SAP Enterprise Architecture Framework

The SAP Enterprise Architecture Framework is centered around the following four cornerstones:

Methodology: Proven, TOGAF and industry standards-based EA methodology, widely adopted throughout SAP

Reference Architecture Content: SAP Reference Business and Solution Architecture mapping Business and SAP IT Solutions

Tooling: Set of customer-facing and SAP-internal Enterprise Architecture tools

Services: Standardized SAP EA Services to support customer transformation

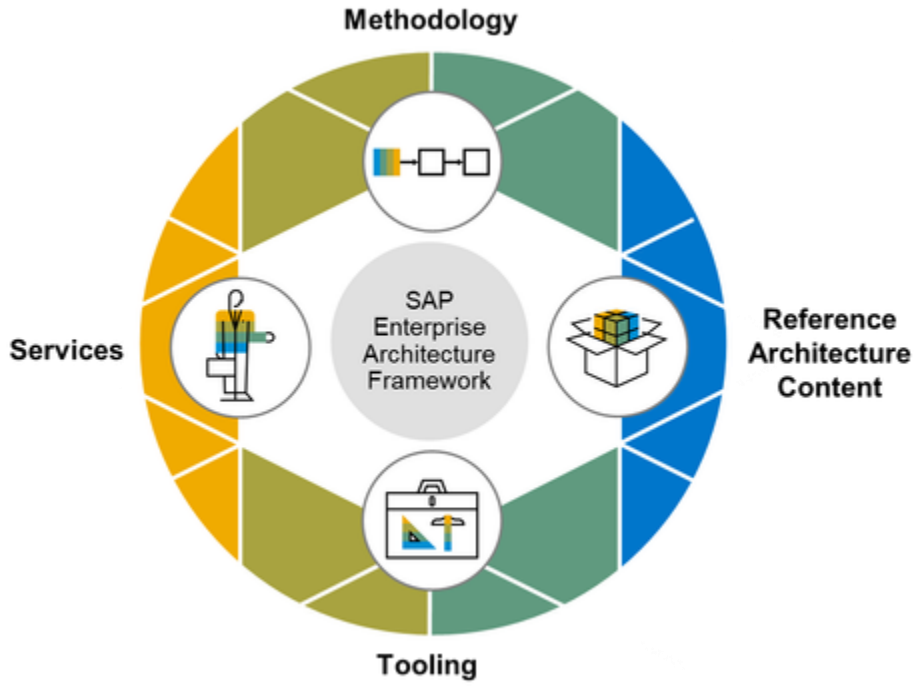


Figure 1 – SAP Enterprise Architecture Framework

SAP Enterprise Architecture Methodology

With the SAP Enterprise Architecture Methodology, we support a sub-set of the TOGAF® Version 10 Architecture Development Method (ADM) phases. Beside requirements management and the preliminary phase, the focus is on the

- Architecture Vision
- Business Architecture
- Application & Data Architecture (Information System Architecture in TOGAF terms)
- Technology Architecture
- Opportunities and Solutions
- Migration Planning

We foresee a set of recommended artifacts for each phase proven widely in architecture engagements. These recommended artifacts are complemented by additional artifacts which can be used in a given architectural context on a per-need basis. At the same time, the framework is open for extensions.

The following graph outlines SAP's customer facing (SAP Presales and SAP Consulting) enterprise architecture development process based on TOGAF® ADM with SAP-recommended artifacts. Although it looks visually like a waterfall model, it is highly iterative.

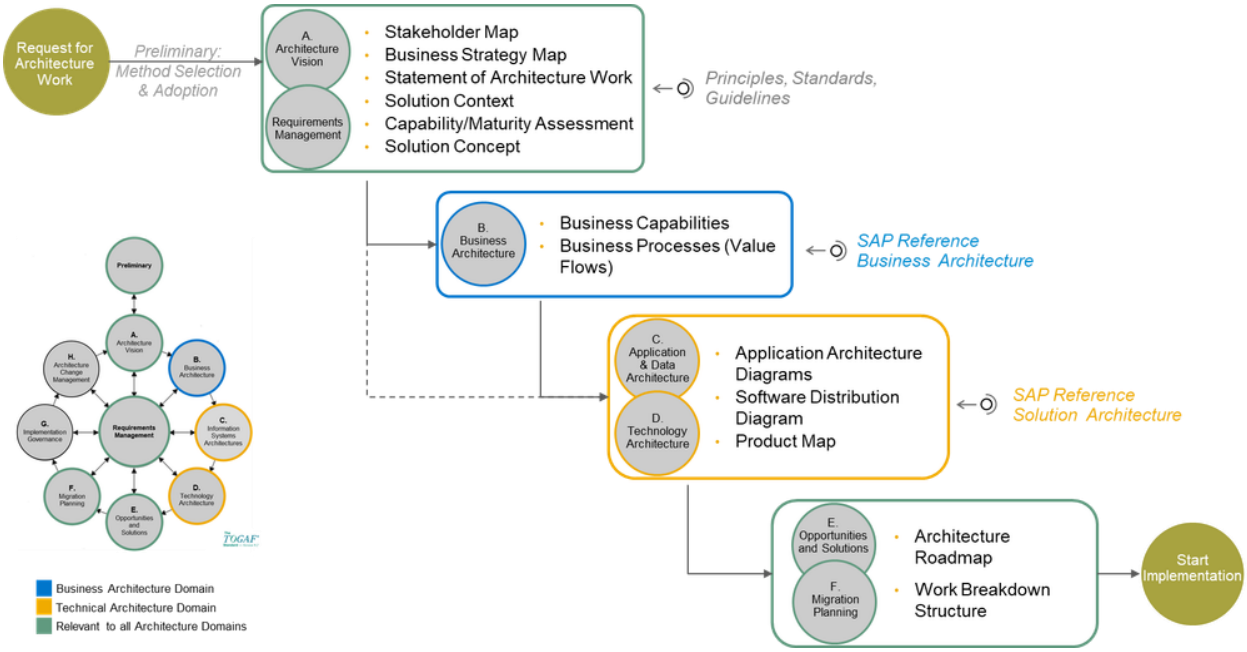


Figure 2 – SAP's customer facing architecture development process based on TOGAF® ADM with SAP-recommended artifacts

The overview of the recommended and optional artifacts is visualized in form of a Metro Map (see figure 3), which depicts the architecture development phases in conjunction with the artifacts rendered as stops on the metro map.

Please note that the arrows in the figure outline rather a natural flow than a strict sequence of artifacts. Majority of the artifacts are based on the TOGAF Version 10 standard.

Beside the TOGAF based artifacts, we complemented our framework with additional artifacts which have been proven to be successful in the stakeholder interaction for example the Business Model Canvas (now in its latest version as Sustainable Business Model Canvas) or the Application Use-Case Diagram which supports a Design Thinking centric and use case driven approach.

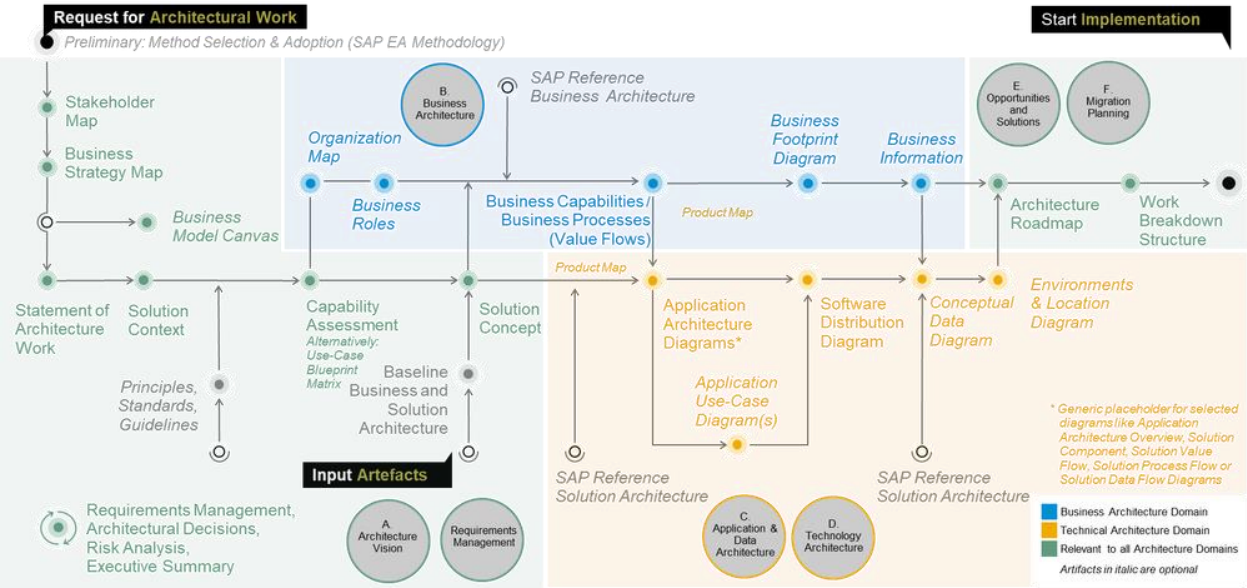


Figure 3 - SAP Enterprise Architecture Methodology – Metro Map

Reference Architecture Content

Another highlight of the SAP Enterprise Architecture Framework are the Reference Business Architecture (RBA) and the Reference Solution Architecture (RSA), as both provide standardized and authored reference content provided by SAP.

The SAP Reference architecture can be applied in SAP's Customer Facing EA ADM and supports multiple of the artifacts outlined in figure 3.

The Reference Business Architecture and Reference Solution Architecture are structured alongside the following four architecture views:

- Capability View
- Process View
- Data View
- Organization View

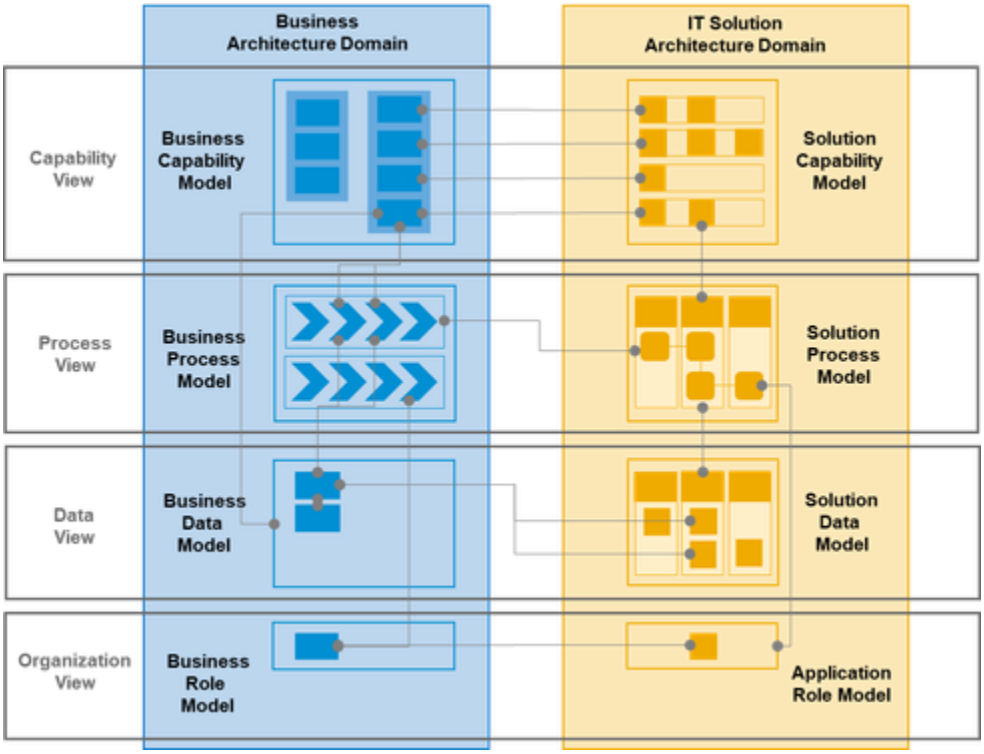


Figure 4 - SAP Enterprise Architecture Methodology - Overview of core domains & models

The four views cover a business and IT related model and allow the navigation between these two perspectives. Having said that, navigation between different views and respective entities adds significant value, as the content of the reference architecture is an official and authored content.

A closer look at the SAP Reference Business Architecture (RBA)

The SAP Reference Business Architecture (RBA) is based on SAP's 50 years of industry experience and is aligned with best practices and standards, such as APQC [2]. It is comprised of the following core elements:

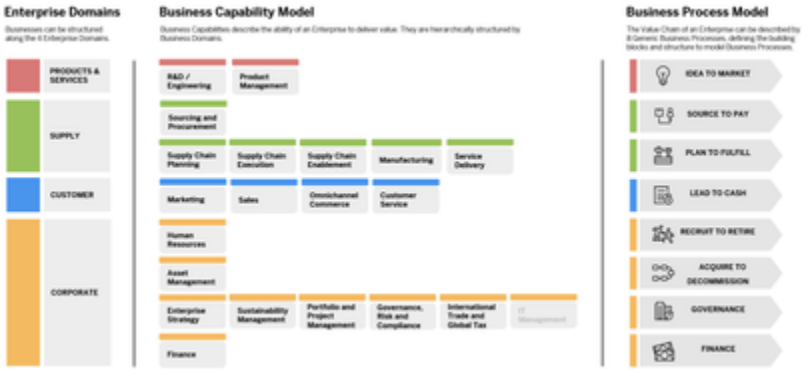


Figure 2 – SAP Reference Business Architecture – Core Elements

The enterprise through the lens of business capabilities…
From a functional-perspective, the SAP Reference Business Architecture (RBA) describes an enterprise using 4 Enterprise Domains:

- Products & Services
  Developing and managing products and services.
- Supply
  Fulfilling the demand for products and services.
- Customer
  Generating the demand for products and services.
- Corporate
  Planning and managing the enterprise.

These Enterprise Domains can be decomposed into Business Domains and Business Areas, which group Business Capabilities. A Business Capability defines the "what" the enterprise does, constituting a particular ability that an enterprise may possess, which is needed to deliver value or achieve a specific outcome.

The enterprise through the lens of business processes…
From a process-perspective, the SAP Reference Business Architecture (RBA) describes an enterprise based on 8 generic End-to-End Business Process:

- Idea to Market
  Managing the lifecycle of products and services, such as managing the product portfolio and investments, identifying new products and services, finalizing the design, managing intellectual property, and product compliance.
- Source to Pay
  Managing the comprehensive sourcing and procurement of products and services, such as the procurement planning and managing spend, sourcing and supplier selection, negotiating and managing supplier contracts, and preparing and executing operational procurement.
- Plan to Fulfill
  Planning, production, delivery, and fulfillment of products or services as well as tracking and tracing, data management, and sustainable manufacturing operations.
- Lead to Cash
  Marketing and selling of products and services, managing sales orders and their fulfillment, providing after-sales related services, invoicing customers, managing accounts receivable and collecting payment.
- Recruit to Retire
  Managing the overall lifecycle of employees, including HR strategizing, planning, and budgeting.
- Acquire to Decommission
  Managing the overall lifecycle, including planning asset strategy and investments, defining asset maintenance strategies, acquiring or building assets, onboarding assets, planning and executing asset maintenance, as well as offboarding and decommissioning assets.
- Governance
  Covering all business activities related to internal operations, such as developing and managing enterprise strategy and plans, managing portfolio and projects, managing global trade and tax, and managing risk and compliance.
- Finance
  Covering all business activities related to financial operations, such as optimizing financials, managing account receivables and payables, accounting and financial close, and managing treasury

The generic end-to-end business processes are foundational templates, which contain all the business activities required in a respective context. As such, the generic business process may have different variations, which contain the actual executable business process that addresses specific use cases, industries and other contexts.

As an example - the following are variations of the generic Lead to Cash (to name only a few):

- Lead to Cash for Business-to-Business
  Marketing and selling tangible products and one-time services to B2B customers.
- Business-to-Consumer Omni-channel Commerce, Physical Products
  Marketing and selling tangible products to B2C customers.
- Subscription and Usage Business
  Selling, delivering and invoicing subscription-based services and usage to B2B and B2C customers. Customers with subscription-based services have recurring charges during their subscription period. For usage-based customers, the use of resources is monitored, and customers are charged only when they use a certain product or service.
- … and more

At a more granular level, a business process can be decomposed into different Business Activities, which describes how value is generated by using certain Business Capabilities.

Enterprise Architecture Tooling

The SAP Enterprise Architecture Framework is featured by a set of SAP externally-facing and internal tools, among these are

- Signavio (with the One Process Acceleration Layer)
- Product Map Generator (SAP internal and available in SAP engagements with SAP)
- Roadmap Explorer
- SAP API Business Hub
- SAP Trust Center

Enterprise Architecture Service

The SAP Enterprise Architecture Framework comes along with a set of predefined enterprise architecture consulting service. Following an extract of the service catalog incl. the most relevant service offerings:

Architecture Point of View	With the architecture point of view (APoV), customers can get support in an early phase of their project on how to approach their long-term transformation needs. The service contains components for various topics like the analysis of solution-

	specific transformation routes, or initial evaluation of adopting SAP S/4HANA, initial guidance in the analytics and data management area, specific solution and technology focused topics, or a deep-dive into SAP's enterprise architecture and road mapping approach.
Innovation Strategy and Roadmap	This service component helps develop a multi-year strategic road map that addresses your digital transformation needs. Starting from strategy and objectives of business and IT, it delivers a long-term target architecture that is based on current and future needs and comprises relevant functionality of SAP S/4HANA, SaaS applications, and SAP Business Technology Platform features. Proposed enablers and initiatives are prioritized by business value.
Target Architecture Assessment	When starting digital transformations, SAP customers need to define the target architecture and the roadmap to layout how to get there. The target architecture assessment focuses on existing artifacts that the project team has produced and reviews them against the industry reference architecture and the SAP road map. As a result, the necessary adjustments to the target application architecture and transition plans are jointly evaluated.
Architecture Transformation	This service provides a comprehensive planning package from strategy down to architecture transformation planning. It supports the customer in developing a multiyear digital transformation road map including specific technical architectures, sizing efforts, required IT infrastructure, mapped SAP software components, and best practices for implementation, deployment, and technical risk mitigation
Integration Strategy	This service component supports you creating your integration strategy when you are planning a system conversion or new implementation for SAP S/4HANA, or implement software-as-a-service (SaaS) cloud solutions from SAP. It includes reviewing the existing and planned integration landscape, SAP Integration Solution Advisory Methodology, and building overall integration strategy.
Architecture Governance	Architecture governance focuses on helping ensure the enterprise architecture is set up and conducted properly. It is

	less about control and strict adherence to rules and more about guidance and effective usage of resources, tapping into best practices and tools to make the transformation a success. The architecture governance service helps customers in early phases or even before their transformation has started, to establish an appropriate framework to create or evolve their enterprise architecture. It focuses on how to manage enterprise architecture and provides direction on planning to make the transformation a success and establish the intelligent enterprise in incremental steps.

As every organization is unique in its setup and level of maturity, individual services can be tailored to specific needs. This happens in a lego-like, modularized approach. The following services build the modular foundation alongside the known TOGAF ADM phases:

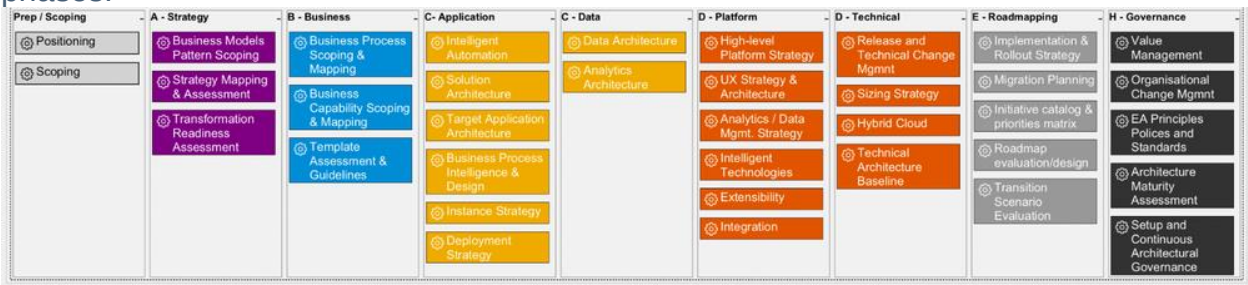


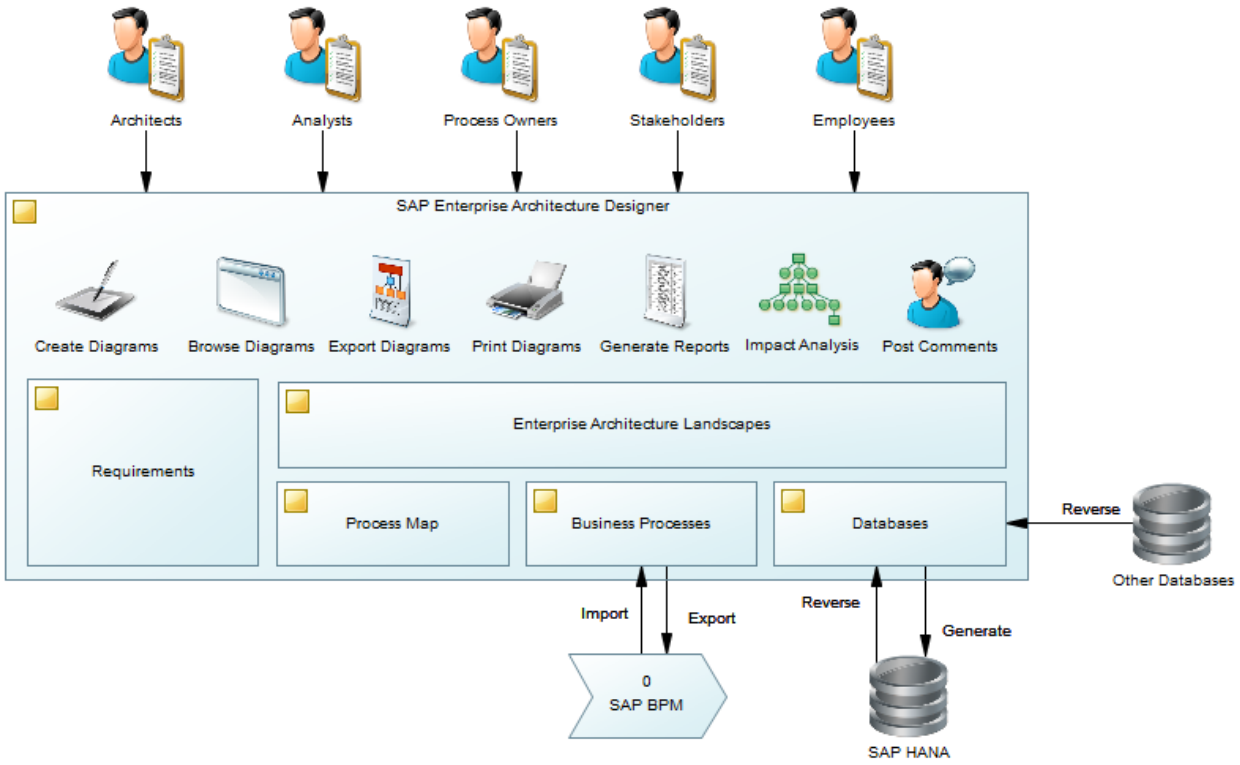
Figure 5 – Enterprise Architecture Service Offering Modules

The outlined services can be booked individually and are delivered by experienced SAP Enterprise Architects around the world. For further information, please get in touch with your SAP Account team.

SAP Enterprise Architecture Designer

SAP Enterprise Architecture Designer (SAP EA Designer) lets you capture, analyze, and present your organization's landscapes, strategies, requirements, processes, data, and other artifacts in a shared environment. Using industry-standard notations and techniques, organizations can leverage rich metadata and use models and diagrams to

drive understanding and promote shared outcomes in creating innovative systems, information sets, and processes to support goals and capabilities.



SAP EA Designer supports the creation and editing of the following kinds of diagrams:

- **Business Process** - Business process diagrams help you identify, describe, and decompose business processes. SAP EA Designer supports both BPMN 2.0 Descriptive (see BPMN 2.0 Descriptive), which provides a small subset of objects suitable for business process design and analysis, and BPMN 2.0 Executable (see BPMN 2.0 Executable), which includes all the standard BPMN 2.0 objects, and is aimed at technical modelers and those who are reverse-engineering from SAP BPM or Eclipse BPMN2 Modeler.
- **Database** - Physical data models help you analyze and optimize the structure of your database. You can reverse-engineer any supported database to create a

physical data model. Generation to SAP HANA, directly to the catalog, or to Web IDE via HDI is also supported. See Databases.

- **Enterprise Architecture Diagram** - Enterprise architecture diagrams help you analyze and document your organization, its functions and processes, the applications and systems that support them, and the physical architecture on which they are implemented. See Enterprise Architecture.
- **Process Map** - A process map provides a graphical view of your business architecture, and helps you identify your business functions and high-level processes, independent of the people and business units who fulfill them. See Process Maps.
- **Requirements List** - Requirements documents display a hierarchical list of written requirements. See Requirements.

SAP EA Designer supports consuming your content through:

- Browsing diagrams and model objects online (see The Diagram Viewer).
- Sharing links to diagrams, printing them, and exporting them as SVG images or PowerPoint slides (see Sharing Links to, Printing, and Exporting Diagrams).
- Generating reports on your diagrams and model objects (see Generating a Report on a Diagram).
- Running an impact analysis (see Impact and Lineage Analysis).
- Posting comments to diagrams and model objects (see Commenting on Diagrams).