

# *Enterprise Architecture Management*

*Knut Hinkelmann*



# *What is Enterprise Architecture Management (EAM)*

EAM is a *management practice* that establishes, maintains and uses a coherent set of **guidelines, architecture principles and governance** regimes that provide direction for [...] the **development of an enterprise's architecture** in order [to align business and IT] and to achieve its vision and strategy.

(Ahlemann et al. 2012, p. 20)



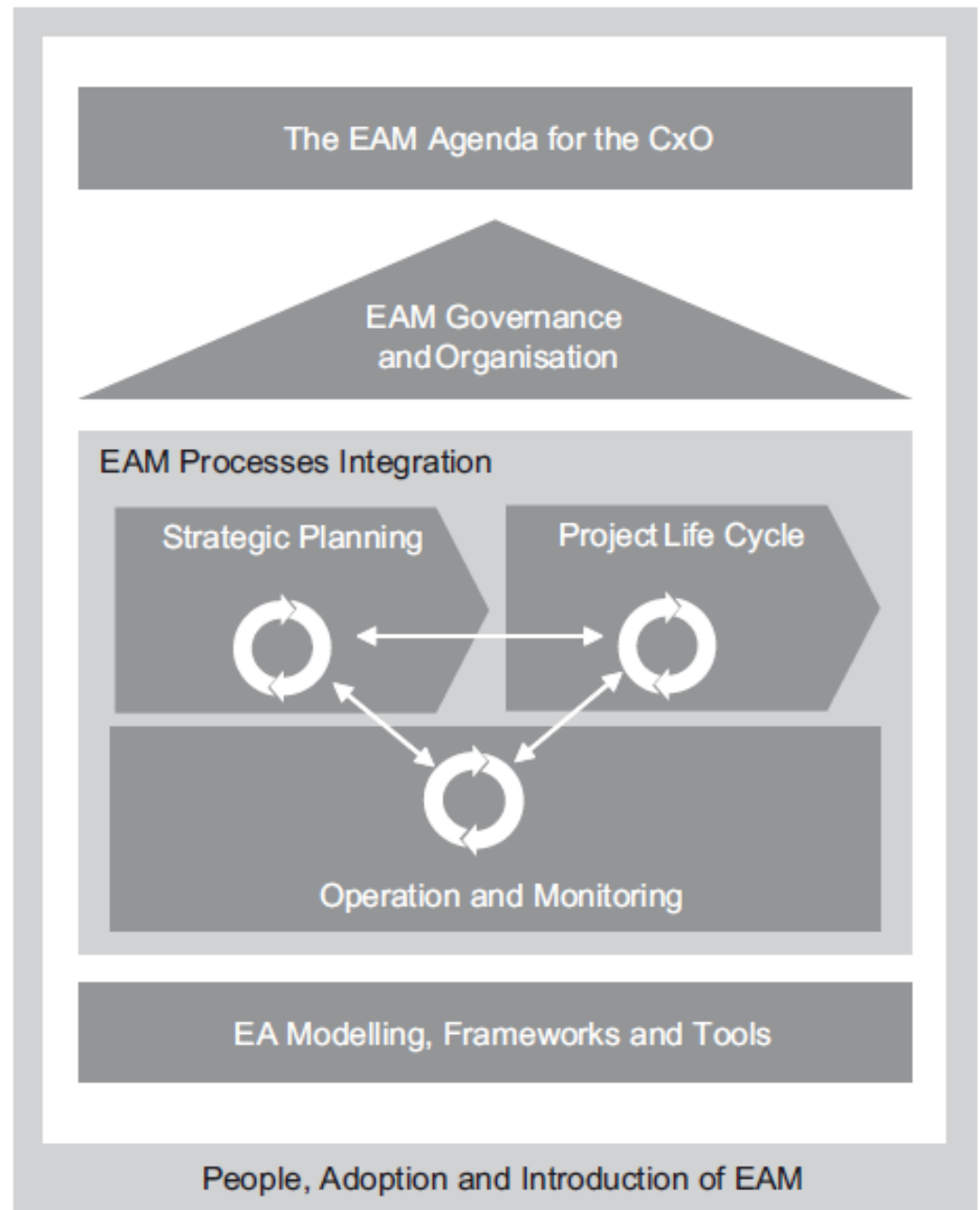
## *What EAM is NOT*

- EAM is not a tool
- EAM is not just modeling of the enterprise architecture
- EAM is not an IT function
- EAM is not a new management process
  - ◆ It changes existing processes/projects
  - ◆ it integrates new management practices into existing management activities:
    - *Strategic Management*
    - *Project Management*
    - *IT Management*
    - *Business Process Management*

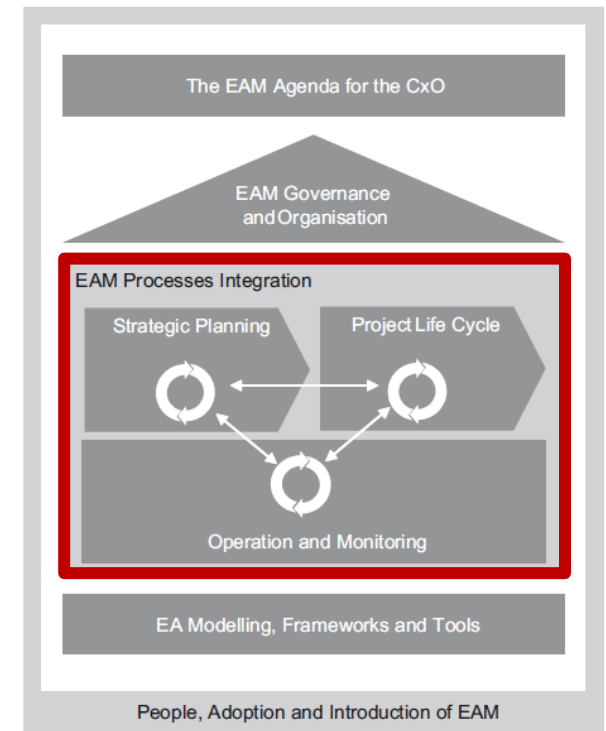
(Ahlemann et al. 2012, p. 20)



# *EAM Building Blocks*



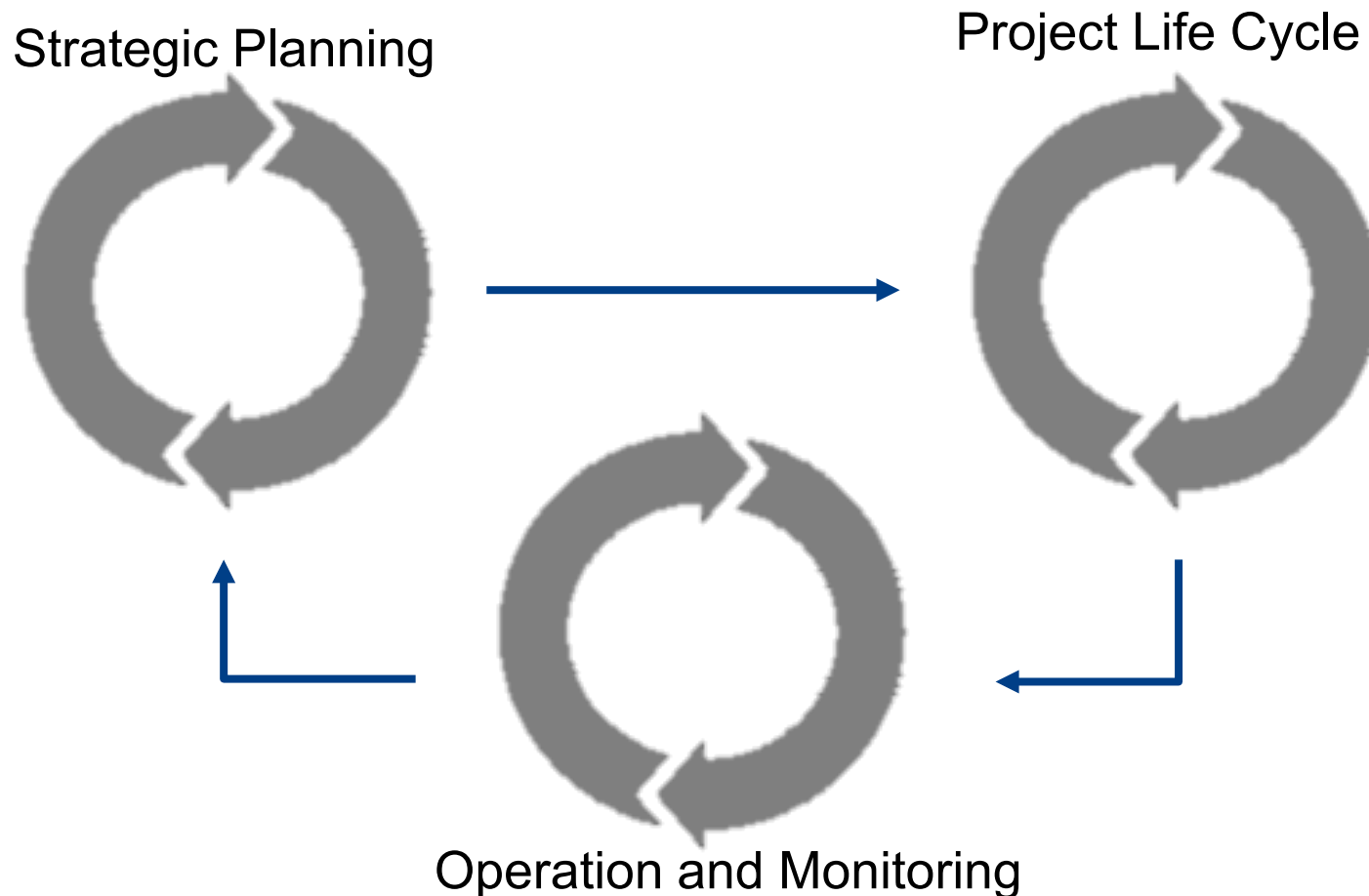
(Ahlemann et al. 2012, p. 42)



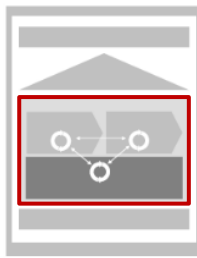
# *Integration of EAM into Management Processes and Projects*

# *EAM Integration into Processes and Projects*

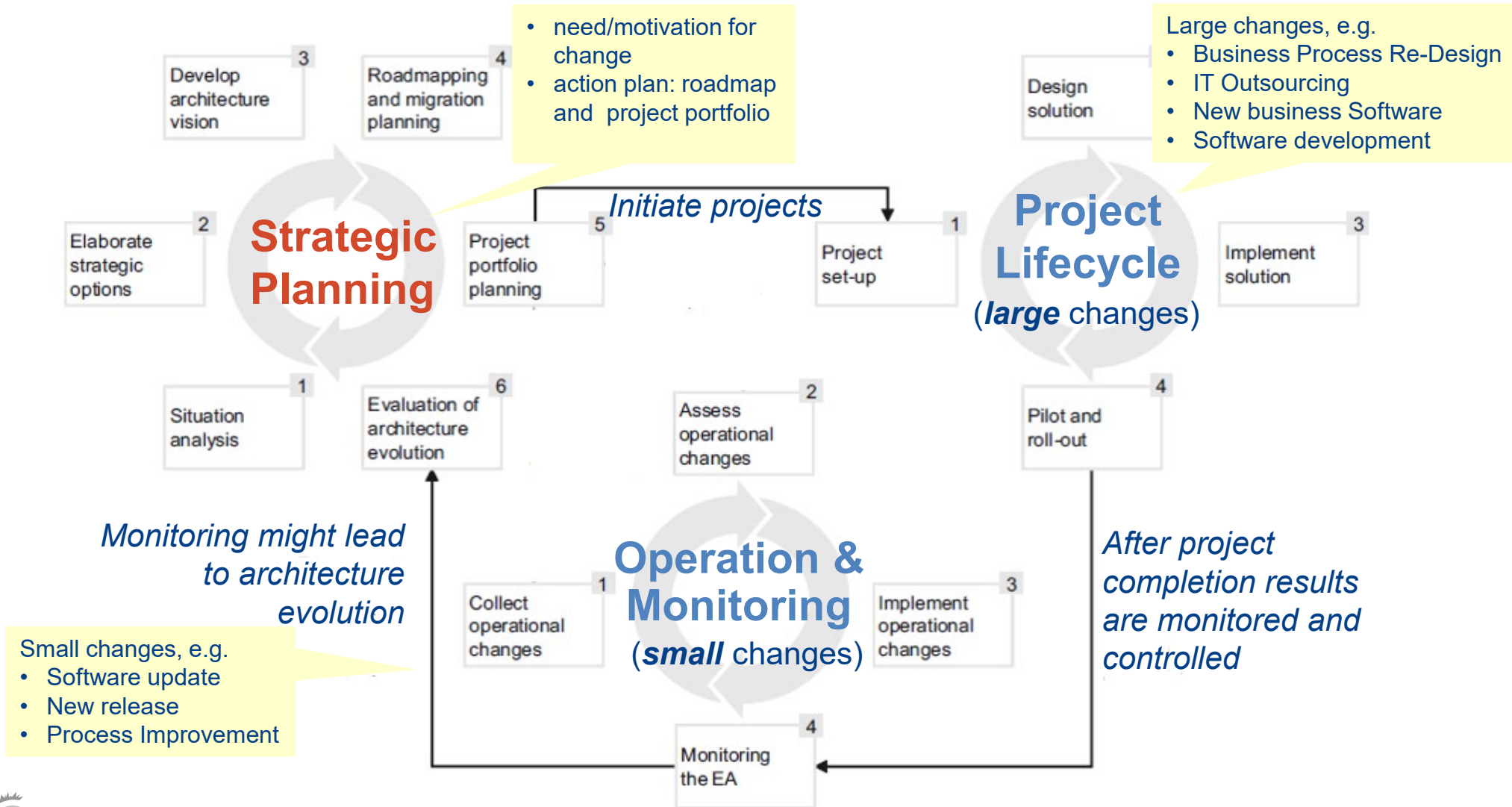
EAM adapts and changes Strategic Planning, Project Management and Operations



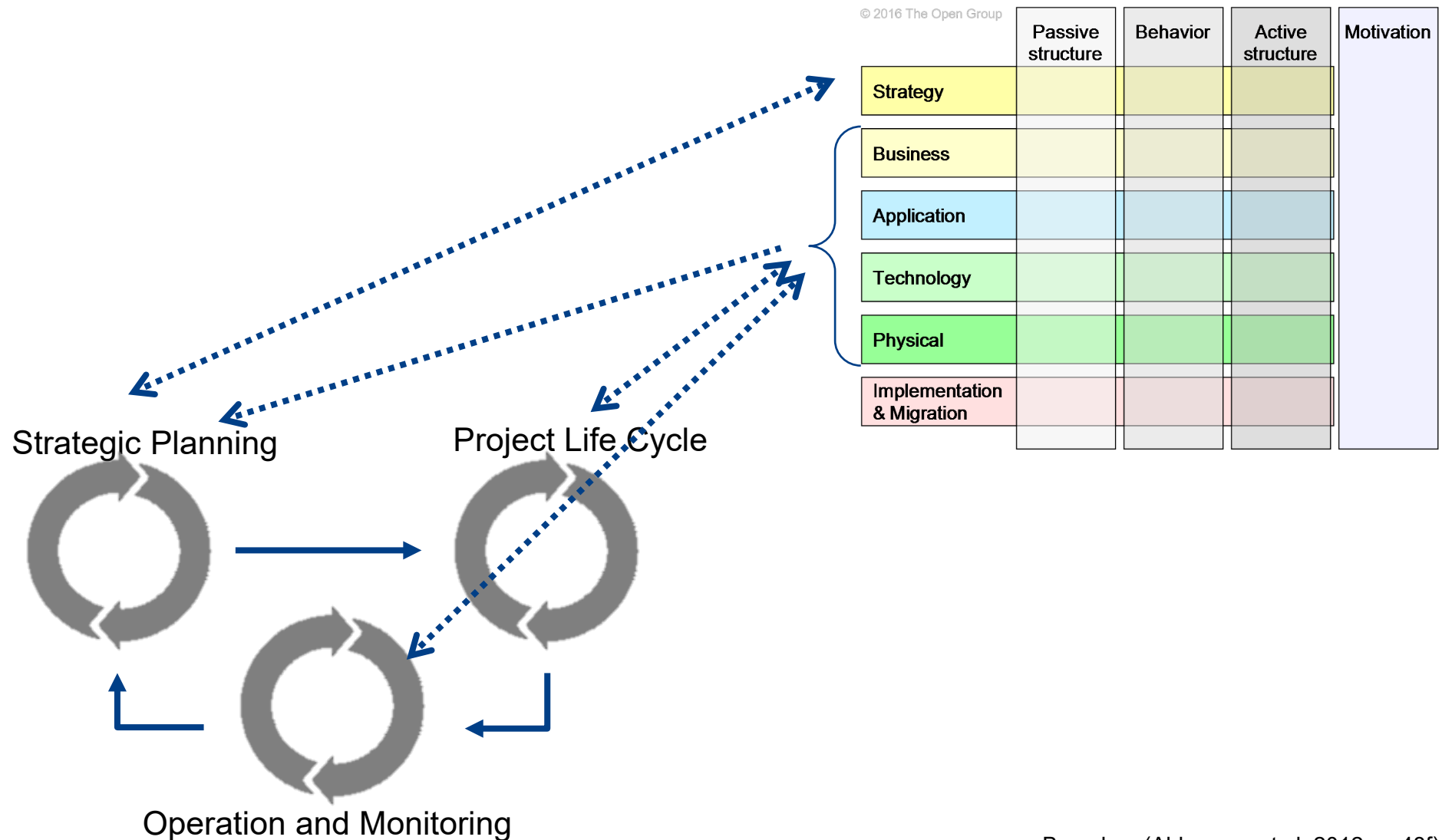
Based on (Ahlemann et al. 2012, p. 45)



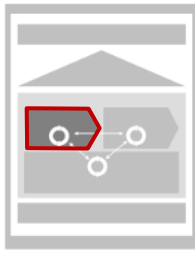
# EAM Integration into Management Processes



# EAM Integration into Management Processes



Based on (Ahlemann et al. 2012, p. 48f)

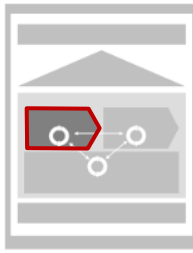


# Embedding EAM into Strategic Planning

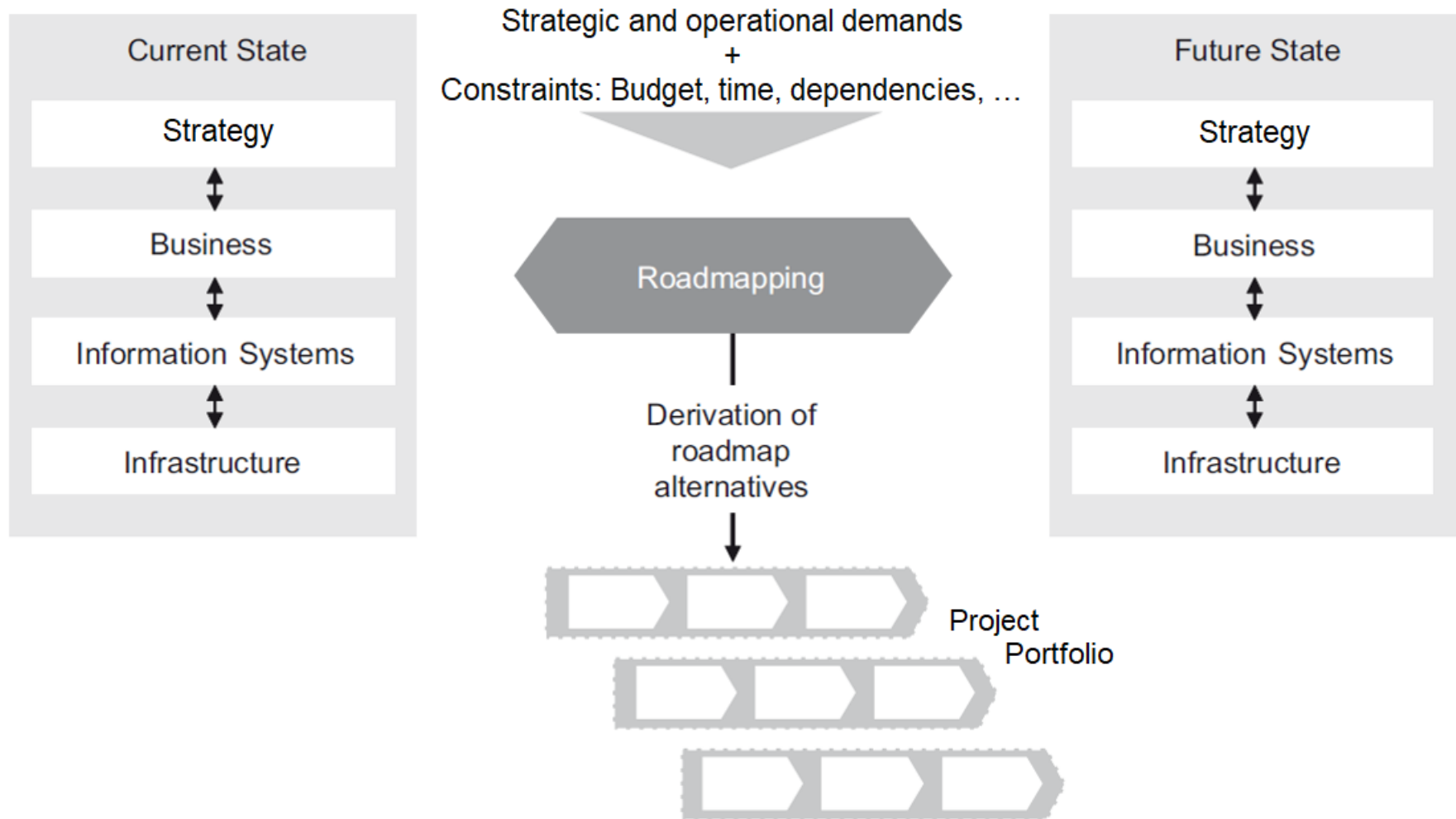
- Strategic planning can bring about initiatives for the development of EA.
- Strategic planning processes therefore need to be complemented by EAM practices
- Strategic initiatives must be
  - ◆ analysed in terms of their impact on the EA
  - ◆ documented in the EA model



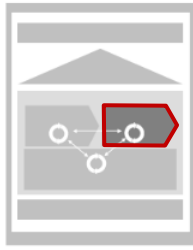
(Ahlemann et al. 2012, p. 44f)



# Roadmapping: Migration Path from As-is to Target State

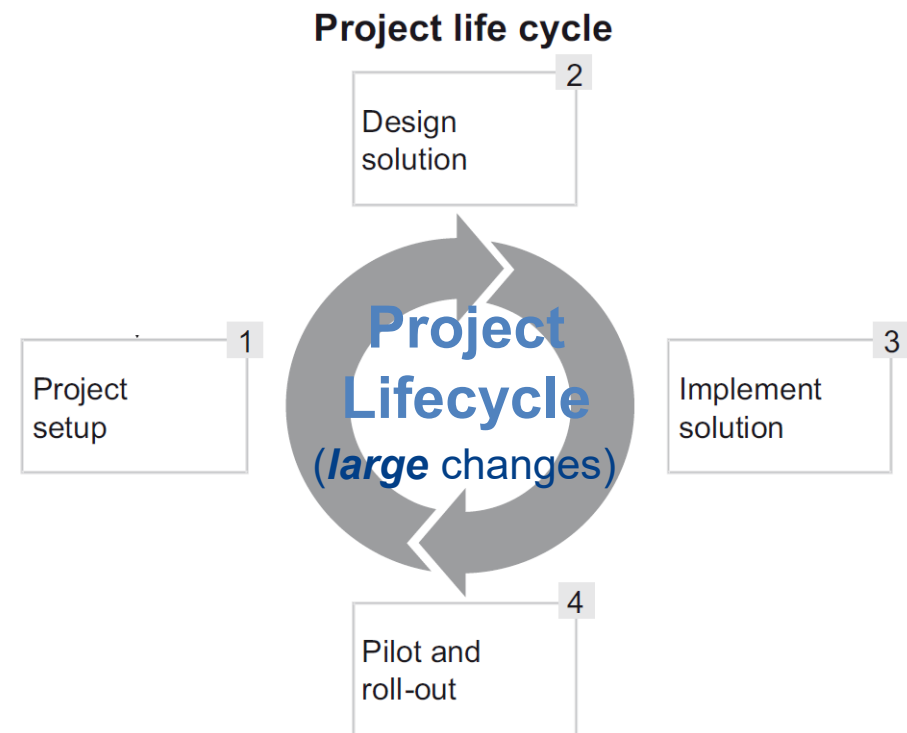


adapted from (Ahlemann et al. 2012, p. 130)

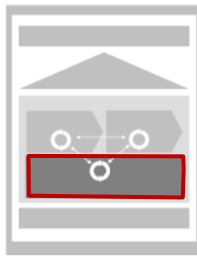


# Embedding EAM in the Project Life Cycle

- Projects are the vehicle for **large** EA changes
- Constant monitoring of decision making in projects to ensure
  - ◆ consistency with other initiatives
  - ◆ compliance with EA standards and guidelines

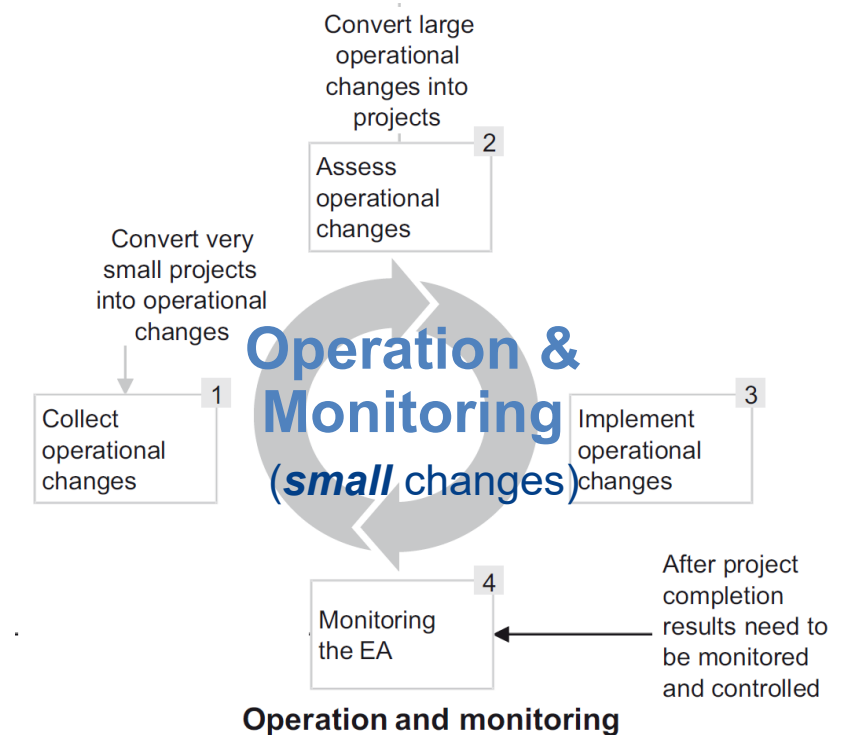


(Ahlemann et al. 2012, p. 46f)

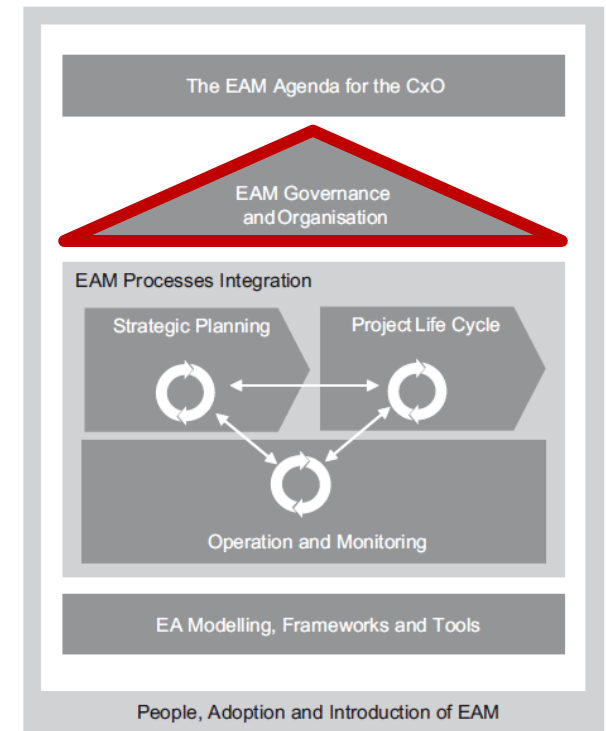


# Embedding EAM into Operations and Monitoring

- **Small changes** are handled during routine EA operations (not in projects)
- Operations and monitoring establishes procedures to counter the risks that changes ...
  - ... are in conflict with EA guidelines
  - ... cause unforeseen side effects
  - ... may not be documented properly



(Ahlemann et al. 2012, p. 47)

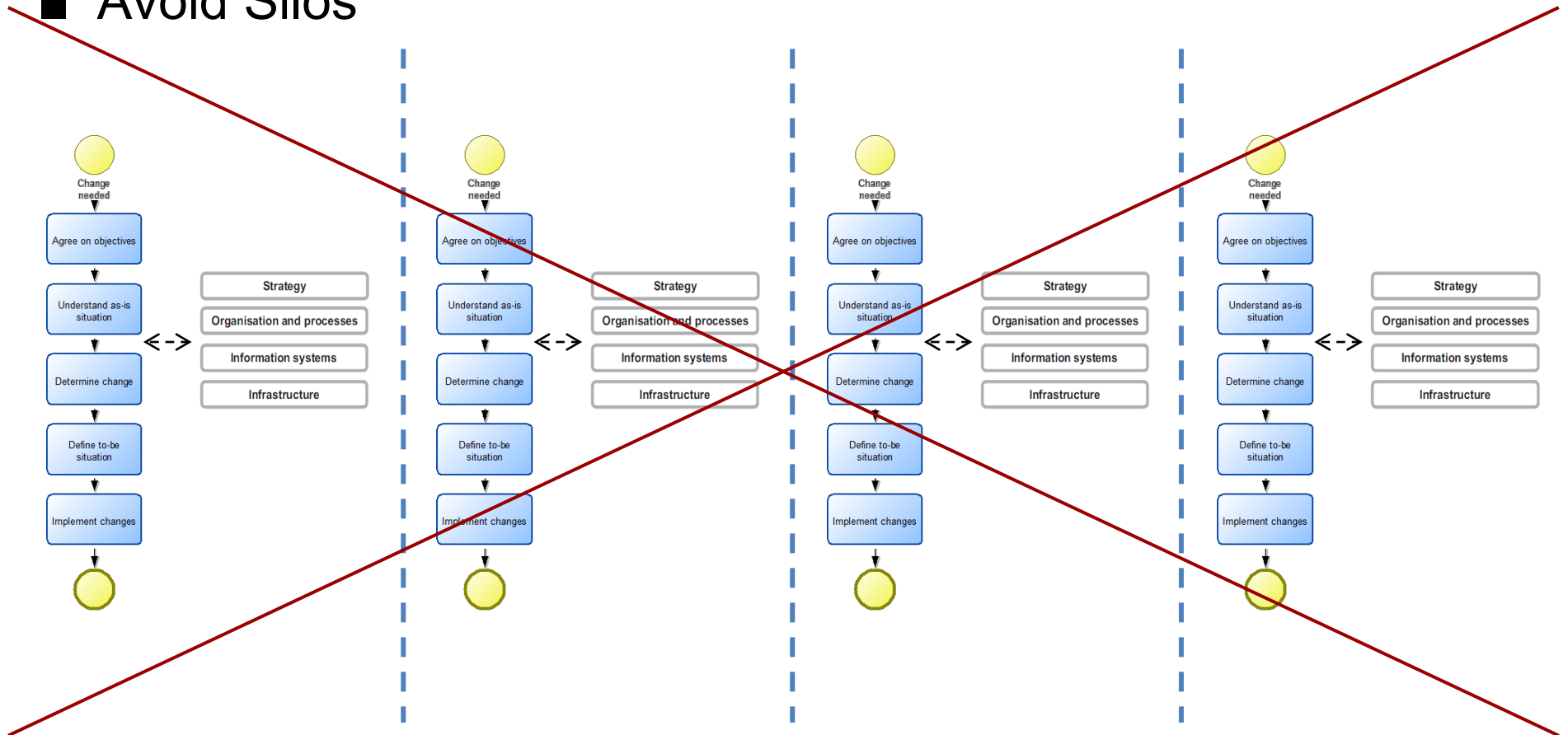


# *EAM Governance and Organisation*

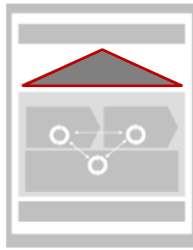
EAM governance and organisation deal with the manner in which EAM is institutionalised in an organisation.

# Why Governance

## ■ Avoid Silos



# *EAM Governance*

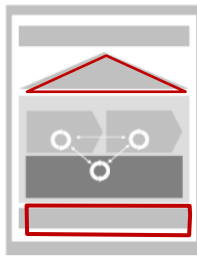


# *EAM Governance*

- **EAM Governance:** ensures that good decisions are made
  - ◆ the *establishment of guidelines, principles, standards and references* to ensure that the right things are done at the right time,
  - ◆ Ensure compliance with architecture standards and coordinated decision making *within project life cycles* and other organisational processes

(Ahlemann et al. 2012, p. 91)





## *Frameworks, Modelling and Tools*

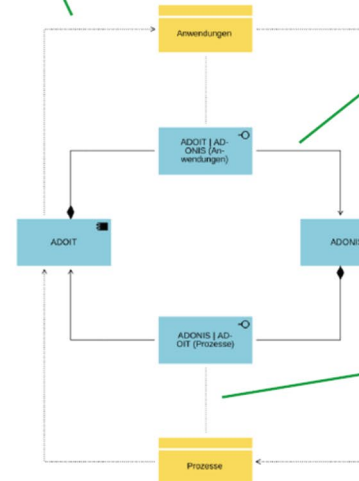
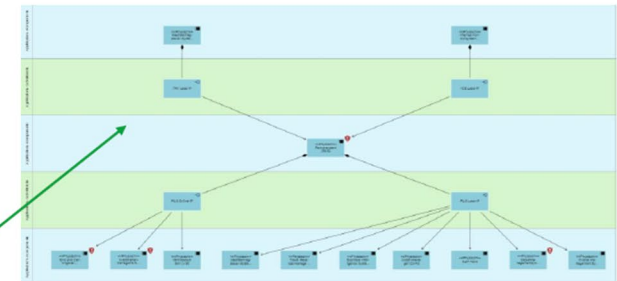
- EA Governance determines the use of Frameworks, Tools and Modeling Approaches
  - ◆ Frameworks comprise guidelines, procedural models and methodologies for the EA's structured development.
  - ◆ Software tools have the potential to lift these activities to a new productivity level.
  - ◆ Appropriate modeling, views and data support decision making

(Ahlemann et al. 2012, p. 48f)

# Patterns for Models and Views

## Modeling of data flows

|                 | Business Partner | Ops and Zahlungsverfahren | Kapitalanlage-System (TAX) | Kreditkartenmanagementsystem (KRE) | Partnersystem (PAS) | STANDARD Banking | Vertriebsystem (VDS) |
|-----------------|------------------|---------------------------|----------------------------|------------------------------------|---------------------|------------------|----------------------|
| Wegst           |                  |                           |                            |                                    |                     | R W              | R W                  |
| Depot           |                  |                           |                            |                                    |                     | R                |                      |
| Bezahlungskunde | R                | R                         |                            |                                    | R W                 |                  | R                    |
| Konto           |                  | R W                       | R                          | R W                                |                     |                  |                      |
| Partner         | R                |                           |                            |                                    | R W                 |                  |                      |
| Partneradresse  | R                |                           |                            | R                                  | R W                 |                  |                      |

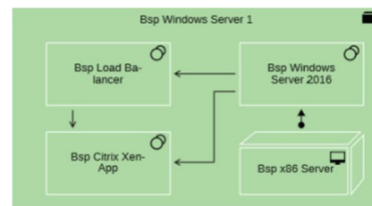


|                                        | Audit        | Beteiligungs | Depot | Konto               | Partner        |
|----------------------------------------|--------------|--------------|-------|---------------------|----------------|
| Auditdokumentationssystem (ADONIS-AUD) | AUD Leser-IF |              |       |                     |                |
| Bank Equity System (BEQ)               |              | BEQ Leser-IF |       |                     |                |
| Business Partner                       |              |              |       | PAS Leser-IF        | PAS Leser-IF   |
| Kapitalanlage-System (ADONIS-KAS)      | KAS Leser-IF |              |       |                     | STANDARD BP-IF |
| Kapitalanlage-System (TAX)             |              |              |       | TAX Leser-IF        |                |
| Partnersystem (PAS)                    |              |              |       | PAS Leser-IF        | PAS Leser-IF   |
| STANDARD Banking                       |              |              |       | STANDARD Banking-IF |                |

## Pattern for describing servers

Servers can be further detailed. In this case, the node would be used to represent a server

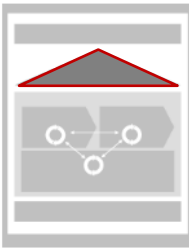
- This node contains the actual device (e.g. x86 server)
- System Software (e.g. Windows Server 2016)
- If necessary System Software Load Balancer
- If applicable, system software Citrix Xen App



See guest lecture of Roman Brun

# *Architecture Principles - TOGAF*

- Principles are general guidelines and rules that inform and support the way in which an organization sets about fulfilling its mission
- *Architecture* Principles define the underlying general rules and guidelines for the use and deployment of all IT resources and assets across the enterprise.
- There are architecture principles for all sub-architectures: business, data, application, technology



# *Establishing Guidelines: Examples for Architecture Principles*

Each application service is provided by only ONE defined application across the company.

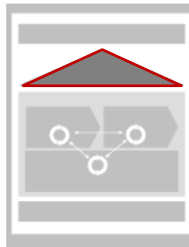
For all our applications a valid support and maintenance contract needs to be in place.

For all our applications modifications/customizing shall be avoided.

For all applications a responsible person as well as a deputy is defined in the IT department.

Each data object is created, updated and deleted by just one defined application. All other applications just read this data object.

Only proved technology is allowed to be used for the operation of applications and interfaces.



# *TOGAF: Example of an Application Architecture Principles*

## Principle 5: Common Use Applications

### Statement:

Development of applications used across the enterprise is preferred over the development of similar or duplicative applications which are only provided to a particular organization.

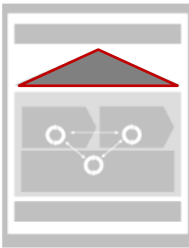
### Rationale:

Duplicative capability is expensive and proliferates conflicting data.

### Implications:

- Organizations which depend on a capability which does not serve the entire enterprise must change over to the replacement enterprise-wide capability; this will require establishment of and adherence to a policy requiring this
- Organizations will not be allowed to develop capabilities for their own use which are similar/duplicative of enterprise-wide capabilities; in this way, expenditures of scarce resources to develop essentially the same capability in marginally different ways will be reduced
- Data and information used to support enterprise decision-making will be standardized to a much greater extent than previously

→ Avoid silos



# *TOGAF: Examples of Data Principles*

## **Principle 10: Data is an Asset**

Data is an asset that has value to the enterprise and is managed accordingly.

## **Principle 11: Data is Shared**

Users have access to the data necessary to perform their duties; therefore, data is shared across enterprise functions and organizations.

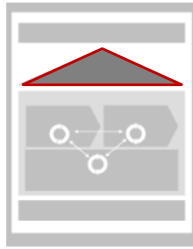
## **Principle 12: Data is Accessible**

Data is accessible for users to perform their functions.

## **Principle 14: Common Vocabulary and Data Definitions**

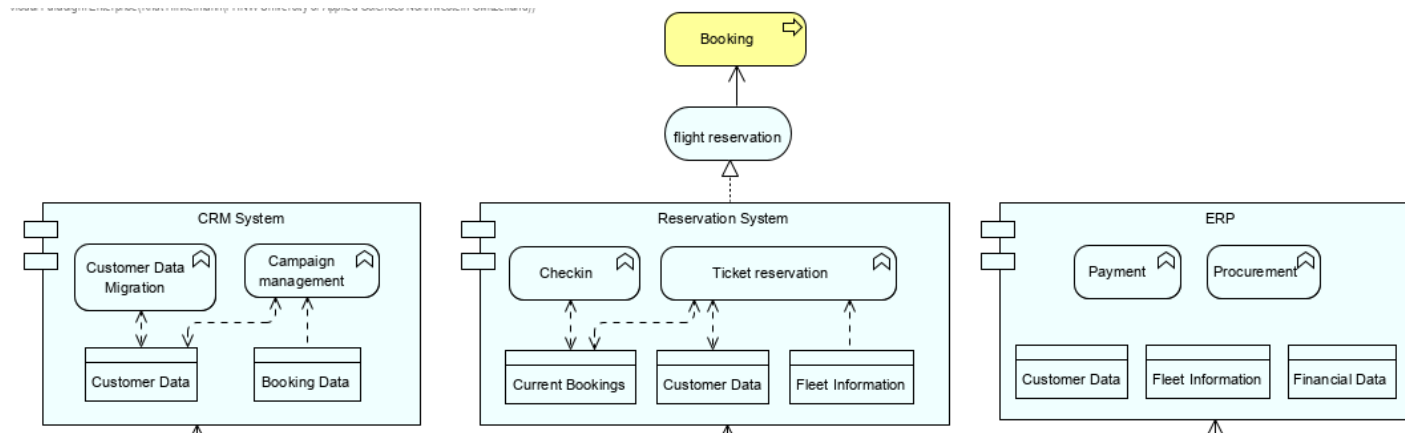
Data is defined consistently throughout the enterprise, and the definitions are understandable and available to all users.





## Example: Master Data Management

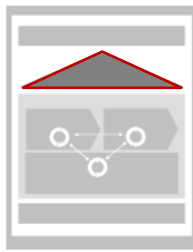
How to make sure that all systems use the same master data about customers?



- Master data represents data about the business entities that provide context for business transactions.<sup>1)</sup>
- Master data is the consistent and uniform set of identifiers and extended attributes that describes the core entities of the enterprise including customers, prospects, citizens, suppliers, sites, hierarchies and chart of accounts.<sup>2)</sup>

<sup>1)</sup> DAMA-DMBOK: Data Management Body of Knowledge. Data Management Association. 2017. ISBN 978-1634622349.

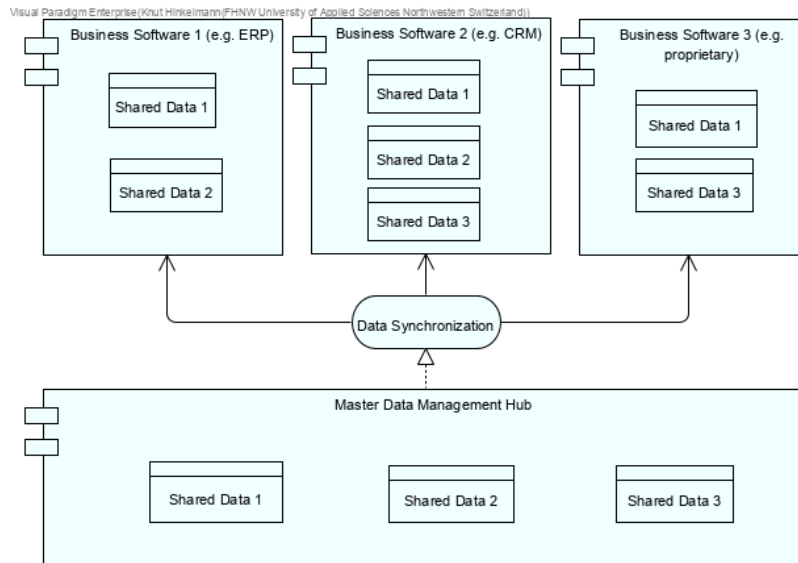
<sup>2)</sup> <https://www.gartner.com/en/information-technology/glossary/master-data-management-mdm>



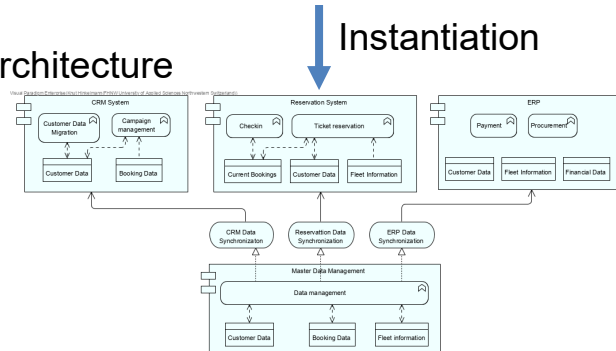
# Reference Architecture

## Example: Master Data Management

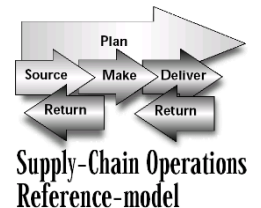
### Reference architecture



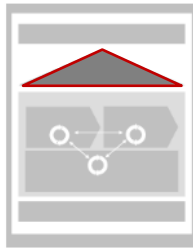
### Concrete architecture



- Reference architectures are *generalised* models of best practices
- Sources:
  - ◆ Corporate (proprietary)
  - ◆ Vendors (e.g. from SAP)
  - ◆ Industry Sectors (e.g. SCOR for supply chain management)
- Instantiated and made concrete in a company architecture



# *EAM Organisation*



## *EAM Organisation*

- **EAM Organisation:** Having the right people, with the right skills, doing the right things in a correctly empowered way.
  - ◆ the definition and operation of organisational bodies, roles and committees
  - ◆ the specification of their tasks, responsibilities and decision rights
- Balance local autonomy and global coordination

(Ahlemann et al. 2012, p. 42f)



# Processes and Responsibilities



Architect



Application Responsible



Technology responsible



Process manager

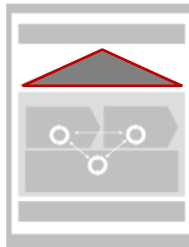


► Who **maintains** information?

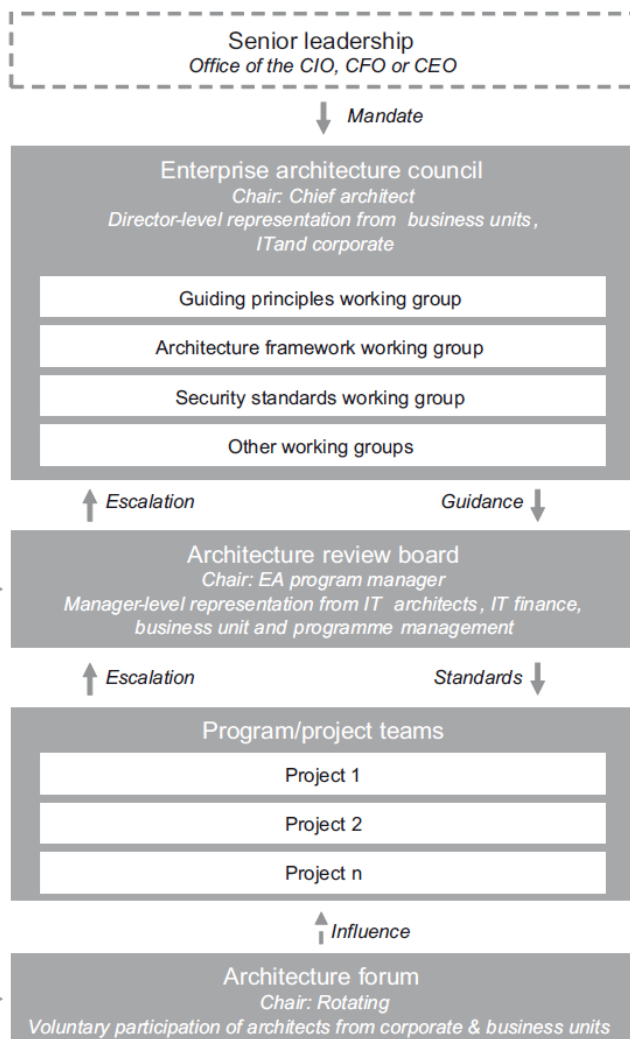
► Who **checks** information?

► Who **consums** information?

► Who **must be informed**?



# Organizational Bodies for EAM Governance



This Architecture Governance has organisational bodies for governance task

## ■ EA Council:

- ◆ Setting guiding principles, standards, reference architectures

## ■ Review Board:

- ◆ Enforcing the guidelines
- ◆ Ensuring compliance with architecture standards within project life cycles

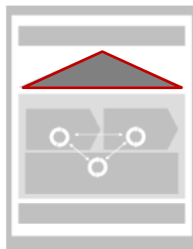
## ■ Project Teams / Management

- ◆ Developing/changing the architecture

## ■ Architecture forum:

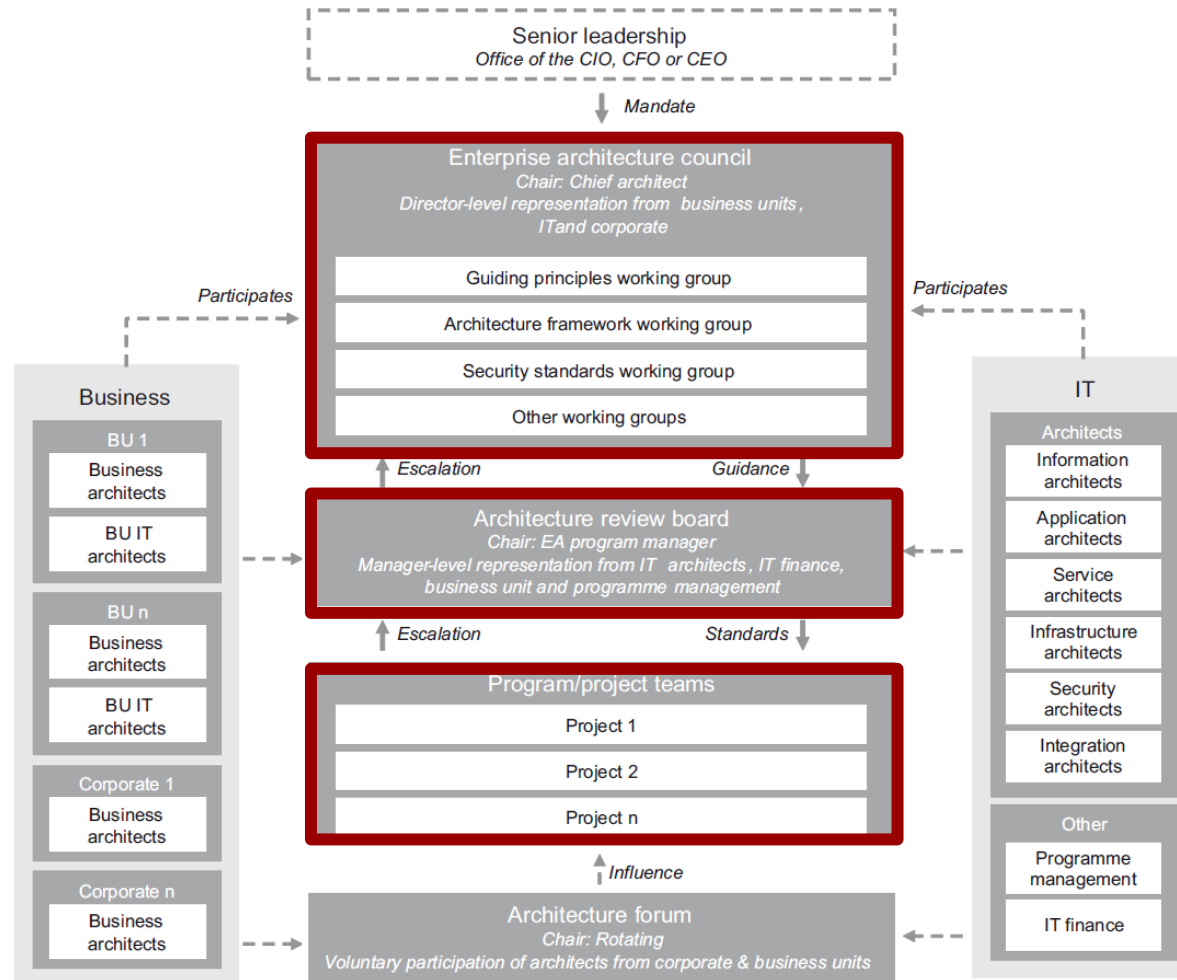
- ◆ An option for a less formal structure
- ◆ facilitate collaboration and exchange between interested parties

(Ahlemann et al. 2012, p. 92f)



# A possible Architecture Governance Model

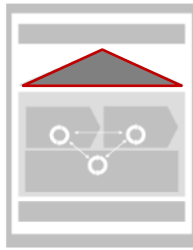
The EA Council and Architecture Review Board consist of representatives from business and IT.



- Membership in the committees can be
- full-time or part-time
  - permanent or temporary

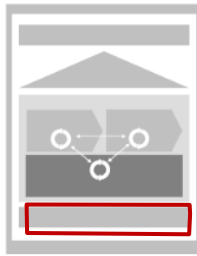
(Ahlemann et al. 2012, p. 92)





# *Enterprise-specific Organisation and Governance*

- There is no one solution that fits all firms.
- Each organisation is different, with different cultures, decision styles and objectives.
- An effective EAM governance and organisation structure must therefore be tailored to every company's unique needs

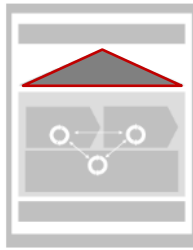


## *People, Adoption and Introduction of EAM*

- EAM's impact is also heavily influenced by '**soft factors**' resulting from the social sphere in which EAM is applied.
  - ◆ Individual resistance, incentives and supportive stakeholders therefore all play an important role.

(Ahlemann et al. 2012, p. 48f)





## Two Unhelpful Extremes

- You need to **avoid** two unhelpful extremes when you establish EAM practices
  - ◆ The first is **implementing minimal EAM**; in other words, dabbling in EAM without a real commitment. This approach will at best produce sporadic and inconsistent results.
  - ◆ At the other extreme, EAM organisations can become **self-serving** and lose sight of their true purpose, namely to deliver business value. In this case, EAM organisations become useless ivory towers.

(Ahlemann et al. 2012, p. 85)



# Literature

This chapter is based on the following literature:

- F. Ahlemann et al. (eds.), *Strategic Enterprise Architecture Management: Challenges, Best Practices, and Future Developments*, Springer-Verlag Berlin Heidelberg 2012

Additional sources:

- Hanschke, Inge. (2010). *Strategic IT Management, Chapter 4*. Berlin Heidelberg: Springer-Verlag.
- Schekkerman, J. (2008). *Enterprise Architecture Good Practices Guide - Chapters 6-8*. Victoria, BC, Canada: Trafford Publishing.

For further details have a look at the referenced sources.