



Alain De Preter
Alain Garsoux

Enterprise Architects
@ SNCB IT (Ypto)

ypto



B



MODULE B1

ITME/ISME 2018

IT & Information Security Management Education

Focus: Enterprise Architecture



Alain De Preter

(Lecturer B1-5)

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

- Enterprise & Solution Architecture
- Analysis, Design & Implementation

Education

- IT Engineer

ITME Expectations

Demonstrate how a common language and architecture workflow eases cross discipline collaboration and business transformation



Alain Garsoux

Career Summary

- 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

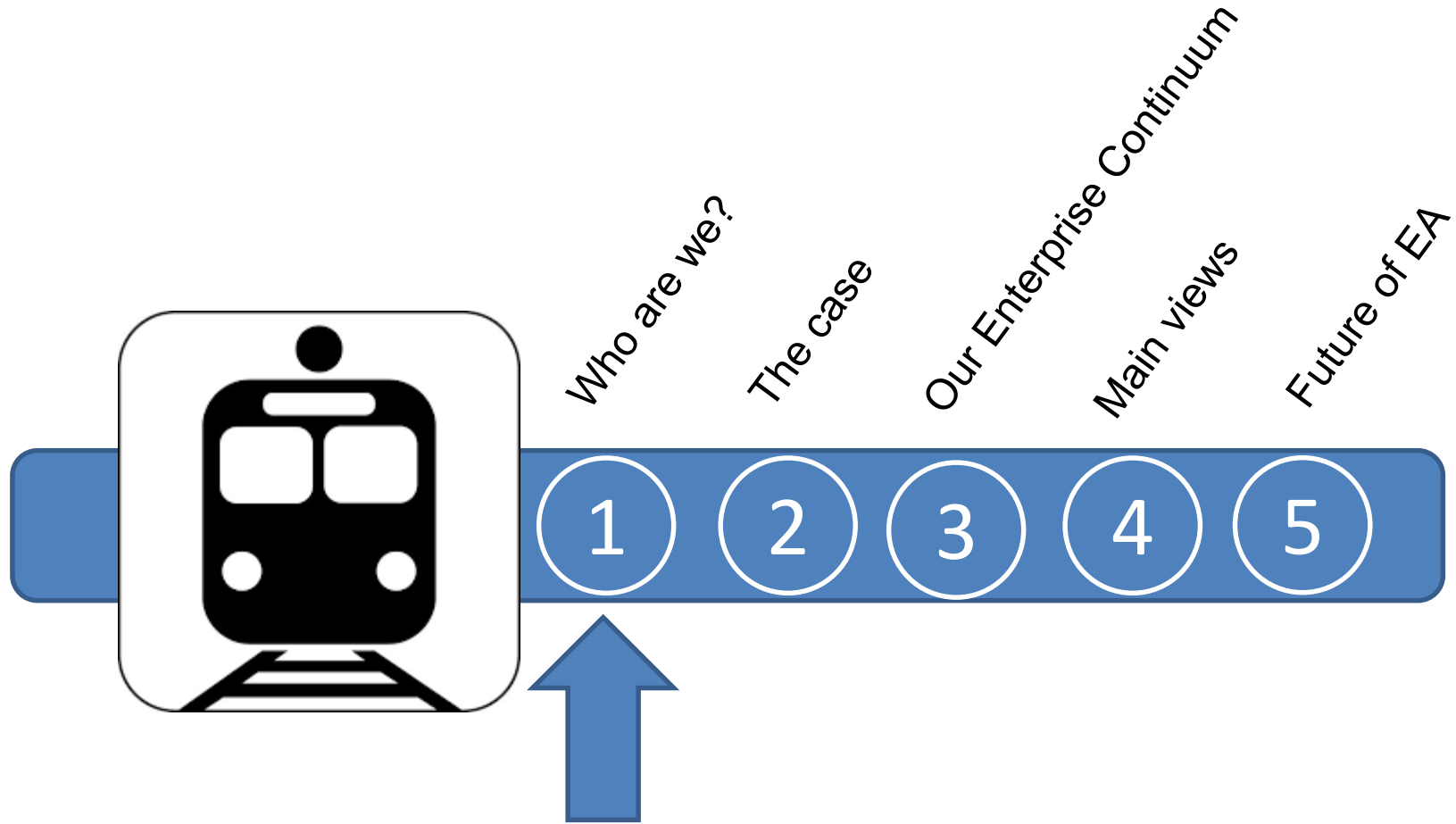
Education/ Certification

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

ITME Expectations

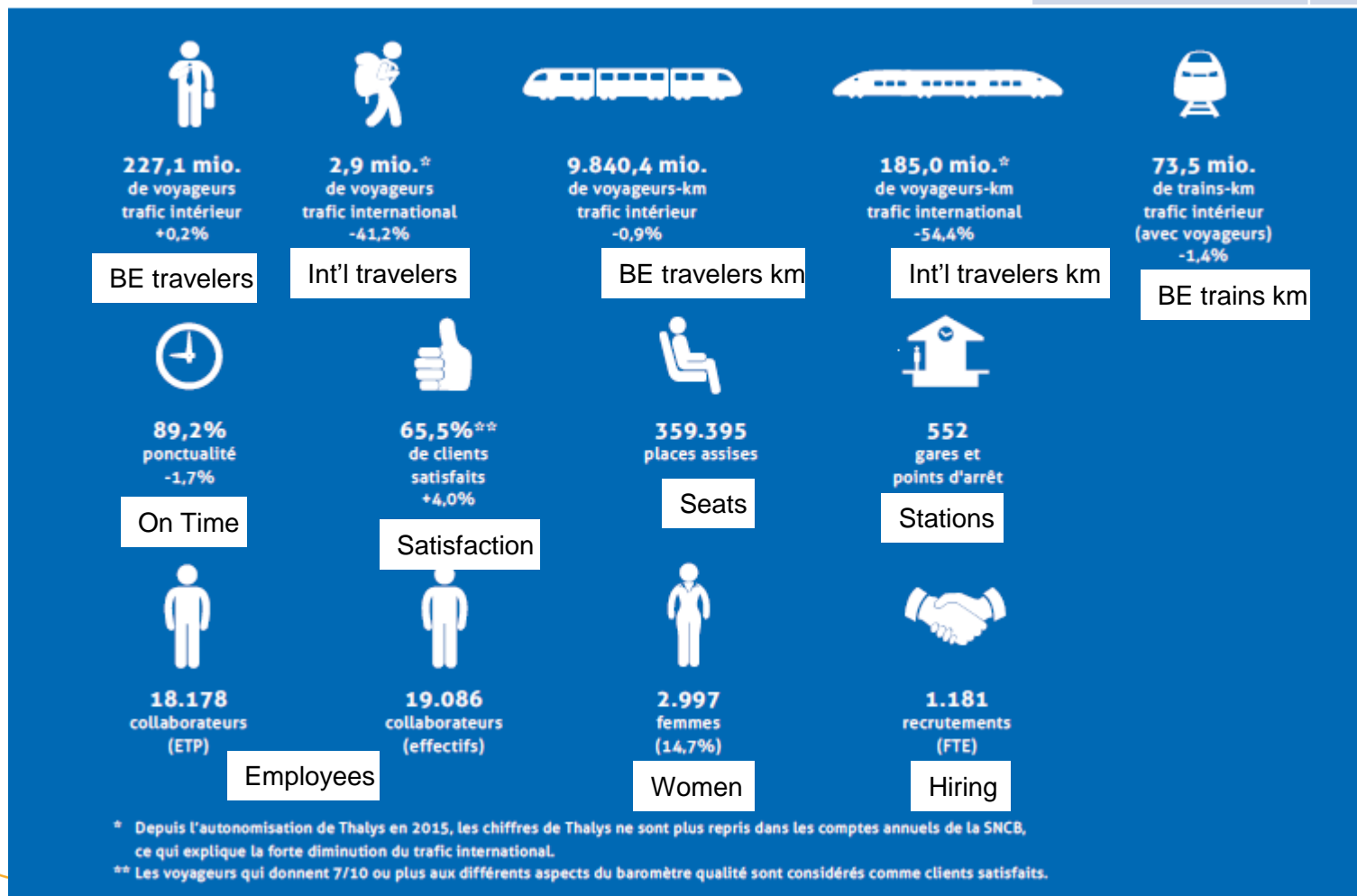
Alain wants to share how Enterprise Architecture shapes an organization.






Belgium Railways

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



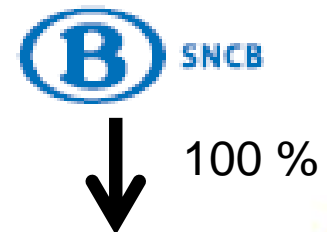
* Source :
annual report
2016

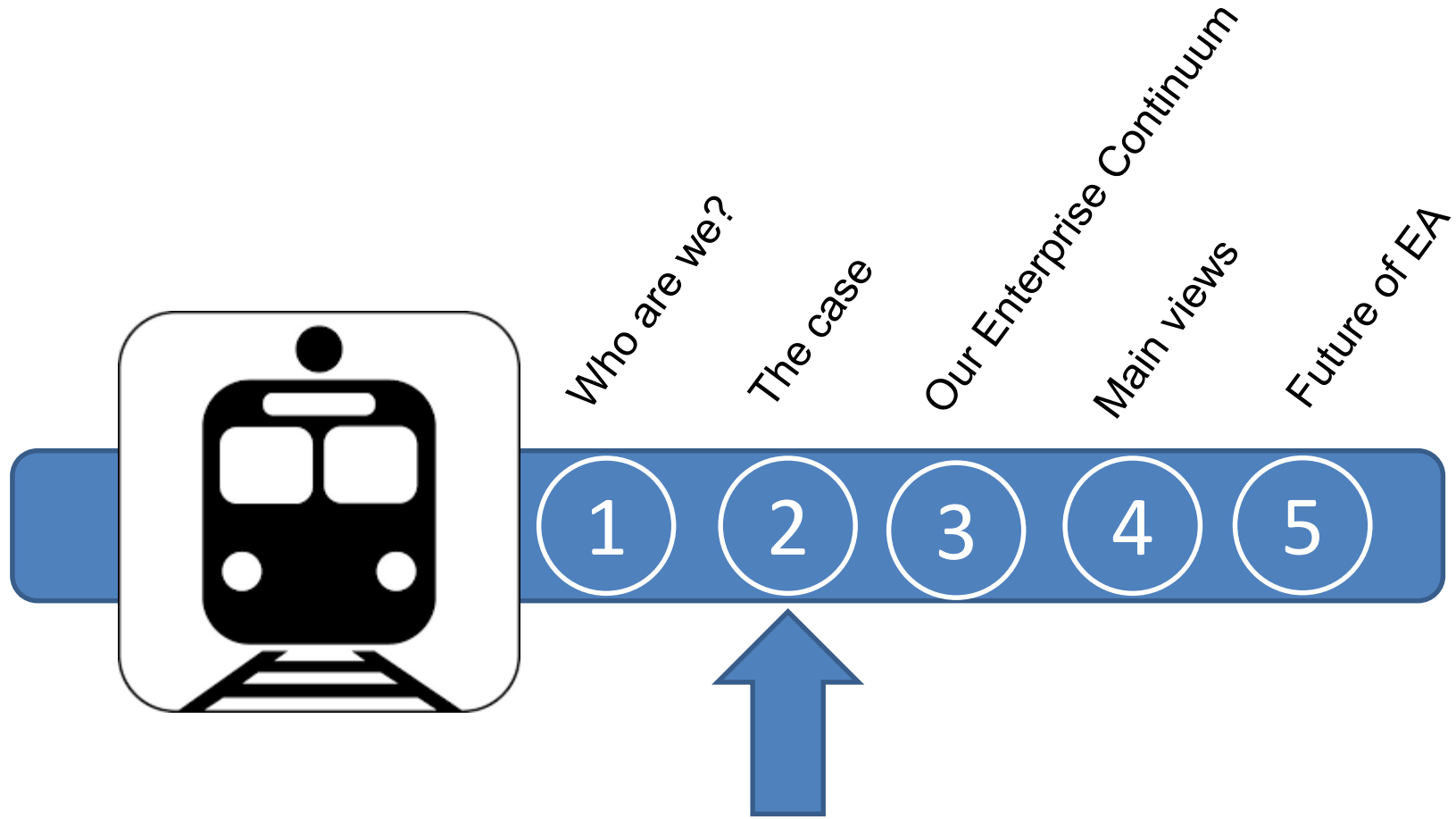




"Onze realisaties worden steeds zichtbaarder voor de treinreizigers. Dat daagt ons uit en maakt ons trots."

- Ypto is a subsidiary of BE railways.
- It delivers IT services.





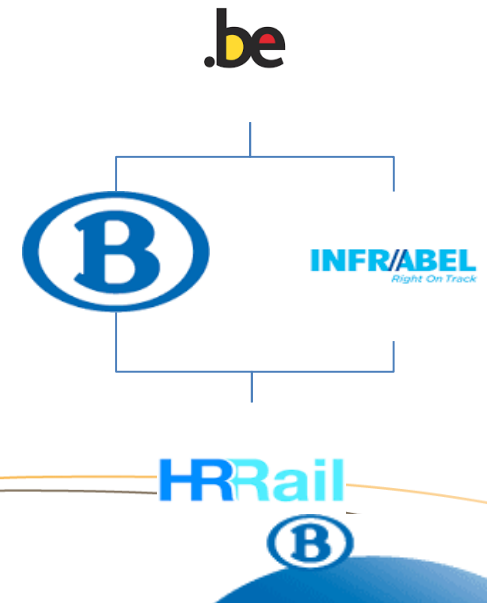
BE railways journey is impacted over years by BE government decisions and adoptions of European railways regulations. Our IT story started in 2005.

1991-1994	1995-2001	2002-2004	2005-2013	2014 - ...
Law 21.03.1991	Restructuration 01.01.1998	Law 22.03.2002	Restructuration 01.01.2005	Restructuration 01.01.2014
more autonomy	rationalization	Corporate Governance	transport liberalisation	Focus on customer experience



Following European regulations, BE railways had to split into 3 public companies.

Companies	Business focus
INFRABEL	Railroad infrastructure
SNCB	Rail operator (carry passengers)
HR Rail	HR services for SNCB and INFRABEL



... and other major challenges

Business challenges:

2020	2023
Less dotation	National traffic is open
more autonomy	More productivitiy

"Trop de gratte-papiers" à la SNCB



Par rapport à un autre dossier relevant de ses compétences, celui de la SNCB, "on doit révolutionner l'organisation interne des chemins de fer", balance François Bellot. "Il y a beaucoup trop de gratte-papiers aujourd'hui aux chemins de fer alors qu'on a davantage besoin d'opérationnels. (...) Attention, je ne prétends pas qu'il faut liquider du personnel, je dis qu'il faut rééquilibrer les choses et c'est ce que nos recrutements démontrent. La gouvernance de l'entreprise est à revoir et la digitalisation doit être poussée. L'autonomie, aussi."

<http://www.7sur7.be/7s7/fr/1502/Belgique/article/detail/3324503/2017/12/09/Trop-de-gratte-papiers-a-la-SNCB.dhtml>

IT challenges (extract from commission infrastructure, 2017 - Sophie Dutordoir)



"Il faut une réforme du département IT. La base est obsolète, les applications sont obsolètes et la manière dont les projets sont gérés est inacceptable. Aucune société sérieuse ne travaille de cette manière"

<<http://www.lalibre.be/actu/belgique/sophie-dutordoir-sur-le-systeme-de-billetterie-abandonne-par-la-sncb-je-regrette-les-millions-perdus-mais-j-assume-59e75153cd70ccab3693bd41>>

L'environnement informatique de la SNCB est obsolète. Voyez plutôt : moins d'un collaborateur sur deux a une adresse email au sein de l'entreprise ! Comment est-ce possible ? Il y a une nécessité impérieuse de transformer d'urgence cette superbe SNCB."

<<http://www.lalibre.be/actu/belgique/comment-dutordoir-veut-transformer-le-tortillard-sncb-en-tgv-59e7ba90cd70ccab3695087d>>

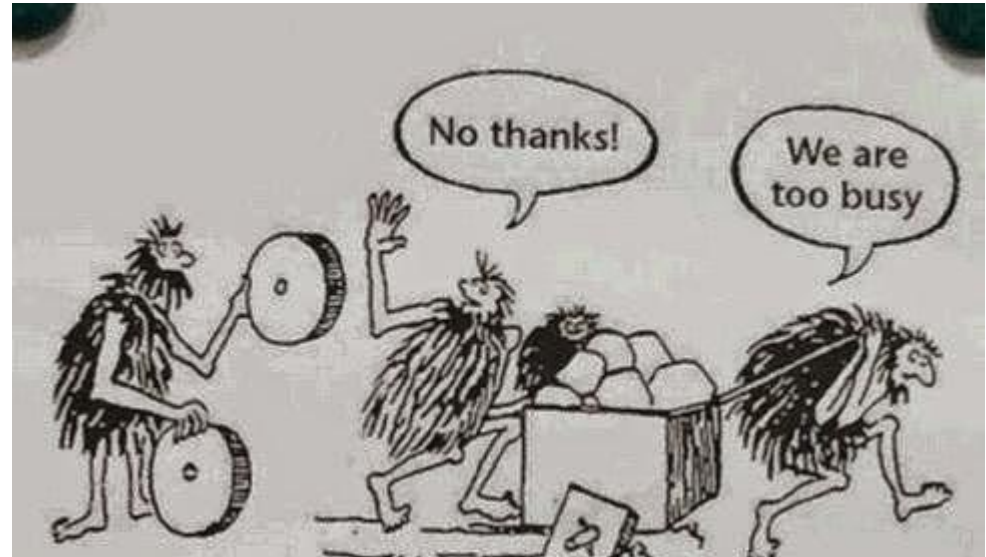
Our IT burning platform



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 a change.

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.

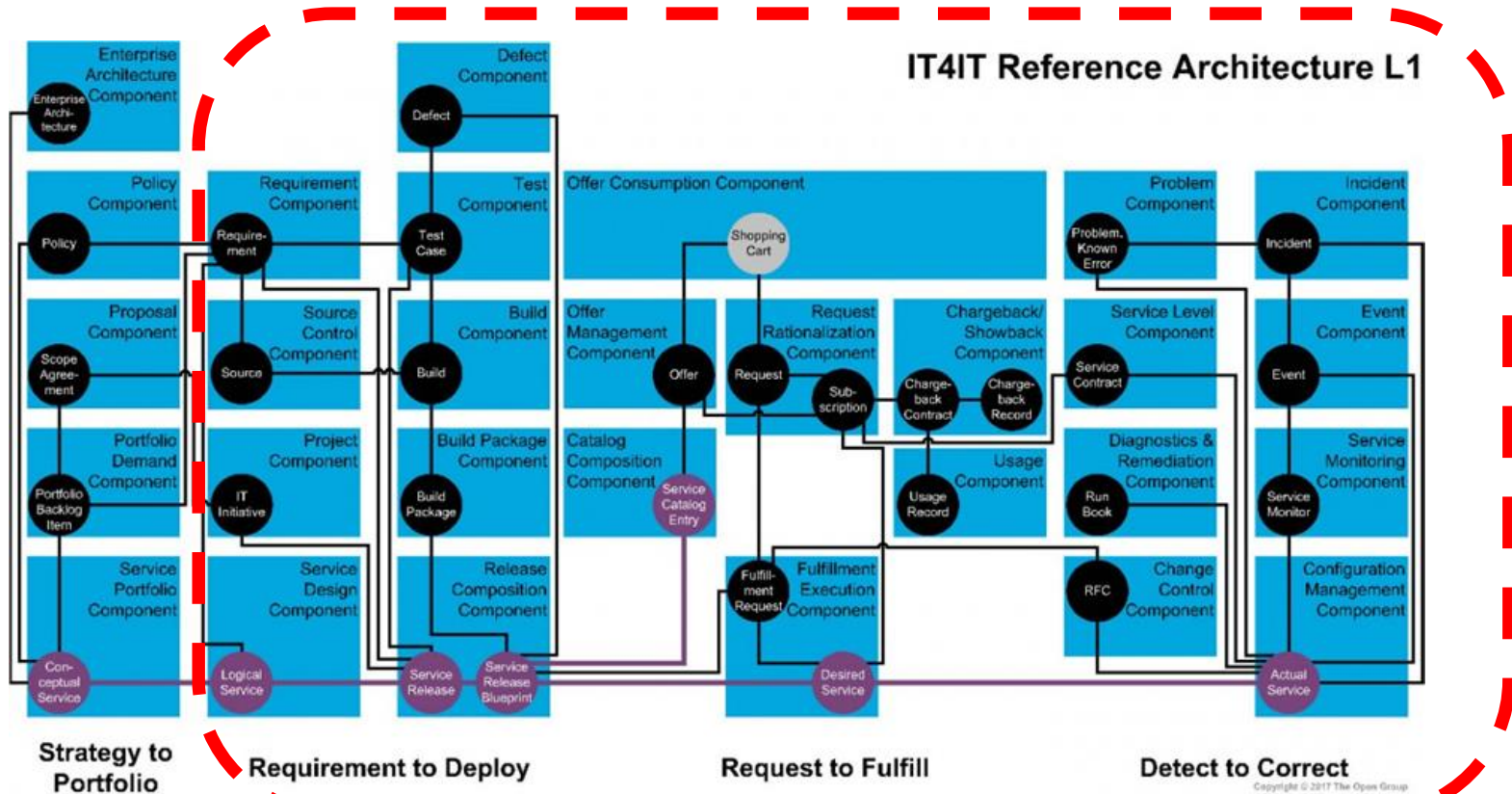
We must close 2 data centers by 2020.

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



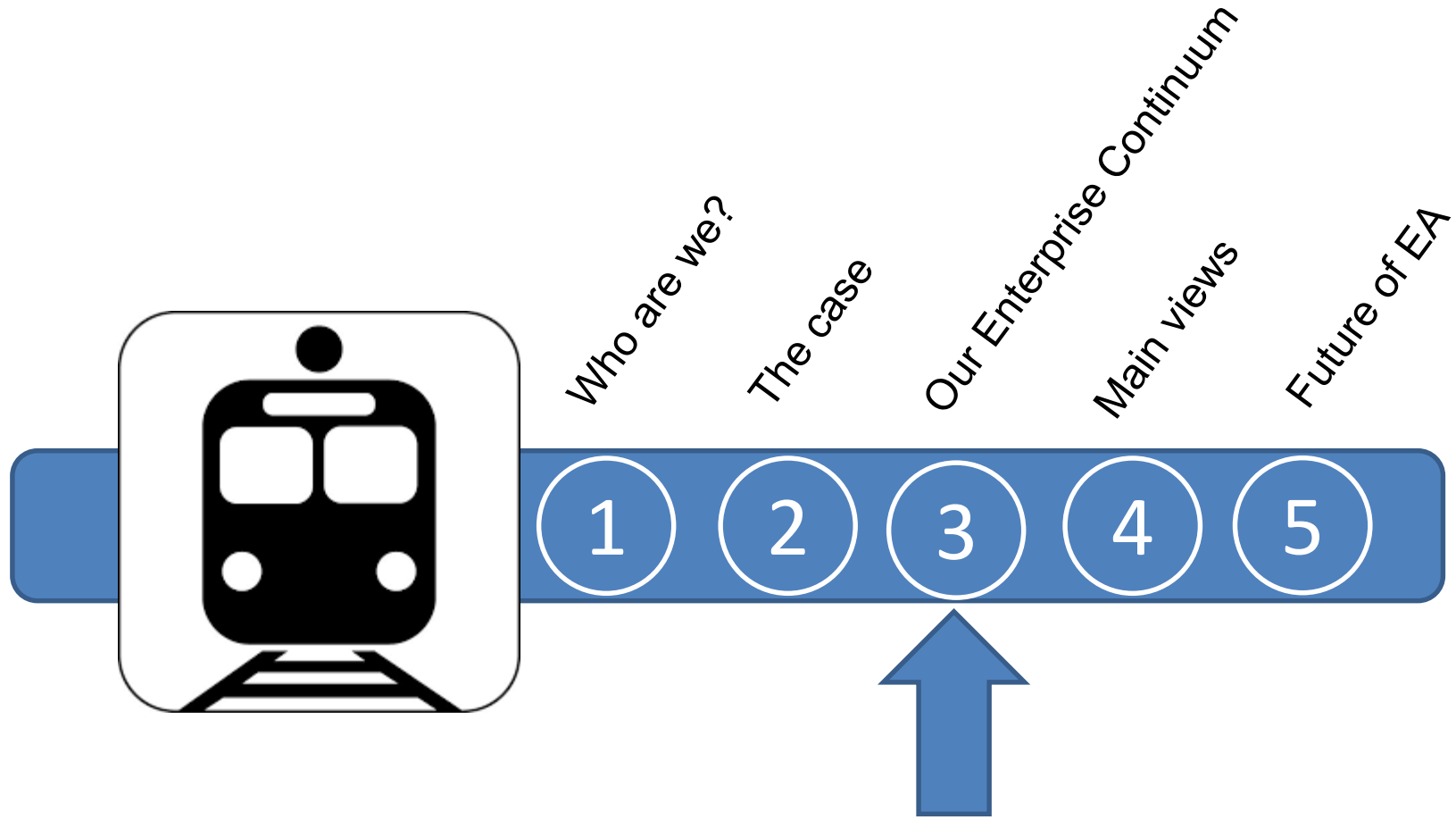
Outsourcing is chosen to transform the SNCB business of IT.

- An public offer is ongoing to select an IT partner.

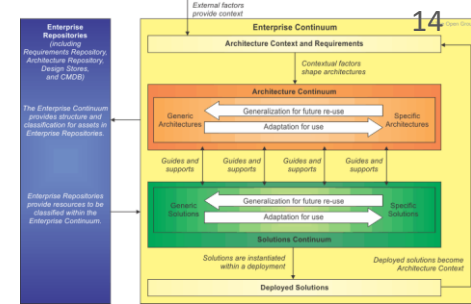


- Finance & Assets
- Sourcing & Vendor
- Intelligence & Reporting
- Resource & Project
- Governance, Risk & Compliance

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



YPTO (SNCB's IT) decided to create its Enterprise Continuum...



Key aims

- Architecture Modeling + IT Portfolio Management
- Integrate architecture catalogs, attributes, descriptions...
- Modeling productivity and consistency
- Share enterprise visibility and traceability
- Ease planning and communication

Decision to adopt

- Archimate, BPMN, UML, TOGAF, IT4IT & SAFe

... based on market standards: ArchiMate, BPMN, UML, TOGAF, IT4IT, SAFe

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

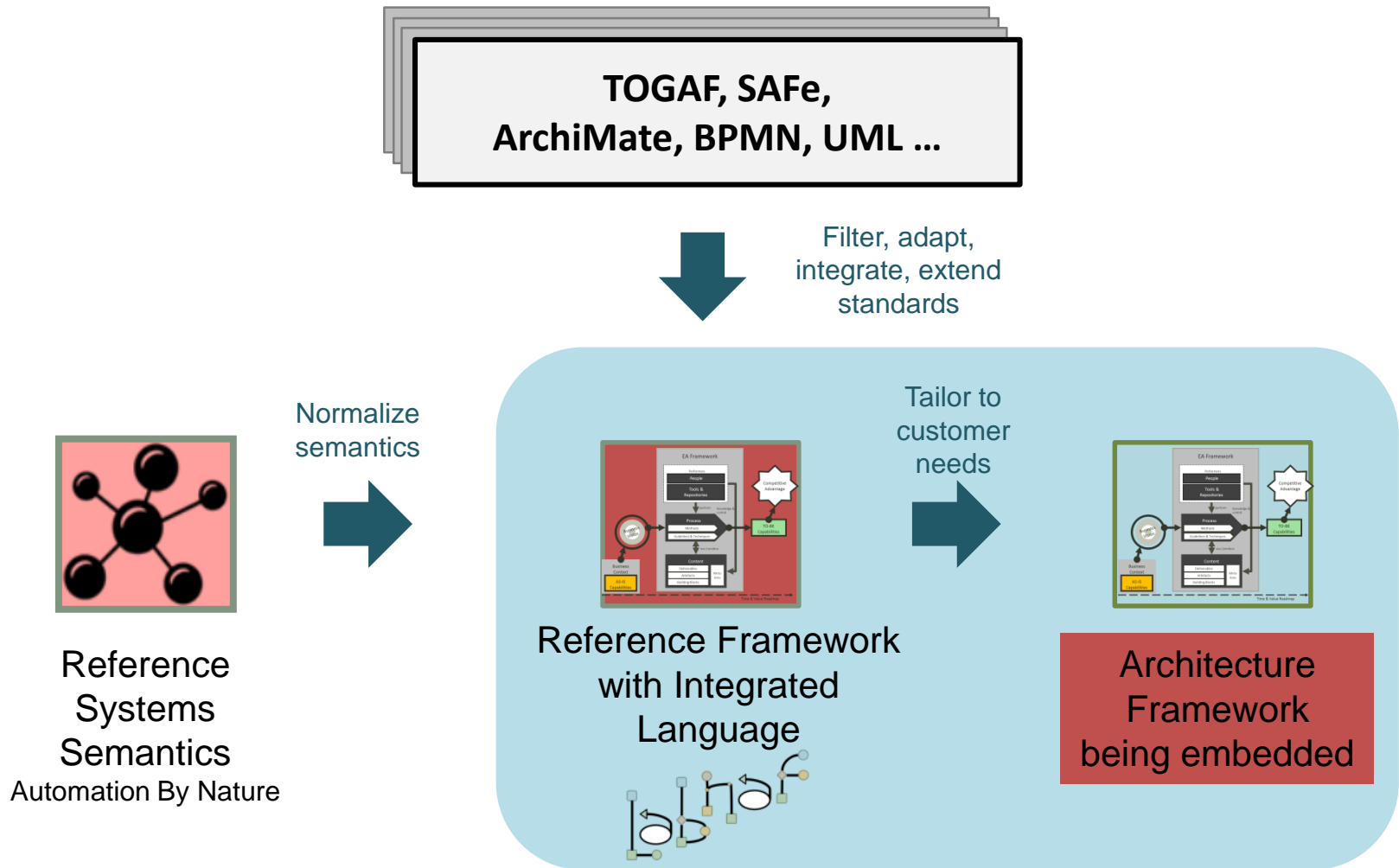
YPTO's conclusion

- Adopting each and every standard is not ideal
- Need a **single integrated company standard** to bring productivity, consistency, a single common language.

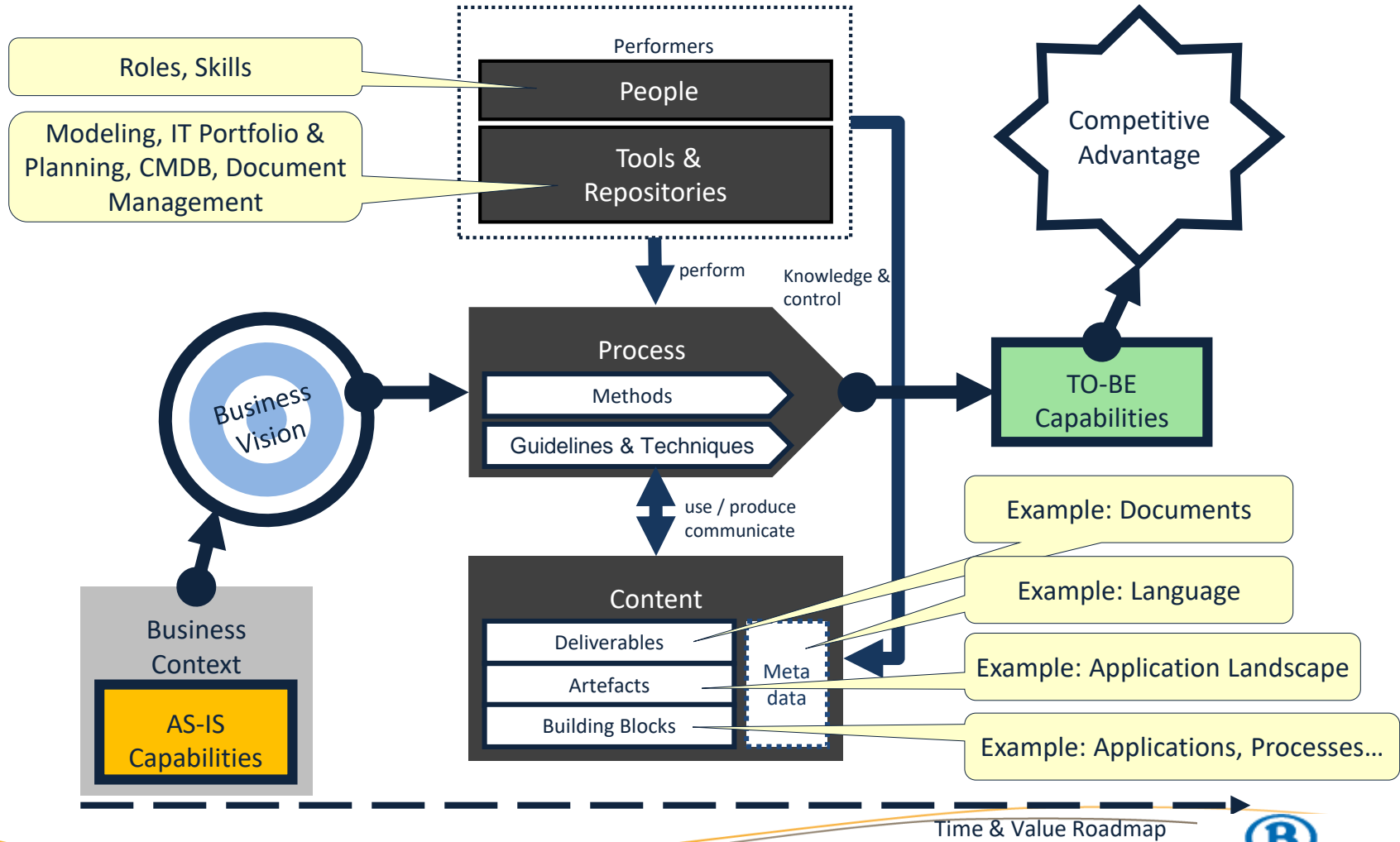
⇒ SNCB decided to go for a **single integrated framework** that is inspired by market standards and to **embed** it into the business of IT



Building a framework inspired by market standards

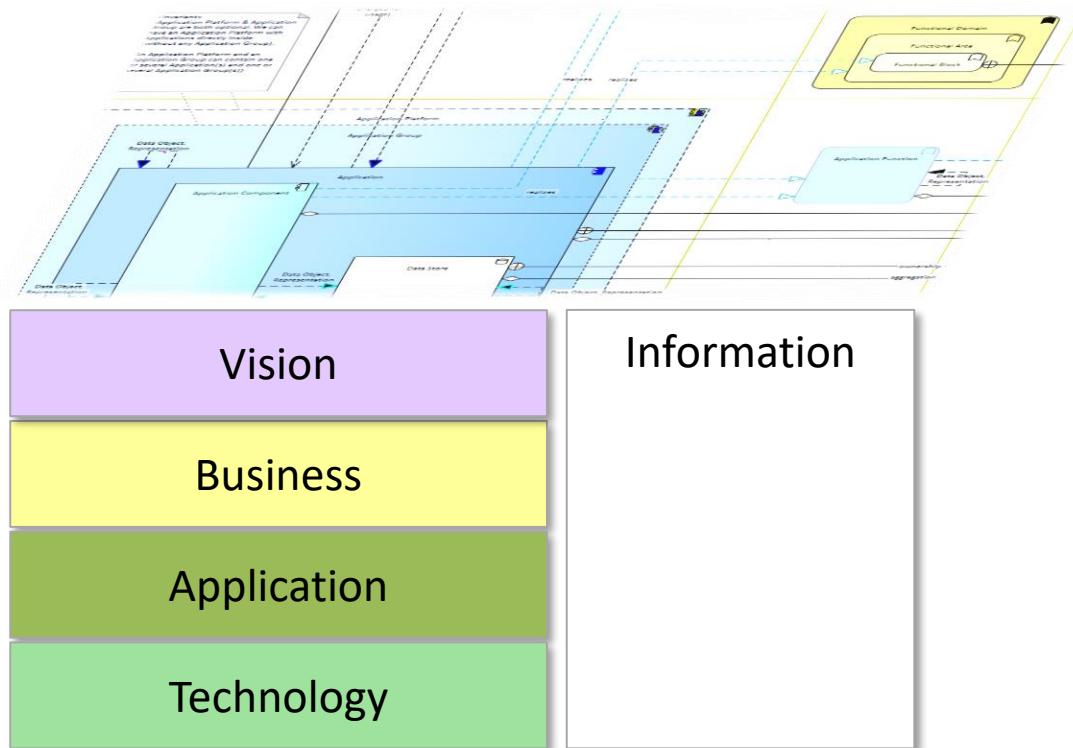


What's in this framework?



A metamodel defines the different types of model elements and relationships that are used across architecture perspectives

More details will be provided in the following slides...



To support change activities, we need to further organize the architecture content

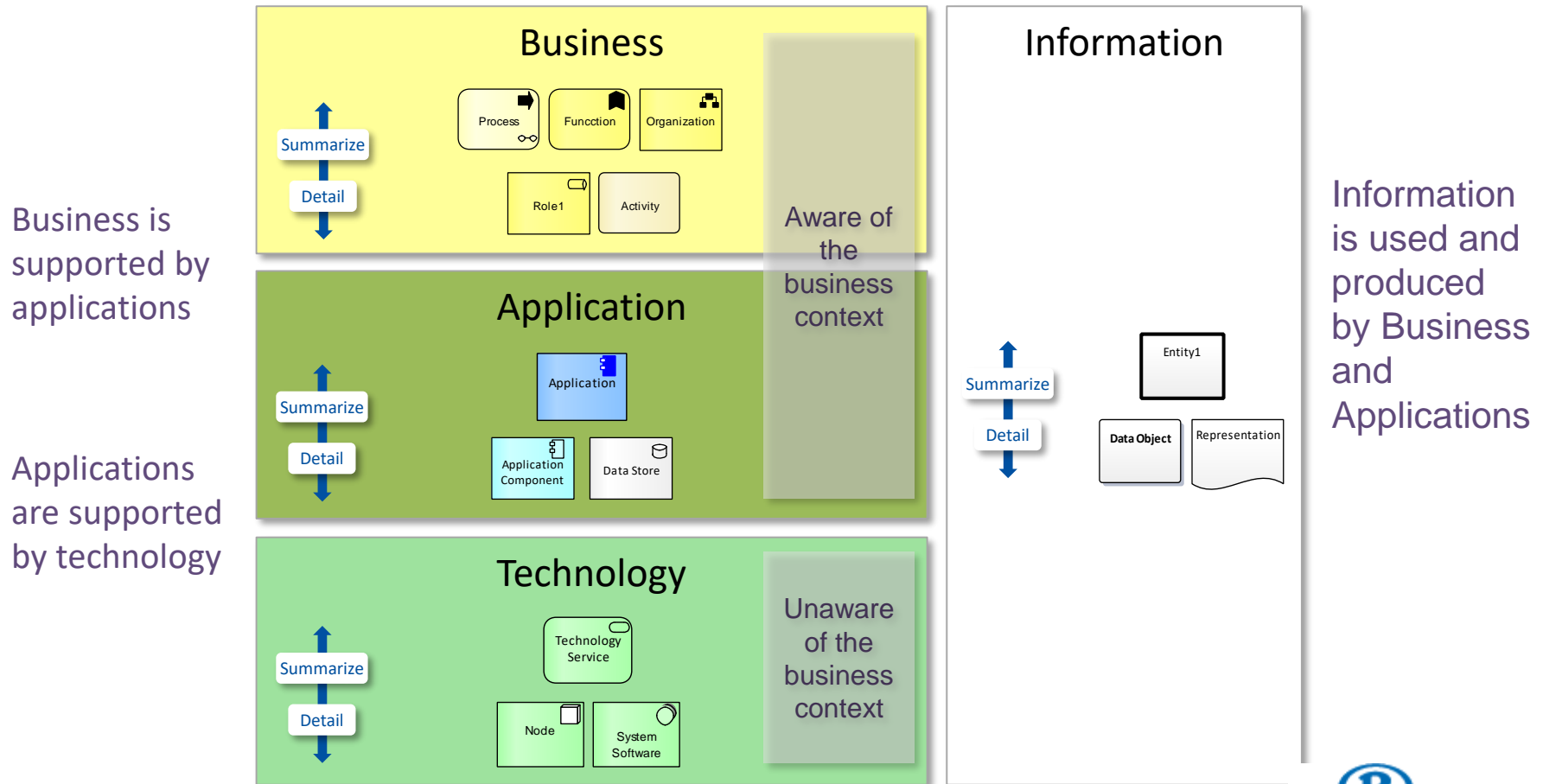
- Define and organize the types of view (viewpoints)
- Integrate architecture views in project deliverables
- Document the IT organisation & roles
- Define the model repository structure

This requires much communication and collaboration.

Integration in change deliverables is time consuming.
It requires some management attention.

Architecture Content is Structured Following Perspectives in order to Manage Complexity

An architecture perspective is similar to an IAF aspect area



Enterprise Architecture created a set of pre-fab views to support change activities

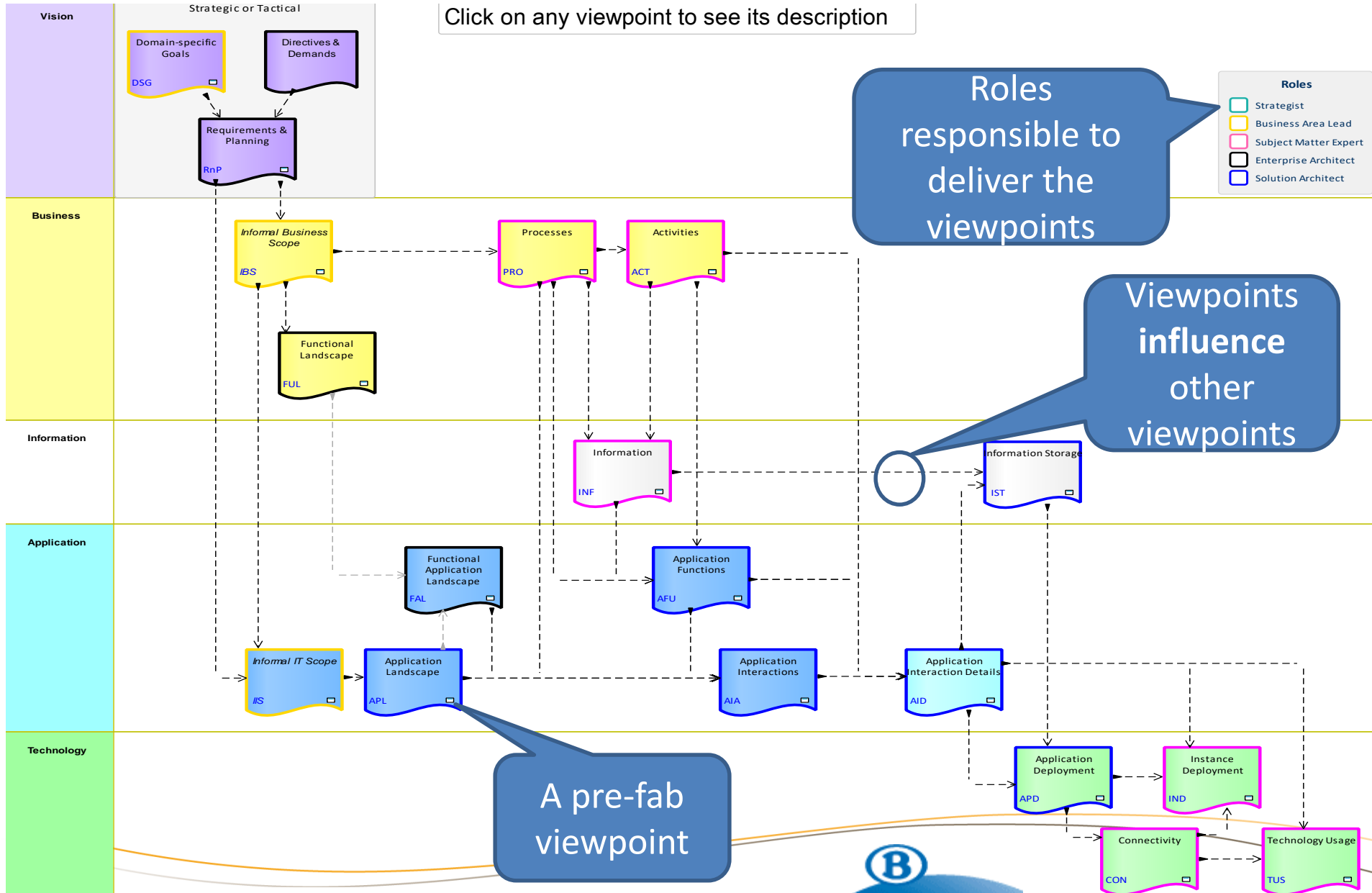
Click on any viewpoint to see its description

Roles responsible to deliver the viewpoints

- Roles**
- Strategist
 - Business Area Lead
 - Subject Matter Expert
 - Enterprise Architect
 - Solution Architect

Viewpoints influence other viewpoints

A pre-fab viewpoint



Each type of architecture view uses specific types of element and connector

Elements & Connectors

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

Examples

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

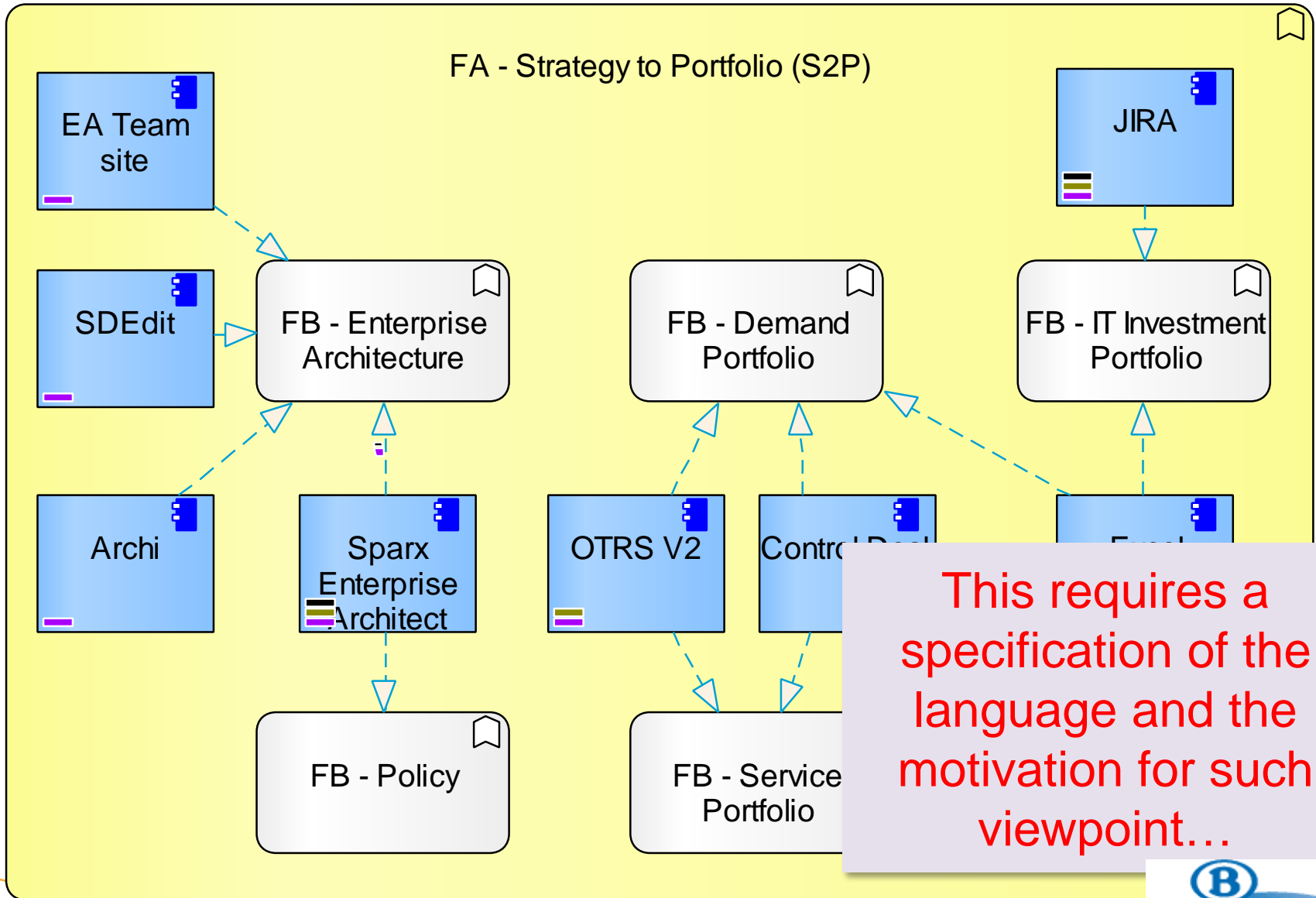
- Application Deployment Set
- Node
- System Software
- Application Component
- Location
- Data Store

Application Deployment Connectors

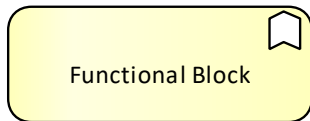
- Is deployed on
- Is part of
- Realizes
- Is dependent on
- Flow allowed by firewall

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

Sample "Functional Application Landscape" View



Prescriptive language for “Functional Application Landscape” views



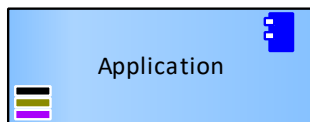
A Functional Block is a level 3 business function that belongs to some functional area.

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.

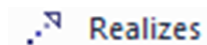
Inspired by Archimate



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.

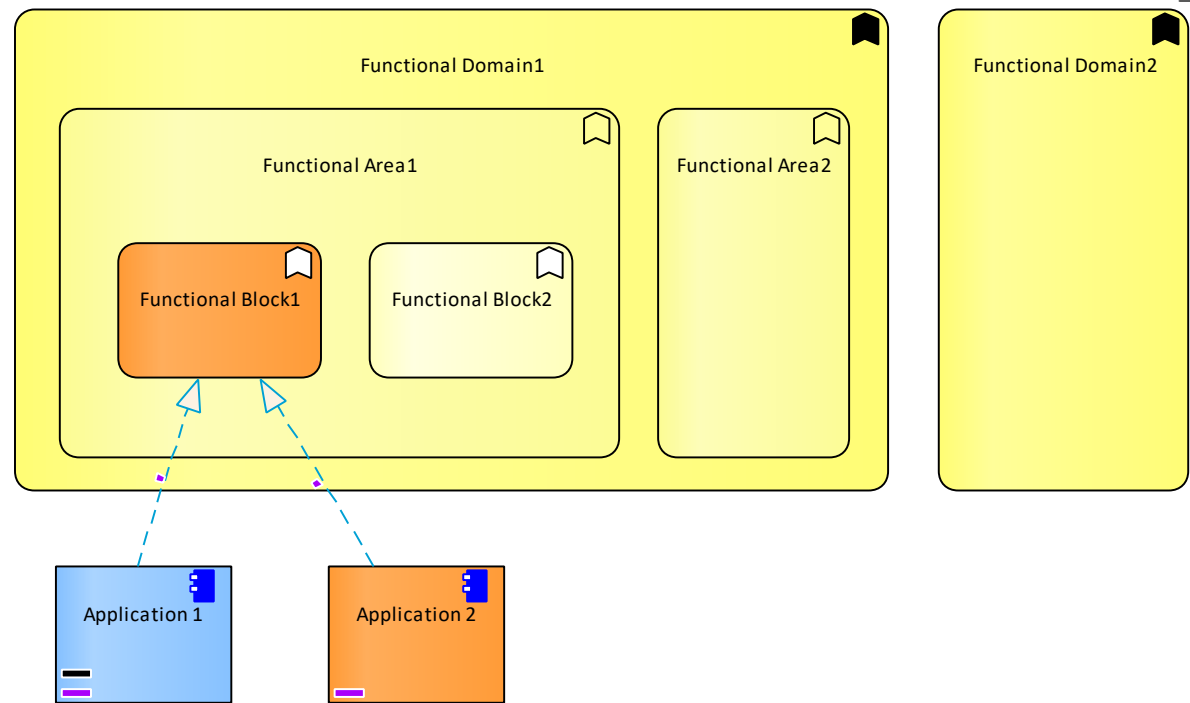


A **Realization** relationship indicates which concrete entities (“how”) realize which abstract entities (“what”). The realization relationship is used in a business operational sense (e.g., a role realizes a swim-lane of activities), but also in an IT context (e.g., an application realizes a functional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

Inspired by UML & Archimate



Motivation for creating “Functional Application Landscape” views



This answers the following questions

When used as enterprise-wide viewpoint

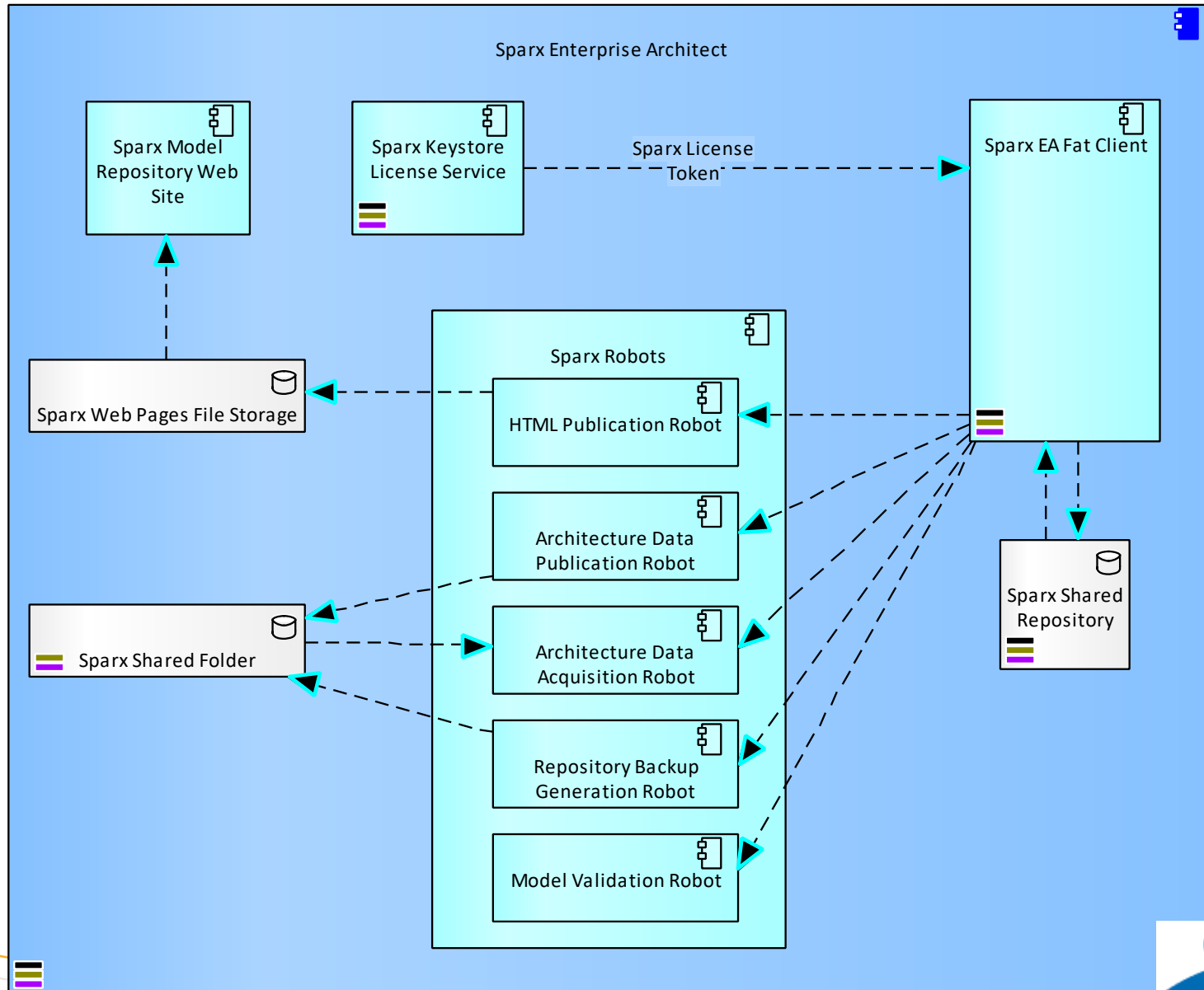
- Which **applications** support which **functional blocks**?

When used as project-specific viewpoint

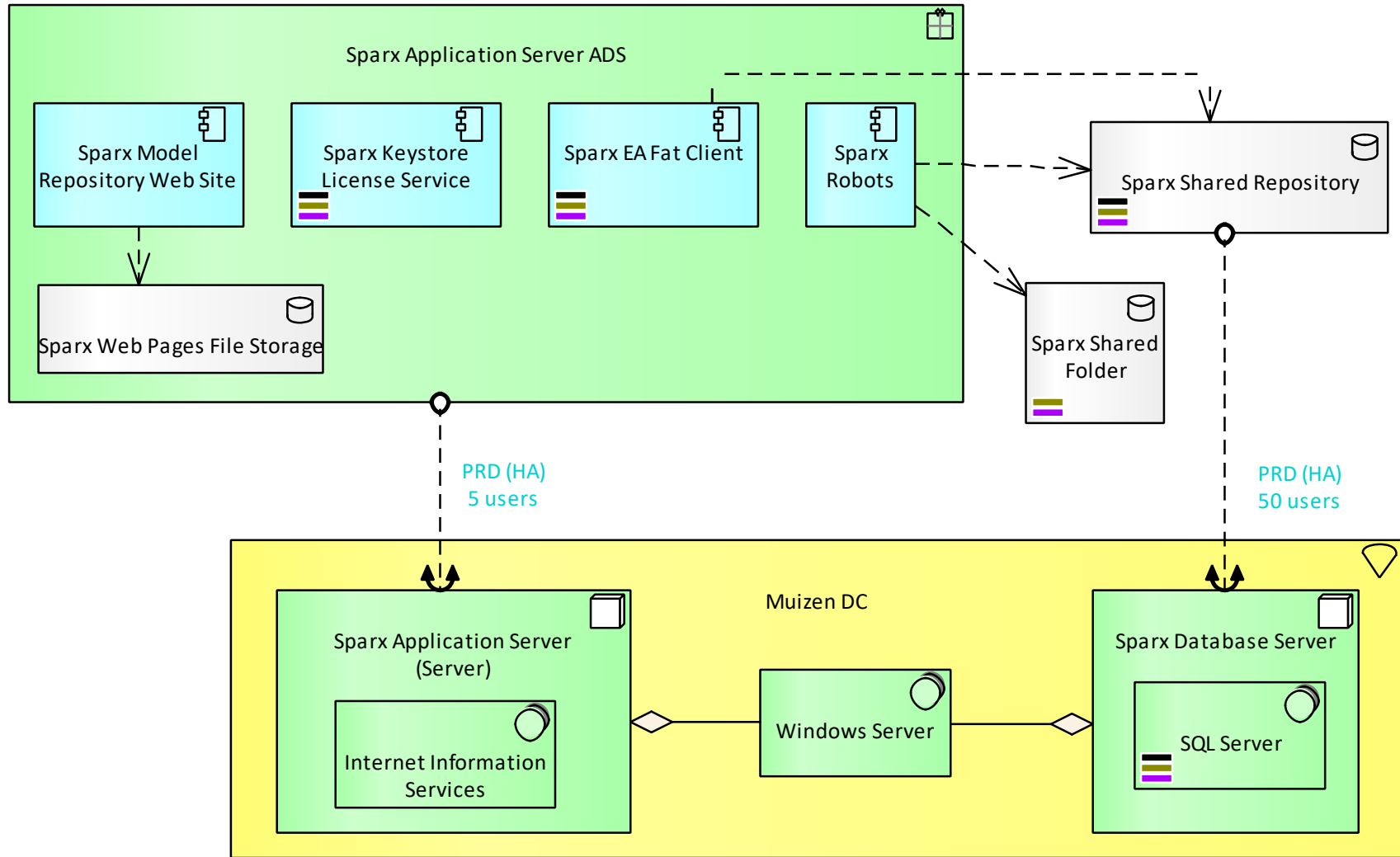
- Which **applications** are/will automate the **functional blocks** inside the scope of this project?



Sample "Application Interaction Details" View

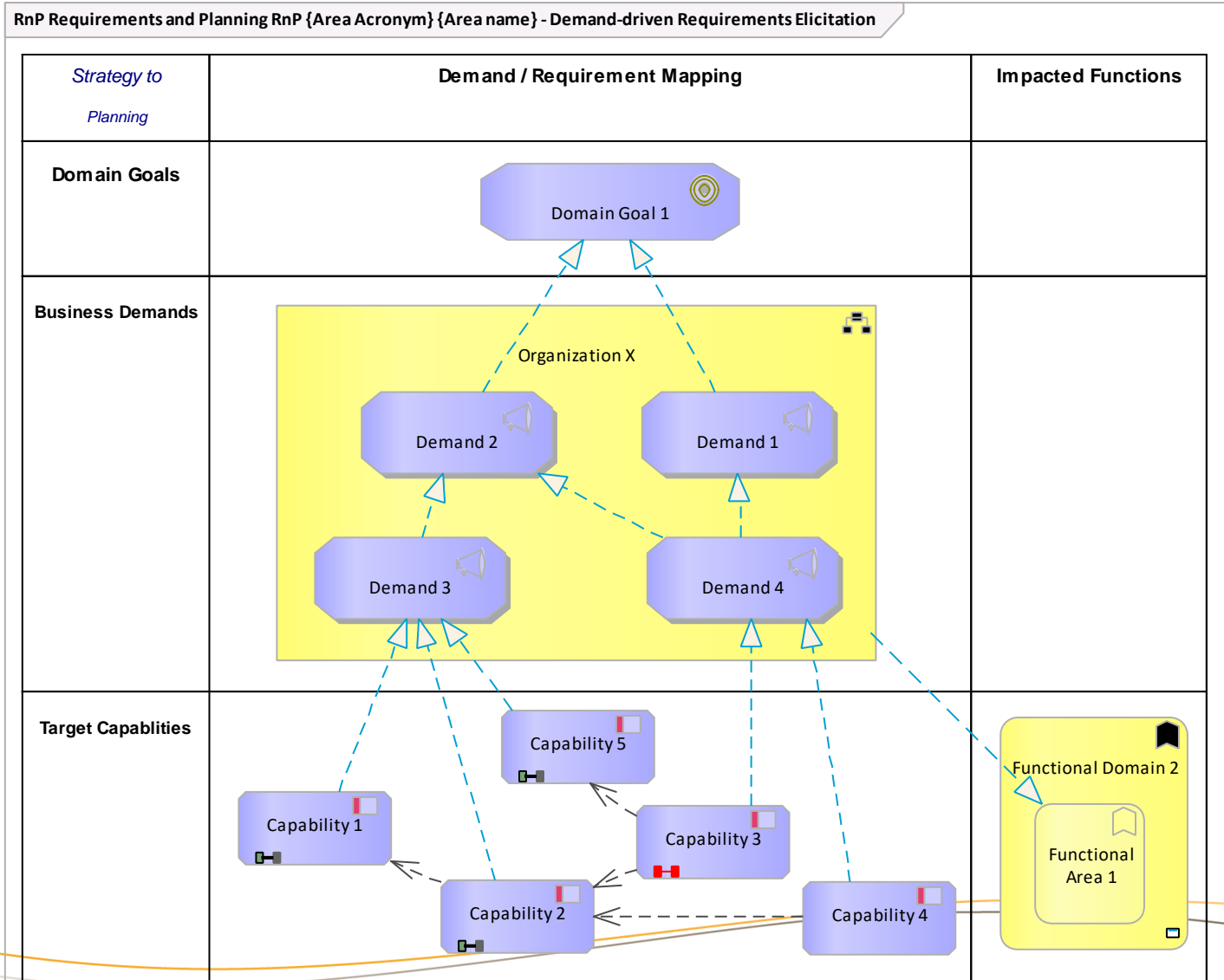


Sample "Application Deployment" View

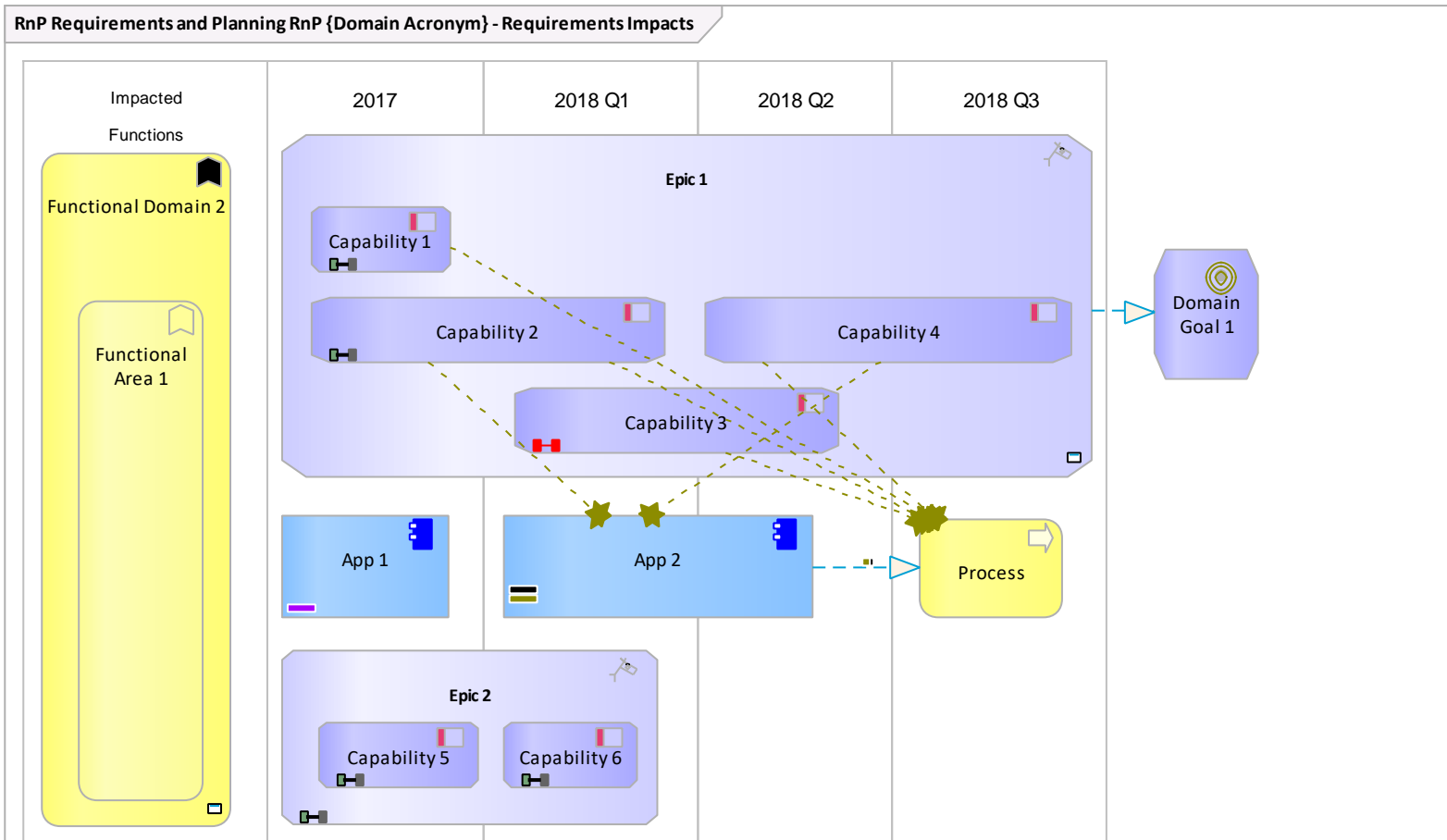


Sample

“Demand Driven requirement Elicitation” View



Sample “Requirement & Planning (Impacts)” View

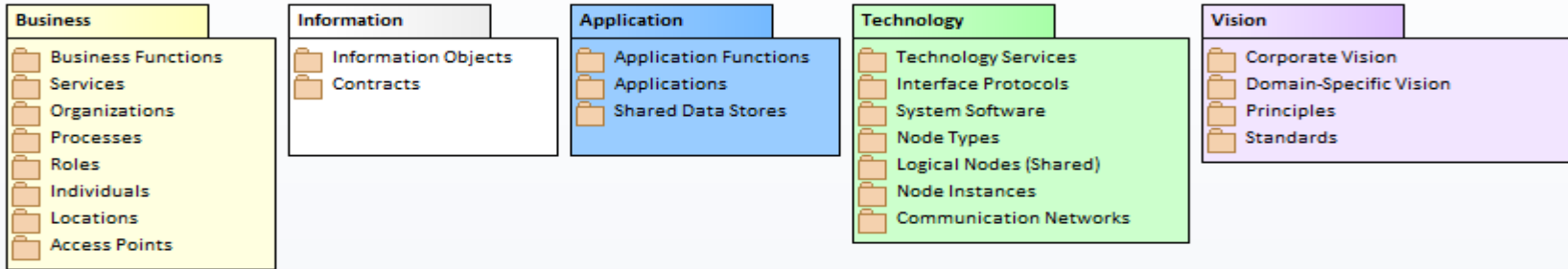


The planning typically evolves as follows:

- 1) Initial planning as requested by the Business (planning by demand)
- 2) Planning rationalized by architects
- 3) Planning adapted following resource availability and other implementation constraints (planning by supply)

Visible Enterprise

Catalogs



Enterprise Viewpoints

Business	Information	Application	Technology	Vision
Viewpoints	Viewpoints	Viewpoints	Viewpoints	Viewpoints
Functional Landscape	Entities	Application Landscape	Standard Technology Servic...	Context
Functional Interactions	Information	Functional Application Landscape	Connectivity	Corporate Strategic Found...
Business Organization Stru...	Information Processors	Application Interactions	Technology Usage	Business Model
Functional Organization La...	Information Storage	Application Interaction Details		Strategic Plans
Service Organization Lands...	Contracts and Implications			Directives & Demands
Business Ownership				Requirements & Planning
Showing 1 - 6 of 6 items	Showing 1 - 5 of 5 items	Showing 1 - 4 of 4 items	Showing 1 - 3 of 3 items	Showing 1 - 6 of 6 items

[Architecture Management Viewpoint](#)

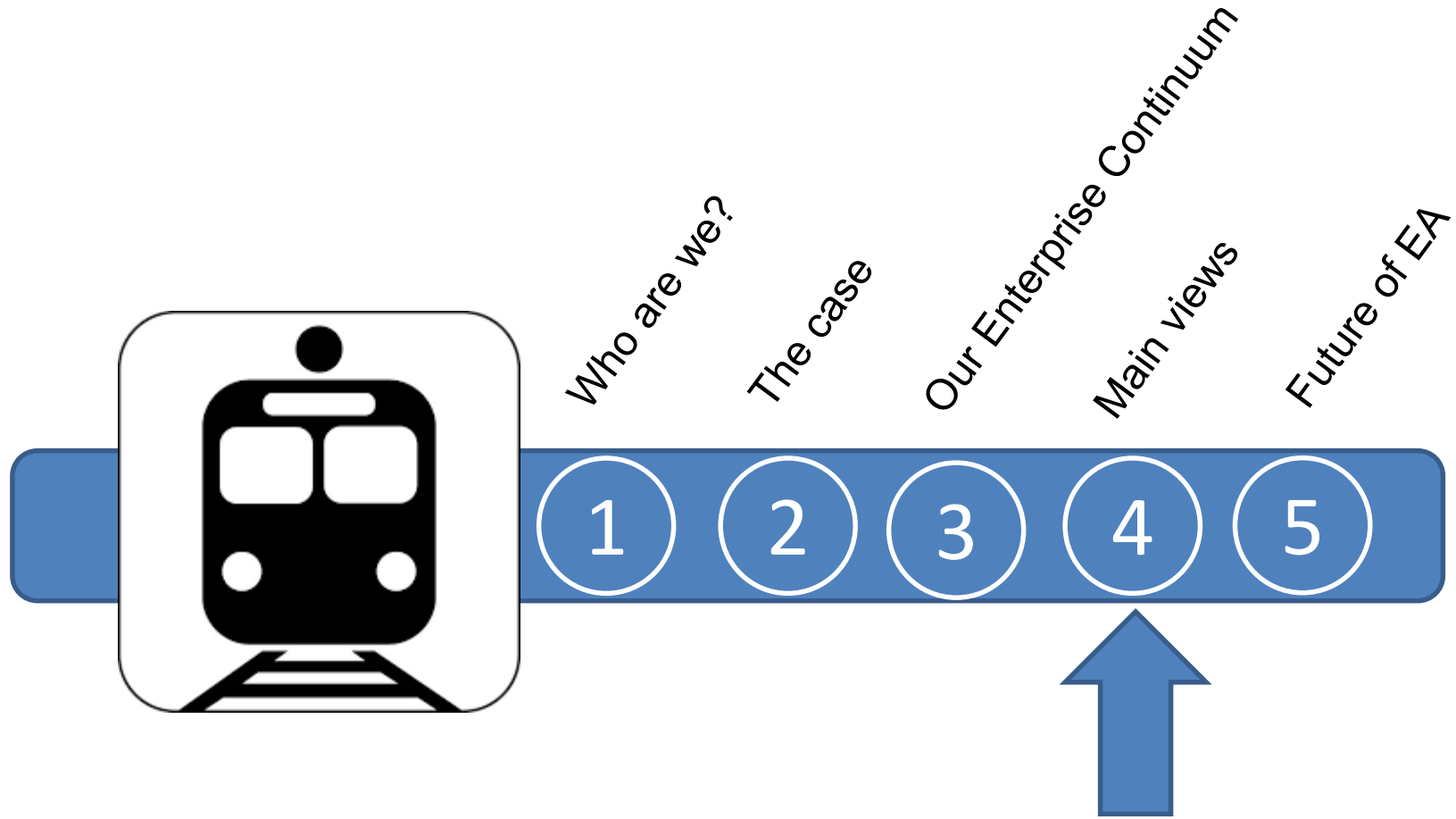
+ Standard HTML, Excel & Word reports published daily on intranet

Project-specific

Project Viewpoints

Vision	Business	Information	Application	Technology
Viewpoints	Viewpoints	Viewpoints	Viewpoints	Viewpoints
Domain-specific Goals	Informal Business Scope	Information	Informal IT Scope	Application Deployment
Directives & Demands	Functional Landscape	Information Storage	Application Landscape	Connectivity
Requirements & Planning	Processes		Functional Application Landscape	Instance Deployment
	Activities		Application Functions	Technology Usage
			Application Interactions	
			Application Interaction Details	
Showing 1 - 3 of 3 items	Showing 1 - 4 of 4 items	Showing 1 - 2 of 2 items	Showing 1 - 6 of 6 items	





	Enterprise Continuum	<>	Configuration Management
Why?	To support decision making on current and future components to plan required budgets in terms of resource and technology.		To inform impact on production when there is an incident and to fix it ASAP (SLA).
what?	From Business, Information, Application, Technology, Security to Governance. Several layers: conceptual, logical and physical to document, support decision making.		About Production environment (sometimes also Test and Acceptance environments) Being the register of installed components to monitor availability of End-to-End IT chains.
With What?	Enterprise Continuum		Configuration Management Solutions (Configuration, Event, Monitoring, Incident, Problem and Change management).



Questions from outsourcer candidates?



QUESTION

Case:

You are an outsourcer candidate to take over applications from a company.

What are your main questions?

Brain storming.

3 minutes.

An enterprise continuum to support outsourcing initiatives by delivering consistent information.

List of applications

Availability of applications

List of critical applications

Interfaces between applications

Technology by applications

Technology by interfaces

List of IT functions by applications

Integrity of data objects by applications

Mapping between applications and business functions

Sensitivity of data objects by applications

Mapping between applications and the IT organisation

List of IT services delivered by each IT organisation

Rem:
 To enrich with
 CMDB information
 ... when available.

Location of IT components by data center

End-to-End data flows and their applications



An enterprise continuum to support outsourcing initiatives by delivering consistent information.

List of applications

Availability of applications

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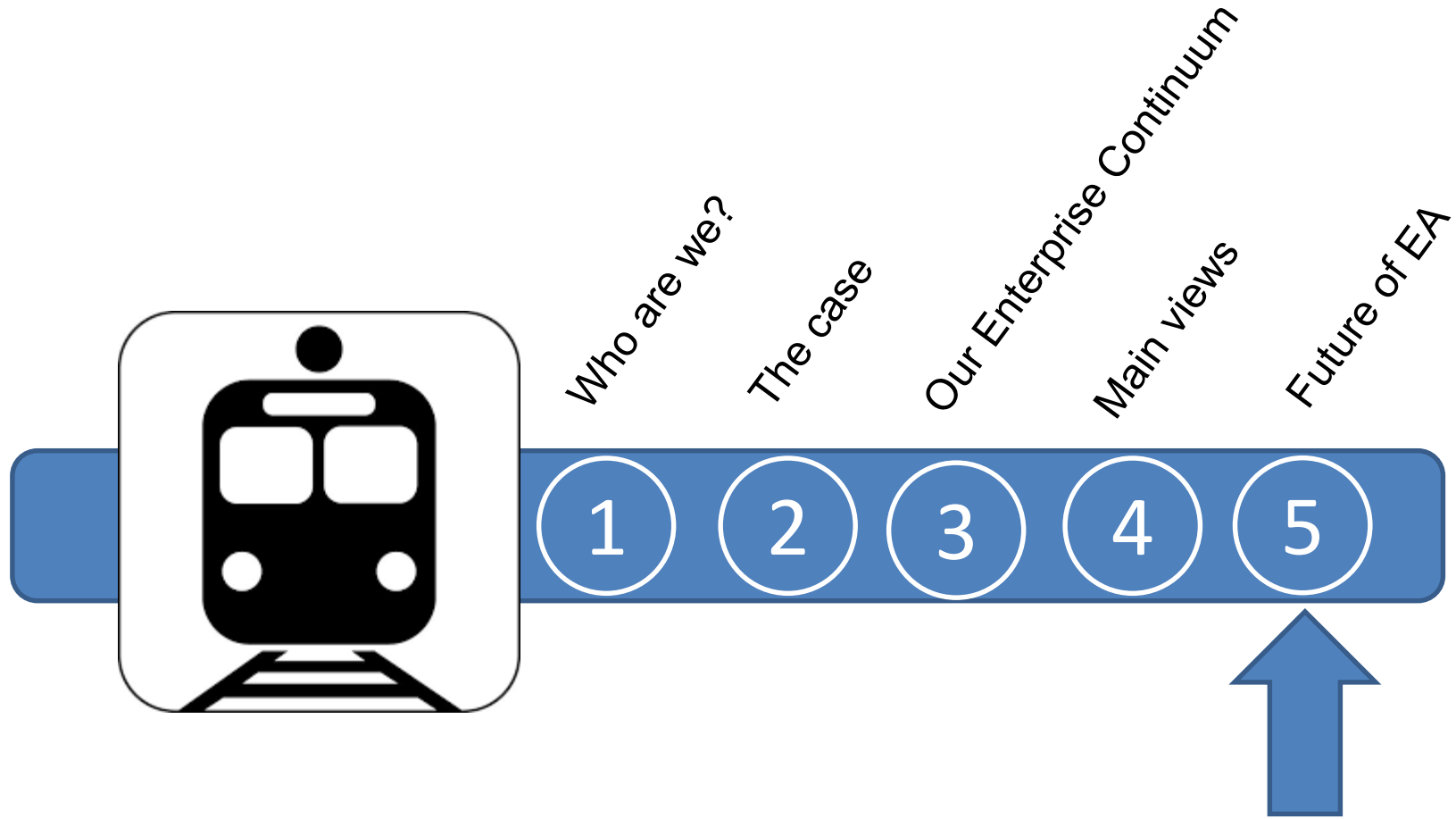
Location of IT components by data centers

End-to-End data flows and their applications

Information to be retrieved from the Enterprise continuum

Rem:
To enrich with
CMDB information
... when available.





Enterprise Architecture continuum to support the specification of a new IT operating model

- Roadmapping to support Portfolio management is becoming key within EA.
- Relationship and communication with and between business partners are becoming critical.
- EA contributes to the specifications of the new organisation:
 - What are the decision boards?
 - What are the roles requires in each board?
 - Where are located the roles.
- EA challenges outsourcer propositions ... influences and constraints it.

Summary

- Enterprise Architecture supports decisions making to be taken by senior management.
- It influences decisions about People, Process and Technology.
- It is based on frameworks, prescriptive languages. It covers context, business, information, application, technology, security and governance. Adopt market standards to start asap.
- It specifies the sequence of future investments.
- It supports management decision about standards.
- It influences and constrains projects in order to deliver a wanted end states. If not, EA adapts the roadmap and informs about the technical debts.
- It is not about timing, it is about the sequence. Timing is a question of resources and budget. Those are constraints for Enterprise Architecture.
- The creation of an Enterprise Architecture team takes several years. It starts by management the as is documentation, collaborate in the ongoing requests for change and then manage the change by defining its content.
- Enterprise Architects never work alone. It is collaborative work and it requires a lot of soft skills.

