

Semantic Architecture Knowledge

Fundamental Business Architecture
Framework

Strategic Business Architecture

WHY



Business Strategy

The 'Formal Link'

WHAT



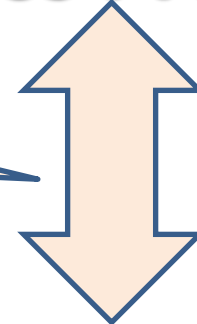
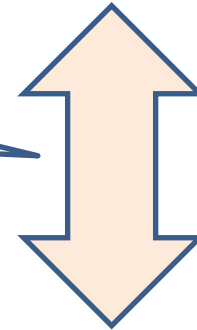
Business Processes

Extreme Semantic
BPMN

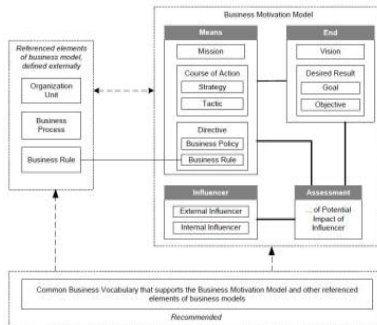
HOW



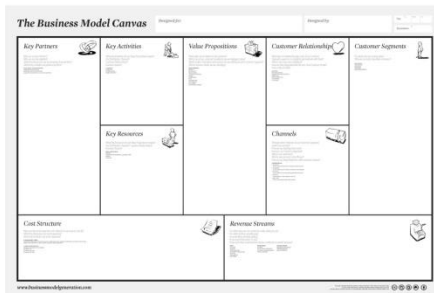
Applications, Services,
Data, Infrastructure



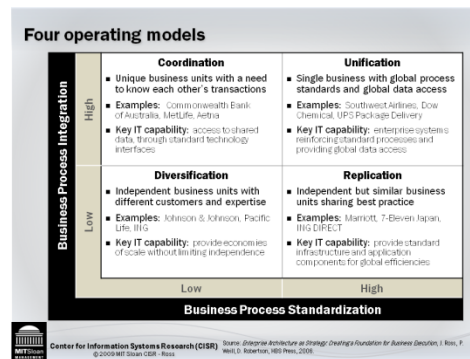
Business Strategy and Operating Models



OMG Business Motivation Model

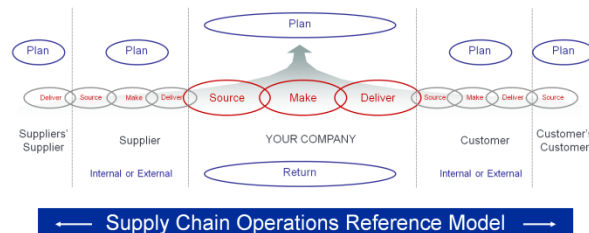


Business Model Canvas



Business Operating Model

Supply Chain = The integrated processes of Plan, Source, Make, Deliver and Return



Supply Chain Operations Reference Model

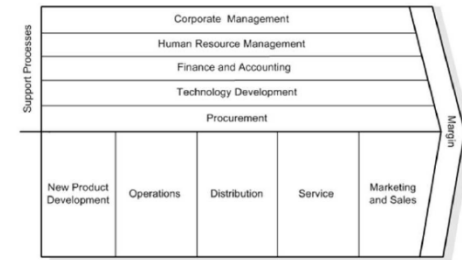


Figure 2. Porter's Value Chain

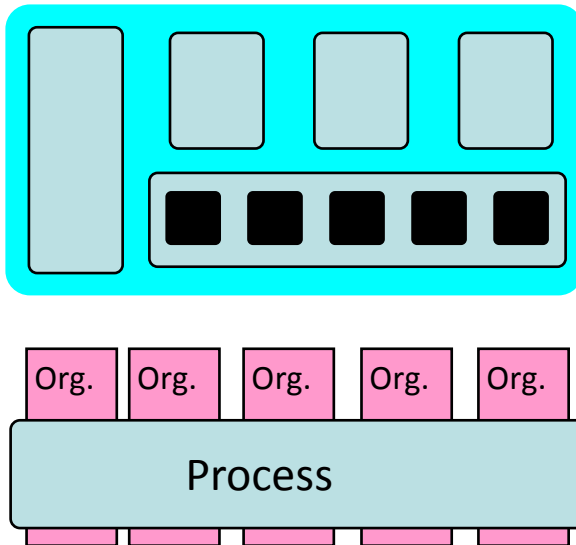


Value Reference Model

Levels of Detail

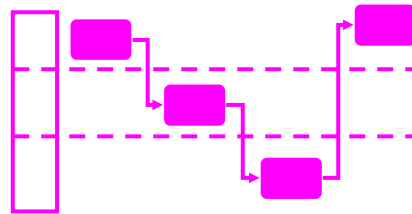
Strategy / Scope

- Planning
- A “context diagram”
- Clarify boundaries, process vs. organization
- Decomposition
- Operating Model



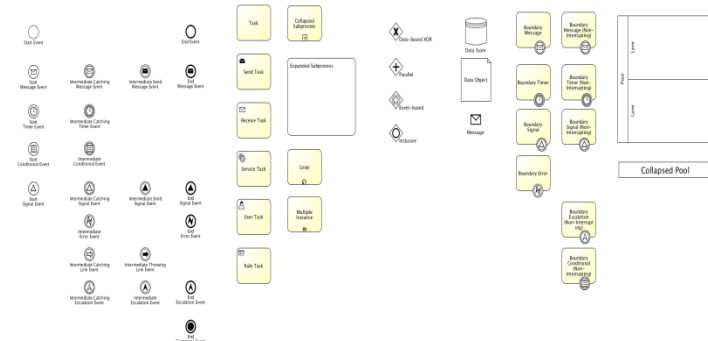
Concept / Operation

- Understanding “Business-oriented” overview of concepts
- Maximize participation
- The “flow of work,” case by case (“tell a story”) Boxes and lines – Value Streams



Detail / Execution

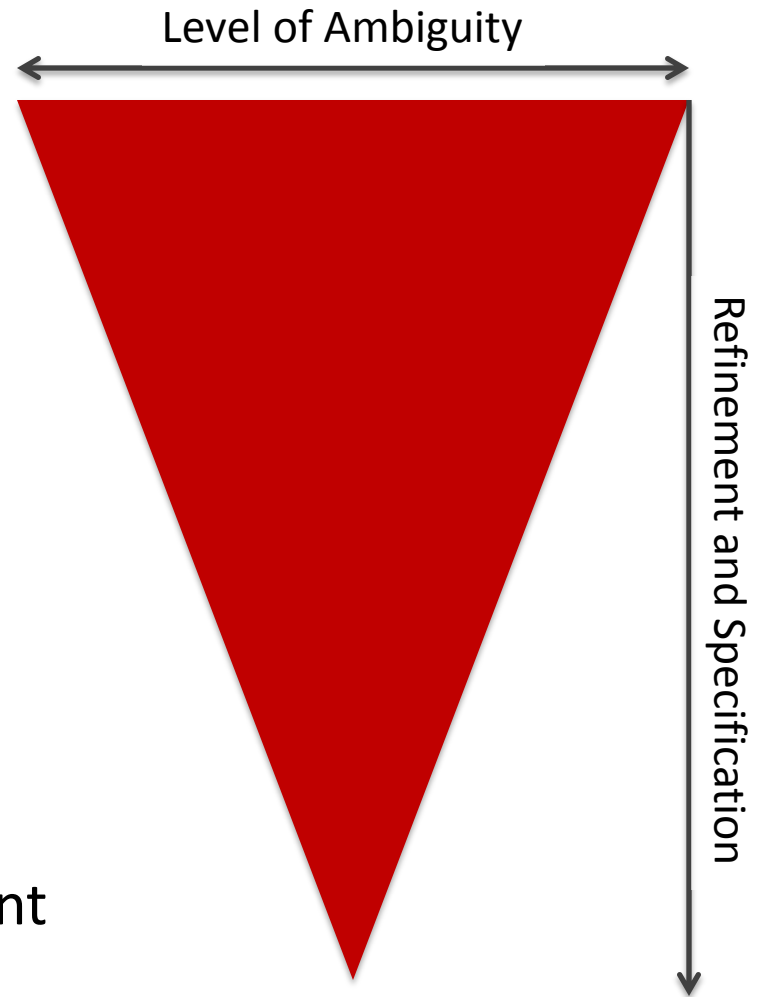
- Specification
- All detail for implementation
- Completeness and rigor
- Detailed flow (BPMN) plus “out of context” rules, procedures, logic, etc.
- Boxes, lines, operators, ...



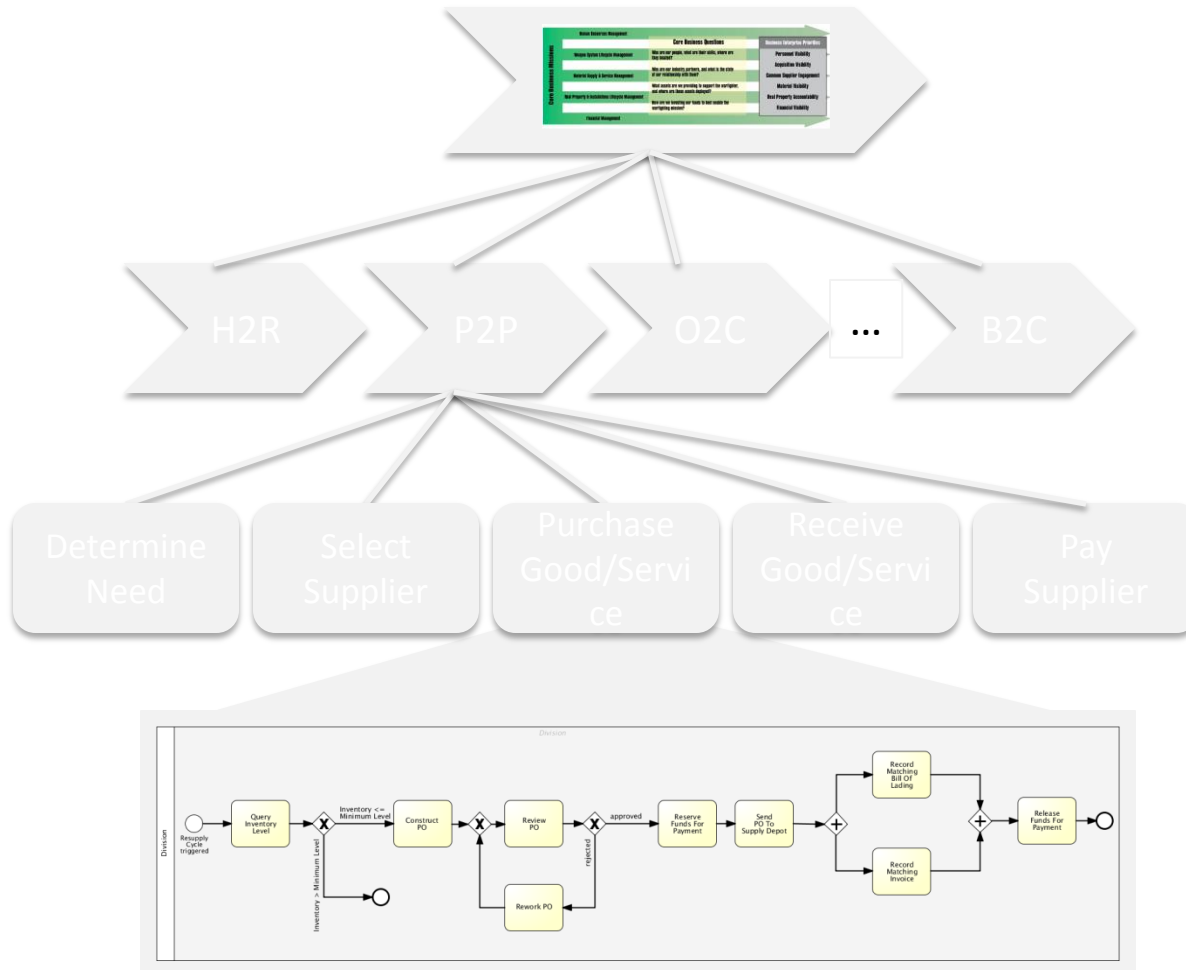


From Policy to Implementation

- Policy Level
 - Ambiguity is necessary to preserve implementation options
- Implementation Level
 - Precision is necessary to ensure consistent and compliant execution



Hierarchy of Models



Operating Model
Provides Context
Show Focus Areas

Value Chain
Show Dependencies
Organized around Outcomes

Value Chain Segments
Show High-Level Info Flow
Organized around Key Concepts

Business Process Map
Shows Activities, Decisions,
Services, and Responsibilities
Organized around Objectives

Policy Level

Level of Ambiguity

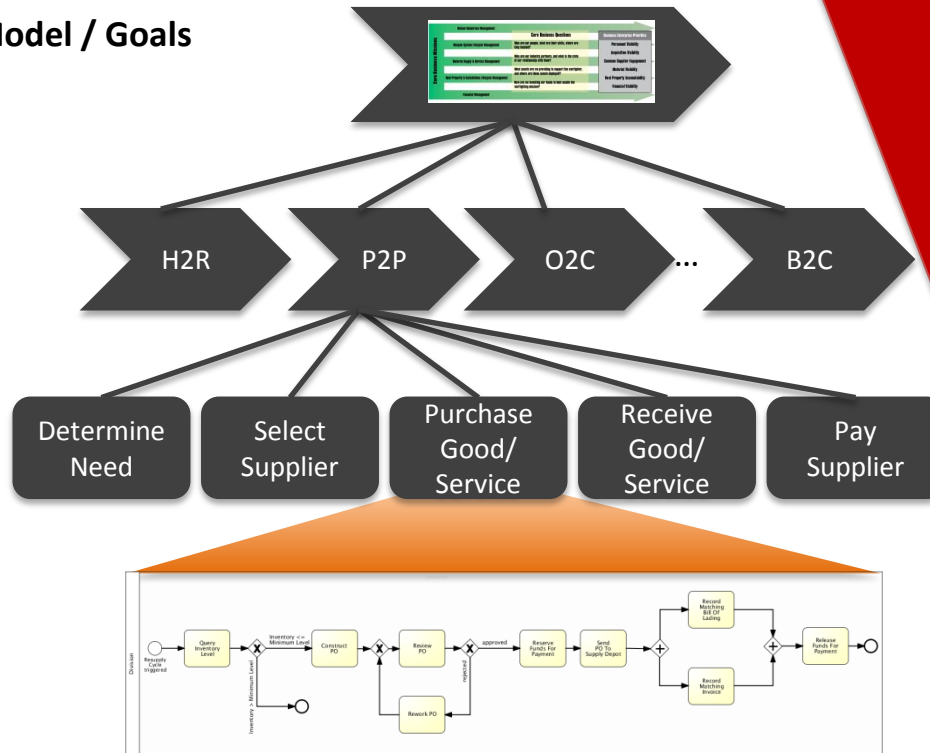
Business Strategy / Model / Goals

End-to-End Processes

Business Process Area

Business Process

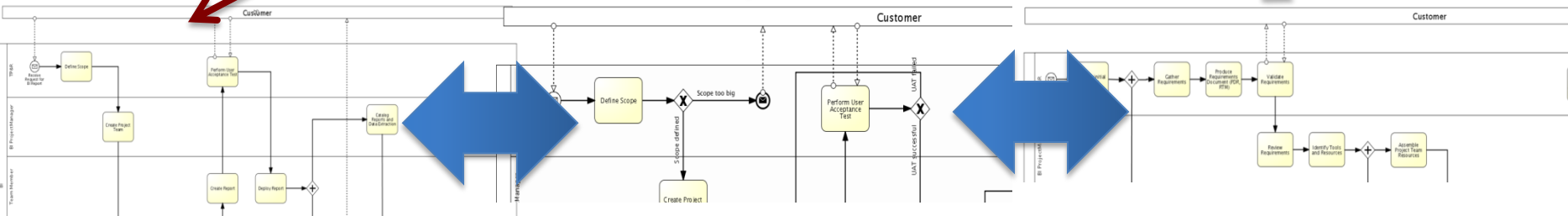
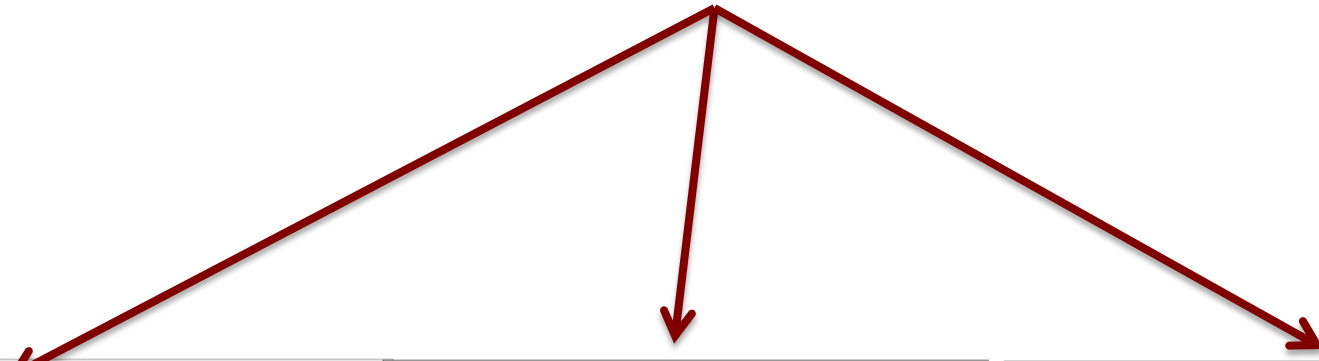
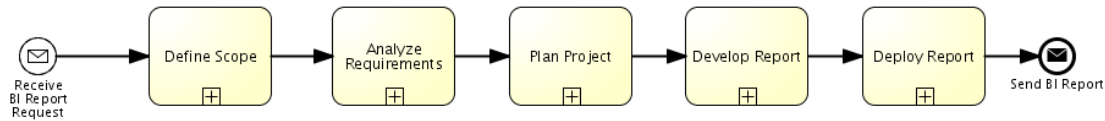
Implementation Level



Refinement and Specification

Modeling Views

Milestones

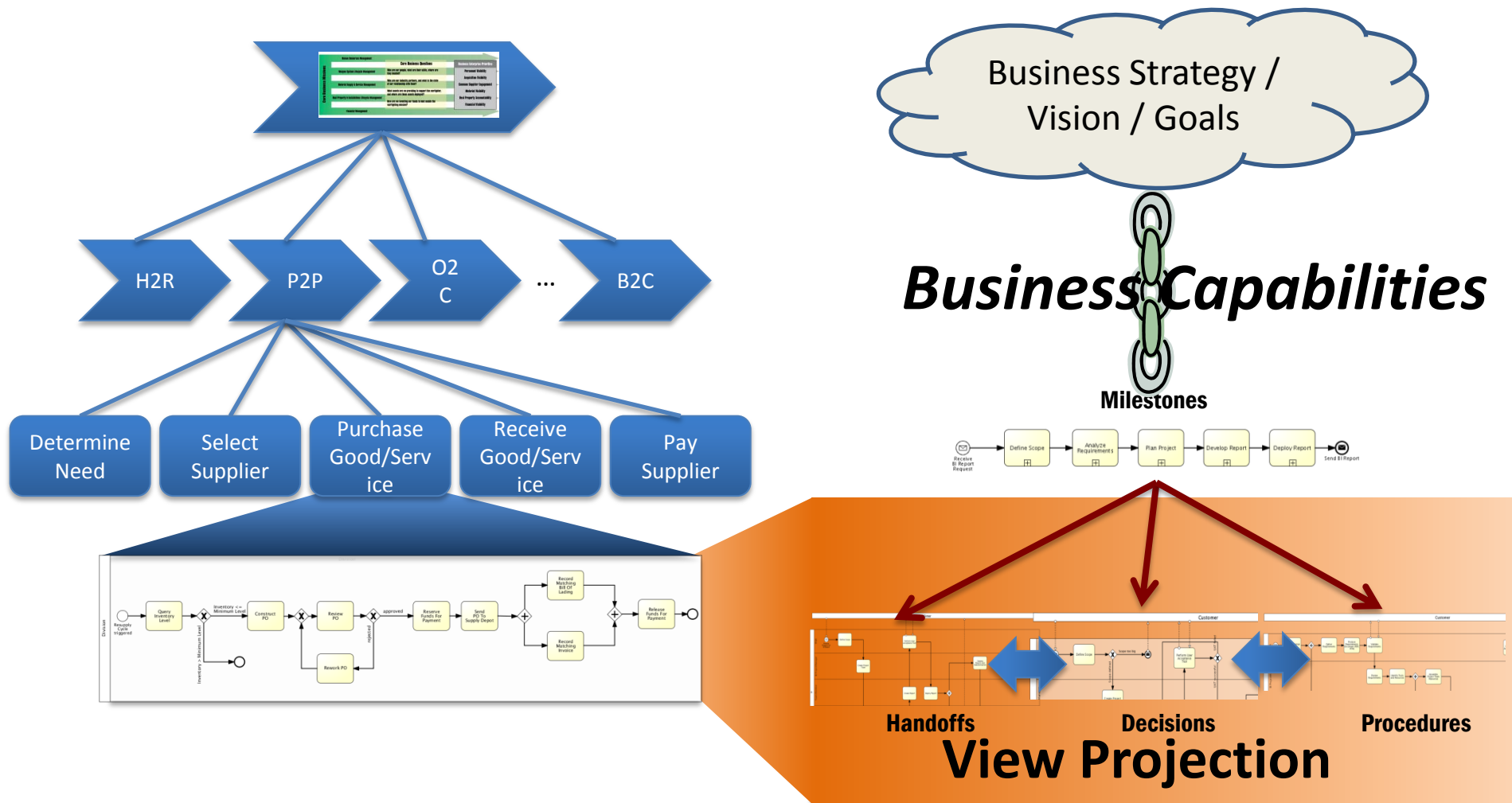


Handoffs

Decisions

Procedures

The Essential Link



Business Capability

- The ability to achieve a Desired Effect
 - under specified [performance] standards and conditions through combinations of ways and means [rules, activities, and resources] to perform a set of activities.
 - Desired Effect : a (specific) desired state of a (specific) resource.
 - A precise and detailed way of stating a strategic goal
- This is something we *want*, not something we *do*
 - Capabilities are directly related to Strategic Goals
 - They should be associated with metrics / targets

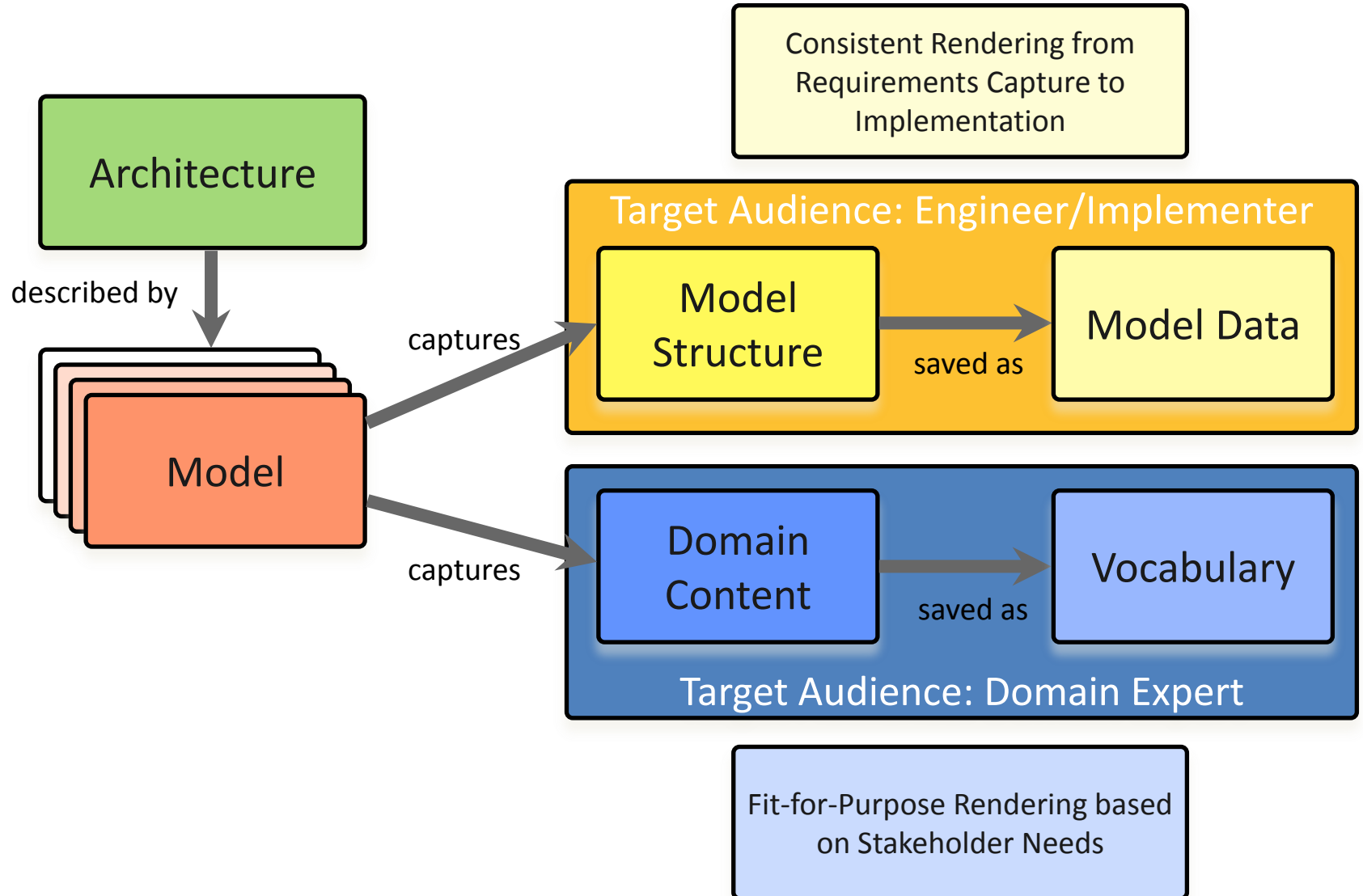
Activity

- Work, not specific to a single organization, weapon system or individual that transforms inputs (Resources) into outputs (Resources) or changes their state.
- This is something we do in order to achieve what we want
 - Activities are composed into processes
 - At some level, a process realizes a capability
 - Distinction between operational ‘business’ process and procedural ‘implementation’ system level process
 - Operational is ‘what’, implementation is ‘how’

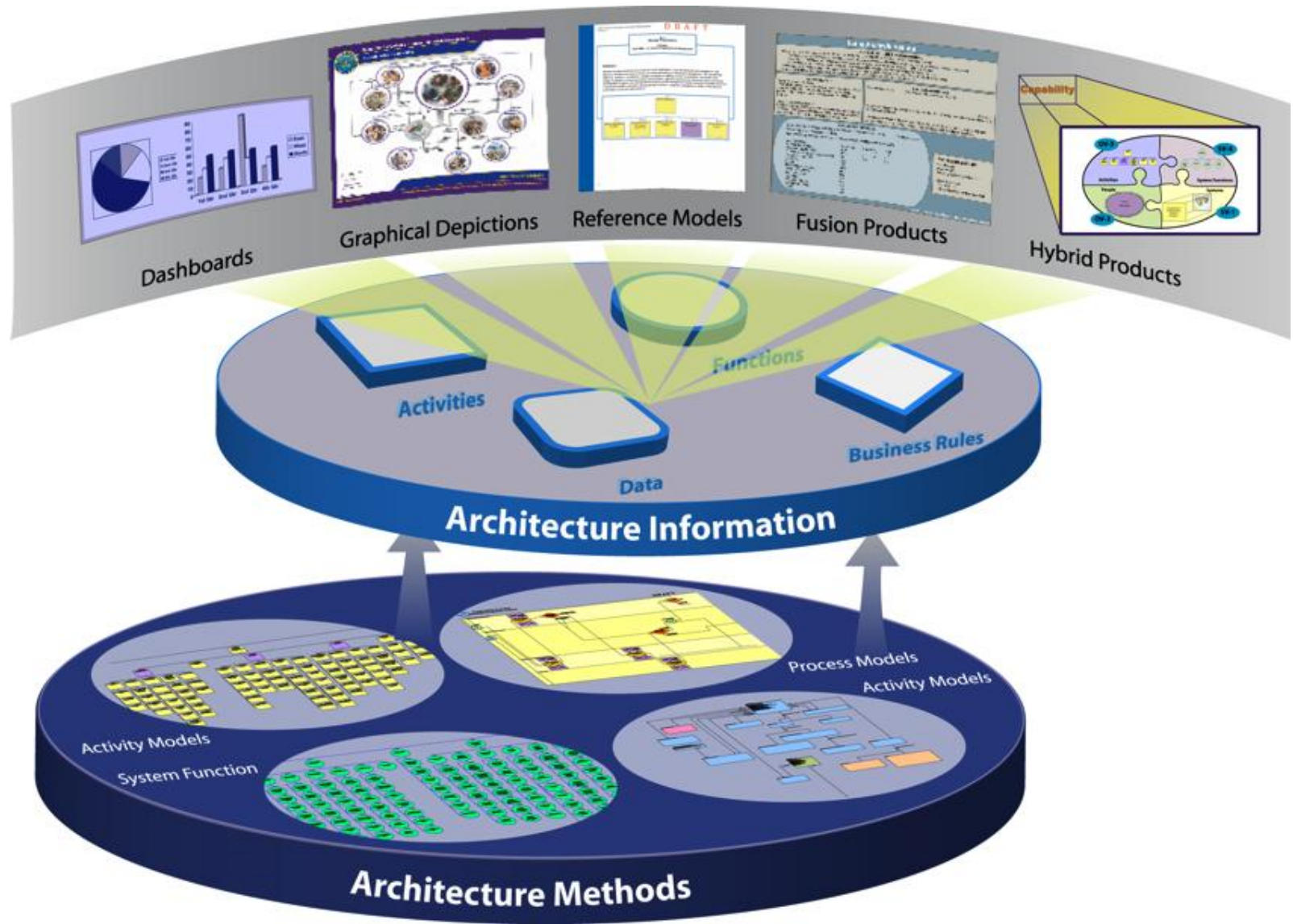
So What?

- Capabilities are things we want
 - Abilities to achieve goals by any means
- Activities are things we do
 - Ways and means of realizing a capability
- Distinguishing what we want from what we do is critical for strategic management and analysis, allowing us to:
 - Compare different things we do to achieve the same thing we want
 - Analysis of alternatives
 - Identify when we do the same thing in different places to achieve what we want
 - Redundancies
 - Assess how well we are achieving what we want
 - Measurable goals
 - Assess how well we are doing what we do
 - Measurable activities

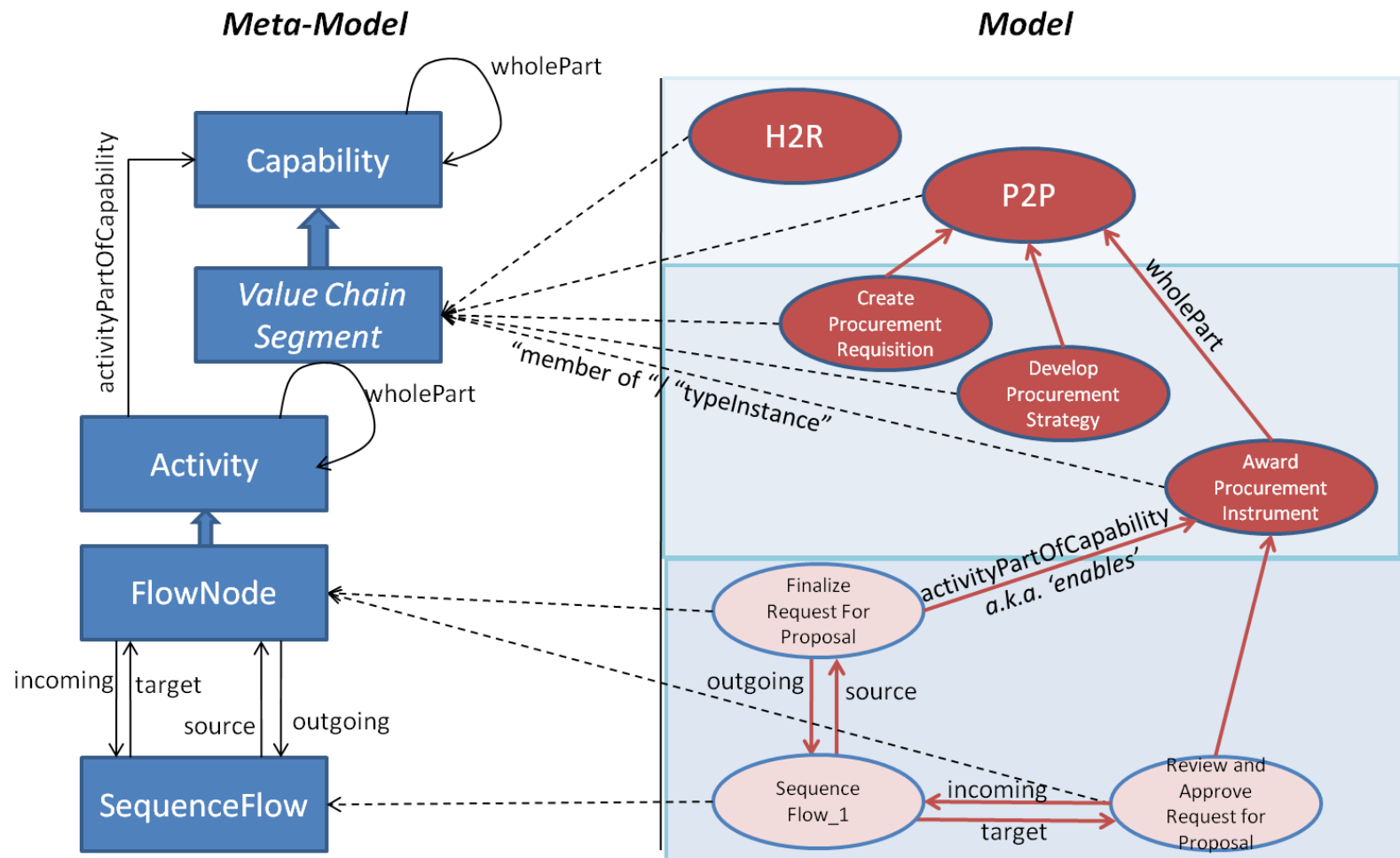
Architecture & Vocabulary



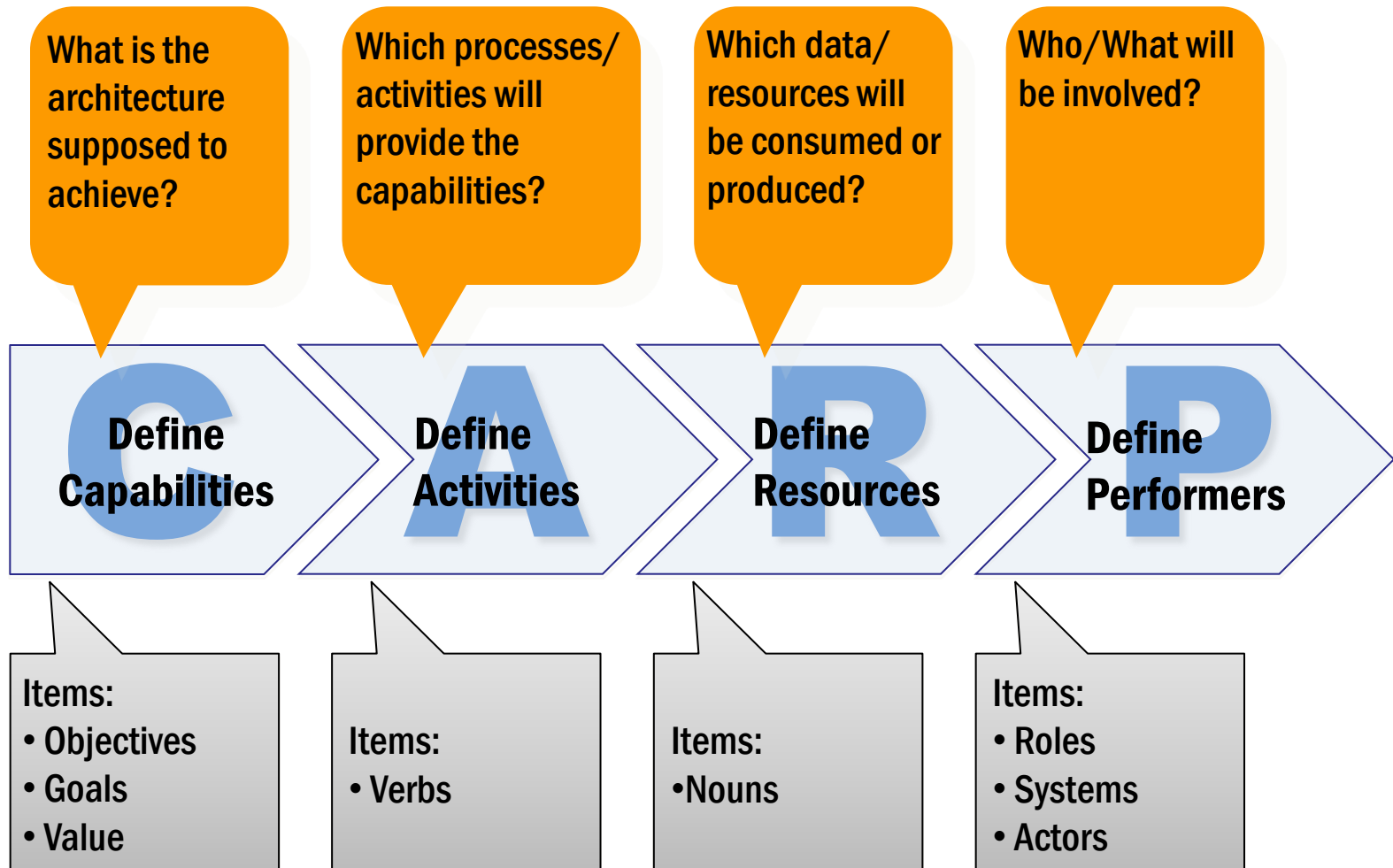
Architecture as Semantic Information



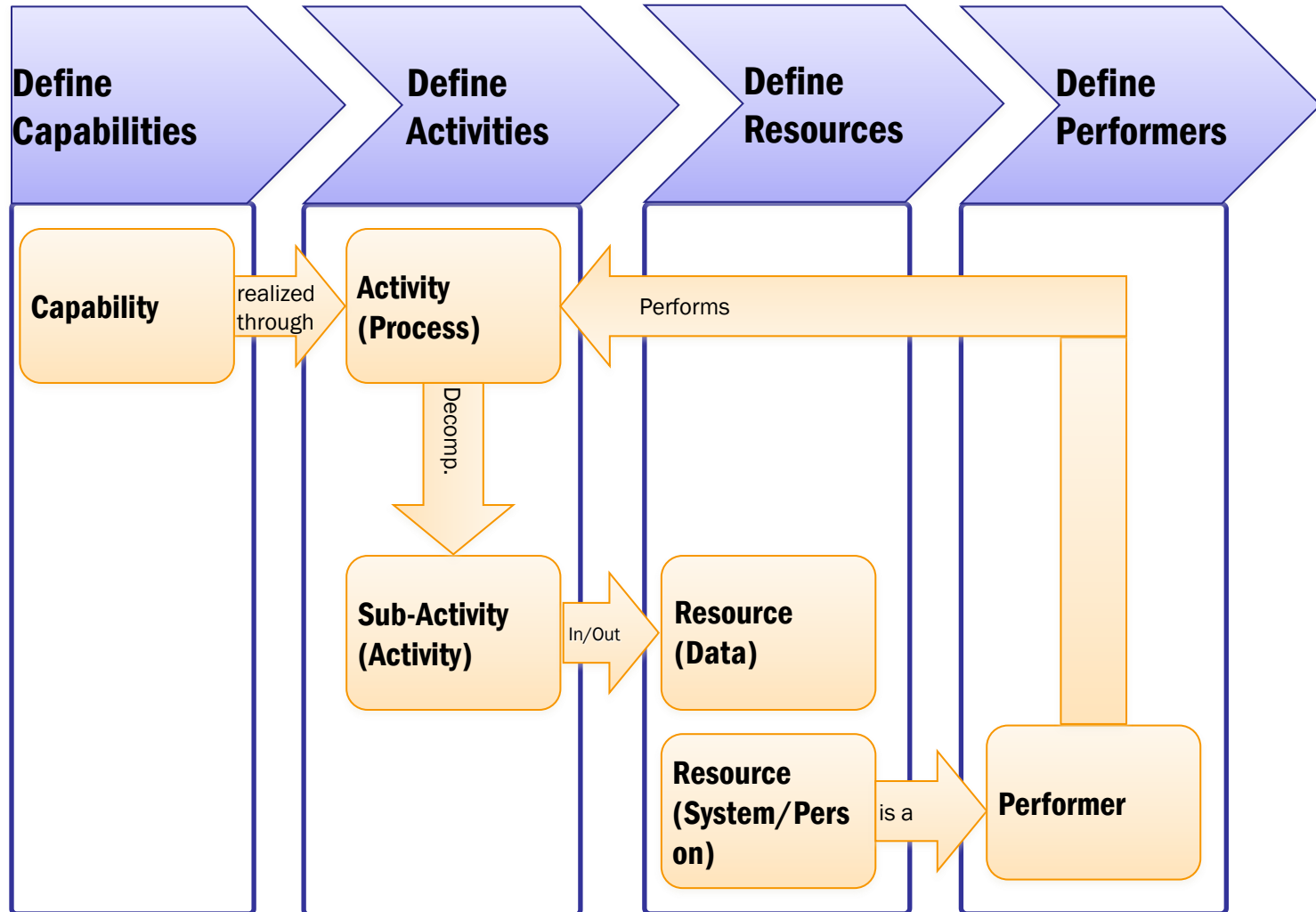
Models and Meta-Models



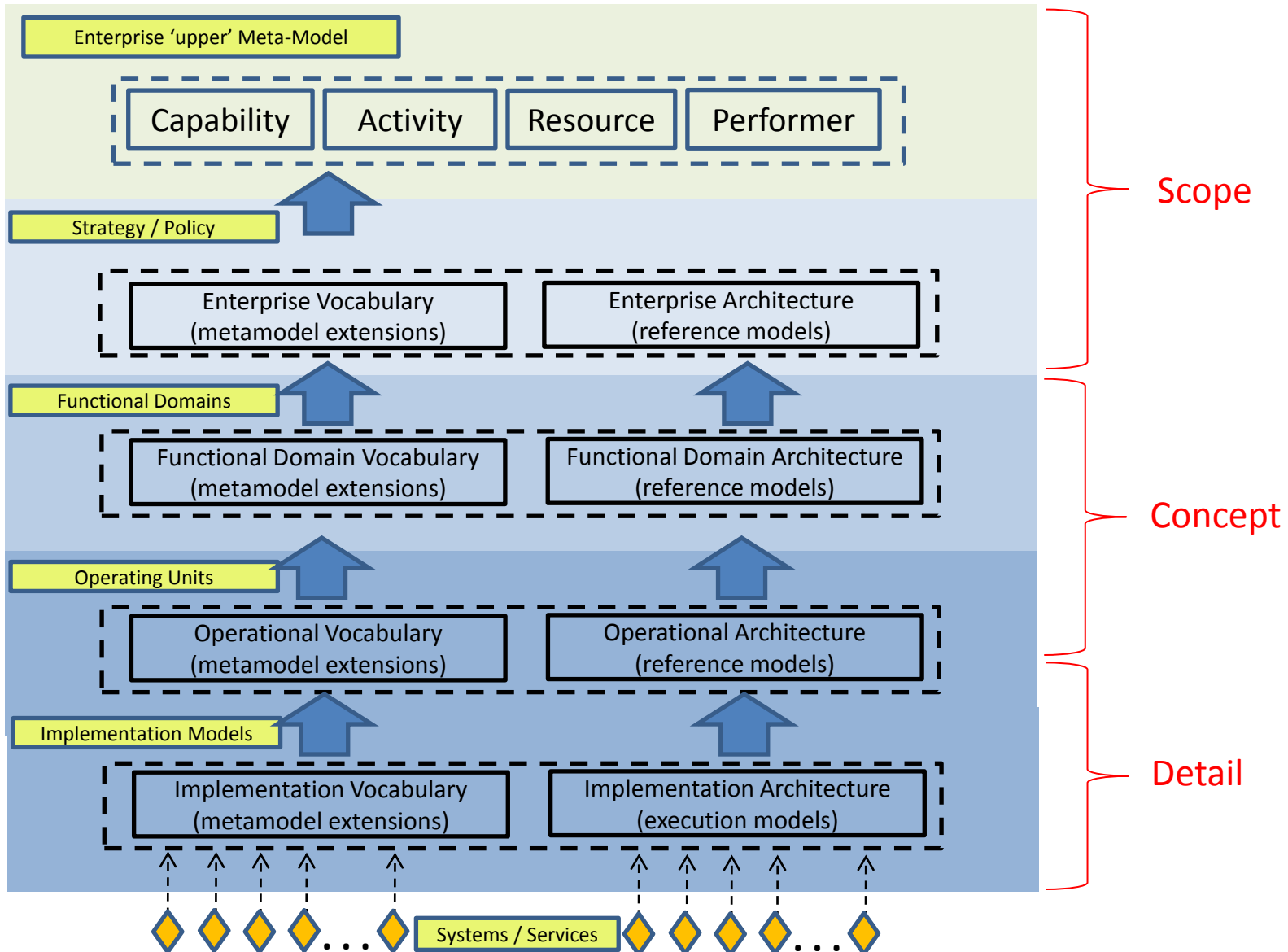
Minimal Core Meta-Model



Relationships Among Concepts



Distributed Federation



Summary

- Semantic approach leverages ontologies to describe domains (meta-model) and content (model)
 - Lean minimal core that easily extendable
 - Supports linkage of distributed federated domains
- Need 'upper' ontology to provide basic core concepts
 - For elementary concepts (capability, activity, resource, performer)
 - For elementary properties (relationships between concepts)
- Agile extension with domain ontologies to provide context
 - Domain-specific concepts and relationships (BPMN for process, FIBO, ...)
 - Domain ontologies map to concepts in the upper ontology
- System ontologies to provide architecture details
 - System-specific concepts and relationships
 - Map to domain ontology or directly to upper ontology