TOGAF & Archimate
An Overview

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Welcome!

This presentation is for you if:

- Need to understand the interest in Information Systems planning.
- Want to know what TOGAF is and what its all about.
- Want to know what Archimate is and how it relates to TOGAF.
- *Can stay awake long enough, reading this document!!*

Summary

- Part I A – Basic Concepts
- Part I B – Introduction
- Part II – TOGAF Overview
- Part III – Archimate Overview

Summary

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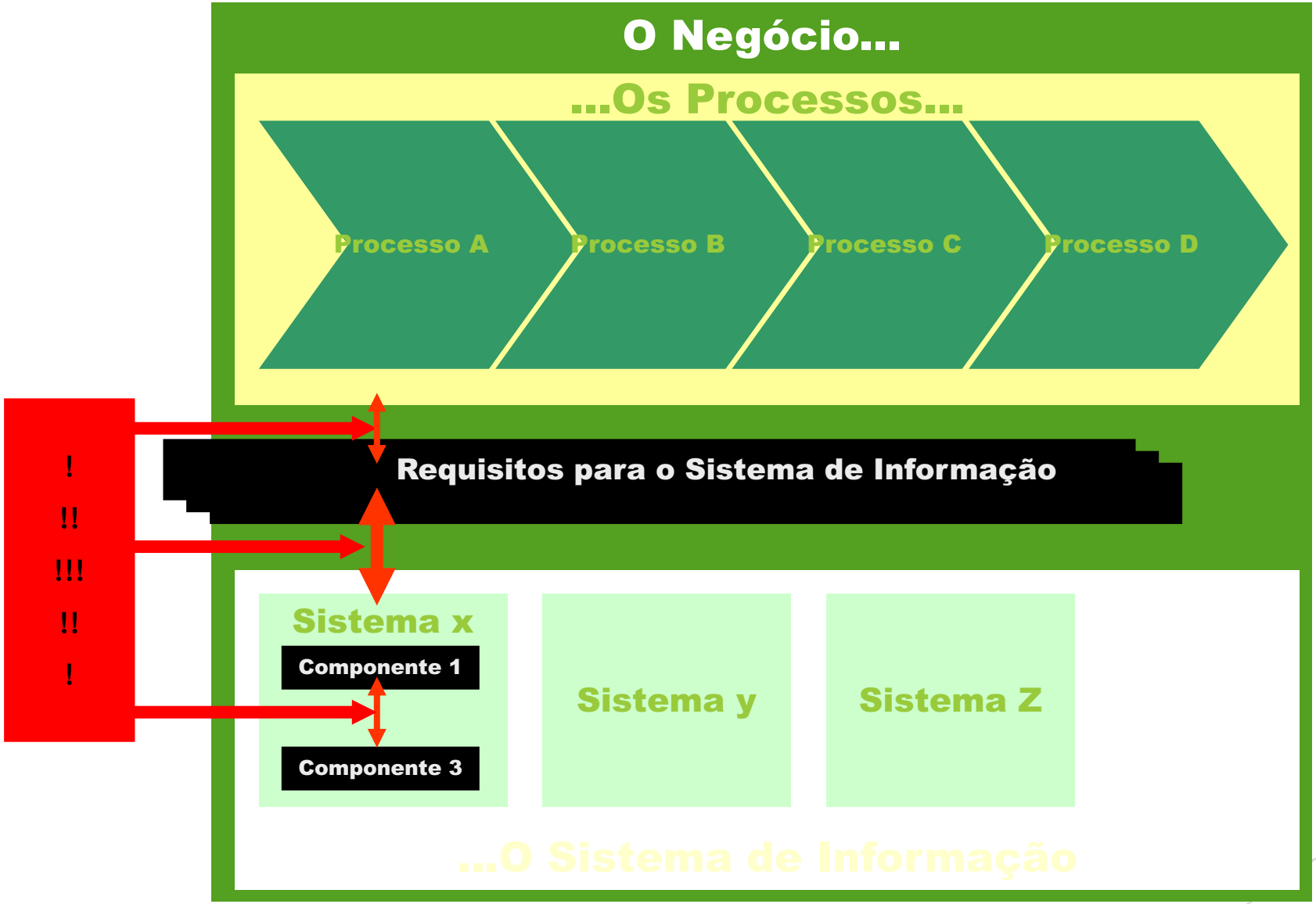
Enquadramento e Conceitos Gerais



Enquadramento e Conceitos Gerais

Análise e Conceção de Sistemas de Informação?

Informação ?

Sistema ?

Enquadramento e Conceitos Gerais

- Informação?
  - Informação
    - Informação são dados com valor e significado para um determinado ator
    - **Informação pode ter de ser interpretada, logo a sua perceção e valor podem ser subjetivos**
  - Dados
    - Dados são elementos brutos de representação de informação
    - **Dados devem ter representações formais, logo devem ser objetivos**
  - …
  - http://en.wikipedia.org/wiki/Information
  - …

Enquadramento e Conceitos Gerais

- Sistema de Informação (uma definição de “fora para dentro”):
  - Um sistema, automatizado ou manual, que compreende pessoas, máquinas e métodos organizados para recolher, processar, transmitir e disseminar dados que representam informação para os seus utilizadores!

  (http://en.wikipedia.org/wiki/Information_system)

- Sistema de Informação (uma definição de “dentro para fora”)?
  - Um conjunto integrado de entidades (humanas e tecnológicas) cujo objetivo é o de satisfazer adequadamente as necessidades de informação de uma organização e dos respetivos processos de negócio!

Enquadramento e Conceitos Gerais

A propósito, então se calhar...

DADOS + PROCESSOS = INFORMAÇÃO

Enquadramento e Conceitos Gerais

Processo de negócio...

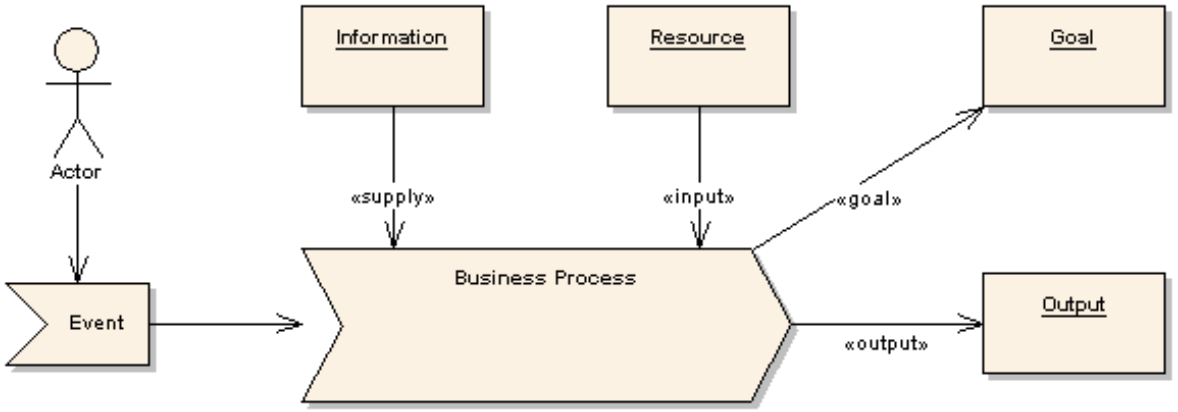
Pretende representar uma sequência de atividades, que processam vários *inputs* e produzem vários *outputs* e que possuem objetivos.

- Pode ser realizado por pessoas e/ou de forma automática.

- Exemplos de processos de negócio incluem
  - as compras de matérias-primas,
  - a contratação de um empregado ou
  - a distribuição de produtos acabados.

Enquadramento e Conceitos Gerais

- **Information** may come from external sources, from customers, from internal organisational units and may even be the product of other processes.
- A resource is an **input** to a business process, and, unlike information, is typically consumed during the processing.
- An **event** is the receipt of some object, a time or date reached, a notification or some other trigger that initiates the business process. The event may be consumed and transformed (for example a customer order) or simply act as a catalyst (e.g. nightly batch job).
- An **output** may be a physical object (such as a report or invoice), a transformation of raw resources into a new arrangement (a daily schedule or roster) or an overall business result such as completing a customer order.
- (**a goal**) is the reason the organization does (**a process**), and should be defined in terms of the benefits this process has for the organization as a whole and in satisfying the business needs.



A Process Metamodel

http://www.sparxsystems.com/EAUserGuide/index.html?businessmodelling.htm

Enquadramento e Conceitos Gerais

Objetivos dos Sistemas de Informação

- Suporte à produção
  - Reduzir **custos operacionais**, através da automatização e reformulação dos processos de negócio
  - melhorar o **desempenho de pessoas e máquinas**
- Suporte tático
  - Satisfazer **requisitos de informação** dos utilizadores
  - Melhorar o nível de **serviço prestado aos clientes** atuais e facilitar a aquisição de novos clientes.
- Suporte estratégico
  - Contribuir para a criação de **novos produtos e serviços**
  - Melhorar e automatizar (integrar) a **relação com os parceiros** de negócio.
- …

Enquadramento e Conceitos Gerais

Objetivos dos de Sistemas de Informação

Planeamento Estratégico de Sistemas de Informação

processo cuja finalidade é garantir o **alinhamento** dos sistemas de informação com os objetivos do negócio

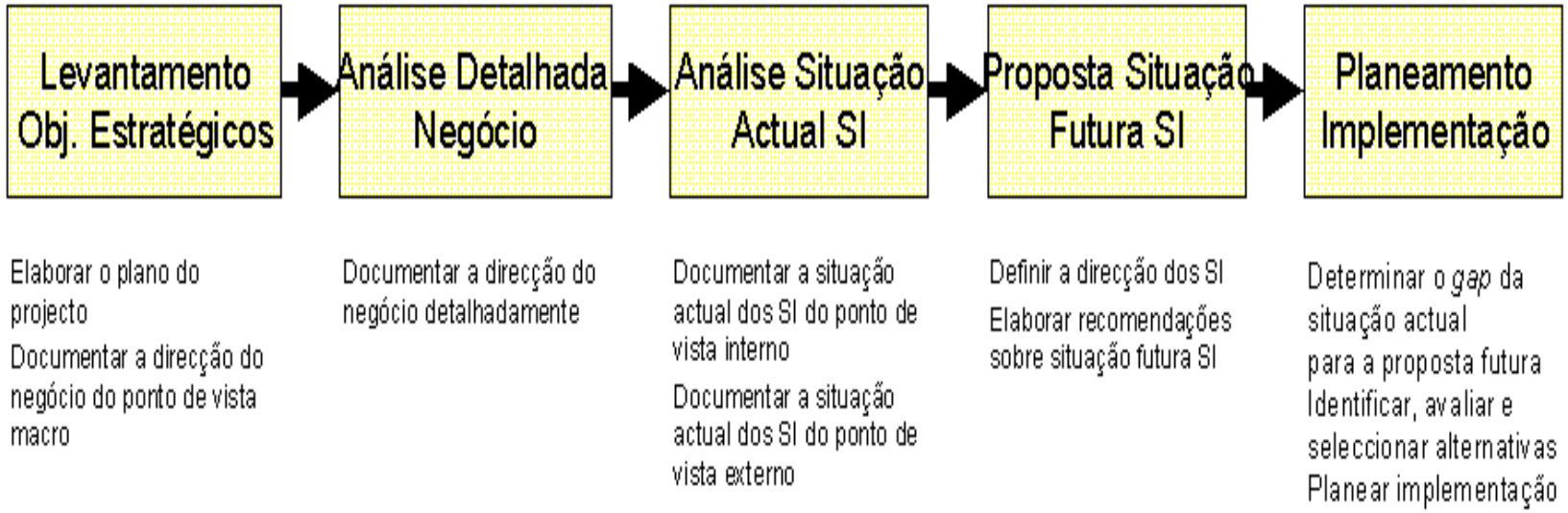
ou

"o processo de decidir os objetivos para a organização informática e identificar as aplicações informáticas potenciais que a organização deve implementar" [Lederer88]

Enquadramento e Conceitos Gerais

Objetivos dos de Sistemas de Informação

Metodologia do Planeamento Estratégico de Sistemas de Informação



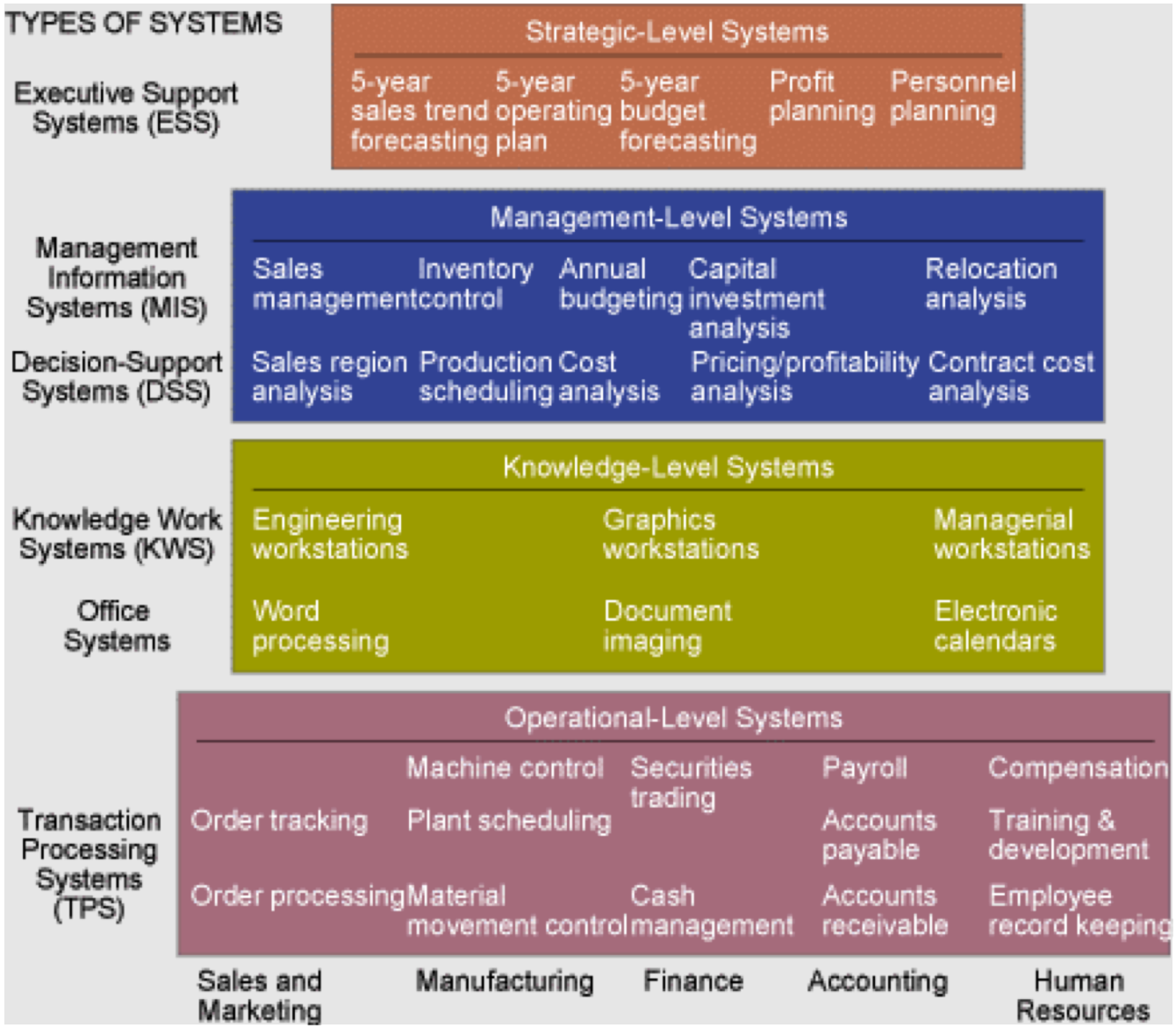
Enquadramento e Conceitos Gerais

Tipos de Sistemas de Informação

SI segundo a classificação de R. Anthony…

Tipo de Sistemas	Exemplos
Operacionais	Facturação, Controle de encomendas, Contabilidade geral, Controle de Stocks, Salários
Tácticos	Análise de vendas, Controle orçamental, Contabilidade analitica, Gestão do inventário, Análise da qualidade
Estratégicos	Previsão de vendas, Planeamento da alocação da produção, Planeamento recursos humanos, Previsão de receitas e custos, Modelização financeira

Enquadramento e Conceitos Gerais



Tipos de Sistemas de Informação

Enquadramento e Conceitos Gerais

Arquitetura de um Sistema de Informação ...

"conjunto de representações descritivas (modelos) relevantes para a descrição de um objecto de forma a que este possa ser elaborado de acordo com os requisitos (de qualidade) e mantido ao longo da sua vida útil"

Zachman, 87.

Definição genérica... Mas, refere-se quer aos sistemas de informação quer à empresa, uma vez que o mesmo modelo apresenta relativamente a cada conceito a perspetiva do negócio e dos sistemas de informação.

O *Framework de Zachman* é uma estrutura lógica de classificação e apresentação dos modelos

- de uma organização relevantes para a respetiva gestão
- desenvolvimento dos seus sistemas

Enquadramento e Conceitos Gerais

Framework de Zachman...

ENTERPRISE ARCHITECTURE - A FRAMEWORK ™

	DATA *What*	FUNCTION *How*	NETWORK *Where*	PEOPLE *Who*	TIME *When*	MOTIVATION *Why*	
SCOPE (CONTEXTUAL) *Planner*	List of Things Important to the Business ENTITY = Class of Business Thing	List of Processes the Business Performs Function = Class of Business Process	List of Locations in which the Business Operates Node = Major Business Location	List of Organizations Important to the Business People = Major Organizations	List of Events Significant to the Business Time = Major Business Event	List of Business Goals/Strat Ends/Means=Major Bus. Goal/ Critical Success Factor	SCOPE (CONTEXTUAL) *Planner*
ENTERPRISE MODEL (CONCEPTUAL) *Owner*	e.g. Semantic Model Ent = Business Entity Reln = Business Relationship	e.g. Business Process Model Proc. = Business Process I/O = Business Resources	e.g. Business Logistics System Node = Business Location Link = Business Linkage	e.g. Work Flow Model People = Organization Unit Work = Work Product	e.g. Master Schedule Time = Business Event Cycle = Business Cycle	e.g. Business Plan End = Business Objective Means = Business Strategy	ENTERPRISE MODEL (CONCEPTUAL) *Owner*
SYSTEM MODEL (LOGICAL) *Designer*	e.g. Logical Data Model Ent = Data Entity Reln = Data Relationship	e.g. Application Architecture Proc. = Application Function I/O = User Views	e.g. Distributed System Architecture Node = I/S Function (Processor, Storage, etc) Link = Line Characteristics	e.g. Human Interface Architecture People = Role Work = Deliverable	e.g. Processing Structure Time = System Event Cycle = Processing Cycle	e.g., Business Rule Model End = Structural Assertion Means = Action Assertion	SYSTEM MODEL (LOGICAL) *Designer*
TECHNOLOGY MODEL (PHYSICAL) *Builder*	e.g. Physical Data Model Ent = Segment/Table/etc. Reln = Pointer/Key/etc.	e.g. System Design Proc.= Computer Function I/O = Data Elements/Sets	e.g. Technology Architecture Node = Hardware/System Software Link = Line Specifications	e.g. Presentation Architecture People = User Work = Screen Format	e.g. Control Structure Time = Execute Cycle = Component Cycle	e.g. Rule Design End = Condition Means = Action	TECHNOLOGY MODEL (PHYSICAL) *Builder*
DETAILED REPRESEN-TATIONS (OUT-OF-CONTEXT) *Sub-Contractor*	e.g. Data Definition Ent = Field Reln = Address	e.g. Program Proc.= Language Stmt I/O = Control Block	e.g. Network Architecture Node = Addresses Link = Protocols	e.g. Security Architecture People = Identity Work = Job	e.g. Timing Definition Time = Interrupt Cycle = Machine Cycle	e.g. Rule Specification End = Sub-condition Means = Step	DETAILED REPRESEN-TATIONS (OUT-OF-CONTEXT) *Sub-Contractor*
FUNCTIONING ENTERPRISE	e.g. DATA	e.g. FUNCTION	e.g. NETWORK	e.g. ORGANIZATION	e.g. SCHEDULE	e.g. STRATEGY	FUNCTIONING ENTERPRISE

Enquadramento e Conceitos Gerais

Frameworks para Arquitetura de um Sistema de Informação ...

- *Zachman*
- *DoDAF*
- *FEAF*
- **TOGAF**
- ....

Summary

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- Part I B – Introduction to EA
- Part II – TOGAF Overview
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Part I – Introduction
Enterprise Architecture – Why?

- **Organizations**: consists of many people, organized in organizational structures, in groups, departments and sections, and – if large enough – in business units or even separate companies.
  If we look to what this people do, you look at business functions ou business processes, i.e., to the behaviour of the organization.
- **I.T.** : most of the work anyone does implies handling information. So we can say you ***use*** IT in your line of work. The IT that supports people also has structure and behaviour, just like business itself.
- **Applications & Data** : You use applications that deal with data. The applications need an IT infrastructure to "run" and there have to be all sorts of networks and physical devices so all these systems can communicate with each other.

- So, Organizations are highly dependent from IT (computer systems & applications in general). But, how to ensure the proper alignment between how the business is organized, how it is run and what IT should be implemented??

Part I – Introduction
Enterprise Architecture – Why?

- **Enterprise Architecture:** is all about the coherent design and modelling of all perspectives within an Organization (Business, IT, Physical).
- It is the way to understand all the components of the organization and the nesting of them, in order to create cohesion.
- The EA challenge is a balancing act between two aspects: the intuitive side of the business; the logical side of the business.

Part I – Introduction
Enterprise Architecture – How?

- **Enterprise Architecture**: How can an Organization use the EA?
- Basically in the following three settings:
  - The Current-State Architecture (or As-Is): descriptive model of how the current landscape of business and IT are.
  - The Future-State Architecture (or To-Be): prescription on how the future landscape should be.
  - Change Architectures: descriptions of what change initiatives (like projects) will produce.

Part I – Introduction
Enterprise Architecture – What?

- **Enterprise Architecture**
  - is all about making good choices in light of strategic goals;
  - Making coherent choices across the enterprise;
  - Making good choices in themselves (e.g. in sense of total cost of ownership, etc.)

Part I – Introduction
Enterprise Architecture

- To realize it, there are several tools like TOGAF and Archimate.

- Next slides will bring an overview of those two

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What is Architecture in the Context of TOGAF?

In TOGAF, “architecture” has two meanings depending upon the context:

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

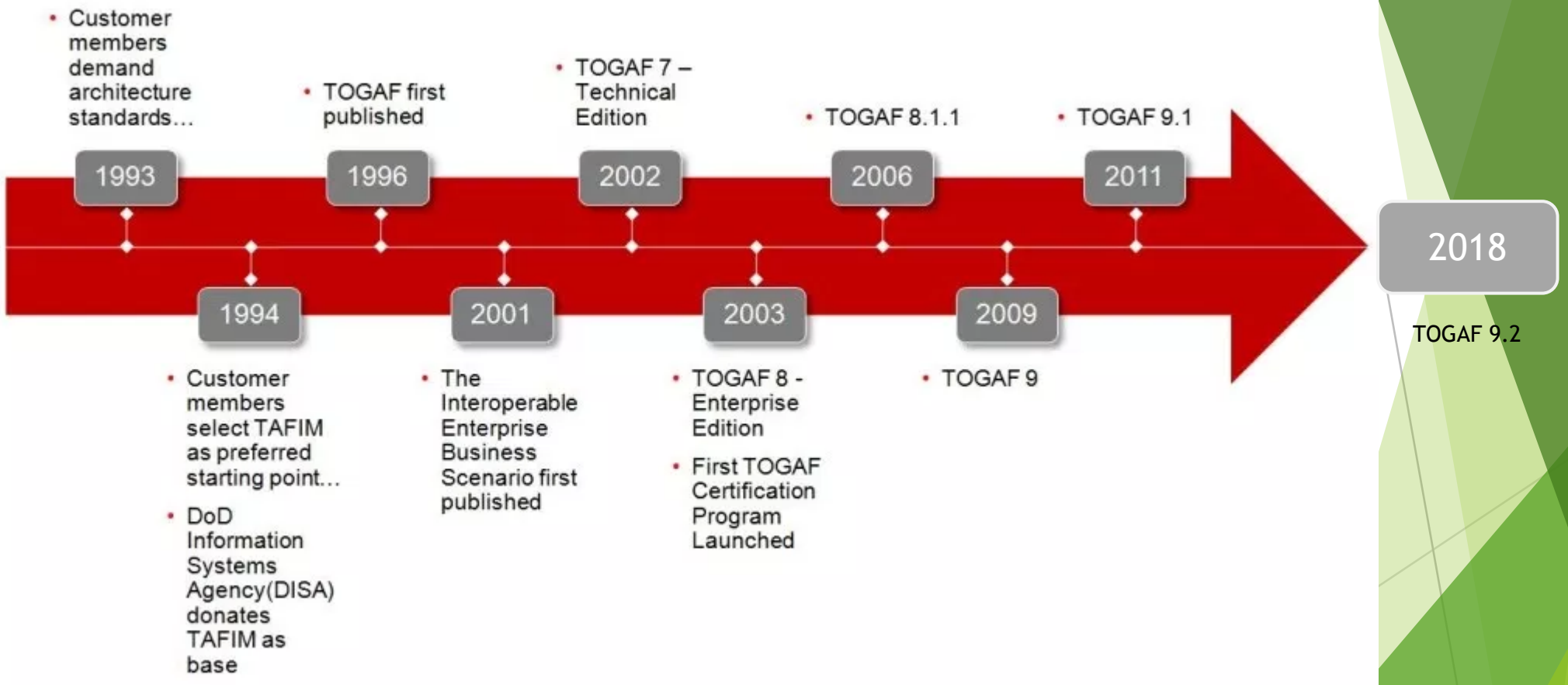
2. The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time.

TOGAF Version

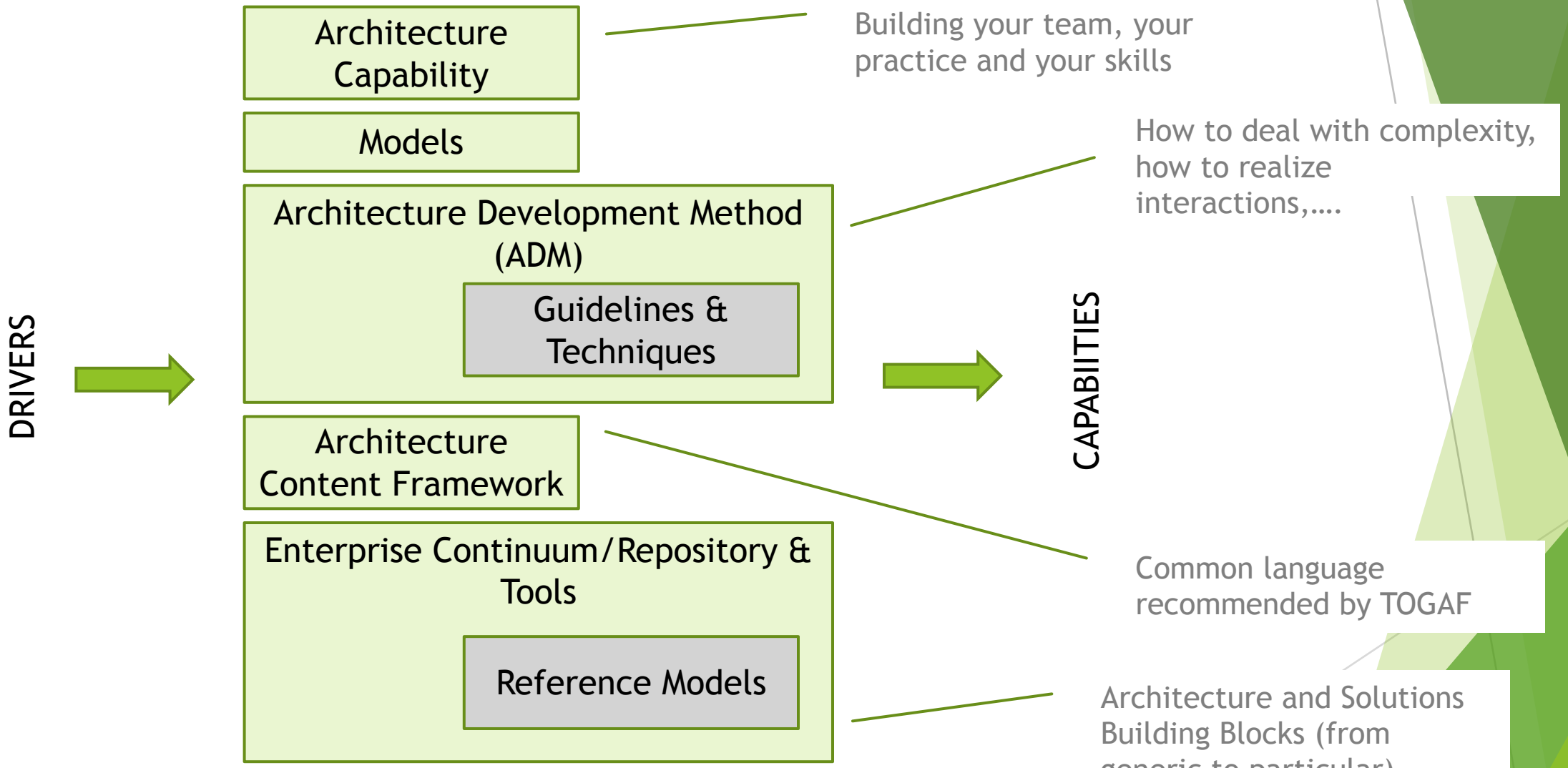
- Most updated version: TOGAF 9.2
- Relesead by April, 2018
- New release between 12 to 24 after release of version 9.2
- See www.opengroup.org/togaf-library

TOGAF Version

How it all started?



What is TOGAF?



TOGAF Book Structure

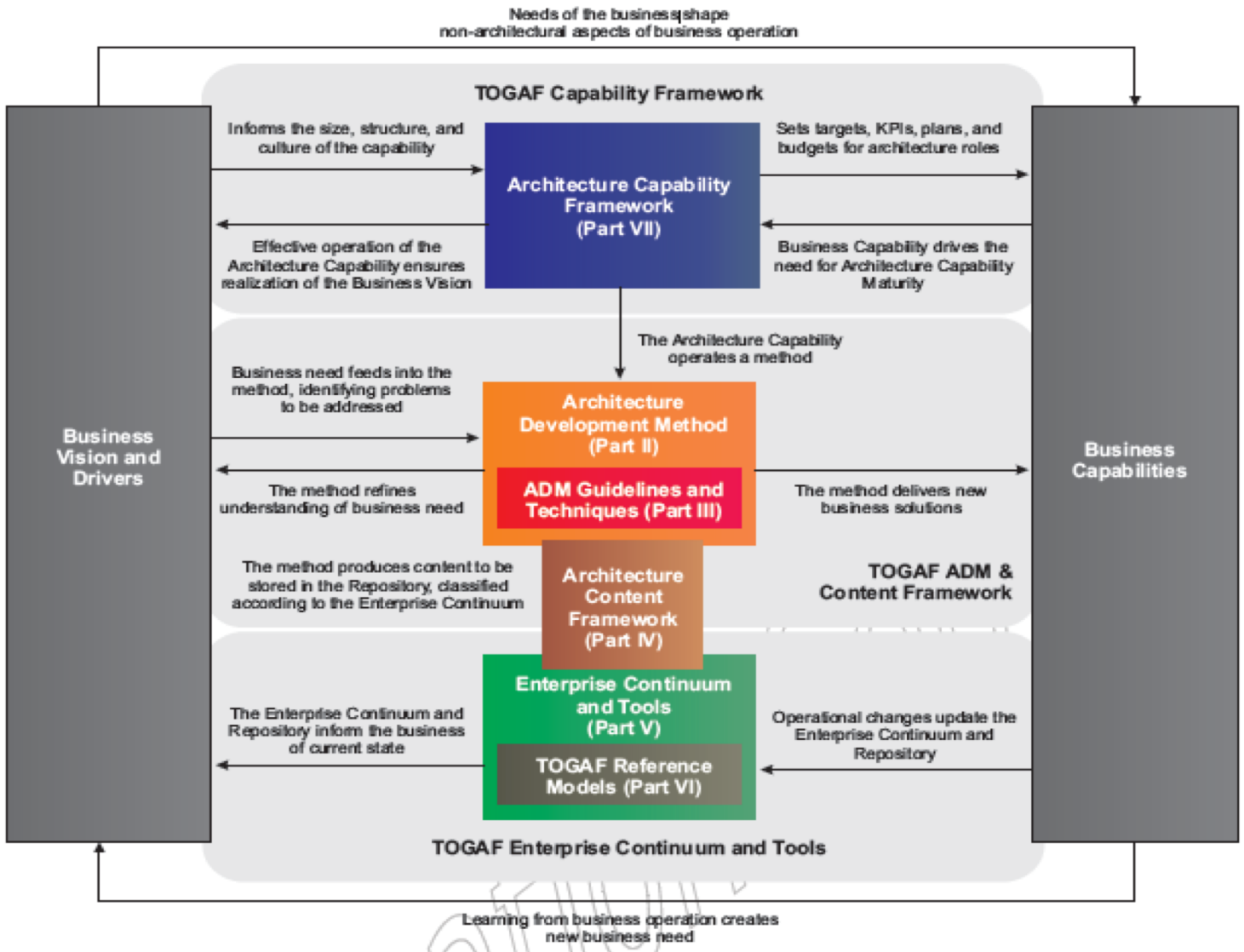
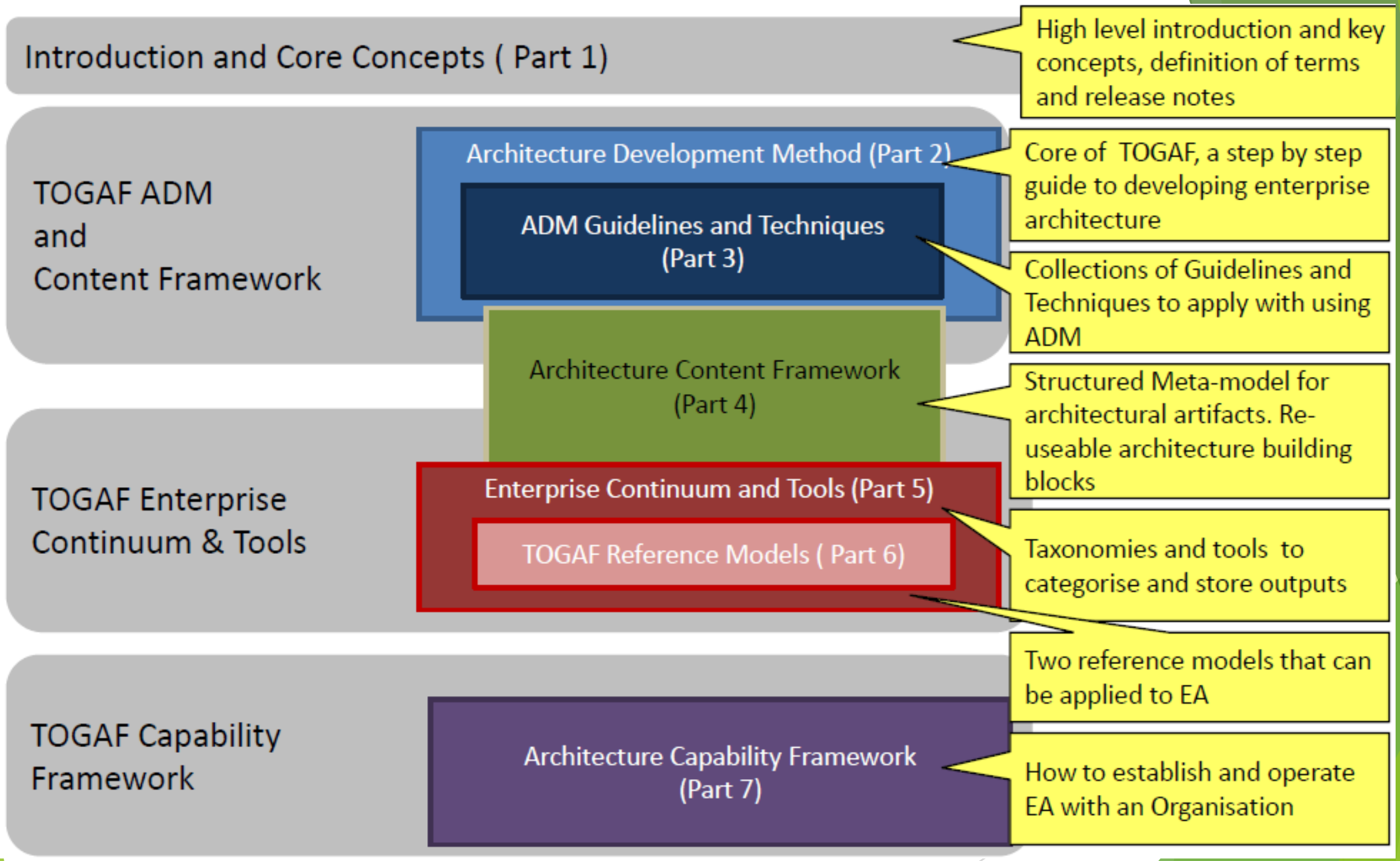


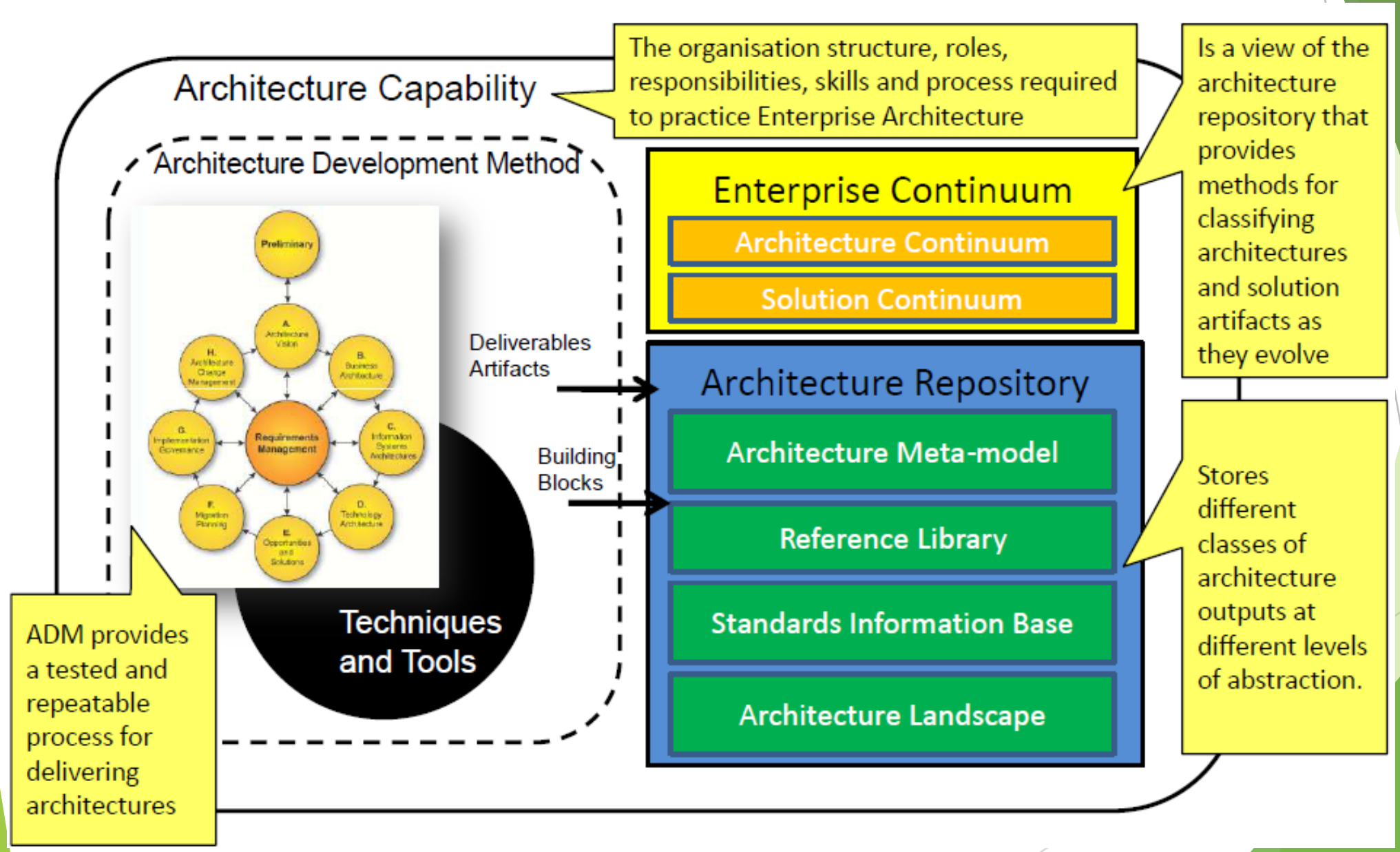
Figure 1-1 Structure of the TOGAF Document

- Seven parts

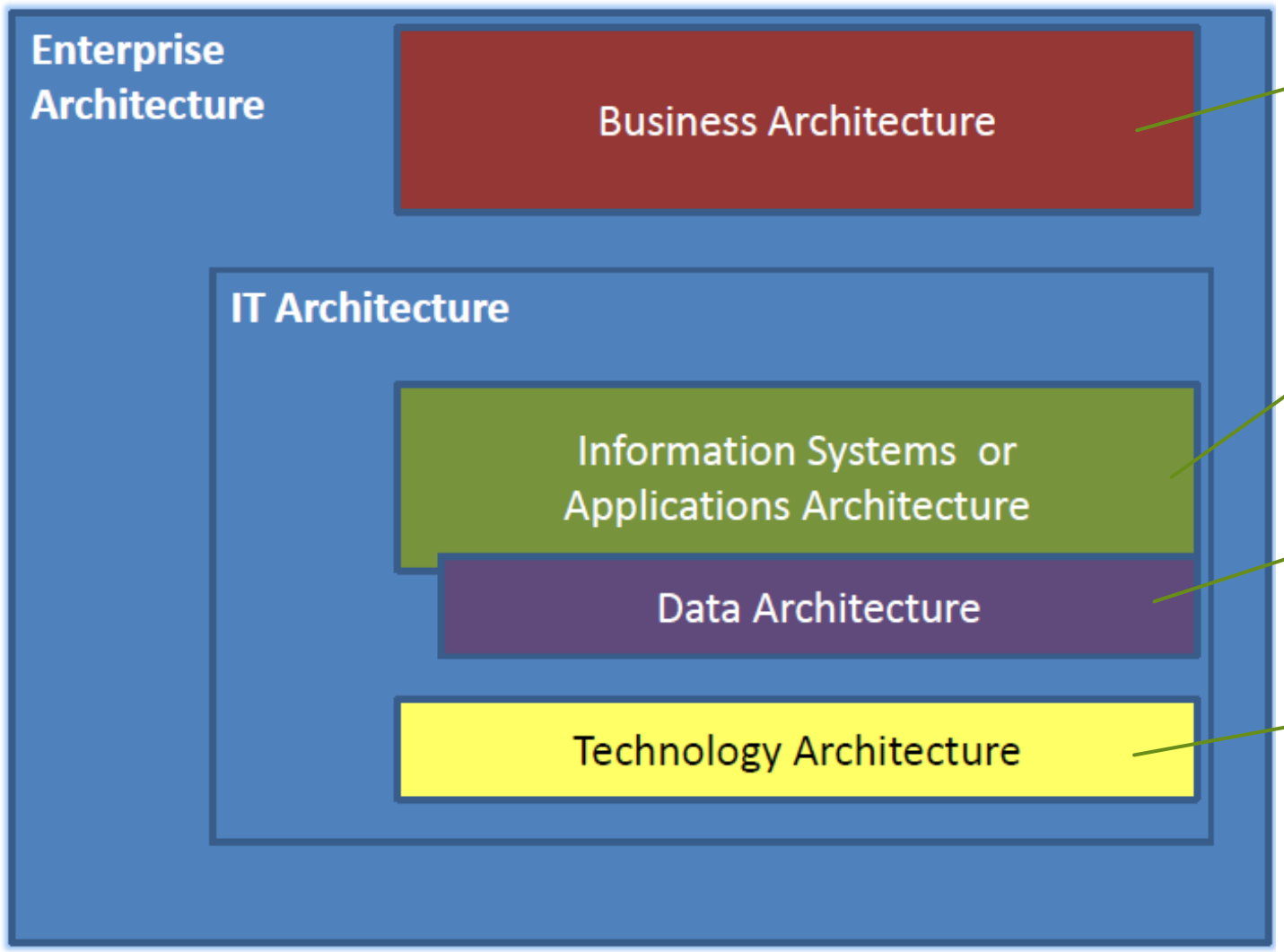
1. High-level intro
2. ADM
3. ADM guide & techniques
4. Architecture content framework
5. Enterprise Continuum & tools
6. Reference models
7. Architecture capability framework


Introduction and Core Concepts (Part 1)
High level introduction and key concepts, definition of terms and release notes
TOGAF ADM and Content Framework
Architecture Development Method (Part 2)
Core of TOGAF, a step by step guide to developing enterprise architecture
ADM Guidelines and Techniques (Part 3)
Collections of Guidelines and Techniques to apply with using ADM
Architecture Content Framework (Part 4)
Structured Meta-model for architectural artifacts. Re-useable architecture building blocks
TOGAF Enterprise Continuum & Tools
Enterprise Continuum and Tools (Part 5)
Taxonomies and tools to categorise and store outputs
TOGAF Reference Models (Part 6)
Two reference models that can be applied to EA
TOGAF Capability Framework
Architecture Capability Framework (Part 7)
How to establish and operate EA with an Organisation

Core Concepts of TOGAF



Types of Architecture Domains



How the business is organized to meet its objectives

How the Information System Support the objective of the business

Structure of the Data assets

How the technology fits together

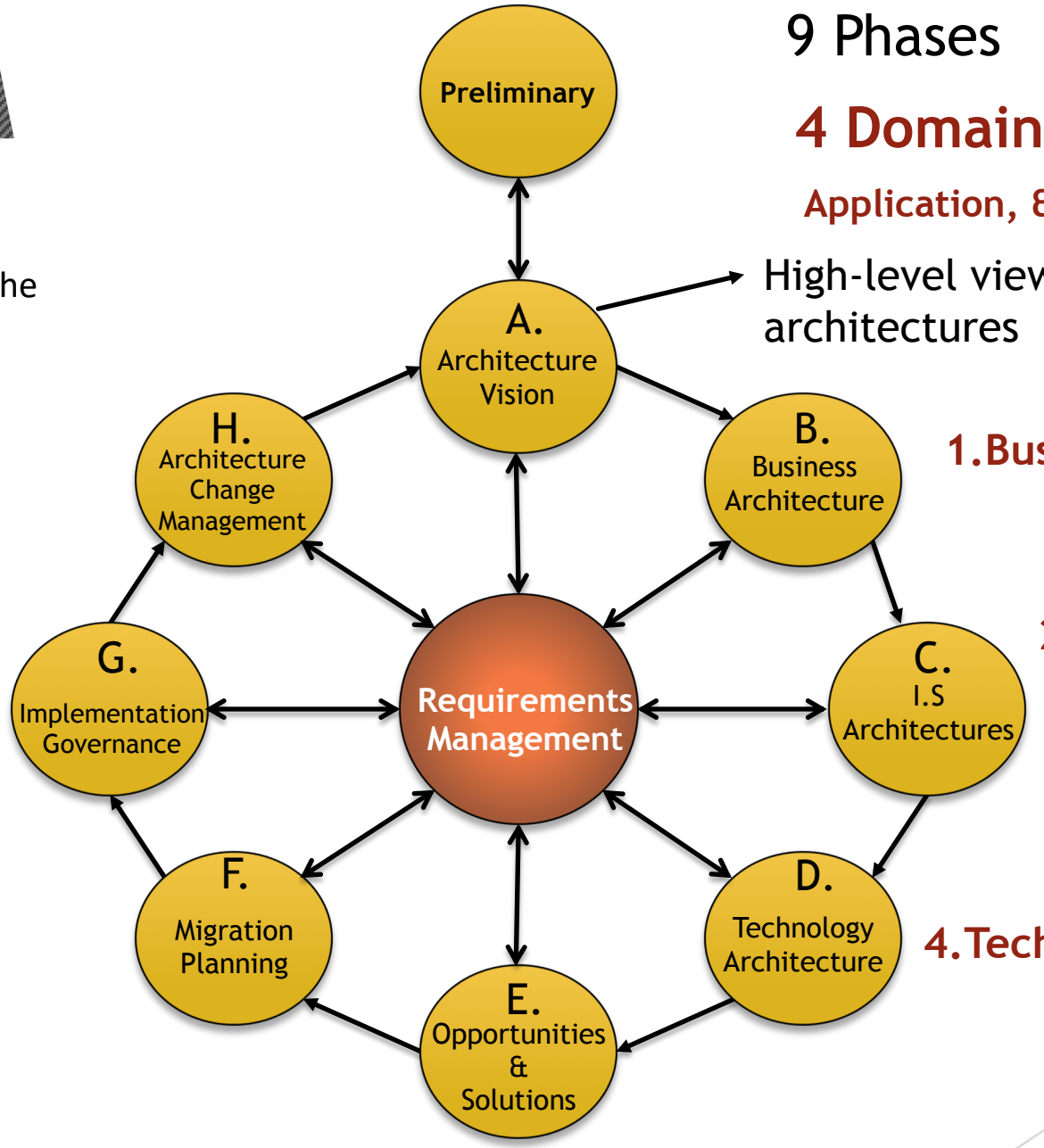
ADM

The TOGAF ADM is framework-agnostic, and helps IT architects fill in the framework they might already have in use.

An iterative life cycle with…

9 Phases

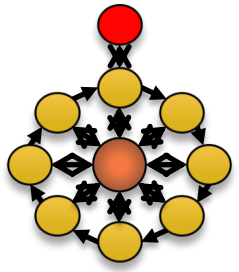
4 Domains (Business, Data, Application, & Technology)



High-level views of extant B.D.A.T architectures

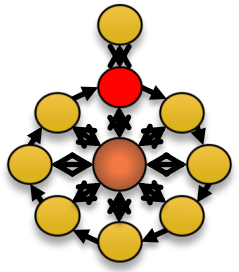
1. Business
2. Data
3. Application
4. Technology

TOGAF ADM



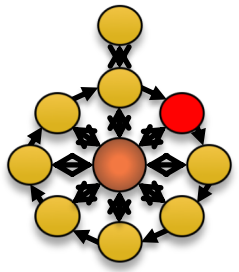
Preliminary Phase

architecture practice setup, capabilities repository, continuum, data categorization, deliverables, artifacts, skills, and team members



Architecture Vision Phase

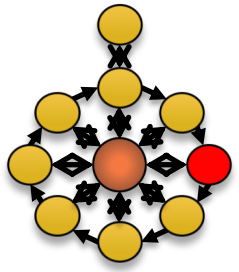
high-level description of the intended architecture, spanning all architectural domains



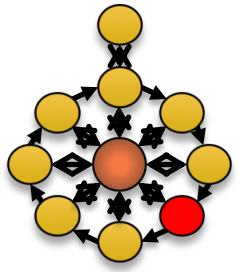
Business Architecture Phase

handles the business domain

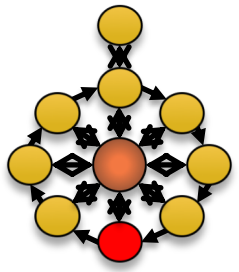
TOGAF ADM



Information Systems Architecture Phase
handles data and applications domain

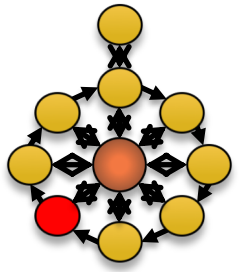


Technology Architecture Phase
handles the technology domain



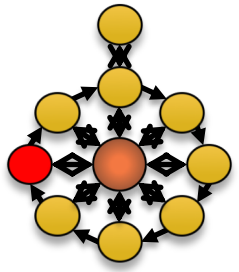
Opportunities & Solutions Phase
evaluating the current state determined in the previous architectures, the functional state to be reached is analyzed and the gaps and solutions that can be provided are identified

TOGAF ADM



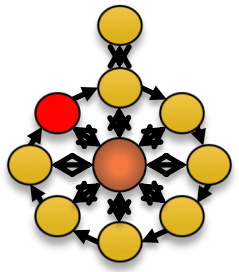
Migration & Planning Phase

The discipline of project management is introduced and the costs, efforts and resources necessary for the solutions envisaged



Implementation Governance Phase

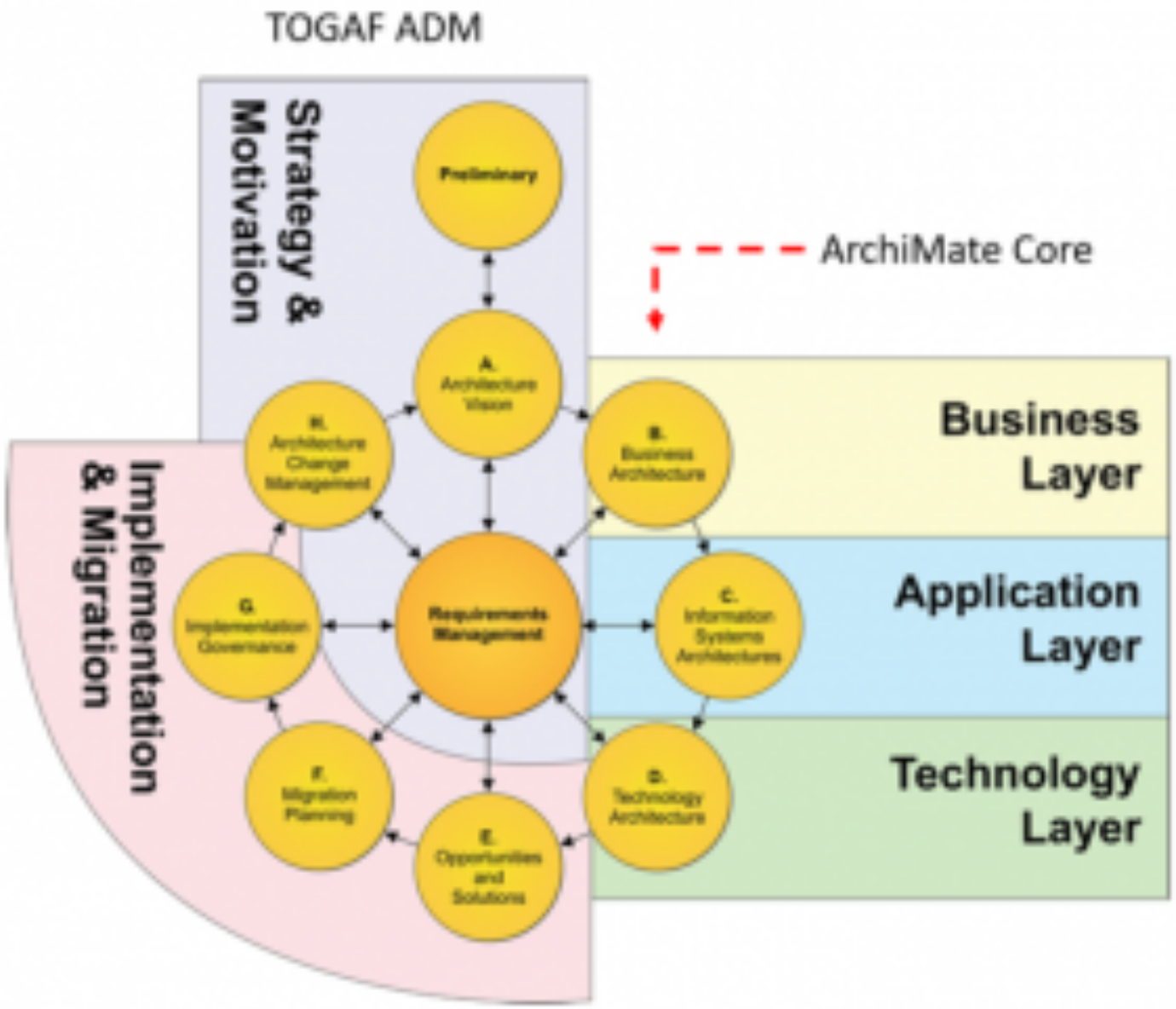
The architect compares what has been decided to do with what is being done, validating what may be happening against the architectural plans



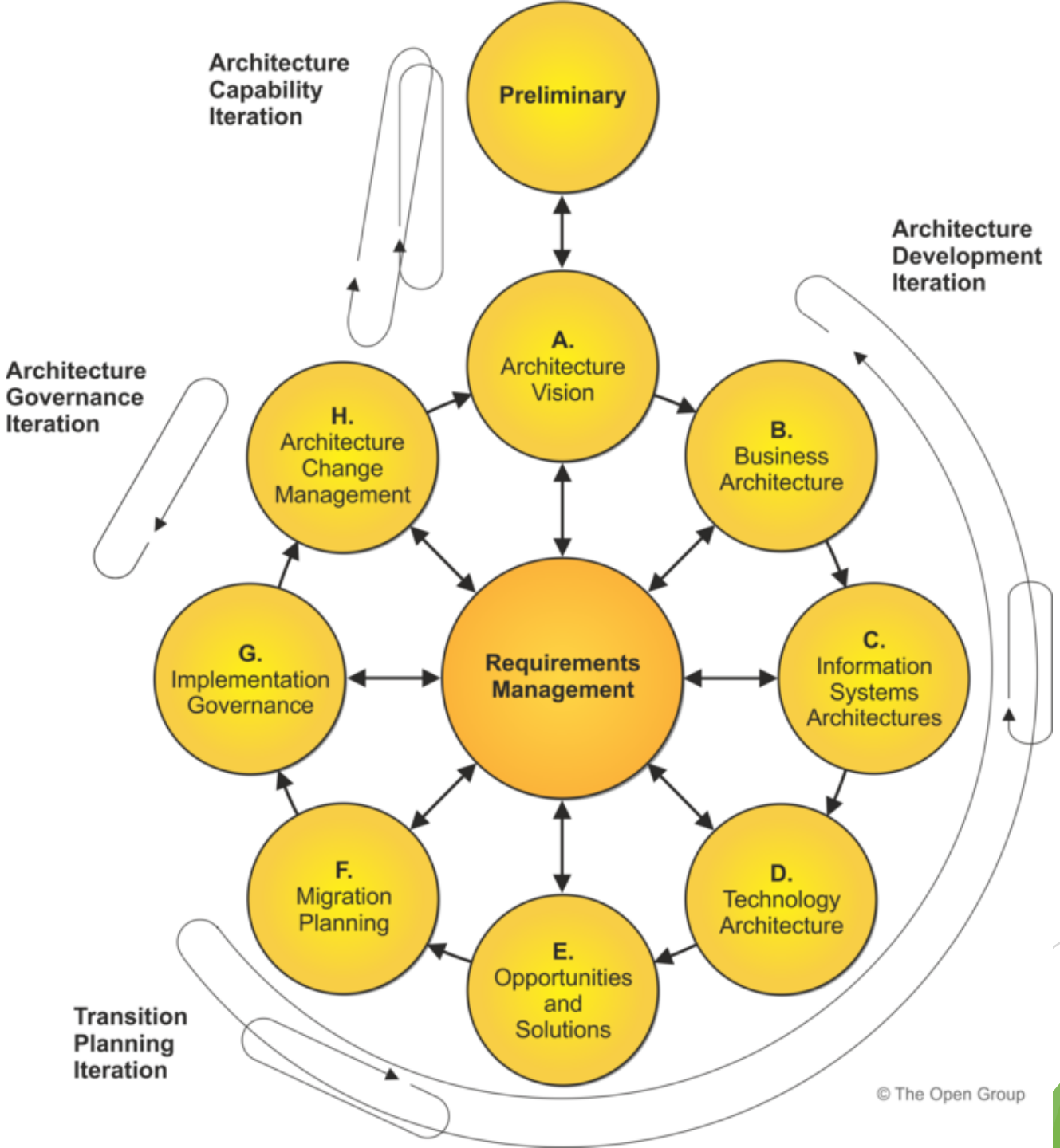
Architecture Change Management Phase

Change in the direction of the implementation of the architecture (optimization space)

TOGAF


TOGAF ADM
Strategy & Motivation
Implementation & Migration
Preliminary
A. Architecture Vision
B. Business Architecture
C. Information Systems Architectures
D. Technology Architecture
E. Opportunities and Solutions
F. Migration Planning
G. Implementation Governance
H. Architecture Change Management
Requirements Management
ArchiMate Core
Business Layer
Application Layer
Technology Layer

TOGAF ADM


Architecture Capability Iteration
Preliminary
Architecture Development Iteration
A. Architecture Vision
B. Business Architecture
C. Information Systems Architectures
D. Technology Architecture
E. Opportunities and Solutions
F. Migration Planning
G. Implementation Governance
H. Architecture Change Management
Architecture Governance Iteration
Requirements Management
Transition Planning Iteration
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Archimate Overview

What is Archimate?

Why Archimate?

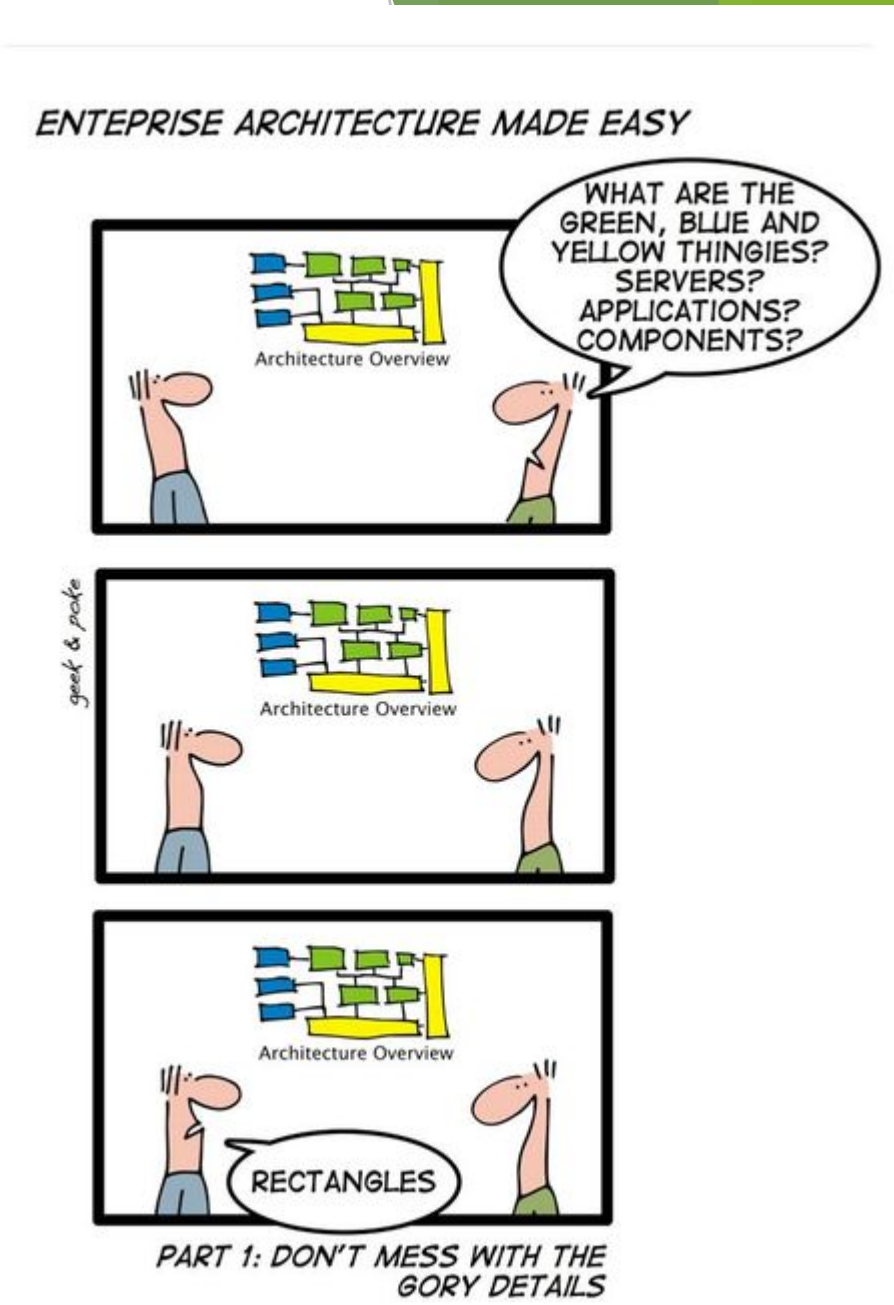
How does it go together with TOGAF?

Archimate Overview

What is Archimate?

ArchiMate is a modeling standard introduced by the Open Group. It provides a rich set of modeling notations and concepts that supports modeling Enterprise Architectures consistently within and across domains.

Some authors say it is a graphical language; others are saying it is more a grammar.



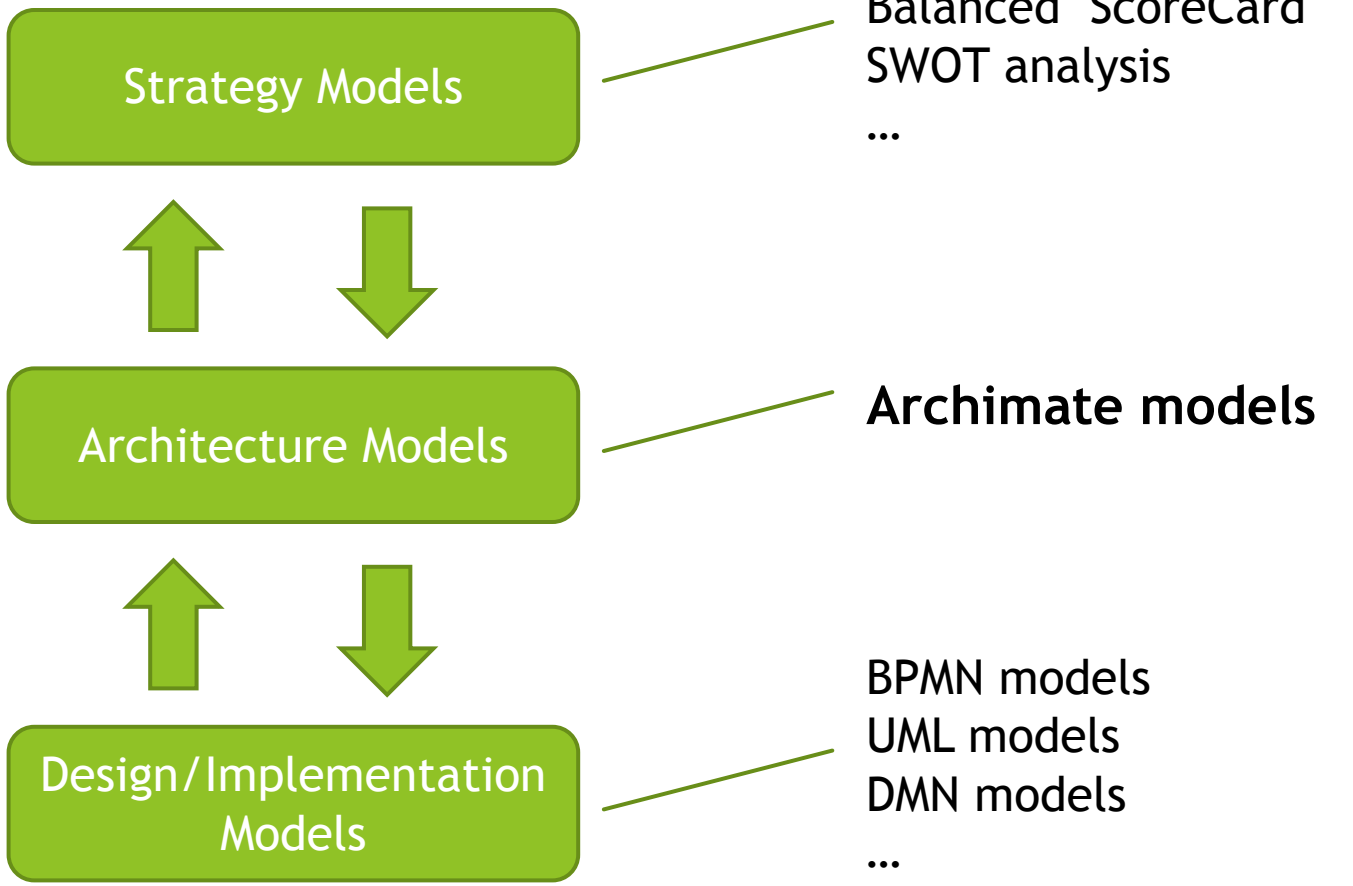
Archimate Overview

What does Archimate provide?

- A **language** with concepts to describe architectures
- A **framework** to organize these concepts
- A **graphical notation** for these concepts
- A vision on **visualizations** for different stakeholders
- An **open standard** maintained by The Open Group

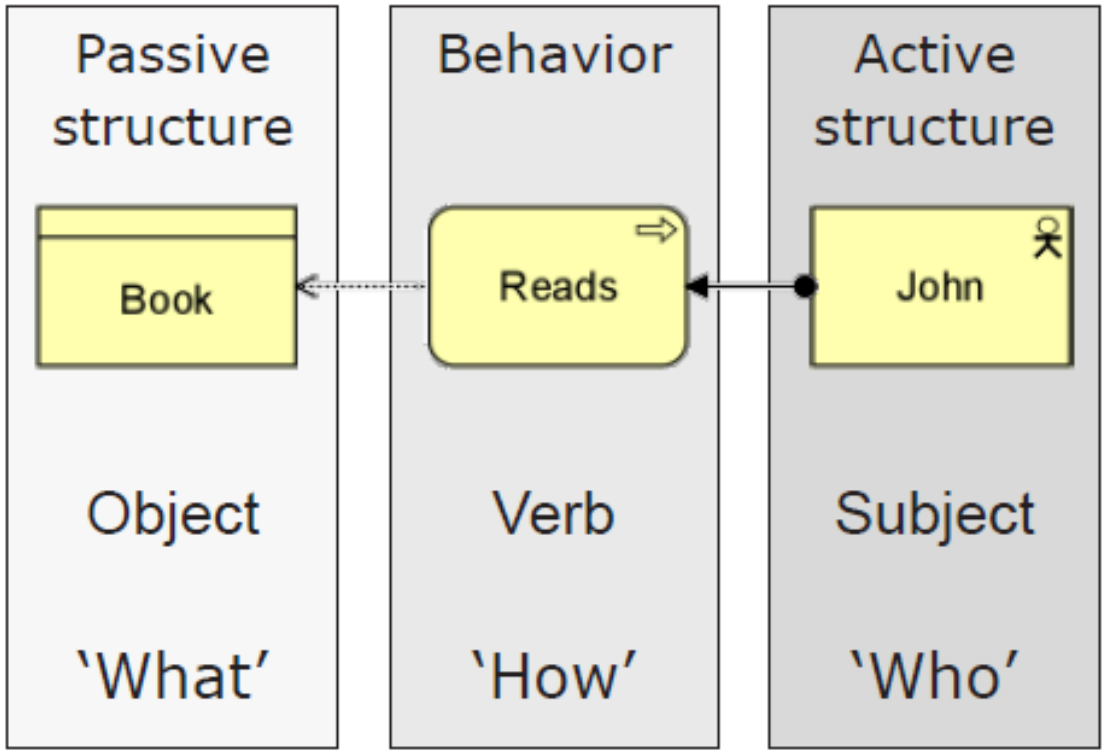
Archimate Overview

Positioning Archimate



Archimate Overview

Core Framework Aspects

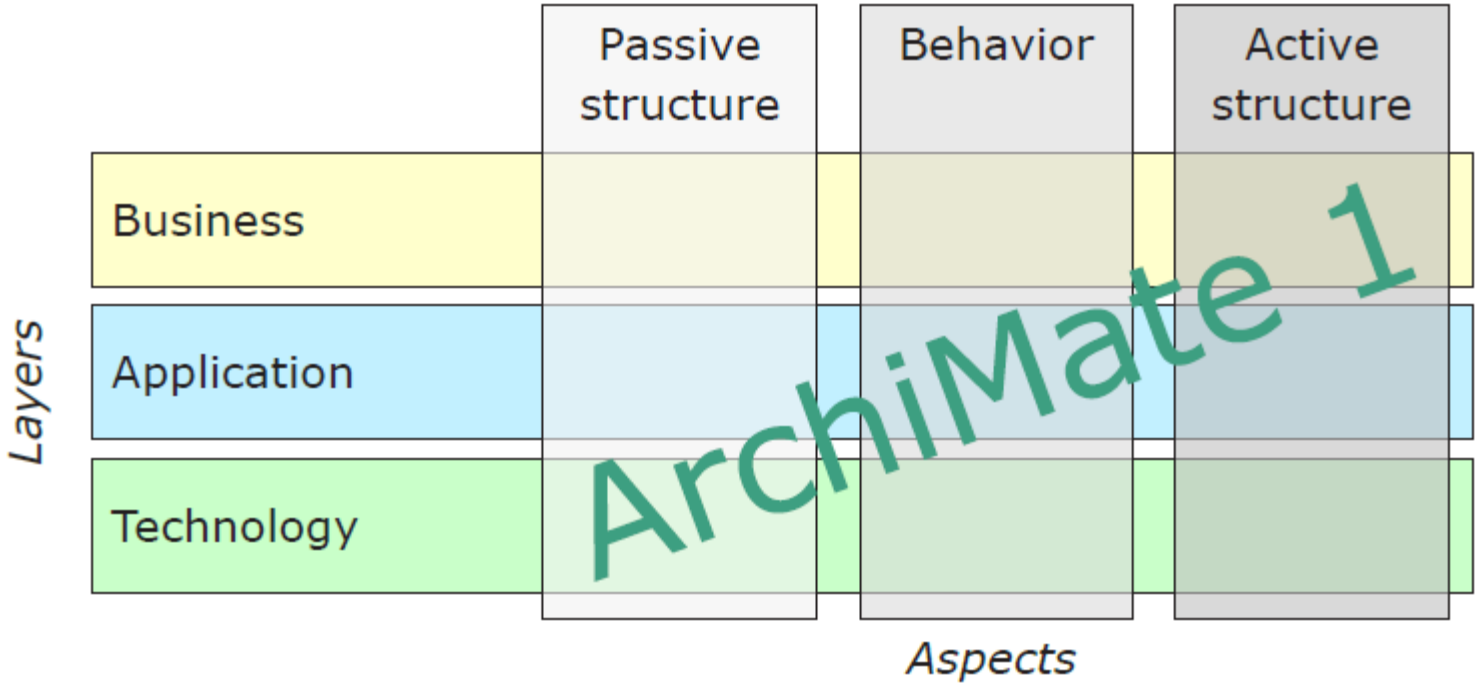


The three element types, connected by relations, can form sentences of sorts. Example: a pickpocket (active structure/application) steals (behavior/application function) a wallet (passive structure/data).

Pattern from natural language: **subject-verb-object**

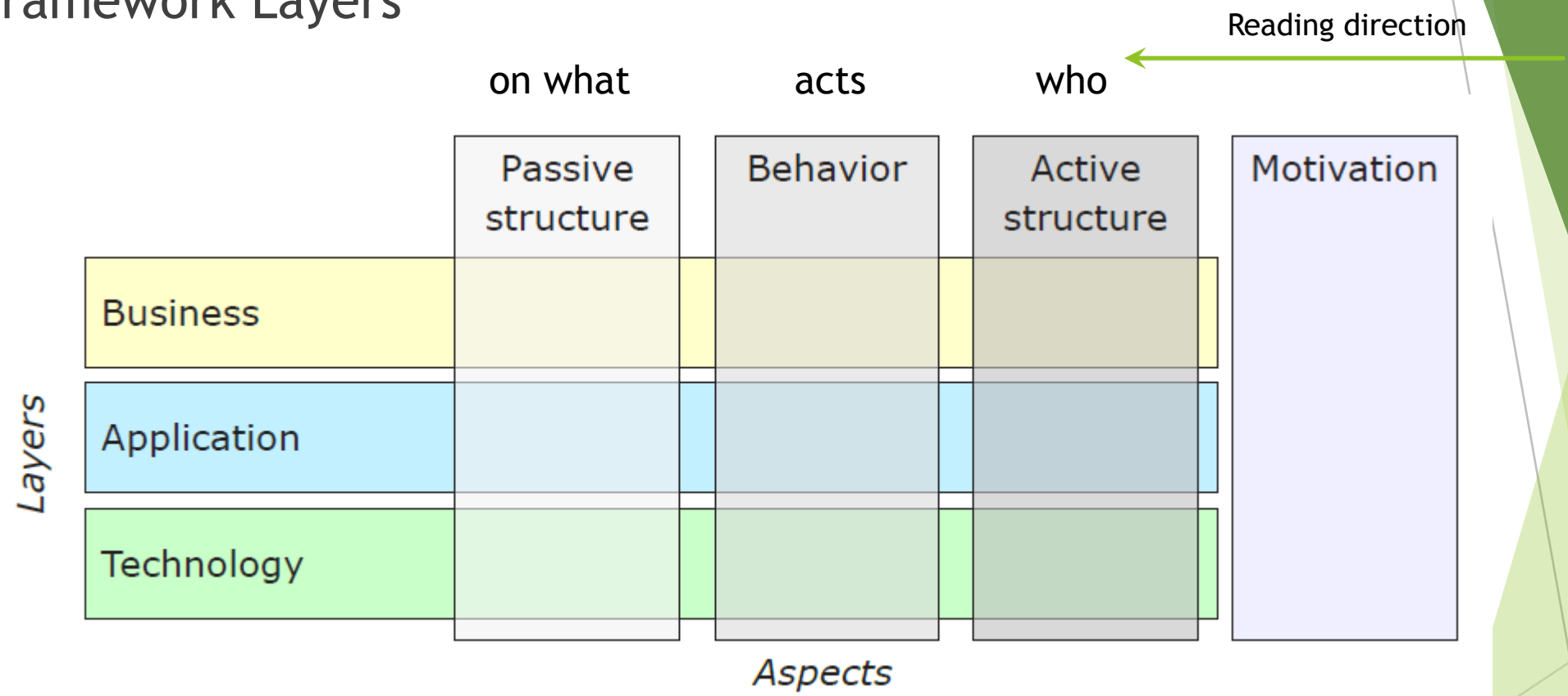
Archimate Overview

Core Framework Layers



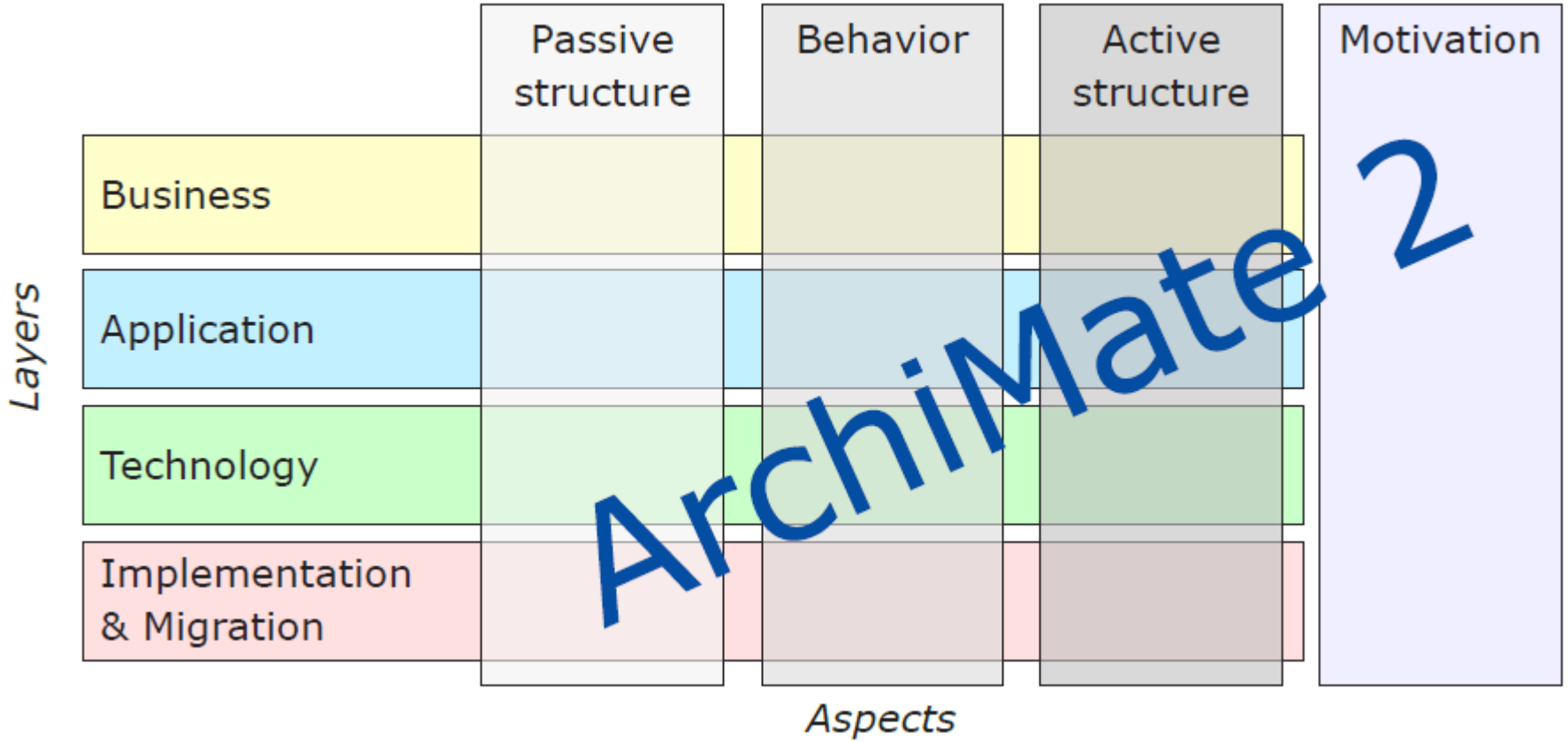
Archimate Overview

Core Framework Layers



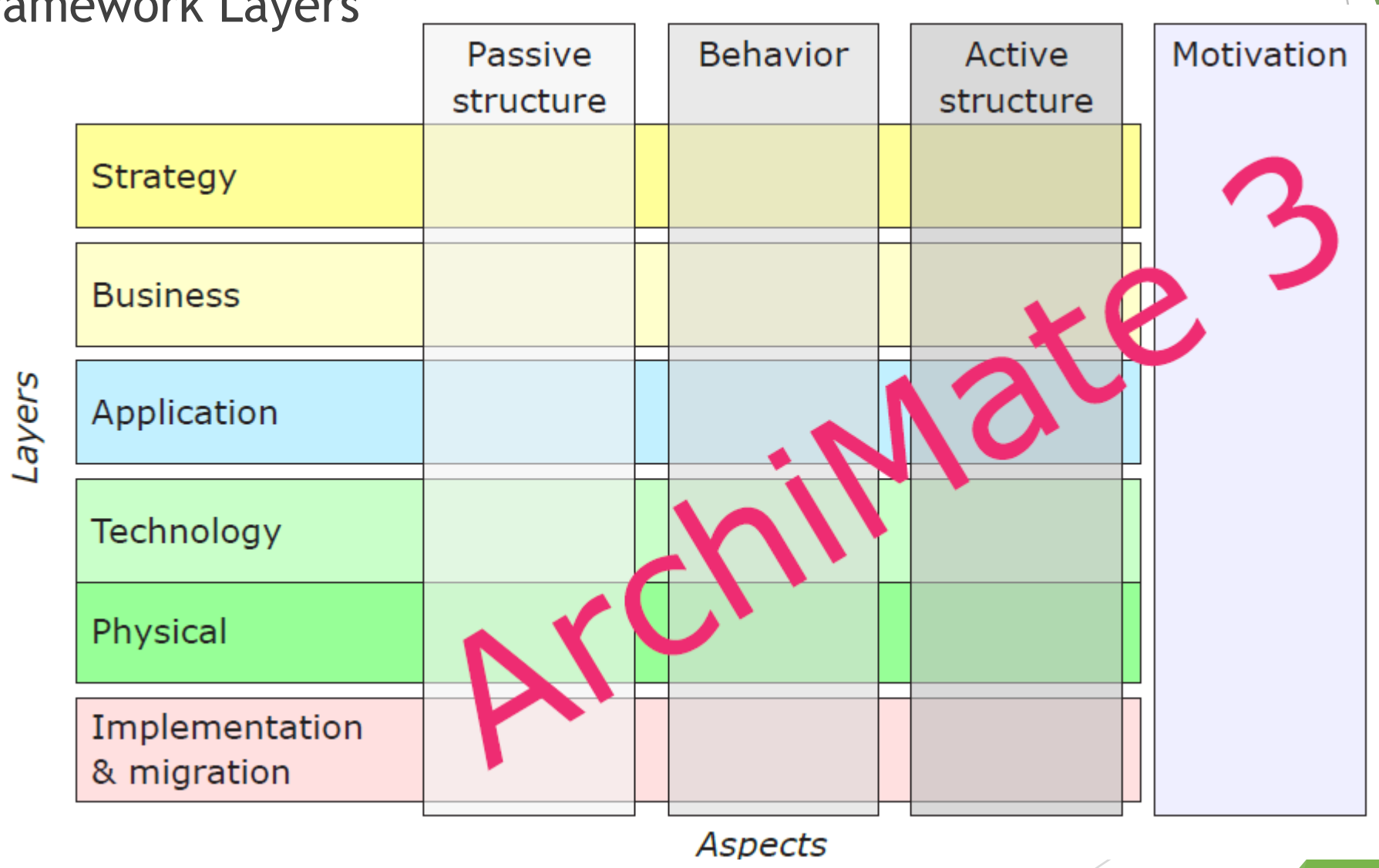
Archimate Overview

Core Framework Layers



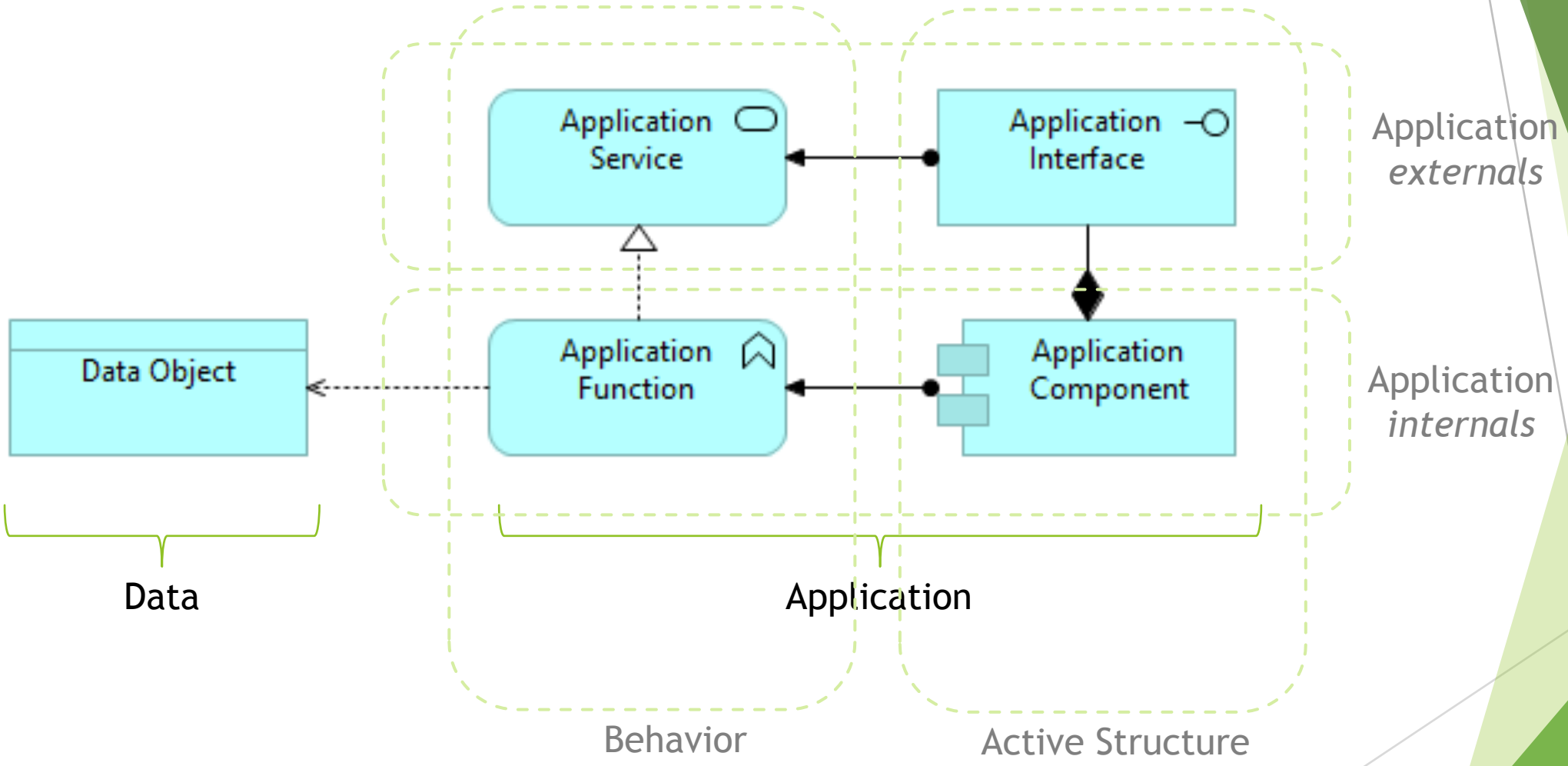
Archimate Overview

Core Framework Layers



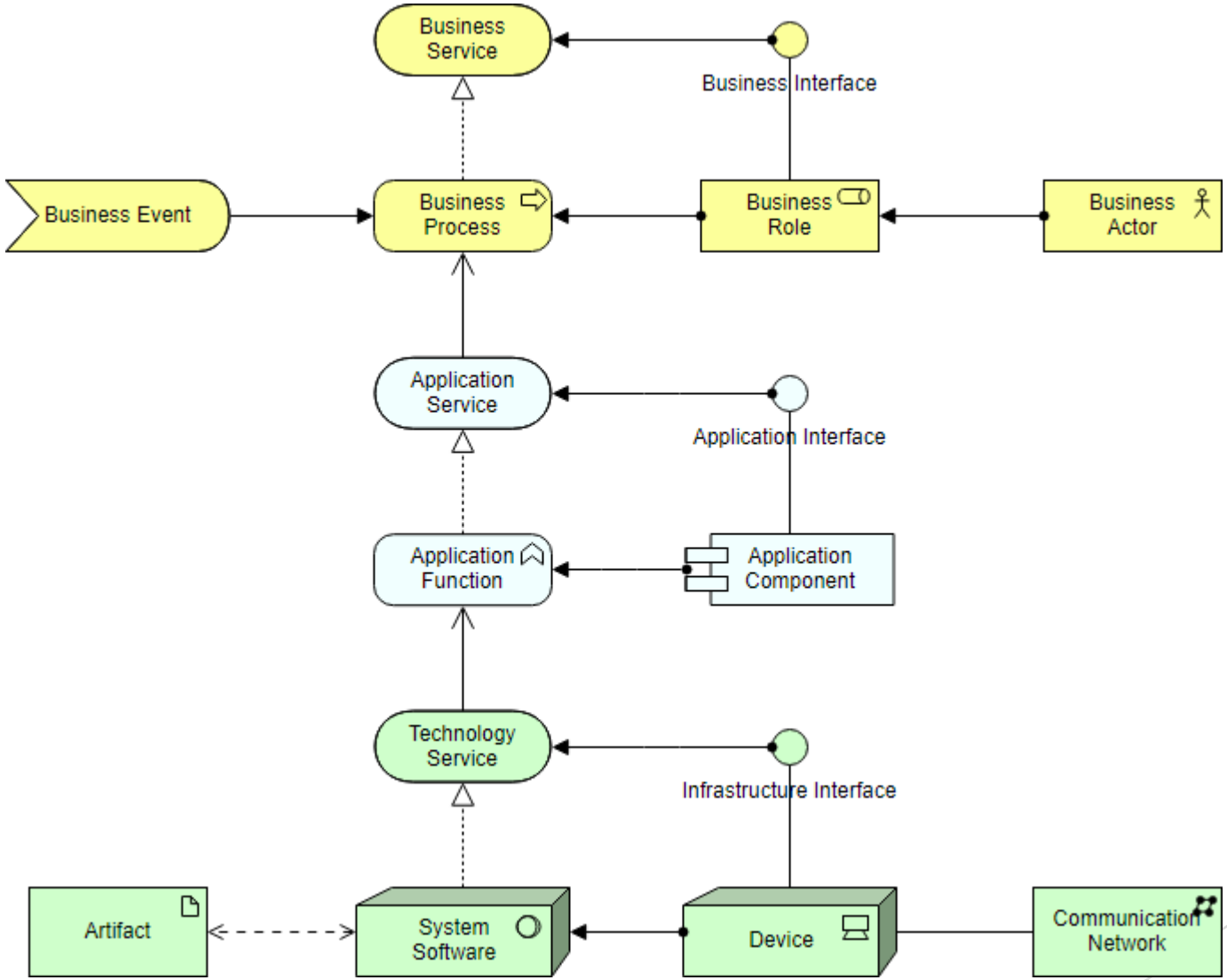
Archimate Overview

The Basic Application Pattern



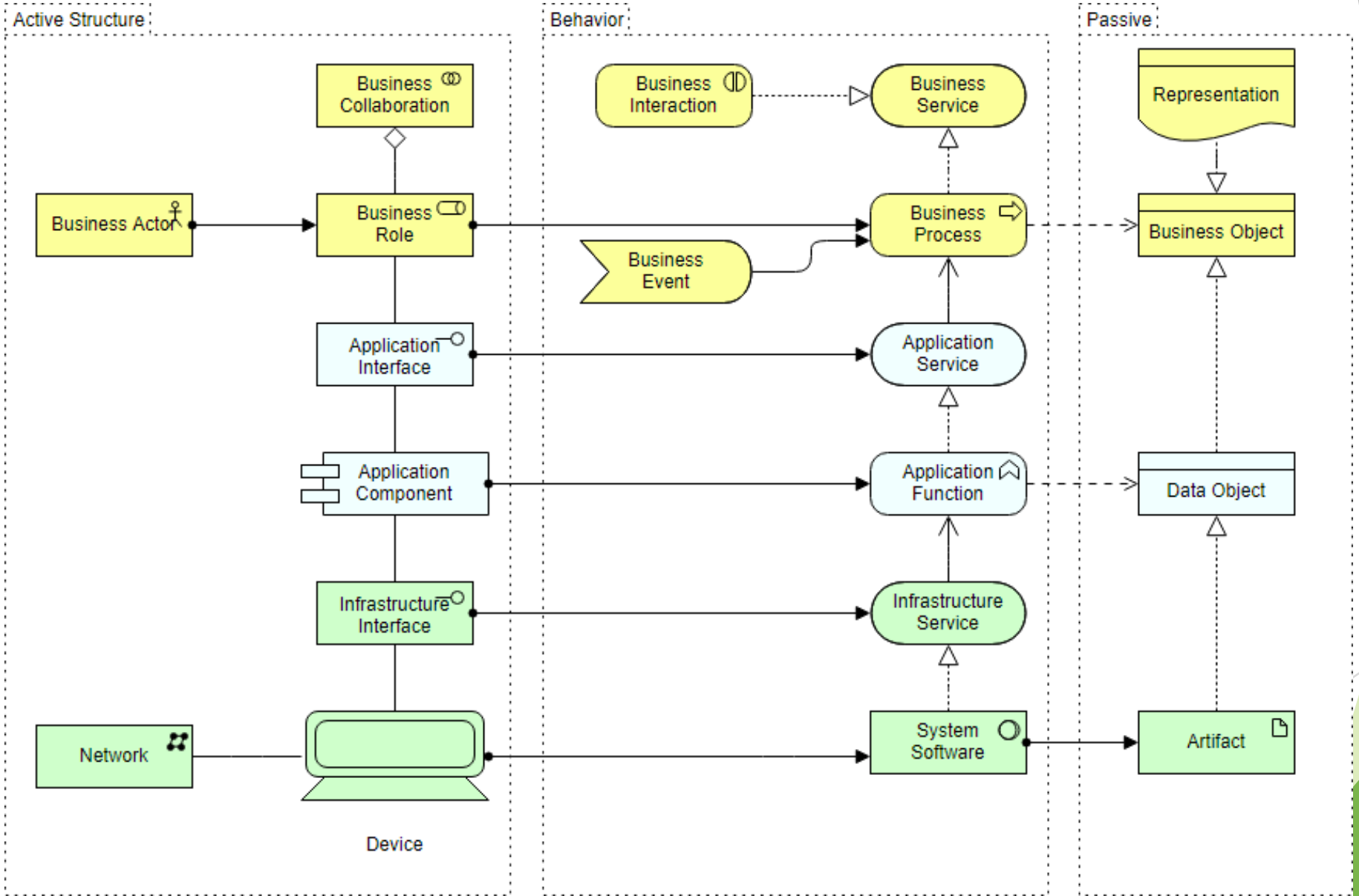
Archimate Overview

Archimate Core Framework Metamodel



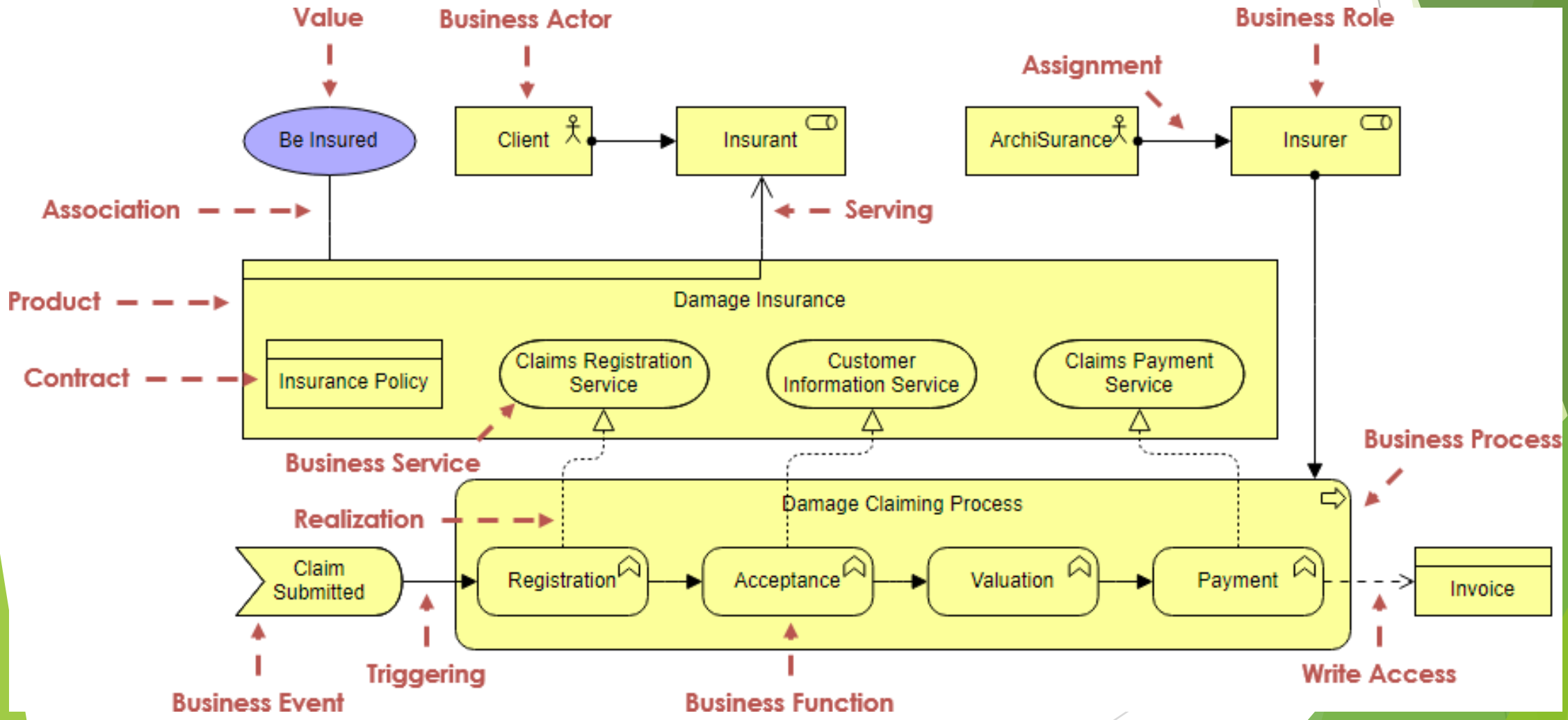
Archimate Overview

Archimate Core Framework Metamodel



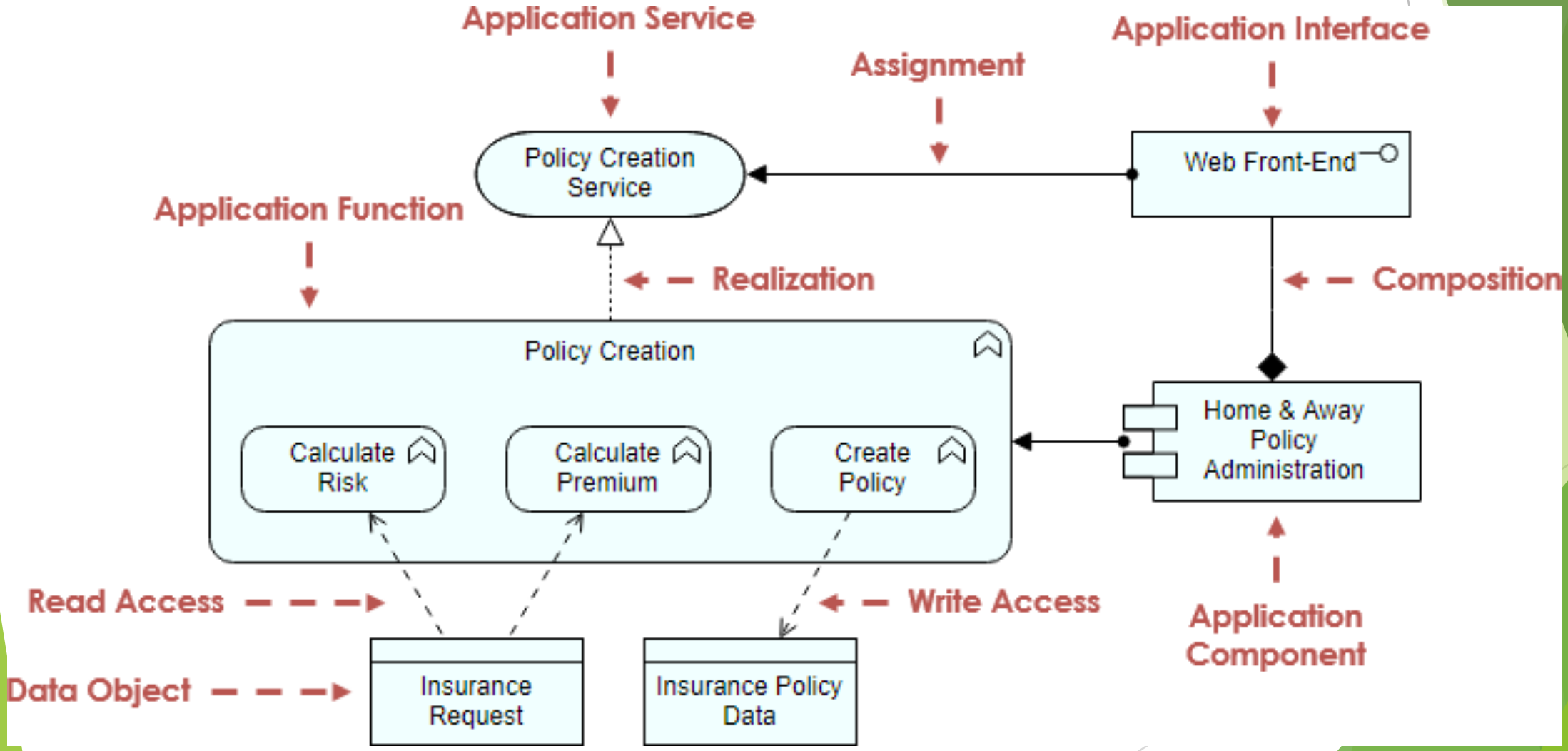
Archimate Overview – Core Layers

The **Business layer** offers products and services to external customers, which are realized in the organization by business processes performed by business actors and roles.



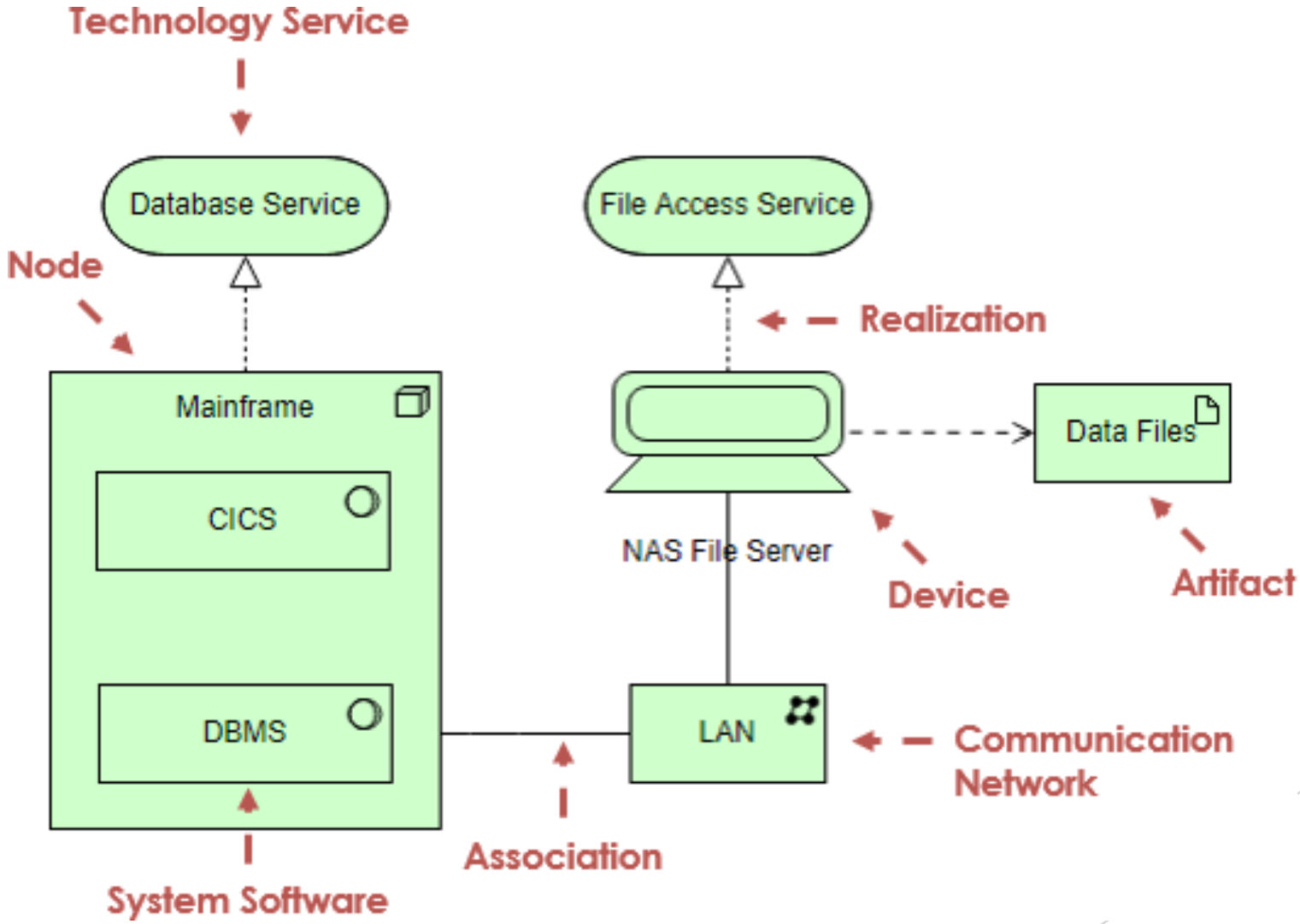
Archimate Overview – Core Layers

The **Application layer** supports the business layer with application services which are realized by (software) application components.



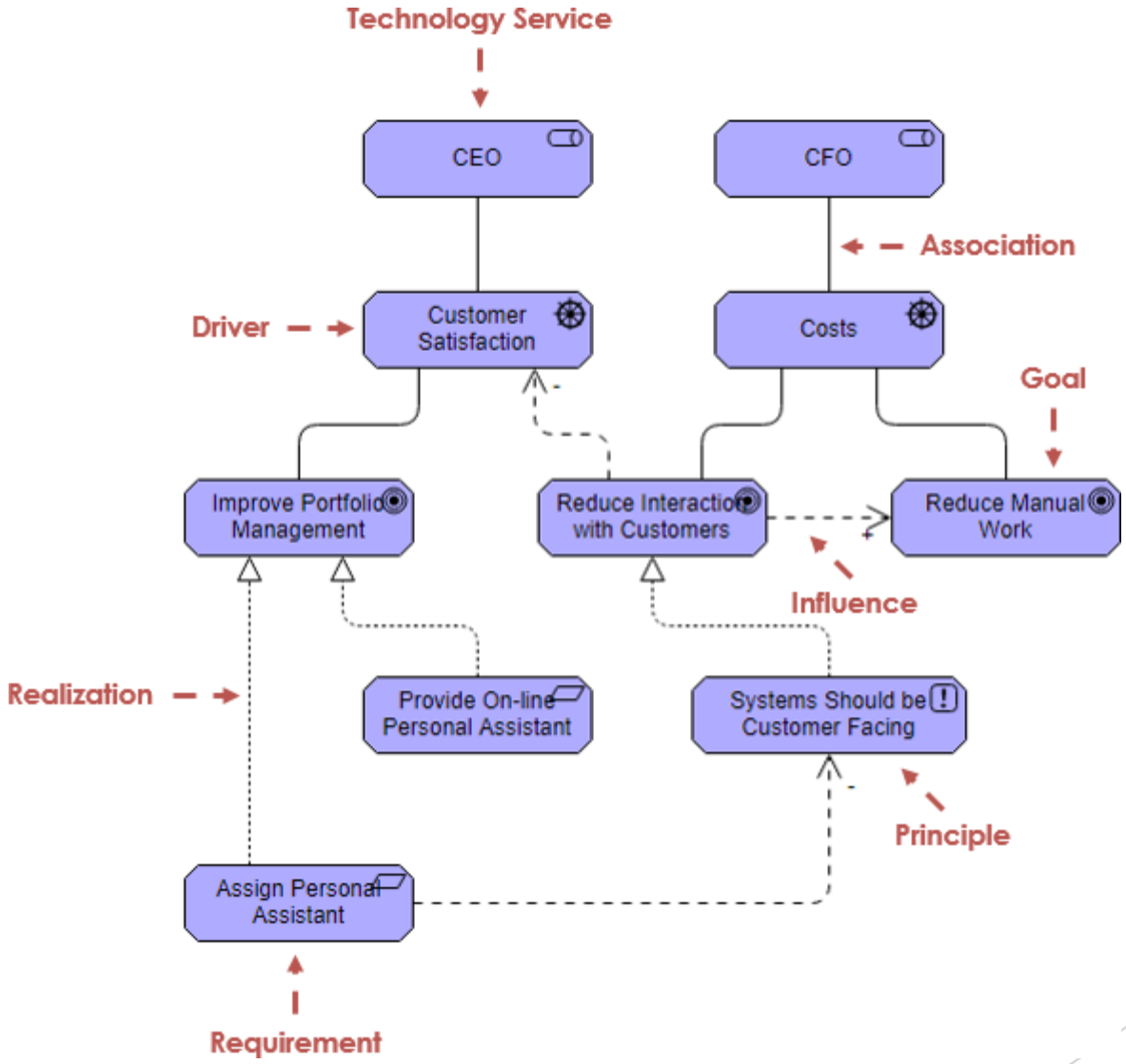
Archimate Overview – Core Layers

The **Technology layer** offers infrastructural services (e.g., processing, storage and communication services) needed to run applications, realized by computer and communication hardware and system software.



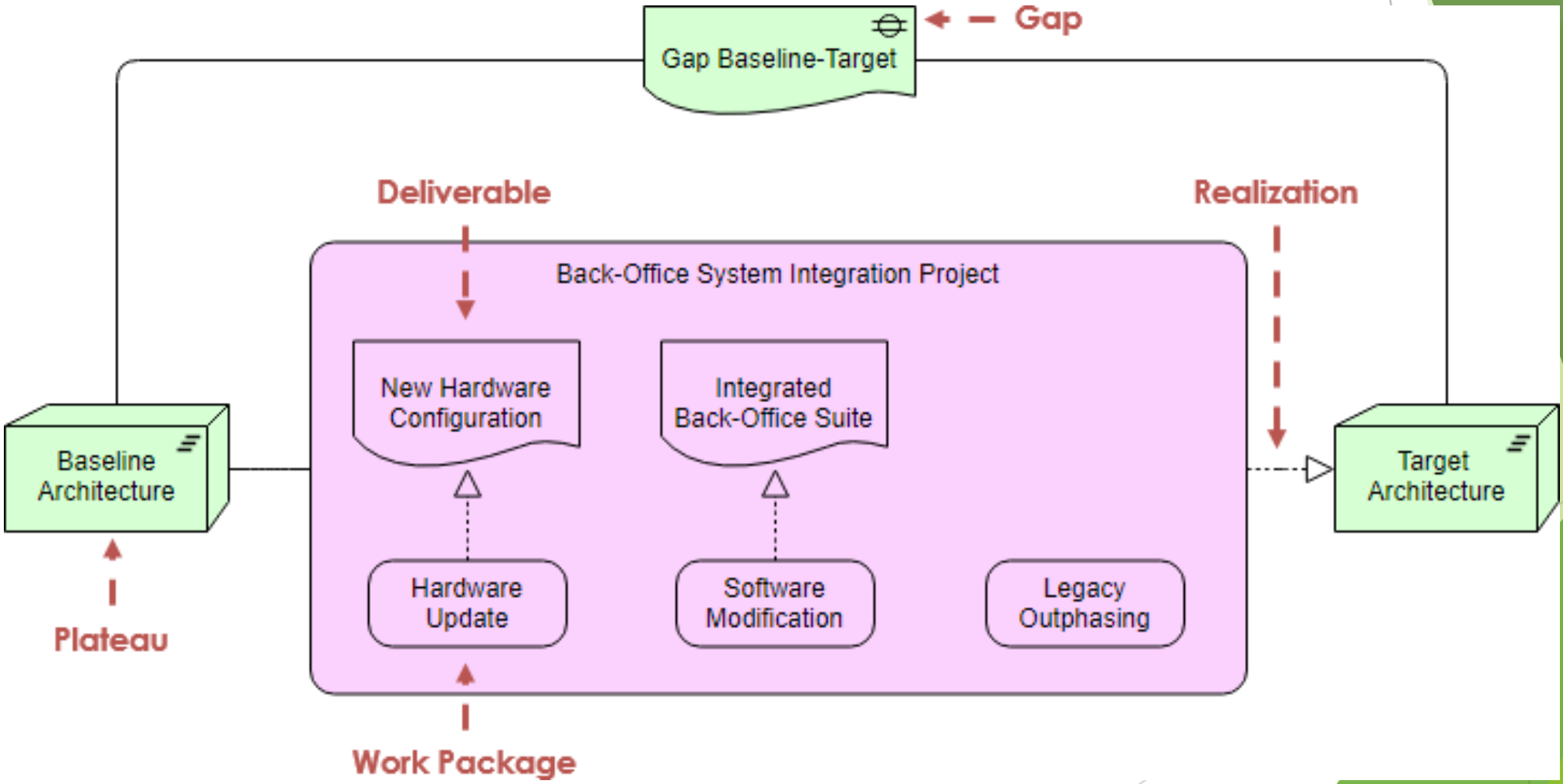
Archimate Overview – Motivation Extension

The ArchiMate **Motivation** elements enable the modeling of stakeholders, drivers for change, business goals, principles and requirements.

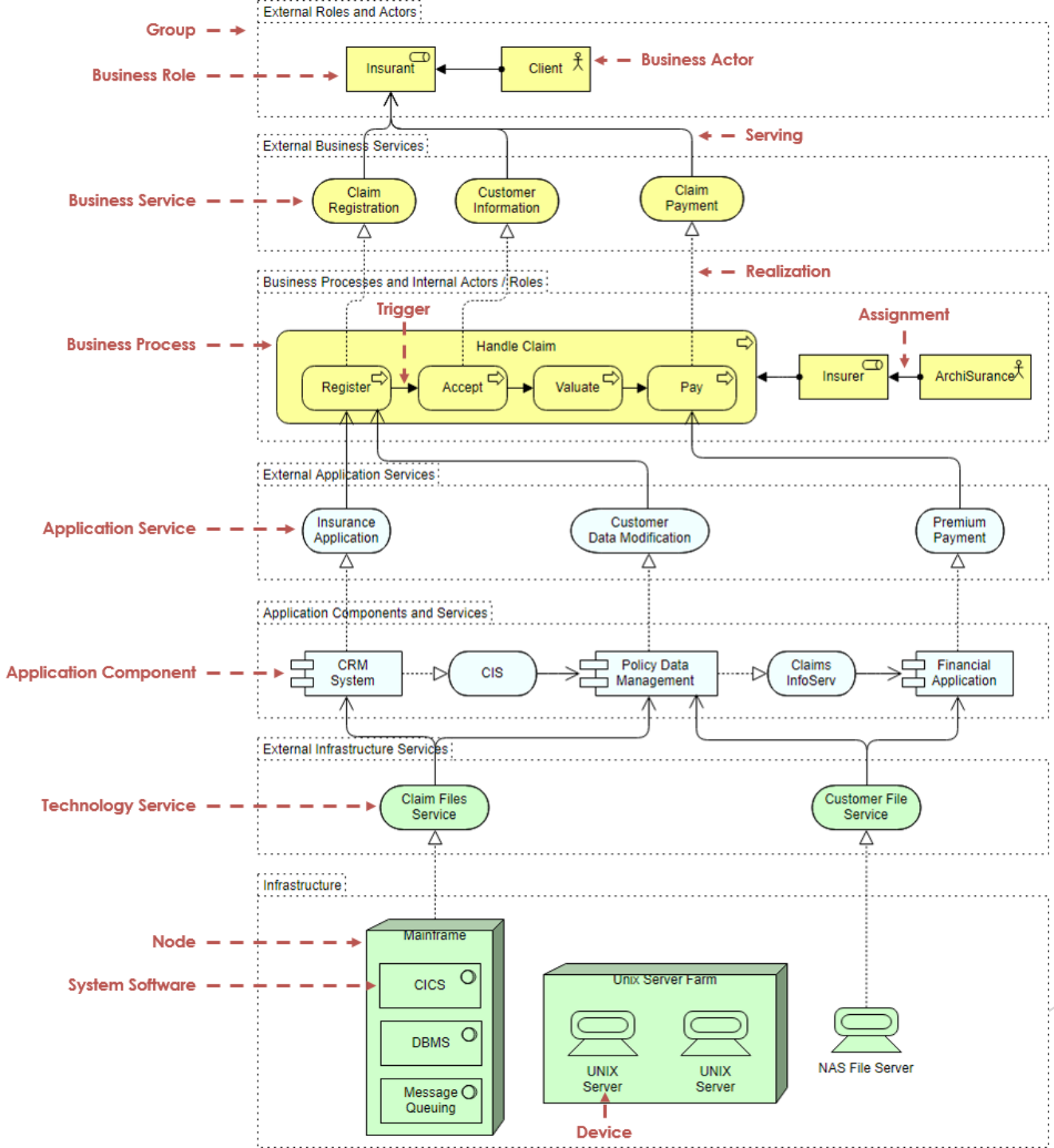


Archimate Overview – Implementation & Migration Extension

The ArchiMate **Implementation and Migration** elements enable the modeling of project portfolio management, gap analysis and transition and migration planning.



Archimate Overview - Example



The End