Developer to CTO

CS 7002

Romain Untereiner

Build tech

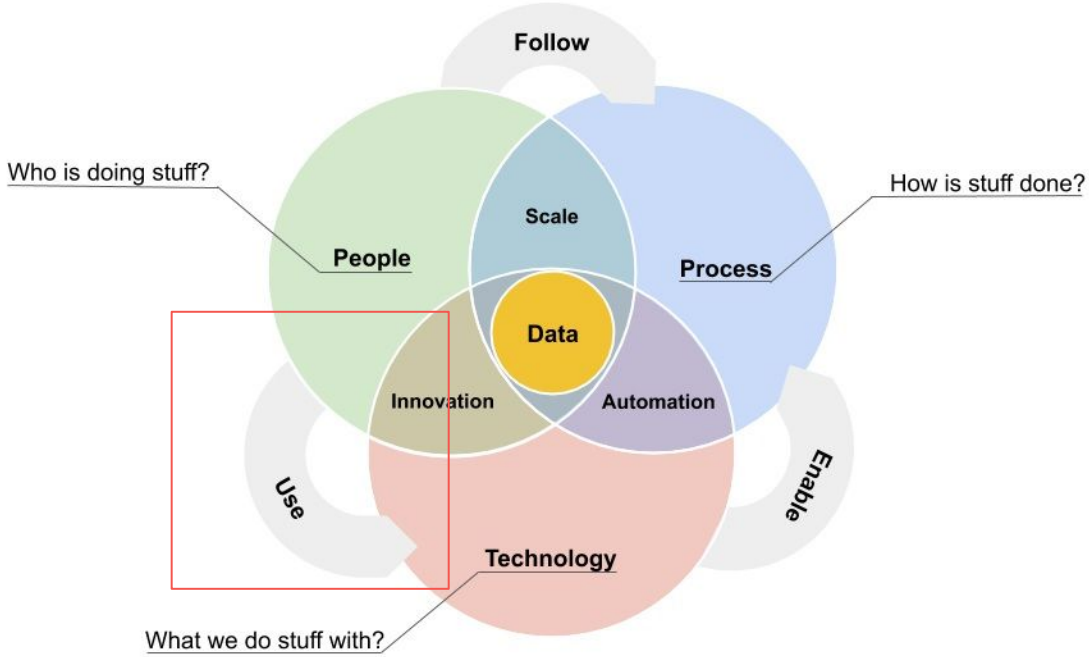
ICT in a tech company

It is both:

- things you will **use** to go faster
- things you will **build** for your customer

ICT is at the very core of your project: it is **information** and **communication**

How does it work?



IT for your project

It should be considered as a **supplied support function**.

It has to bring you a **value** in some **process** and might be required for it.

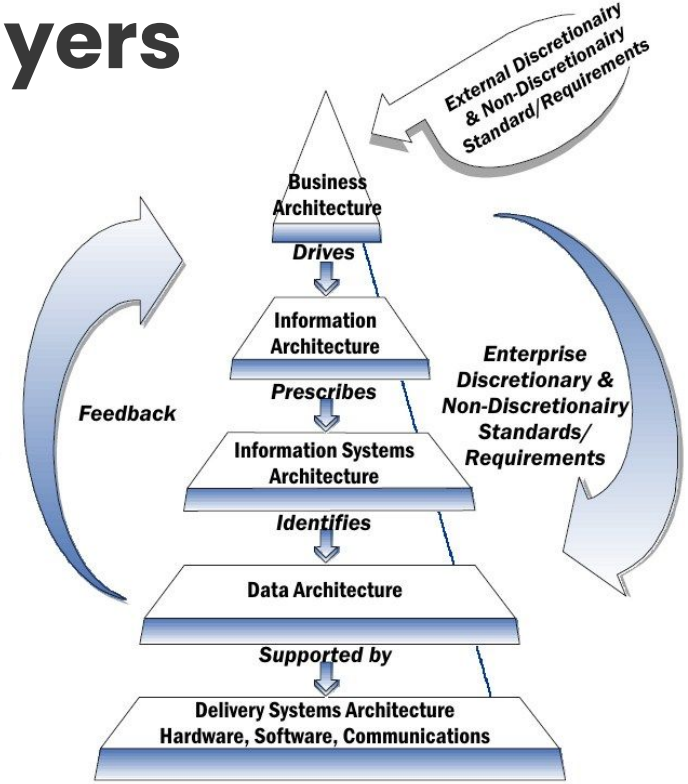
How is an organization structured?

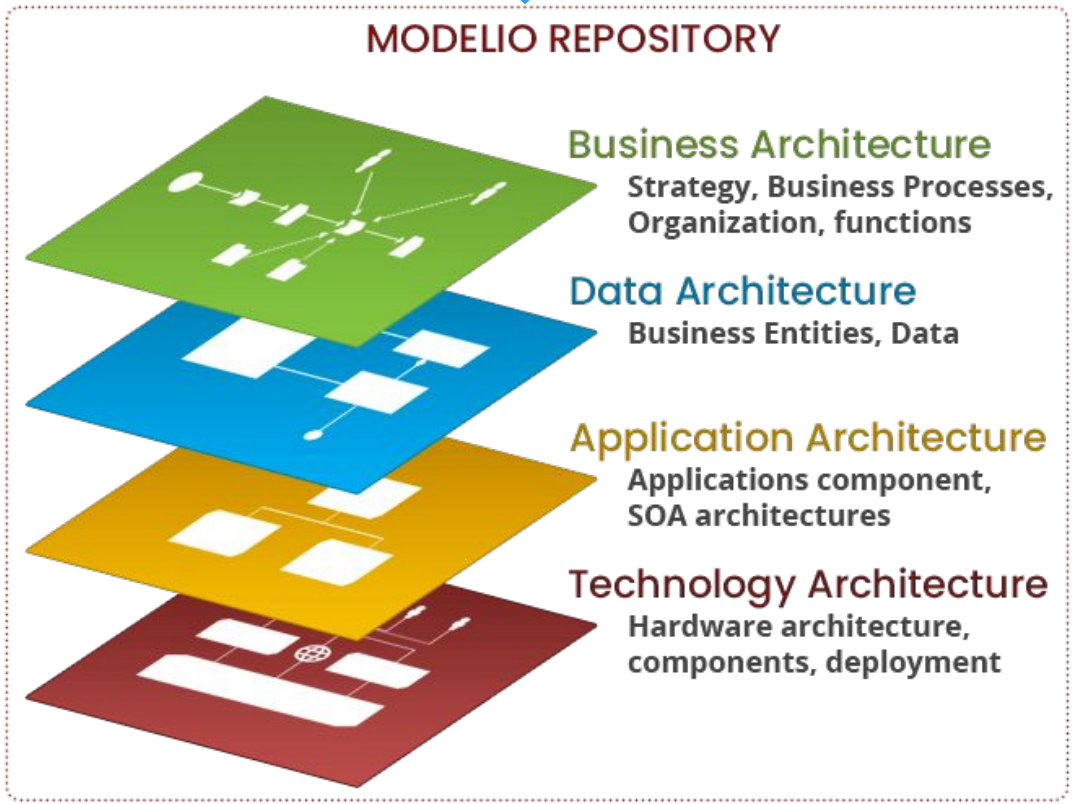
What layers do you see in a company?

What are the drivers of a company?

What are the drivers for IT implementation?

Entreprise layers



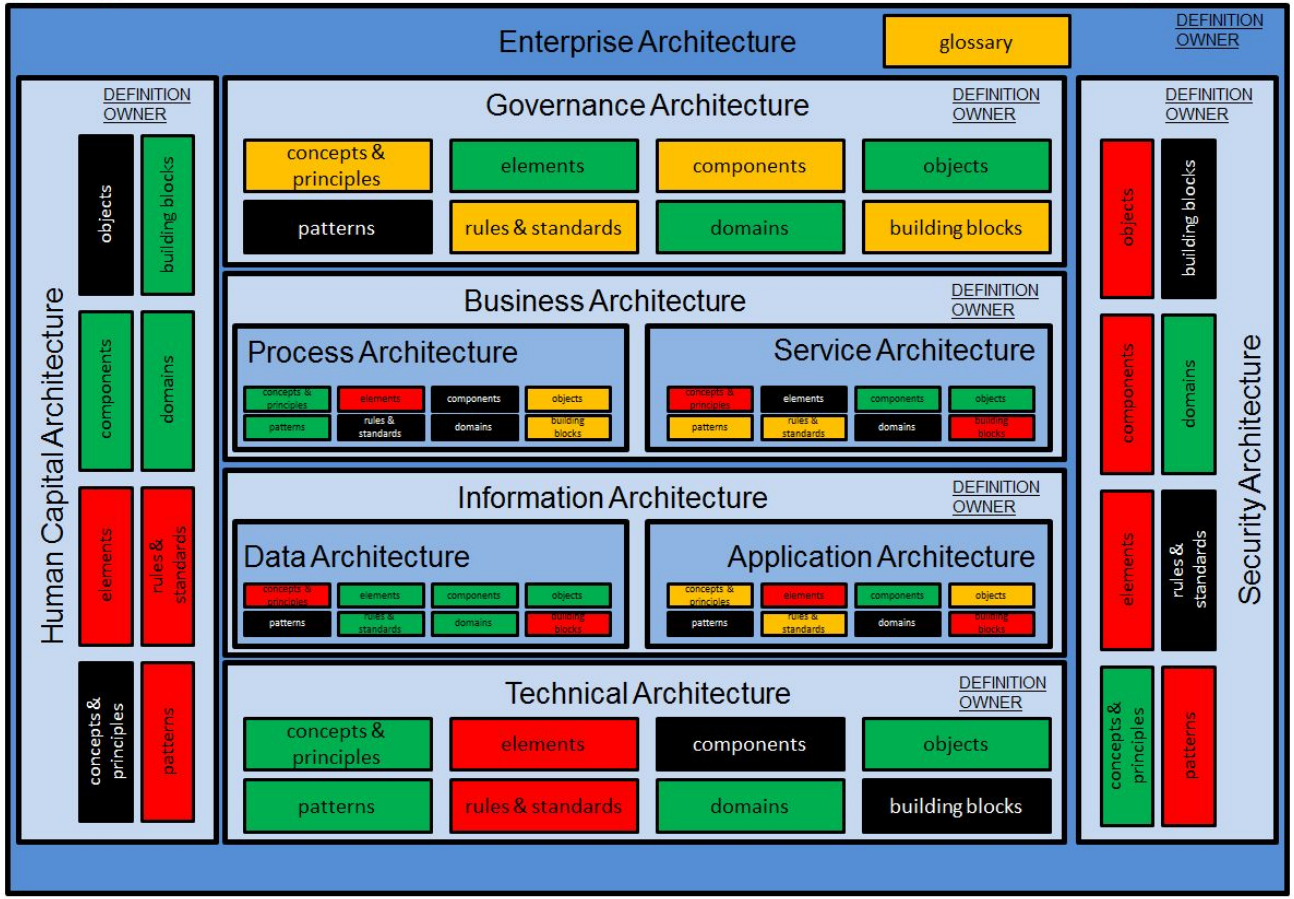

MODELIO REPOSITORY
Business Architecture
Strategy, Business Processes, Organization, functions
Data Architecture
Business Entities, Data
Application Architecture
Applications component, SOA architectures
Technology Architecture
Hardware architecture, components, deployment

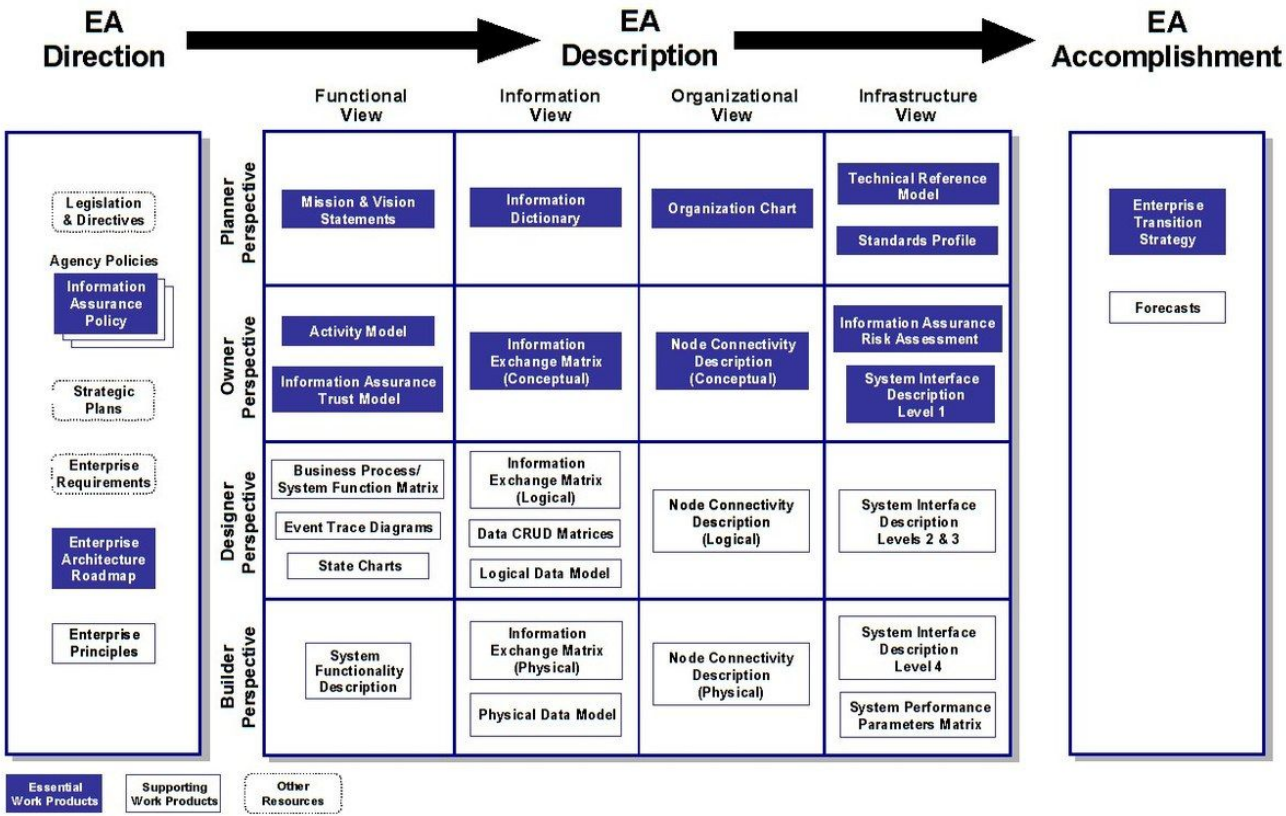
The Enterprise Architecture

EA is a well-defined practice for conducting enterprise analysis, design, planning, and implementation, using a comprehensive approach at all times

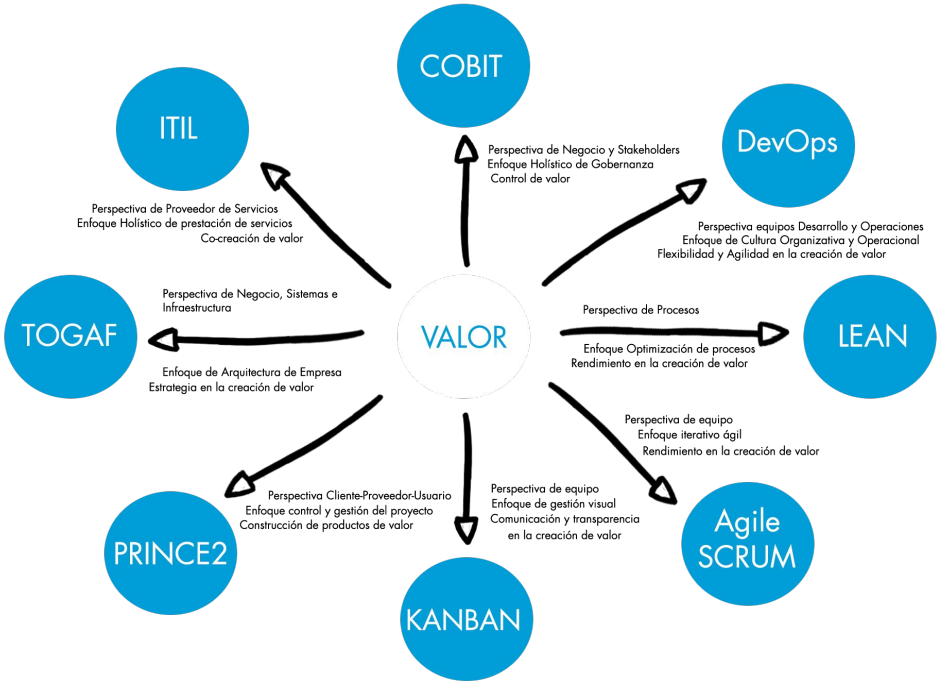
A global framework for the entire entreprise

Example Enterprise Architecture Framework Diagram

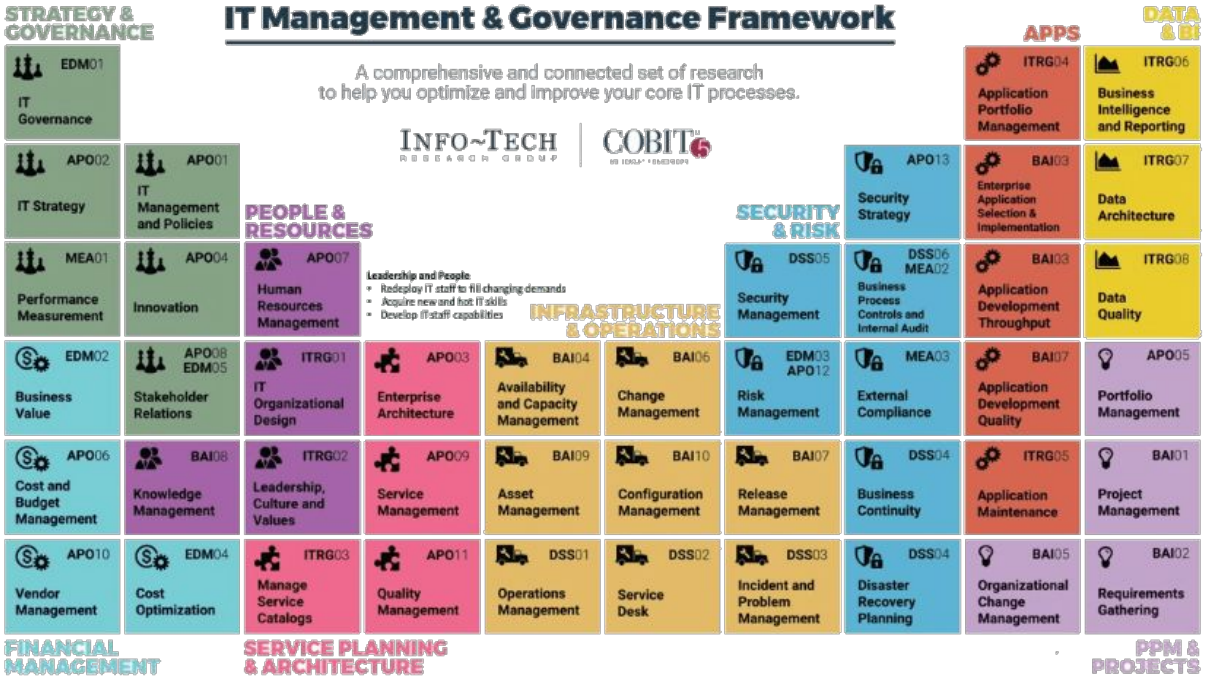


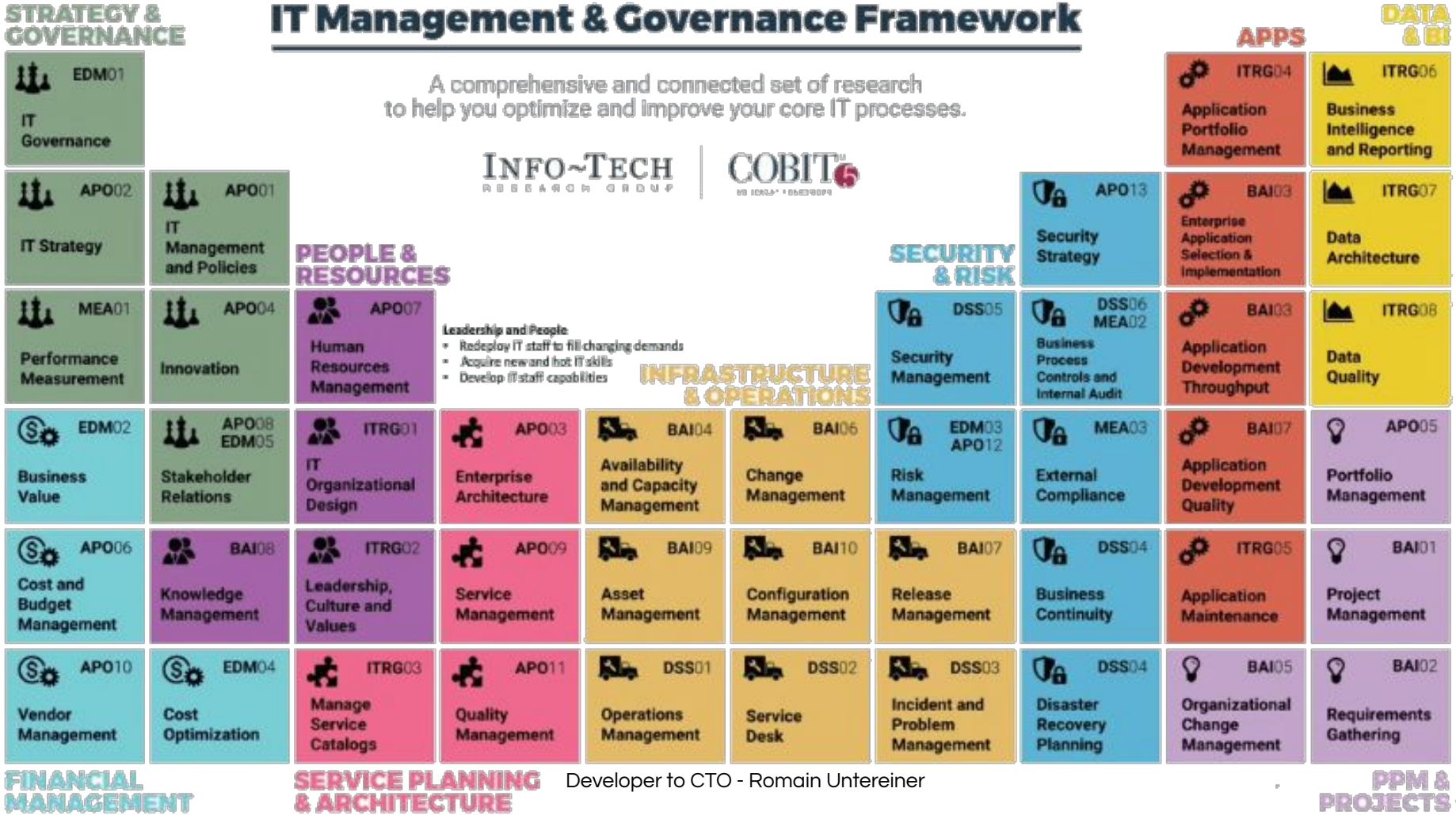

EA Direction
EA Description
EA Accomplishment
Functional View
Information View
Organizational View
Infrastructure View
Planner Perspective
Owner Perspective
Designer Perspective
Builder Perspective
Legislation & Directives
Agency Policies
Information Assurance Policy
Strategic Plans
Enterprise Requirements
Enterprise Architecture Roadmap
Enterprise Principles
Mission & Vision Statements
Information Dictionary
Organization Chart
Technical Reference Model
Standards Profile
Activity Model
Information Assurance Trust Model
Information Exchange Matrix (Conceptual)
Node Connectivity Description (Conceptual)
Information Assurance Risk Assessment
System Interface Description Level 1
Business Process/ System Function Matrix
Event Trace Diagrams
State Charts
Information Exchange Matrix (Logical)
Data CRUD Matrices
Logical Data Model
Node Connectivity Description (Logical)
System Interface Description Levels 2 & 3
System Functionality Description
Information Exchange Matrix (Physical)
Physical Data Model
Node Connectivity Description (Physical)
System Interface Description Level 4
System Performance Parameters Matrix
Enterprise Transition Strategy
Forecasts
Essential Work Products
Supporting Work Products
Other Resources

IT frameworks for your project



COBIT


IT Management & Governance Framework
A comprehensive and connected set of research to help you optimize and improve your core IT processes.
INFO-TECH RESEARCH GROUP
COBIT
STRATEGY & GOVERNANCE
EDM01 IT Governance
APO02 IT Strategy
APO01 IT Management and Policies
MEA01 Performance Measurement
APO04 Innovation
EDM02 Business Value
APO08 EDM05 Stakeholder Relations
APO06 Cost and Budget Management
BAI08 Knowledge Management
APO10 Vendor Management
EDM04 Cost Optimization
FINANCIAL MANAGEMENT
PEOPLE & RESOURCES
APO07 Human Resources Management
Leadership and People
Redeploy IT staff to fill changing demands
Acquire new and hot IT skills
Develop IT-staff capabilities
ITRG01 IT Organizational Design
ITRG02 Leadership, Culture and Values
ITRG03 Manage Service Catalogs
SERVICE PLANNING & ARCHITECTURE
APO03 Enterprise Architecture
APO09 Service Management
APO11 Quality Management
INFRASTRUCTURE & OPERATIONS
BAI04 Availability and Capacity Management
BAI06 Change Management
BAI09 Asset Management
BAI10 Configuration Management
DSS01 Operations Management
DSS02 Service Desk
SECURITY & RISK
DSS05 Security Management
EDM03 APO12 Risk Management
BAI07 Release Management
DSS03 Incident and Problem Management
APO13 Security Strategy
DSS06 MEA02 Business Process Controls and Internal Audit
MEA03 External Compliance
DSS04 Business Continuity
DSS04 Disaster Recovery Planning
APPS
ITRG04 Application Portfolio Management
BAI03 Enterprise Application Selection & Implementation
BAI03 Application Development Throughput
BAI07 Application Development Quality
ITRG05 Application Maintenance
BAI05 Organizational Change Management
DATA & BI
ITRG06 Business Intelligence and Reporting
ITRG07 Data Architecture
ITRG08 Data Quality
APO05 Portfolio Management
BAI01 Project Management
BAI02 Requirements Gathering
PPM & PROJECTS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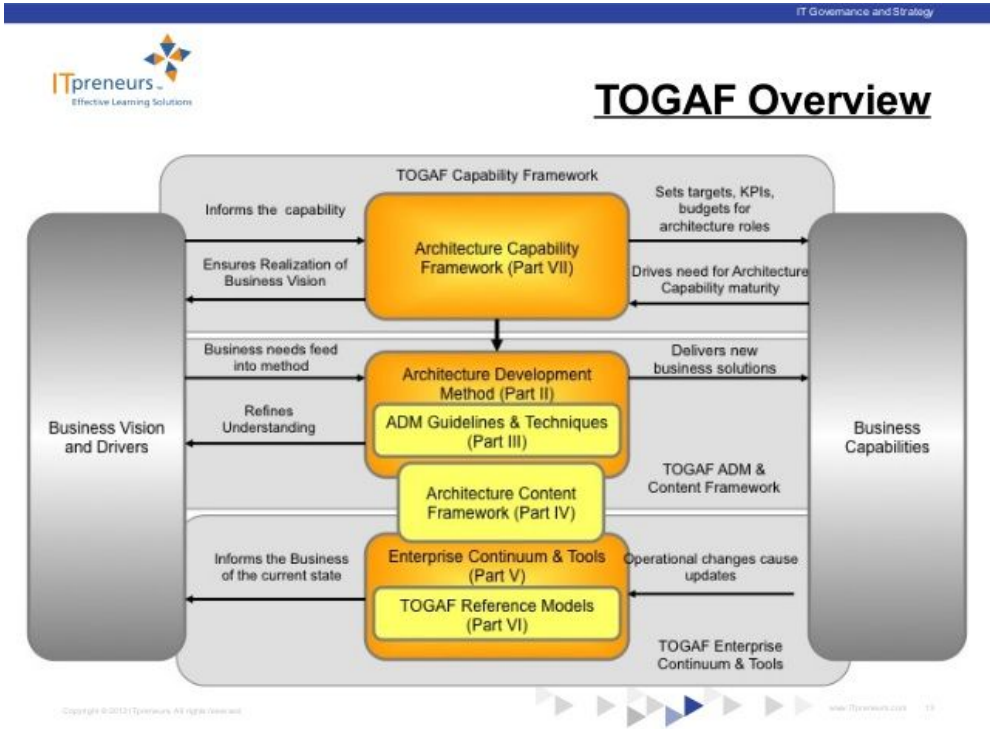
BAI05 Organizational Change Management
BAI02 Requirements Gathering
FINANCIAL MANAGEMENT
SERVICE PLANNING & ARCHITECTURE
PPM & PROJECTS

TOGAF


IT Governance and Strategy
ITpreneurs
Effective Learning Solutions
TOGAF Overview
TOGAF Capability Framework
Informs the capability
Ensures Realization of Business Vision
Architecture Capability Framework (Part VII)
Sets targets, KPIs, budgets for architecture roles
Drives need for Architecture Capability maturity
Business needs feed into method
Refines Understanding
Architecture Development Method (Part II)
ADM Guidelines & Techniques (Part III)
Delivers new business solutions
Business Vision and Drivers
Business Capabilities
TOGAF ADM & Content Framework
Architecture Content Framework (Part IV)
Informs the Business of the current state
Enterprise Continuum & Tools (Part V)
TOGAF Reference Models (Part VI)
Operational changes cause updates
TOGAF Enterprise Continuum & Tools

Security framework

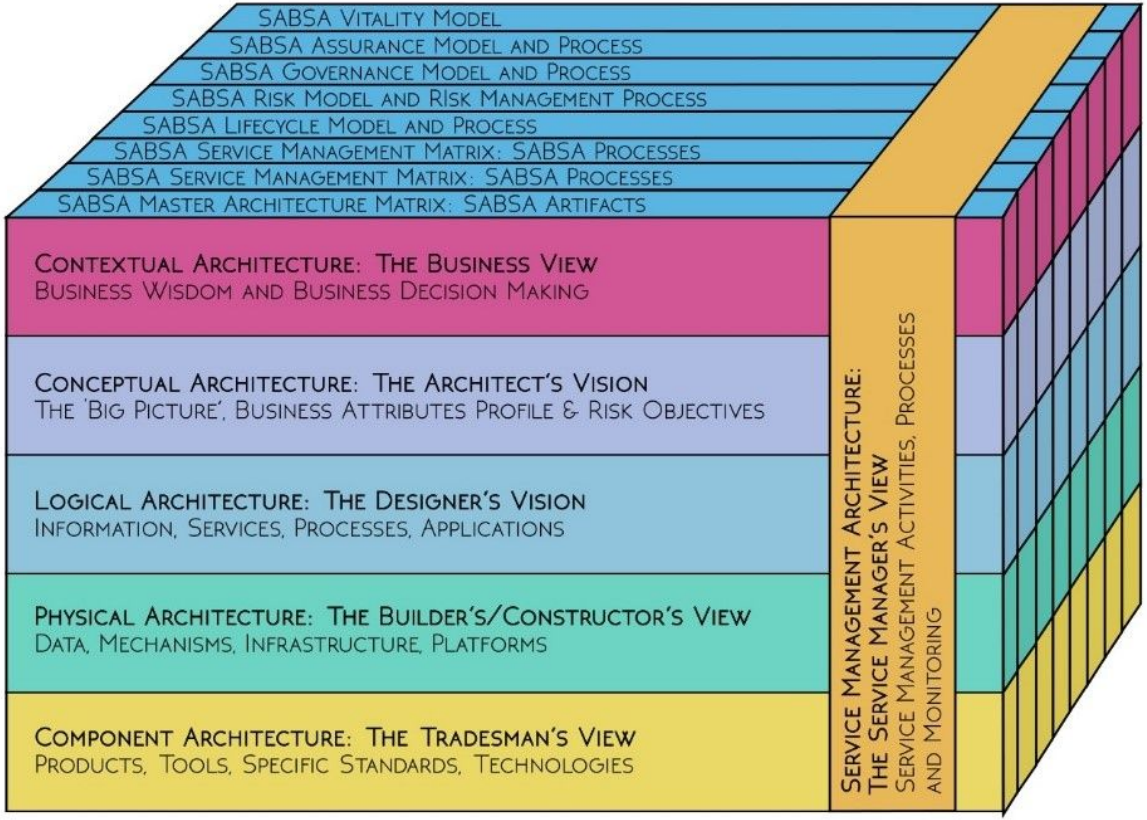
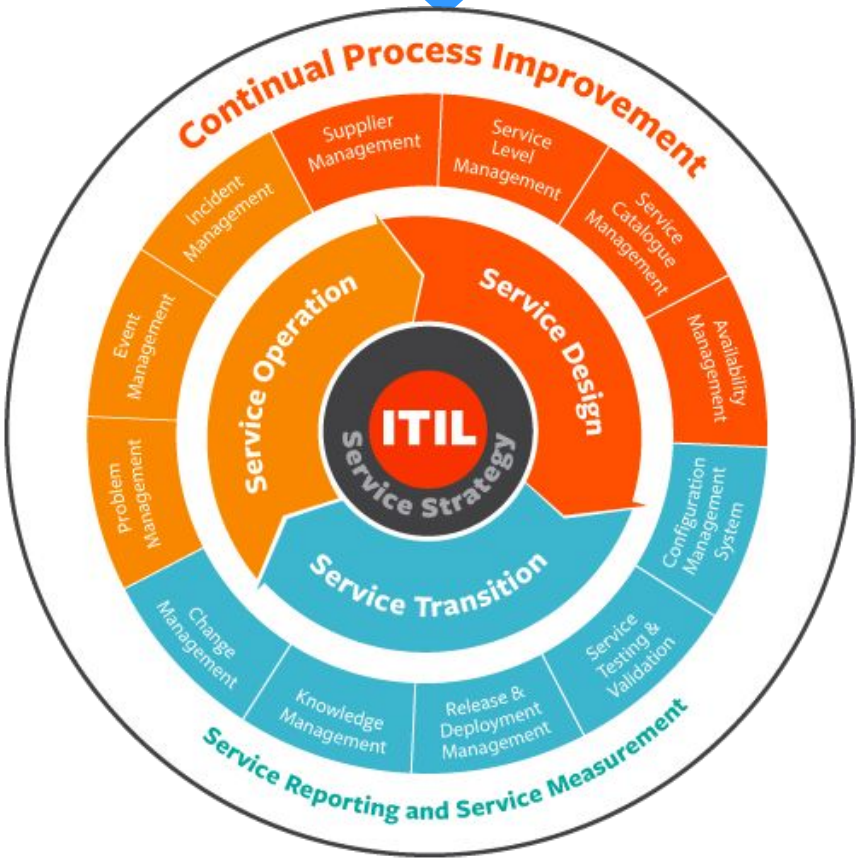


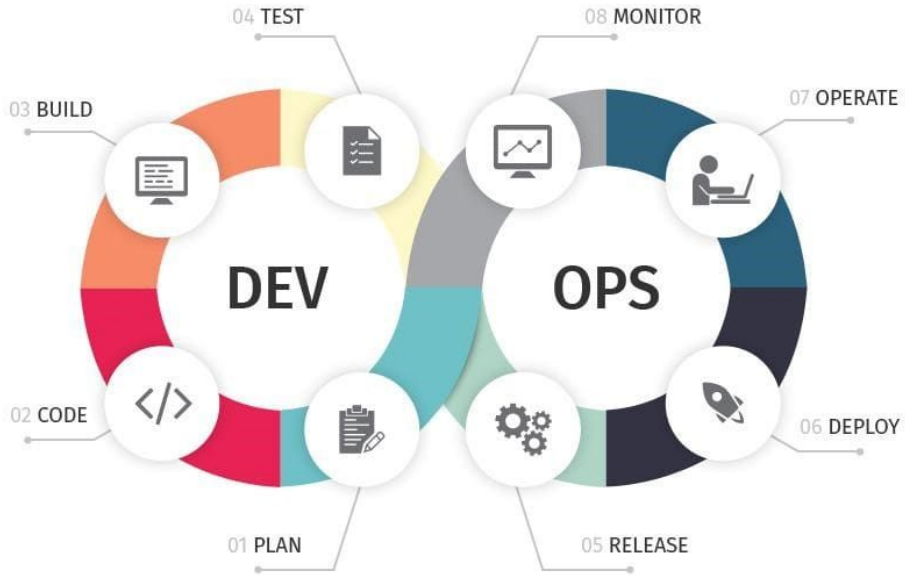
Table 3: SABSA Management Matrix™ 2018

	ASSETS (What)	MOTIVATION (Why)	PROCESS (How)	PEOPLE (Who)	LOCATION (Where)	TIME (When)
MANAGEMENT ARCHITECTURE	Delivery and Continuity Management	Operational Risk Management	Process Delivery Management	Governance, Relationship & Personnel Management	Environment Management	Time & Performance Management
	Assurance of Operational Excellence & Continuity	Risk Assessment; Risk Monitoring & Reporting; Risk Treatment	Management & Support of Systems, Applications & Services	Management & Support of Enterprise-wide and Extended Enterprise Relationships	Management of Buildings, Sites, Platforms & Networks	Management of Calendar and Timetable
	The row above is a repeat of Layer 6 of the main SABSA Matrix. The five rows below are an exploded overlay of how this Layer 6 relates to each of these other Layers					
CONTEXTUAL ARCHITECTURE	Business Driver Development	Business Risk Assessment	Capability Management	Relationship Management	Supply Chain Management	Performance Management
	Business Benchmarking & Identification of Business Drivers	Analysis of Internal & External Risk Factors	Managing Processes and Capabilities for Providing Value to Stakeholders	Managing Suppliers, Service Providers, Customers; Business Partners & Employees. Contract Management	Demand & Supply Management (upstream and downstream); Deployment & Consumption	Defining Business-Driven Performance Targets
CONCEPTUAL ARCHITECTURE	Proxy Asset Development	Developing Risk Objectives	Delivery Planning	Role Management	Business Portfolio Management	Service Level Definition
	Defining Business Attributes Profile with Performance Criteria, KPIs & KRIs	Maintaining Risk Modelling Framework; Risk Analysis on Business Attributes Profile	SLA Planning; BCP; Financial Planning; Transition Planning. Planning and Maintaining the Inventory of Processes and Services Catalogue	Maintaining Trust Modelling Framework; Defining Roles, Responsibilities, Liabilities & Cultural Values	Planning & Maintaining the Business Footprint: Points of Supply and Access	Managing Performance Criteria and Targets; Abstracting Attribute Performance Targets
LOGICAL ARCHITECTURE	Logical Asset Management	Policy Management	Delivery Management	Enterprise-wide User Management	Service Catalogue Management	Evaluation Management
	Knowledge Management; Release & Deployment Management	Risk Modelling; Management of Policy Development & Maintenance. Policy Publication & Compliance Management	SLA Management; Supply Chain Management; BCM; Financial Management; Transition Management	Trust Modelling; Identity & Access Management; Management of User Privileges, Account Administration & Provisioning	Configuration (CMDB) Management; Capacity Planning; Availability Management	Monitoring & Reporting Performance against KPIs and KRIs
PHYSICAL ARCHITECTURE	Physical Asset Management	Risk Data Management	Operations Management	User Support	Resources Management	Performance Data Collection
	Change Management; Platform & Data Storage Management	Risk Procedure Management; Risk Metadata Management	Job, Incident, Event, and Disaster Recovery Management	Service Desk, Problem, and Request Management	Physical & Environmental Security Management; Real Estate and Facilities Management	Business Systems Monitoring Procedure Management
COMPONENT ARCHITECTURE	Component Management	Risk Management Components	Component Deployment	Personnel Component Management	Component Environment Management	Monitoring Components
	Product & Component Standards Management	Risk Analysis, Monitoring & Reporting Components, Systems and Standards Management	Product & Component Selection, Procurement. Project and Standards Management	Recruitment, Disciplinary, Training & Awareness Delivery. Component and Standards Management	Physical and Environmental Security Component and Standards Management	Analysis, Monitoring & Reporting Component and Standards Management

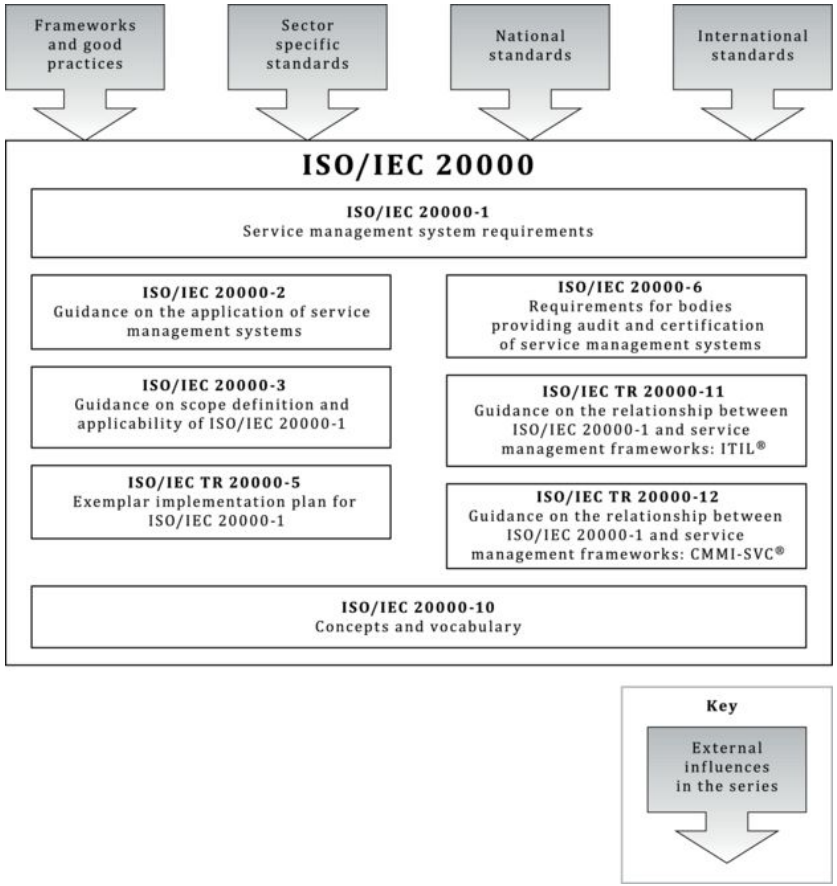
ITIL v4


Continual Process Improvement
Supplier Management
Service Level Management
Service Catalogue Management
Availability Management
Configuration Management System
Service Testing & Validation
Release & Deployment Management
Knowledge Management
Change Management
Problem Management
Event Management
Incident Management
Service Operation
Service Design
ITIL
Service Strategy
Service Transition
Service Reporting and Service Measurement

Devops


04 TEST
08 MONITOR
03 BUILD
07 OPERATE
DEV
OPS
02 CODE
06 DEPLOY
01 PLAN
05 RELEASE

ISO 20000


Frameworks and good practices
Sector specific standards
National standards
International standards
ISO/IEC 20000
ISO/IEC 20000-1
Service management system requirements
ISO/IEC 20000-2
Guidance on the application of service management systems
ISO/IEC 20000-3
Guidance on scope definition and applicability of ISO/IEC 20000-1
ISO/IEC TR 20000-5
Exemplar implementation plan for ISO/IEC 20000-1
ISO/IEC 20000-6
Requirements for bodies providing audit and certification of service management systems
ISO/IEC TR 20000-11
Guidance on the relationship between ISO/IEC 20000-1 and service management frameworks: ITIL®
ISO/IEC TR 20000-12
Guidance on the relationship between ISO/IEC 20000-1 and service management frameworks: CMMI-SVC®
ISO/IEC 20000-10
Concepts and vocabulary
Key
External influences in the series

Architecture decision

Name	MySQL Master Slave
Current Version	3 (MS2 <<Release>>)
Current State	Approved
Decision Group	None
Problem/Issue	The physical storage on the database server uses a RAID 0 configuration. If one of the discs in the array fails, a complete loss of data would be the effect. This violates the reliability requirements.
Decision	Provide a second hardware node that runs MySQL in slave configuration. The primary database server is configured as master.
Alternatives	Periodically backup the whole database as complete image of the server
Arguments	With a master slave configuration, all changes made to the master are automatically synchronized with the slave server. If the master fails or needs to be maintained, the slave can be reconfigured to act as a master within 30 seconds. A backup would only capture snapshots and recovery would take much longer.
Related decisions	• This <<caused by>> RAID 0 • This <<caused by>> MySQL DBMS
Related requirements	NFR1, NFR2, NFR3, NFR4
History	**Stakeholder** / **Action** / **Status** / **Iteration** F. Fredson <<Architect>> / <<Propose>> / <<Tentative>> / MS1 E. Ericson <<Architect>> / <<Validate>> / <<Decided>> / MS1 T. Thompson <<Reviewer>> / <<Confirm>> / <<Approved>> / MS2

Fig. 2. Example detail model of an architecture decision.

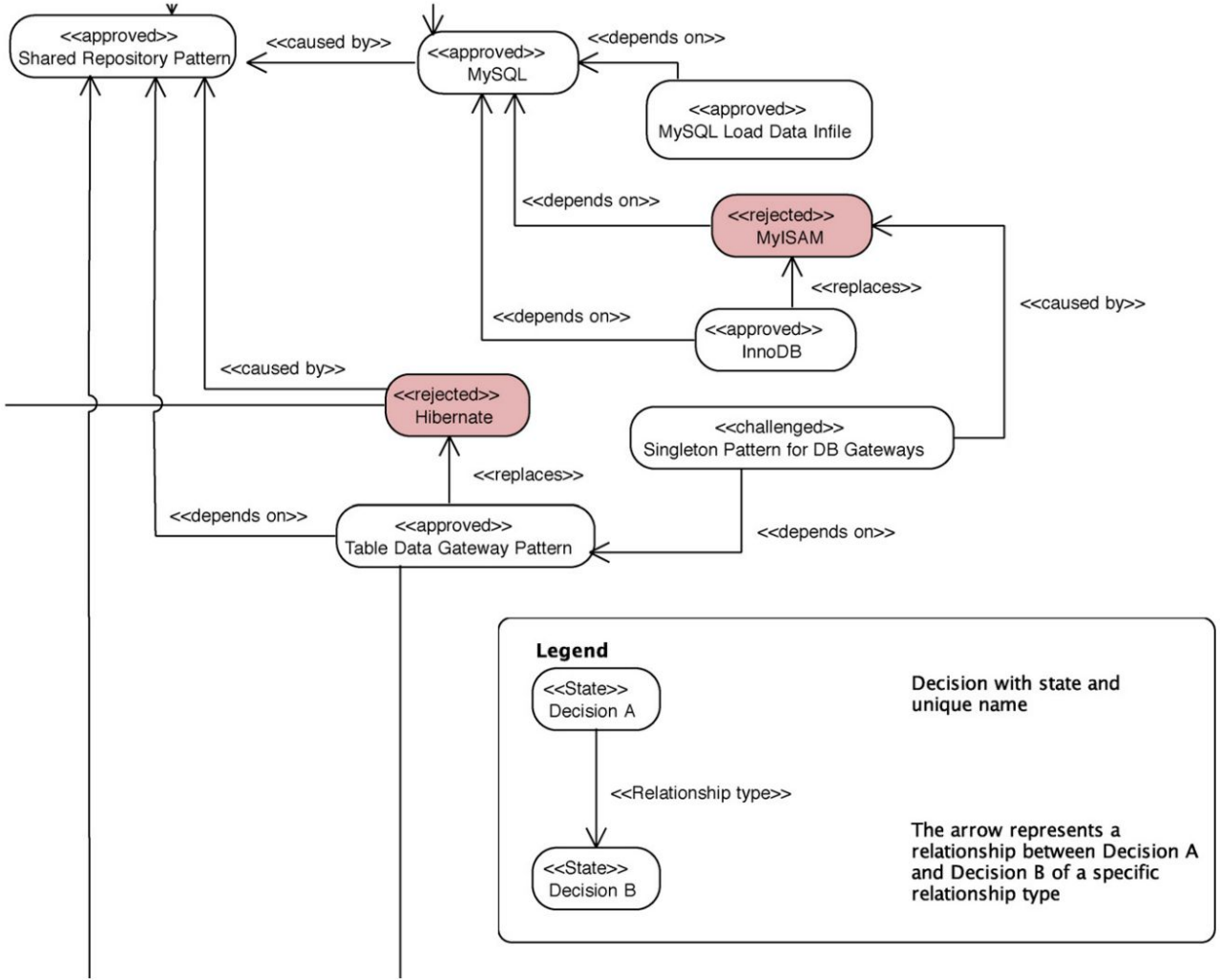
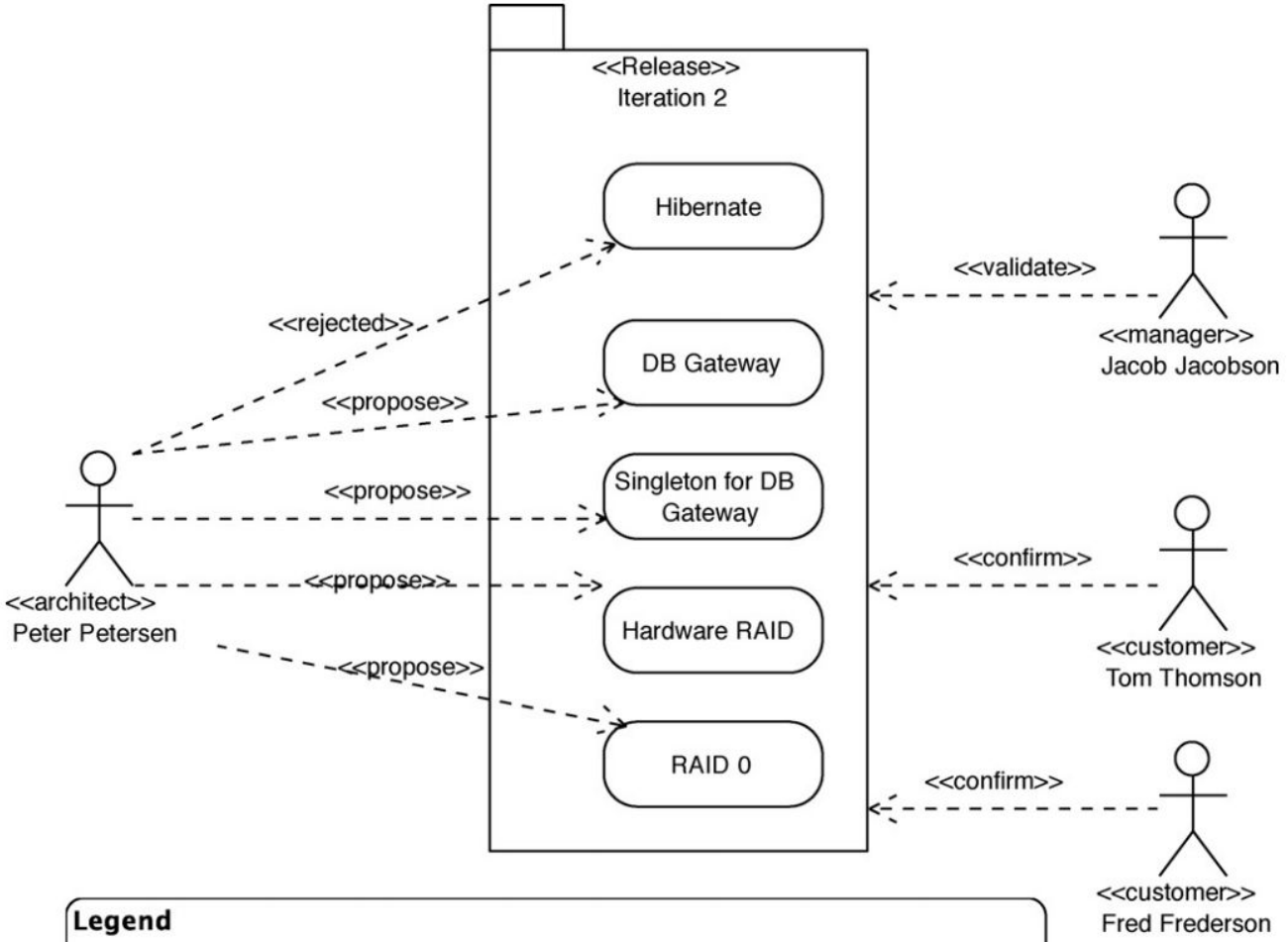


Fig. 3. Extract of a relationship view.


<<Release>>
Iteration 2
Hibernate
DB Gateway
Singleton for DB Gateway
Hardware RAID
RAID 0
<<rejected>>
<<propose>>
<<propose>>
<<propose>>
<<propose>>
<<architect>>
Peter Petersen
<<validate>>
<<manager>>
Jacob Jacobson
<<confirm>>
<<customer>>
Tom Thomson
<<confirm>>
<<customer>>
Fred Frederson


Legend

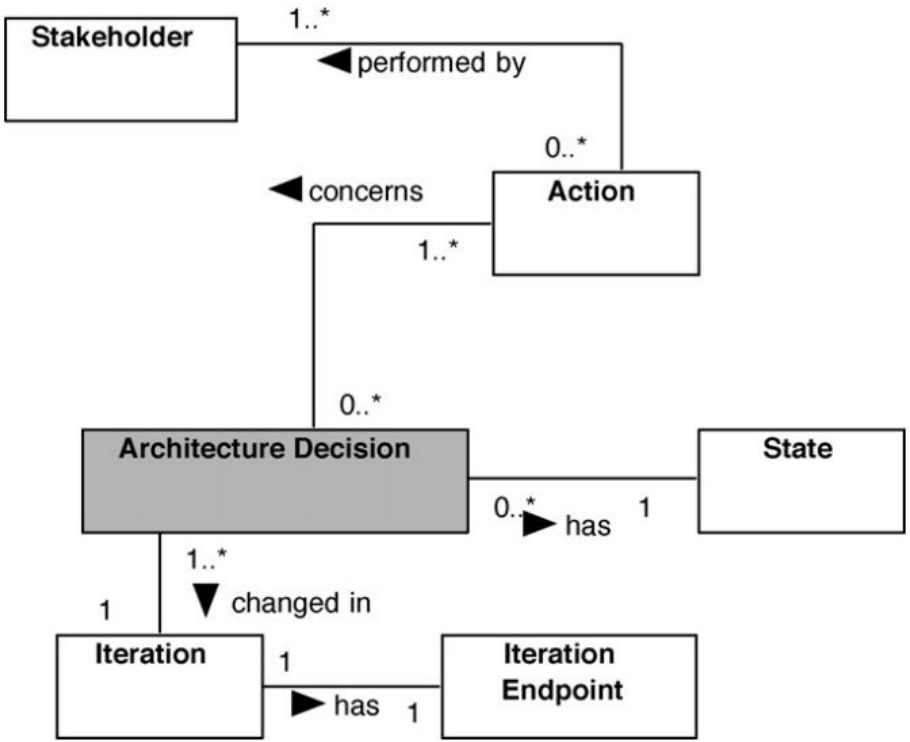
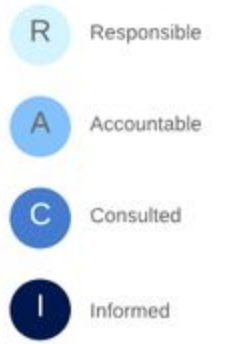


Fig. C.5. Metamodel of stakeholder involvement viewpoint.

RACI

	Role 1	Role 2	Role 3	Role 3	Role 4
Phase 1					
Task 1					
Task 2					
Phase 2					
Task 1					
Task 2					
Task 3					
Phase 3					
Task 1					



Pro tip: Select a circle shape from the RACI legend, hold the Alt key, and drag the shape to make a copy.

Place your new circle on the chart to show who needs to be responsible, accountable, consulted, and informed throughout the project.

RACI

	Ellen	Carl	Babette	Thomas
Project planning	A	R	C	
Prepare technical doc.	A		R	I
Meeting protocols	AR			I
Negotiate with customer	A	C		R
Support customer	A	R	I	C
Prepare contract	A		R	
Sign contract	AR	I	I	I

Session learnings

- Entreprise can be modeled with EA

- A project is organised in several connected layers

- Many frameworks exist, defending very similar principles

- Main element resides in Ownership, Decision making and Enterprise stakeholder alignment

- The size of an enterprise requires a correlated level of organisation

Next session

- Explore the core pillars of IT

- Dive into: Product, System Design, Infrastructure, Development, Delivery, Tooling, Security, Monitoring

- Functional architecturing