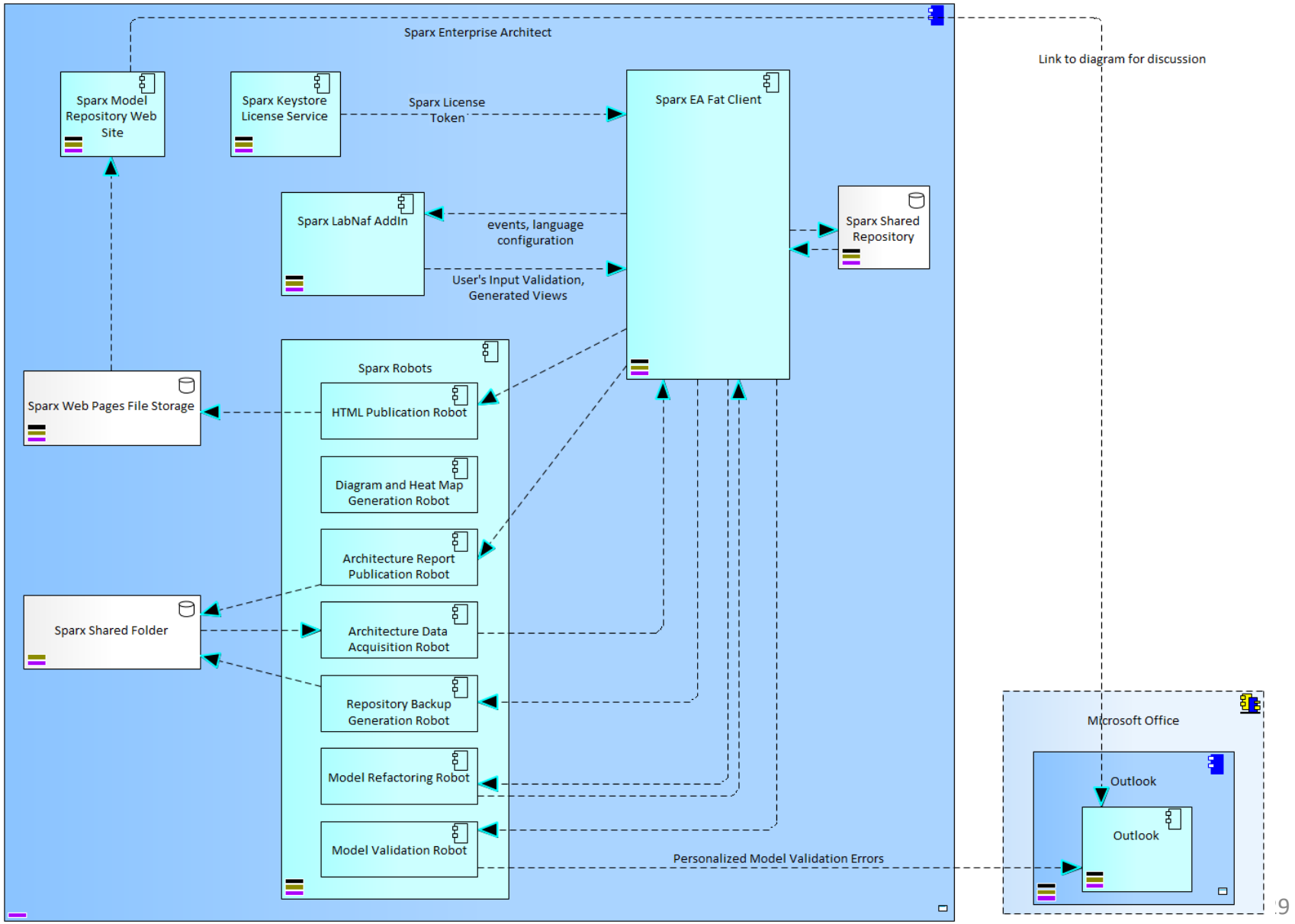
Sparx Software Development Kit (SDK)

Multiple levels of customization

Higher level of customization = more work



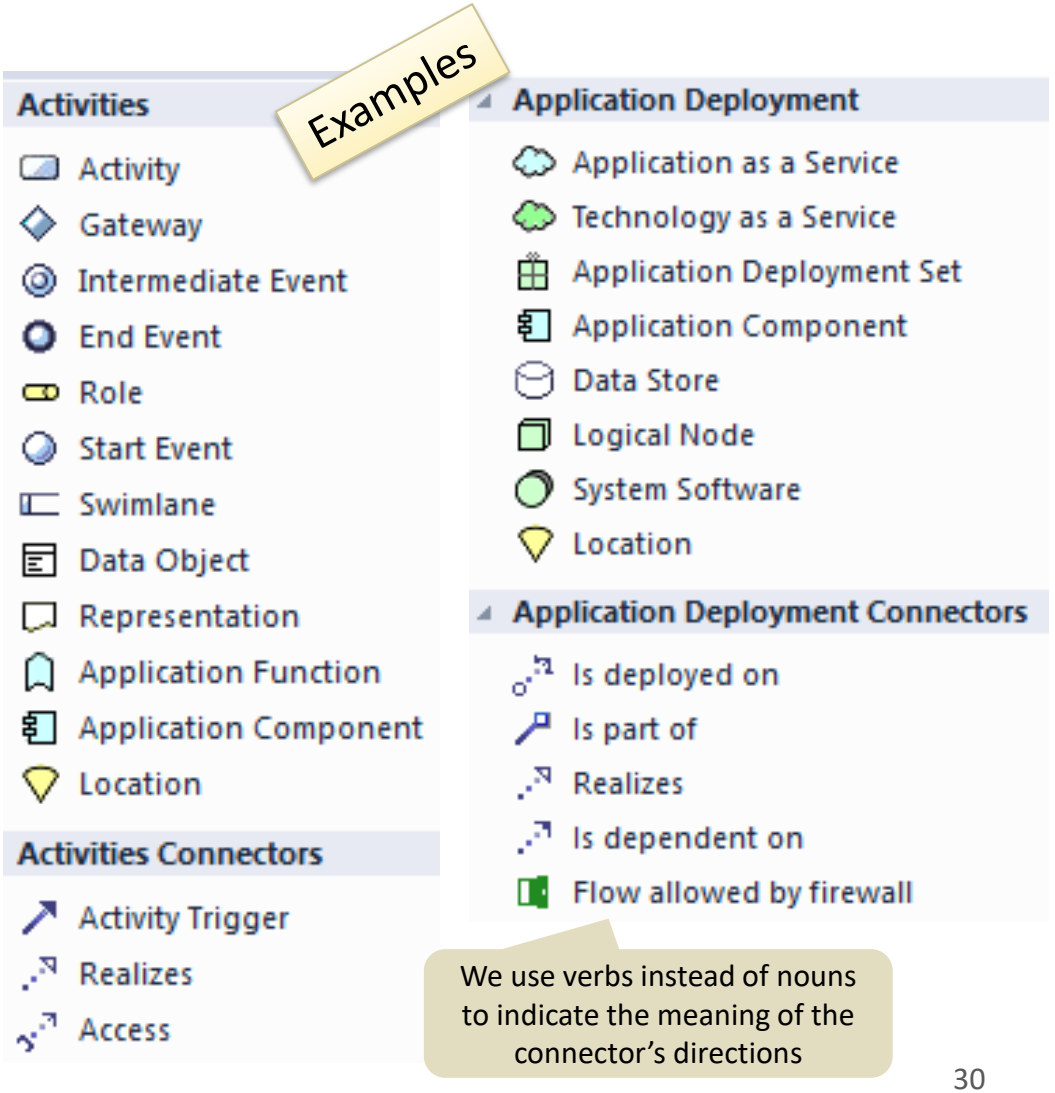
Sparx in the Application Portfolio



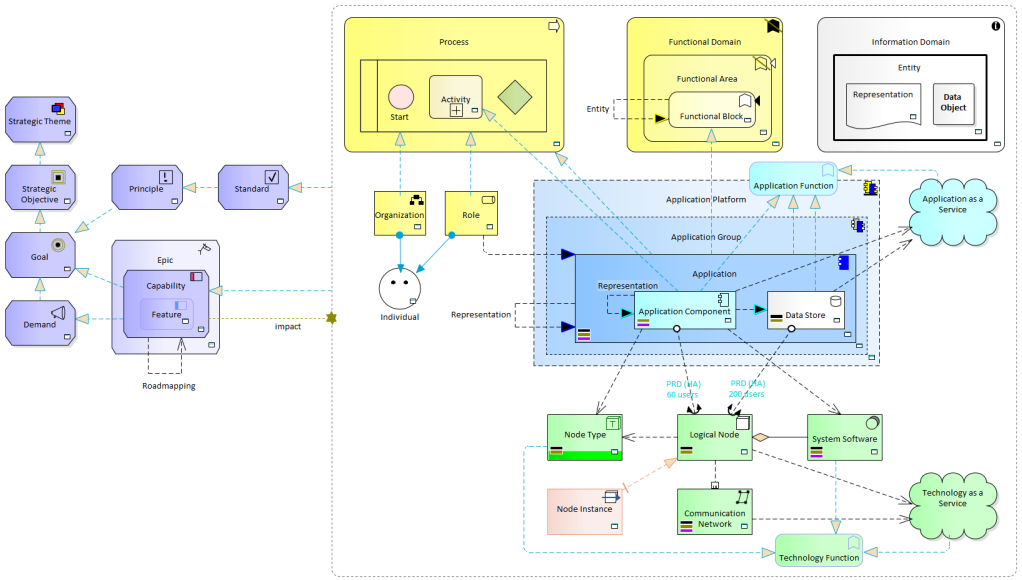
Each type of architecture view has its toolbox with element and connector types

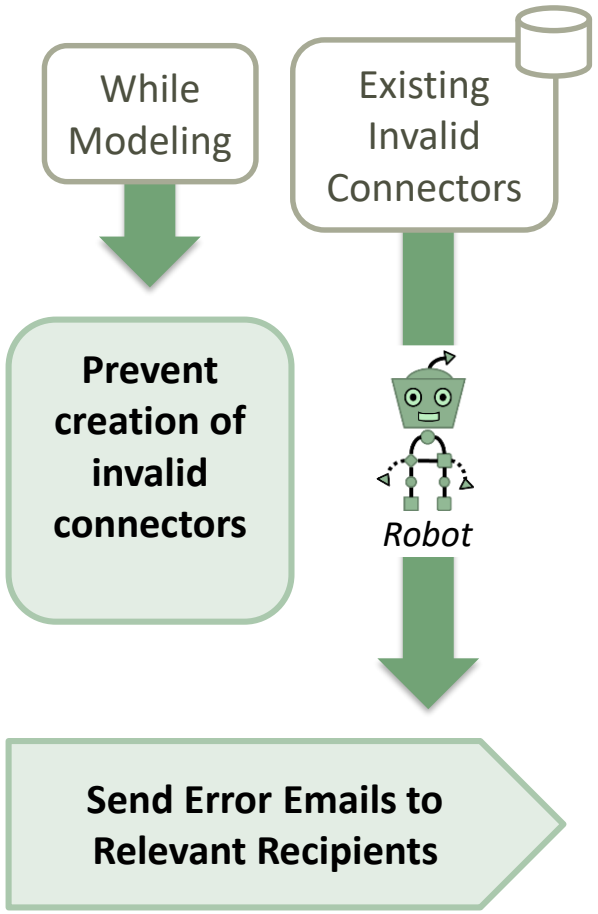
Elements & Connectors

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

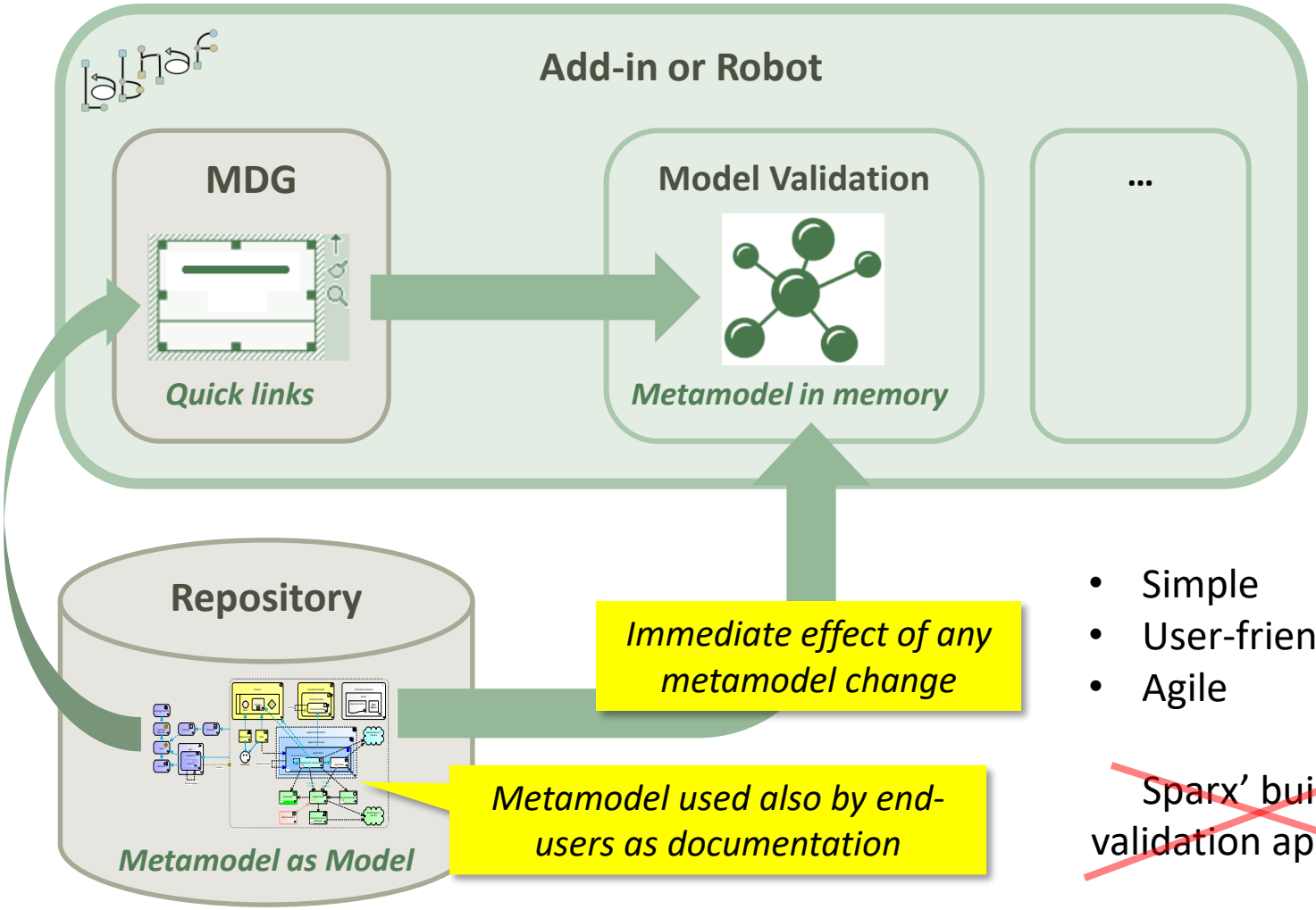


The Language Metamodel is used both for documentation & automatic model validation





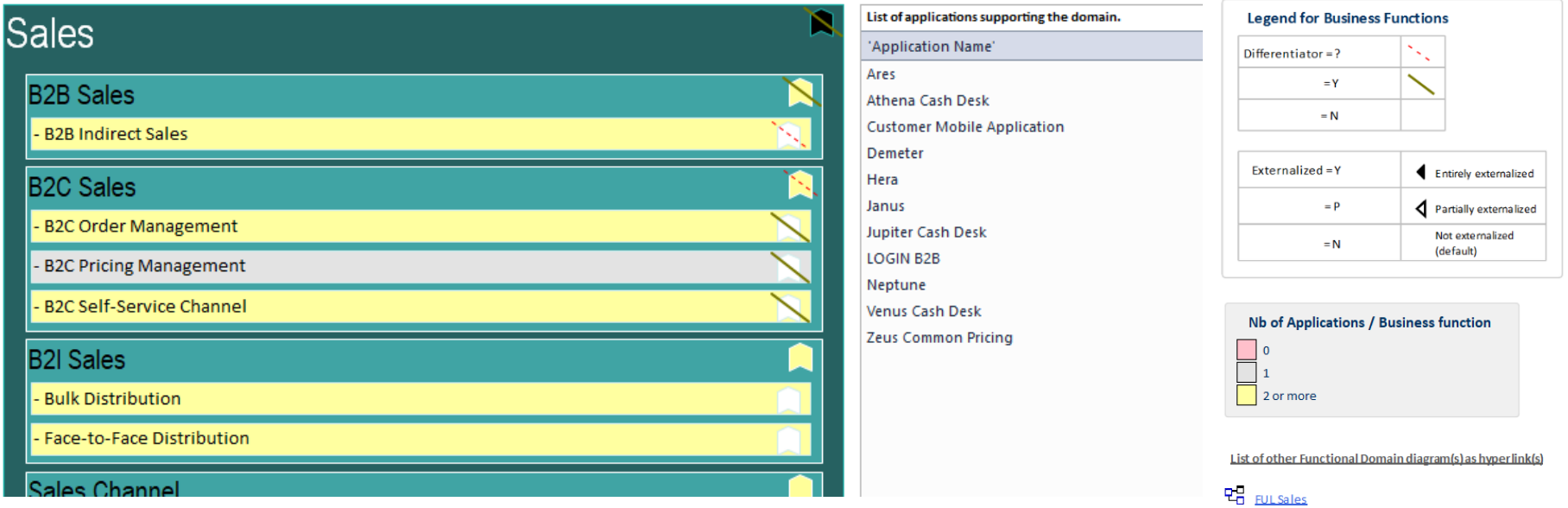
The metamodel used for validation is loaded either from quick links or from the repository



- Simple
- User-friendly
- Agile

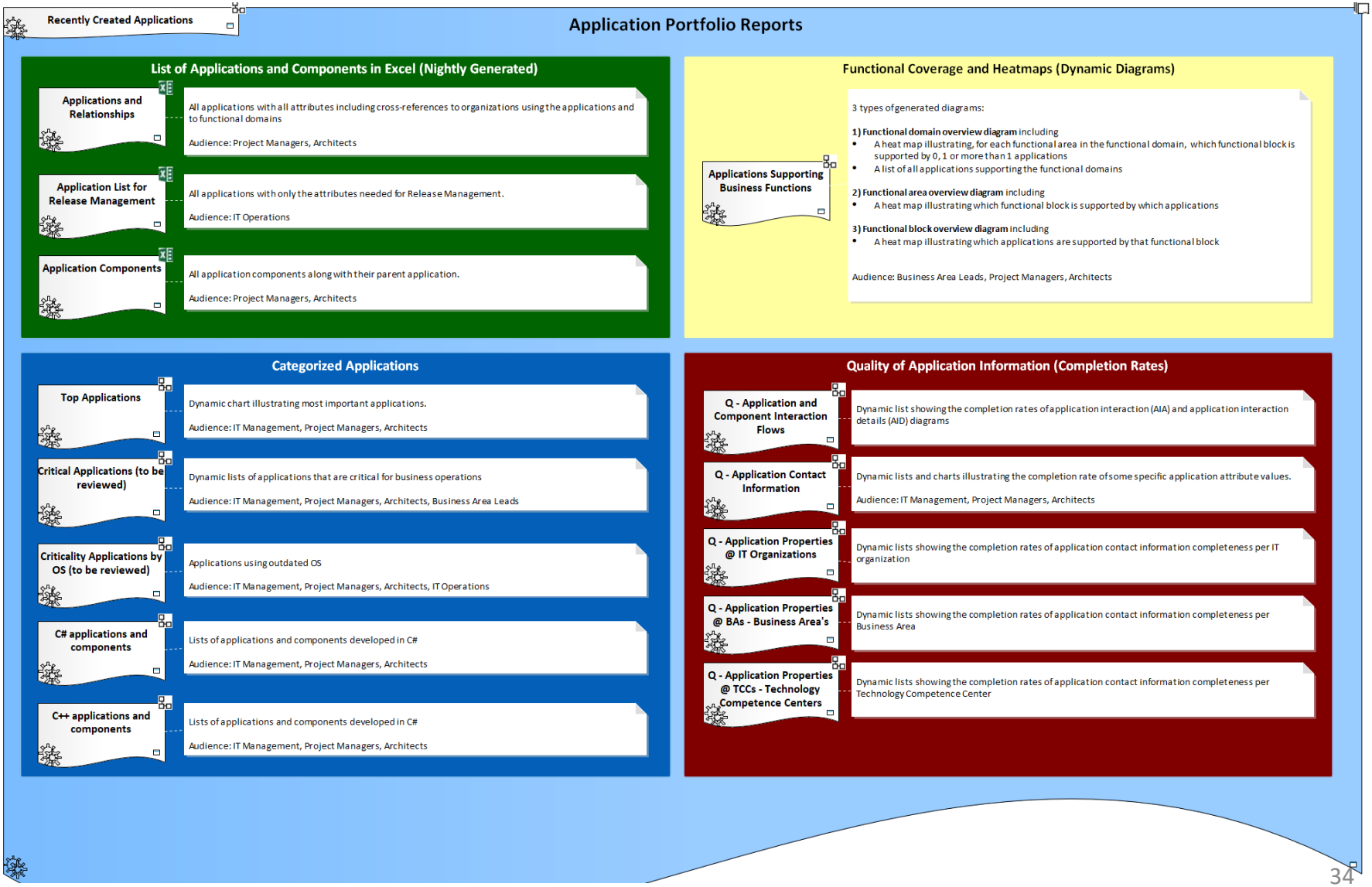
~~Sparx' built-in validation approach~~

Many key diagrams are generated every night following diagram templates



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

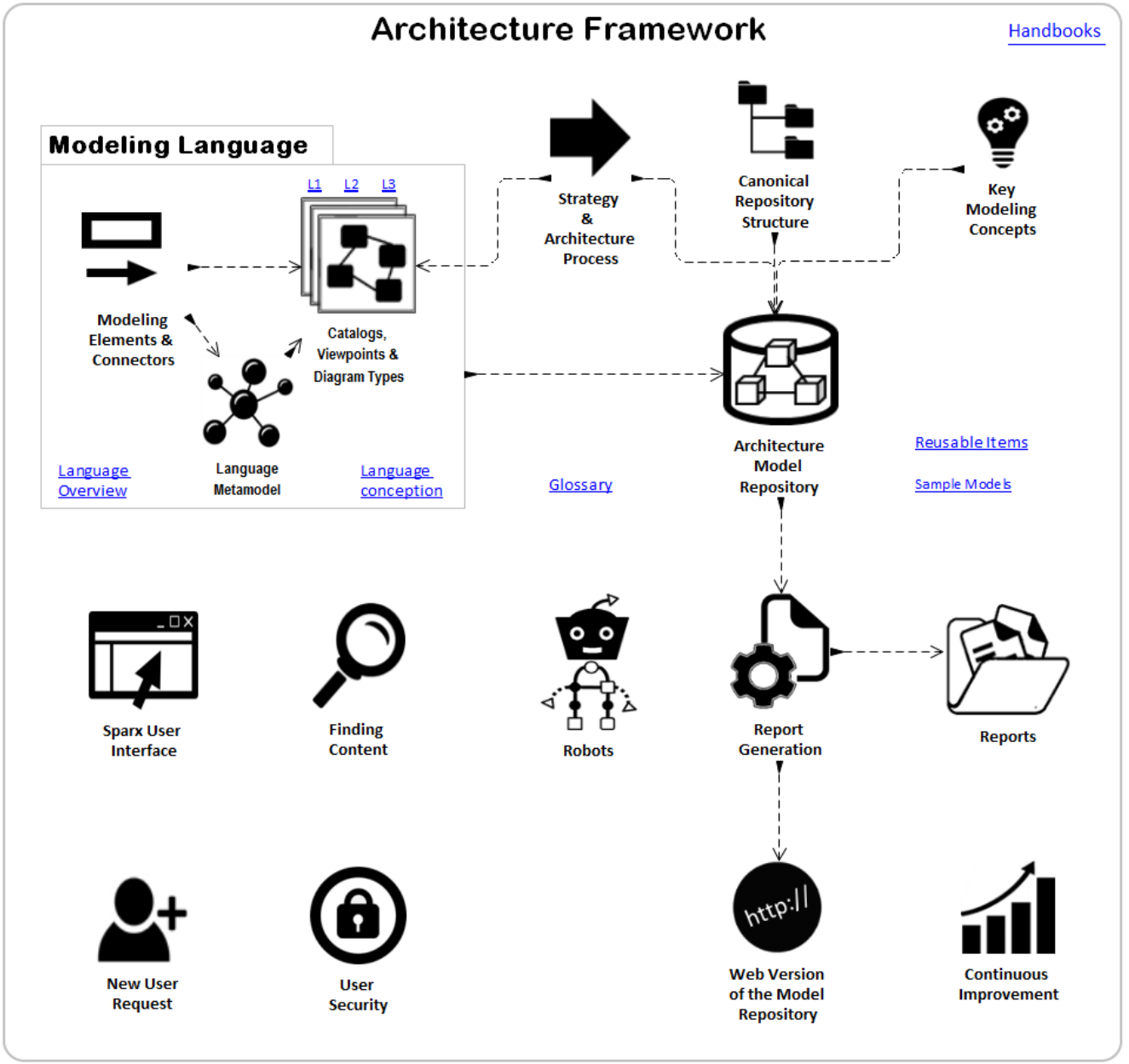
Generated Application Portfolio Reports



Generated Guidance Web Site

Public version:

www.labnaf.one/guidance



Summary

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 …

Detailed documentation is available here:
www.Labnaf.one

Thank you!

alain.depreter@outlook.com