



The Value of an integrated Enterprise Architecture as a steering instrument in the petroleum business

OMV Group

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CIO Office IT Strategy and Architecture Group, OMV Group



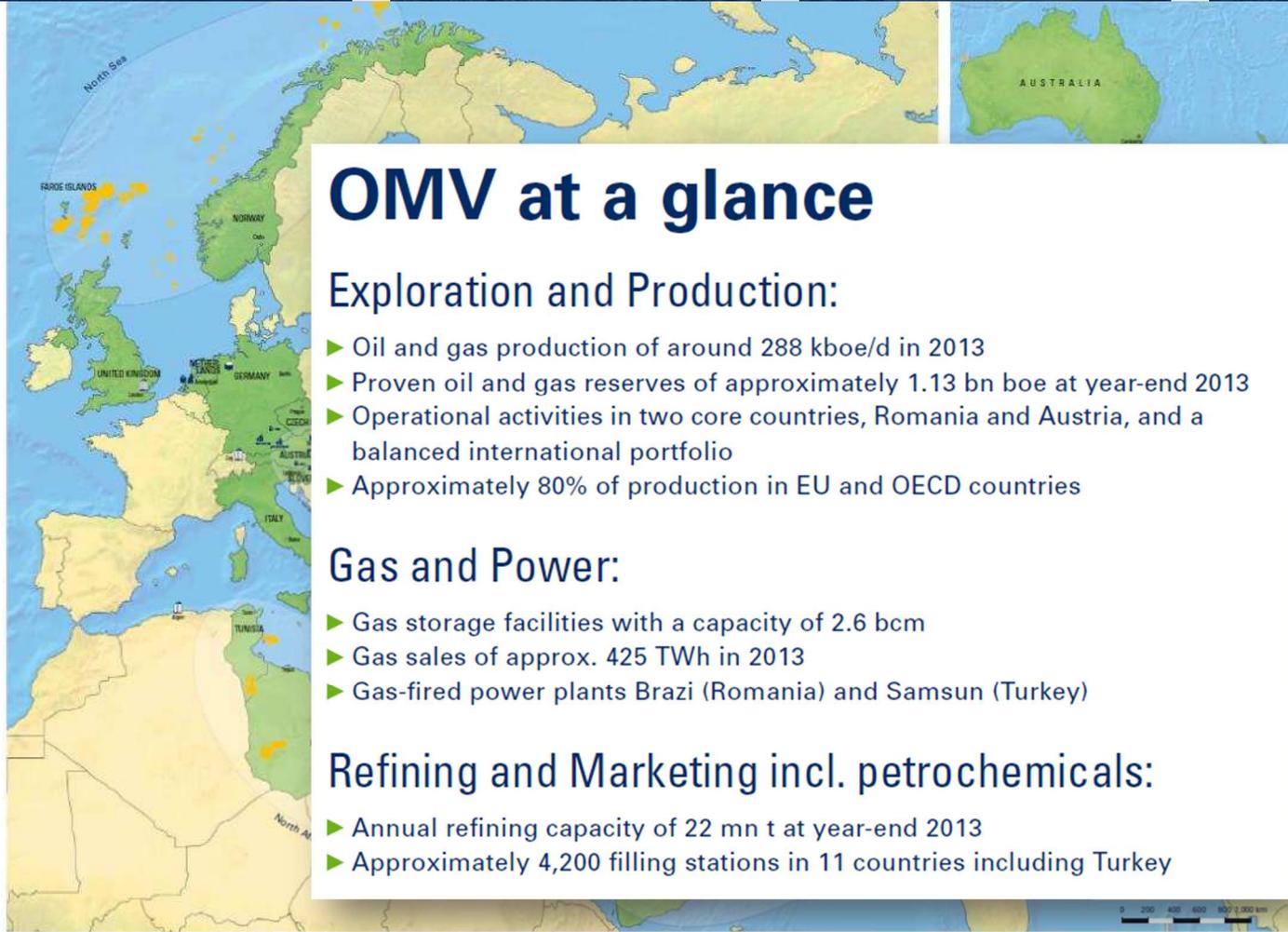
# OMV Legal Disclaimer

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# OMV at a glance

## Exploration and Production:

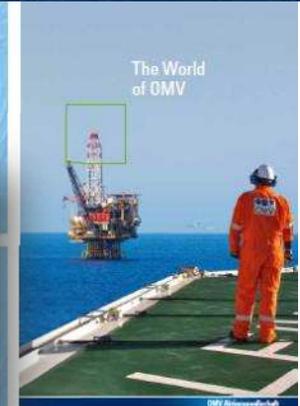
- ▶ Oil and gas production of around 288 kboe/d in 2013
- ▶ Proven oil and gas reserves of approximately 1.13 bn boe at year-end 2013
- ▶ Operational activities in two core countries, Romania and Austria, and a balanced international portfolio
- ▶ Approximately 80% of production in EU and OECD countries

## Gas and Power:

- ▶ Gas storage facilities with a capacity of 2.6 bcm
- ▶ Gas sales of approx. 425 TWh in 2013
- ▶ Gas-fired power plants Brazi (Romania) and Samsun (Turkey)

## Refining and Marketing incl. petrochemicals:

- ▶ Annual refining capacity of 22 mn t at year-end 2013
- ▶ Approximately 4,200 filling stations in 11 countries including Turkey



Moving more. Moving the future. OMV

December 2013

### OMV at a glance

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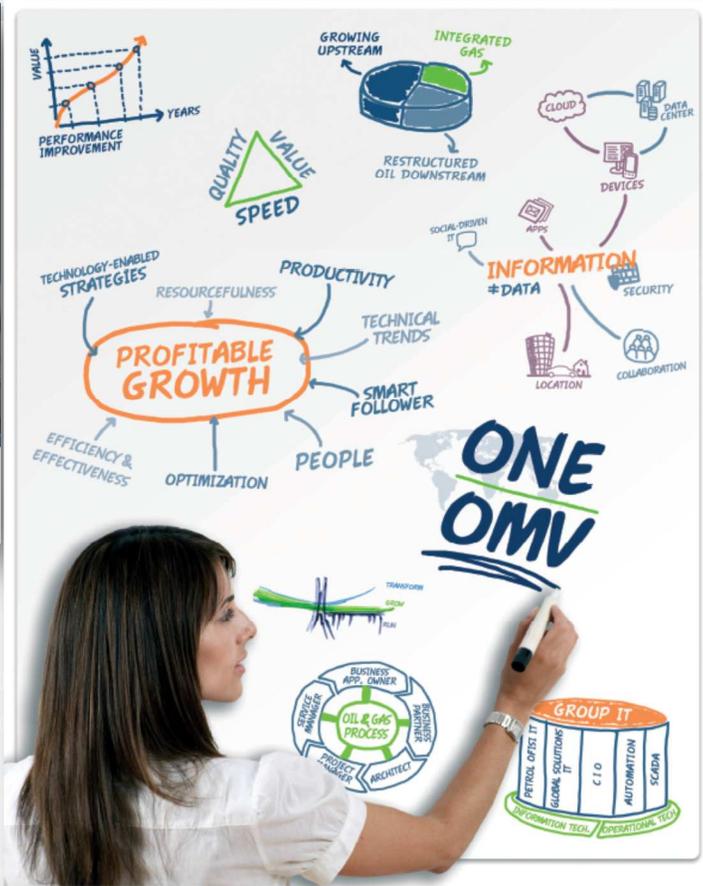
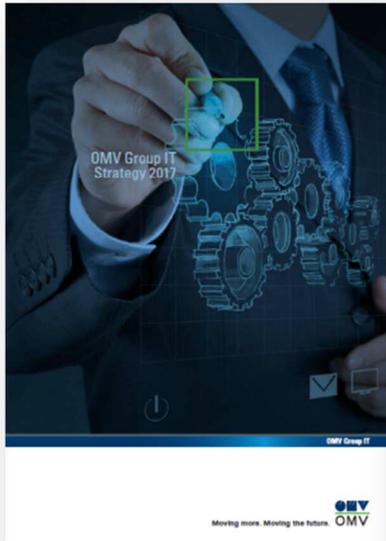
- ▶ Annual refining capacity of 22 mn t at year-end 2013
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Ref. country	Subsidiary	Production	Capacity	Marketing
Austria	OMV Austria	+	+	+
Brazil	OMV Brazi	+	+	+
Germany	OMV Germany	+	+	+
Romania	OMV Brazi	+	+	+
Turkey	OMV Samsun	+	+	+
Other		+	+	+
Production (P/100)		+	+	+
Capacity (C/100)		+	+	+
Marketing (M/100)		+	+	+
Other		+	+	+
Production		+	+	+
Capacity		+	+	+
Marketing		+	+	+
Other		+	+	+

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# Context to OMV Business and OMV Group IT Strategy



Living integration in a smarter organization.

## Enterprise Architecture

Moving towards the architected enterprise

## Process Management

Connecting the dots

## Information Management

Professional care for key company assets. Discard the rest.



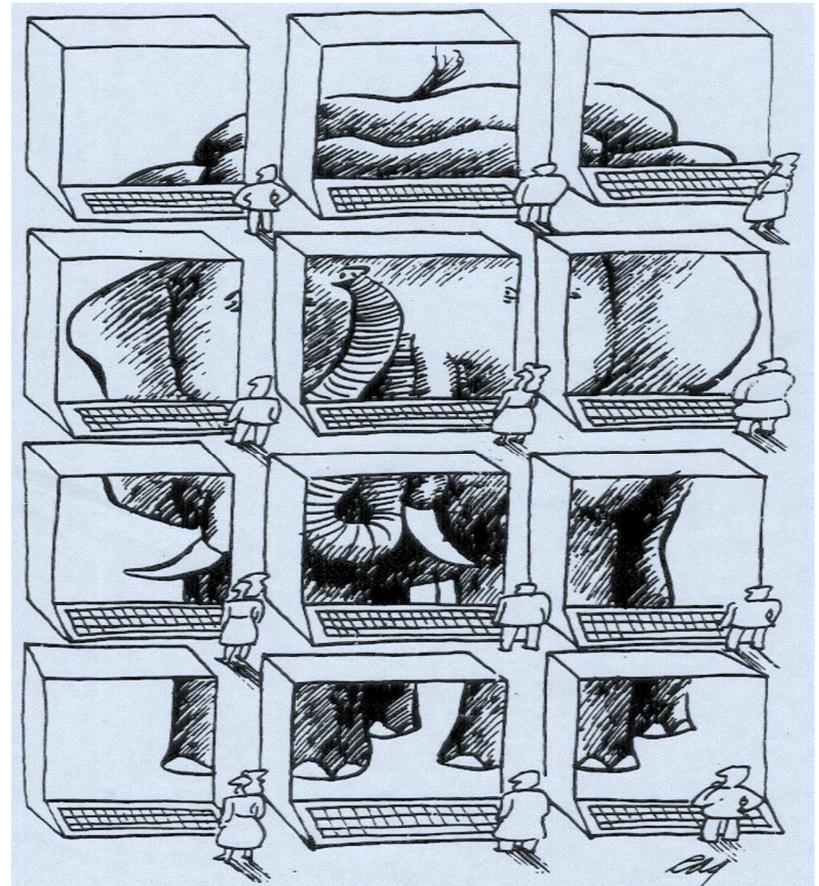
# Enterprise Architecture Framework

# Taming the Enterprise Architecture

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## How to slice the EA elephant?

- Create EA understanding and define an EA Framework based on best practice
- Ensure business context and address stakeholder concerns
- Select the EA supporting tools
- Show the benefits of EA for both business and IT
- Define the EA building blocks with layers, levels and artifacts
- Apply the Architecture Management Processes (AMP) in (IT-)Projects



# Enterprise Architecture

## TOGAF considers the Enterprise as a System

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### The Architecture of an Enterprise

#### Architecture

A formal description of a system, or a detailed plan of the system at component level, to guide its implementation

(ISO/IEC 42010:2007).

The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time.

#### Enterprise

The highest level (typically) of description of an organization and typically covers all missions and functions.

**An enterprise will often span multiple organizations.**



# Enterprise Architecture

## A definition

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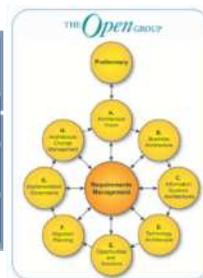
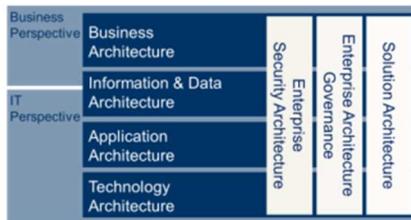
- ▶ **Enterprise Architecture (EA)** is the **process** of translating the **business strategy** and **architecting the enterprise** to ensure **planning reliability, transparency and sustainability** of IT investments to enable business success.
- ▶ It includes **both** the **process** and the **result**.



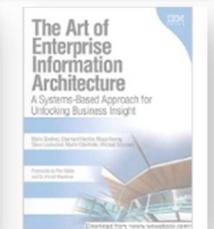
# Enterprise Architecture Framework

## Selection of a Framework

- ▶ Numerous frameworks and supporting concepts exist, to provide a structure for Enterprise Architecture (e.g. Zachmann, TOGAF, Rational Architecture, ArchiMate, IAF Gartner, DAMA, IBM, COBIT, ITIL)



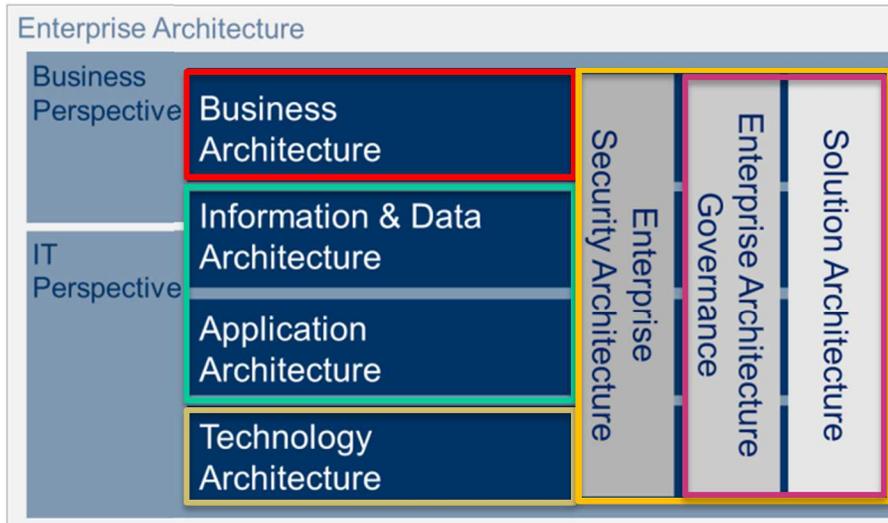
Gartner



# Enterprise Architecture Framework

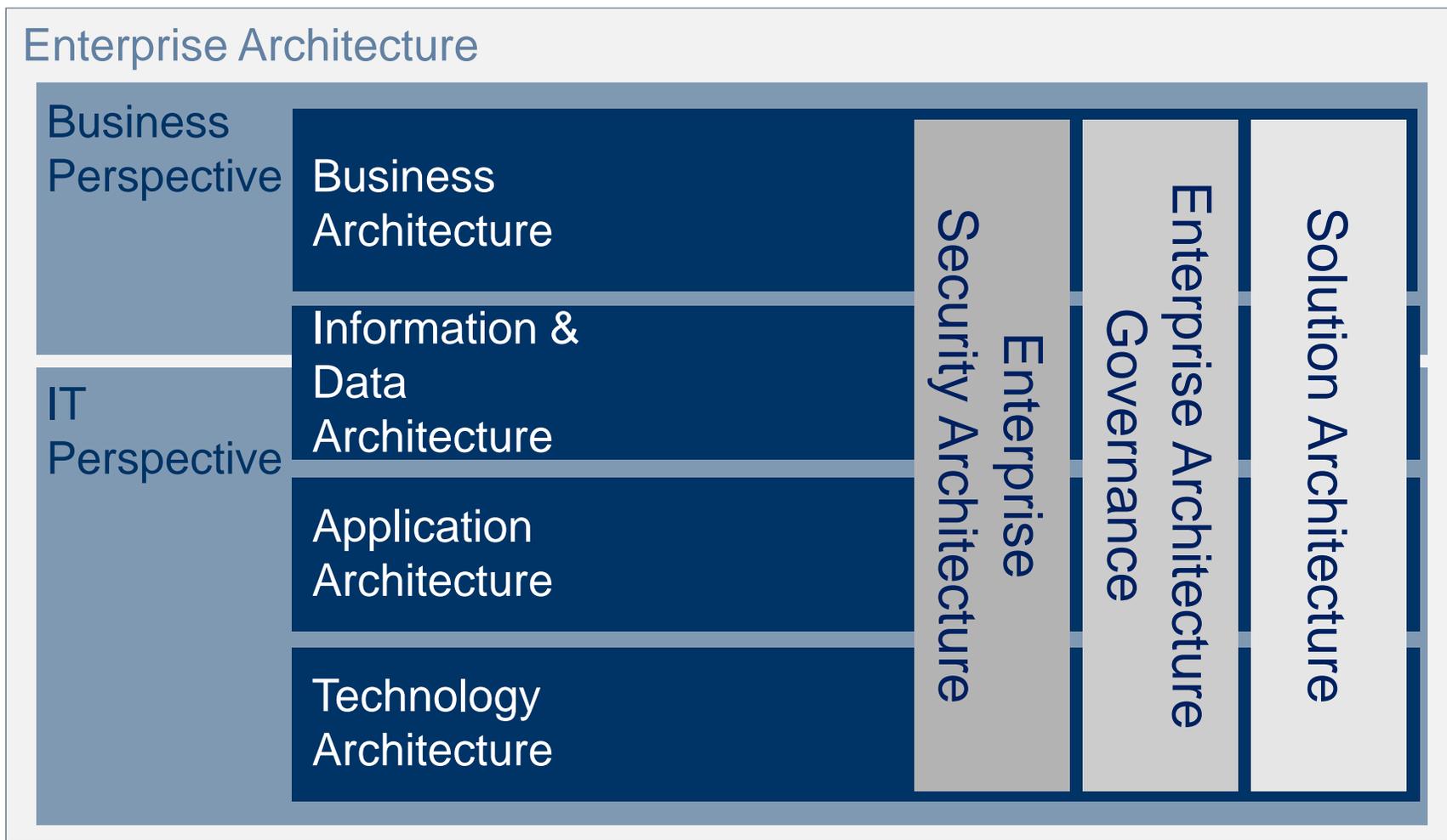
## Ensure that the Framework...

... is based on the best practice like TOGAF®  
 The Open Group Architecture Framework and Architecture Development Methodology (ADM)



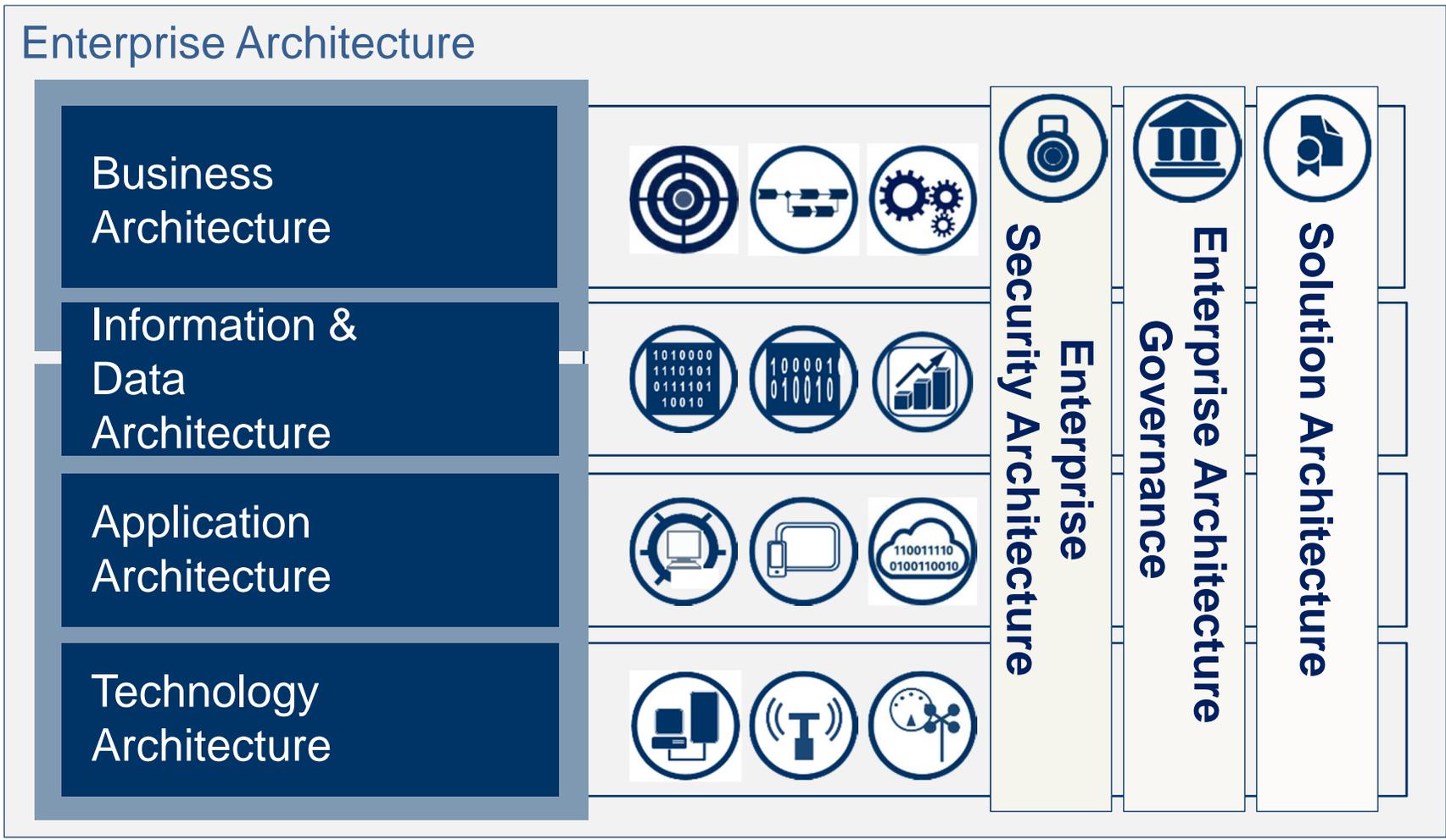
# Enterprise Architecture Framework

## Architectural Layers



# Enterprise Architecture Framework

## Architectural Layers

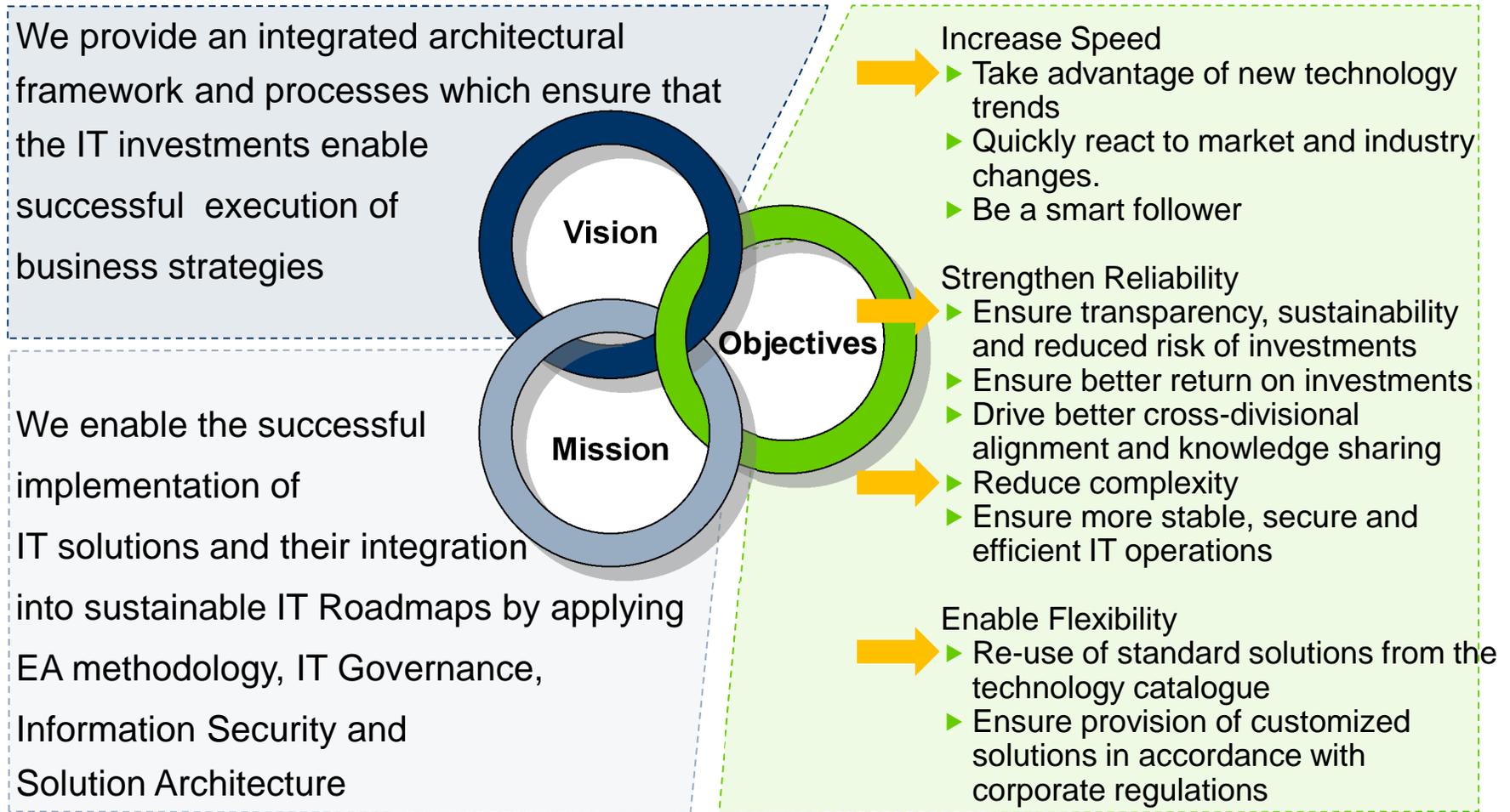




# Enterprise Architecture

## Business Context

# Establish business context: Vision and Mission defines the framework for business success

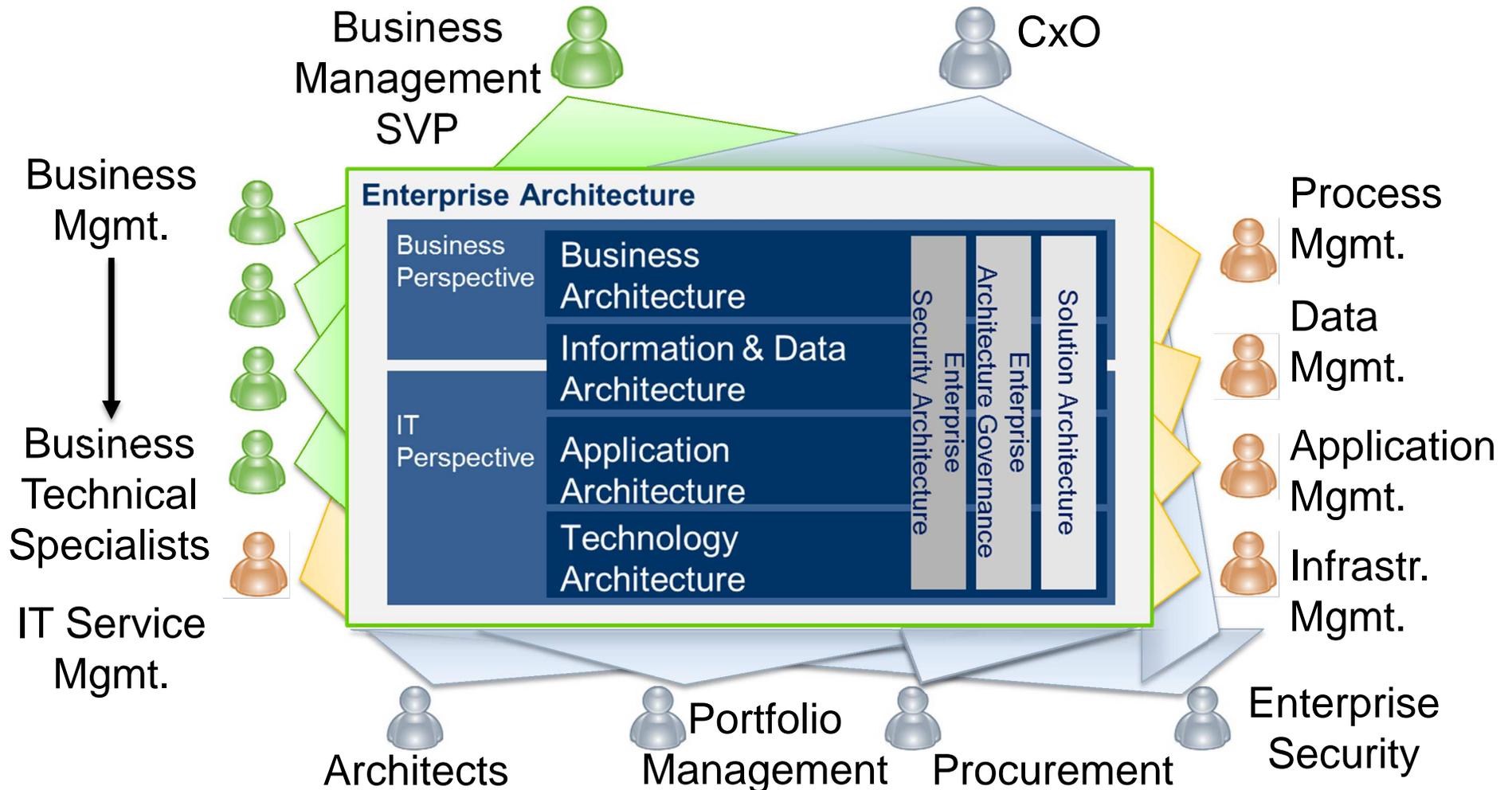




## Enterprise Architecture Benefits & Value Proposition

“Effective management of the enterprise’s architecture is key to business success and competitive advantage”

# Various Stakeholders look at Enterprise Architecture from different Perspectives



# Enterprise Architecture Benefits

## Why do we need Enterprise Architecture?

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### Benefits for CxOs:

- ▶ Enterprise Architecture is an “option” on future (stock exchange)
  - ▶ ...the more speculative or random an option is, the higher the risk
  - ▶ ...the more reliable the option is, the higher the investment security and business success
- ▶ Support to make the right IT investments inside the right business projects
- ▶ Enterprise Architecture ensures planning reliability, transparency and sustainability



Source Gartner, Inc.

# Enterprise Architecture Benefits

## Why do we need Enterprise Architecture?

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Benefits for the business users and IT organization:



**Need  
for  
improvement**



- ▶ Stability issues
- ▶ Overly complex IT landscape
- ▶ Inflexible to respond to technology development
- ▶ Not transparent IT landscape and too high IT-cost

- ▶ Ensure continued stability of running business
- ▶ Increase simplicity of the IT landscape
- ▶ Reduce cost of non-quality
- ▶ Improve time-to-market



# Enterprise Architecture Tool Support

# Select and Enterprise Architecture Repository / Supporting Environment

Requirements document

Market Scan

- Should have repository/database behind the models
- TOGAF / Extended Enterprise Architecture Framework(E2AF) support
- Versioning/Revision support
- Collaboration support (check-in/check-out/locking)
- Document/report generation support – documents should be generated automatically from models
- UML support (may be SysML support)
- Guidelines/Templates – to help guide the documentation of the architecture
- Import/Export functionality for UML models, Visio, via XML
- Syntax checks/semantic checks
- Reverse engineering capability especially for database objects, would be nice also for code
- Scenario Simulation (i.e. impact of server replacement)



- Support for all Enterprise Architecture Layers
- Should have repository/database behind the models including versioning / revision control
- TOGAF / Extended Enterprise Architecture Framework support
- Collaboration support (check-in/check-out/locking)
- Document/report generation support – documents should be generated automatically from models

Risk / Strategy / Enterprise / Solution Architecture Tools Overview - 2011 v6.3 (C) Copyright FTAD 2011 - 2011

Supplier	Tool	Governance, Risk, Compliance	Program Management	Enterprise / IT Portfolio Management	Business/IT Strategy	Enterprise Architecture	Solution Architecture	Software Engineering	Yellow = leaders, Orange = successful, Blue = challengers, Green = niche players, according to Gartner 2010 & Forrester 2011. More information
Acceptofware	Accept 300 Enterprise Architecture Manager, IT Portfolio Manager, Metadata Manager								<a href="http://www.acceptofware.com/index.html">http://www.acceptofware.com/index.html</a>
Adaptive									<a href="http://www.adaptive.com">http://www.adaptive.com</a>
Acti Technologies	EAAM	Green							<a href="http://www.actigroup.eu/en/products/acti-acti-acti/">http://www.actigroup.eu/en/products/acti-acti-acti/</a>
Affabet	Planning IT	Green						Forrester	<a href="http://www.affabet.de/">http://www.affabet.de/</a>
Avolution	Alicious	Green						Forrester	<a href="http://www.avolution.com.au/index.html">http://www.avolution.com.au/index.html</a>
Booz&B	BOZdesign Architect, BOZdesigner, BusinessManager	Green							<a href="http://www.boozandb.com">http://www.boozandb.com</a>
BOC-Group	ADOC Corporate Modeler Enterprise Edition	Green						Forrester	<a href="http://www.boc-group.com/en/products/aboc/">http://www.boc-group.com/en/products/aboc/</a>
CaseWare		Green							<a href="http://www.caseware.com">http://www.caseware.com</a>
CAO International	StratProcess								<a href="http://www.cao-int.com">http://www.cao-int.com</a>
Enterprise Business	Data Tractor, Enterprise Repository	Green							<a href="http://www.enterprisebusiness.com/product.html">http://www.enterprisebusiness.com/product.html</a>
Forreign	Modeling & Validation Tool set								<a href="http://www.foreignsystems-manual.com">http://www.foreignsystems-manual.com</a>
Future Tech Systems, Inc	EA/ECOA/VP	Green							<a href="http://www.future-tech.com/index.html">http://www.future-tech.com/index.html</a>
IBM - Rational	System Architect Family - Rationality	Green						Forrester	<a href="http://www-01.ibm.com/software/awdtools/system-architect/">http://www-01.ibm.com/software/awdtools/system-architect/</a>
Multiple Corporation	MAP Suite + T&A								<a href="http://www.intelligence.com">http://www.intelligence.com</a>
Orion Consulting	LUXX Explorer								<a href="http://www.orion-consulting.com">http://www.orion-consulting.com</a>
Mega International	Mega Suite	Green						Forrester	<a href="http://www.mega-int.com/product">http://www.mega-int.com/product</a>
Open Source	Eclipse Agile EA								<a href="http://www.agile.com/open/index.php">http://www.agile.com/open/index.php</a>
Open Source (various)	Varacton								<a href="http://www.varacton.com/">http://www.varacton.com/</a>
OpenText	Metastorm Enterprise Products	Green						Forrester	<a href="http://www.opentext.com/ea/ea_products.html">http://www.opentext.com/ea/ea_products.html</a>
Optiva Software	Genver 2011								<a href="http://www.optiva.com/en/enterprise-architecture/enterprise-architecture/">http://www.optiva.com/en/enterprise-architecture/enterprise-architecture/</a>
Palisade	Plan & Decision Analysis								<a href="http://www.palisade-ecorp.com">http://www.palisade-ecorp.com</a>
Pro-ma	EVA Methodology	Green							<a href="http://www.pro-ma.com/ma-net/moocler.html">http://www.pro-ma.com/ma-net/moocler.html</a>
QPR	QPR ProcessSuite (EA)								<a href="http://www.qpr.com/products/process-suite/ea/ea.htm">http://www.qpr.com/products/process-suite/ea/ea.htm</a>
Qualiware	Qualiware Product Suite	Green							<a href="http://www2.qualiware.com">http://www2.qualiware.com</a>
Organisation	MetO Platform	Green						Forrester	<a href="http://www.metoo.com">http://www.metoo.com</a>
Select Business Solutions	Select Solution Factory								<a href="http://www.selectbs.com/products/products.html">http://www.selectbs.com/products/products.html</a>
SOA Software	Repository Manager								<a href="http://www.soa.com/products/repository_manager/">http://www.soa.com/products/repository_manager/</a>
Software AG	ARIS Business Performance Edition	Green						Forrester	<a href="http://www.software-ag.com/en/products/aris-business-performance-edition/">http://www.software-ag.com/en/products/aris-business-performance-edition/</a>
Spans Systems	Enterprise Architect	Green							<a href="http://www.spansystems.com/">http://www.spansystems.com/</a>
Sybase (SAP)	PowerDesigner								<a href="http://www.sybase.com/products/developing/development/powerdesigner/developing/enterprise-architecture/">http://www.sybase.com/products/developing/development/powerdesigner/developing/enterprise-architecture/</a>
Troun	Troun Transformation Platform	Green						Forrester	<a href="http://www.troun.com/products/troun_">http://www.troun.com/products/troun_</a>
Visio	Visio Advantage								<a href="http://www.visio.com/products/visio-advantage/overview.html">http://www.visio.com/products/visio-advantage/overview.html</a>

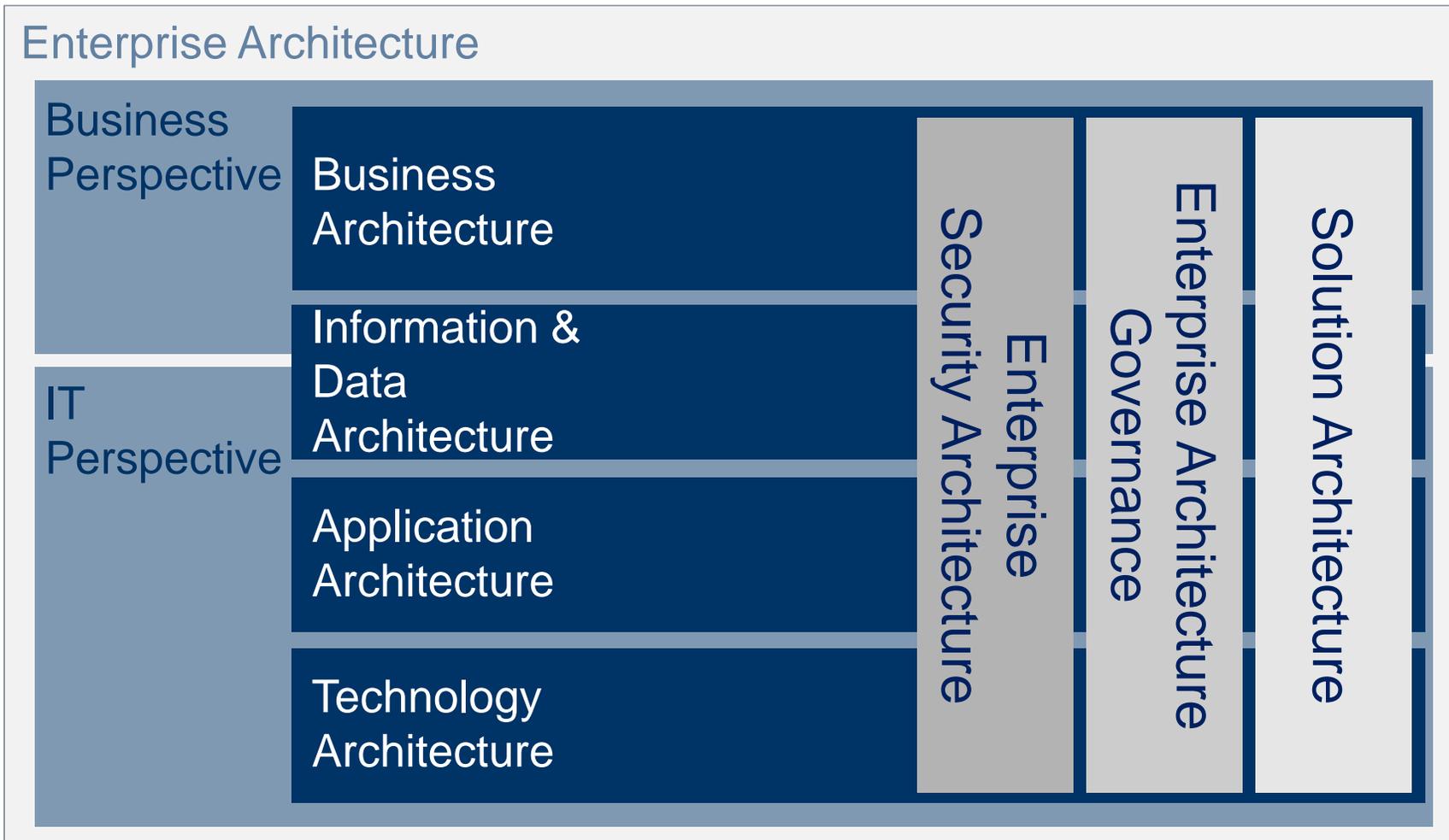


# Enterprise Architecture

## Architecture Building Blocks

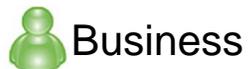
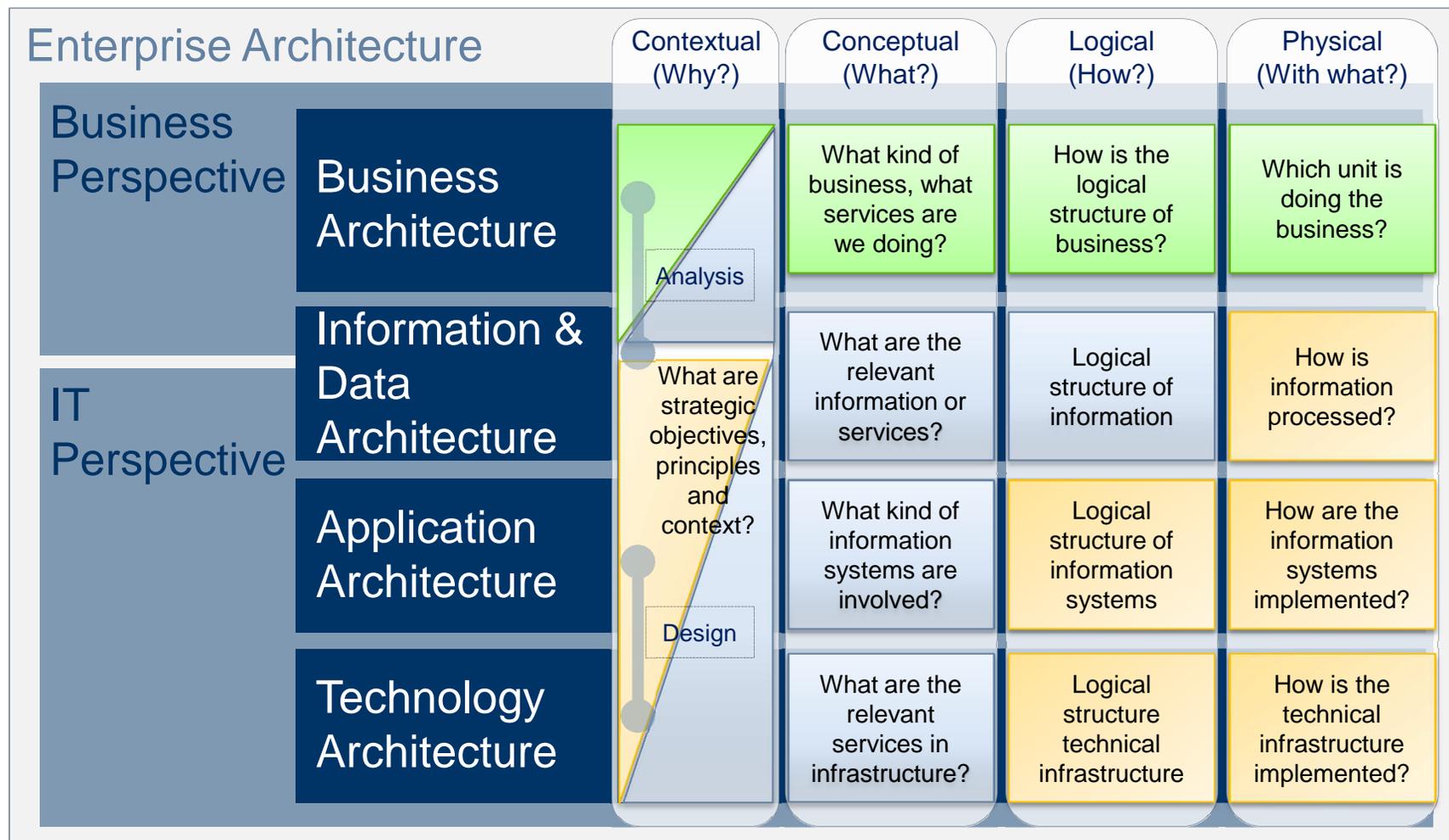
# Defining Architecture Building blocks

## EA Governance – Roles and Responsibilities



# Defining Architecture Building blocks

## EA Governance – Roles and Responsibilities



Business



Architects

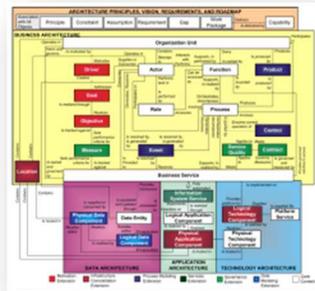


IT (SM)



# Select the Architecture Building blocks

- ▶ Review the meta model and architecture artifacts





# Implementation of EA

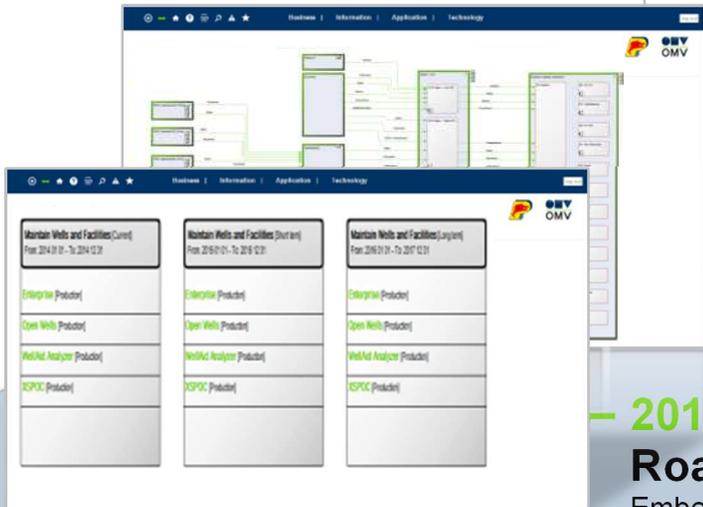
## QLM Achievements @OMV

# Broadening the scope, connecting the artifacts

Continuous evolution of the EA scope and the management system demands **increasing alignment and integration** across all layers of the framework.

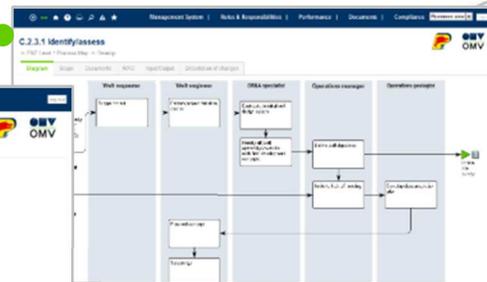
**Corporate Process Map**  
Globally aligned Corporate processes and internal controls

2013



**EA System Landscape**  
All business divisions, links to processes, information and technology

2011



**E&P Process Management**  
Norway and Vienna Head Office: compliance and process architecture

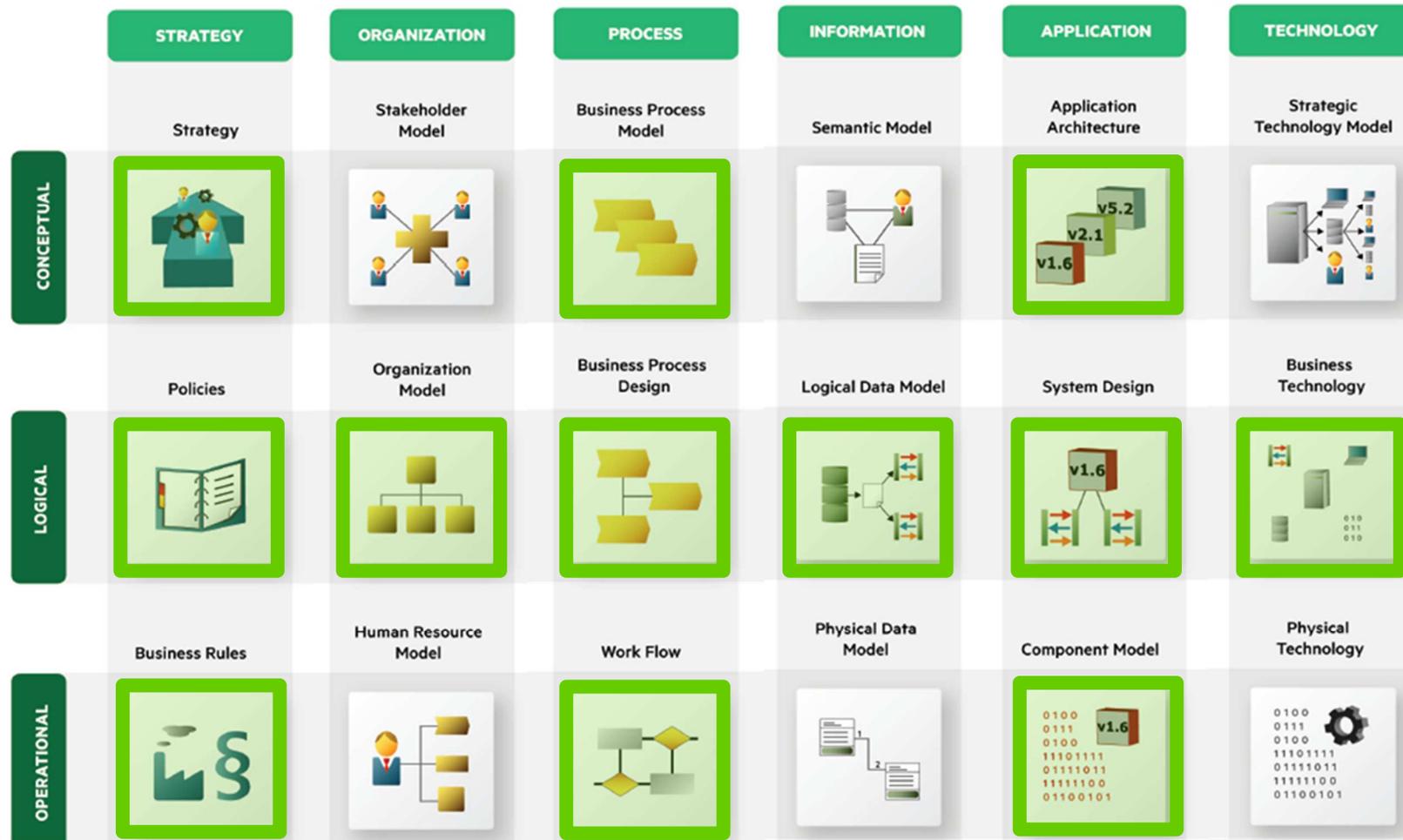
2009



– 2014 - 2015 cont'd:  
**Roadmaps & Integrated Planning**  
Embedded project management process, business/IT alignment and service portfolio management

# Slicing the architecture, defining building blocks

## Start small and take one step at a time

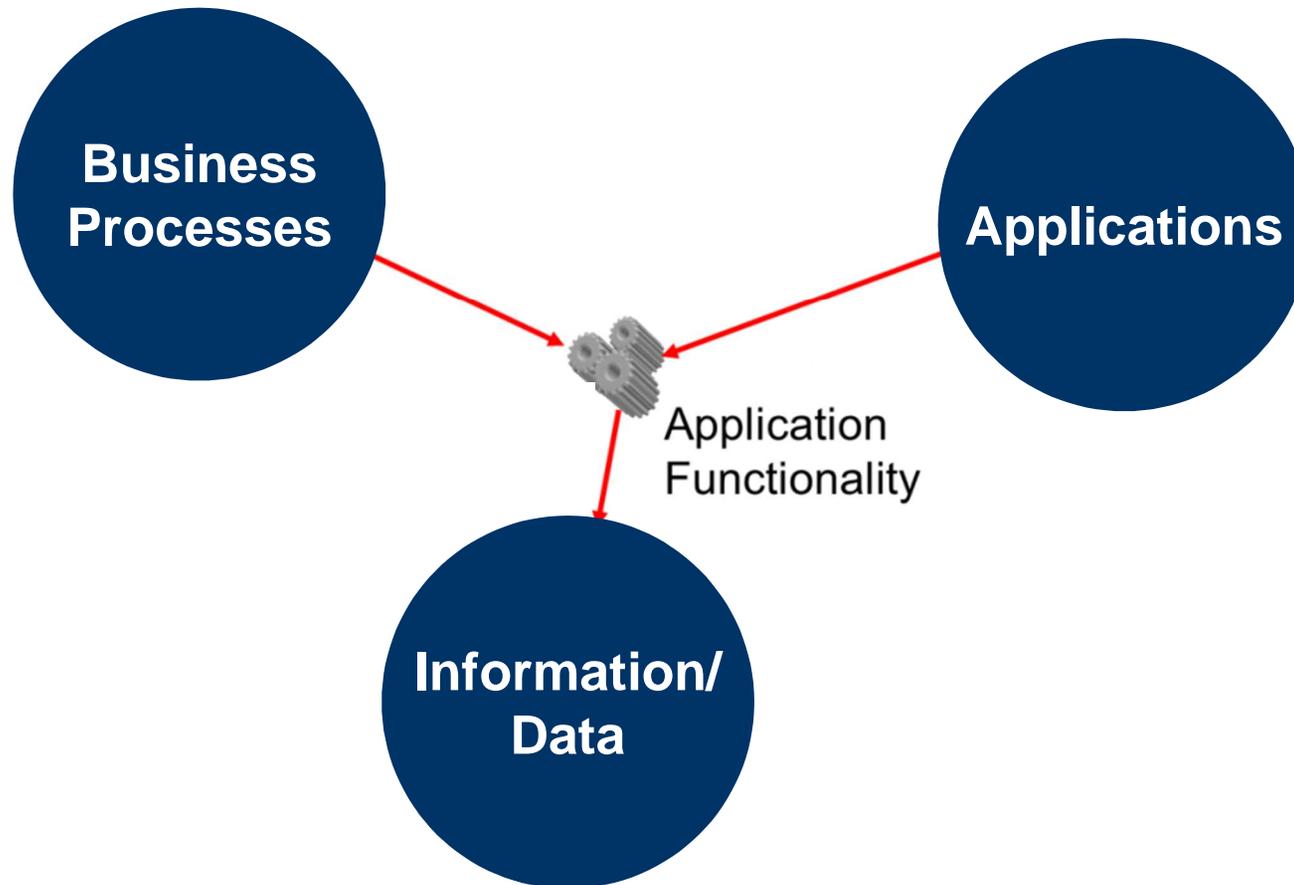


Source: QualiWare Enterprise Architecture Framework

# Enterprise Architecture Framework

## Orchestration of all Enterprise Architecture Aspects

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# Business Architecture (E&P)Management System

**PROCESS**

Business Process Model

**CONCEPTUAL**

Business Process Design

**LOGICAL**

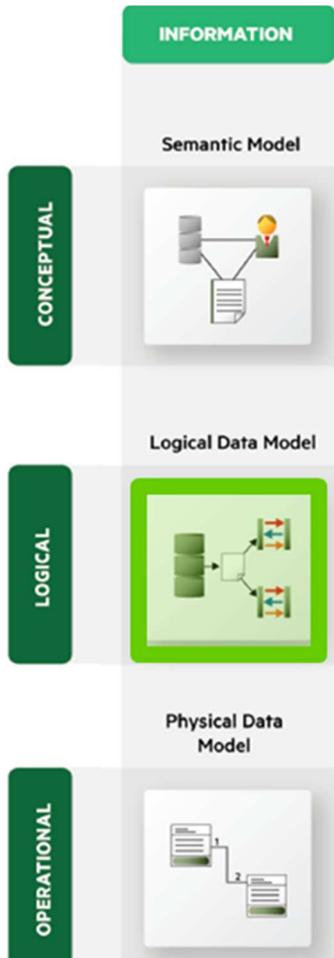
Work Flow

**OPERATIONAL**

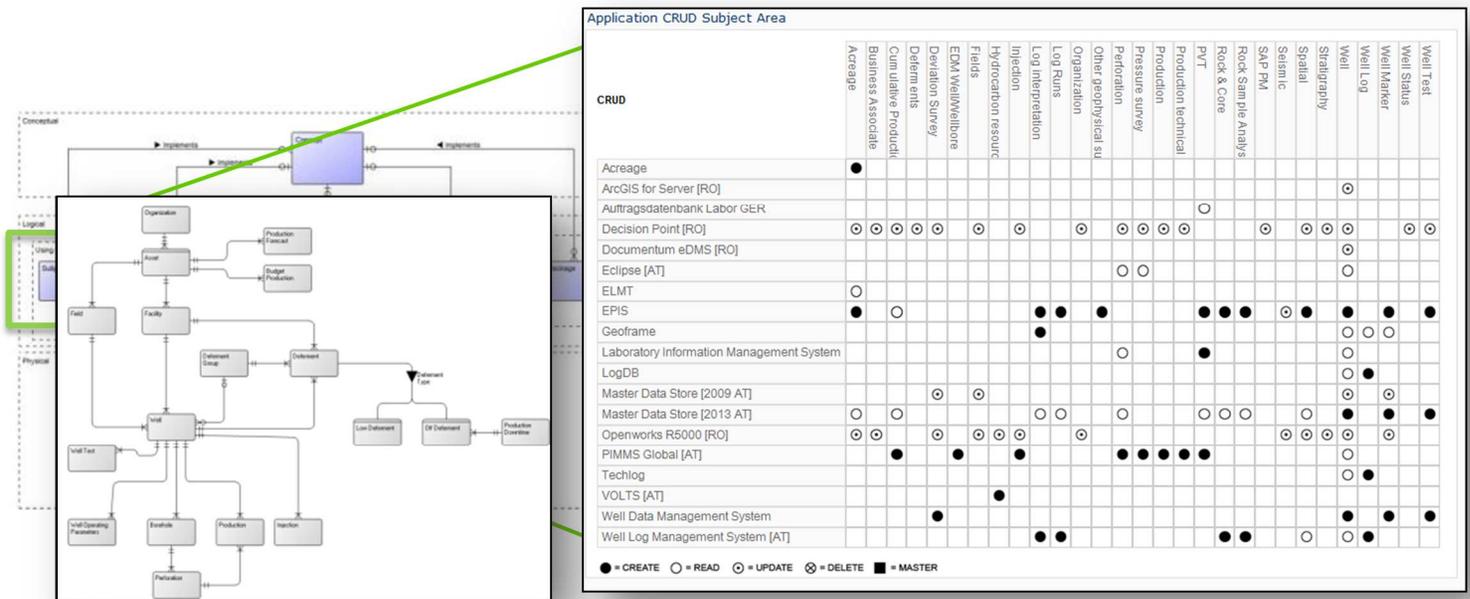
The screenshot displays the 'OMV E&P Management System' interface. At the top, there is a navigation bar with 'Business | Information | Application | Technology' and a user profile for 'Achim Kamejger'. The main content area is titled 'E&P Level 1 Process Map' and includes a 'Diagram' tab. The process map is organized into a grid of functional areas: 'Manage Group Strategy', 'Manage Group Risk', 'Manage Group Governance & Financial Steering', and 'Manage Group Production'. Below these are specific process blocks like 'A.1 Manage E&P Mid Term Plan', 'A.2 Manage Reputation', 'A.3 Manage E&P Management System', 'B.1 Manage Growth Strategy and Plan', and 'B.2 Develop'. The foreground shows a detailed workflow for 'Maximum production capacity approved', involving roles like 'Choke owner', 'Choke coordinator', and 'Operations manager (BO)'. The workflow steps include 'Gather data', 'Update and validate choke values', 'Conduct the production system capacity review', 'Update and finalize model', and 'Approve Maximum Production Capacities (MPC)'. A sidebar on the left provides metadata such as 'Published: 2014-10-29 18:10', 'Repository: OMV\_EA\_EP', and 'Last modified by: Andreas Richter'.

# Information Architecture

## Information Flow

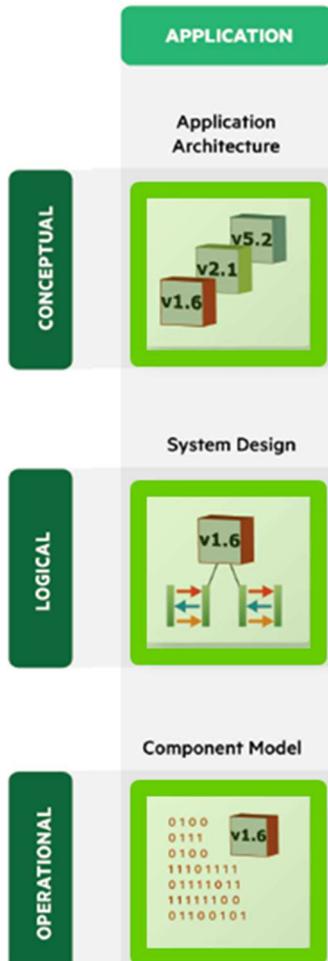


- ▶ Define the data (meta) model, data domains and data entities
- ▶ Define for data domains the data governance aspects with roles (i.e. data owners, custodians)

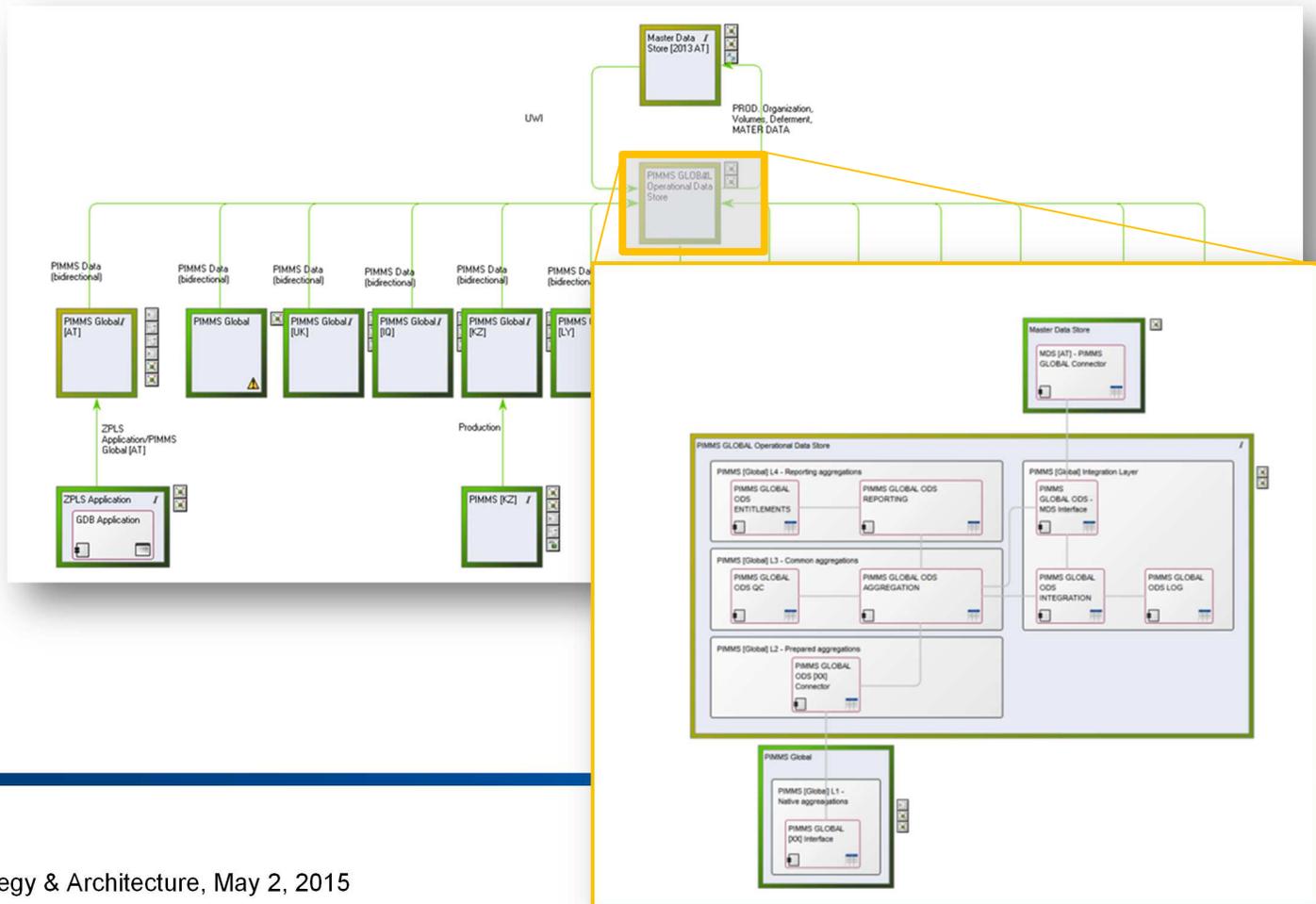


# Application Architecture

## Content View(points) – Instances & Components

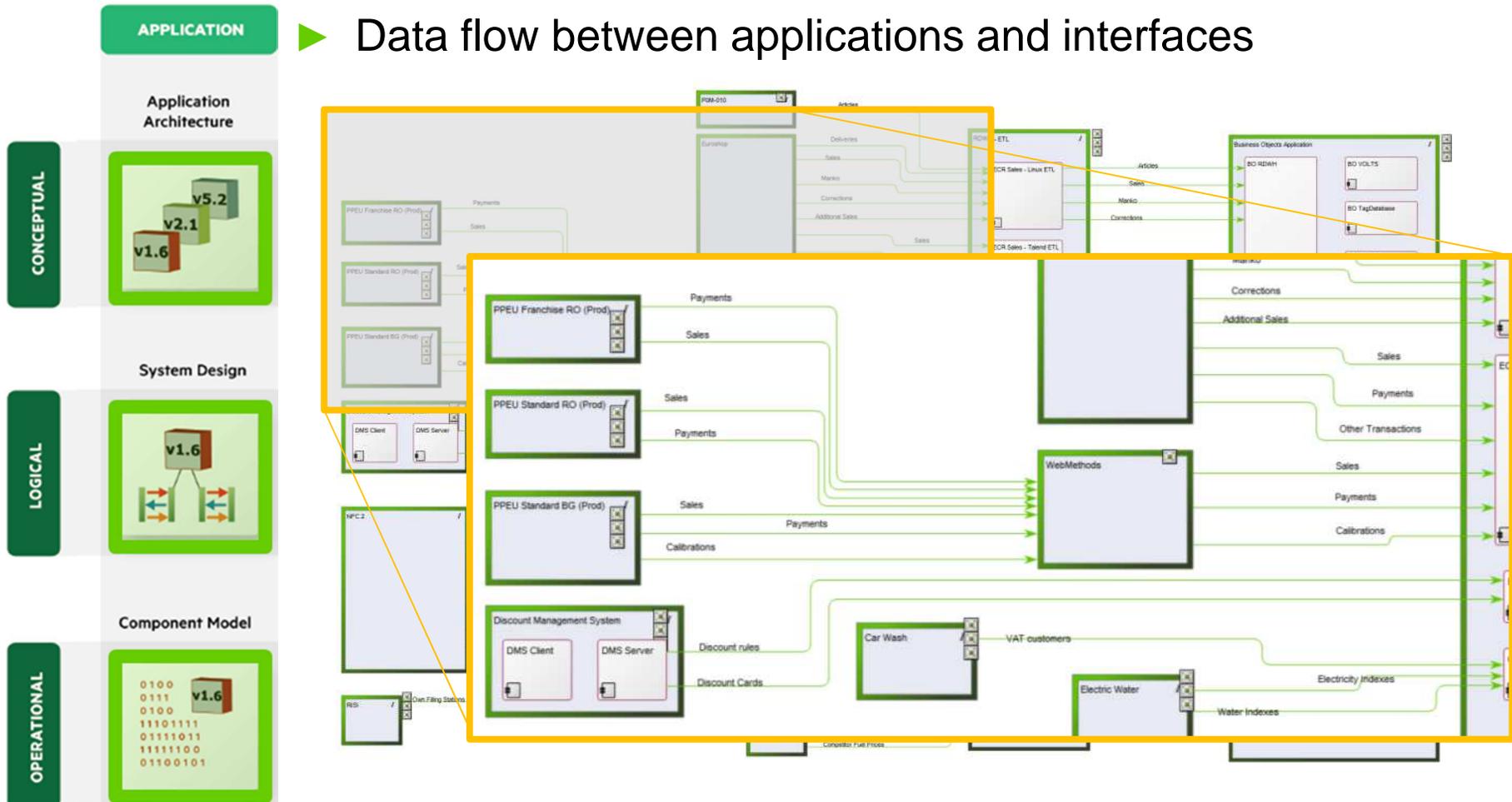


- ▶ Model physical/logical application dependencies
- ▶ Example: PIMMS



# Application Architecture

## Information Flow – Integration View



# Benefit of Architecting the Enterprise: The Integrated View Business Perspectives and IT Perspectives

The image displays a collage of screenshots from the OMV E&P Management System and PIMMS Global [AT].

**OMV E&P Management System Screenshot 1:** Shows the 'E&P Level 1 Process Map' with tabs for 'Diagram' and 'Description of changes'. The interface includes a navigation bar with 'Business | Information | Application | Technology' and a user profile for 'Achim Kamelger'. Logos for PETROM, PG, and OMV are visible.

**OMV E&P Management System Screenshot 2:** Shows the 'Produce' section with a 'Diagram' tab. It lists various process steps such as 'C.3.1 Produce Hydrocarbons' and 'C.3.2 Maintain Wells and Facilities'. A sidebar on the left shows 'My favorites' and 'My tasks'.

**PIMMS Global [AT] Screenshot:** Shows a table with columns for 'Application', 'Functionality and usage', and 'Information'. The table lists various data points and their status across different applications.

**IT Support List:** A list of IT systems including Datastream, Oilfield Manager, ODM, Ecrin (Saphir & Top IRA), Enterprise Fieldpro, PIMMS [KZ], PIMMS [RO], Petromar Software, PIMMS, and XSPOC.

# Benefit of Architecting the Enterprise: Linkage of Process and Regulations

The image displays three overlapping screenshots from the OMV E&P Management System and REAL Regulations Alignment Platform.

**Top Screenshot:** Shows the 'OMV E&P Management System' interface. The main content area is titled 'A.6.1 Identify and assess' and includes a breadcrumb trail: 'E&P Level 1 Process Map > Opportunity Maturation and Project Delivery > Opportunity Maturation and Project Delivery > Opportunity Maturation and Project Delivery'. A navigation bar below the title has tabs for 'Diagram', 'Scope', 'Documents', 'RACI', 'Input/Output', and 'Description of changes'. The 'Documents' tab is active. On the left, there are sections for 'My Favorites' (listing 'E&P Level 1 Process Map', 'Operate wells and facilities', 'Produce') and 'My tasks' (listing 'Published: 2014-09-26', 'Repository: OMV\_EA\_EP', 'Configuration: Base Configuration', 'Approval state: Under development', 'Last modified: 2014-08-26 15:27', 'Last modified by: Jan Harestad').

**Middle Screenshot:** Shows a table of documents. A green header row reads 'Appoint project manager'. Below it, a table lists documents:

Title	Number	Type	Country
E&P Tollgate Manual	E-A-6-HQ-STD-002	Standard	Global

**Bottom Screenshot:** Shows the 'REAL Regulations Alignment Platform' interface. It includes a 'Browser Results' section with a table for filtering by department and company. To the right, there is a preview of the 'E&P Tollgate Manual' document, which is a signed document with multiple signatures and dates.

# Benefit of Architecting the Enterprise: Embedded, cross-process Risk/Controls

Management System | Strategy & Objectives | Roles & Responsibilities | Documents | Compliance | Business view | Admin2 (Admin2) [Default] | Log out

## OMV E&P Management System

My Favorites -

Status +

### Risks

Displayed rows: 14

Risk	Pr
ARP content not defined in planned time	D.
Asset Manager disagrees with quality of final ARP package	D.
Flawed assessment	C.
Flawed maintenance strategy control	C.
IAP changes not reflected in IAP process	D. Int PI
Miss need for change	C.
Not be able to sign 2 year IAP	D. Int PI
Not be able to sign 14 day IAP	D. Int PI
Not be able to sign 90 day IAP	D. Int PI

### Prepare for integrated activity planning

Manage Integrated Activity Planning > Manage Integrated Activity Planning > E&P Level 1 Process Map > Manage Integrated Activity Planning

Diagram | Scope | RACI | Input/Output | Risk | Description of changes

**Functional planner** | **Asset manager** | **Asset IAP team** | **Asset functional planner**

Initiate IAP process in HQ → Approve IAP calendar → IAP calendar issued

Update IAP register and repository

Review IAP standards & rules → Sign off IAP standard

Define IAP changes

Verify and entry crite

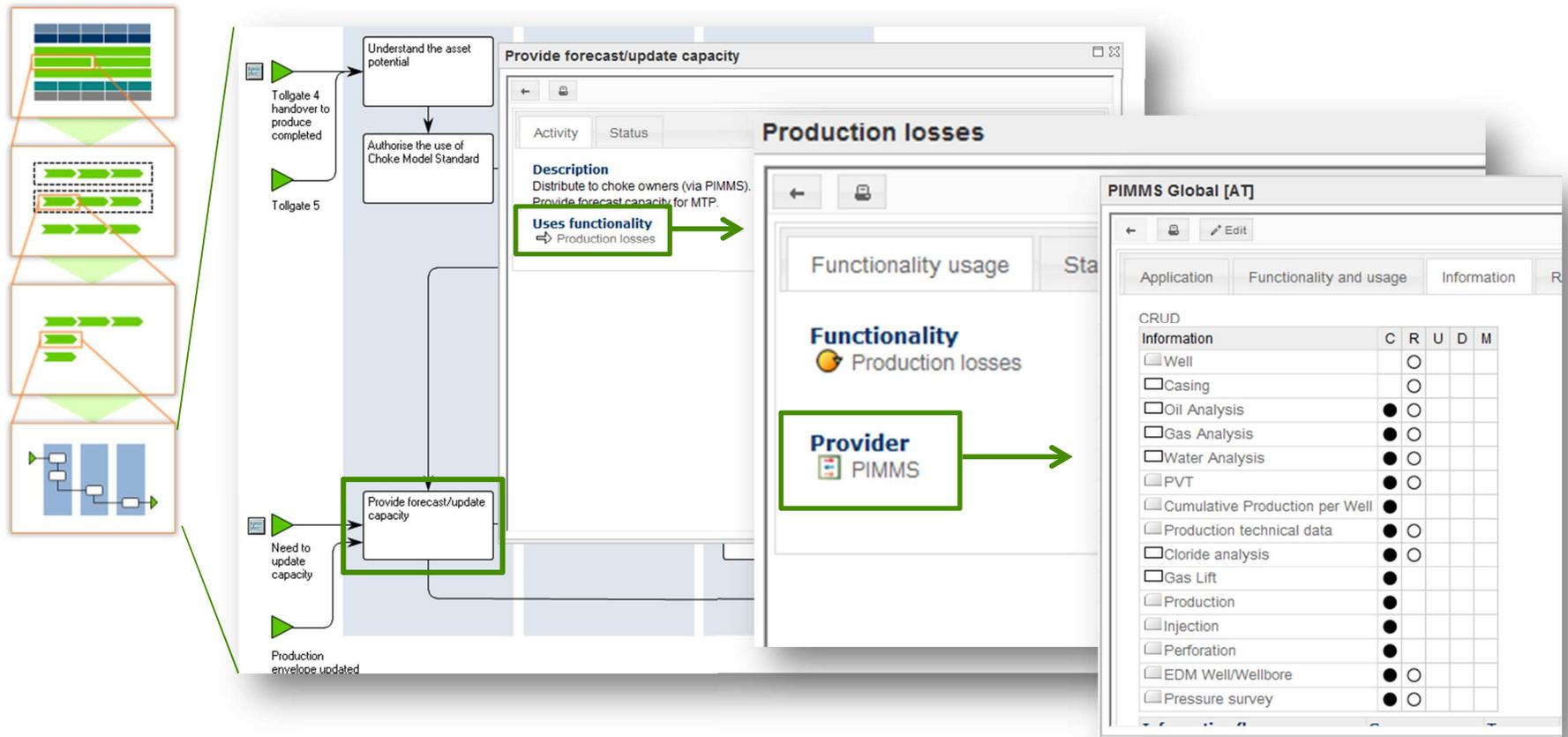
Frequency: Frequent, Probable, Seldom, Unlikely, Improbable

Consequence: 1, 2, 3, 4, 5

Review IAP process

# Benefit of Architecting the enterprise: The integrated view business and IT

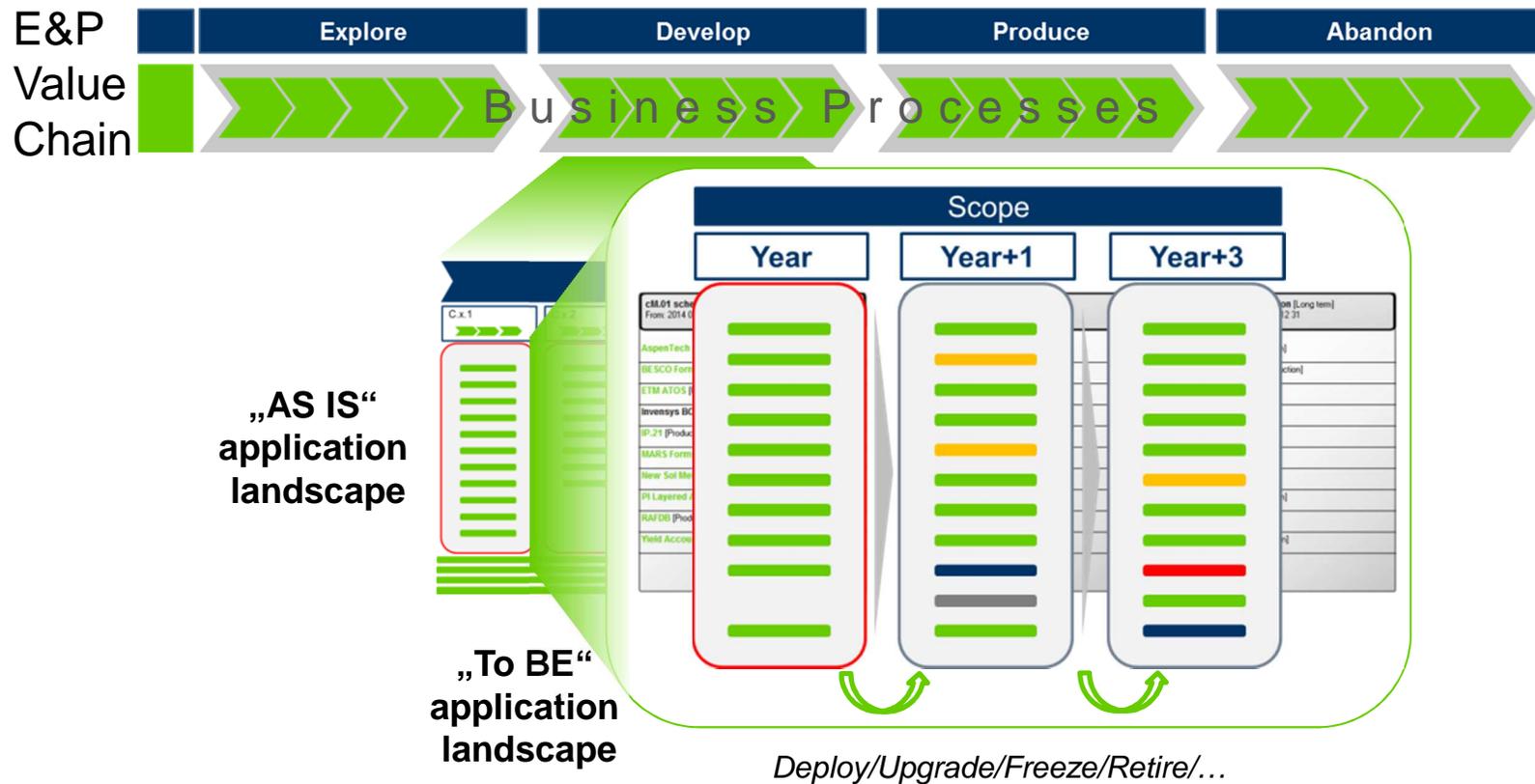
**Processes** | **Workflows** | **Information/Data** | **Application Functionality** | **Application** | **Technology**



# Planning the Future IT Landscape

## An IT Roadmap...

... schematically visualizes the planned evolution of the information systems (application) landscape over time in accordance with business- and IT strategies.





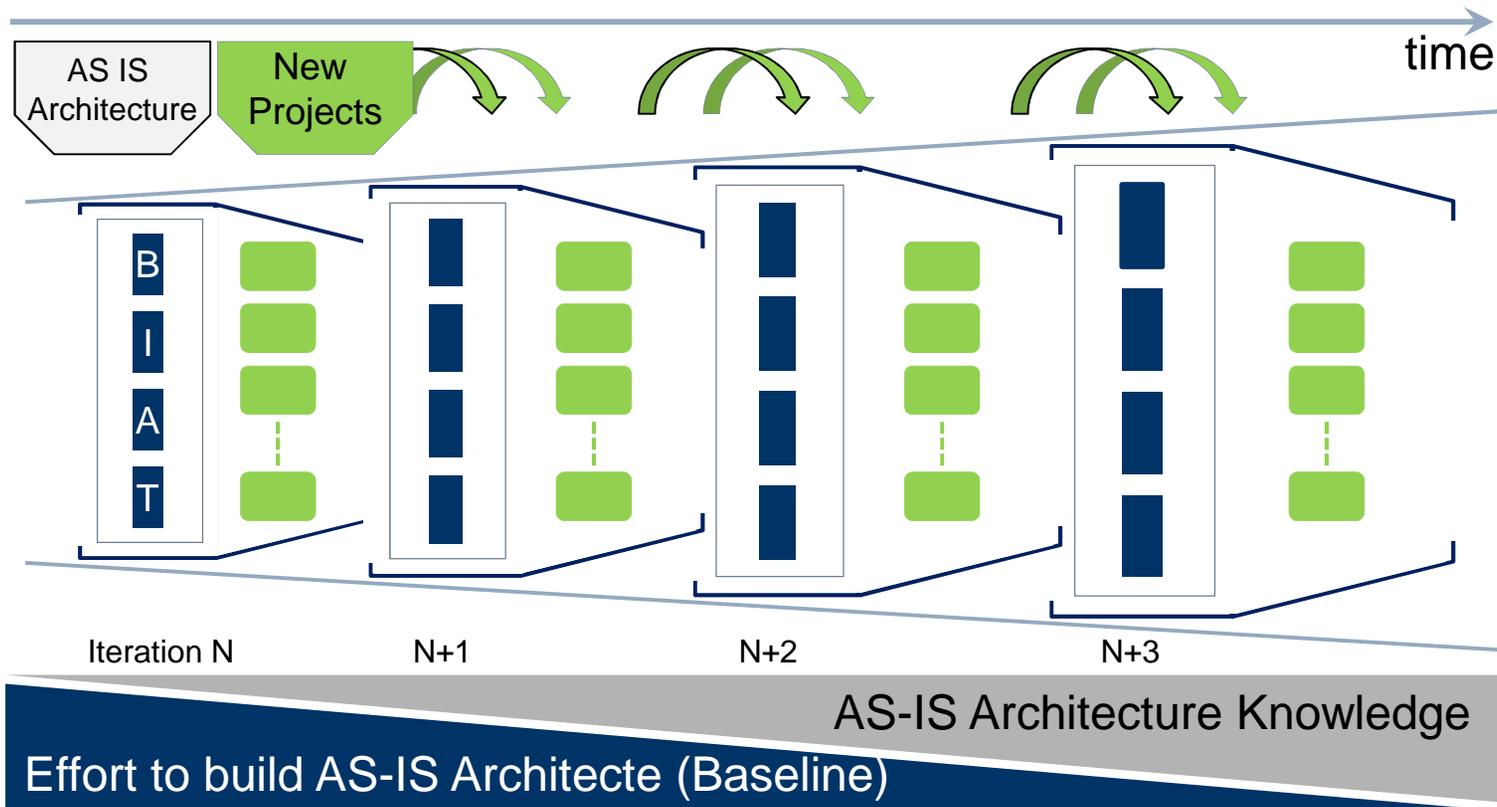
# Enterprise Architecture

## Applied inside Projects

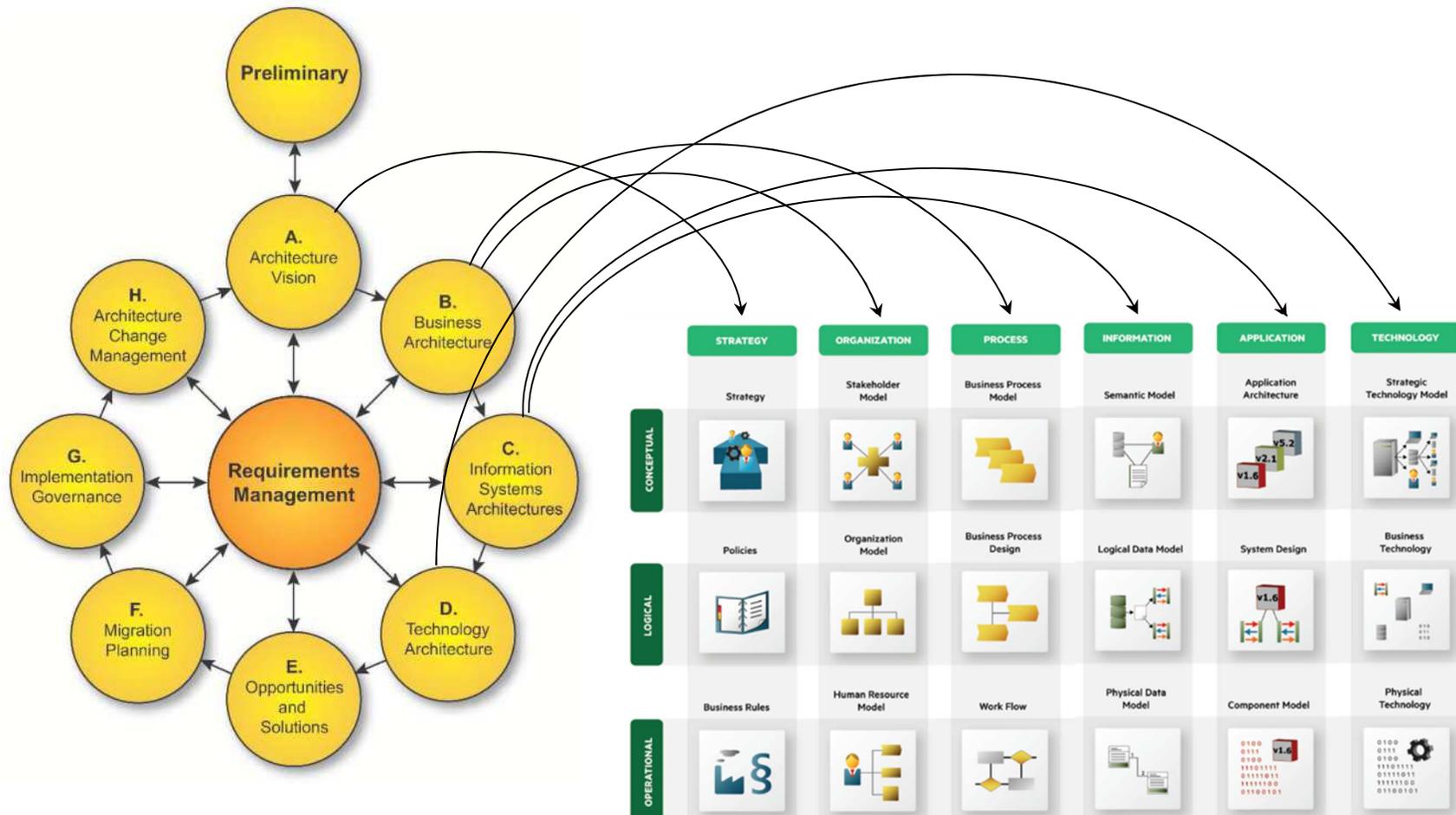
# Enterprise Architecture

## Iterative Knowledge Collection Gathering Process

Each iteration with new projects(-architecture) will increase the AS IS architecture and develop the (future) TO BE application landscape

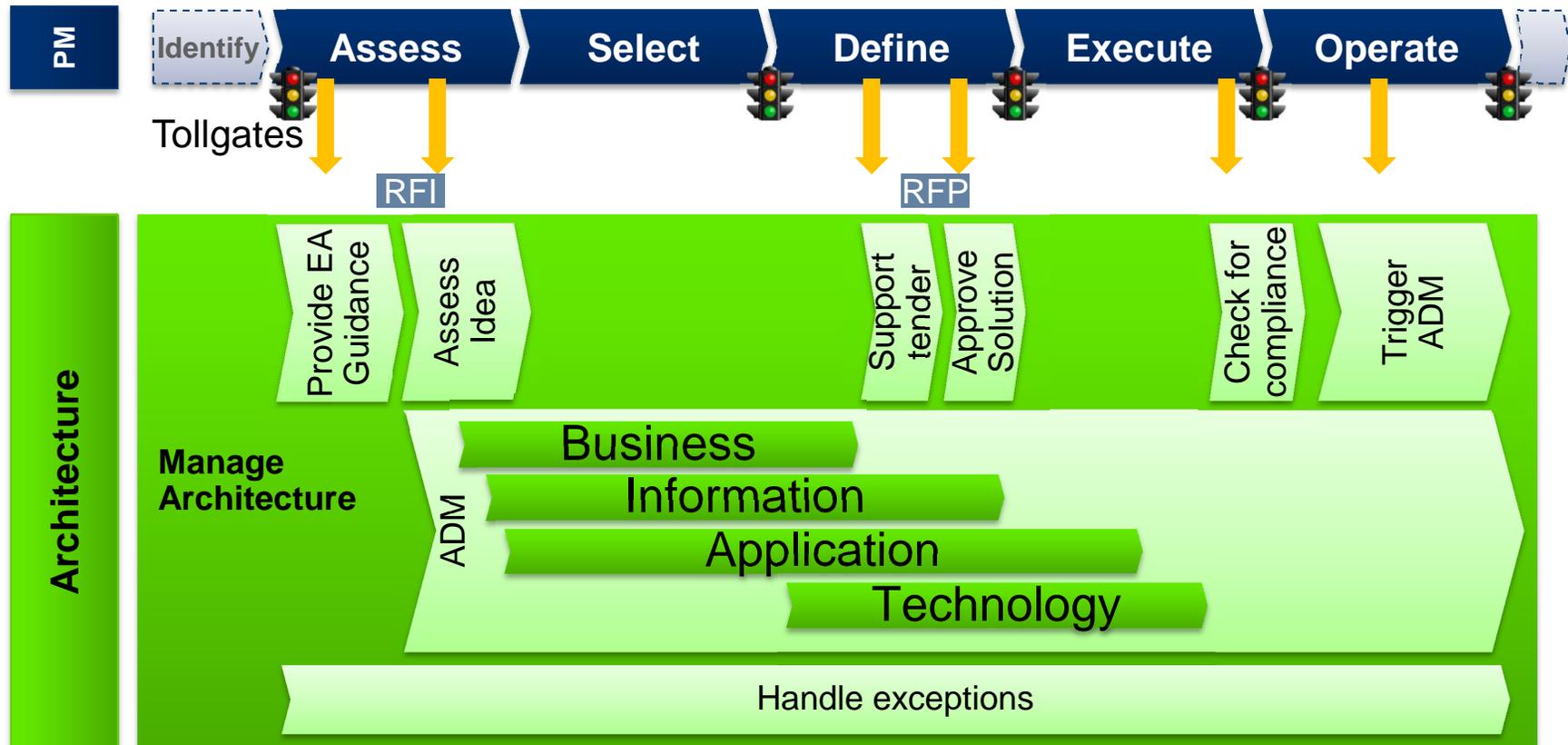


# Mapping of TOGAF Architecture Development Methodology with QualiWare Lifecycle Manager (QLM)



# Enterprise Architecture Activities are included in the Project Management Process...

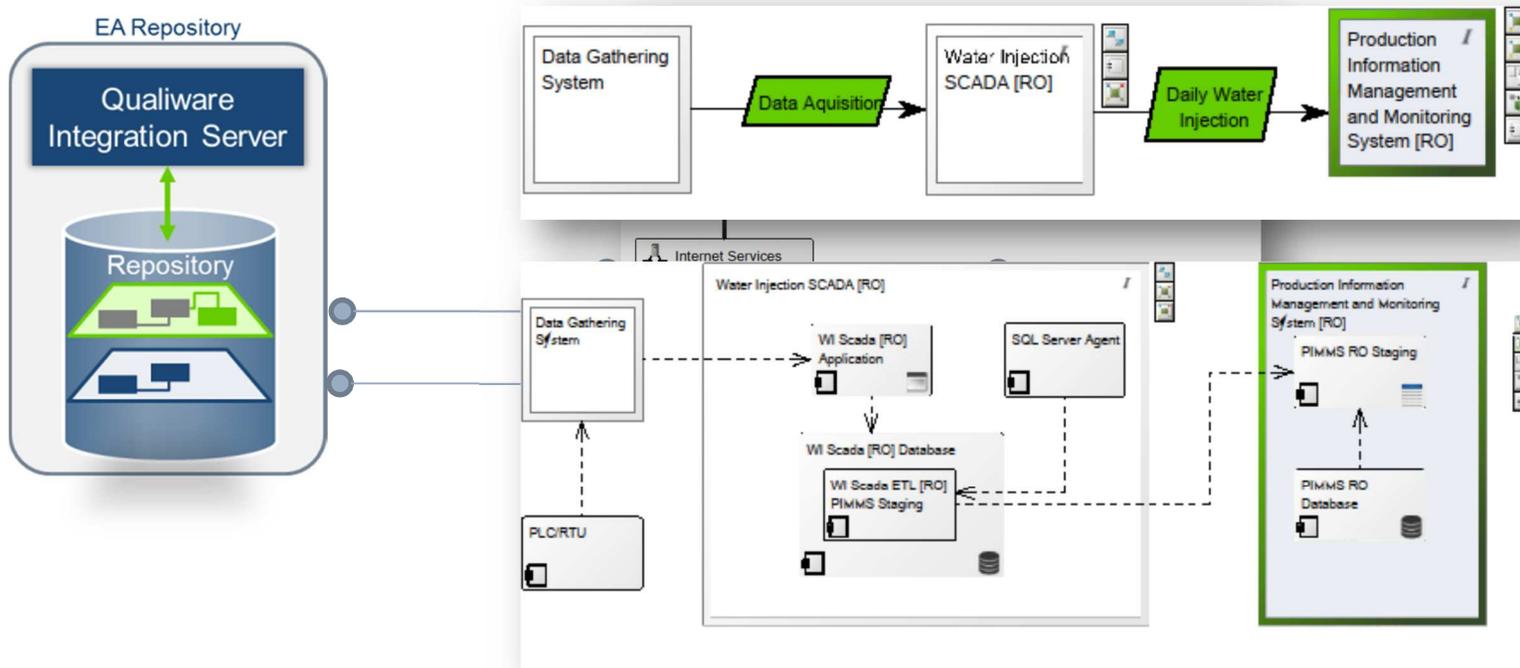
...and are based on the best practice TOGAF® ADM methodology



# Example 1

## Water Injection Project

- ▶ Currently we are working to roll out the Water Injection Project which has as scope to retrieve automatically data from Water Injection Wells into XSPOC and then transfer the data into PIMMS.

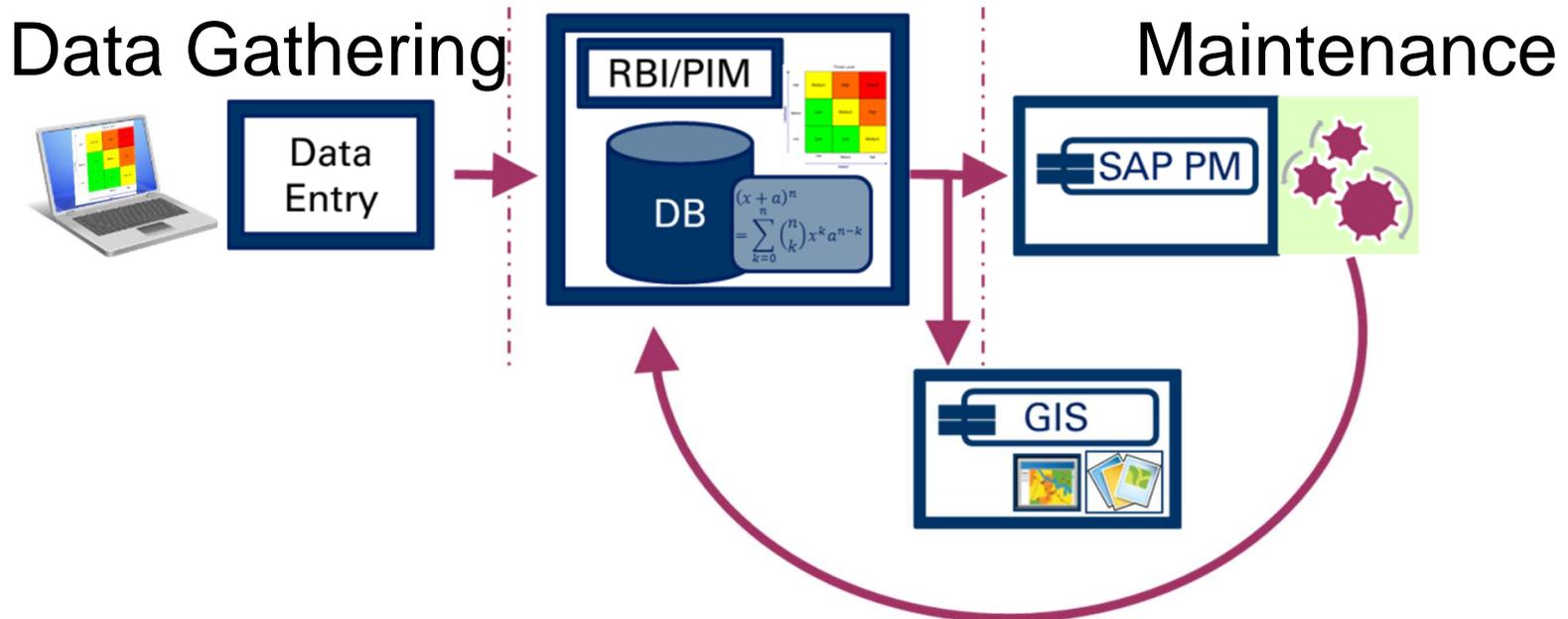




# Example 3: Risk Based Inspection / Pipeline Integrity Management

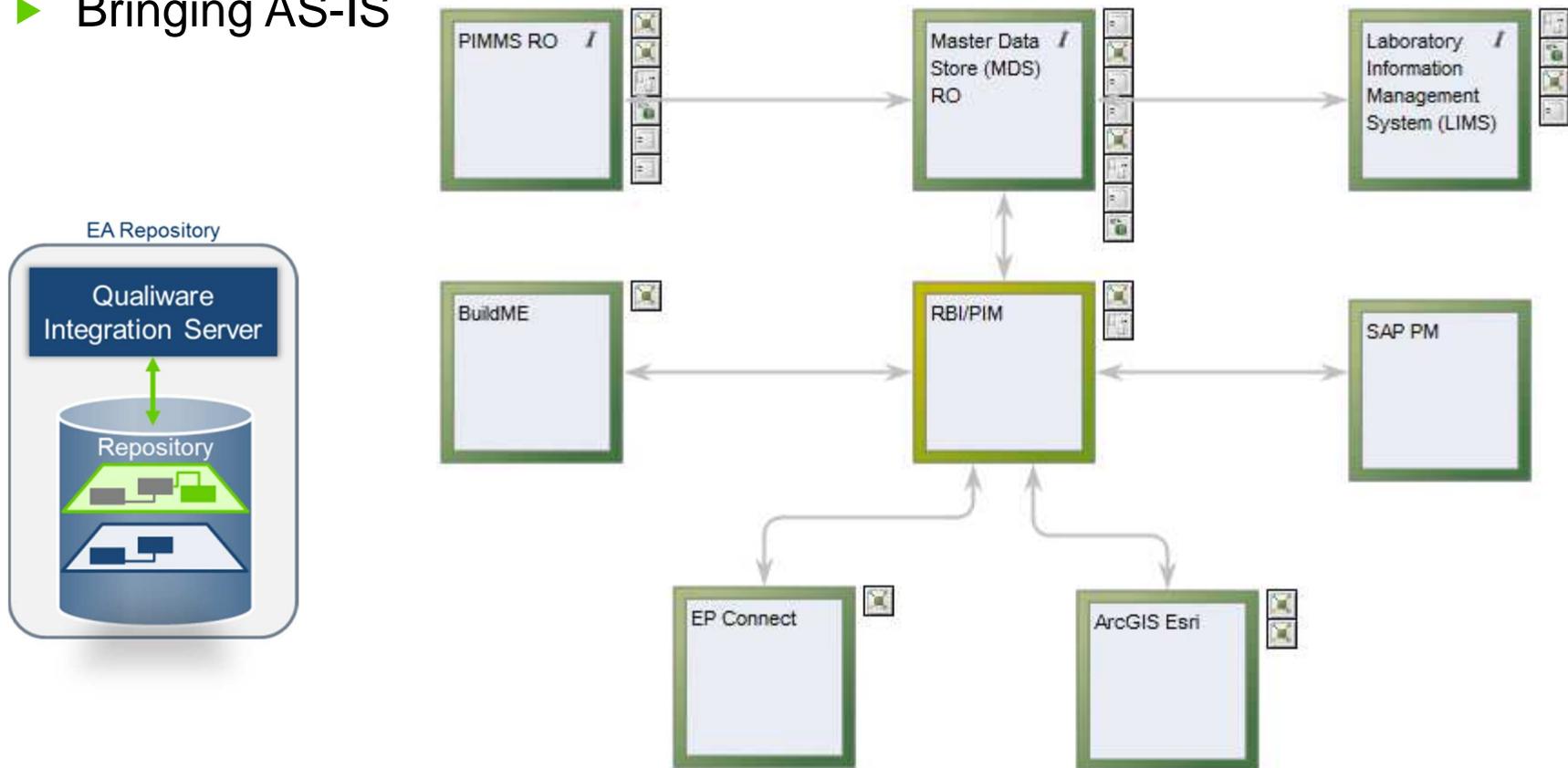
## Solution Concept

- ▶ Agreed processes and workflows
- ▶ Fully integrated applications and defined information-flows



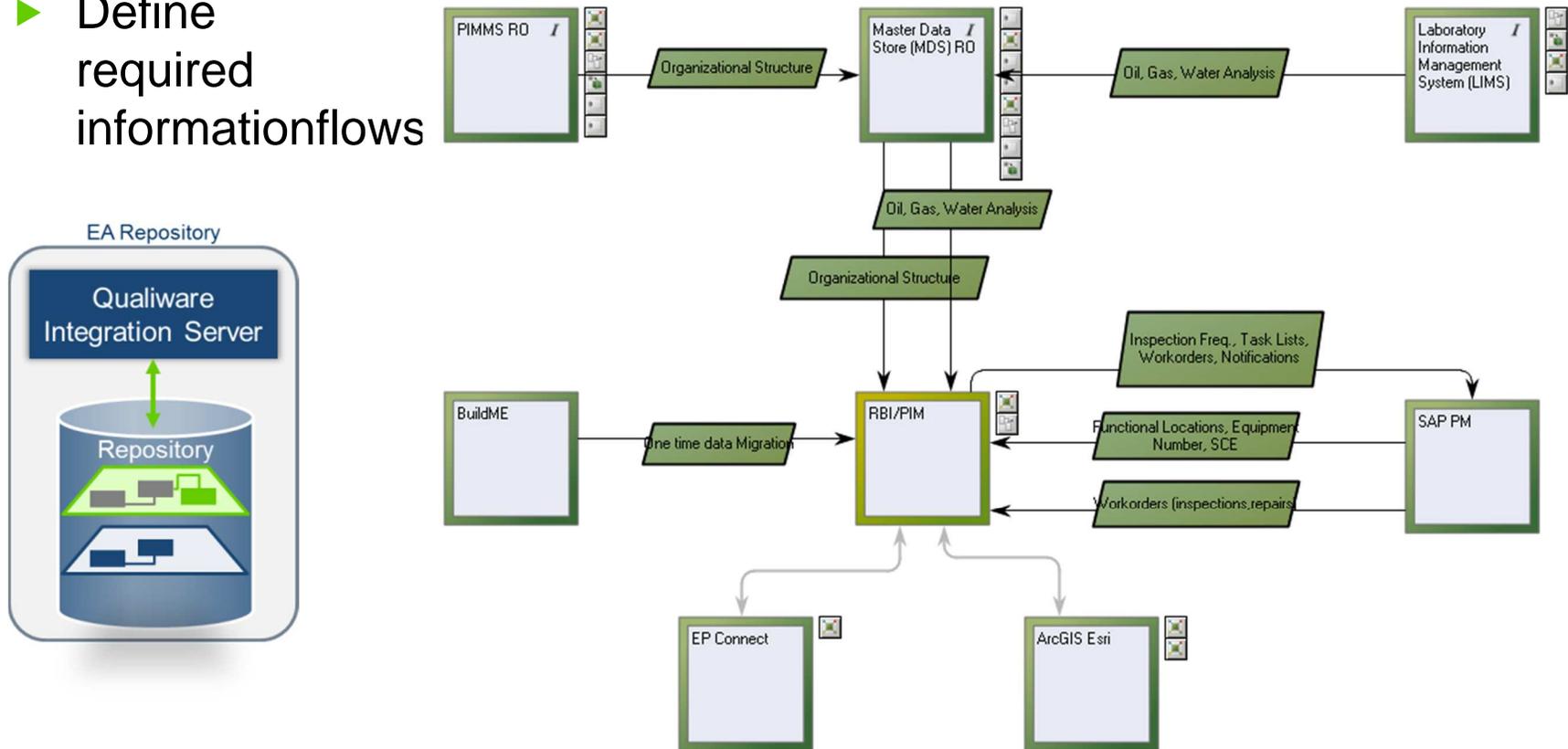
# Example 3: Designing System Dependencies

## ► Bringing AS-IS

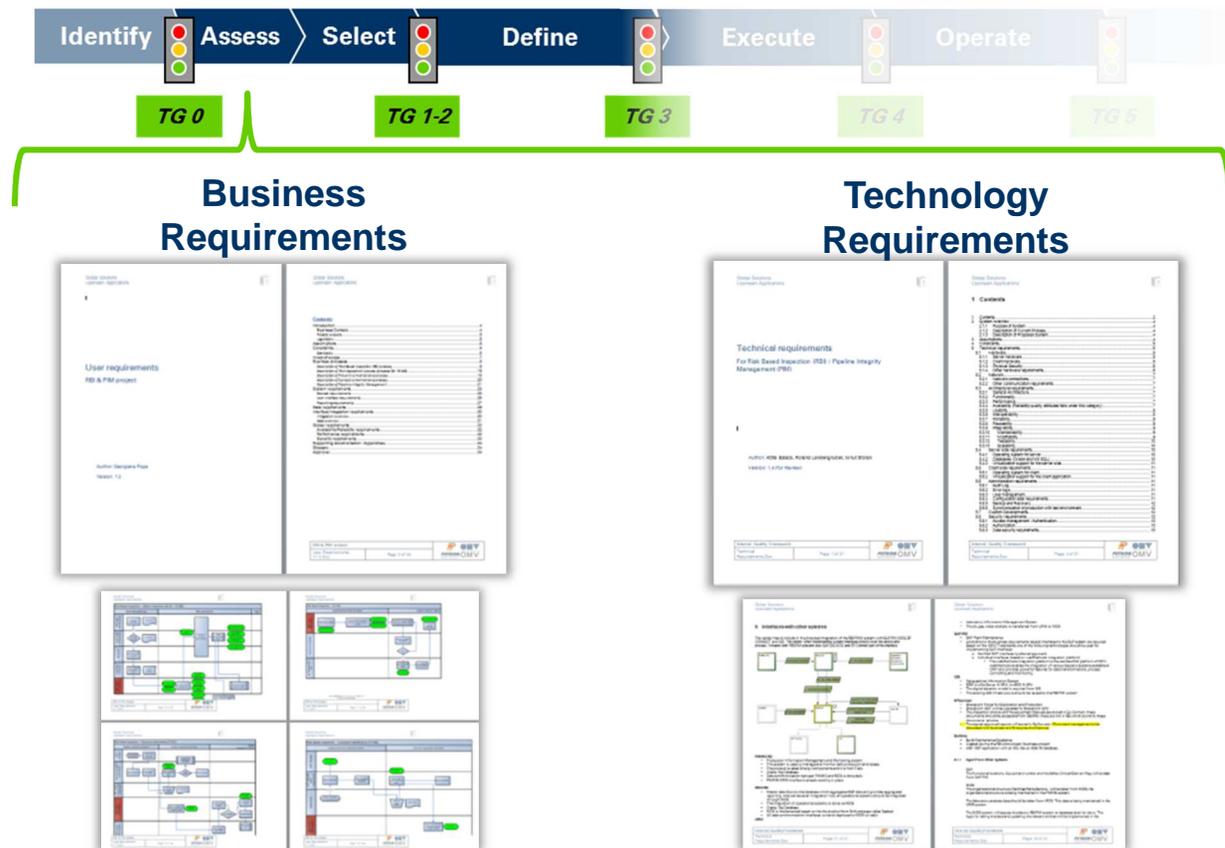


# Example 3: Designing Information Flow and Interfaces

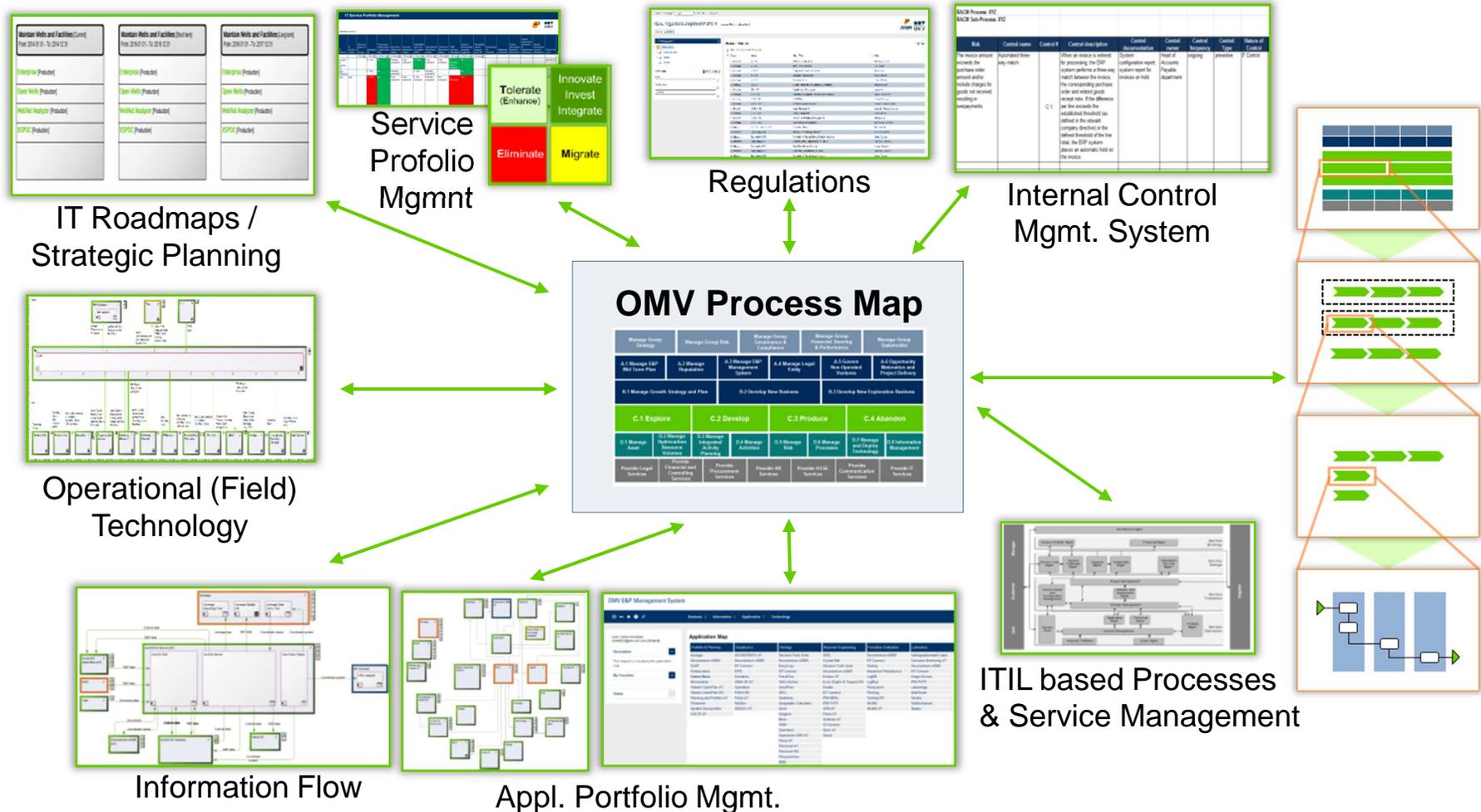
- Define required informationflows



# Example 3: As input for the RFI/RFP Process (Tender)

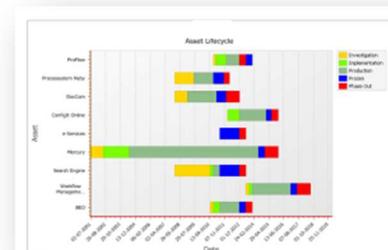
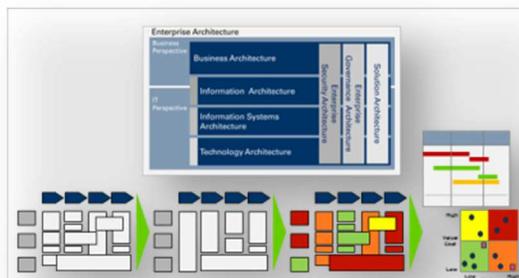


# Summary: OMV Initiatives in Business and IT Building an integrated EA “one stop shop”



# Summary

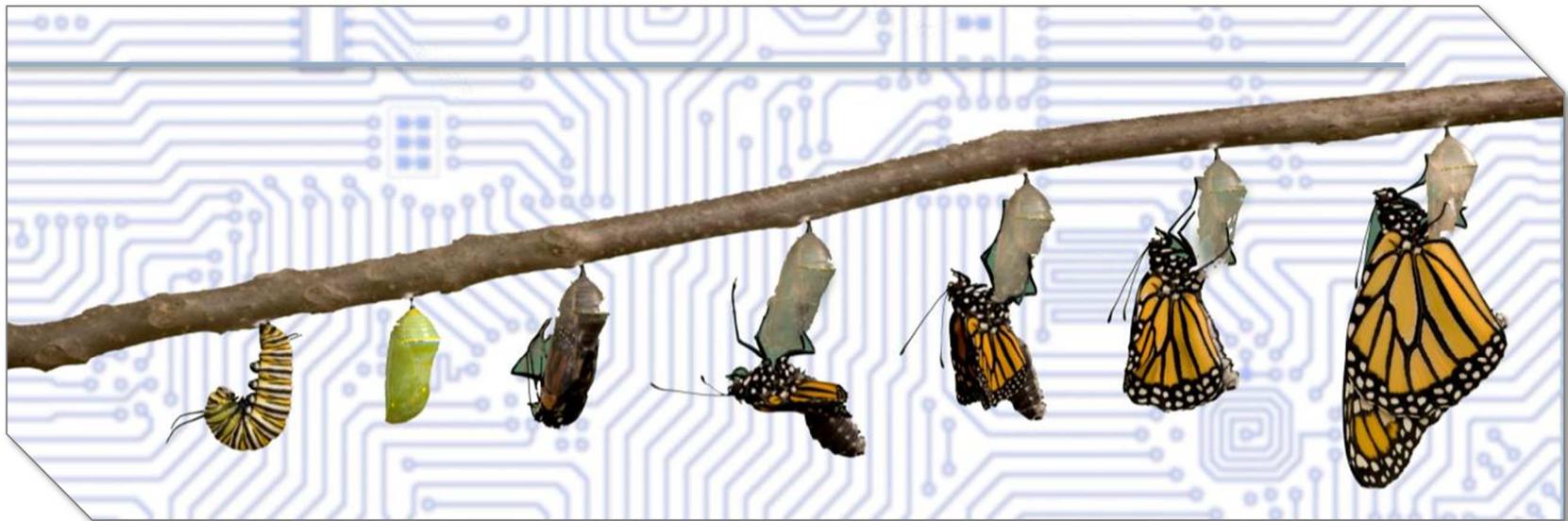
- ▶ EA allows cooperative overview of business and technology for common understanding
- ▶ Framework of various levels supports quick integrated decisions for changing business needs
- ▶ Establishes reliable information and data throughout the OMV Group
- ▶ Re-usable innovations and solutions can be uncovered and leveraged
- ▶ Supports IT cost reduction and financial transparency
- ▶ Next steps are: optimizing application portfolio, roadmaps, analytics



Thank you

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## EA Development - One step a time



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