Systemic Framework for Enterprise Architecture & Transformation

Overview

Introduction

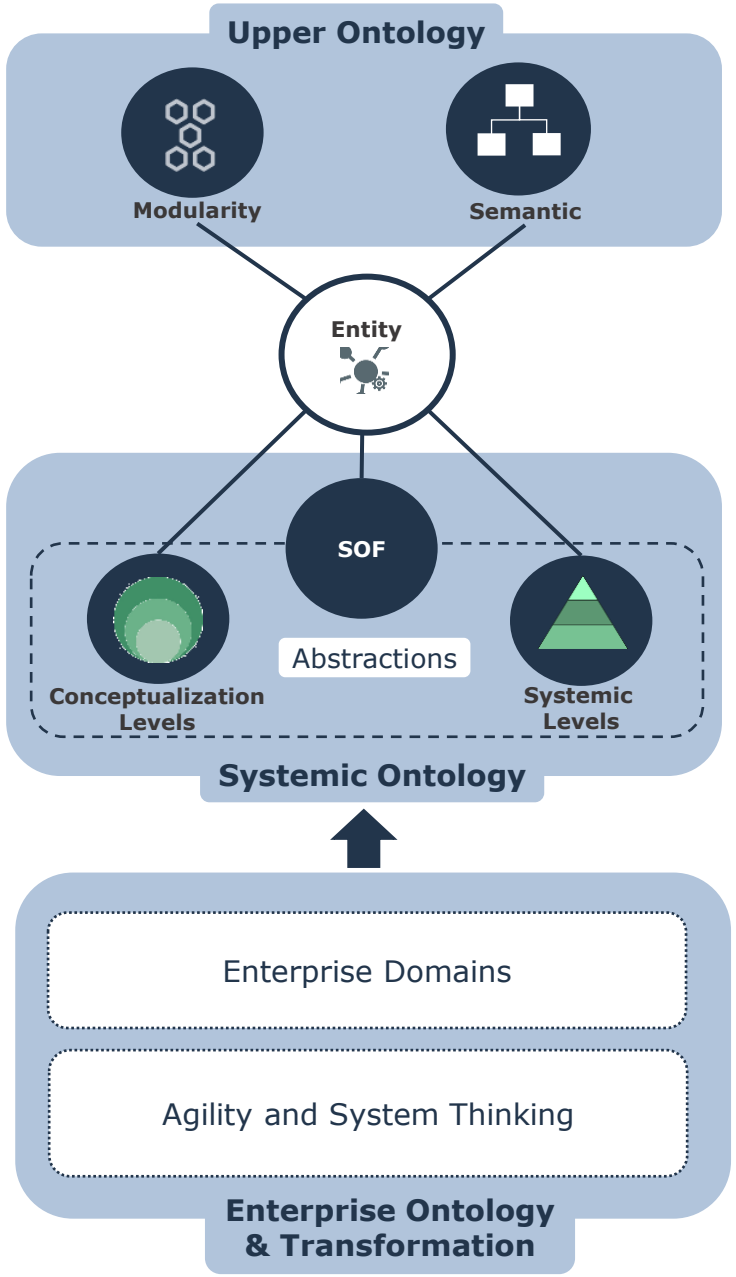
- This document is an integral component of the SysFEAT architectural framework. It provides foundations to address the challenges posed by Enterprise Architecture in the 21st century, which include :
  - Increasing complexity in system structures and behaviors.
  - Growing intricacy in architecture, management and governance of these systems.
  - The mission of the framework is to demystify these complexities, ensuring they are comprehensible to a broad audience, thereby facilitating the design and management of complex-systems across all scales, from micro-systems to enterprise level systems.

- Enterprise Modeling refers to the overarching language and conceptual framework used to describe, understand, and communicate the complex structures and dynamics of an enterprise.
- It integrates both the operating aspects of the enterprise (how it functions and interacts within its ecosystem), the transformational aspects (how it evolves and sustains over time through initiatives, asset management) and how these transformations are governed to ensure effectiveness, efficiency and reliability.

- The following slides present the foundations of enterprise modeling.

Foundations of enterprise modeling

- **Modularity** provides the syntax for building robust, manageable, and scalable architectures, based on the principles of compositionality and packaging.
- **Semantic** provides robust capabilities for classifying and composing entities, from time-bound entities (individuals) to families of concepts, enabling effective representation of meaning.
- The **Systemic Operating Framework (SOF)** serves as the overarching language that describes why and how a system operates and interacts within its ecosystems.
- **Abstractions** organizes systems and concepts in degree of abstractions, including systemic levels and conceptualization levels.
- **Enterprise Domains** formalize the various disciplines that make-up EA, ranging from enterprise road-mapping to System ArcDevOps.
- **Agility and System Thinking** ensure that the enterprise evolves and sustains over time through governed initiatives, architected for flexibility and responsiveness in complex and dynamic business environments.



What do we model in EA?

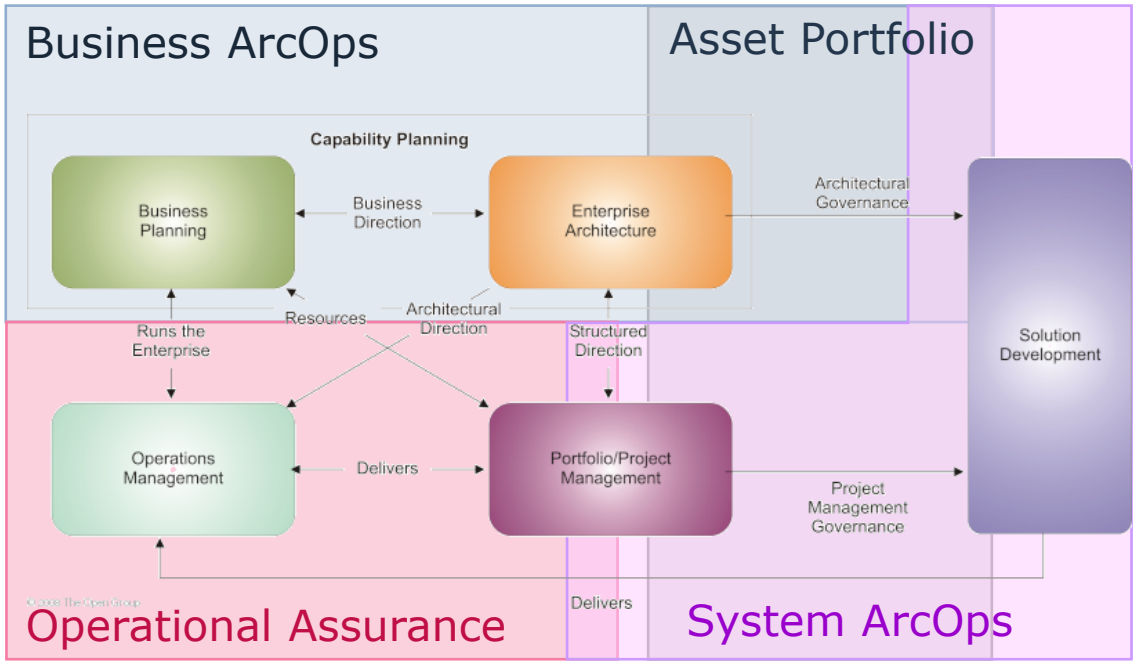
What do we mean by “Enterprise”

Enterprise Architecture Main Use Cases

- **System Architecture & Development:**
  - Enterprise transformation (Business ArcOps):
    - Combine Business Planning, Enterprise Architecture and Operations Management to design and govern enterprise transformation plans.
  - System Design & Development (System ArcOps):
    - Combine Business Systems' architecture (Arc) and Business Operations (Ops) to streamline the systems development lifecycle, enabling continuous delivery while maintaining high quality.

- **Operational Efficiency:**
  - Enterprise resources optimization (portfolio management):
    - Manage and govern key assets (Applications, Technology, Infrastructure) so that these resources map business needs over time.
  - Operational Excellence (process management):
    - Design and govern operations accountability and processes to ensure recurring and long-term improvements throughout the organization.

- **Operational Assurance:**
  - Privacy Assurance:
    - Demonstrate that an enterprise's handling of personal data complies with regulatory privacy standards.
  - Business continuity planning:
    - helping in the design and follow-up of systems of prevention and recovery to deal with potential threats to the enterprise.
  - Operational risk assurance:
    - predicting and managing risks that could hinder the organization to achieve its duties.



TOGAF : Management Frameworks

What kind of enterprise, what kind of perspective

- We model the Enterprise …. but what do we mean by Enterprise?
  - Isn’t SAP modeling the entire activities of enterprises?
  - Cannot we find all members of the enterprise in HR Systems?
  - What is missing in services provided by CMDB tools and API management tools?

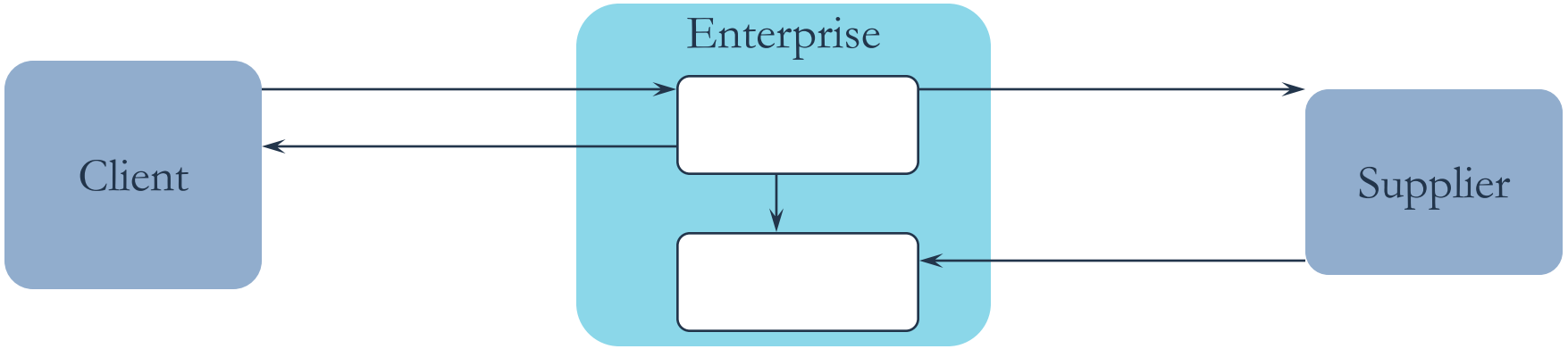
- The goal is to model how the Enterprise “**Operate/Function**”, identifying its objectives, the resources (Assets) it uses and organizations it sets up to achieve them, as well as putting in place the governance that ensures that everything is progressing as intended.

- To accomplish this, we have adopted an approach grounded in **Systems Thinking**.
  - How thing functions
  - What are the objects

Modeling the enterprise – System thinking

- Systems thinking is an interdisciplinary approach that seeks to understand systems as organized and complex wholes. It focuses on the relationships and interactions between the elements of a system rather than on the elements themselves.

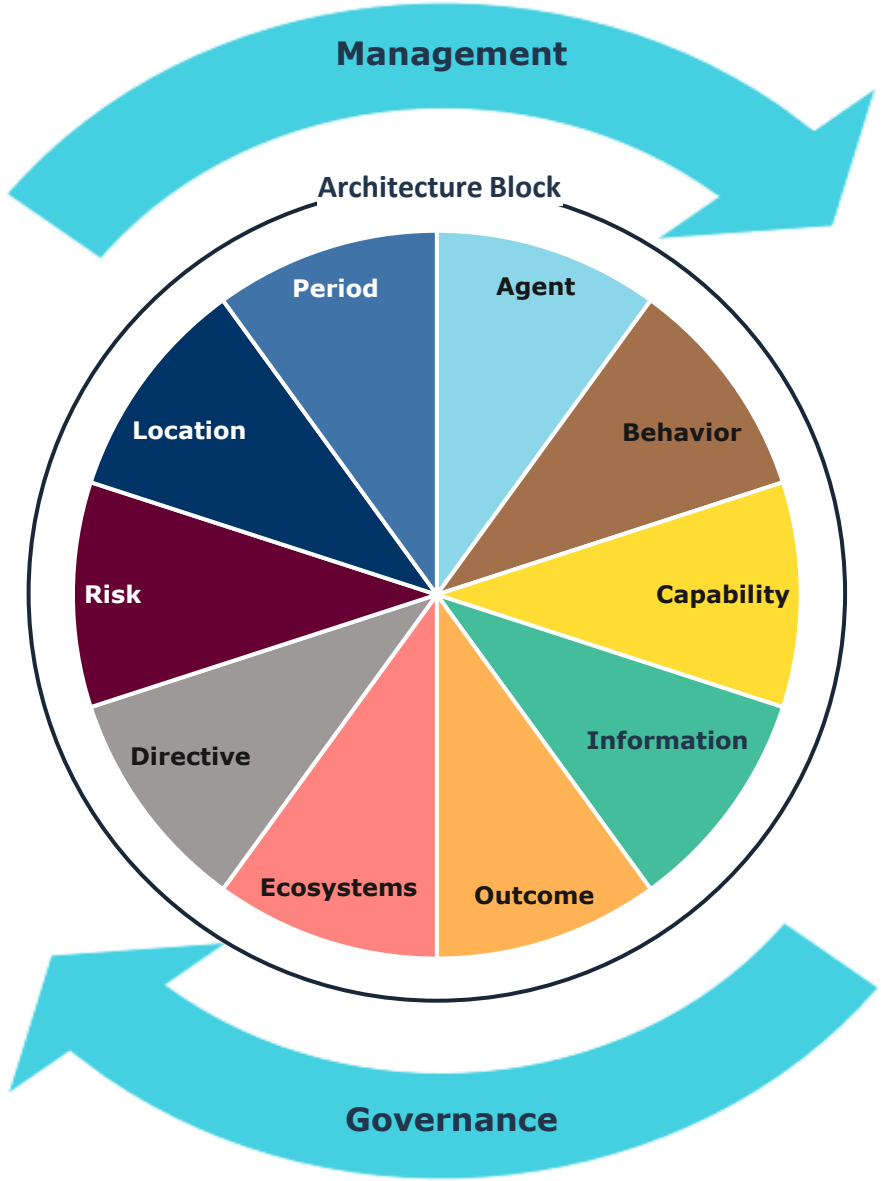
- In enables a black-box/white-box approach of the various aspects of the functioning enterprise.



Summary of aspects of a functioning enterprise

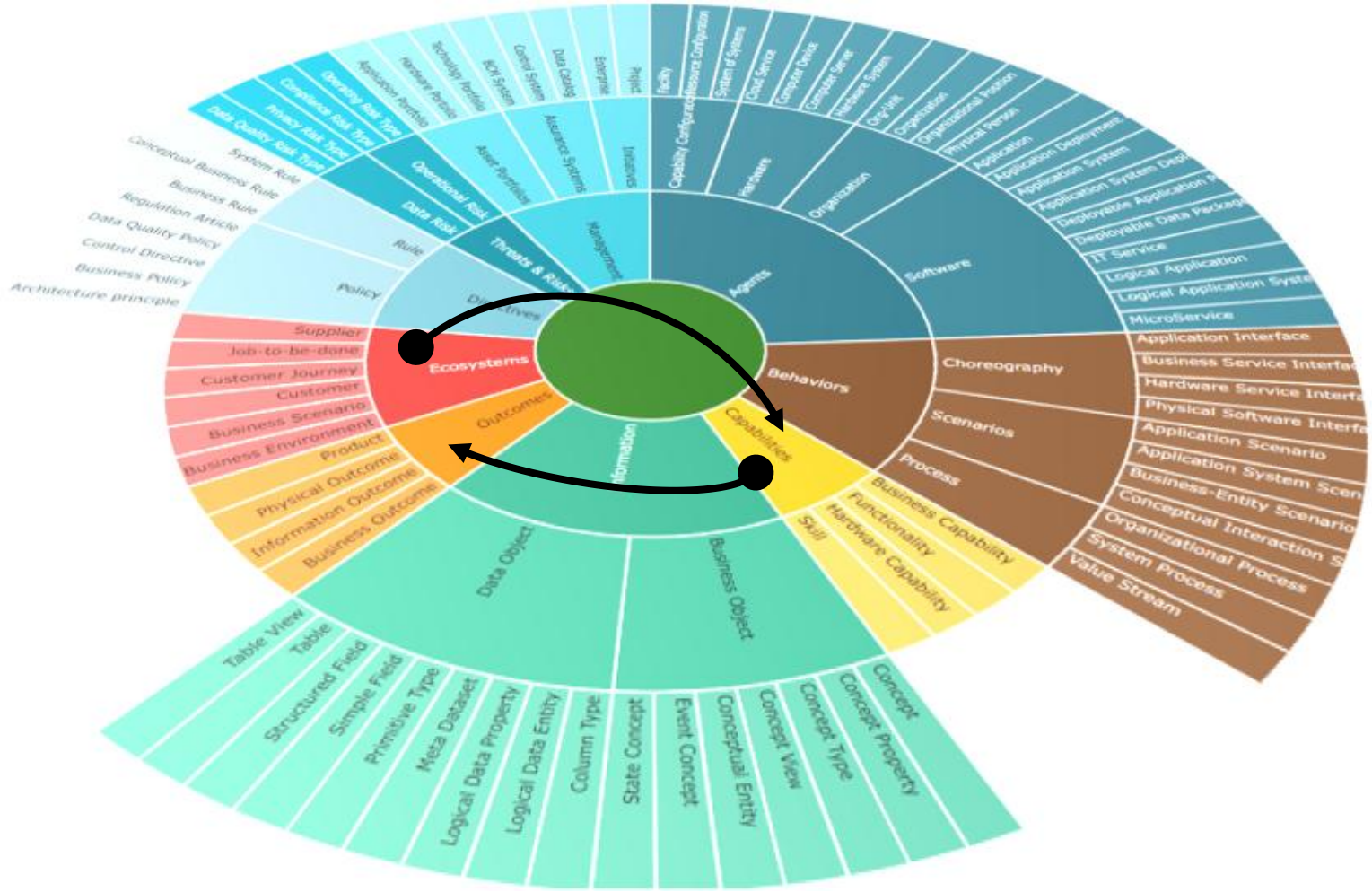
- The diagram on the right outlines the key aspects of how and why an enterprise functions, defined by its Operating Semantic within the architecture framework.
  - *from Capability fulfilled by Agents who act and interact (Behavior) in their Operating Eco-Systems to produce Outcomes that benefit (value) to other Agents.*

- The following slides provides a methodological walkthrough the EA GRID.



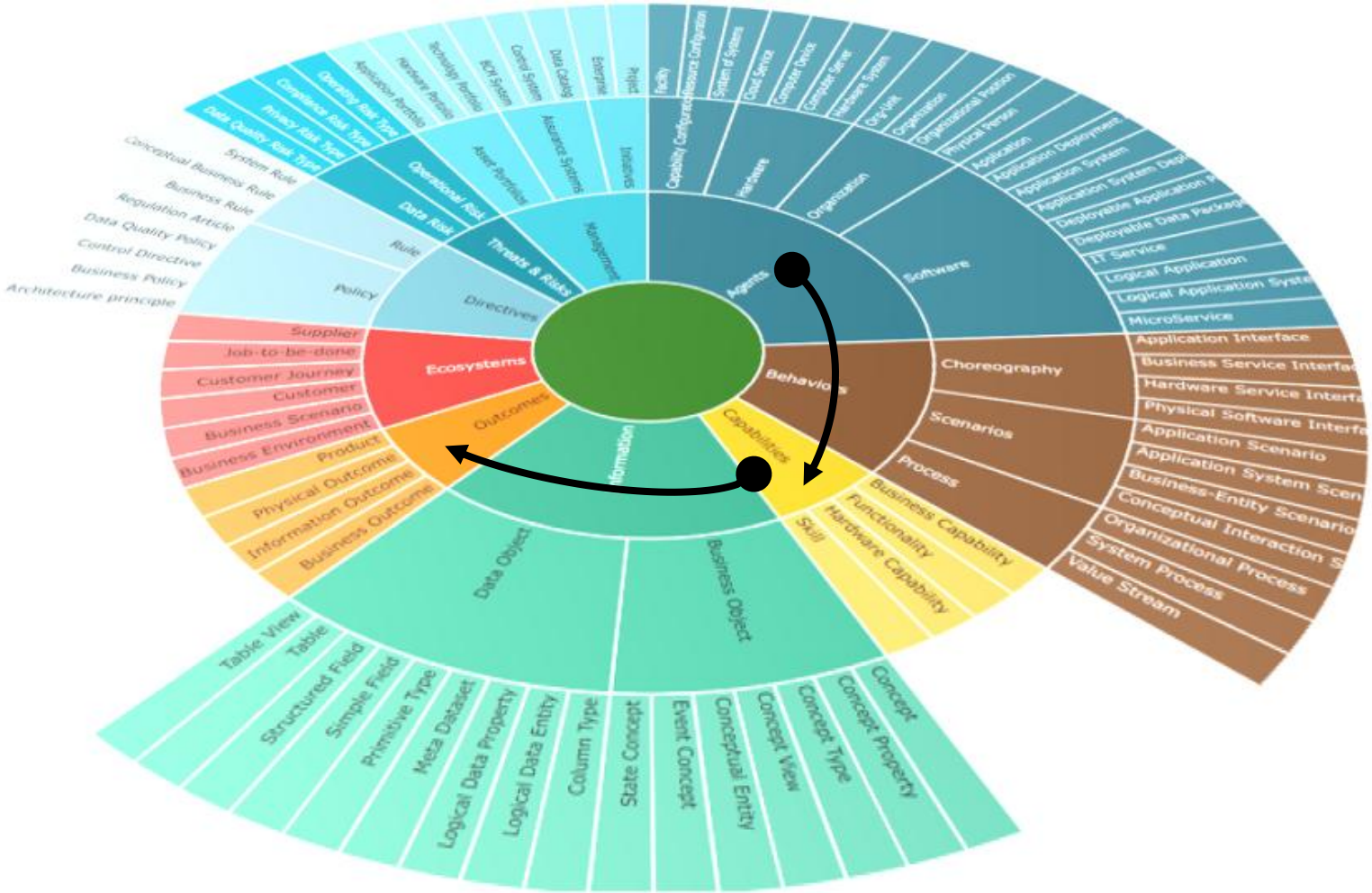
For a given Eco-system, Outcomes are results delivered by a provider that meets a consumer's needs (job-to-be-done).

Capabilities are the provider's abilities to generate those Outcomes.



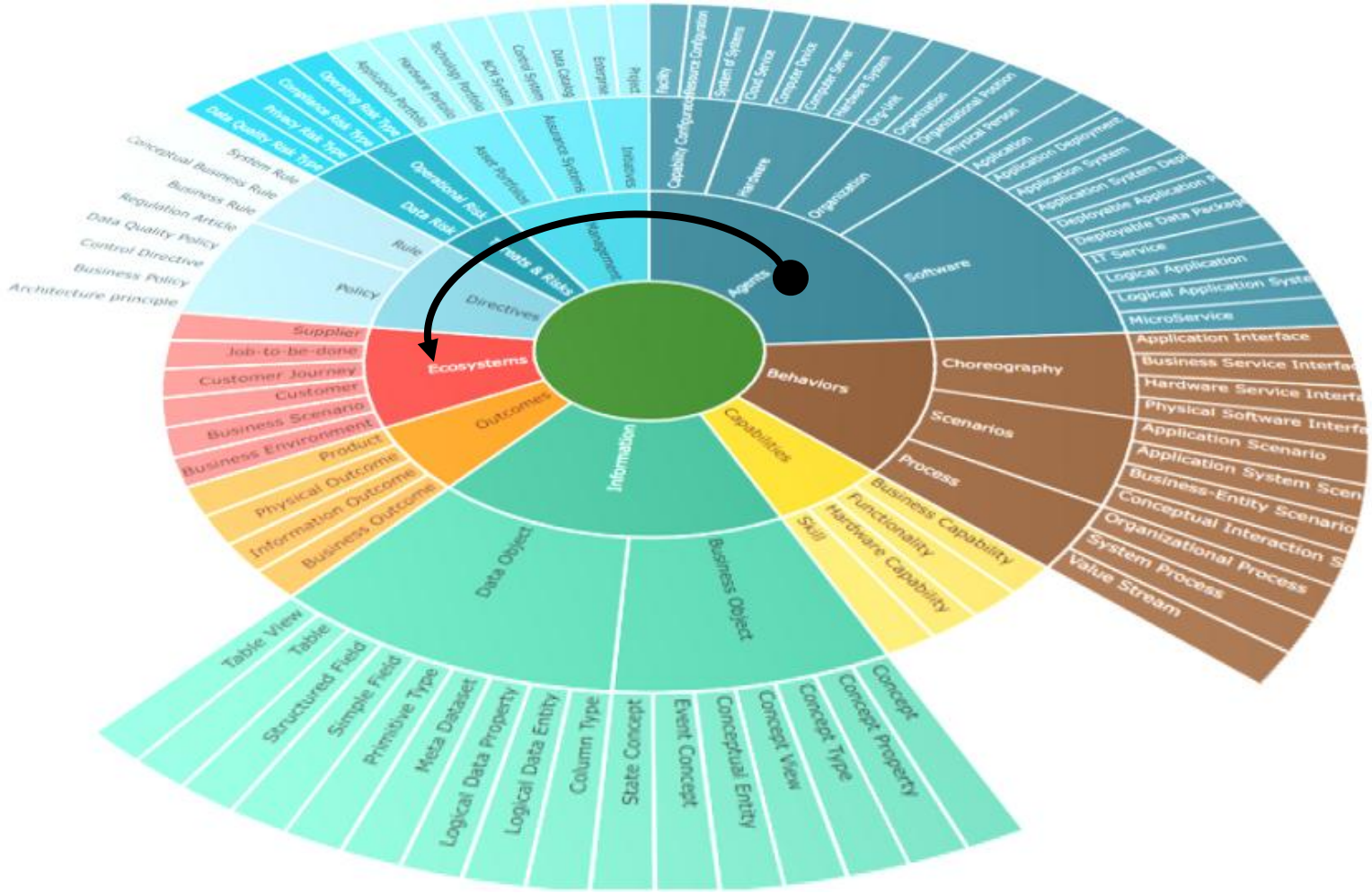
Agents fulfill Capabilities

Thereby, they commit to produce Outcomes



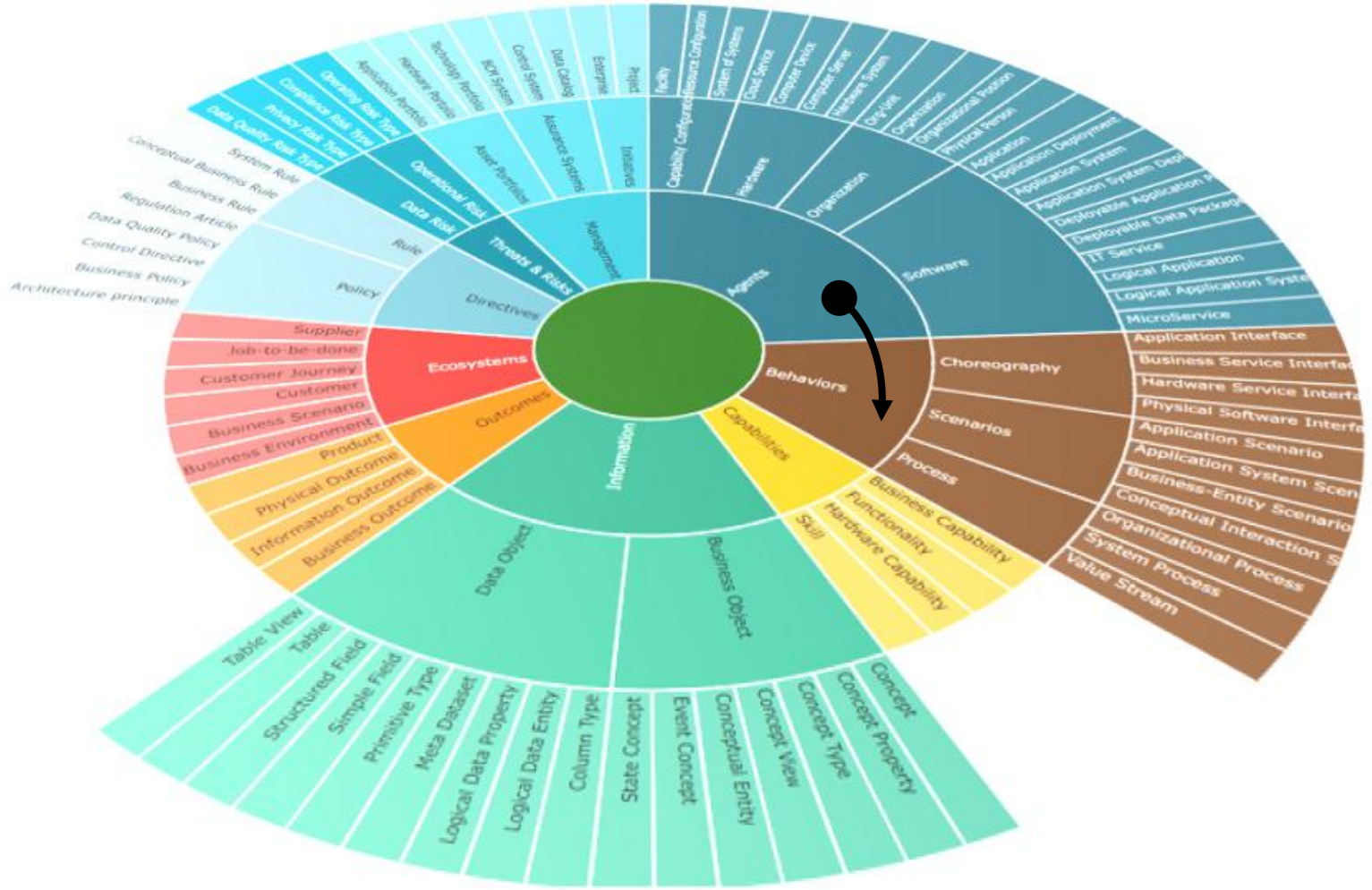
Agents interact and act in Eco-systems

- Ecosystems define how Outcomes are co-produced with Partners.
- Ecosystems define Conditions under which Outcomes are co-produced.



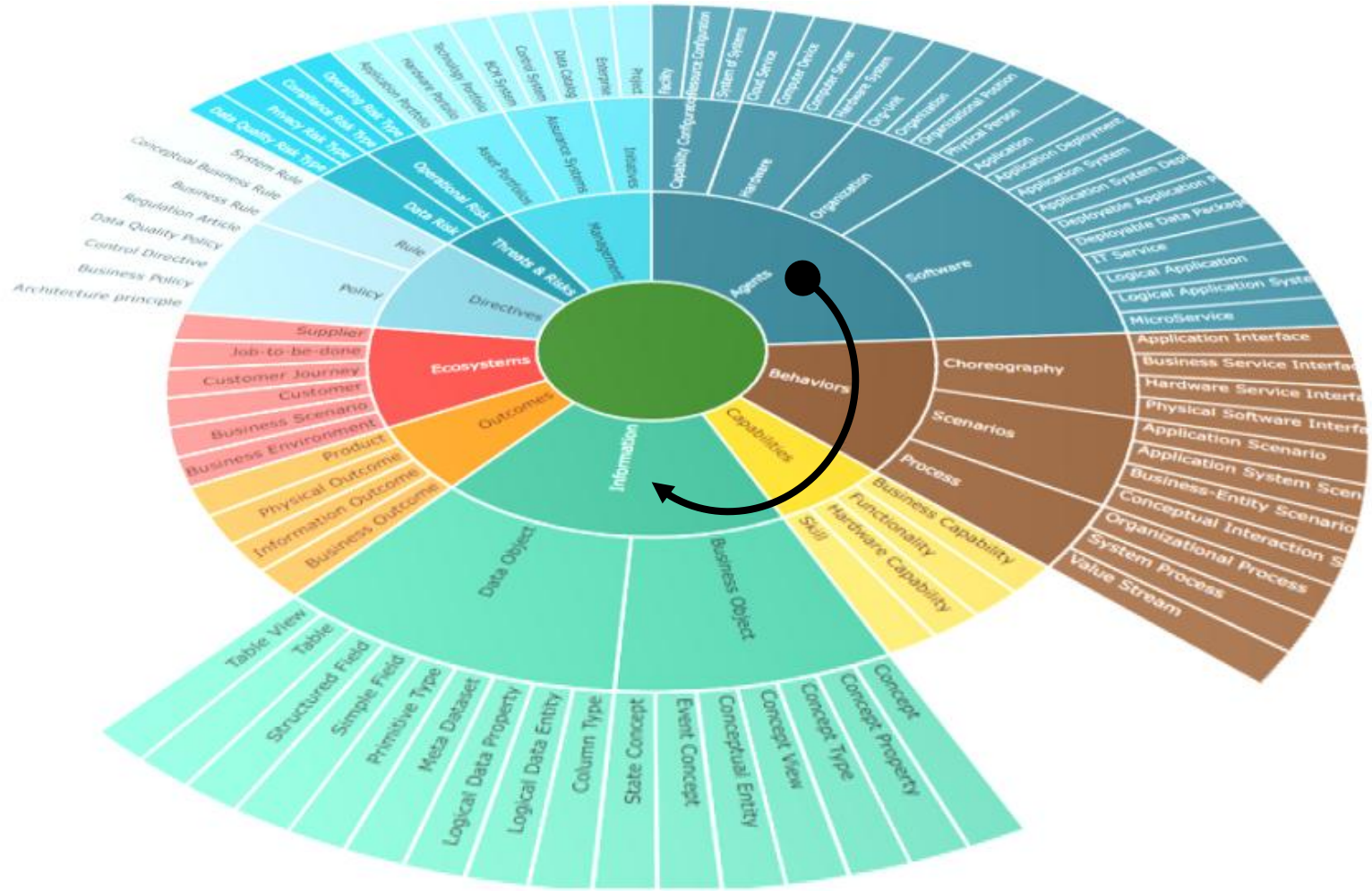
To fulfill Capabilities and produce Outcomes, Agents have behaviors:

- They act: they participate to processes.
- They interact: they participate to exchanges.



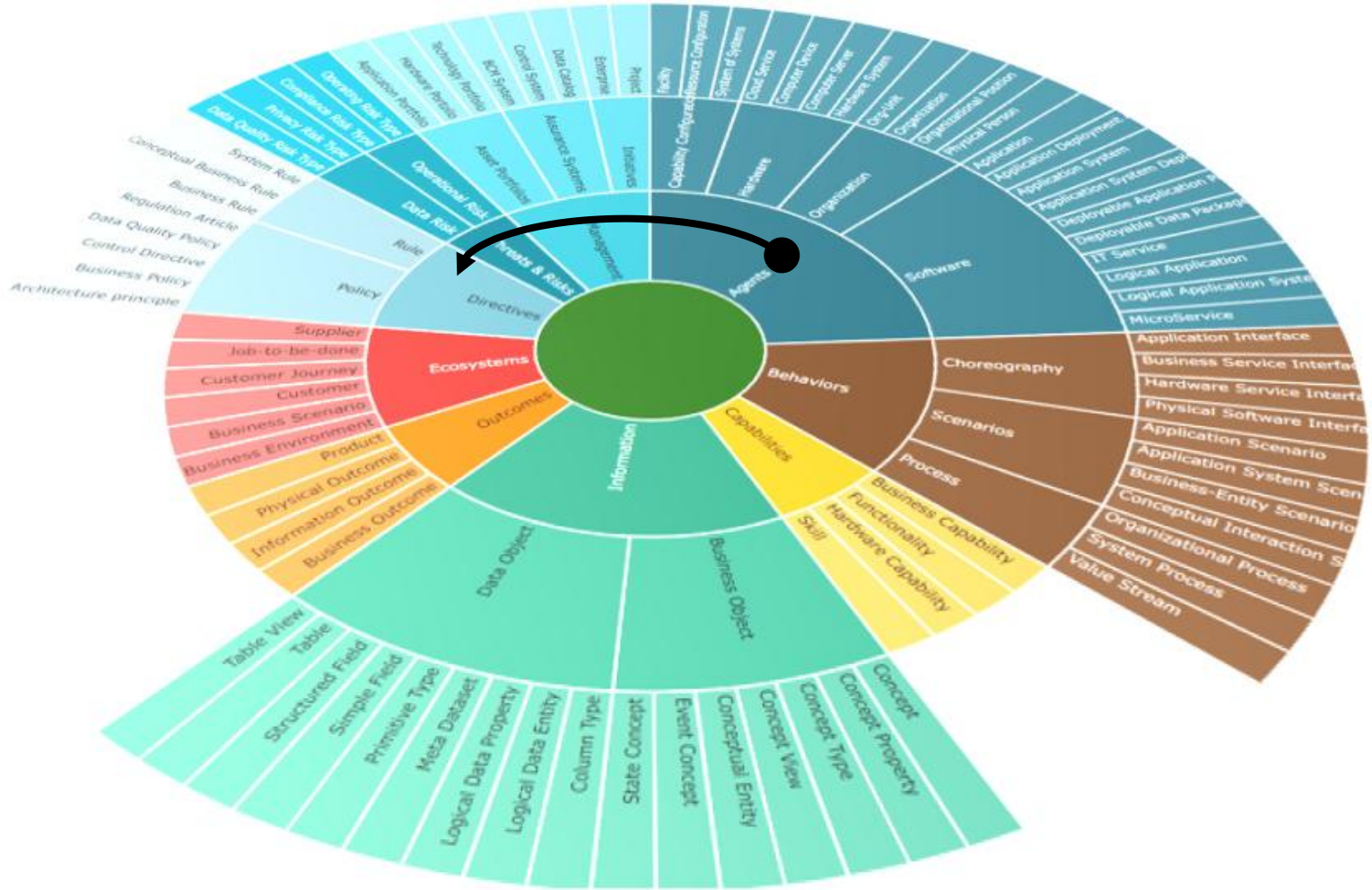
To operate and make decisions, Agents have memory.

They produce and store Information.



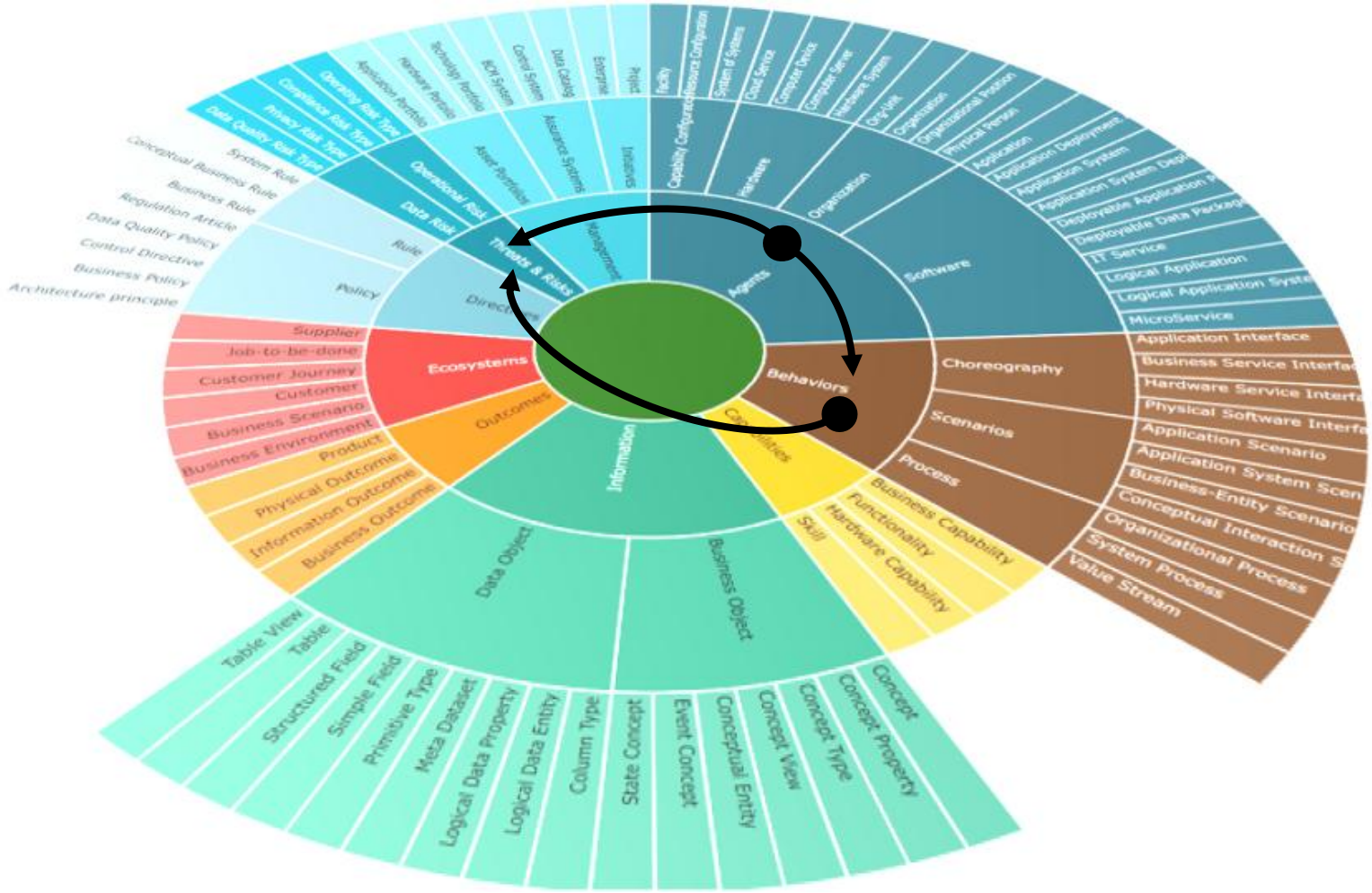
Agent structure and behaviors are constrained by directives.

- Directives indicate what **should** or **should not** be done.
- Directives can be internal policies, regulations (Law) or architecture principles.



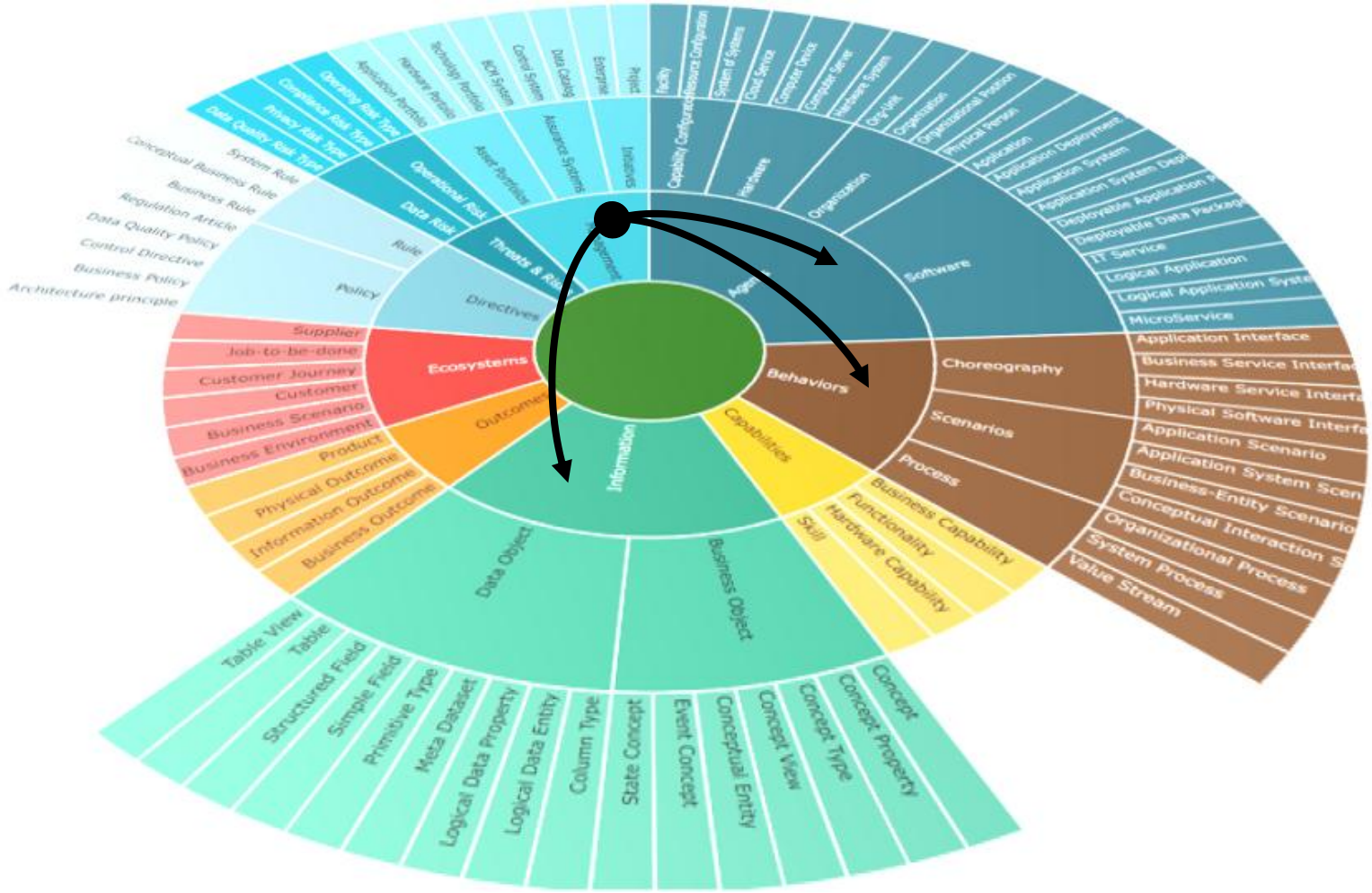
Agents and their behaviors are subject to Risks.

- They are exposed to Threats
- They can exhibit operational Failures
- Controls ensure that associated risks can be mitigated



Agents, their behaviors and their data are managed and governed.

- Management provides transformation and assurance objectives.
  - Transformation is about continuous improvement of effectiveness (value at cost).
  - Assurance is about continuous improvement of resilience.
- Governance ensures that these objectives are understood and fulfilled.

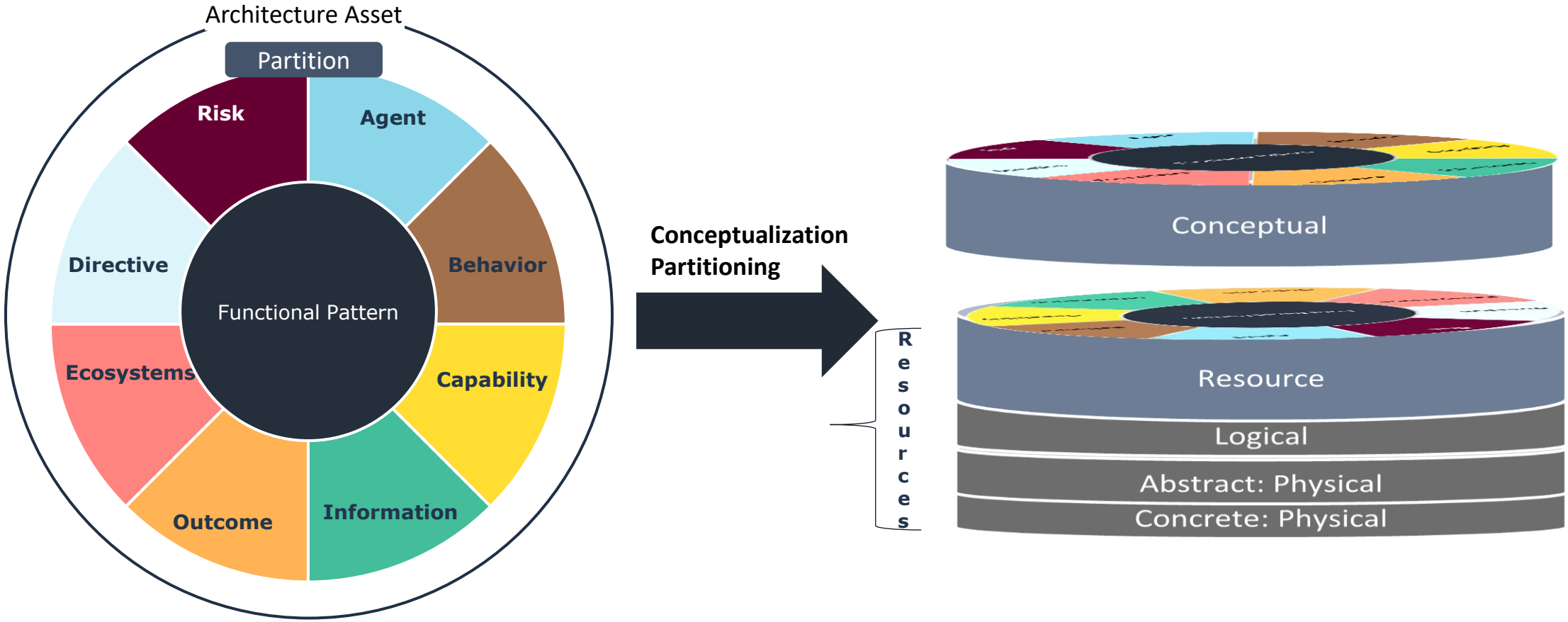


Abstractions

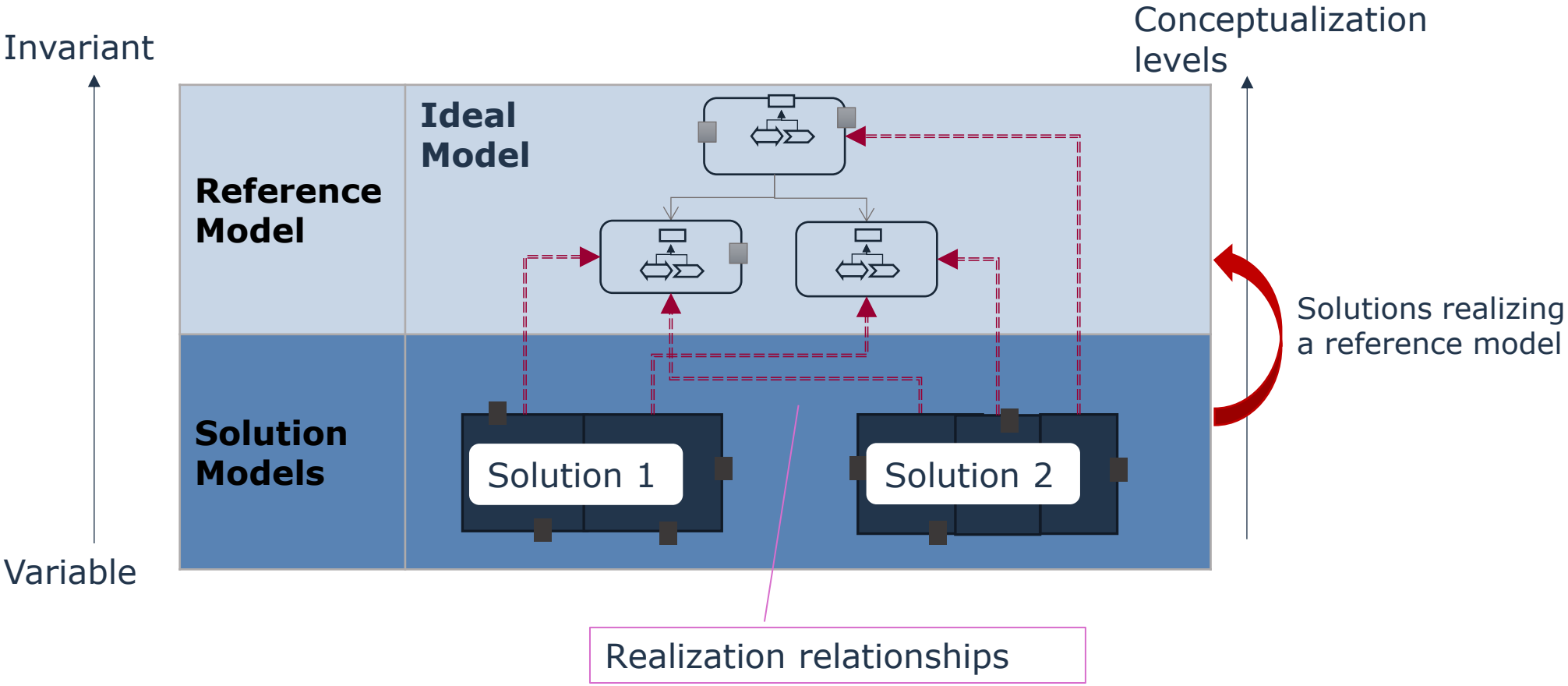
Systemic levels and conceptualization levels.

Architecture Stack – Conceptual levels

- The Operating Semantic is delineated according to the several levels of conceptualization, chosen for the study of the Enterprise
- Conceptual levels serve to offer a multi-tiered framework for envisioning and guidance., where more general levels, considered as invariants, are used as "functioning" requirements for more specific levels.



Abstraction: Conceptual Levels



Architecture Management

Agile@Scale

Systemic levels and Transformation

- As outlined in TOGAF and SAFe, there are three distinct levels of architectural granularity aligned with varying time horizons: not all elements can be transformed simultaneously, from overarching enterprise strategy down to small teams and low-level components..
- A balance must be struck between autonomy and coordination across these levels of architectural granularity and planning to ensure alignment toward shared objectives.
- Roadmaps are managed on different timescales, corresponding to the respective levels of architectural granularity.

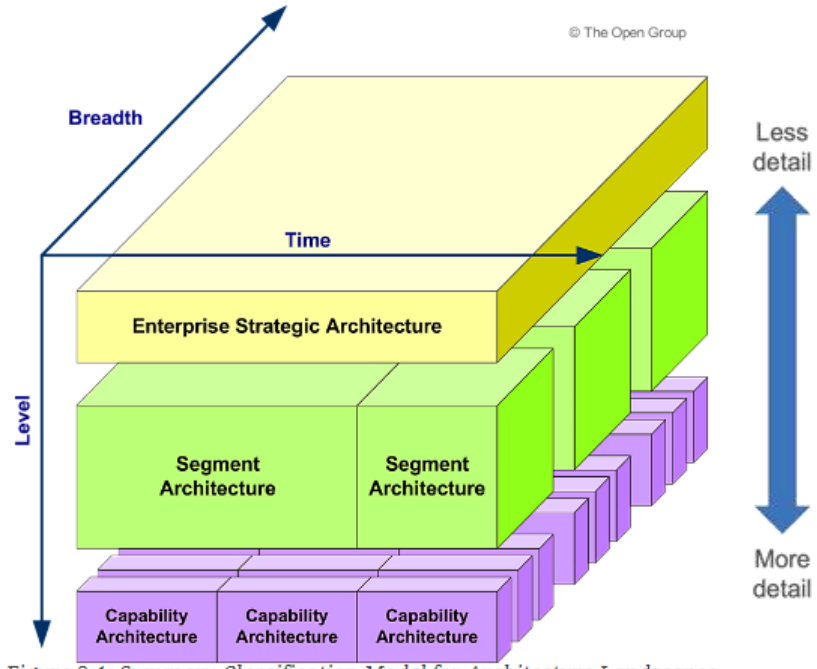
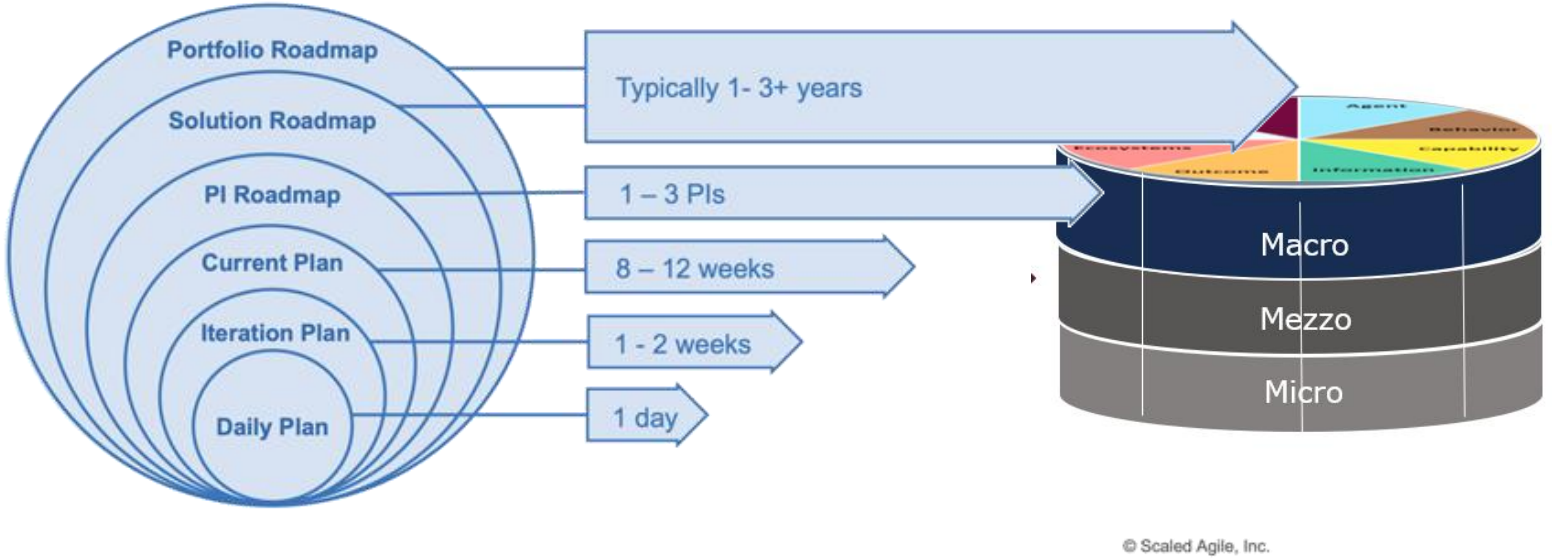


Figure 3-1: Summary Classification Model for Architecture Landscapes

TOGAF



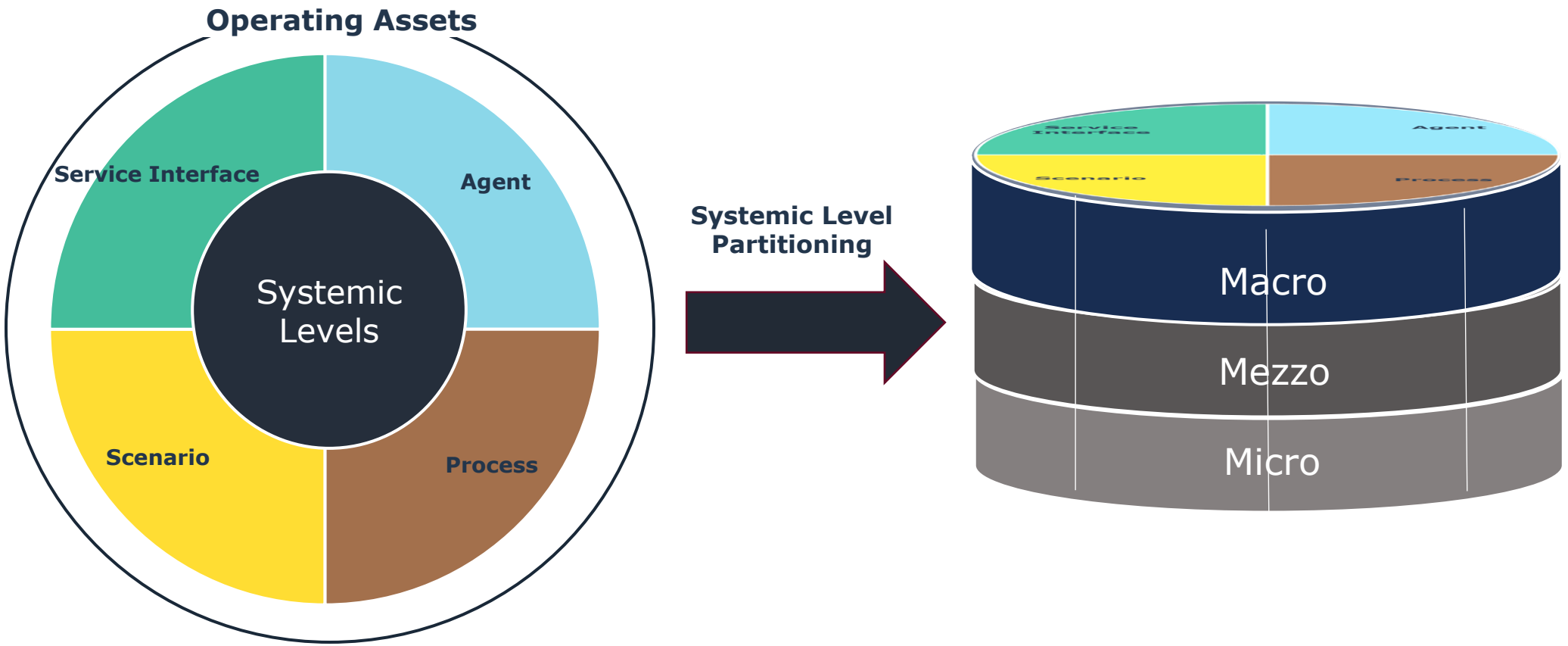
SAFe

SEAF

Architecture Stack – Systemic levels

The Operating Assets of the Operating Semantic are configured according to the different levels of granularity chosen for the study and transformation of the Enterprise.

- Organization: Position, Department, Legal entity.
- Software: IT Service, Application, Application System.



The Domains of Enterprise Architecture Discipline