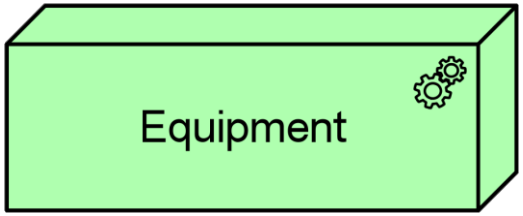
Physical Elements

Physical Elements

- Extended the Technology Layer with elements for modeling the physical world
- Closely integrated:
  - Nodes can combine IT and physical elements
  - E.g. for computer-controlled machinery or Internet of Things
  - Behavior elements reused from Technology Layer

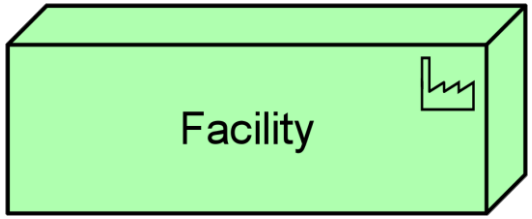
Equipment



- Equipment represents one or more physical machines, tools, or instruments that can create, use, store, move, or transform materials
- Is a specialization of a node

- Possible to model nodes that are formed by a combination of IT infrastructure and physical infrastructure like an MRI scanner at a hospital, a production plant with its control systems, etc.

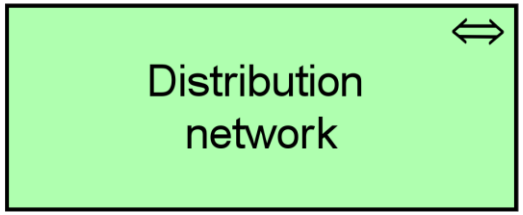
Facility



- A facility represents a physical structure or environment
- Is a specialization of a node
- Has the capability of facilitating (e.g., housing or locating) the use of equipment
- Examples of facilities include a factory, a laboratory, a warehouse, a shopping mall, a cave, or a spaceship

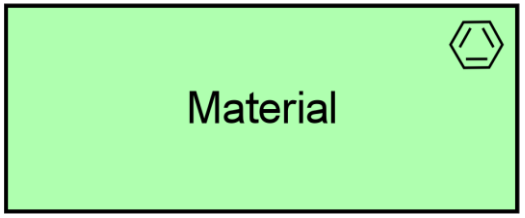
Distribution Network

- A distribution network represents a physical network used to transport materials or energy
- A distribution network connects two or more nodes

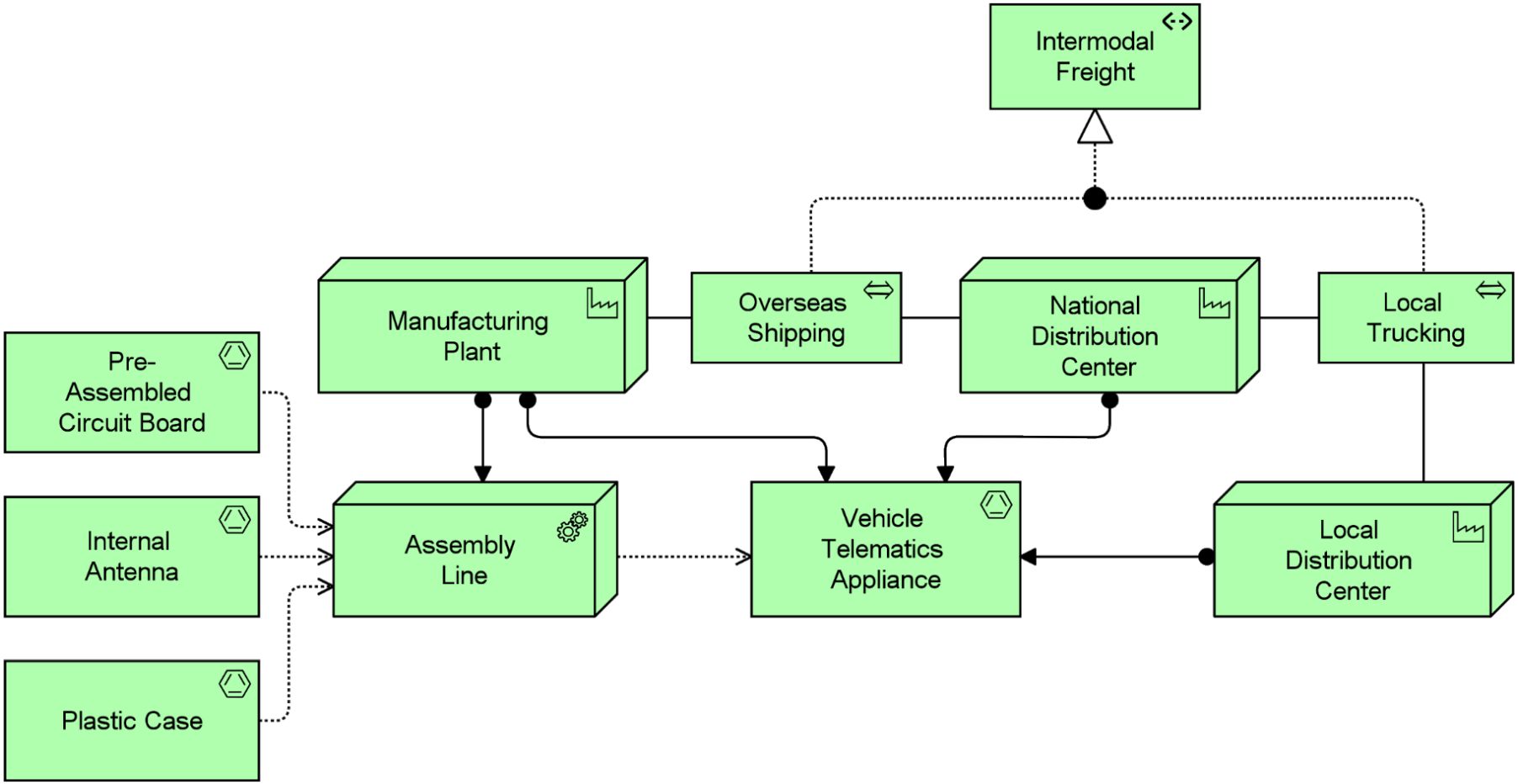


Material

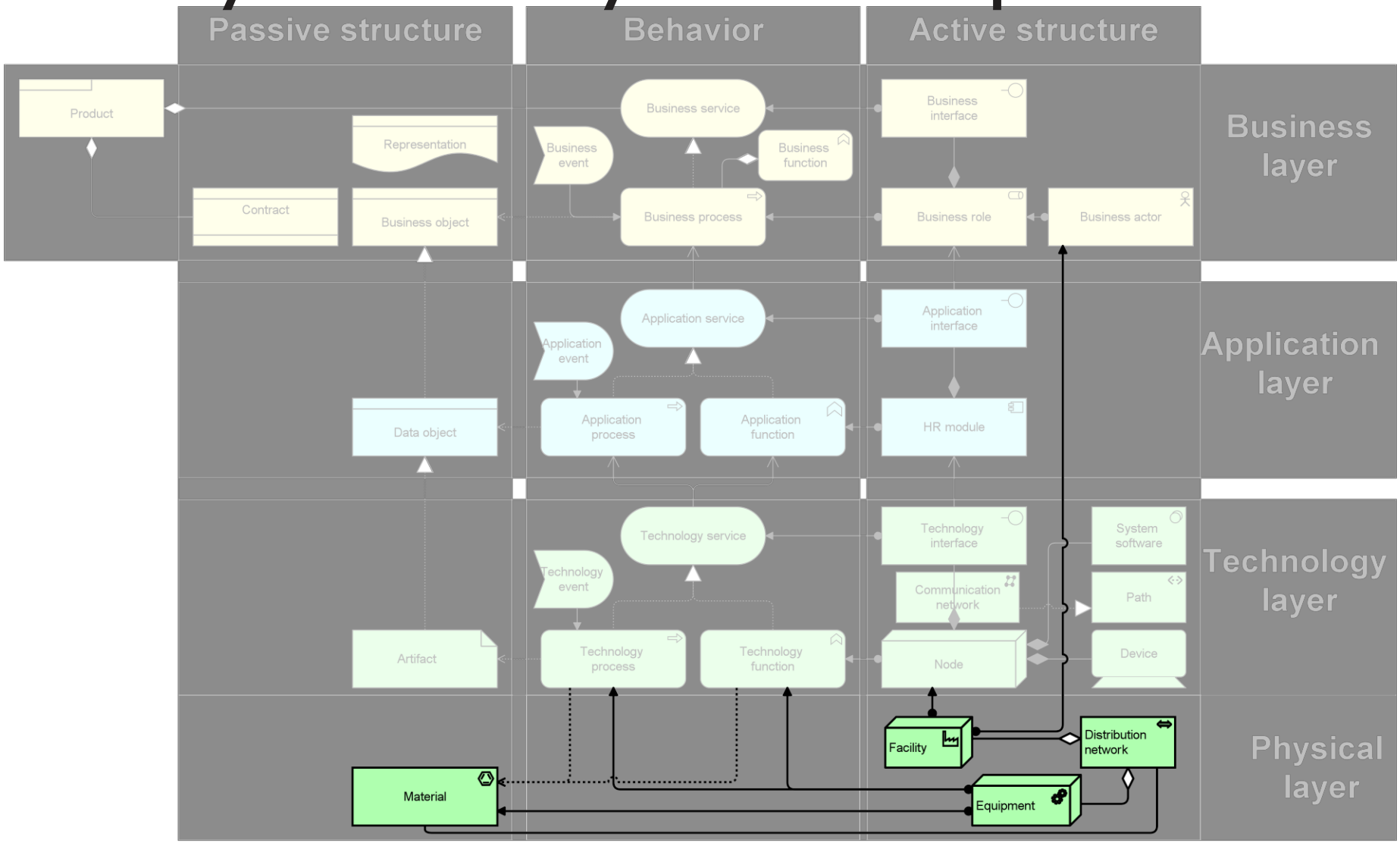
- Material represents tangible physical matter or physical elements
- Typically used to model raw materials and physical products, and also energy sources such as fuel



Physical Elements Example

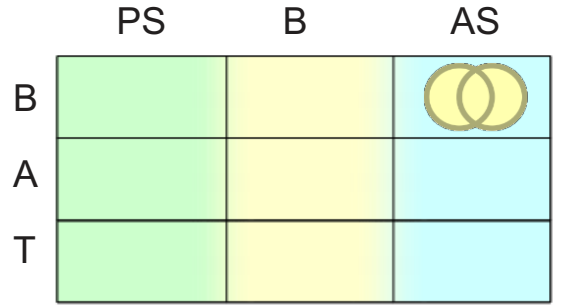


Physical Layer in Aspects



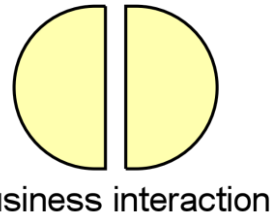
Business Collaboration

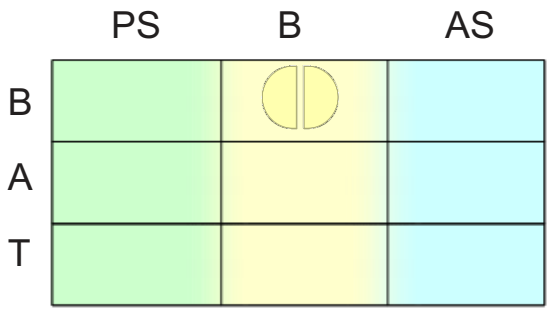
- **Business collaboration:** an aggregate of two or more business internal active structure elements that work together to perform collective behavior
- Often used for temporary aggregated roles



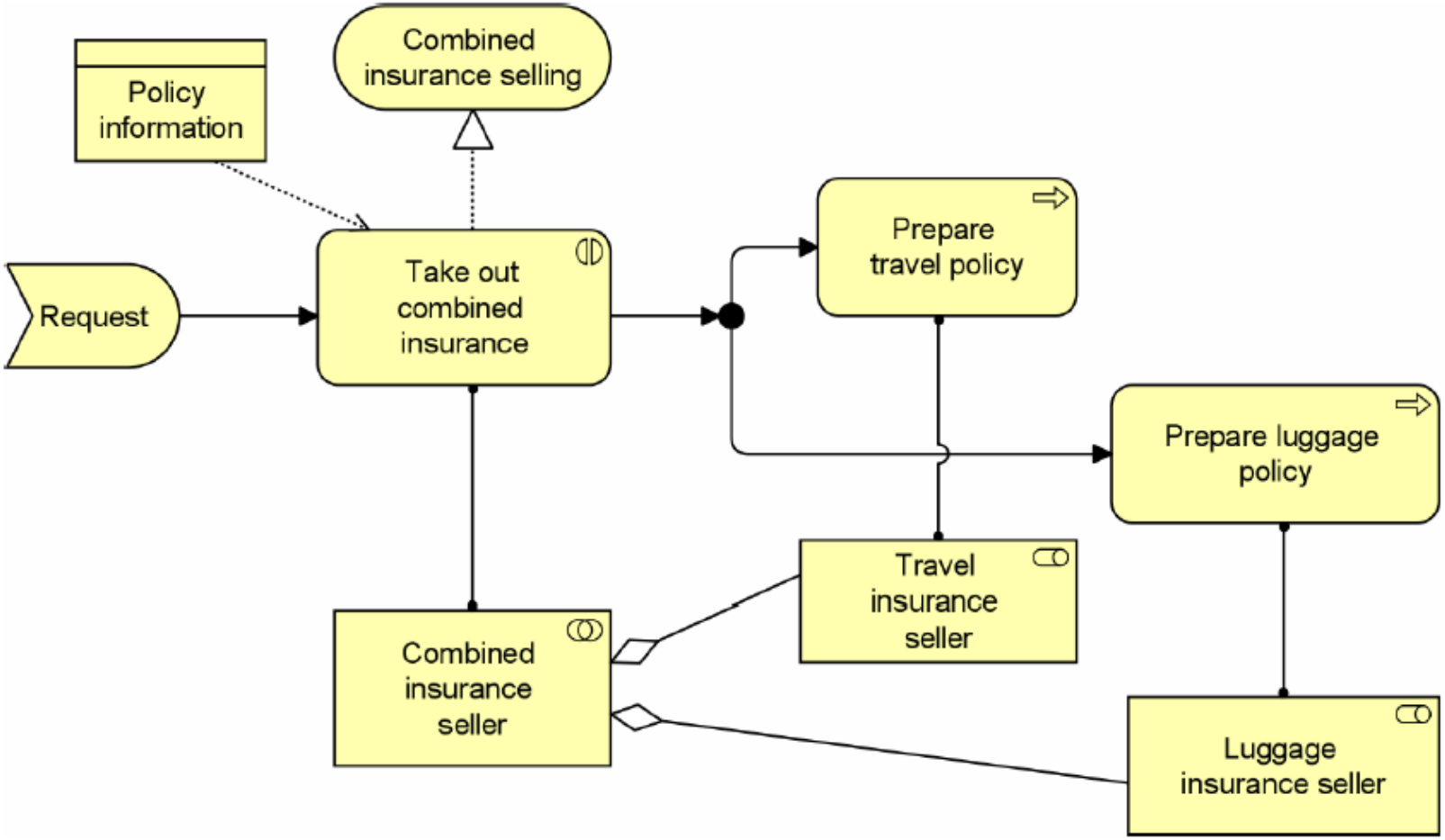
Business Interaction

- **Business interaction:** is a unit of collective business behavior performed by (a collaboration of) two or more business roles



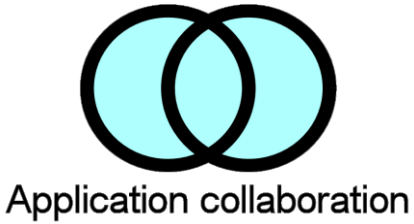


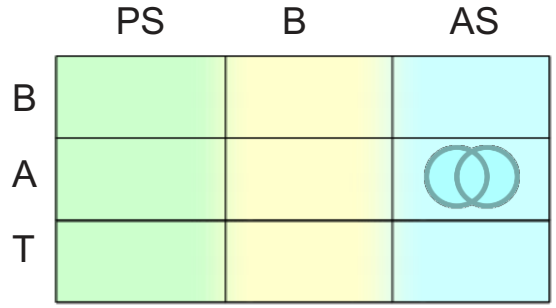
Example: Business Collaboration & Interaction



Application Collaboration

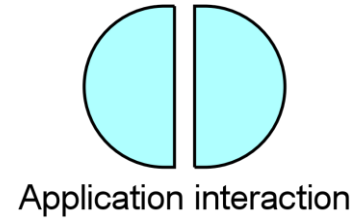
- **Application Collaboration**: represents an aggregate of two or more application components that work together to perform collective application behavior
- An application collaboration typically models a logical or temporary collaboration of application components, and does not exist as a separate entity in the enterprise

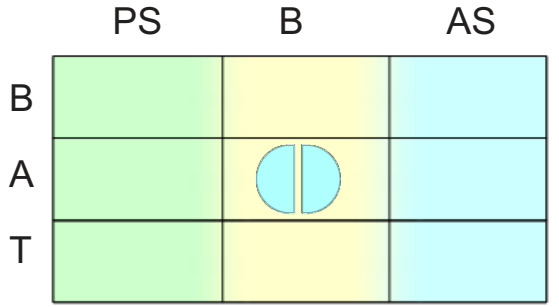




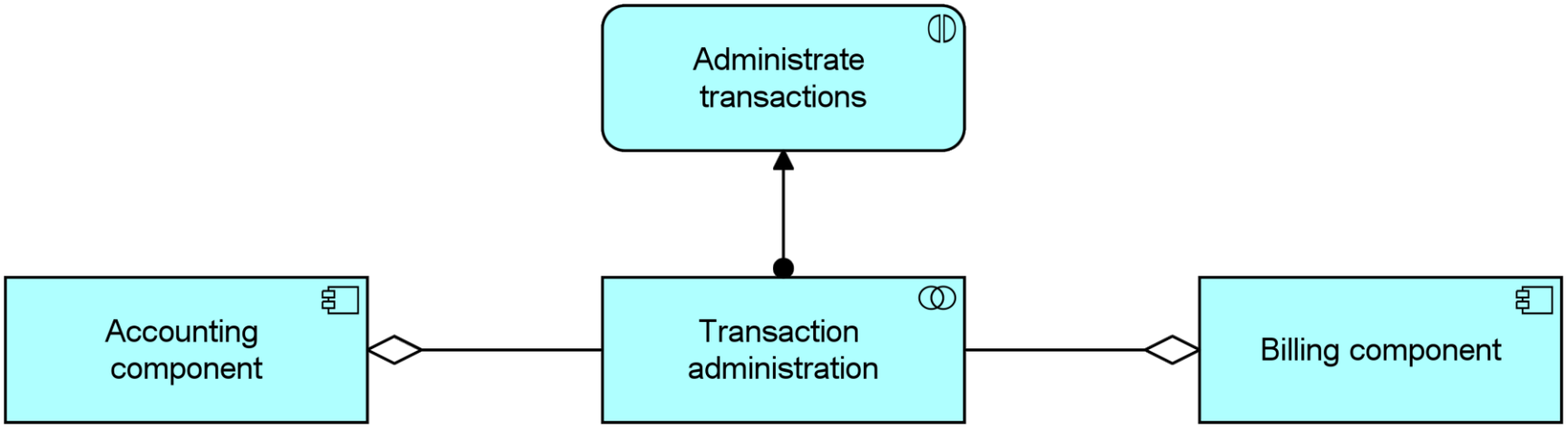
Application Interaction

- **Application Interaction:** interaction represents a unit of collective application behavior performed by (a collaboration of) two or more application components



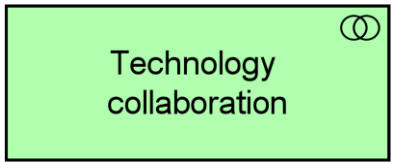


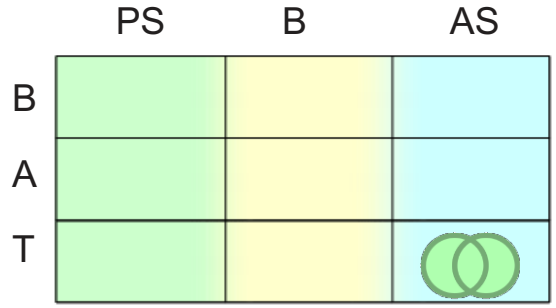
Example: Application Collaboration & Interaction



Technology Collaboration

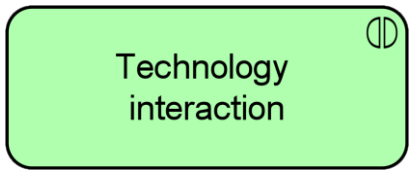
- **Technology collaboration:** represents an aggregate of two or more nodes that work together to perform collective technology behavior
- Typically models a logical or temporary collaboration of nodes, and does not exist as a separate entity in the enterprise

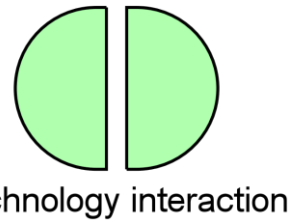


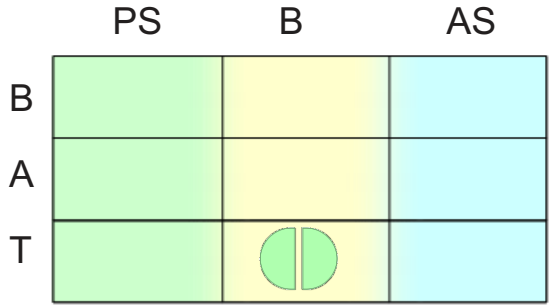


Technology Interaction

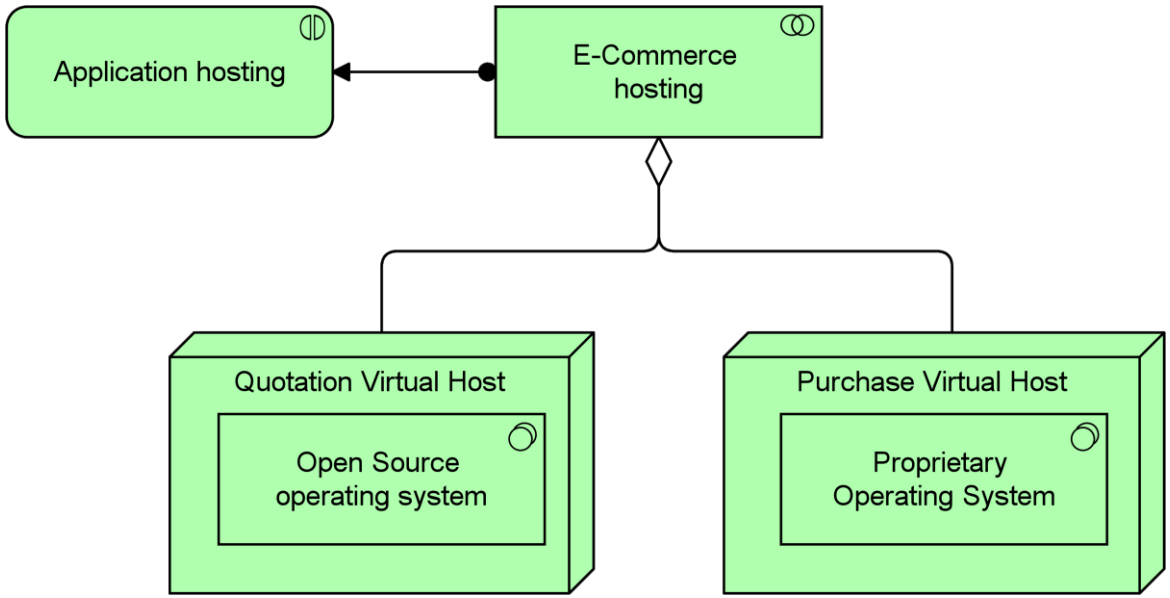
- **Technology interaction:** represents a unit of collective technology behavior performed by (a collaboration of) two or more nodes.







Example: Technology Collaboration & Interaction



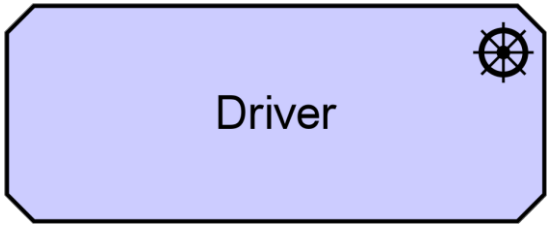
Motivation elements

- ArchiMate® core describes the structure of elements that form the organization
- Motivation elements are used to model the motivations, or reasons, that guide the design or change of an Enterprise Architecture
- Corresponds with the “Why” column in the Zachman framework

Stakeholder

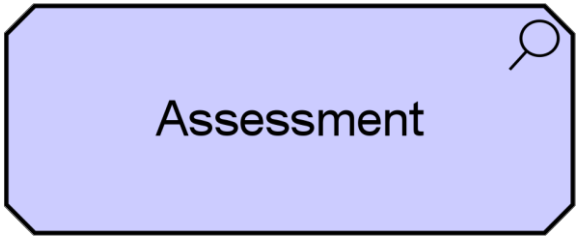
- A stakeholder is the role of an individual, team, or organization (or classes thereof) that represents their interests in the outcome of the architecture.

Driver



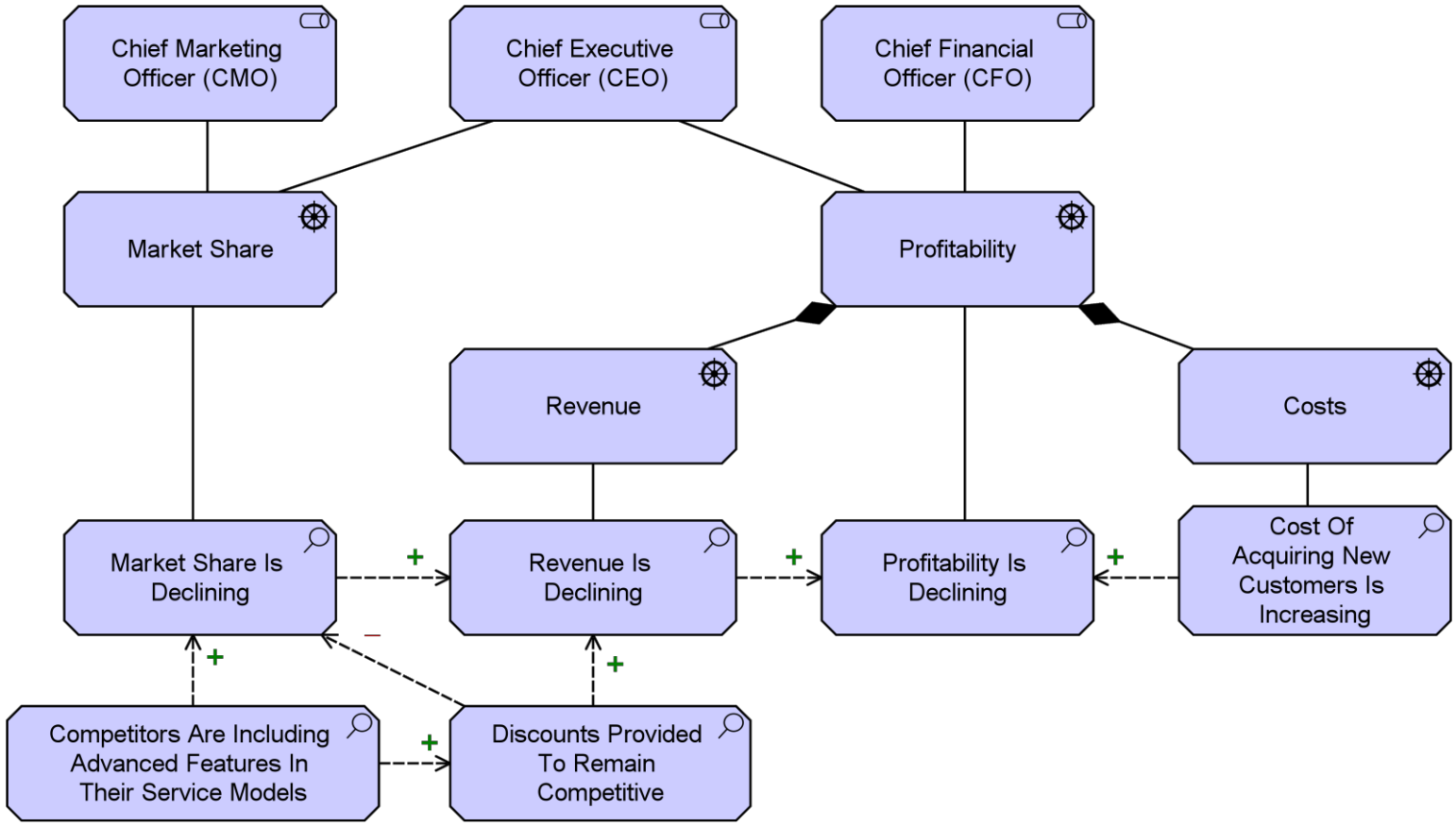
- A driver represents an external or internal condition that motivates an organization to define its goals and implement the changes necessary to achieve them
  - Internal drivers are associated with a stakeholder and are often called ‘concerns’, for example Customer satisfaction and Profitability
  - External drivers are for example economic changes or changing legislation

Assessment

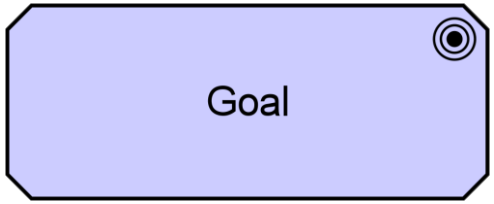


- An assessment represents the result of an analysis of the state of affairs of the enterprise with respect to some driver
- An assessment may reveal strengths, weaknesses, opportunities, or threats for some area of interest

Example: Stakeholder, Driver & Assessment

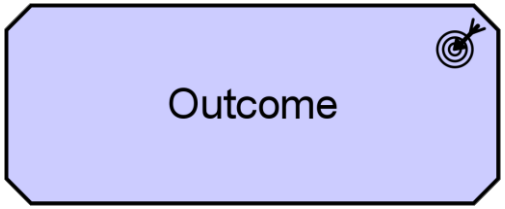


Goal



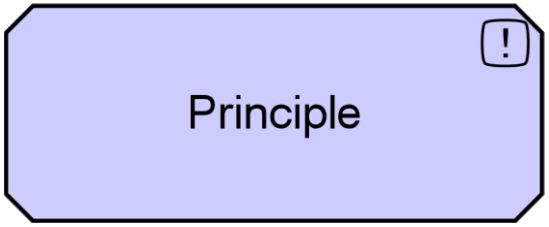
- A goal represents a high-level statement of intent, direction, or desired end state for an organization and its stakeholders
- A goal can be composed of several sub-goals
- Goals are generally expressed using qualitative words; e.g., "increase", "improve", or "easier". However, it is also very common to associate concrete objectives

Outcome



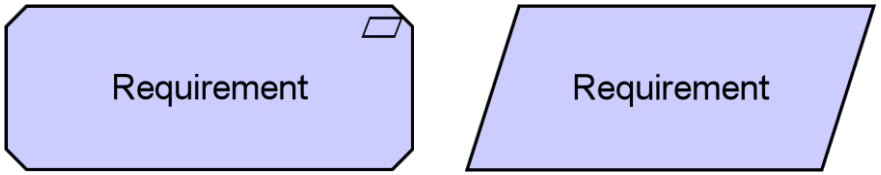
- An outcome represents an end result that has been achieved
- High-level, business-oriented results produced by capabilities of an organization
- Outcome names should unambiguously identify end results that have been achieved in order to avoid confusion with actions or goals

Principle



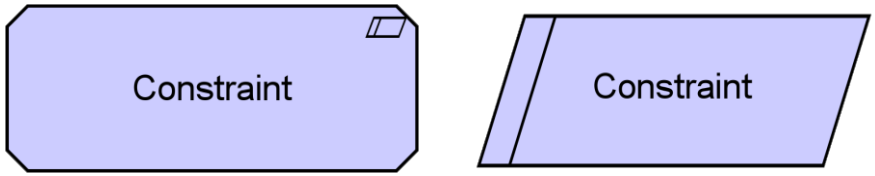
- A principle represents a qualitative statement of intent that should be met by the architecture
- A principle defines a general property that applies to any system in a certain context, and is therefore broader in scope and more abstract than a requirement
- A principle is motivated by some goal or driver

Requirement



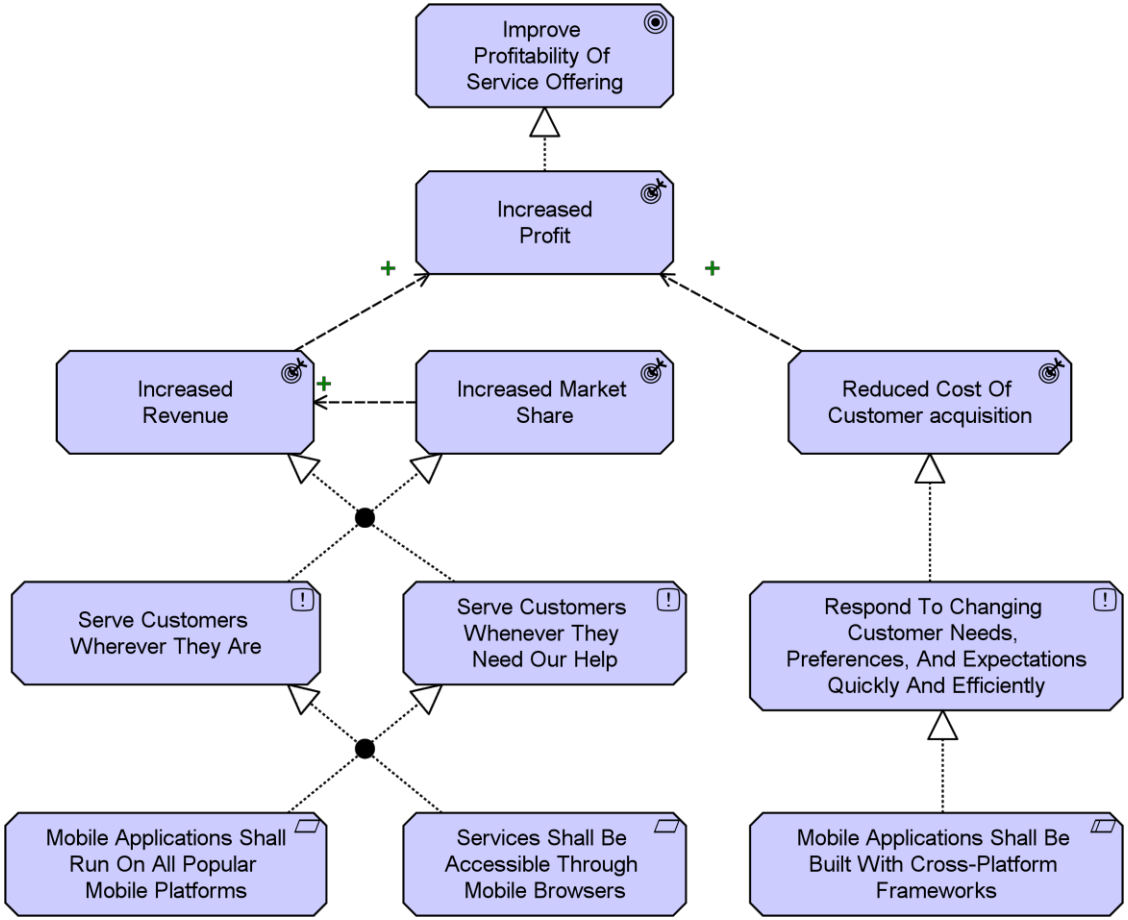
- A requirement represents a statement of need that must be met by the architecture.
- The term “system” is used in its general meaning; i.e., as a group of (functionally) related elements, where each element may be considered as a system again
- Requirements model the properties of these elements that are needed to achieve the “ends” that are modeled by the goals

Constraint

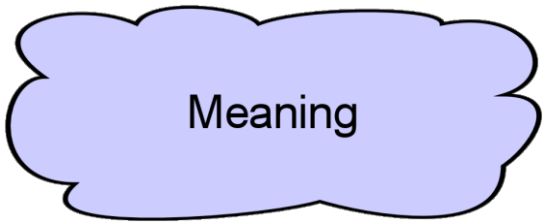


- A constraint represents a factor that prevents or obstructs the realization of goals.
- A constraint does not prescribe some intended functionality of the system to be realized, but imposes a restriction on the way it operates or may be realized:
  - a restriction on the implementation of the system (e.g. specific technology that is to be used)
  - a restriction on the implementation process (e.g. time and budget constraints)
  - a restriction on the functioning of the system (e.g. legal constraints)

Example: Goal, Outcome, Principle, Req. and Constraint

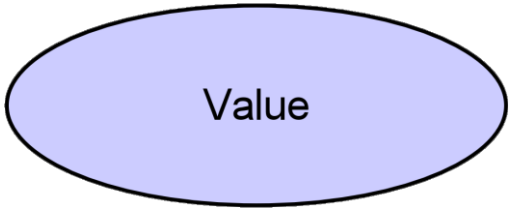


Meaning



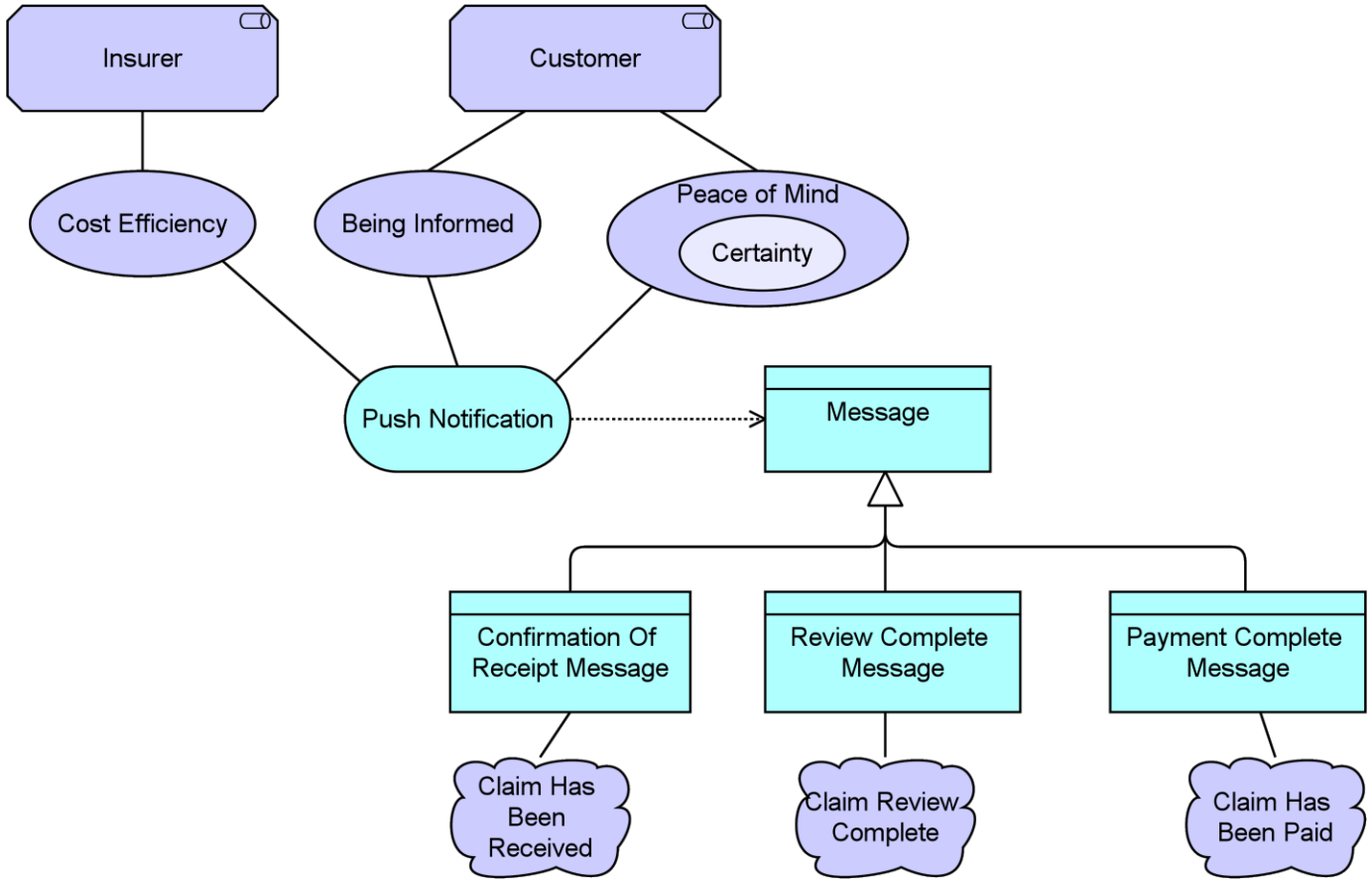
- Meaning represents the knowledge or expertise present in, or the interpretation given to, a core element in a particular context
- It represents the interpretation of an element of the architecture
- Often used to describe the meaning of passive structure elements, (for example, a document, message)

Value



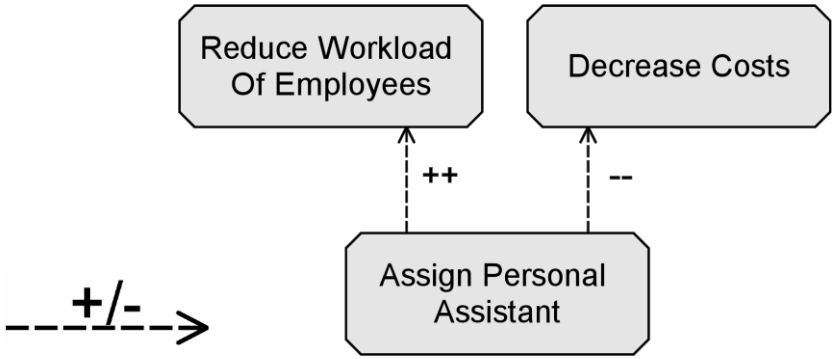
- Value represents the relative worth, utility, or importance of a core element or an outcome
- Value may apply to what a party gets by selling or making available some product or service, or it may apply to what a party gets by buying or obtaining access to it
- A value can be associated with all core elements of an architecture as well as with outcomes

Example Value and Meaning

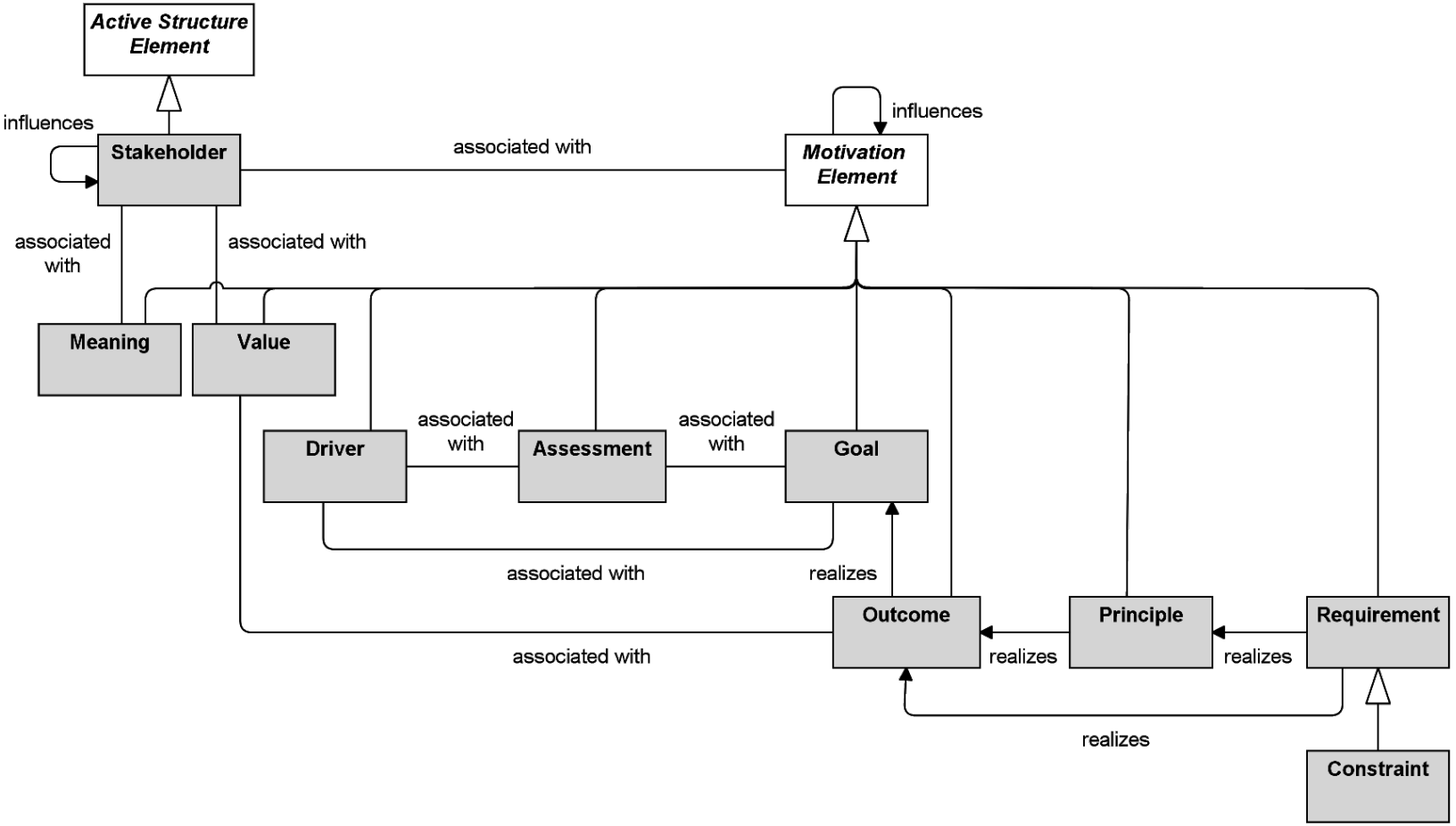


Influence Relationship

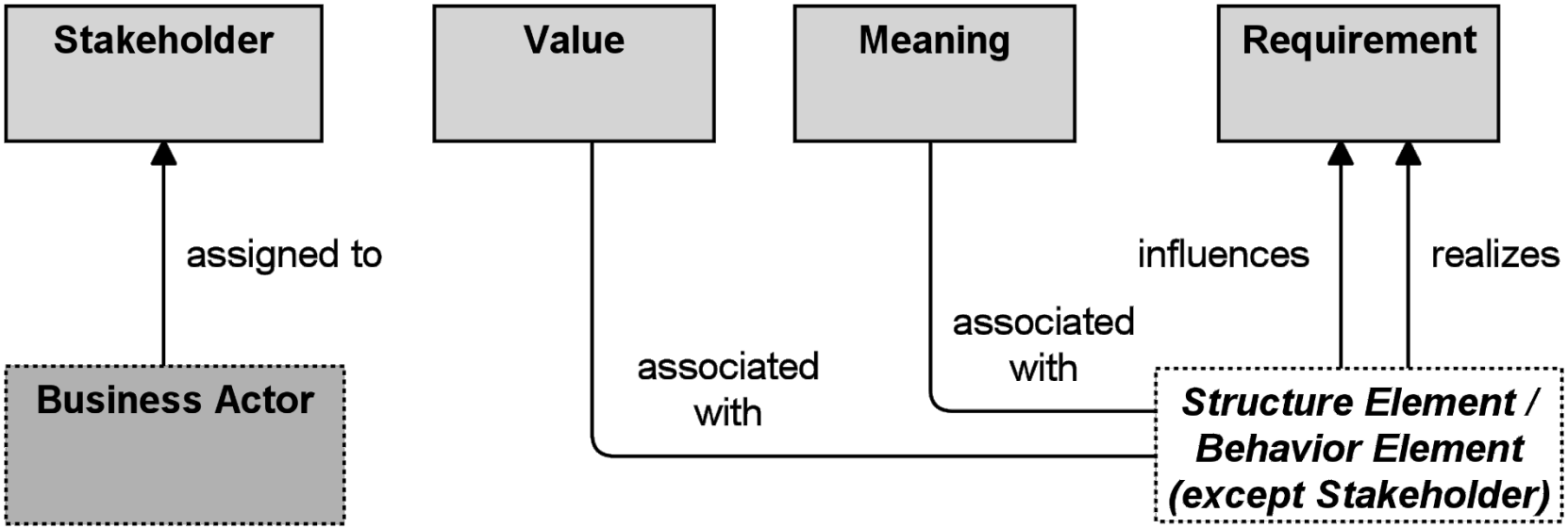
- The influence relationship models that an element affects the implementation or achievement of some motivation element
  - Vertical: An ArchiMate core element influences a motivation element
  - Horizontal: A motivation element influences another motivation element
  - Attributes can be used to indicate the sign and/or strength of the influence



Metamodel Motivation Elements



Relationships with Core Elements



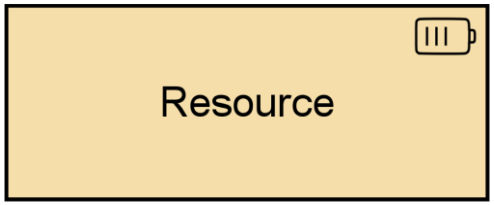
BiZdesign

ArchiMate® 3.0 Training course - Foundation

Strategy Elements

Resource

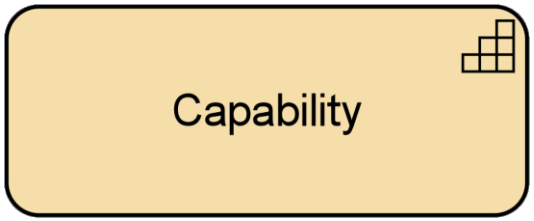
- A resource represents an asset owned or controlled by an individual or organization
- Resources are realized by active and passive structure elements



Capability

- A capability represents an ability that an active structure element, such as an organization, person, or system, possesses
- Often used for capability-based planning
- All behavior elements can realize capabilities

- Expressed in general and high-level terms and are typically realized by a combination of organization, people, processes, information, and technology



Functions vs. Capabilities

Business Functions

- Aligned with organization
- Often explicitly managed
- More focused on the present, the work of the enterprise
- May realize capabilities
- May occur multiple times
- Hierarchical, functional decomposition

Capabilities

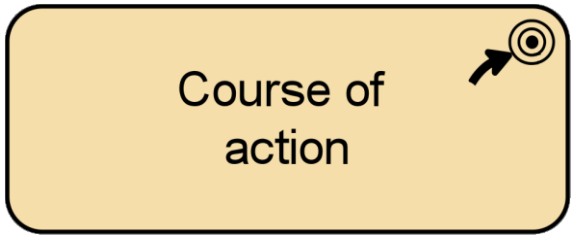
- Independent from organization structure
- Not always recognized or managed explicitly
- Unit of strategic change, used for analysis and planning
- Each capability occurs only once for the enterprise
- Not a hierarchical breakdown

Course of Action

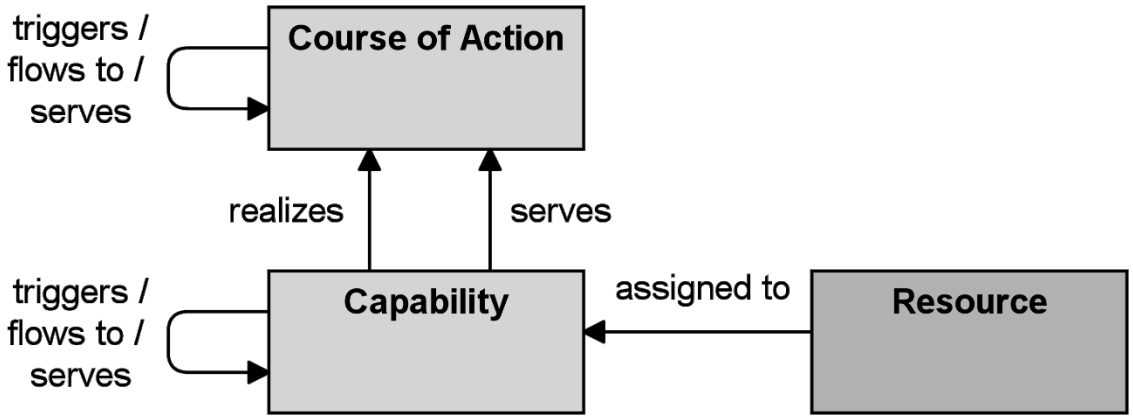
- A course of action is an approach or plan for configuring some capabilities and resources of the enterprise,

  undertaken to achieve a goal

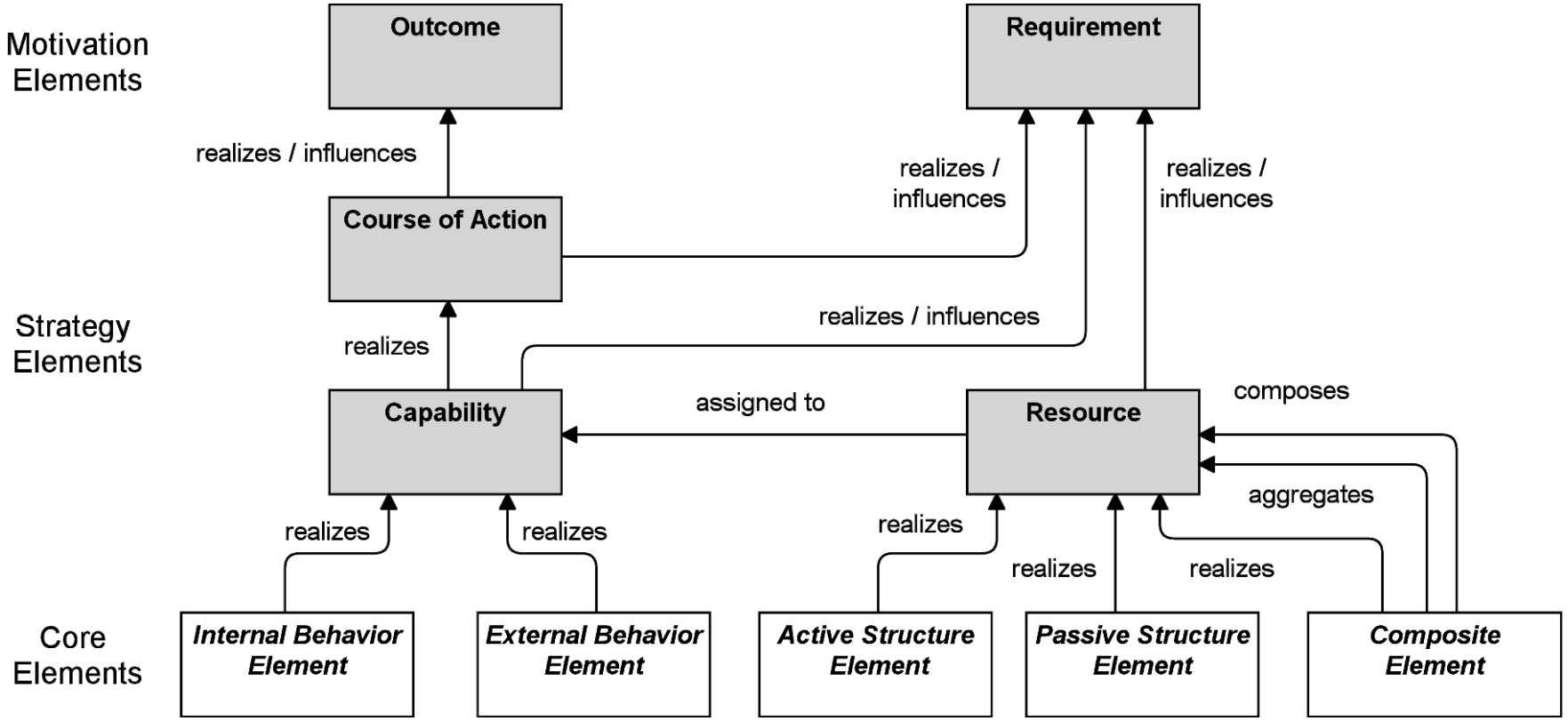
- A course of action represents what an enterprise has decided to do



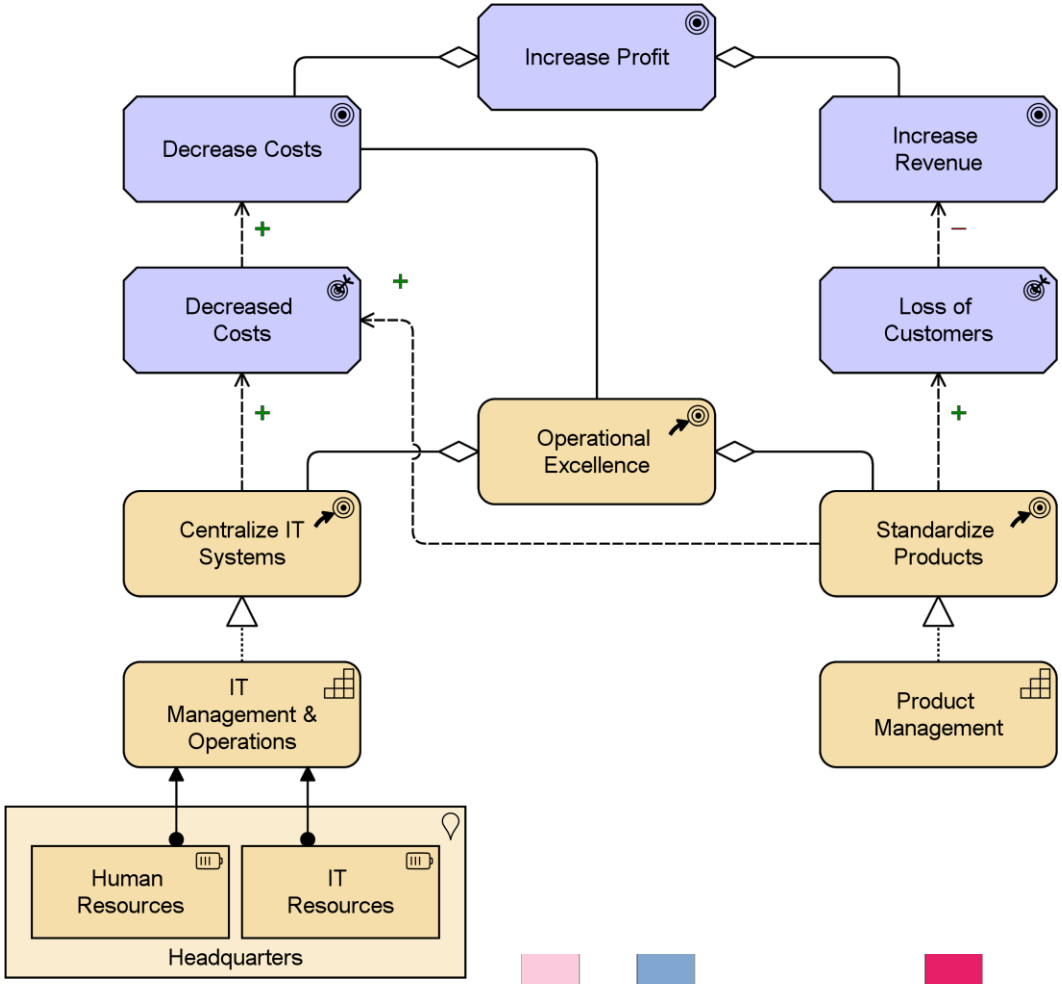
Strategy Elements Metamodel



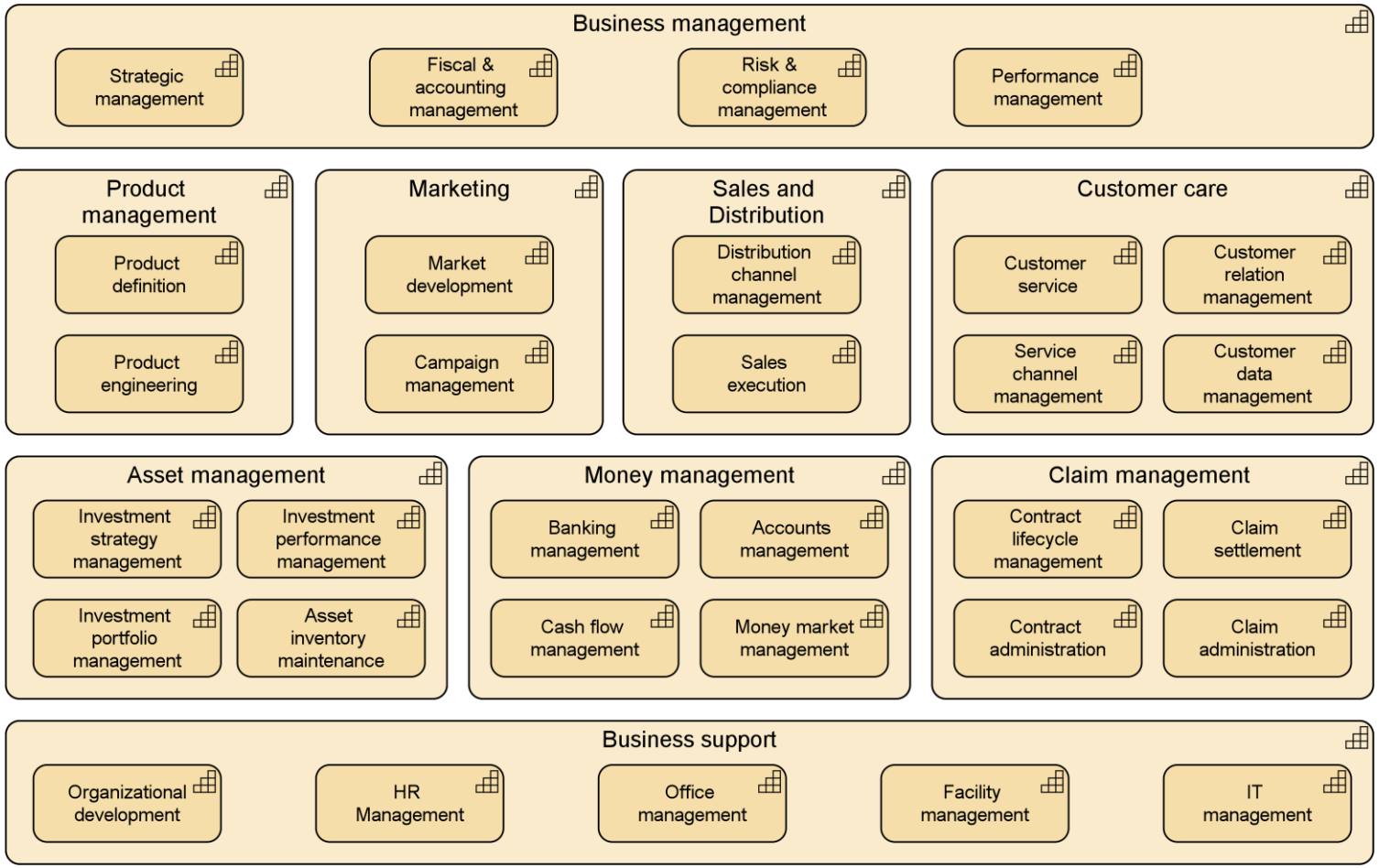
Relations with Motivation and Core Elements



Example Strategy and Motivation Elements



Example Capability Map



Inspired by Panorama360 reference model for the insurance industry