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Business Architecture Core Metamodel

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This OMG document replaces the submission document (bmi/22-03-15). It is an OMG Adopted Beta Specification and is currently in the finalization phase. Comments on the content of this document are welcome and should be directed to issues@omg.org by May 31, 2023.

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Preface

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1 Scope

The Business Architecture Core Metamodel defines concepts suitable for modeling business concepts found to be useful in business direction and strategy and not found in business operating models. These concepts include value and its delivery to stakeholders of a business, capability, abstract organization, process, product and strategy. The concepts are represented at a high level typical of executive management and staffs who are responsible for overall business management and direction. Business architecture models derived from this metamodel are not intended to represent all aspects of a business; they are intended to be used in conjunction with other models, with the ensemble of models being a sufficient basis for strategic and business analysis and planning. While the business architecture models are high level, they must be grounded in the reality and details of the business. For this reason, an ability to align or link elements or groups of elements of a business architecture model with elements and groups of elements of other models or even portions of prose documents or business data is a strong requirement. The OMG has produced or is working on specifications for other business models, but the business architect will need to include models not based on any OMG specification. This specification defines a general mechanism for linking a BACM-derived model to other models and data sources. These mechanisms respond to the RFP request for a “touchpoint” mechanism.

Business architects typically make use of conceptual frameworks to create models of a business or type of business. There are many such frameworks and they change with frequency, consequently it would be inappropriate to encode particular frameworks in the metamodel. A general mechanism, MEF [MEF] has been defined for MOF that allows the dynamic application of stereotypes to any MOF-based model. The specification requires MEF and recommends that business architects develop profiles of stereotypes for such frameworks. The concepts of the framework, represented as stereotypes, may then be applied to BACM model elements to characterize them and provide supplementary information according to the framework.

2 Conformance

2.1 Overview

Implementers of this specification must be able to create, edit and delete instances of each of the meta-classes and meta-associations in this specification. Implementers may perform these operations in any suitable manner, provided that the effect is as if each meta-class and meta-association were present in the implementation and associated with each instance. XMI exports of an instance model must include in each instance of a class or association, a reference to the definition of the meta-class or meta-association used to create the instance definition in the normative XMI of the relevant specification version.

The specification diagrams and prose define and use a “shortcut” mechanism for certain associations. Shortcuts are defined in the metamodel and these definitions are used to create constraints associated with instances of shortcuts. The representation of shortcuts is mandatory, but implementing the evaluation of the constraints is an optional point of compliance. Shortcuts are important tools for the evolution of BACM models, so full implementations are strongly encouraged.

The specification also defines an approach to implementing “touchpoints” (references to information contained in models outside the scope of the BACM). The approach employs a “resourceIdentifier”, typically an IRI, to identify a resource (which may be an external model, document or data set) and an alignment specification whose language is not controlled by this specification, except that if the language attribute is “Natural”, then the specification will be a prose description of the alignment mapping in a natural language.

Implementations must support all packages defined in this specification.

Implementations must implement the Metamodel Extension Facility (MEF) [MEF], which implies the implementation of [SMOF] and [MOF] or an equivalent facility. This conformance requirement supports the requirement that model elements be instances from one or more metaelements and the requirement that stereotypes be used to define frameworks for the additional interpretation of BACM models.

3 References

3.1 Normative References

The following normative documents contain provisions which, through reference in this text, constitute provisions of this specification. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply.

[BMM] The Business Motivation Model http://www.omg.org/spec/BMM/1.3)

[BPMN] The Business Process Model And Notation™ (BPMN™): http://www.omg.org/spec/BPMN/2.0.2/.

[CMMN] Case Management Model and Notation http://www.omg.org/spec/CMMN/Current

[DMN] Decision Model Notation http://www.omg.org/spec/DMN/Current

[SBVR] Semantics of Business Vocabulary and Rules™ (SBVR™) http://www.omg.org/spec/SBVR/1.3.

[SIMF] Semantic Information Modeling for Federation (SIMF) http://www.omgwiki.org/architecture-ecosystem/doku.php?id=semantic_information_modeling_for_federation_rfp

[SMM] Structured Metrics Meta-Model (SMM) Version 1.2 http://www.omg.org/spec/SMM/Current

[UAF] Unified Architecture Framework Profile (UAF) http://www.omg.org/spec/UAF/1.0/Beta1/.

[UML] Unified Modeling Language http://www.omg.org/spec/UML/2.5.

[VDML] The Value Delivery Modeling Language (VDML) http://www.omg.org/spec/VDML/1.0/.

[XMI] XML Metadata Interchange. http://www.omg.org/spec/XMI/2.5.1.

[MEF] Metamodel Extension Facility (MEF) , version 1.0 Beta 1, OMG Specification https://www.omg.org/spec/MEF/1.0

[MOF] Meta Object Facility (MOF) Core, version 2.5.1, OMG Specification https://www.omg.org/spec/MOF/2.5.1

[SMOF] MOF Support for Semantic Structures (SMOF), version 1.0, OMG Specification https://www.omg.org/spec/SMOF/1.0

[UML] Unified Modeling Language (UML), version 2.5.1, OMG Specification https://www.omg.org/spec/UML/2.5.1

[XMI] XML Metadata Interchange (XMI), version 2.5.1, OMG Specification https://www.omg.org/spec/XMI/2.5.1

3.2 Non-normative References

[RDF-star] Foundations of an Alternative Approach to Reification in RDF https://arxiv.org/pdf/1406.3399.pdf

[openbCypher] Cypher Query Language Reference,Version 9 https://s3.amazonaws.com/artifacts.opencypher.org/openCypher9.pdf

4 Terms and Definitions

The terms used to label metaelements in this specification and their definitions are contained in Annex A:

5 Symbols and Abbreviations

The specification employs UML symbols and diagrams to present the metamodel.

6 Additional Information

6.1 Changes to Adopted OMG Specifications [optional]

No changes are proposed to any adopted OMG specifications by this specification.

6.2 Acknowledgements

The following companies submitted this specification:

- Business Architecture Guild
- Mega Corporation
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- Capsifi USA

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- Airbus
- Boeing

The following individuals contributed to this specification:

- Jim Rhyne
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- Fred Cummins
- Lloyd Dugan
- Hermann Schlamann
- Michel Sauvage

- Chalon Mullins

6.3 IPR Mode

The IPR mode of this specification is “non-assert”.

6.4 Document Style Conventions

The following stylistic conventions apply to text about the Clause 7 (Metamodel):

Italicized names in the descriptive text refer to the corresponding named elements in the diagrams and in the element syntax definitions. In general, such terms can be taken as referring to instances of the named metaclasses and meta-associations. Where necessary, an ambiguity will be resolved by using the metamodel element label followed by the “metaclass” or “meta-association” term.

7 Business Architecture Core Metamodel

7.1 Overview of the Metamodel (non-normative)

The metamodel is specified as a collection of packages containing metaclasses and meta-association that refer to metaclasses and meta-associations in other packages. The metamodel is intended to define an abstract syntax for BACM models that are instances of the overall metamodel. The packaging is a convenience and should not be construed by implementers as specifying a modeling palette structure or any other characteristic of model presentation except for the names of the metaclasses and meta-associations.

Many meta-associations in the metamodel are given a <<class>> stereotype. This stereotype should be interpreted as meaning that these associations can have properties, be specialized and participate in associations. Some associations are n-ary; these associations are sometimes represented as classes with an <<association>> stereotype and sometimes as a UML n-ary association. In either case, these associations should be able to have properties, be specialized and participate in associations.

The <<shortcut>> stereotype is sometimes applied to an association in the metamodel. This stereotype indicates that the association must be consistent with other details that may or may not be elaborated in the metamodel. For example, a business architect may wish to assert that a value stream is intended to satisfy the values of a set of customers (represented as a customer) without immediately specifying the details of value propositions, customer journeys and customer segments. This assertion would be modeled as an instance of a <<shortcut>> stereotyped meta-association. The assertions associated with shortcuts are represented in the MOF-compliant XMI as OCL constraints.

The model instances of the meta-classes and meta-associations represent types or sets of entities that would be found in a real or imagined business. Some of these entities will be tangible (occupying time and space) while others will be intangible (conventions of thought). The model instances have potentially intensional and extensional semantics and are not required to have disjoint extensions; for example, a *BusinessObject* instance, AssemblyRobot, may in a different context be an instance of *Performer* or an instance of *Resource*. This may create a problem for tool implementations that do not allow an instance to have multiple metaclasses. The OMG specification MOF Support for Semantic Structures – SMOF [SMOF] provides such a facility for MOF metamodels and the implementation of the MOF metamodel of this specification will also require implementation of SMOF.

7.1.1 Capability Package

The Capability package specifies abstract syntax for *Capability*, *Outcome*, *BusinessObject* and *InformationItem* and their related metaclasses. It also specifies associations that link these metaclasses together. *Capability* is an abstraction of a unit of work that does not specify how the work is done. In effect, a *Capability* is specified by its *Outcomes* that are states of *BusinessObjects* or *InformationItems*. A *Capability* produces *Outcomes* and needs *Outcomes*. An *Outcome* that is produced by a *Capability* and seen by an entity outside *theBusiness* corresponds to an external event or state; typically such Outcomes would be experienced by stakeholders such as customers and regulators. An *Outcome* that is needed by a *Capability* and not produced by any *Capability* is effectively a triggering event that occurs outside the business, such as receipt of an order.

Outcomes effectively externalize the modeled state of a *BusinessObject* or *InformationItem*. This allows the modeler to define a *BusinessObject* or *InformationItem* without having to define its state variables, properties or characteristic associations; these can be specified separately as *Outcomes*. The resulting abstract model is more complex but allows a *BusinessObject* or *InformationItem* to be represented in the model in multiple states in the structural model of the business. The alternative, internalized states, requires the separate specification of state machines that control the state behavior and tie it to *Capabilities*.

Capabilities are also associated with *Role* instances that are abstract specifications of a type of work that may be accomplished by the *Capability* while producing an *Outcome*. *Roles* are useful for defining *Capabilities* that can be used to manage behavioral variation in a business. There are two types of *Roles* that can be instantiated in a model: *PerformerRoles* and *ResourceRoles*. *PerformerRoles* specify a kind of skill. *ResourceRoles* specify actions that may be performed with or on a *Resource*.

Capabilities must be tied to an operating model of a business to be useful for analysis of the business. The BACM Capability package provides two metaclasses, *CapabilityBehavior* and *CapabilityImplementation* as intermediaries that can be tied to a business operating model. *CapabilityBehavior* represents specific behaviors of a *Capability* (that might be described in a BPMN or VDML model). *CapabilityImplementation* instances represent a specification of *Performers* and *Resources* that can be assigned to *Roles* of a *CapabilityBehavior*. These instances can represent specifications of project resourcing for planning purposes, or they can represent actual elements of an organization for purposes of analysis.

InformationItems can be used to control decisions and other behaviors of *Capabilities* and *CapabilityBehaviors*. *InformationItems* can also represent metadata (is_about) about a *BusinessObject*. *InformationItems* are typically intangible but may also represent a tangible such as a report or a dataset. *BusinessObjects* are typically tangible but may also represent collections of tangible and intangible things.

Capabilities are also associated with the production of value by *ValueStreams*. The abstract syntax in the *CapabilityValue* diagram shows that *Capabilities* support *ValueStreamStages* and *Outcomes* are valued by *ValueItems*. In effect, the *Capabilities* supporting *ValueStreamStages* represent abilities that the business must have to produce values that are experienced by *Customers* (and other stakeholders). The *ValueStreams*, *ValueStreamStages*, *ValueItems* and *ValuePropositions* create a value perspective on the underlying *Capabilities* and *Outcomes*. The Customer package provides additional details.

7.1.2 Customer Package

The Customer package defines abstract syntax for *Customer*, *CustomerSegment*, *CustomerJourney*, *JourneyStage* and *Touchpoint*. The *Customer* identifies a customer (or any value-receiving stakeholder) but does not describe the customer/stakeholder. Descriptions are held in *CustomerSegments* associated with a *Customer*. The *CustomerSegments* would describe a *Customer* in terms of needs and avoidances as well as information that would allow targeting the customer type (e.g. demographic information). A *Customer* owns all of the *CustomerSegments* associated with it; *CustomerSegments* cannot exist independently of a *Customer*. A *Customer* is also defined relative to a *ProductOffering* (see the Product package) targeting the *Customer*.

A Customer may be associated with a *CustomerJourney*, consisting of several *JourneyStages* that usually represent important decision and interaction points the *Customer* experiences in the course of finding, acquiring and using a product type. The *CustomerJourney* is a view of customer behavior that is relevant to the objectives of the business and *CustomerJourneys* are usually created by the business, not by customers. *CustomerSegments* are also associated with *JourneyStages* and *Touchpoints*; they describe the needs and avoidances of the *Customer* at the associated *JourneyStage* or *Touchpoint*.

Customers, CustomerSegments, ValuePropositions, ValueItems and *ValueCharacteristics* can be categorized by a common set of *ValueCategories*. These categories typically define a framework for analyzing types of delivered value, analyzing the satisfaction (“fit”) the customer has with the *ValueProposition* and its components. For example, *ValueCategories* with labels such as “uses”, “pains” and “gains” could be used to categorize the aforementioned elements and support different kinds of value analysis based on the categories.

The *CustomerPackage* also defines *ValueStream, ValueStreamStage, ValueProposition and ValueItem*. These element types represent values the business believes it is offering the *Customer* and how those values are accumulated. The *ValueProposition* is “of” a *ProductOffering*. These believed values may match the needs and avoidances of the Customer or they may not. The degree to which the *ValueProposition* and its components match or fit the Customer needs and avoidances is captured by the *ValueCharacteristic*. This fit is typically a complex set of measures.

ValueStreamStages represent the accumulation of value leading to a *ValueProposition*. Consequently, the definition of the *ValueStreamStages* by the modeler determines the relationship between *Capabilities* and components of the *ValueProposition* by way of the *ValueStreamStage*.

7.1.3 Organization Package

The Organization package defines abstract syntax for *Performer* and *Resource*. A *Performer* is an *OrgUnit* (the humans) or a *System* (IT system or robot). A *Performer* is described by a set of abilities that match the skills required by a *PerformerRole* to which the *Performer* is assigned. A *Resource* is described by the things that are allowed to be done to or done with the *Resource*. *Resources* and *Performers* should not be considered disjoint at the M0 (real) level; an assembly robot may be considered a *Resource* by an equipment management *Capability* and as a performer by an assembly *Capability*.

An *OrgUnit* can be a *LegalEntity*. The *LegalEntity* is characterized by being in the *legal_jurisdiction* of one or more Jurisdictions. The *legal_jurisdiction* concept includes regulatory oversight as well as the location of the business and represents taxation, operating policy regulation and criminal and civil statutes. The *Jurisdiction* elements represents the authority to regulate, tax or create criminal and civil statutes and to adjudicate disputes in such authorities.

7.1.4 Process Package

The Process package defines a basic model for processes that is like Input-Process-Output (IPO) but adds *Outcome* connectors between activities. The *Outcome* connectors convey stateful objects between activities that typically change the state of objects. Process and capability models of a business are complementary perspectives on the business. Process models reveal end-to-end flows of information and materials, while capability models reveal common things a business must do independently of the organization of the business. Both capability and process models share information, business objects, resources, and performers. The Process package defines abstract syntax for *Activities*, *Processes* and reuses *Capability::Outcome*. *Activities* are un-decomposed. *Processes* are groups of Activities. *Outcomes* are input from *Processes* and *Activities* and output to other *Processes* and *Activities*. The capability models of a business and the process models of the same business are linked through the Outcomes.

Because representing the creation of delivered value (in the form of a *ValueProposition*) is important, *Processes* and *Activities* can implement *ValueStreams*. However, *Processes* and *Activities* may also implement *ValueStreamStages* when it is useful to represent process detail for a *ValueStreamStage*. The *Process* metamodel provides the *implements* association between *ValueStreamStages* and *Processes*/*Activities*. This complex set of associations to a *ValueStream* define the *Processes* and *Activities* that produce the *Outcomes* that are valued as *ValueItems* and compose the *ValueProposition*.

Processes and *Activities* also share roles (*PerformerRoles* and *ResourceRoles*) with *Capabilities*, allowing the same assignments of *Performers* and *Resources* that *Capabilities* permit. *Activities* and *Processes* are scoped differently from *Capabilities*, so the roles will be associated differently as well. In addition, some roles that are associated with a *Capability* may not appear in a process model because they are not used in the process.

7.1.5 Product Package

The Product package defines abstract syntax for *ProductOffering*, representing the description of a product or product family, including terms and conditions pertaining to the acquisition and/or use of the product. *ProductOffering* has four subtypes:

- Merchandise Offering – a *ProductOffering* that includes one or more BusinessObjects for sale/lease to and use by the Customer;
- Service Offering – a *ProductOffering* that promises to deliver a result (Outcomes) to a Customer.
- OutsourcedServiceOffering – a *ProductOffering* that is a solicitation for a service to be performed for the business by another business.
- ProcurementOffering – a *ProductOffering* that is a solicitation by the business to acquire products from another business

A *ProductOffering* is a *BusinessObject* or *InformationItem* and inherits the properties and associations of these model elements.

7.1.6 Strategy Package

The abstract syntax defined in the Strategy package is premised on the need by analysts to compare and evaluate strategy options. The package defines *StrategyChoices*, a container of *StrategyModels*, to satisfy this need. A StrategyModel represents a complete strategy, consisting of *Means* and *Ends*. *Ends* represent the desired results of the StrategyModel and are often changes to the value offered to the customer (*ValuePropositions* and *ValueItems*) or the fit of the offered value to the customer needs and avoidances (*ValueCharacteristic*). Sometimes *Ends* will represent an outreach to a new customer type (*Customer, CustomerSegment, CustomerJourney, CustomerJourneyStage, Touchpoint*). The model element types noted are all abstractly represented by the AbstractValueModel metaclass.

The *Means* represent ways or approaches that are expected to produce the *Means*. The *Means* are associated with the *Ends* by the expects association. This association must be instanced as an association classifier to allow the modeler to express the influence of environmental factors, risks and to provide a rational for the expectation.

The *Ends* also represent expectations of change to results of business operations (*Outcomes*). The *Outcomes* associated with *Ends* represent a baseline operating state of the business and the *Ends* describe the hoped for operating state of the business (and are thus effectively future *Outcomes*).

The *Means* represent changes to the operating structure and behavior of the business (*Capabilities, CapabilityBehaviors, CapabilityImplementations* and *Role* assignments). These changes impact the corresponding BACM model elements. Recording the impacts helps strategists and planners deal with collaboration and conflict in the execution of business strategies.

Businesses need to track the implementation of strategies for several reasons: 1) to determine if strategy implementations (*Initiatives*) are on the expected trajectory; 2) to understand the impact of a change in strategy to ongoing or planned implementations; 3) to analyze and predict the impact of variances in execution on the delivered value of the business. The Initiatives represent in-process, planned, or recently completed strategy implementation efforts. These efforts should implement the general strategy *Means* of the adopted StrategyModel.

Initiatives are expected to produce Changes to elements of the types in the *AbstractValueModel* and the *AbstractOperatingModel*. These Changes should implement the *Ends* of the chosen StrategyModel. The expects association connecting *Initiatives* to *Changes* must be consistent with the expects association connecting the *Means* and *Ends* being implemented by the *Initiatives* and *Changes*.

The *Initiatives* and *Changes* elements are intended for use as gateways to actual planning documents such as project objectives, staffing, schedules and work breakdowns. These alignments allow the upward flow of information into the BACM model for analysis and management of the strategy execution. They also support change management of ongoing and planned strategy executions when strategy changes are made.

7.1.7 BACM Package

The BACM package includes two sub-packages that define abstract syntax for BACM models and foundational elements, along with importing the SMM metamodel and specializing some of its classes._1_.

7.1.7.1 The BACM_Model package

The BACM_Model package defines *BACMElement* as the base metaclass. It provides for a name and description of each element as well as providing multiple, categorized Annotation elements to be associated with any *BACMElement* concrete subclass instance.

BusinessElement is a specialization of *BACMElement* that is the base metaclass for all metaclasses representing business entities and relationships. *BusinessElement* can be associated with *ExternalRelationship* and *ExternalData*.allowing the architect to record a relationship to an external model or document. This metamodel structure is adapted from the metamodel structure defined in the SysML V2 API and Services submission.

The BACM_Model package also defines BACM_Model as the root element in a BACM model. This element holds associations to SMM *MeasureLibraries*, *StrategyChoices* and all *BusinessElements*.

7.2 Interpreting and Implementing the Metamodel (normative)

7.2.1 Interpreting the UML metamodel and generated XMI

UML visual modeling is used in this specification as a visual notation for an underlying graphical predicate model. The underlying model can be given a concrete form in MOF, RDF-star [RDF-star] or a property graph language (e.g. [OpenCypher]. Most of the semantics of the metamodel (except for shortcuts and co-occurrence constraints) can be specified in OWL 2.

For an implementation of the metamodel, the normative XMI that is part of this specification is intended to be an unambiguous and precise way to create an implementation that is equivalent to the underlying graphical predicate model. The non-normative XMI that is provided with the specification must be interpreted according to a set of rules to create a conforming implementation that is not based on MOF.

In general, metamodel classes in the diagrams in this document will become meta-classes (class prototypes or templates) in an implementation. However, classes stereotyped as “association” will become associationclasses. These entities are binary or n-ary associations that can be specialized (from other meta-associationclasses), have features, and participate in other associations. UML binary associations with a <<class>> stereotype should be implemented as binary meta-associationclasses.

The implemented meta-associationclasses are presumed to have “legs” that represent roles in the association part (and argument positions in an equivalent predicate expression of the association). For convenience, each leg is assumed to have a distinct role name in the context of the association. For binary, directed meta-asssociationclasses, these names are assumed to be “src” and “tgt” snd the direction of the association is “src” to “tgt”. Where an n-ary association is displayed in the UML model, the legs are represented as un-stereotyped binary associations whose names are the leg names. The leg names are defined in the model and in the meta-class-association template. Instances of the meta-class-association template must have the same set of legs and preserve the leg names of the template. These derived instance leg names may not be modified by the user.

A leg may have a quantification expression applied to the target end of the leg. Such expressions, as in UML, restrict the number of instances allowed as targets in an instance model. These expressions consist of an upper and lower bound that a non-negative integers. A “*” symbol in the visual representation (and a “*” in the XMI) indicate no upper bound.

An instance of an association some of whose legs may have more than one targets should be taken to represent a set of tuples created by taking the cross-product of the sets of targets. For example, P(a:{x}, b:{p,q}, c:{r,s}) would generate the tuple set {(x,p,r),(x,p,s),(x,q,r),(x,q,s)}.

The specification does not provide a way to specify complex or co-occurrence constraints on the targets of a leg or on targets of two or more legs of a meta-class-association instance. However, many query/constraint languages specified for RDF* or property graphs will be able to express such constraints either by signaling a constraint violation or by producing a non-empty result set of a query.

When producing an instance of an element defined in the specification metamodel, the implementation should note the meta-class template the instance is created from. Features and legs of the meta-element should be replicated in the instance and may not be changed by the user, except that the values of features and the targets of legs may be changed, along with an instance label and description (defined as property features name and description in the metamodel – see the BACM_element). The exception to this rule is any UML n-ary association or <association>> stereotyped class, with a single leg labelled “related”. In this case, instances may be created with an arity specified by the user and with instance leg names specified by the user. These meta-associations are intended for use in representing relationships between instance elements of the same meta-element other than generalization and agregation. The user is allowed to add property features to instances and define their names and types, subject to type restrictions that may be provided by the implementation. The user may also indicate that one instance generalizes another, but the implementation is not obligated to determine that the instance model is consistent.

7.2.2 Meta-class Instances as classes

A business architecture model represents entity and relational concepts of the business. These concepts typically represent sets of things in a business. For example, an instance of a *BusinessObject* labeled as “part bin” represents

several hundred actual part bins used by the business. All the part bins can be represented by a single instance because they have identical or similar properties and are used in identical or similar ways. The “part bin” instance needs to describe these similar properties and the similar behaviors the part bins participate in. Consequently, the “part bin” instance is to be implemented as a class, and the business architect must be able to add properties, methods and create structures and behaviors to adequately describe the concept of an abstract part bin.

7.2.3 Meta-model association instances as association classes

The UML 2.5.1 specification allows N-ary associations to be class associations and distinguishes owned features as pertaining to the class and owned ends as pertaining to the association (see [OMG UML] 11.5.3.2). Instances of meta-model associations should be treated similarly, i.e. as a combination of a class and an association. Where applicable, the semantics of class associations should be followed. The metamodel also makes use of metaclasses stereotyped as <<association>>; instances of these metaclasses in M1 models should be implemented as class associations.

Simple associations in the metamodel with a stereotype of <<class>> or <<shortcut>> should also be implemented at the M1 model as binary, directed class associations.

7.2.4 Distinguished association names

These associations are exempted from requirement previously stated to implement associations as class-associations or a similar representation permitting associations to have properties and participate in other associations. The meaning and usage of these associations is defined here and not in the generated content of section 7.3.

7.2.4.1 aggregates

This association name identifies an association type that creates hierarchies of same-typed instances of meta-classes. An example is the use of this association name on a self-association with the *ValueCategory* meta-class. *ValueCategory* eventually specializes *Category*, and *Category* is associated (“aggregates”) with *CategoryLibrary*. The semantics of this association in this case are that an instance of *CategoryLibrary* aggregates one or more instances of *ValueCategory* that aggregate other instances of *ValueCategory*.
The association end cardinalities ensure that each *ValueCategory* instance has a single parent, which may be either another instance of *ValueCategory* or an instance of *CategoryLibrary*. This interpretation shall be applied to any other uses of the “aggregates” association in the meta-model. The common use of the “aggregates” label indicates a semantic association type that is specialized by the meta-classes at the association ends, e.g., the “aggregates” self-association of *ValueCategory* specializes the generic “aggregates” to an association between instances of *ValueCategory*.

7.2.4.2 generalizes

The instances of this association create a generalization semantic relationship between the meta-class instances at the association ends. The association is restricted to 1) self-association of a meta-class; 2) association between concrete meta-classes such that one meta-class eventually specializes the other. In case 2) above, the instance of this association may not contradict the generalization relationship between the meta-classes.

7.2.4.3 owns

The instances of this association carry the semantic of exclusive ownership. The target of the association may not exist separately from the source.

7.2.4.4 related

Some meta-classes stereotyped as associations should be realized in models as n-ary relations, whose arity is determined by the architect. These meta-classes have a single association, *related*, to a target meta-class. When realized in a model, multiple instances of the *related* association may be created by the architect and given distinct labels to distinguish them. The category mechanism can be used to indicate that one or more instances of these n-ary associations are representatives of a type identified by the category.

7.2.5 N-ary Associations reified as Classes and Binary Associations

N-ary associations in this metamodel are represented as classes with an <<association>> stereotype. In the diagrams, the n-ary association class may be represented either by a box or a diamond. The roles of the n-ary association are modeled as binary associations between the n-ary association class and the classes allowed to participate in these roles (i.e. the participants). However, the UML interpretation of this configuration is deficient in some important ways: 1) the UML specification states that the cardinality specification of a role assumes that the other n-1 role entities are held constant; 2) the specification is unclear about how to interpret optional role participants.

An n-ary association specified in this way in this specification should be interpreted in its extension as a set of n-tuples, possibly with constraints between elements in each tuple and among the tuples, in addition to the requirement that the entries in the k^{th} position of the tuple are instances of the class participating in the k^{th} role. This specification does not determine an implementation, and implementors are free to number the roles of each association as they choose.

Likewise, the specification does not determine a technical language for the specification of constraints. In the specification, prose is used to define constraints.

7.2.6 Like-named associations with same meta-class source

This is a UML notational pattern used to represent that the instance association should have as its target instance classes of one target or the other, but target instances may not a mixture of instances of the targets. For example, in the Process diagram, the *implements* association has as targets *Customer::ValueStream* and *Customer::ValueStreamStage*. At the model level, an *implements* instance can have as targets some instances of *Customer::ValueStream* or some instances of *Customer::ValueStreamStage* but not a mixture of such instances.

7.2.7 Application of business architecture frameworks with MEF

The Metamodel Extension Facility (MEF) provides for the definition and application of profiles and stereotypes that can be applied to any MOF-based model elements. The implementation of MEF or its equivalent is a requirement.

It is recommended that architects encode conceptual frameworks, such as the Value Proposition Canvas [VPC] in a MEF profile and use the stereotypes to characterize model elements, such as ValueItems and CustomerSegments according to the principles of the Value Proposition Canvas by applying stereotypes, such as “pains”, “gains” and “uses” to the model elements.

7.3 BACM Metamodel (Normative)

The following material describes the classes and associations that comprise the BACM metamodel

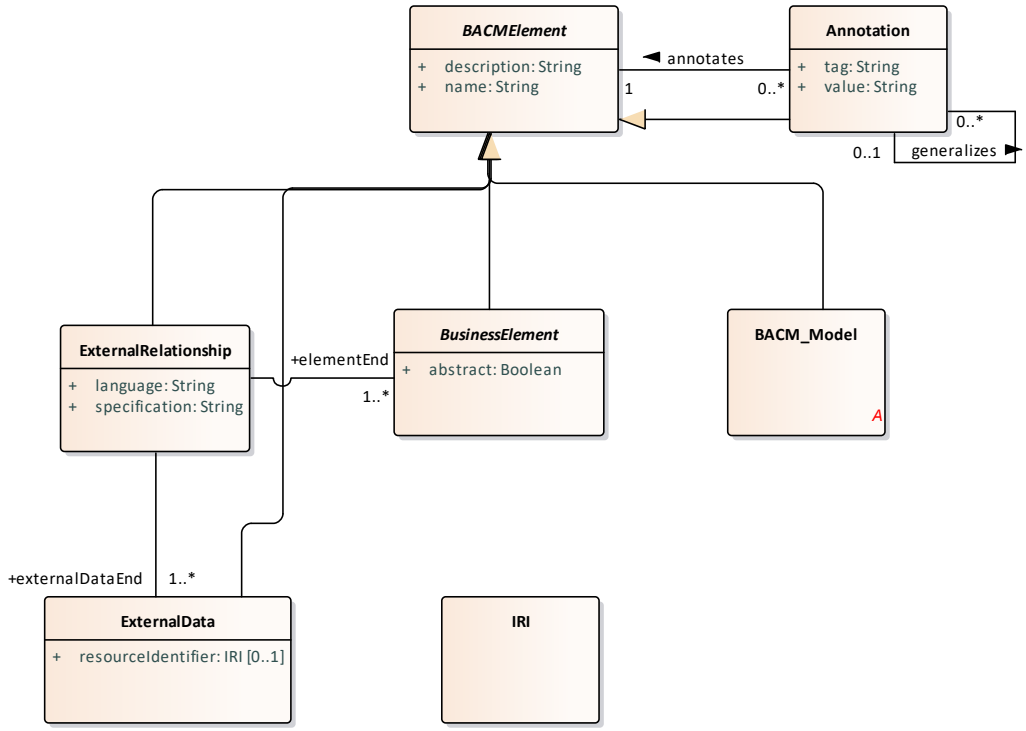
7.3.1 Package: BACM

The BACM package includes the BACM_Model and SMM packages

7.3.1.1 *Package: BACM_Model*

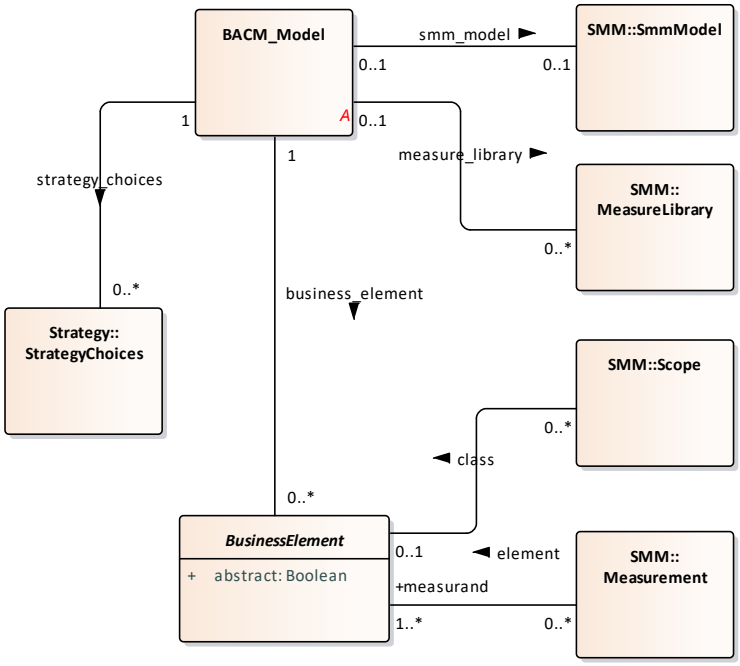
The BACM_Model package defines the concept of a model and external references. It imports the domain packages.

7.3.1.1.1 Diagram: BACM_Element



The BACM_Element diagram defines abstract syntax for the *BACMElement* and for *Annotation* and *AnnotationCategory* Every other metaclass in the BACM metamodel inherits from the *BACMElement* metataclass.

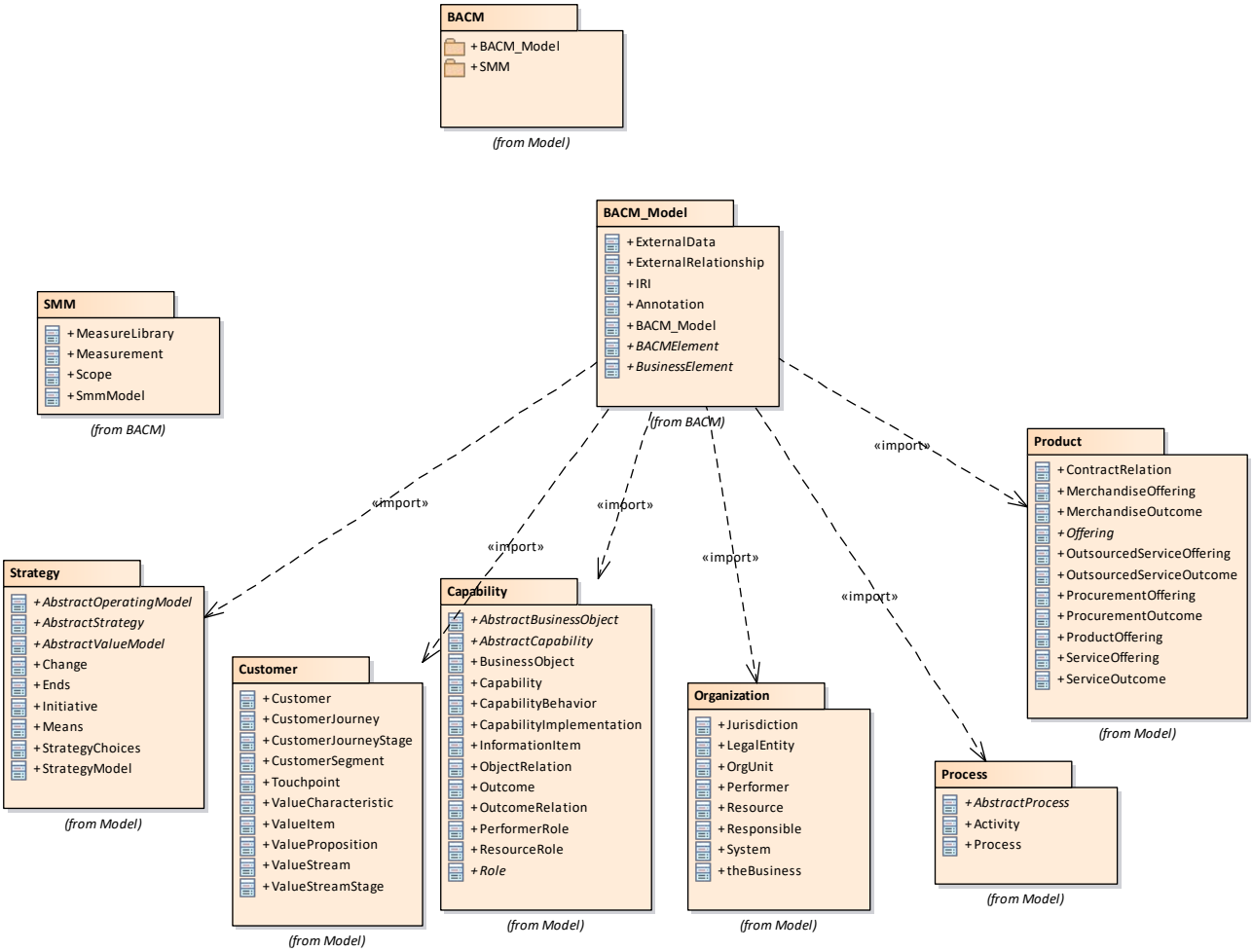
7.3.1.1.2 Diagram: BACM_Model



The BACM_Model diagram defines abstract syntax for *BACM_Model*, whose instance is the root element for a BACM model.

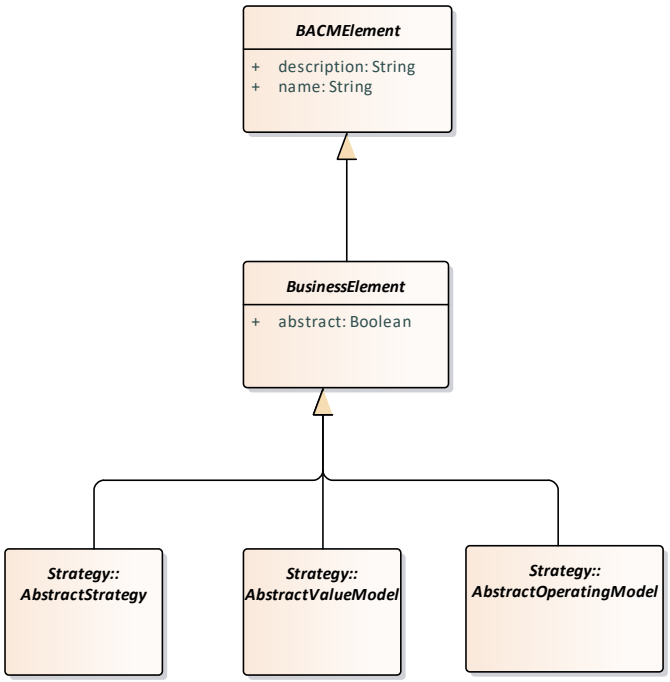
The *BACM_Model* element is a container for all *BusinessElements* in the model. It is also a container for all *Proxy* elements in the model
The *BACM_Model* is associated with a single *StrategyChoices* (which may contain several alternative *StrategyModels*)
The *BACM_Model* also contains all *CategoryLibraries* that are to be used with *BusinessElement*.
Finally, the BACM_Model contains an SMMModel element and a selected set of SMM MeasureLibraries. The integration with SMM allows any instance of *BusinessElement* to be the measurand of a SMM Measurement. The SMM *Scope* element is extended to allow scope selection based on Category, in addition to informal, class and stereotype based scope selection. The BACM specification effectively imports the SMM 1.2 specification.

7.3.1.1.3 Diagram: BACM_Model



The package diagram shows the import relationships among the packages of this specification. The SMM package imports SMM V1.2 (or newer) and specializes some of its classes to customize them for use in the BACM model.

7.3.1.1.4 Diagram: BusinessElement



The BusinessElement diagram defines abstract syntax for *BusinessElement*, the abstract base class for all metaclasses whose instances represent business entities.
These metaclassses are grouped by the *AbstractStrategy*, *AbstractValueModel* and *AbstractOperatingModel* abstract base classes that indicate which part of the metamodel these metaclasses belong to.

7.3.1.1.5 Class Name: Annotation Class Type: Class Stereotype:

Base Classes: BACMElement
Definition: *Annotation* provides the modeler an ability to associate tag/value pairs to any *BACMElement* in a BACM model.
Usage: *Annotations* may be annotated. *Annotations* may also be specialized in an M1 model to add additional attributes.

7.3.1.1.5.1 *Attributes, Methods and Connectors:*

Attribute Name: tag **Attribute Type:** String
Definition: The *property* identifies the intended meaning of the *value* property.

Attribute Name: value **Attribute Type:** String
Definition: The *value* property holds the value of the annotation. The meaning of this value is provided by the *tag* property.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Annotation **[]** **Target Class:** BACMElement **[]**

Association Name: annotates **Association Type:** Association **Stereotype:**
Source Class: Annotation **[**0..*] **Target Class:** BACMElement **[**1]
Definition: The *annotates* association links an *Annotation* to the *BACMElement* being annotated.

Association Name: generalizes **Association Type:** Association **Stereotype:**

Source Class: Annotation [0..1] **Target Class:** Annotation [0..*]

Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: Annotation [0..1] **Target Class:** Annotation [0..*]

7.3.1.1.6 Class Name: BACM_Model Class Type: Class Stereotype:

Base Classes: BACMElement
Definition: The *BACMModel* represents the root element of a BACM model (i.e. the element from which a tool or person can navigate to every other element in the model)
Usage: A single instance of this metaclass must exist in an instance model.

7.3.1.1.6.1 *Attributes, Methods and Connectors:*

Association Name: business_element **Association Type:** Association **Stereotype:**
Source Class: BACM_Model [1] **Target Class:** BusinessElement [0..*]
Definition: *business_element* links the *BACMModel* to all of the *BusinessElements* contained in a BACM model.
Usage: This association should be interpreted to include all n-ary associations, associations stereotyped <class>> and classes stereotyped <<association>>.

Association Name: measure_library **Association Type:** Association **Stereotype:**
Source Class: BACM_Model [0..1] **Target Class:** MeasureLibrary [0..*]
Definition: The *measure_library* association links an SMM measure library to the BACM model.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: BACM_Model [] **Target Class:** BACMElement []

Association Name: strategy_choices **Association Type:** Association **Stereotype:**
Source Class: BACM_Model [1] **Target Class:** StrategyChoices [0..*]
Definition: *strategy_choices* links a set of *StrategyChoices* to a *BACMModel*.
Usage: To facilitate reuse of the BACM model in different strategy situations, multiple *StrategyChoices* may be associated with a *BACMModel*.

Association Name: smm_model **Association Type:** Association **Stereotype:**
Source Class: BACM_Model [0..1] **Target Class:** SmmModel [0..1]
Definition: The *smm_model* association links an SMM model to the BACM model.

7.3.1.1.7 Class Name: BACMElement Class Type: Class Stereotype:

Base Classes:
Definition: The *BACMElement* represents the class of all elements in a BACM model. It provides elements with a name and description and allows elements to be annotated.
Usage: *BACMElement* is an abstract class and cannnot be instantiated in a model. Any n-ary association, association stereotyped as <<class>> or class stereotyped as <<association>> should be treated as a subtype of BACMElement.

7.3.1.1.7.1 *Attributes, Methods and Connectors:*

Attribute Name: description **Attribute Type:** String

Definition: The *description* property provides a description of the *BACMElement*.
Usage: Typically the *description* states what business concept or entity the *BACMElement* is intended to represent.

Attribute Name: name **Attribute Type:** String
Definition: The *name* property provides a term that indicates what the *BACMElement* represents in the BACM model.
Usage: The *description* property should provide a more detailed description of the represented business concept or entity.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Annotation **[]** **Target Class:** BACMElement **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ExternalRelationship **[]** **Target Class:** BACMElement **[]**

Association Name: annotates **Association Type:** Association **Stereotype:**
Source Class: Annotation **[**0..*] **Target Class:** BACMElement **[**1]
Definition: The *annotates* association links an *Annotation* to the *BACMElement* being annotated.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: BACM_Model **[]** **Target Class:** BACMElement **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: BusinessElement **[]** **Target Class:** BACMElement **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ExternalData **[]** **Target Class:** BACMElement **[]**

7.3.1.1.8 Class Name: BusinessElement Class Type: Class Stereotype:

Base Classes: BACMElement
Definition: *BusinessElement* represents a concept or entity that existing or is planned to exist in the business.
Usage: *BusinessElement* is an abstract base metaclass for all metaclasses whose instances represent business entities. It inherits from *Proxyable*, allowing M1 instances of *BusinessElement* subclasses to be aligned with elements in foreign models by means of the proxy touchpoint mechanism. Any n-ary association, association with a <<class>> stereotype or class with an <<association>> stereotype should be considered to be a specialization of *BusinessElement*..

7.3.1.1.8.1 *Attributes, Methods and Connectors:*

Attribute Name: abstract **Attribute Type:** Boolean
Definition: The *abstract* property of a *BusinessElement* has a boolean value and the true value means that the represented business concept is not a tangible entity.
Usage: This property allows a business architect to create a framework through generalization at the M1 level that prevents instances marked as abstract from being included in the instance of the M1 model that is also at the M1 level.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: BusinessElement **[]** **Target Class:** BACMElement **[]**

Association Name: class **Association Type:** Association **Stereotype:**
Source Class: Scope **[**0..*] **Target Class:** BusinessElement **[**0..1]
Definition: The *class* association provides the *SMM::Scope* element with a scoping reference to one or more *BusinessElements*.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: AbstractValueModel **[]** **Target Class:** BusinessElement **[]**

Association Name: element **Association Type:** Association **Stereotype:**
Source Class: Measurement **[**0..*] **Target Class:** BusinessElement **[**1..*]
Definieion: The *measurand* association specializes the *SMM::measurand* association to associate a *SMM::Measurement* with a *BusinessElement*.
Usage: Any n-ary association, class stereotyped as <<association>> or association stereotyped as <<class>> should be treated as a *BusinessElement* target of this association.

Association Name: business_element **Association Type:** Association **Stereotype:**
Source Class: BACM_Model **[**1] **Target Class:** BusinessElement **[**0..*]
Definition: *business_element* links the *BACMModel* to all of the *BusinessElements* contained in a BACM model.
Usage: This association should be interpreted to include all n-ary associations, associations stereotyped <class>> and classes stereotyped <<association>>.

Association Name: Association Type: Association **Stereotype:**
Source Class: ExternalRelationship **[]** **Target Class:** BusinessElement **[**1..*]

Association Name: nature **Association Type:** Association **Stereotype:**
Source Class: Responsible **[**0..*] **Target Class:** BusinessElement **[**0..*]
Definition: The *nature* leg of the *Responsible* designates a *BusinessElement* that helps define the scope and/or nature of the *Responsible* association.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: AbstractStrategy **[]** **Target Class:** BusinessElement **[]**

Association Name: Association Type: Generalization **Stereotype:**
Source Class: AbstractOperatingModel **[]** **Target Class:** BusinessElement **[]**

7.3.1.1.9 Class Name: ExternalData Class Type: Class Stereotype:

Base Classes: BACMElement

7.3.1.1.9.1 *Attributes, Methods and Connectors:*

Attribute Name: resourceIdentifier **Attribute Type:** IRI

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ExternalData **[]** **Target Class:** BACMElement **[]**

Association Name: **Association Type:** Association **Stereotype:**
Source Class: ExternalRelationship **[]** **Target Class:** ExternalData **[**1..*]

7.3.1.1.10 Class Name: ExternalRelationship Class Type: Class Stereotype:

Base Classes: BACMElement
Definition: ExternalRealtionship represents a relationship between a BusinessElement in a provider tool or repository to ExternalData in another tool or Repository. The external data may be a BusinessElement (or a linked collection of BusinessElements) or some other element (or linked collection of elements) from a model that is not a BACM model. The IRI must identify a resource to which the specification String can be applied to identify the element (or linked set of elements) in that resource. The language attribute of the ExternalRelationship identifies the language of the specification String.

Note that BusinessElement classifies all BACM metaclasses and metaassociations that are intended to represent business concepts (as opposed to model concepts or analysis concepts).

Usage: The tool provider may elect to provide services to dereference the ExternalData and apply the specification to allow the architect to view and interact with the results. However, a compliant implementation may just implement, import and export the ExternalRelationship, the ExternalData and the links connecting them and connecting the ExternalRelationship to the BusienssElement.
If the *language* string is the string "Natural" then the *specification* Strong will be a natural language description of the alignment mapping

7.3.1.1.10.1 *Attributes, Methods and Connectors:*

Attribute Name: language **Attribute Type:** String

Attribute Name: specification **Attribute Type:** String

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ExternalRelationship **[]** **Target Class:** BACMElement **[]**

Association Name: **Association Type:** Association **Stereotype:**
Source Class: ExternalRelationship **[]** **Target Class:** ExternalData **[**1..*]

Association Name: **Association Type:** Association **Stereotype:**
Source Class: ExternalRelationship **[]** **Target Class:** BusinessElement **[**1..*]

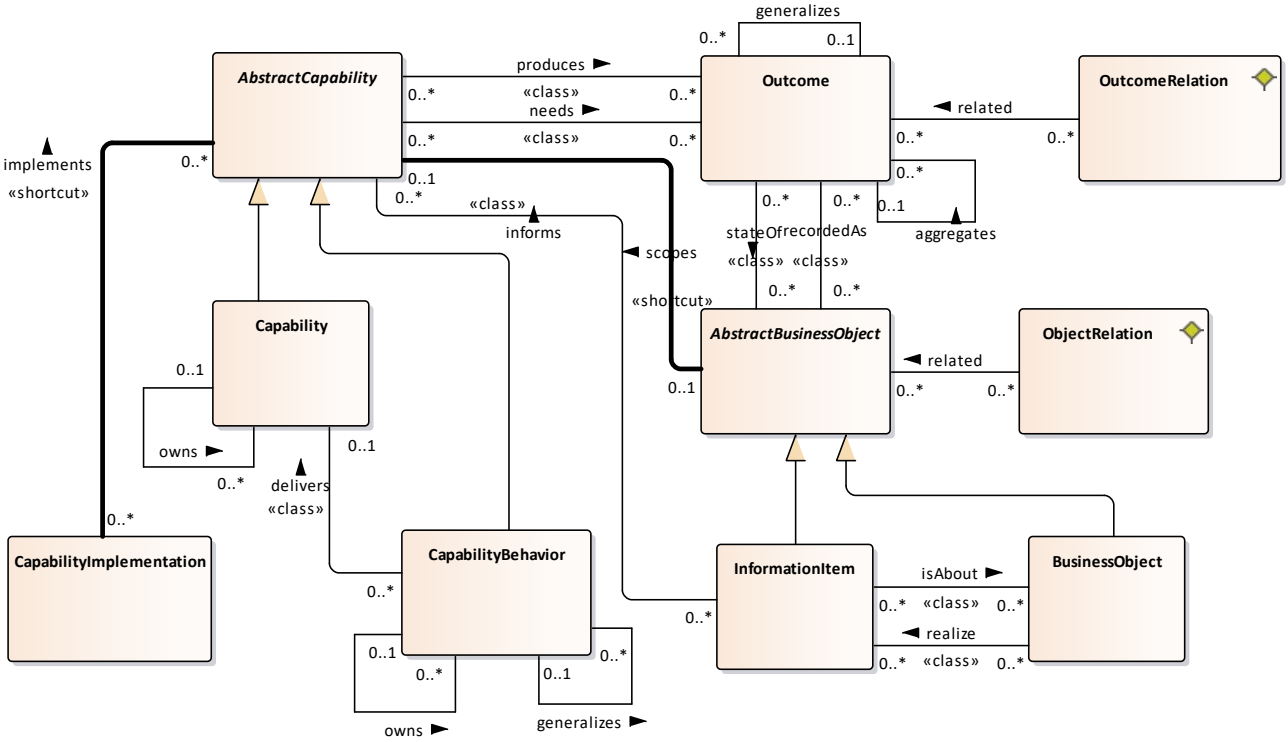
7.3.1.1.11 Class Name: IRI Class Type: Class Stereotype:

Base Classes:
Specializes PrimitiveTypes#String to match the regular expression defining a legal IRI.

7.3.1.1.11.1 *Attributes, Methods and Connectors:*

7.3.2 **Package:** Capability

7.3.2.1 ***Diagram:*** *Capability*



The Capability diagram defines abstract syntax for *Capability* and *CapabilityBehavior* classes. Both metaclasses inherit from *AbstractCapability* which allows their instances to produce and need *FlowOutcomes* and to be informed by *InformationItems* (e.g. a decision or action associated with the *Capability* is influenced by the *InformationItems*).

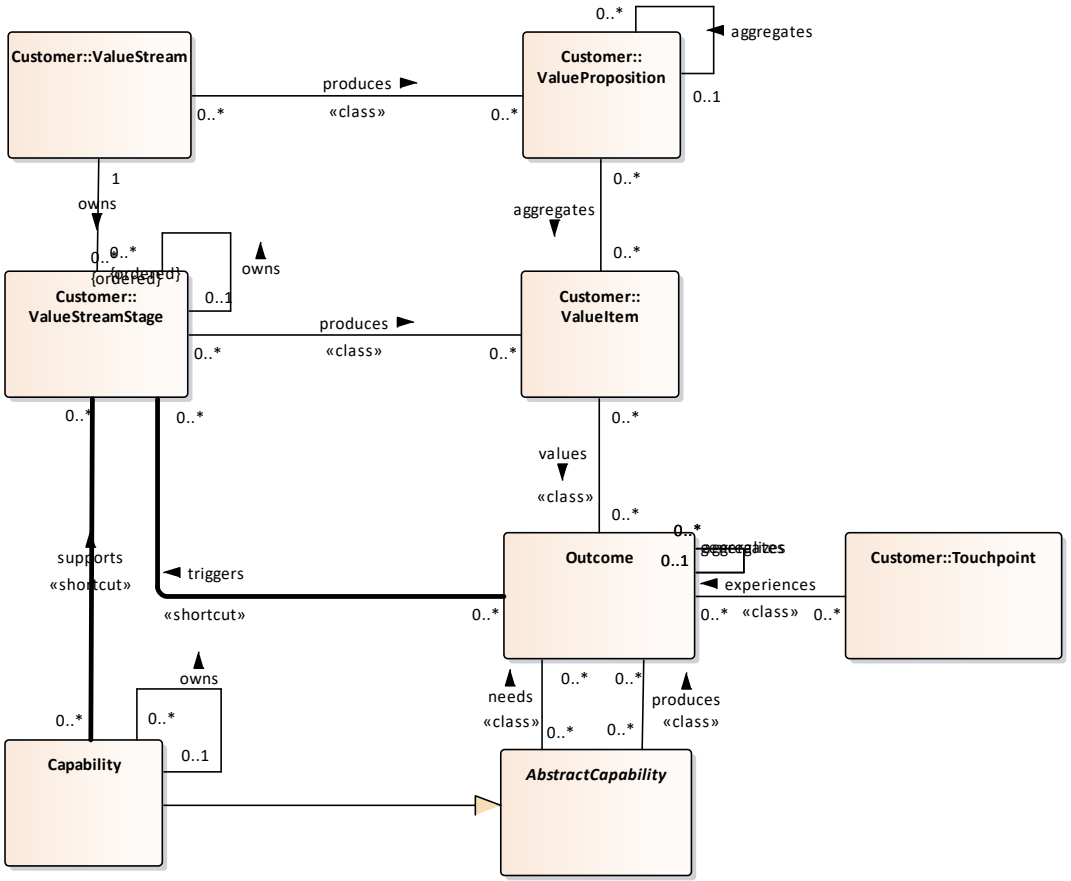
While *Capability* represents an ability to produce a *FlowOutcone*, *CapabilityBehavior* represents a particular way, process or manner of producing that *FlowOutcome*. A *CapabilityBehavior* that delivers a *Capability* must *produce* and/or *need FlowOutcomes* that are equivalent to, specialize, or contribute parts to the *Outcomes* produced by the *Capability*. A *CapabilityBehavior* may *produce* and *need FlowOutcomes* not *needed* or *produced* by the Capability it delivers.

The Capability diagram also specifies abstract syntax for *BusinessObjects* and *InformationItems*. *FlowOutcomes* represent the state_of *BusinessObjects* and/or *InformationItems*. The *AbstractBusinessObject* defines associations and properties common to *BusinessObject* and *InformationItem*.

Capabilities may be decomposed by the *owns* association creating a strict hierarchy (i.e. a subCapability may not have multiple parents)
Where a *FlowOutcome* is obvious, the *scopes* shortcut association may be used to omit it from the model. The modeler may later elect to define *FlowOutcomes* that are consistent with the *possess* shortcut association constraint.

A *CapabilityImplementation* represents actual or planned role occupants (see Roles diagram) implementing a *Capability* and/or *CapabilityBehavior*. The modeler may also specify *Roles* and *assignments* to these *Roles* that are consistent with the constraint defined in the *implements* shortcut association.
See also the Process diagram in the Process package.

7.3.2.2 ***Diagram:*** *CapabilityValue*



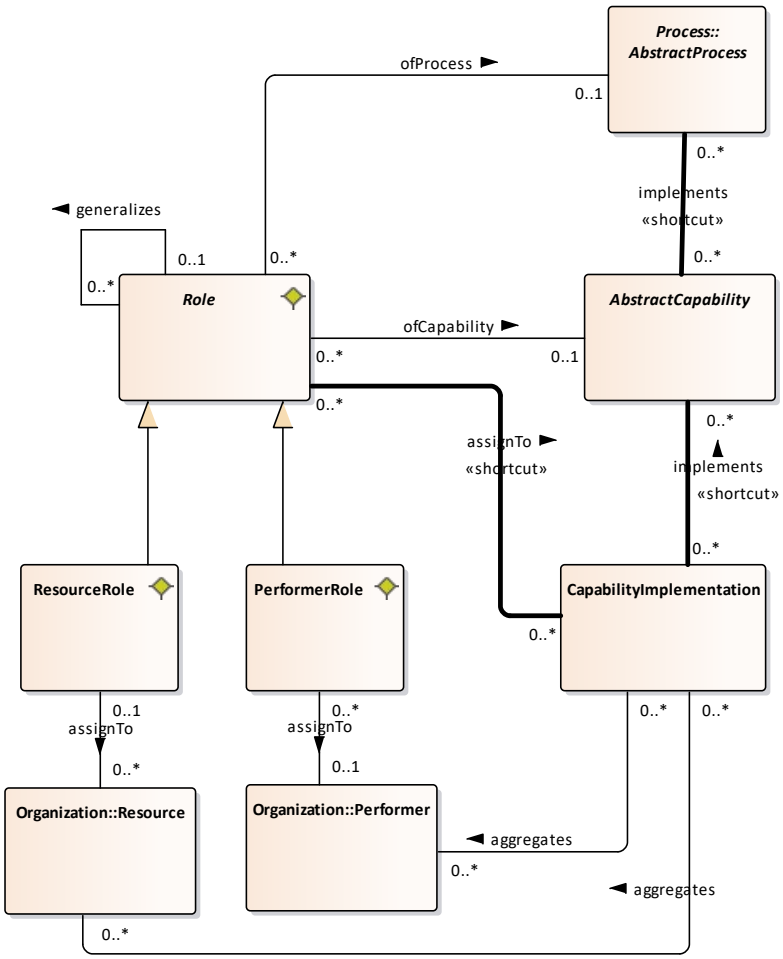
The CapabilityValue diagram extends the abstract syntax defined by the Capability diagram to show the relationship between *Capability/Outcome* and *ValueStreamStage/ValueItem*. The business architecture core metamodel recognizes that different stakeholders may place different values on the same Outcome. The metamodel provides the *ValueItem* as a model element to represent value beliefs. Refer to the document section on the Customer package for a full description of the model elemnts for representing customers (and other stakeholders) and value beliefs.

The *supports* association between *Capability* and *ValueStreamStage* represents the business capabilities needed to produce the *Outcomes* that are valued by the *Customer* to whom the *ValueProposition* is directed.

Not all *Outcomes* that are produced by *Capabilities* are experienced by the *Customer*. The *Outcomes* that are experienced by the *Customer* are associated with a *Touchpoint* representing an interaction between the business and the customer. The *Outcomes* experienced by the *Customer* at a *Touchpoint* should have *ValueItems*.

Most of the *Outcomes* in a business architecture model will be internal to the business, not experienced by the *Customer* and should not have *ValueItems*, unless they represent intermediate *Outcomes* that contribute to a *ValueProposition*. For example, a design capability following an "ease of use" design principle, and a test capability for testing "ease of use" with a prototype produce an "ease of use" outcome that is realized in the final product. The "ease of use" *ValueItem* can value the design *Outcome*, the test *Outcome* and the customer use *Outcome*.

7.3.2.3 *Diagram:* Roles



The Roles diagram defines the abstract syntax for roles and role assignments. *Roles* define how *Performers* and *Resources* participate in *Capabilities* and *CapabilityBehaviors*.

The *Role* acts as a ternary association that represents assignments of *Performers* and *Resources* to *PerformerRoles* and *ResourceRoles* that are role associated to *Capabilities* and *CapabilityBehaviors*.

A *Role* may not exist except in a role association to a *Capability* and/or *CapabilityBehavior*.
Assignment of Resource or Performer to their respective Roles is optional.

A *CapabilityImplementation* represents a bundling of (aggregates) *Resources* and *Performers* to implement a *Capability* and/or *CapabilityBehavior*. A *CapabilityImplementation* may be empty and contain an annotation suggesting future contents.

The *Implements* shortcut association allows a *CapabilityImplementation* to be associated with a *Capability* and/or a *CapabilityBehavior* without having to specify the *Roles* or the *Performers* and/or *Resources* or the associations that link them together. The modeler may subsequently add these details consistent with the implements shortcut association constraints.

The *assignmment* shortcut association allows a *CapabilityImplementation* to be assigned to selected *Roles* without having to specify the details about *Performers* and *Resources* in the *CapabilityImplementation* and how they have assignments to these *Roles*.

7.3.2.4 *Class Name: AbstractBusinessObject Class Type: Class* ***Stereotype:***

Base Classes: AbstractOperatingModel
Definition: *AbstractBusinessObject* represents *BusinessObjects* or *InformationItems*.
Usage: *AbstractBusinessObject* cannot be instanced or specialized in a business arcitecture model. The *AbstractBusinessObject* metaclass has two concrete subclasses:

- *BusinessObject* - instances represent tangible things of importance to the business.
- *InformationItem* - instances represent intangible (mental) concepts important to the business.

The *AbstractBusinessObject* metaclass provides its concrete specializations with the *state_of* association to *Outcomes* and the *scopes* association to *Capability* and *CapabilityBehavior*.
AbstractBusinessObject also provides for *ObjectRelations* that may relate any collection of *BusinessObjects* and *InformationItems*.

7.3.2.4.1 Attributes, Methods and Connectors:

Association Name: scopes **Association Type:** Association **Stereotype:** «shortcut»
Source Class: AbstractBusinessObject **[**0..1] **Target Class:** AbstractCapability **[**0..1]
Definition: The scopes shortcut association allows a Capability and/or CapabilityBehavior to be associated with some BusinessObjects and.or an InformationItems without defining Outcomes produced or needed by the Capability and/or CapabilityBehavior.
Usage: The modeler may elect to subsequently define such Outcomes, which must be consistent with the constraint specified by the scopes shortcut association.
Constraint: Let BO1 be a BusinessObject and C1 be a Capability that are associated by scopes s1. Then there should existin the model an Outcome O1 such that C1 produces O1 and O1 is a stateOf BO1.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: AbstractBusinessObject **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: related **Association Type:** Association **Stereotype:**
Source Class: ObjectRelation **[**0..*] **Target Class:** AbstractBusinessObject **[**0..*]
Definition: The *related* leg of the *ObjectRelation* association links an *ObjectAssociation* to *BusinessObjects* and/or *InformationItems* that participate in the *ObjectAssociation*.
Usage: The *ObjectRelation* association does not have a fixed number of legs. The *related* leg may be instanced multiple times as long as the name given to each instance is distinct. The *related* leg may be given a label that defines a role the *BusinessObject* or *InformationItem* plays in the *ObjectAssociation*.

Association Name: object **Association Type:** Association **Stereotype:** «shortcut»
Source Class: ProcurementOffering **[**0..*] **Target Class:** AbstractBusinessObject **[**0..*]
Definition: The *object* shortcut association asserts that the *ProcurementOffering* incorporates unspecified *Outcomes* describing the states of *AbstractBusinessObjects*.
Usage: This association allows the business architect to omit the *Outcome* in the procurement of some *AbstractBusinessObjects* for use by *theBusiness* when those *Outcomes* are obvious or irrelevant to the purposes of the analysis that is using the business architecture model.
Constraint: Let POf1 be a ProcurementOffering and BO1 be a BusinessObject associated by o1 an "object" association. Then POf1 should incorporate ProcurementOutcomes {POj} that represent either the change of ownership of BO1 or the establishment of a limited right to use BO1.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: Offering **[]** **Target Class:** AbstractBusinessObject **[]**

Association Name: recordedAs **Association Type:** Association **Stereotype:** «class»
Source Class: Outcome **[**0..*] **Target Class:** AbstractBusinessObject **[**0..*]

Association Name: stateOf **Association Type:** Association **Stereotype:** «class»
Source Class: Outcome [0..*] **Target Class:** AbstractBusinessObject [0..*]
The "state_of" meta-association applies a state to an AbstractBusinessObject instance. For example, a passenger may be transported from one location to another by a Capability, and the Outcome resulting from the Capability execution represents the fact that the passenger is now in the destinationlocation.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: InformationItem [] **Target Class:** AbstractBusinessObject []

Association Name: Association Type: Generalization **Stereotype:**
Source Class: BusinessObject [] **Target Class:** AbstractBusinessObject []

Association Name: object **Association Type:** Association **Stereotype:** «shortcut»
Source Class: MerchandiseOffering [0..*] **Target Class:** AbstractBusinessObject [0..*]
Definition: The *object* association represents a shortcut relationship between a *MerchandiseOffering* and a *BusinessObject* or *InformationItem* offered for sale or lease to the *Customer*.
Usage: This shortcut implies that there is an unspecified *MerchandiseOutcome* of the *AbstractBusinessObject* that would describe the terms of ownership/use incorporated in the *MerchandiseOffering*.
Constraint: Let MOf1 be a MerchandiseOffering and BO1 be a BusinessObject associated by o1 an "object" association. Then MOf1 should incorporate MerchandiseOutcomes {MOj} that represent either the change of ownership of BO1 or the establishment of a limited right to use BO1.

7.3.2.5 *Class Name: AbstractCapability Class Type: Class* Stereotype:

Base Classes: AbstractOperatingModel
Definition: *AbstractCapability* is not intended to represent a business concept. It is a metamodeling device to provide relationships to *Capability* and *CapabilityBehavior* that would otherwise be duplicated.
Usage: The *AbstractCapability* metaclass has two concrete specializations: *Capability* and *CapabilityBehavior*. Only the specializations can be instanced in models.
AbstractCapability provides the following to its concrete specializations:

1. to represent the production of an *Outcome*;
2. to represent the need for an *Outcome*;
3. to represent the ability of an *InformationItem* to inform the behavior of a *Capability* and/or *CapabilityBehavior*;
4. to represent the ability of a *CapabilityImplementation* to implement a *Capability* and/or a *CapabilityBehavior*;
5. to represent the notion that a *BusinessObject* and/or an *InformationItem* scopes a *Capability* and/or a *CapabilityBehavior*

7.3.2.5.1 Attributes, Methods and Connectors:

Association Name: Association Type: Generalization **Stereotype:**
Source Class: AbstractCapability [] **Target Class:** AbstractOperatingModel []

Association Name: needs **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractCapability [0..*] **Target Class:** Outcome [0..*]
Definition: The *needs* association represents the assertion that a *Capability* and/or *CapabilityBehavior* needs, desires or requires a particular *Outcome* representing a state of an *BusinessObject* or *InformationItem*.

Association Name: produces **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractCapability **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *produces* association represents that a *Capability* and/or *CapabilityBehavior* may produce the *Outcome*.

Association Name: ofCapability **Association Type:** Association **Stereotype:**
Source Class: Role **[**0..*] **Target Class:** AbstractCapability **[**0..1]
Definition: The *ofCapability* leg of the *Role* association links the *Role* to the *AbstractCapability*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Capability **[]** **Target Class:** AbstractCapability **[]**

Association Name: object **Association Type:** Association **Stereotype:** «shortcut»
Source Class: ServiceOffering **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: the *object* shortcut association designates an *AbstractCapability* possessed by *theBusiness* that is intended to produce the *ServiceOutcome incorporated* into the *ServiceOffering*.
Constraint: Let SOf1 be a ServiceOffering and C1 be a Capability that is associated by o1 an object association. Then there should exist a ServiceOutcome SO1 such that SO1 is incoporated in SOf1 and SO1 is produced by C1.

Association Name: scopes **Association Type:** Association **Stereotype:** «shortcut»
Source Class: AbstractBusinessObject **[**0..1] **Target Class:** AbstractCapability **[**0..1]
Definition: The scopes shortcut association allows a Capability and/or CapabilityBehavior to be associated with some BusinessObjects and.or an InformationItems without defining Outcomes produced or needed by the Capability and/or CapabilityBehavior.
Usage: The modeler may elect to subsequently define such Outcomes, which must be consistent with the constraint specified by the scopes shortcut association.
Constraint: Let BO1 be a BusinessObject and C1 be a Capability that are associated by scopes s1. Then there should existin the model an Outcome O1 such that C1 produces O1 and O1 is a stateOf BO1.

Association Name: implements **Association Type:** Association **Stereotype:** «shortcut»
Source Class: CapabilityImplementation **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: The *implements* association represents a relationship meaning that the *CapabilityImplementation* provides *Performers* and *Resources* to implement a *Capability* or *CapabilityBehavior*.
Usage: The *implements* association is a shortcut linking a *CapabilityImplementation* to a *Capability* or *CapabilityBehavior*. It carries a constraints that Performers and Resources in the *CapabilityImplementation* should be assigned to *Roles* of the *Capability* or *CapabilityBehavior*.
Constraint: Given a CapabilityImplementation CI1 and a Capability C1, if an impliements association I1 exists between CI1 and C1, then paths should exist between CI1 and C1 such that for some subset of the Performers {Pi} aggregated by CI1 and some subset of the Resources {Ri} aggregated by CI1, the Pi are assignTo PerformerRoles PRj and assignTo ResourceRoles RRj ofCapability C1

Association Name: require **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: The *require* association represents that a *Capability* and/or *CapabilityBehavior* is required for performance of the *Initiative*.
Usage: Definition of this association in an M1 level model allows the business architect to record and analyze such requirements.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: CapabilityBehavior **[]** **Target Class:** AbstractCapability **[]**

Association Name: implements **Association Type:** Association **Stereotype:** «shortcut»
Source Class: AbstractProcess **[**0..*] **Target Class:** AbstractCapability **[**0..*]

Definition: The *implements* shortcut represents that a *CapabilityBehavior* and an *AbstractProcess* have related *Outcomes*
Usage: It could also be justified by a common *Performer* playing a role in the *CapabilityBehavior* and the *AbstractProcess*
Constraint: Let P1 be a Process and C1 be a capability associated by an implements association. Then there should exist Outcomes O1 and O2 such that O1 is produced by (needed by) C1 and O2 is output (input) by P1 and O1 and O2 are related such that they are the same Outcome or one is in the extended aggregation of the other or one is the extended specialization of the other or any chain of relationships connecting the two where the chain consists exclusively of being aggregated by or being a specialization of the predecessor Outcome.

Association Name: informs **Association Type:** Association **Stereotype:** «class»
Source Class: InformationItem **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: The *informs* association represents the influence of information (represented by *InformationItem*) on a *Capability* or a *CapabilityBehavior*.
Usage: Information, such as weather, production targets, and results of a business analysis project will change how a business behaves and how a Capability or CapabilityBehavior performs.

Association Name: require **Association Type:** Association **Stereotype:** «class»
Source Class: Means **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: The *require* association represents that a *Capability* and/or *CapabilityBehavior* is required for performance of the *Means*.
Usage: Definition of this association in an M1 level model allows the business architect to record and analyze such requirements.

7.3.2.6 *Class Name: BusinessObject Class Type: Class Stereotype:*

Base Classes: AbstractBusinessObject
Definition: *BusinessObject* represents a tangible thing that is of significance to a business.
Usage: *BusinessObjects* may also overlap with other classes in the model; for example a *BusinessObject* may also be a *Resource* used by a *Capability*.
Typically, the *BusinessObject* represents tangible things that are acted on by the *Capabilities* of a business to create a new *Outcome* that defines a new state of the *BusinessObject*. An assembly robot may be a Performer associated with an assembly *Capability*. The same assembly robot may be a *BusinessObject* when it is no longer needed and is sold.

7.3.2.6.1 Attributes, Methods and Connectors:

Association Name: contains **Association Type:** Association **Stereotype:** «class»
Source Class: BusinessObject **[**0..*] **Target Class:** System **[**0..*]
Definition: The *contains* association represents that *BusinessObjects* may contain *System*.
Usage: In some cases, a *BusinessObject* and a *System* may represent different aspects of the same entity; since meta-classes in this meta-model are not assumed disjoint, an instance may have both meta-classes as parents. However, a *BusinessObject* may contain several *Systems* and other *BusinessObjects* as well. In this case, the Systems are not aspects of the primary *BusinessObject*, and the contains association allows the architect to represent this. An example of this latter case is a primary *BusinessObject* that is a computer and the System is a software package hosted on that computer (along with other software packages). The software package may be an instance of a *System* and also an instance of a *BusinessObject* (i.e. the code)

Association Name: realize **Association Type:** Association **Stereotype:** «class»
Source Class: BusinessObject **[**0..*] **Target Class:** InformationItem **[**0..*]

Association Name: Association Type: Generalization **Stereotype:**

Source Class: BusinessObject [] **Target Class:** AbstractBusinessObject []

Association Name: isAbout **Association Type:** Association **Stereotype:** «class»
Source Class: InformationItem [0..*] **Target Class:** BusinessObject [0..*]
The is about association represents the coupling of information to a business object where the information represents some aspects or characterizations of the business object.
For example, a business object that is a car may have a "digital twin", i.e. a collection of information that describes the state of being of the car. Such a "digital twin" is more accessible for controlling and auditing the business than the actual catr.

7.3.2.7 *Class Name: Capability Class Type: Class* ***Stereotype:***

Base Classes: AbstractCapability
Definition: *Capability* represents generalization over variations in behavior and variations in structure applied to the behavior where the same general *Outcome* is produced by the behavior.. A *Capability* represents the ability a business has to produce an *Outcome* without specifying how that *Outcome* is produced.
Usage: *Capability* is defined in this way to allow executives to analyze variation in business behaviors and structures that all produce the same or similar outcomes.
In addition, observing problems or successes that recur in most or all of the variations of a *Capability* is a clue that the business has a systemic problem with respect to the capability. For example, if all behavior variants and implementations of a *Capability* are underperforming, then one might wish to understand why.
Capabilities may be decomposed in a strict hierarchy, but are not allowed to be specialized. The *CapabilityBehavior* that delivers a *Capability* is used to represent behavioral variants of a *Capability*.
A *Capability* may be implemented by a *CapabilityImplementation*, a collection of *Resources* and *Performers* that are assigned *Roles* in the *Capability*.
The modeler may use any of the following patterns:
1. *Capability* is defined without *CapabilityBejaviors* or *CapabilityImplementations*;
2. *Capability* is defined with *CapabilityImplementations* annotated with proposed resources and performers but without *Roles*, *Resources* and *Performers*;
3. *Capability* is defined with *Roles*, *CapabilityImplementations*, *Performers*, *Resources* where the *Performers* and *Resources* are aggregated to the *CapabilityImplementation* and are assigned to *Roles* of the *Capability*;
4. *Capability* is defined as in 3. and *CapabilityBehaviors* are defined delivering the *Capability* with *Role* assignments to CapabilityBehavior compatible with the assignments to *Capability Roles*;
5. *Capability* is defined with delivering *CapabilityBehaviors* but no *CapabilityImplementation*;
6. *Capability* is defined with *Roles* and delivering *CapabilityBehaviors* are defined with consistent *Roles*;
7. All other configurations are disallowed.

7.3.2.7.1 Attributes, Methods and Connectors:

Association Name: supports **Association Type:** Association **Stereotype:** «shortcut»
Source Class: Capability [0..*] **Target Class:** ValueStreamStage [0..*]
Definition: The *supports* shortcut association represents the relationship between a *Capability* and a *ValueStreamStage* that means that the *Capability* is needed in order to create an *Outcome* valued as a *ValueItem* produced by the *ValueStreamStage*.
Usage: For example, an important stage in the creation of value for a manipulation puzzle such as Rubik's Cobe is the production of a manufacturable design of the puzzle. A failure here can result in a puzzle that cannot be manufactured or is not attractive to purchasers.
Outcomes providing value are:
- a positive maniufacturability review;
- a positive customer reaction in a focus group.

The *Capabilities* needed to produce these Outcomes are: product design, manufacturability analysis, focus group management. For this example, the previous three *Capability* instances would be associated with the "Design Ready" *ValueStreamStage*.

Constraint: Let C1 be a Capability and VSS1 be a ValueStreamStage and S1 be a supports association linking C1 and VSS1, then there should exist an Outcome O1 produced by C1 and a ValueItem V1 that values O1 and is produced by VSS1.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Capability **[]** **Target Class:** AbstractCapability **[]**

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: Capability **[**0..1] **Target Class:** Capability **[**0..*]
The "aggregates" association represents that Capabilities can be arranged in a hierarchy. This hierarchy often represents a decomposition of the business object that characterizes the Capability.

Association Name: delivers **Association Type:** Association **Stereotype:** «class»
Source Class: CapabilityBehavior **[**0..*] **Target Class:** Capability **[**0..1]
Definition: The *delivers* association represents a *CapabilityBehavior* that produces or is intended to produce *Outcomes* that satisfy the *Outcomes* produced by the *Capability*.
Usage: A *CapabilityBehavior* that delivers a *Capability* must provide at least the set of *Roles* provided by the *Capability*.

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: Capability **[**0..1] **Target Class:** Capability **[**0..*]
The "aggregates" association represents that Capabilities can be arranged in a hierarchy. This hierarchy often represents a decomposition of the business object that characterizes the Capability.

7.3.2.8 ***Class Name:*** *CapabilityBehavior* ***Class Type:*** *Class* ***Stereotype:***

Base Classes: AbstractCapability
Definition: *CapabilityBehavior* represents a behavior description or specification, such as process diagrams, procedures manuals and other means of recording and publishing expected business practices.
Usage: *CapabilityBehavior* also represents rules, regulations and policies that constrain behavior, whether imposed by statute, regulators or business executives.
CapabilityBehaviors deliver a Capability, indicating that the set *CapabilityBehaviors* associated to a Capability are variant ways of producing the same or similar *Outcomes*.
CapabilityBehaviors may have associated *Roles*. These *Roles* define how *Performers* and *Resources* may participate in the described or specified behavior.
CapabilityBehavior is a subtype of *AbstractCapability* and inherits associations with the *Outcomes* of *Capabilities*. These associations represent the ability of a behavior to produce an *outcome*. The *Outcomes* produced by a *CapabilityBehavior* are usually more specific than *Outcomes* produced by the *Capability*. Often the *Outcome* of a *CapabilityBehavior* will include side-effects that result from the particular behavior, such as resources consumed in executing the behavior or time taken by the execution.
CapabilityBehaviors are not decomposable, but may be associated with Processes, which are decomposable.

7.3.2.8.1 Attributes, Methods and Connectors:

Association Name: delivers **Association Type:** Association **Stereotype:** «class»
Source Class: CapabilityBehavior **[**0..*] **Target Class:** Capability **[**0..1]
Definition: The *delivers* association represents a *CapabilityBehavior* that produces or is intended to produce *Outcomes* that satisfy the *Outcomes* produced by the *Capability*.
Usage: A *CapabilityBehavior* that delivers a *Capability* must provide at least the set of *Roles* provided by the *Capability*.

Association Name: owns **Association Type:** Association **Stereotype:**

Source Class: CapabilityBehavior [0..1] **Target Class:** CapabilityBehavior [0..*]

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: CapabilityBehavior [] **Target Class:** AbstractCapability []

Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: CapabilityBehavior [0..1] **Target Class:** CapabilityBehavior [0..*]

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: CapabilityBehavior [0..1] **Target Class:** CapabilityBehavior [0..*]

Association Name: specifies **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOffering [0..*] **Target Class:** CapabilityBehavior [0..*]
Definition: The specifies association represents a relationship between an OutsourcingOffering and a CapabilityBehavior or Process or *CapabilityImplementation*, in which the *Customer* would be required or advised to perform the *CapabilityBehavior* or *Process* and/or provide *Performers* and *Resources* as specified by the *CapabilityImplementation* as an implementation of the *CapabilityBehavior* or *Process*..
Usage: This association is effectively combined with the two other *specifies* relation whose source is *OutsourcingOffering* so that the range of the combined associations is the union of *AbstractProcess*, *CapabilityBehavior* and *CapabilityImplementation*.

Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: CapabilityBehavior [0..1] **Target Class:** CapabilityBehavior [0..*]

7.3.2.9 *Class Name: CapabilityImplementation Class Type: Class Stereotype:*

Base Classes: AbstractOperatingModel
Definition: The *CapabilityImplementation* represents a collection of *Resources* and *Performers* that may be used to implement a *Capability* or *CapabilityBehavior* (see the Roles diagram).
Usage: The *Resources* and *Performers* are optional; the modeler may create instances of *CapabilityImplementation* annotated with a description of proposed or planned resources and performers and subsequently add the *Performers* and *Resources*..

7.3.2.9.1 Attributes, Methods and Connectors:

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: CapabilityImplementation [0..*] **Target Class:** Initiative [0..*]
Definition: The *implements* association represents an assertion that one or more *CapabilityImplementations* are required to perform the *initiative*.
Usage: Definition of this association in an M1 level model allows the business arcitect to record that specific *CapabilityImplementations* are needed to perform the Initiative.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: CapabilityImplementation [0..*] **Target Class:** Performer [0..*]

Association Name: implements **Association Type:** Association **Stereotype:** «shortcut»
Source Class: CapabilityImplementation [0..*] **Target Class:** AbstractCapability [0..*]

Definition: The *implements* association represents a relationship meaning that the *CapabilityImplementation* provides *Performers* and *Resources* to implement a *Capability* or *CapabilityBehavior*.
Usage: The *implements* association is a shortcut linking a *CapabilityImplementation* to a *Capability* or *CapabilityBehavior*. It carries a constraints that Performers and Resources in the *CapabilityImplementation* should be assigned to *Roles* of the *Capability* or *CapabilityBehavior*.
Constraint: Given a CapabilityImplementation CI1 and a Capability C1, if an impliements association I1 exists between CI1 and C1, then paths should exist between CI1 and C1 such that for some subset of the Performers {Pi} aggregated by CI1 and some subset of the Resources {Ri} aggregated by CI1, the Pi are assignTo PerformerRoles PRj and assignTo ResourceRoles RRj ofCapability C1

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: CapabilityImplementation **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: CapabilityImplementation **[**0..*] **Target Class:** Resource **[**0..*]

Association Name: assignTo **Association Type:** Association **Stereotype:** «shortcut»
Source Class: Role **[**0..*] **Target Class:** CapabilityImplementation **[**0..*]
Definition: The *assignment* shortcut association represents that a *CapabilityImplementation* provides *Performers* and *Resources* that can be assigned to *ResourceRoles* and *PerformerRoles* respectively of a *Capability*, *CapabilityBehavior*, *Process* or *Activity*.
Constraint: Let CI1 be a CapabilityImplementation and PR1 be a PerformerRole, then some subset of the Performers {pj} aggregated by CI1 are assignTo PR1. Let CI1 be a CapabilityImplementation and RR1 be a ResourceRole, then some subset of the Performers {pj} aggregated by CI1 are assignTo RR1.

Association Name: specifies **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOffering **[**0..*] **Target Class:** CapabilityImplementation **[**0..*]
Definition: The specifies association represents a relationship between an OutsourcingOffering and a CapabilityBehavior or Process or *CapabilityImplementation*, in which the *Customer* would be required or advised to perform the *CapabilityBehavior* or *Process* and/or provide *Performers* and *Resources* as specified by the *CapabilityImplementation* as an implementation of the *CapabilityBehavior* or *Process*..
Usage: This association is effectively combined with the two other *specifies* relation whose source is *OutsourcingOffering* so that the range of the combined associations is the union of *AbstractProcess*, *CapabilityBehavior* and *CapabilityImplementation*.

7.3.2.10 *Class Name: InformationItem Class Type: Class* Stereotype:

Base Classes: AbstractBusinessObject
Definition: The *InformationItem* represents a kind of information.
Usage: The same *InformationItem* may represent a thought or piece of knowedge and a physical manifestation of that thought or knowledge as a document or a dataset.

7.3.2.10.1 Attributes, Methods and Connectors:

Association Name: informs **Association Type:** Association **Stereotype:** «class»
Source Class: InformationItem **[**0..*] **Target Class:** AbstractProcess **[**0..*]
Definition: The *informs* association represents the influence of information (represented by *InformationItem*) on a *Process* or *Activity.*
Usage: Information, such as weather, production targets, and results of a business analysis project will change how a business behaves and how a *Process* or *Activity* performs.

Association Name: isAbout **Association Type:** Association **Stereotype:** «class»
Source Class: InformationItem **[**0..*] **Target Class:** BusinessObject **[**0..*]
The is about association represents the coupling of information to a business object where the information represents some aspects or characterizations of the business object.
For example, a business object that is a car may have a "digital twin", i.e. a collection of information that describes the state of being of the car. Such a "digital twin" is more accessible for controlling and auditing the business than the actual catr.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: InformationItem **[]** **Target Class:** AbstractBusinessObject **[]**

Association Name: informs **Association Type:** Association **Stereotype:** «class»
Source Class: InformationItem **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: The *informs* association represents the influence of information (represented by *InformationItem*) on a *Capability* or a *CapabilityBehavior*.
Usage: Information, such as weather, production targets, and results of a business analysis project will change how a business behaves and how a Capability or CapabilityBehavior performs.

Association Name: realize **Association Type:** Association **Stereotype:** «class»
Source Class: BusinessObject **[**0..*] **Target Class:** InformationItem **[**0..*]

7.3.2.11 *Class Name: ObjectRelation Class Type: Class Stereotype: «association»*

Base Classes: AbstractOperatingModel
Definition: *ObjectRelation* represents any relationship of any arity among *BusinessObjects* and *InformationItems*.
Usage: The architect may use *ObjectRelation* to indicate that two *BusinessObjects* are joined together or that one *BusinessObject* is part of another.

7.3.2.11.1 Attributes, Methods and Connectors:

Association Name: related **Association Type:** Association **Stereotype:**
Source Class: ObjectRelation **[**0..*] **Target Class:** AbstractBusinessObject **[**0..*]
Definition: The *related* leg of the *ObjectRelation* association links an *ObjectAssociation* to *BusinessObjects* and/or *InformationItems* that participate in the *ObjectAssociation*.
Usage: The *ObjectRelation* association does not have a fixed number of legs. The *related* leg may be instanced multiple times as long as the name given to each instance is distinct. The *related* leg may be given a label that defines a role the *BusinessObject* or *InformationItem* plays in the *ObjectAssociation*.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ObjectRelation **[]** **Target Class:** AbstractOperatingModel **[]**

7.3.2.12 *Class Name: Outcome Class Type: Class Stereotype:*

Base Classes: AbstractOperatingModel
Definition: An *Outcome* represents a fact or collection of facts about an experienced state of affairs pertaining to one or more *BusinessObjects* and/or *InformationItems*. *Outcomes* are produced/needed by Iand outputs/inputs of *AbstractProcesses*.
Usage: For example, a *Capability* to attach wheels to a vehicle being manufactured would require that a vehicle without wheels be available and that wheels be available. This requirements would be modeled as two *Outcomes*:

1. A vehicle without wheels is available to the *Capability*, and
2. A set of wheels is available to the *Capability*.

The result of the *Capability* is another *Outcome* in which the wheels are no longer separate but are attached to the vehicle.

Separating the state of a *BusinessObject* or *InformationItem* from the *BusinessObject* or *InformationItem* allows the model to represent many possible states of the *BusinessObject* or *InformationItem* and associate each state with the *Capabilities* and/or *CapabilityBehaviors* that produce the states.

Outcome and its *AbstractBusinessObjects* must represent a single, consistent set of facts whether viewed from the capability perspective or the process perspective. However, the facts represented by a *Outcome* may not be at the same level of detail when viewed in a capability perspective as when viewed in a process perspective. For example, a process perspective may represent the wheel assembly activities in greater detail, specifying the additional tools and parts needed to attach the wheels to the vehicle with intermediate *Outcomes* representing the stages of mounting the wheels to the hubs, attaching the nuts to the hub bolts, and tightening them to the required torque specification. The beginning and end of this sequence of *Outcomes* are the same in the process perspective and in the capability perspective. Other semantic relationships provided for *Outcome* are generalization and aggregation.

7.3.2.12.1 Attributes, Methods and Connectors:

Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: Outcome **[**0..1] **Target Class:** Outcome **[**0..*]

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Outcome **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Outcome **[**0..1] **Target Class:** Outcome **[**0..*]

Association Name: recordedAs **Association Type:** Association **Stereotype:** «class»
Source Class: Outcome **[**0..*] **Target Class:** AbstractBusinessObject **[**0..*]

Association Name: stateOf **Association Type:** Association **Stereotype:** «class»
Source Class: Outcome **[**0..*] **Target Class:** AbstractBusinessObject **[**0..*]
The "state_of" meta-association applies a state to an AbstractBusinessObject instance. For example, a passenger may be transported from one location to another by a Capability, and the Outcome resulting from the Capability execution represents the fact that the passenger is now in the destinationlocation.

Association Name: triggers **Association Type:** Association **Stereotype:** «shortcut»
Source Class: Outcome **[**0..*] **Target Class:** ValueStreamStage **[**0..*]
Definition: The *triggers* association represents that the Outcome allows or initiates the *ValueStreamStage*.
Usage: It is often useful in analysis to record the *Outcomes* that constitute the important beginning events of a *ValueStreamStage* The *triggers* association allows the architect to record these relationships.
Constraint: Let O1 be an Outcome experienced at a Touchpoint T1 and VSS1 be a ValueStreamStage where O1 triggers VSS1, then there should exist a ValueItem VI1 that values O1 and is produced by VSS1.

Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: Outcome **[**0..1] **Target Class:** Outcome **[**0..*]

Association Name: output **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractProcess **[**0..*] **Target Class:** Outcome **[**0..*]

Definition: The *output* association represents that the *AbstractProcess outputs* the *Outcome*.
Usage: The *output* association in the process perspective corresponds to the *produces* association in the capability perspective. While it is possible that the same *Outcome* is *output* from a process and *produced* by a capability, it will usually be the case that a process *outputs* an *Outcome* that is related by generalization or aggregation (or another relation between *Outcomes*) to an Outcome *produced* by a capability. The process and capability in this case are semantically related by the relationship between their *Outcomes*.
For example, a CustomerInformationManagement *Capability* may *produce* CustomerInformation_is_current and CustomerInformation_is_correct *Outcomes.* A process that updates the CustomerAddress (a component of CustomerInformation) may *produce* CustomerAddress_is_current and CustomerAddress_is_correct *Outcomes*, that are related to the other *Outcomes* by aggregation.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: OutsourcedServiceOutcome **[]** **Target Class:** Outcome **[]**

Association Name: values **Association Type:** Association **Stereotype:** «class»
Source Class: ValueItem **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *values* association links a *ValueItem* to an *Outcome* and provides a valuation of that *Outcome*. An *Outcome* may have several *ValueItems*, reflecting the ways in which different stakeholders perceive the *Outcome*. Likewise, a *ValueItem* may value multiple *Outcomes* that must be valued as a group.
Usage: The Outcome may be present in the business architecture model without an associated ValueItem, but ValueItems may not exist without being associated to an Outcome.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Outcome **[**0..1] **Target Class:** Outcome **[**0..*]

Association Name: experiences **Association Type:** Association **Stereotype:** «class»
Source Class: Touchpoint **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *experiences* relation represents a relationship between an *Outcome* and a *Touchpoint* meaning that the *Customer* will experience the *Outcome* at the *Touchpoint*.
Usage: A *Touchpoint* experiences an *Outcome*:
1. when that *Outcome* is provided as a service or
2. when the *Outcome* is associated with acceptance of the *ProductOffering* (e.g. the customer is happy with the contract of sale), or
3. when the customer receives information that resolves a question, or
4. when the customer makes use of a business object that is provided as an *Outcome* of an exchange transaction

Association Name: needs **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractCapability **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *needs* association represents the assertion that a *Capability* and/or *CapabilityBehavior* needs, desires or requires a particular *Outcome* representing a state of an *BusinessObject* or *InformationItem*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: MerchandiseOutcome **[]** **Target Class:** Outcome **[]**

Association Name: produces **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractCapability **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *produces* association represents that a *Capability* and/or *CapabilityBehavior* may produce the *Outcome*.

Association Name: related **Association Type:** Association **Stereotype:**
Source Class: OutcomeRelation **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *relatedOutcome* leg of the *OutcomeRelation* association identifies an *Outcome* that is related to one or more other *Outcomes*.

Usage: The *OutcomeRelation* association does not have a fixed number of legs when instanced. The architect may define any number of instances of the *relatedOutcome* leg wen instancing the *OutcomeRelation* as long as each leg is given a unique name.

Association Name: input **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractProcess **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *input* association represents that the *AbstractProcess inputs* (requires or can use) the *Outcome*.
Usage: The *input* association in the process perspective corresponds to the *needs* association in the capability perspective. While it is possible that the same *Outcome* is *input* to a process and *needed* by a capability, it will usually be the case that a process *inputs* an *Outcome* that is related by generalization or aggregation (or another relation between *Outcomes*) to an Outcome *needed* by a capability. The process and capability in this case are semantically related by the relationship between their *Outcomes*.
For example, a CustomerInformationManagement *Capability* may *need* CustomerInformation_change_pending *Outcome.* A process that updates the CustomerAddress (a component of CustomerInformation) may *input* CustomerAddress_change_pending *Outcome*, that is related to the other *Outcome* by aggregation.

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: ProductOffering **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *incorporates* association represents that an *Outcome* is included in a *ProductOffering*.
Usage: It may be implied that the *BusinessObject* whose state is represented by the *Outcome* is also included in the *ProductOffering*. In the case of a service offering, the *Outcome* instance represents the intended result of performing the capability as a service for a customer (as opposed to performing the capability for the immediate benefit of the business).

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ProcurementOutcome **[]** **Target Class:** Outcome **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ServiceOutcome **[]** **Target Class:** Outcome **[]**

7.3.2.13 *Class Name: OutcomeRelation Class Type: Class Stereotype: «association»*

Base Classes: AbstractOperatingModel
Definition: *OutcomeRelation* represents any kind of semantic relationship between *Outcomes*.
Usage: The architect may create instances of any arity to define semantic relationships between *Outcomes*. For example, two *Outcomes* may be specified as alternative that cannot both be produced by a *Capability* or *Process* in a single execution.

7.3.2.13.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: OutcomeRelation **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: related **Association Type:** Association **Stereotype:**
Source Class: OutcomeRelation **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *relatedOutcome* leg of the *OutcomeRelation* association identifies an *Outcome* that is related to one or more other *Outcomes*.

Usage: The *OutcomeRelation* association does not have a fixed number of legs when instanced. The architect may define any number of instances of the *relatedOutcome* leg wen instancing the *OutcomeRelation* as long as each leg is given a unique name.

7.3.2.14 *Class Name: PerformerRole Class Type: Class Stereotype: «association»*

Base Classes: Role
Definition: *PerformerRole* represents skills, knowledge and willingness to use these in the production of the *Outcomes* of a *Capability*.
Usage: *PerformerRole* represents roles that must be fulfilled by human or automation actors.

7.3.2.14.1 Attributes, Methods and Connectors:

Association Name: assignTo **Association Type:** Association **Stereotype:**
Source Class: PerformerRole **[**0..*] **Target Class:** Performer **[**0..1]
Definition: The *assignment* leg of the *PerformerRole* association represents that a *Performer* is assigned to the *PerformerRole*.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: PerformerRole **[]** **Target Class:** Role **[]**

7.3.2.15 *Class Name: ResourceRole Class Type: Class Stereotype: «association»*

Base Classes: Role
Definition: *ResourceRole* represents the set of roles that must be fulfilled by business entities that are passive participants in the *Capability*, *CapabilityBehavior*, *Process* or *Activity*. This includes tools, locations and materials that are used in the behavior but do not become incorporated into the *Outcome* of the behavior. Any materials or entities that are incorporated into a *BusinessObject* or *InformationItem* whose *Outcomes* are produced by the *Capability* or *CapabilityBehavior* should be represented as *BusinessObjects* or *InformationItems* associated with *Outcomes* needed by the *Capability* and not represented as *Resources* in this context.
Usage:

7.3.2.15.1 Attributes, Methods and Connectors:

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ResourceRole **[]** **Target Class:** Role **[]**

Association Name: assignTo **Association Type:** Association **Stereotype:**
Source Class: ResourceRole **[**0..1] **Target Class:** Resource **[**0..*]
Definition: The *assignTo* leg of the *ResourceRole* association represents that a *Resource* has been assigned to a *ResourceRole*.

7.3.2.16 *Class Name: Role Class Type: Class Stereotype: «association»*

Base Classes: AbstractOperatingModel
Definition: *Role* represents a specified way for an entity to participate in producing the *Outcome* of a *Capability* or a *Process*. However, only the concrete subclasses of *Role* may be used in a model.
Usage: *Role* is an abstract association meta-class used to model relationships between *Performers* and *Resources* and *Capabilities* and *Processes*. It represents how *Performers* and *Resources* participate in behavior descriptions as

represented by *CapabilityBehaviors* and/or in *Capabilities*. The *Role* meta-class is stereotyped as an association and its concrete instances are effectively class associations.
Specifically, the *Role* meta-class acts as an n-ary association with three predominant patterns:
1. A *Capability* is associated with a *Performer*;
2. A *CapabilityBehavior* is associated with a *Performer*, or a choice of an *OrgUnit* or a *System*;
3. A *CapabilityImplementation* is associated with a *CapabilityBehavior* and a choice of an *OrgUnit* or a *System*.
These three patterns represent:
1. An abstract view of the business capability with detail added by the Role instance indicating the type of activity to be performed. Since a *Capability* may have multiple associated *Roles*, this implies that the *Capability* incorporates multiple activities.
2. An intermediate view of the business used in planning where details about the specific behaviors of a capability and the type of performer entity (*OrgUnit* or *System*) are specified, but the actual or planned assignment of real *OrgUnits* or *Systems* has not occurred.
3. A more detailed planning/implementation view of the business in which specific performers and resources have been or are planned to be allocated to a *Capability* and its *CapabilityBehaviors* by way of a set of *CapabilityImplementations*.
Neither *ResourceRoles* nor *PerformerRoles* may exist without being linked to a *Capability* or a *CapabilityBehavior* or a *Process* or an *Activity* with the role link.
A *Capability* and a *CapabilityBehavior* may share a *Role*, but an assignment to that Role will be the same for both the *Capability* and the *CapabilityBehavior*. To indicate that a *CapabilityBehavior* and a *Capability* have related roles, the modeler should create a specialization ot the *Capability Role* for each *CapabilityBehavior* that delivers the *Capability* and link the specialized *Role* to the *CapabilityBehavior*.
A *Process* and an *Activity* may not share a *Role*.
A *Role* may be shared between a *Capability* and/or a *CapabilityBehavior*, and either a *Process* or an *Activity*. In this case, any assignment to the *Role* is an assignment to both the *Capability/CapabilityBehavior* and the *Process/Activity*
PerformerRoles and *ResourceRoles* may be linked to *CapabilityImplementations* with the assignment shortcut association. *Performers* and *Resources* aggregated in the *CapabilityImplementation* should be assigned to these roles.

7.3.2.16.1 Attributes, Methods and Connectors:

Association Name: assignTo **Association Type:** Association **Stereotype:** «shortcut»
Source Class: Role **[**0..*] **Target Class:** CapabilityImplementation **[**0..*]
Definition: The *assignment* shortcut association represents that a *CapabilityImplementation* provides *Performers* and *Resources* that can be assigned to *ResourceRoles* and *PerformerRoles* respectively of a *Capability*, *CapabilityBehavior*, *Process* or *Activity*.
Constraint: Let CI1 be a CapabilityImplementation and PR1 be a PerformerRole, then some subset of the Performers {pj} aggregated by CI1 are assignTo PR1. Let CI1 be a CapabilityImplementation and RR1 be a ResourceRole, then some subset of the Performers {pj} aggregated by CI1 are assignTo RR1.

Association Name: ofCapability **Association Type:** Association **Stereotype:**
Source Class: Role **[**0..*] **Target Class:** AbstractCapability **[**0..1]
Definition: The *ofCapability* leg of the *Role* association links the *Role* to the *AbstractCapability*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Role **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: Role **[**0..1] **Target Class:** Role **[**0..*]

Association Name: ofProcess **Association Type:** Association **Stereotype:**
Source Class: Role **[**0..*] **Target Class:** AbstractProcess **[**0..1]
Definition: The *ofProcess* leg of the *Role* association links a *PerformerRole* or *ResourceRole* to a *Process* or *Activity*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ResourceRole **[]** **Target Class:** Role **[]**

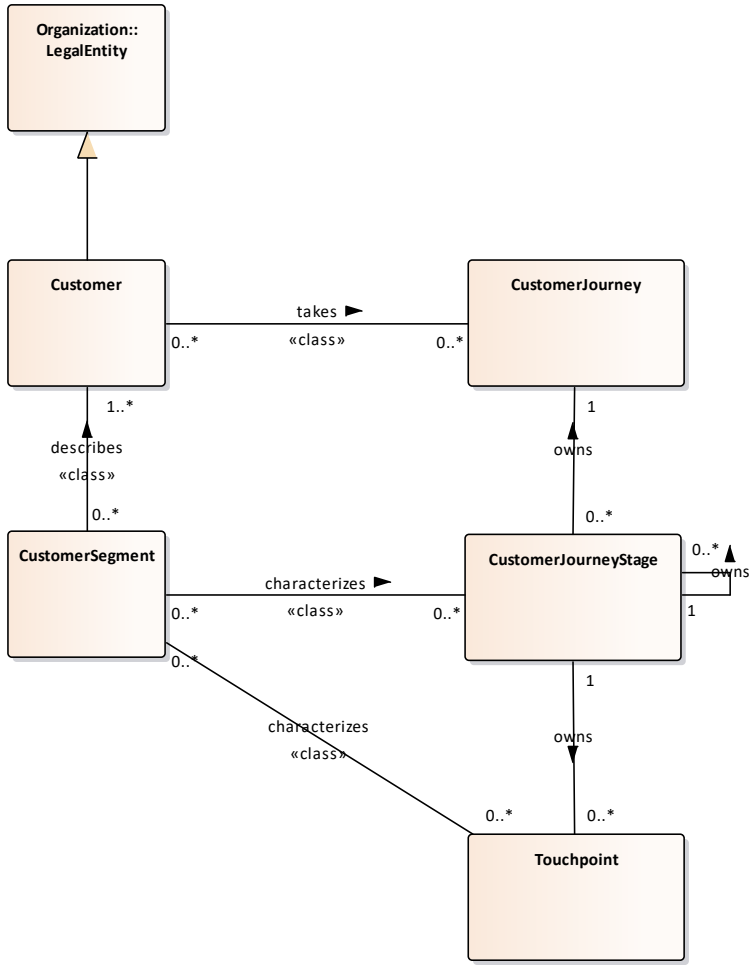
Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: Role **[**0..1] **Target Class:** Role **[**0..*]

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: PerformerRole **[]** **Target Class:** Role **[]**

7.3.3 **Package:** Customer

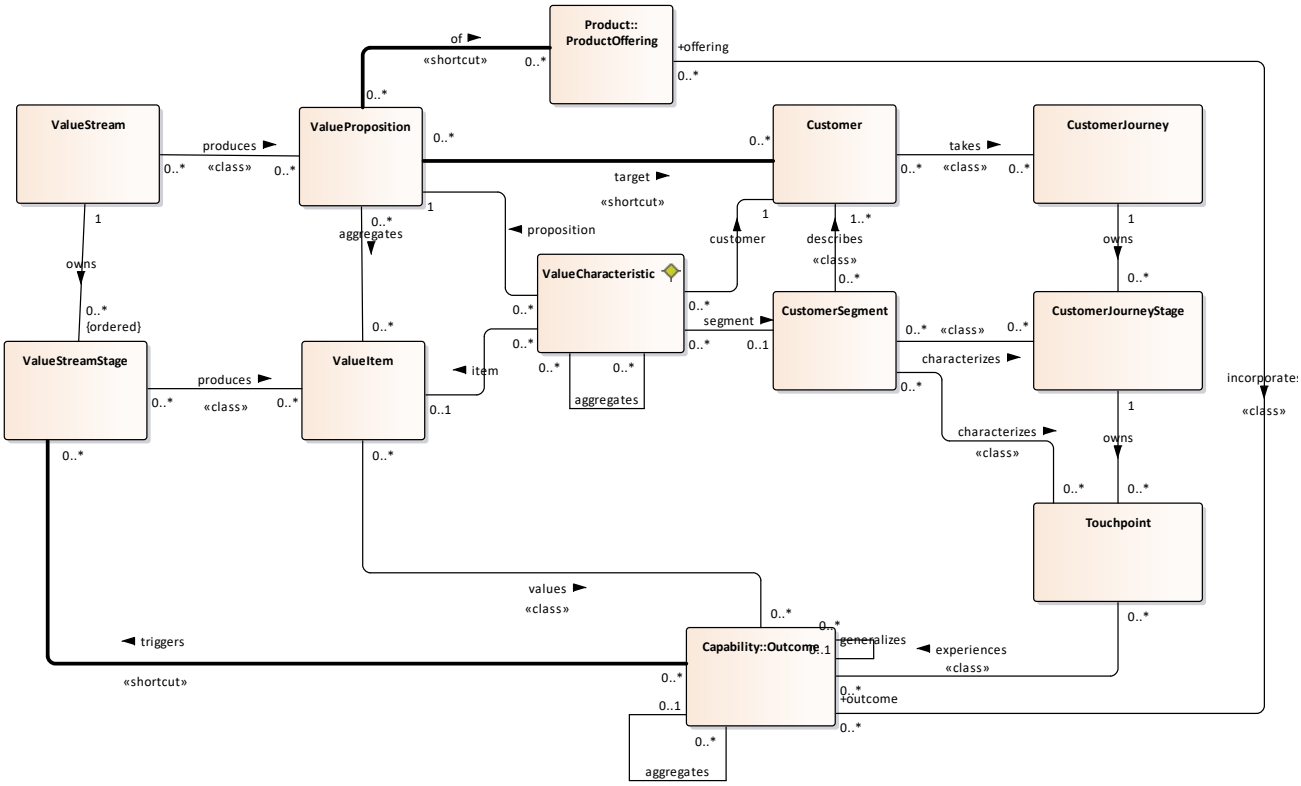
The Customer package includes definitions of elements that describe perceived value, value streams and customer journeys. These elements constitute the valuation perspective that is applied to the abstract operational perspective (defined in the Capability, Organization, Process and Product packages) to determine if the business operations are delivering the intended values and if those intended values are a good match to the value expectations of the customer.

7.3.3.1 ***Diagram:*** *Customer*



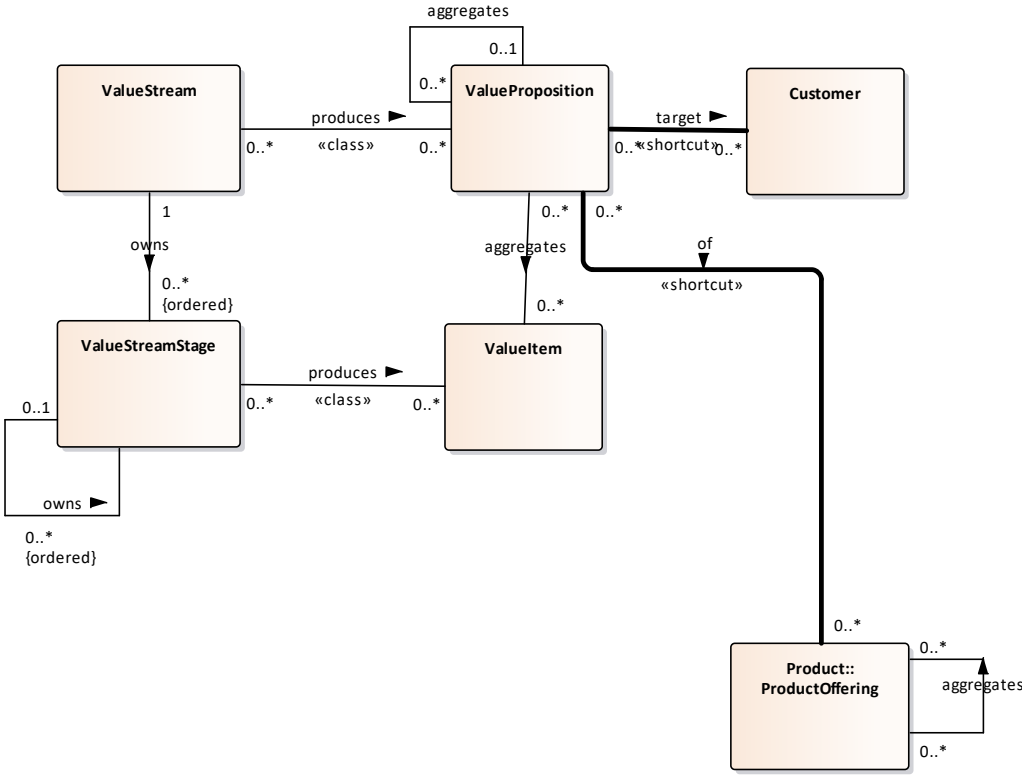
The Customer diagram expresses the abstract syntax of elements that collectively describe the customer, the customer's interactions with the business or its products and services, and the customer's state of mind at these interactions.
The CustomerJourney is a reusable tree that decomposes a journey into CustomerJourneyStages and CustomerJourneyStages into Touchpoints. This tree is reusable in that it allows multiple Customers to take the same CustomerJourney. It also allows a Customer to take different Journeys.
The CustomerSegment describes customer characteristics and/or state of mind at CustomerJourneyStages and Touchpoints of a CustomerJourney. The CustomerSegments are associated with CustomerJourneyStages and Touchpoints, but are effectively owned by the Customer taking the CustomerJourney. Separating the customer characteristics and state of mind from the CustomerJourneyStage and Touchpoint allows the CustomerJourneyStage and Touchpoint to be associated with different Customers.
Touchpoint differs from CustomerJourneyStage in experiencing Outcomes that may be incorporated in a ProductOffering. Such Outcomes might include the sale of a product item, the performance of a service or the customer's use of a product item after the sale. At each such Touchpoint, the customer characteristics and state of mind are described in a CustomerSegment.

7.3.3.2 *Diagram: ValueFit*



The ValueFit diagram defines abstract syntax for an analysis of how well the *ValuePropositions* meet the *Customer* expectations. The *ValueCharacteristic* holds an assessment of the fit of the *ValueProposition* (and its constituent *ValuePropositions* and *ValueItems*) to the *CustomerSegments* associated with the targeted *Customer*

7.3.3.3 *Diagram: ValueStream*



The ValueStream diagram defines abstract syntax for models incorporating ValueStreams. The ValueStream owns ValueStreamStages representing business significant stages in the composition of value for a customer. The ValueStream itself produces ValuePropositions that aggregates other ValuePropositions and ValueItems.
ValueStreams are abstractly realized by Capabilities that support ValueStreamStages. These Capabilities produce Outcomes that are Valued by ValueItems. Some of these Outcomes are incorporated into the ProductOffering (e.g. sale price, warranty).
ValuePropositions target a Customer, who is also the target of the ProductOffering. The ValueProposition is of the ProductOffering.
The product shortcut association links a ValueStream to a ProductOffering, allowing the modeler to defer details of the ValueProposition.

7.3.3.4 *Class Name: Customer Class Type: Class Stereotype:*

Base Classes: LegalEntity
Definition: *Customer* represents a customer type or a class of customers. *Customer* also represents partner businesses and other forms of contracted business relationships.
Usage: *Customer* effectively owns a set of *CustomerSegments*, each of which contains a partial description of the *Customer*. The *CustomerSegments* of a *Customer* may characterize *CustomerJourneyStages* or *Touchpoints* (i.e. they describe the *Customer* characteristics and state of mind at the *CustomerJourneyStage* or *Touchpoint*. When this is the case, the Customer should take the *CustomerJourney* owning the *CustomerJourneyStages* and *Youchpoints*.
The *Customer* is an *acceptor* of one or more *ProductOfferings* and *target* of the *ValuePropositions* of these *ProductOfferings*.

7.3.3.4.1 Attributes, Methods and Connectors:

Association Name: Association Type: Generalization **Stereotype:**

Source Class: Customer [] **Target Class:** LegalEntity []

Association Name: takes **Association Type:** Association **Stereotype:** «class»
Source Class: Customer [0..*] **Target Class:** CustomerJourney [0..*]
Definition: The *takes* association represents a relationship between a *Customer* and a *CustomerJourney* asserting that the *Customer* is likely to take the *CustomerJourney*.

Association Name: describes **Association Type:** Association **Stereotype:** «class»
Source Class: CustomerSegment [0..*] **Target Class:** Customer [1..*]
Definition: The *describes* association represents the relationship between a *CustomerSegment* and a *Customer* asserting that the *Customer* is partially described by the *CustomerSegment*
Usage: If there is no *CustomerJourney* associated with a *Customer*, then the set of all *CustomerSegments* that *describe* the *Customer* represent the total customer description.
If the *Customer* takes a *CustomerJourney*, then the *CustomerSegments* that *describe* the *Customer* may be qualified by the *characterizes* association to a *CustomerJourneyStage* or *Touchpoint*, indicating that the *CustomerSegment* partially *describes* the *Customer* at that *CustomerJourneyStage* or *Touchpoint*.

Association Name: target **Association Type:** Association **Stereotype:** «shortcut»
Source Class: ValueProposition [0..*] **Target Class:** Customer [0..*]
Definition: The *target* shortcut association asserts that the *ValueProposition* is intended to target the *Customer*.
Usage: This shortcut allows the architect to assert that a *ValueProposition* targets a *Customer* and imply that there is an unspecified *ValueCharacteristic* that represents the value fit analysis of the *ValueProposition* and *Customer*.
Constraint: Let VP1 be a ValueProposition and Cu1 be a Customer associated by t1, a target association. Then there should be a ValueCharacteristic VC1 with VP1 as its proposition and Cu1 as its customer. Also, there should be ValueItems {VIj} aggregated by VP1 that value Outcomes {Oj} incorporated in ProductOfferings {POj} accepted by LegalEntities {LEj} that are also the Customer Cu1.
Note that it is commonly the case that the set of individuals represented intensionally by the Customer element are also LegalEntities.

Association Name: customer **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic [0..*] **Target Class:** Customer [1]
Definition: The *customer* leg of the *ValueCharacteristic* association identifies the *Customer* participating in the value fit analysis represented by the *ValueCharacteristic*.
Usage: The *ValueCharacteristic* may define specific *CustomerSegments*, *JourneyStages* and *Touchpoints* as having weigts in the value fit analysis. The meta-model does not provide direct support for asserting such facts, but they can be recorded in *Annotations* associated with the *ValueCharacteristic*.

7.3.3.5 ***Class Name:*** *CustomerJourney* ***Class Type:*** *Class* ***Stereotype:***

Base Classes: AbstractValueModel
Definition: A *CustomerJourney* represents a sequence of stages through which a *Customer* may pass with respect to a *ProductOffering* and its *ValueProposition*. The *CustomerJourneyStages* of the *CustomerJourney* capture the notion that the customer experience is cumulative.

7.3.3.5.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: CustomerJourney [] **Target Class:** AbstractValueModel []

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: CustomerJourney **[**1] **Target Class:** CustomerJourneyStage **[**0..*]

Association Name: takes **Association Type:** Association **Stereotype:** «class»
Source Class: Customer **[**0..*] **Target Class:** CustomerJourney **[**0..*]
Definition: The *takes* association represents a relationship between a *Customer* and a *CustomerJourney* asserting that the *Customer* is likely to take the *CustomerJourney*.

7.3.3.6 *Class Name: CustomerJourneyStage Class Type: Class Stereotype:*

Base Classes: AbstractValueModel
Definition: The *CustomerJourneyStage* represents a significant stage in the *CustomerJourney*. An example of the stages of a customer journey would be: awareness, seeking a solution, weighting alternatives, acquiring the solution, using the solution, disposing the solution. **Usage:** *CustomerJourneyStages* are often associated with decisions by the customer to proceed to the next stage or abandon the journey. However, the *CustomerJourney* is not a process and has no alternative sequences or paths.

7.3.3.6.1 Attributes, Methods and Connectors:

Association Name: Association Type: Generalization **Stereotype:**
Source Class: CustomerJourneyStage **[]** **Target Class:** AbstractValueModel **[]**

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: CustomerJourneyStage **[**1] **Target Class:** Touchpoint **[**0..*]

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: CustomerJourneyStage **[**1] **Target Class:** CustomerJourneyStage **[**0..*]

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: CustomerJourneyStage **[**1] **Target Class:** CustomerJourneyStage **[**0..*]

Association Name: characterizes **Association Type:** Association **Stereotype:** «class»
Source Class: CustomerSegment **[**0..*] **Target Class:** CustomerJourneyStage **[**0..*]
Definition: The *characterizes* association represents a relationship between a *CustomerSegment* and a *CustomerJourneyStage*meaning that the *CustomerSegment* partially describes the state of mind or capability of the *Customer* at the *CustomerJourneyStage*.
Usage: This *characterizes* association represents the same kind of relationship as the *characterizes* association between the *CustomerSegment* and the *Touchpoint*. The range of the association is the union of *CustomerJourneyStage* and *Touchpoint*.

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: CustomerJourney **[**1] **Target Class:** CustomerJourneyStage **[**0..*]

7.3.3.7 *Class Name: CustomerSegment Class Type: Class Stereotype:*

Base Classes: AbstractValueModel

Definition: The *CustomerSegment* represents a characteristic of the *Customer* or a component of customer state of mind. *CustomerSegments* are owned by the Customer they describe.
Usage: When the owning *Customer* takes a *Customerjourney*, *CustomerSegments* should be created for each *CustomerJourneyStage* and *Touchpoint* in the *CustomerJourney*. These *CustomerSegments* characterize the customer or the customer's state of mind at the *CustomerJourneyStage* or *Touchpoint*.
CustomerSegments may be categorized by *ValueCategories*, allowing *CustomerSegments* to be factored e.g. by demographic characteristics or state of mind descriptions.

7.3.3.7.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: CustomerSegment **[]** **Target Class:** AbstractValueModel **[]**

Association Name: characterizes **Association Type:** Association **Stereotype:** «class»
Source Class: CustomerSegment **[**0..*] **Target Class:** Touchpoint **[**0..*]
Definition: The *characterizes* association represents a relationship between a *CustomerSegment* and a *Touchpoint* meaning that the *CustomerSegment* partially describes the state of mind or capability of the *Customer* at the *Touchpoint* interaction.
Usage: This *characterizes* association represents the same kind of relationship as the *characterizes* association between the *CustomerSegment* and the *CustomerJourneyStage*. The range of the association is the union of *CustomerJourneyStage* and *Touchpoint*.

Association Name: describes **Association Type:** Association **Stereotype:** «class»
Source Class: CustomerSegment **[**0..*] **Target Class:** Customer **[**1..*]
Definition: The *describes* association represents the relationship between a *CustomerSegment* and a *Customer* asserting that the *Customer* is partially described by the *CustomerSegment*
Usage: If there is no *CustomerJourney* associated with a *Customer*, then the set of all *CustomerSegments* that *describe* the *Customer* represent the total customer description.
If the *Customer* takes a *CustomerJourney*, then the *CustomerSegments* that *describe* the *Customer* may be qualified by the *characterizes* association to a *CustomerJourneyStage* or *Touchpoint*, indicating that the *CustomerSegment* partially *describes* the *Customer* at that *CustomerJourneyStage* or *Touchpoint*.

Association Name: characterizes **Association Type:** Association **Stereotype:** «class»
Source Class: CustomerSegment **[**0..*] **Target Class:** CustomerJourneyStage **[**0..*]
Definition: The *characterizes* association represents a relationship between a *CustomerSegment* and a *CustomerJourneyStage*meaning that the *CustomerSegment* partially describes the state of mind or capability of the *Customer* at the *CustomerJourneyStage*.
Usage: This *characterizes* association represents the same kind of relationship as the *characterizes* association between the *CustomerSegment* and the *Touchpoint*. The range of the association is the union of *CustomerJourneyStage* and *Touchpoint*.

Association Name: segment **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** CustomerSegment **[**0..1]

7.3.3.8 *Class Name: Touchpoint Class Type: Class Stereotype:*

Base Classes: AbstractValueModel
Definition: The *Touchpoint* represents an interaction between the business and the *Customer*.
Usage: One or more *Outcomes* created by the business are experienced by the *Customer* at the *Touchpoint* (e.g. the customer finds the answer to a question in a brochure created by the business, or the customer receives the business object that was ordered in good condition and on time). Alternatively, one or more *Outcomes* created by customer uses of

the business objects contained in the *ProductOffering* are experienced by the customer (e.g. the customer uses the purchased hammer to drive nails).
The analysis of value exchanged at the *Touchpoint* is represented by the *ValueCharacteristic* associated with the *Touchpoint*.

7.3.3.8.1 Attributes, Methods and Connectors:

Association Name: experiences **Association Type:** Association **Stereotype:** «class»
Source Class: Touchpoint **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *experiences* relation represents a relationship between an *Outcome* and a *Touchpoint* meaning that the *Customer* will experience the *Outcome* at the *Touchpoint*.
Usage: A *Touchpoint* experiences an *Outcome*:
1. when that *Outcome* is provided as a service or
2. when the *Outcome* is associated with acceptance of the *ProductOffering* (e.g. the customer is happy with the contract of sale), or
3. when the customer receives information that resolves a question, or
4. when the customer makes use of a business object that is provided as an *Outcome* of an exchange transaction

Association Name: Association Type: Generalization **Stereotype:**
Source Class: Touchpoint **[]** **Target Class:** AbstractValueModel **[]**

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: CustomerJourneyStage **[**1] **Target Class:** Touchpoint **[**0..*]

Association Name: characterizes **Association Type:** Association **Stereotype:** «class»
Source Class: CustomerSegment **[**0..*] **Target Class:** Touchpoint **[**0..*]
Definition: The *characterizes* association represents a relationship between a *CustomerSegment* and a *Touchpoint* meaning that the *CustomerSegment* partially describes the state of mind or capability of the *Customer* at the *Touchpoint* interaction.
Usage: This *characterizes* association represents the same kind of relationship as the *characterizes* association between the *CustomerSegment* and the *CustomerJourneyStage*. The range of the association is the union of *CustomerJourneyStage* and *Touchpoint*.

7.3.3.9 ***Class Name:*** *ValueCharacteristic* ***Class Type:*** *Class* ***Stereotype:*** *«association»*

Base Classes:
Definition: *ValueCharacteristic* represents the fit between the *ValueProposition* of a *ProductOffering* targeted at a *Customer*.
Usage: *ValueCharacteristic* is intended to be used with a library of *ValueCategories*, e.g. the Value Proposition Canvas categories of "use", "pain" and "gain". The *ValuePropositions*, *CustomerSegments* and *ValueItems* should be categorized by these categories. The *ValueCharacteristic* should be similarly categorized and should represent the fit of like categorized *ValuePropositions* and *CustomerSegments*. For example, a *ValueProposition* that relieves a "pain" should be fitted to a *CustomerSegment* that describes the "pain" by a *ValueCharacteristic* categorized as "pain".
Constraints: A top level *ValueCharacteristic* defines a fit value for a relationship between a single *Customer* and a single *ValueProposition*. The *ValueCharacteristic* may be decomposed and account for fit between *ValueItems* and *CustomerSegments* that are part of the top level *ValueProposition* and *Customer*.

7.3.3.9.1 Attributes, Methods and Connectors:

Association Name: proposition **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** ValueProposition **[**1]

Definition: The *proposition* leg of the *ValueCharacteristic* association identifies the *ValueProposition* that is a component of the value fit analysis represented by the *ValueCharacteristic*.
Usage: A *ValueCharacteristic* may identify specific *ValueItems* of the *ValueProposition* and represent weights that these items may have in the analysis, but this information must be placed in an *Annotation* of the *ValueCharacteristic* as there is no direct support for such facts in the meta-model.

Association Name: customer **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** Customer **[**1]
Definition: The *customer* leg of the *ValueCharacteristic* association identifies the *Customer* participating in the value fit analysis represented by the *ValueCharacteristic*.
Usage: The *ValueCharacteristic* may define specific *CustomerSegments*, *JourneyStages* and *Touchpoints* as having weigts in the value fit analysis. The meta-model does not provide direct support for asserting such facts, but they can be recorded in *Annotations* associated with the *ValueCharacteristic*.

Association Name: segment **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** CustomerSegment **[**0..1]

Association Name: item **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** ValueItem **[**0..1]

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** ValueCharacteristic **[**0..1]

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** ValueCharacteristic **[**0..*]

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** ValueCharacteristic **[**0..1]

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** ValueCharacteristic **[**0..*]

7.3.3.10 *Class Name: ValueItem Class Type: Class Stereotype:*

Base Classes: AbstractValueModel
Definition: A *ValueItem* represents the business belief that a *Customer* will value one or more *Outcomes* that are experienced by the *Customer*.
Usage: For example, the ability of a sales representative to answer customer questions about a product is deemed to be valuable to the customer. Another example *Outcome* is the exchange of a good for money; the associated *ValueItem* could represent the buyer's feeling of having gotten a good deal.

7.3.3.10.1 Attributes, Methods and Connectors:

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ValueItem **[]** **Target Class:** AbstractValueModel **[]**

Association Name: values **Association Type:** Association **Stereotype:** «class»
Source Class: ValueItem [0..*] **Target Class:** Outcome [0..*]
Definition: The *values* association links a *ValueItem* to an *Outcome* and provides a valuation of that *Outcome*. An *Outcome* may have several *ValueItems*, reflecting the ways in which different stakeholders perceive the *Outcome*. Likewise, a *ValueItem* may value multiple *Outcomes* that must be valued as a group.
Usage: The Outcome may be present in the business architecture model without an associated ValueItem, but ValueItems may not exist without being associated to an Outcome.

Association Name: produces **Association Type:** Association **Stereotype:** «class»
Source Class: ValueStreamStage [0..*] **Target Class:** ValueItem [0..*]
Definition: The *produces* shortcut association represents the fact of a *ValueItem* being produced by valuing one or more *Outcomes* produced by *Capabilities* that support the *ValueStreamStage* or *Processes* or *Activities* that implement the *ValueStreamStage*.
Usage: The *ValueItems* produced in a *ValueStreamStage* that is part of a *ValueStream* should contribute to the *ValueProposition* produced by the *ValueStream*. The meta-model does not enforce this restriction.

Association Name: item **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic [0..*] **Target Class:** ValueItem [0..1]

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ValueProposition [0..*] **Target Class:** ValueItem [0..*]
This "aggregates" association represents the composition of ValueItems into a ValueProposition. ValueItems may be shared with multiple ValueProposition s.

7.3.3.11 *Class Name: ValueProposition Class Type: Class Stereotype:*

Base Classes: AbstractValueModel
Definition: The *ValueProposition* represents a collection of values the business believes it is offering to customers, partners and other stakeholders through a *ProductOffering*.

7.3.3.11.1 Attributes, Methods and Connectors:

Association Name: of **Association Type:** Association **Stereotype:** «shortcut»
Source Class: ValueProposition [0..*] **Target Class:** ProductOffering [0..*]
Definition: The *of* association links a *VsluеProposition* to a *ProductOffering* and represents that is the *ValueProposition* is about the *ProductOffering*.
Constraint: Let VP1 be a ValueProposition and PO1 be a ProductOffering associated by o1, an "of" association. Then for some subset of ValueItems {VIj} aggregated by VP1 such that each VIj values an Outcome O1 that is incorporated in the ProductOffering PO1. Note that the ProductOfferings typically include Outcomes that are experienced by the Customer at a Touchpoint.

Association Name: target **Association Type:** Association **Stereotype:** «shortcut»
Source Class: ValueProposition [0..*] **Target Class:** Customer [0..*]
Definition: The *target* shortcut association asserts that the *ValueProposition* is intended to target the *Customer*.
Usage: This shortcut allows the architect to assert that a *ValueProposition* targets a *Customer* and imply that there is an unspecified *ValueCharacteristic* that represents the value fit analysis of the *ValueProposition* and *Customer*.
Constraint: Let VP1 be a ValueProposition and Cu1 be a Customer associated by t1, a target association. Then there should be a ValueCharacteristic VC1 with VP1 as its proposition and Cu1 as its customer. Also, there should be ValueItems {VIj} aggregated by VP1 that value Outcomes {Oj} incorporated in ProductOfferings {POj} accepted by LegalEntities {LEj} that are also the Customer Cu1.
Note that it is commonly the case that the set of individuals represented intensionally by the Customer element are also LegalEntities.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ValueProposition **[**0..1] **Target Class:** ValueProposition **[**0..*]
The aggregates association permits the VapueProposition to be composed from other ValuePropositions.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ValueProposition **[]** **Target Class:** AbstractValueModel **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ValueProposition **[**0..*] **Target Class:** ValueItem **[**0..*]
This "aggregates" association represents the composition of ValueItems into a ValueProposition. ValueItems may be shared with multiple ValuePropositions.

Association Name: produces **Association Type:** Association **Stereotype:** «class»
Source Class: ValueStream **[**0..*] **Target Class:** ValueProposition **[**0..*]
Definition: The *produces* association represents the creation of a *ValueProposition* by a *ValueStream*.
Usage: The *produces* relation effectively aggregates the produces relations between the *ValueStreamStages* that are part of this *ValueStream* and the *ValueItems* that comprise the *ValueProposition* of this *ValueStream*.

Association Name: proposition **Association Type:** Association **Stereotype:**
Source Class: ValueCharacteristic **[**0..*] **Target Class:** ValueProposition **[**1]
Definition: The *proposition* leg of the *ValueCharacteristic* association identifies the *ValueProposition* that is a component of the value fit analysis represented by the *ValueCharacteristic*.
Usage: A *ValueCharacteristic* may identify specific *ValueItems* of the *ValueProposition* and represent weights that these items may have in the analysis, but this information must be placed in an *Annotation* of the *ValueCharacteristic* as there is no direct support for such facts in the meta-model.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ValueProposition **[**0..1] **Target Class:** ValueProposition **[**0..*]
The aggregates association permits the VapueProposition to be composed from other ValuePropositions.

7.3.3.12 *Class Name: ValueStream Class Type: Class* Stereotype:

Base Classes: AbstractValueModel
Definition: A *ValueStream* represnts a set of stages that accumulate value represented by the *ValueProposition*.
Usage: The notion that value accumulation can be broken into components has been central to strategic practices such as Michael Porter's value chains and high level, value oriented process architecture. The notion is well established in business architecture and analysis practice.
In some cases, it may be desirable to order the stages in a *ValueStream*. For example, there is a natural order to the design, build, inventory, sell and service stages of a manufacturing business. However, in other cases, such as health care, it is difficult to order the stages of triage, diagnosis, treatment, prevention. Consequently, no strong semantic interpretation should be associated with the ordering of *ValueStreamStages* in a *ValueStream*.

7.3.3.12.1 Attributes, Methods and Connectors:

Association Name: produces **Association Type:** Association **Stereotype:** «class»
Source Class: ValueStream **[**0..*] **Target Class:** ValueProposition **[**0..*]
Definition: The *produces* association represents the creation of a *ValueProposition* by a *ValueStream*.
Usage: The *produces* relation effectively aggregates the produces relations between the *ValueStreamStages* that are part of this *ValueStream* and the *ValueItems* that comprise the *ValueProposition* of this *ValueStream*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ValueStream **[]** **Target Class:** AbstractValueModel **[]**

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: ValueStream **[**1] **Target Class:** ValueStreamStage **[**0..*]
The owns association represents that a ValueStream may be composed of ValueStreamStages. ValueStreamStages cannot be shared with other ValueStream instances.
This association may be ordered to facilitate the presentation of ValueStreamStages, but no business operating model implications should be assumed based on the ordering of ValueStreamStages.

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractProcess **[**0..*] **Target Class:** ValueStream **[**0..*]
Definition: The *implements* association asserts that a *Process* or *Activity* implements a *ValueStream* and implies that *Outcomes* of the *Process* are valued as *ValueItems* incorporated into the *ValueProposition* delivered by the *ValueStream*.
Usage: It is not permitted for a *Process* or *Activity* to implement both a *ValueStream* and one or more *ValueStreamStages* of that *ValueStream*. A *Process* implementing a *ValueStream* may have aggregated *Processes* that implement *ValueStreamStages* of the *ValueStream*.

7.3.3.13 *Class Name: ValueStreamStage Class Type: Class* Stereotype:

Base Classes: AbstractValueModel
Definition: *ValueStreamStages* represent significant points of value creation in a *ValueStream*.
Usage: *ValueStreamStages* are dependent on their containing *ValueStream* and are not shared with other *ValueStreams*. When the business architect intends to represent similar *ValueStreamStages* in different *ValueStreams*, the similarity should be represented by having the same set of relationships with the supporting *Capabilities*.
ValueStreamStages are often defined by analysis and decomposition of the *ValueProposition*. They may also respresent stages of completion of a "build to order" product that are of interest to the *Customer* (e.g. stages where the *Customer* may make changes in specifications of the ordered product).

7.3.3.13.1 Attributes, Methods and Connectors:

Association Name: produces **Association Type:** Association **Stereotype:** «class»
Source Class: ValueStreamStage **[**0..*] **Target Class:** ValueItem **[**0..*]
Definition: The *produces* shortcut association represents the fact of a *ValueItem* being produced by valuing one or more *Outcomes* produced by *Capabilities* that support the *ValueStreamStage* or *Processes* or *Activities* that implement the *ValueStreamStage*.
Usage: The *ValueItems* produced in a *ValueStreamStage* that is part of a *ValueStream* should contribute to the *ValueProposition* produced by the *ValueStream*. The meta-model does not enforce this restriction.

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: ValueStreamStage **[**0..1] **Target Class:** ValueStreamStage **[**0..*]
The aggregates association permits the ValueStreamStage to be decomposed into more detailed ValueStreamStages. This decomposition should be used sparingly if at all, as there is typically little analytic value to be obtained by breaking ValueStreams into more than a couple of dozen ValueStreamStages. The association may be ordered if appropriate.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ValueStreamStage **[]** **Target Class:** AbstractValueModel **[]**

Association Name: supports **Association Type:** Association **Stereotype:** «shortcut»

Source Class: Capability [0..*] **Target Class:** ValueStreamStage [0..*]
Definition: The *supports* shortcut association represents the relationship between a *Capability* and a *ValueStreamStage* that means that the *Capability* is needed in order to create an *Outcome* valued as a *ValueItem* produced by the *ValueStreamStage*.
Usage: For example, an important stage in the creation of value for a manipulation puzzle such as Rubik's Cobe is the production of a manufacturable design of the puzzle. A failure here can result in a puzzle that cannot be manufactured or is not attractive to purchasers.
Outcomes providing value are:

- a positive maniufacturability review;
- a positive customer reaction in a focus group.

The *Capabilities* needed to produce these Outcomes are: product design, manufacturability analysis, focus group management. For this example, the previous three *Capability* instances would be associated with the "Design Ready" *ValueStreamStage*.
Constraint: Let C1 be a Capability and VSS1 be a ValueStreamStage and S1 be a supports association linking C1 and VSS1, then there should exist an Outcome O1 produced by C1 and a ValueItem V1 that values O1 and is produced by VSS1.

Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: ValueStream [1] **Target Class:** ValueStreamStage [0..*]
The owns association represents that a ValueStream may be composed of ValueStreamStages. ValueStreamStages cannot be shared with other ValueStream instances.
This association may be ordered to facilitate the presentation of ValueStreamStages, but no business operating model implications should be assumed based on the ordering of ValueStreamStages.

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractProcess [0..*] **Target Class:** ValueStreamStage [0..*]
Definition: The *implements* association links a *Process* or *Activity* to a *ValueStreamStage*, representing that the *Process* or *Activity* may be executed and output an *Outcome* that is valued by a *ValueItem* that is produced by the *ValueStreamStage*.
Usage: As *ValueStreamStages* are not shared, the set of *Process/Activity* elements that implement a *ValueStreamStage* should be complete. The *Processes* and *Activities* in this set may be aggregated into several parent *Processes*. An operating semantic (such as alternative process implementations) is not implied by this syntactic configuration, but may be made specific by aligning the *Processes* with external process models that specify an operating semantic.
Usage: It is not permitted for a *Process* or *Activity* to implement both a *ValueStream* and one or more *ValueStreamStages* of that *ValueStream*. A *Process* implementing a *ValueStream* may have aggregated *Processes* that implement *ValueStreamStages* of the *ValueStream*.

Association Name: triggers **Association Type:** Association **Stereotype:** «shortcut»
Source Class: Outcome [0..*] **Target Class:** ValueStreamStage [0..*]
Definition: The *triggers* association represents that the Outcome allows or initiates the *ValueStreamStage*.
Usage: It is often useful in analysis to record the *Outcomes* that constitute the important beginning events of a *ValueStreamStage* The *triggers* association allows the architect to record these relationships.
Constraint: Let O1 be an Outcome experienced at a Touchpoint T1 and VSS1 be a ValueStreamStage where O1 triggers VSS1, then there should exist a ValueItem VI1 that values O1 and is produced by VSS1.

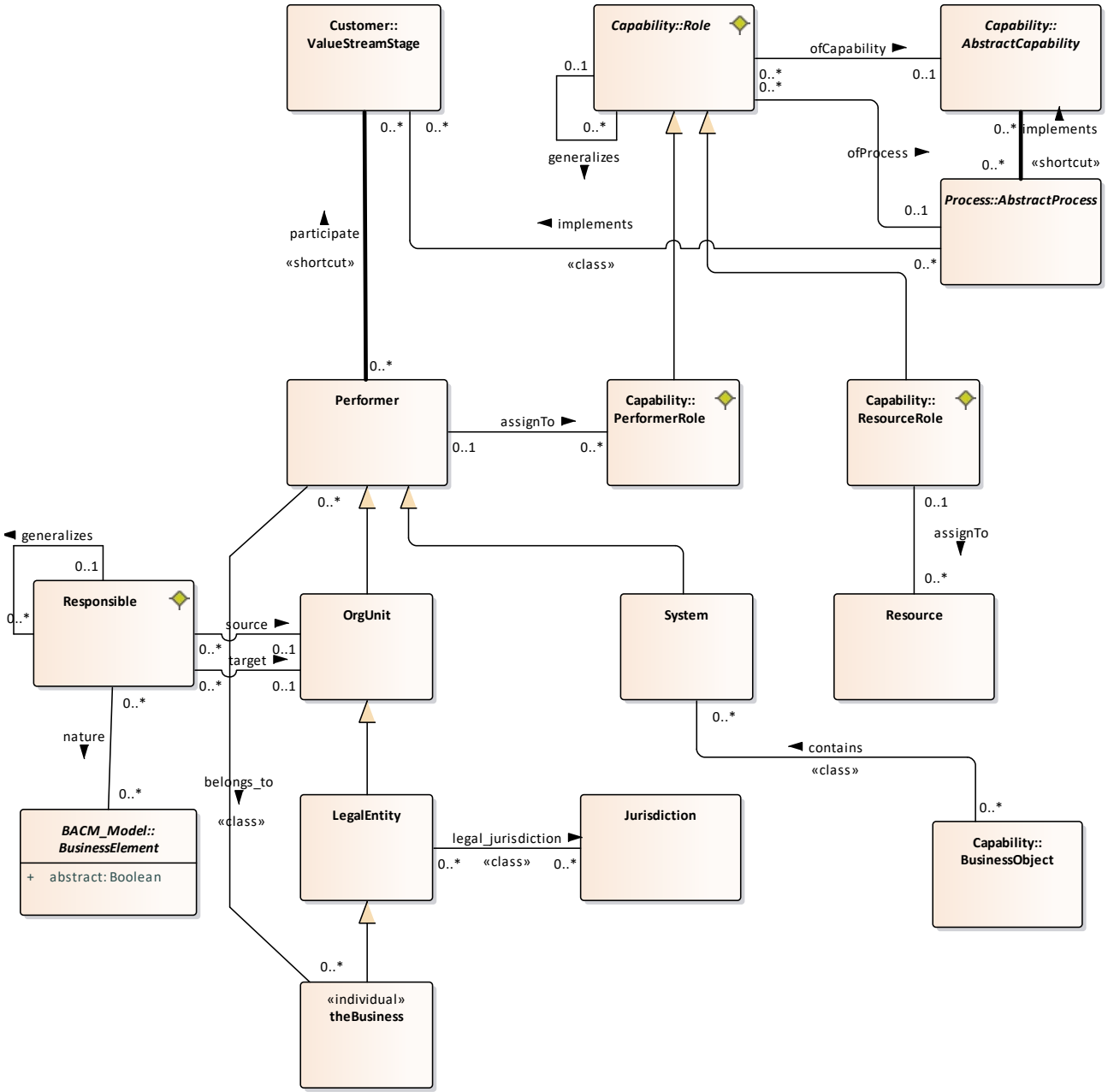
Association Name: owns **Association Type:** Association **Stereotype:**
Source Class: ValueStreamStage [0..1] **Target Class:** ValueStreamStage [0..*]
The aggregates association permits the ValueStreamStage to be decomposed into more detailed ValueStreamStages. This decomposition should be used sparingly if at all, as there is typically little analytic value to be obtained by breaking ValueStreams into more than a couple of dozen ValueStreamStages. The association may be ordered if appropriate.

Association Name: participate **Association Type:** Association **Stereotype:** «shortcut»
Source Class: Performer [0..*] **Target Class:** ValueStreamStage [0..*]

Definition: The *participate* shortcut asserts that a *Performer* is assigned to an unspecified *PerformerRole* of an unspecified *Capability* hat supports the *ValueStreamStage*.
Constraint: Let P1 be a Performer participating in a ValueStreamStage VSS1. There should exist a PerformerRole PR1 that P1 is assignedTo and PR1 is a PerformerRole ofCapability C1 that produces some Outcme O1 valued by a ValueItem VI1 that is produced by ValueStream VSS1.

7.3.4 **Package:** Organization

7.3.4.1 ***Diagram:*** *Organization*



The Organization diagram defines abstract syntax representing relationships between structural components of the organization (OrgUnits, Systems and Resources) and Capabilities and/or Processes.

7.3.4.2 *Class Name:* Jurisdiction *Class Type:* Class *Stereotype:*

Base Classes: AbstractOperatingModel
Definition: The *Jurisdiction* represents a legal jurisdictions with powers to charter and/or regulate businesses.

7.3.4.2.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Jurisdiction **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: legal_jurisdiction **Association Type:** Association **Stereotype:** «class»
Source Class: LegalEntity **[**0..*] **Target Class:** Jurisdiction **[**0..*]
Definition: The "legal_jurisdiction"association instances represent the jurisdiction to which an Enterprise belongs.
Usage: The meta-model allows Enterprise instances to be in multiple jurisdictions (e.g. a business that is subject to local, provincial and stage laws, regulations and processes).

7.3.4.3 *Class Name:* LegalEntity *Class Type:* Class *Stereotype:*

Base Classes: OrgUnit
Definition: *LegalEntity* represents a human organization that is subject to the laws and regulations of a *Jurisdiction*..

7.3.4.3.1 Attributes, Methods and Connectors:

Association Name: legal_jurisdiction **Association Type:** Association **Stereotype:** «class»
Source Class: LegalEntity **[**0..*] **Target Class:** Jurisdiction **[**0..*]
Definition: The "legal_jurisdiction"association instances represent the jurisdiction to which an Enterprise belongs.
Usage: The meta-model allows Enterprise instances to be in multiple jurisdictions (e.g. a business that is subject to local, provincial and stage laws, regulations and processes).

Association Name: provides **Association Type:** Association **Stereotype:** «class»
Source Class: LegalEntity **[**0..*] **Target Class:** Offering **[**0..*]
Definition: The provider relation represents a relationship between a LegalEntity and an Offering created by the LegalEntity that is intended to solicit the business of designated parties identified by the consumer relation.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: LegalEntity **[]** **Target Class:** OrgUnit **[]**

Association Name: accepts **Association Type:** Association **Stereotype:** «class»
Source Class: LegalEntity **[**0..*] **Target Class:** Offering **[**0..*]
Definition: The acceptor relation represents a relationship between a party external to the business and an Offering intended to solicit business from the acceptor party represented by the Customer..

Usage: Note that offering dies not represent a sale; in a sale, each party gives something of value and receives something of value.

Association Name: buyer **Association Type:** Association **Stereotype:** «class»
Source Class: MerchandiseOutcome **[**0..*] **Target Class:** LegalEntity **[**0..*]
Definition: The *buyer* association is related to the *accepts* association and asserts that a *LegalEntity* (typically also a *Customer*) is the targeted buyer of the *MerchandiseOutcome*.
Usage: The buyer of the *MerchandiseOutcome* is not necessarily the *LegalEntity* that accepts the *MerchandiseOffering* in the case when the acceptor is acting as an agent for the buyer.

Association Name: supplier **Association Type:** Association **Stereotype:** «class»
Source Class: ProcurementOutcome **[**0..*] **Target Class:** LegalEntity **[**0..*]
Definition: The *supplier* association asserts that the *LegalEntity* is to be the supplier of the *ProcurementOutcome*.
Usage: The supplier *LegalEntity* is not necessarily the same as the provider *LegalEntity* for the *ProcurementOffering* incorporating the *ProcurementOutcome*.

Association Name: provider **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOutcome **[**0..*] **Target Class:** LegalEntity **[**0..*]
Definition: The *provider* association asserts that a *LegalEntity* is the provider of the *OutsourcedServiceOutcome*.
Usage: The provider *LegalEntity* is not necessarily the same *LegalEntity* as the provider of the *OutsourcedServiceOffering*.

Association Name: recipient **Association Type:** Association **Stereotype:** «class»
Source Class: ServiceOutcome **[**0..*] **Target Class:** LegalEntity **[**0..*]
Definition: The *recipient* association asserts that the *LegalEntity* is the recipient of *ServiceOutcomes* incorporated into a *ServiceOffering*.
Usage: It is not necessarily the case that the recipient *LegalEntity* is the same as the accepting *LegalEntity* of the incorporating *ServiceOffering*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Customer **[]** **Target Class:** LegalEntity **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: theBusiness **[]** **Target Class:** LegalEntity **[]**

7.3.4.4 *Class Name:* OrgUnit *Class Type:* Class ***Stereotype:***

Base Classes: Performer
Definition: The OrgUnit meta-class represents the various types of human organizations and individuals capable of acting as performers.

7.3.4.4.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: OrgUnit **[]** **Target Class:** Performer **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: LegalEntity **[]** **Target Class:** OrgUnit **[]**

Association Name: target **Association Type:** Association **Stereotype:**
Source Class: Responsible **[**0..*] **Target Class:** OrgUnit **[**0..1]
Definition: The *target* leg of the *Responsible* association asserts that the *OrgUnit* is responsible to another *OrgUnit* determined by the *source* leg of the *Responsible* association.

Association Name: source **Association Type:** Association **Stereotype:**
Source Class: Responsible **[**0..*] **Target Class:** OrgUnit **[**0..1]
Definition: The *source* leg of the *Responsible* association asserts that the source *OrgUnit* is responsible in some way for the target *OrgUnit*.

7.3.4.5 *Class Name: Performer Class Type: Class* ***Stereotype:***

Base Classes: AbstractOperatingModel
Definition: The *Performer* represents entities that are capable of performing *PerformerRoles*. *Performer* has two specializations: *OrgUnit* and *System*, representing a human components of the business or a system.
Usage: The *Performer* is concrete to allow modeling the need for a Performer without committing to a human assignment, a system assignment, or a combination of both. *Performers* are generally described by skills or abilities. The *Performer* and Resource *classes* are not disjoint (i.e. an entity may be a *Resource* with respect to one *Capability* while being a *Performer* with respect to another *Capability*). An entity may not be both a *Performer* and a *Resource* of the same *Capability*.

7.3.4.5.1 Attributes, Methods and Connectors:

Association Name: participate **Association Type:** Association **Stereotype:** «shortcut»
Source Class: Performer **[**0..*] **Target Class:** ValueStreamStage **[**0..*]
Definition: The *participate* shortcut asserts that a *Performer* is assigned to an unspecified *PerformerRole* of an unspecified *Capability* hat supports the *ValueStreamStage*.
Constraint: Let P1 be a Performer participating in a ValueStreamStage VSS1. There should exist a PerformerRole PR1 that P1 is assignedTo and PR1 is a PerformerRole ofCapability C1 that produces some Outcme O1 valued by a ValueItem VI1 that is produced by ValueStream VSS1.

Association Name: belongs_to **Association Type:** Association **Stereotype:** «class»
Source Class: Performer **[**0..*] **Target Class:** theBusiness **[**0..*]
Definition: belongs_to represents that a Performer belongs to theBusiness.
Usage: In a model, there will typically be semantic overlap between belongs_to and Responsible. However, the metamodel syntax presently does not allow the specification of this overlap. The business architect may choose to use belongs_to in lieu of Responsible or vice versa. It would not be recommended to use both where there is the potential of semantic overlap.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Performer **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: CapabilityImplementation **[**0..*] **Target Class:** Performer **[**0..*]

Association Name: assignTo **Association Type:** Association **Stereotype:**
Source Class: PerformerRole **[**0..*] **Target Class:** Performer **[**0..1]
Definition: The *assignment* leg of the *PerformerRole* association represents that a *Performer* is assigned to the *PerformerRole*.

Association Name: **Association Type:** Generalization **Stereotype:**

Source Class: System [] **Target Class:** Performer []

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: OrgUnit [] **Target Class:** Performer []

7.3.4.6 *Class Name: Resource Class Type: Class Stereotype:*

Base Classes: AbstractOperatingModel
Definition: *Resource* represents an entity that is required or needed by a *ResourceRole* but is not a *Performer* and does not become a part of a *BusinessObject* or *InformationItem* associated with any *Outcome* produced by the *Capability* or *CapabilityBehavior*.
Usage: These relationships are represented by the assignment of structural components of the business to roles of *Capabilities/CapabilityBehaviors* and *Processes/Activities*.

7.3.4.6.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Resource [] **Target Class:** AbstractOperatingModel []

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: CapabilityImplementation [0..*] **Target Class:** Resource [0..*]

Association Name: assignTo **Association Type:** Association **Stereotype:**
Source Class: ResourceRole [0..1] **Target Class:** Resource [0..*]
Definition: The *assignTo* leg of the *ResourceRole* association represents that a *Resource* has been assigned to a *ResourceRole*.

7.3.4.7 *Class Name: Responsible Class Type: Class Stereotype: «association»*

Base Classes: AbstractOperatingModel
Definition: *Responsible* represents an unspecified kind of responsibility relationship between a source *OrgUnit* and a target *OrgUnit*. This relationship may also include a *BusinessElement* that defines the nature of the association.
Usage: *Responsible* instances may form generalization hierarchies. The business architect may create these hierarchies to represent particular types of responsibility relationships found in the business. When specializing Responsible instances, the source, target and nature association legs may be subsetted to restrict them to particular types of *OrgUnit* and *BusinessElement*.

7.3.4.7.1 Attributes, Methods and Connectors:

Association Name: nature **Association Type:** Association **Stereotype:**
Source Class: Responsible [0..*] **Target Class:** BusinessElement [0..*]
Definition: The *nature* leg of the *Responsible* designates a *BusinessElement* that helps define the scope and/or nature of the *Responsible* association.

Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: Responsible [0..1] **Target Class:** Responsible [0..*]

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Responsible [] **Target Class:** AbstractOperatingModel []

Association Name: target **Association Type:** Association **Stereotype:**
Source Class: Responsible [0..*] **Target Class:** OrgUnit [0..1]
Definition: The *target* leg of the *Responsible* association asserts that the *OrgUnit* is responsible to another *OrgUnit* determined by the *source* leg of the *Responsible* association.

Association Name: source **Association Type:** Association **Stereotype:**
Source Class: Responsible [0..*] **Target Class:** OrgUnit [0..1]
Definition: The *source* leg of the *Responsible* association asserts that the source *OrgUnit* is responsible in some way for the target *OrgUnit*.

Association Name: generalizes **Association Type:** Association **Stereotype:**
Source Class: Responsible [0..1] **Target Class:** Responsible [0..*]

7.3.4.8 *Class Name: System Class Type: Class Stereotype:*

Base Classes: Performer
Definition: The *System* represents the concept of a non-human performer, such as an IT system or a robot. Tools such as jigs and drills are not considered *Perfomers* for the purpose of business architecture. They should be modeled as *Resources*.

7.3.4.8.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: System [] **Target Class:** Performer []

Association Name: contains **Association Type:** Association **Stereotype:** «class»
Source Class: BusinessObject [0..*] **Target Class:** System [0..*]
Definition: The *contains* association represents that *BusinessObjects* may contain *System*.
Usage: In some cases, a *BusinessObject* and a *System* may represent different aspects of the same entity; since meta-classes in this meta-model are not assumed disjoint, an instance may have both meta-classes as parents. However, a *BusinessObject* may contain several *Systems* and other *BusinessObjects* as well. In this case, the Systems are not aspects of the primary *BusinessObject*, and the contains association allows the architect to represent this. An example of this latter case is a primary *BusinessObject* that is a computer and the System is a software package hosted on that computer (along with other software packages). The software package may be an instance of a *System* and also an instance of a *BusinessObject* (i.e. the code)

7.3.4.9 *Class Name: theBusiness Class Type: Class Stereotype: «individual»*

Base Classes: LegalEntity
Definition: *theBusiness* represents the particular business that is the subject of the business architecture model.
Usage: Only one instance of this metaclass is allowed in a model. This instance should be the sole *provider* of the top level *ProductOffering*, representing that the business is responsible for the entire product offering, parts of which may be provided by business partners represented as *LegalEntities*.

7.3.4.9.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: theBusiness **[]** **Target Class:** LegalEntity **[]**

Association Name: belongs_to **Association Type:** Association **Stereotype:** «class»
Source Class: Performer **[**0..*] **Target Class:** theBusiness **[**0..*]
Definition: belongs_to represents that a Performer belongs to theBusiness.
Usage: In a model, there will typically be semantic overlap between belongs_to and Responsible. However, the metamodel syntax presently does not allow the specification of this overlap. The business architect may choose to use belongs_to in lieu of Responsible or vice versa. It would not be recommended to use both where there is the potential of semantic overlap.

Association Name: procurer **Association Type:** Association **Stereotype:** «class»
Source Class: ProcurementOutcome **[**0..*] **Target Class:** theBusiness **[**1]
Definition: The *procurer* association asserts that *theBusiness* is the procurer of the *ProcurementOutcome*
Usage: The procurer *LegalEntity* is not necessarily the acceptor *LegalEntity* of the *ProcurementOffering*

Association Name: seller **Association Type:** Association **Stereotype:** «class»
Source Class: MerchandiseOutcome **[**0..*] **Target Class:** theBusiness **[**1]
Definition: The *seller* association asserts that *theBusiness* is the seller of the *MerchandiseOutcome* incorporated in the *MerchandiseOffering*.
Usage: This association does not imply that the *LegalEntity* providing the *MerchandiseOffering* is the same as the seller of the *MerchandiseOutcome*.

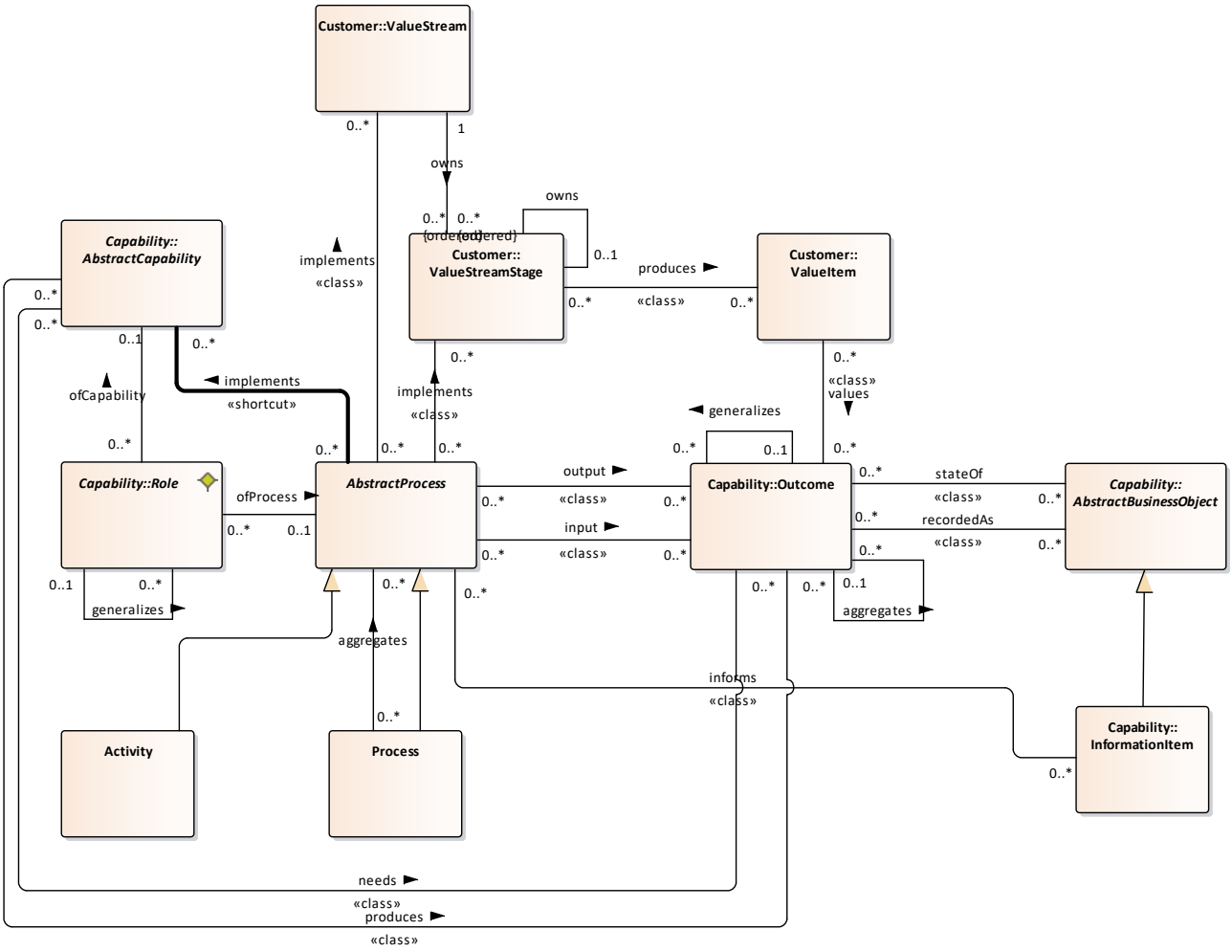
Association Name: recipient **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOutcome **[**0..*] **Target Class:** theBusiness **[**1]
Definition: The *recipient* association assserts that *theBusiness* is the intended recipient and beneficiary of the *OutsourcedServiceOutcome*.
Usage: The *recipient* is not necessarily the same *LegalEntity* that accepts the *OutsourcedServiceOffering*.

Association Name: provider **Association Type:** Association **Stereotype:** «class»
Source Class: ServiceOutcome **[**0..*] **Target Class:** theBusiness **[**0..1]
Definition: The *provider* association asserts that *theBusiness* is the provider of the *ServiceOutcome* incorporated into a *ServiceOffering*.
Usage: The provider *LegalEntity* is not necessarily the same as the *LegalEntity* that provides the *ServiceOffering* that incorporates the *ServiceOutcome*.

7.3.5 Package: Process

The Process package defines a primary perspective on the abstract operating model of a business that is based on the flow of Outcomes and their BusinessObjects and InformationItems between activities.
The Process package also defines how Processes and Activities are aligned with the stages of a ValueStream, allowing ValueStreams, ValueStreamStages, ValuePropositions and ValueItems to be implemented as processes.

7.3.5.1 *Diagram: Process*



The Process diagram defines abstract syntax for a high level process model, for representing how components of a process implement a value stream's *ValueStreamStages*, and for relating *Capabilities* and *Processes/Activities* through their related *Outcomes* and the *Outcome* associated *BusinessObjects* and *InformationItems*..
Processes are modeled as *Activities* and *Processes*. A *Process* is an aggregator of other *Processes* and *Activities*.

7.3.5.2 *Class Name: AbstractProcess Class Type: Class* ***Stereotype:***

Base Classes: AbstractOperatingModel
Definition: *AbstractProcess* is not intended to represent a busines concept. It is a metamodeling technical device to share relationships with *Process* and *Activity* that would otherwise need to be duplicated.
Usage: *AbstractProcess* is an abstract meta-class that provides input and output *Outcome* connection abilities to both *Process* and *Activity*. It also provides the *role* link to *PerformerRoles* and *ResourceRoled*. It also provides the *implements* link to a ValueStream or some *ValueStreamStages*. Since *implements* aligns the scope of the *Process* with either a *ValueStreamStage* or a *ValueStream*, it should not link both a *ValueStreamStage* and the *ValueStream* the *ValueStreamStage* belongs to.

7.3.5.2.1 Attributes, Methods and Connectors:

Association Name: implements **Association Type:** Association **Stereotype:** «shortcut»
Source Class: AbstractProcess **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: The *implements* shortcut represents that a *CapabilityBehavior* and an *AbstractProcess* have related *Outcomes*
Usage: It could also be justified by a common *Performer* playing a role in the *CapabilityBehavior* and the *AbstractProcess*
Constraint: Let P1 be a Process and C1 be a capability associated by an implements association. Then there should exist Outcomes O1 and O2 such that O1 is produced by (needed by) C1 and O2 is output (input) by P1 and O1 and O2 are related such that they are the same Outcome or one is in the extended aggregation of the other or one is the extended specialization of the other or any chain of relationships connecting the two where the chain consists exclusively of being aggregated by or being a specialization of the predecessor Outcome.

Association Name: input **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractProcess **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *input* association represents that the *AbstractProcess inputs* (requires or can use) the *Outcome*.
Usage: The *input* association in the process perspective corresponds to the *needs* association in the capability perspective. While it is possible that the same *Outcome* is *input* to a process and *needed* by a capability, it will usually be the case that a process *inputs* an *Outcome* that is related by generalization or aggregation (or another relation between *Outcomes*) to an Outcome *needed* by a capability. The process and capability in this case are semantically related by the relationship between their *Outcomes*.
For example, a CustomerInformationManagement *Capability* may *need* CustomerInformation_change_pending *Outcome.* A process that updates the CustomerAddress (a component of CustomerInformation) may *input* CustomerAddress_change_pending *Outcome*, that is related to the other *Outcome* by aggregation.

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractProcess **[**0..*] **Target Class:** ValueStreamStage **[**0..*]
Definition: The *implements* association links a *Process* or *Activity* to a *ValueStreamStage*, representing that the *Process* or *Activity* may be executed and output an *Outcome* that is valued by a *ValueItem* that is produced by the *ValueStreamStage*.
Usage: As *ValueStreamStages* are not shared, the set of *Process/Activity* elements that implement a *ValueStreamStage* should be complete. The *Processes* and *Activities* in this set may be aggregated into several parent *Processes*. An operating semantic (such as alternative process implementations) is not implied by this syntactic configuration, but may be made specific by aligning the *Processes* with external process models that specify an operating semantic.
Usage: It is not permitted for a *Process* or *Activity* to implement both a *ValueStream* and one or more *ValueStreamStages* of that *ValueStream*. A *Process* implementing a *ValueStream* may have aggregated *Processes* that implement *ValueStreamStages* of the *ValueStream*.

Association Name: output **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractProcess **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *output* association represents that the *AbstractProcess outputs* the *Outcome*.
Usage: The *output* association in the process perspective corresponds to the *produces* association in the capability perspective. While it is possible that the same *Outcome* is *output* from a process and *produced* by a capability, it will usually be the case that a process *outputs* an *Outcome* that is related by generalization or aggregation (or another relation between *Outcomes*) to an Outcome *produced* by a capability. The process and capability in this case are semantically related by the relationship between their *Outcomes*.
For example, a CustomerInformationManagement *Capability* may *produce* CustomerInformation_is_current and CustomerInformation_is_correct *Outcomes.* A process that updates the CustomerAddress (a component of CustomerInformation) may *produce* CustomerAddress_is_current and CustomerAddress_is_correct *Outcomes*, that are related to the other *Outcomes* by aggregation.

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: AbstractProcess **[**0..*] **Target Class:** ValueStream **[**0..*]

Definition: The *implements* association asserts that a *Process* or *Activity* implements a *ValueStream* and implies that *Outcomes* of the *Process* are valued as *ValueItems* incorporated into the *ValueProposition* delivered by the *ValueStream*.
Usage: It is not permitted for a *Process* or *Activity* to implement both a *ValueStream* and one or more *ValueStreamStages* of that *ValueStream*. A *Process* implementing a *ValueStream* may have aggregated *Processes* that implement *ValueStreamStages* of the *ValueStream*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: AbstractProcess **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: specifies **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOffering **[**0..*] **Target Class:** AbstractProcess **[**0..*]
Definition: The specifies association represents a relationship between an OutsourcingOffering and a CapabilityBehavior or Process or *CapabilityImplementation*, in which the *Customer* would be required or advised to perform the *CapabilityBehavior* or *Process* and/or provide *Performers* and *Resources* as specified by the *CapabilityImplementation* as an implementation of the *CapabilityBehavior* or *Process*..
Usage: This association is effectively combined with the two other *specifies* relation whose source is *OutsourcingOffering* so that the range of the combined associations is the union of *AbstractProcess*, *CapabilityBehavior* and *CapabilityImplementation*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Activity **[]** **Target Class:** AbstractProcess **[]**

Association Name: ofProcess **Association Type:** Association **Stereotype:**
Source Class: Role **[**0..*] **Target Class:** AbstractProcess **[**0..1]
Definition: The *ofProcess* leg of the *Role* association links a *PerformerRole* or *ResourceRole* to a *Process* or *Activity*.

Association Name: informs **Association Type:** Association **Stereotype:** «class»
Source Class: InformationItem **[**0..*] **Target Class:** AbstractProcess **[**0..*]
Definition: The *informs* association represents the influence of information (represented by *InformationItem*) on a *Process* or *Activity.*
Usage: Information, such as weather, production targets, and results of a business analysis project will change how a business behaves and how a *Process* or *Activity* performs.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Process **[]** **Target Class:** AbstractProcess **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Process **[**0..*] **Target Class:** AbstractProcess **[**0..*]
A Process aggregates other Processes and Activities.

7.3.5.3 *Class Name:* Activity *Class Type:* Class ***Stereotype:***

Base Classes: AbstractProcess
Definition: *Activities* represent atomic (non-decomposable) activities.

7.3.5.3.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**

Source Class: Activity **[]** **Target Class:** AbstractProcess **[]**

7.3.5.4 *Class Name: Process Class Type: Class Stereotype:*

Base Classes: AbstractProcess
Definition: *Process* represents an aggregation of *Activities* and other *Processes*.
Usage: A *Process* aggregated into another *Process* means that the child *Process* may be executed as a part of executing the parent *Process*. The abstract syntax does not specify a starting or ending *Process/Activity*; consequently starting and ending *Activities/Processes* aggregated by another *Process* must be determined by analysis of the *Outcome* connections.

7.3.5.4.1 Attributes, Methods and Connectors:

Association Name: Association Type: Generalization **Stereotype:**
Source Class: Process **[]** **Target Class:** AbstractProcess **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Process **[**0..*] **Target Class:** AbstractProcess **[**0..*]
A Process aggregates other Processes and Activities.

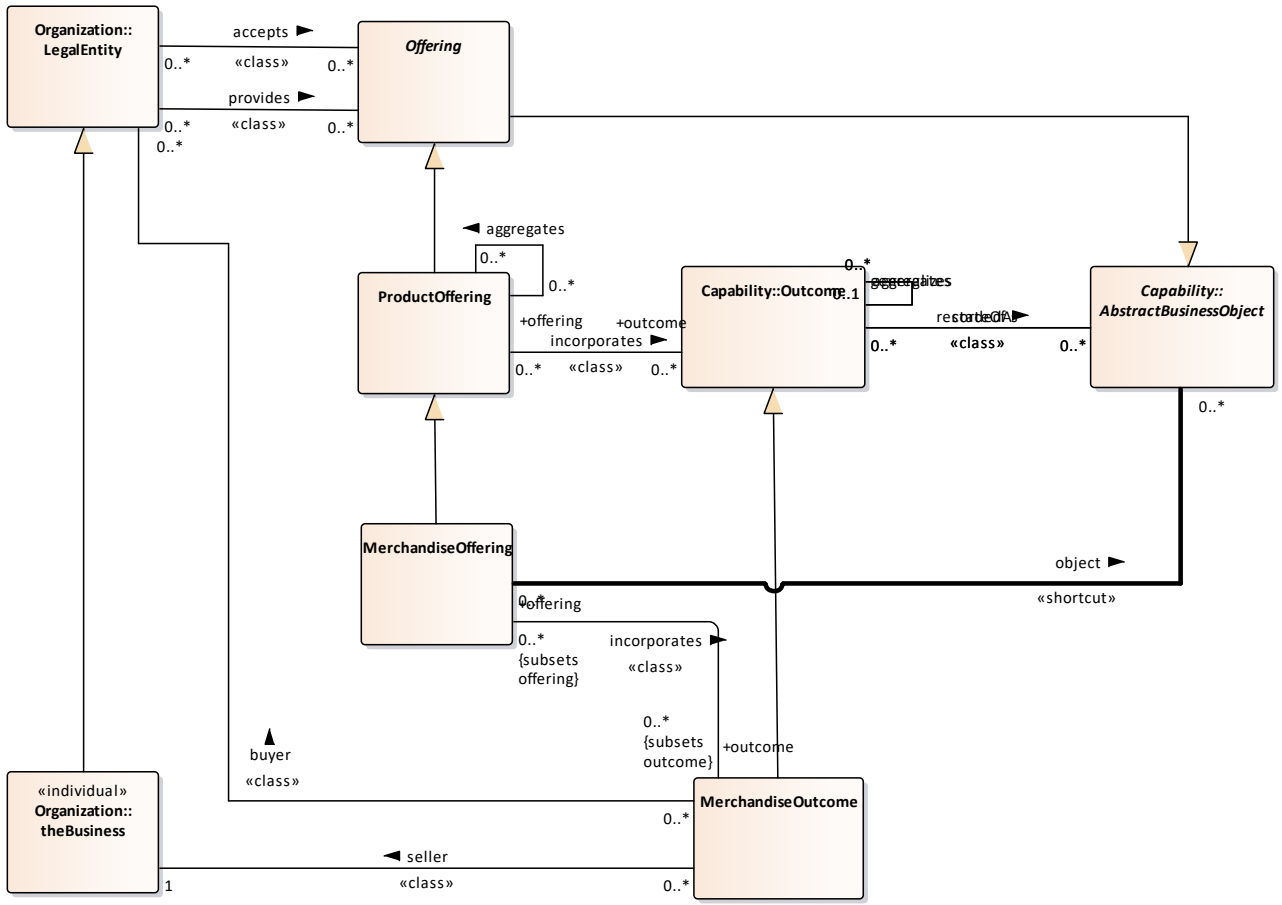
7.3.6 Package: Product

The Product package specifies a non-specific form (ProductOffering) of a bundle of terms and conditions that a business will publish about its product offerings. It also specifies:

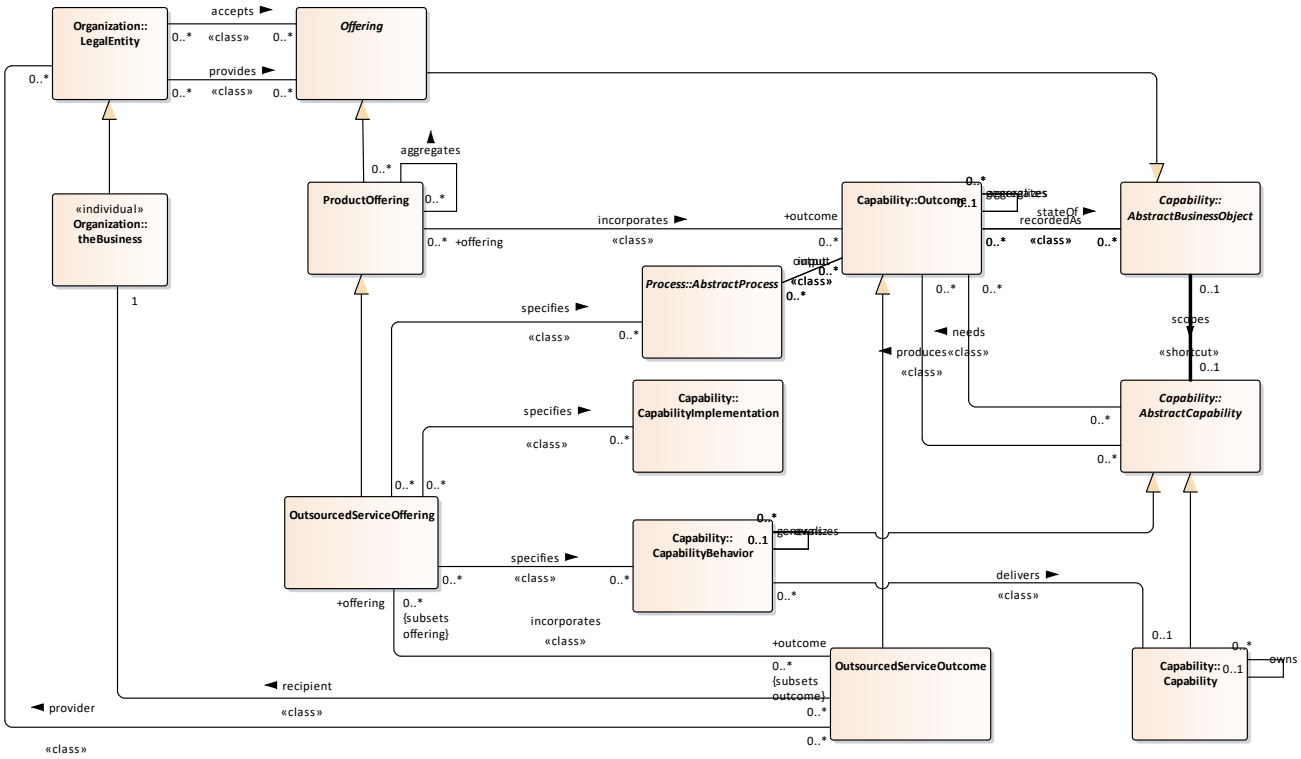
- Good - a ProductOffering that incorporates change of ownership or possession.
- Service - a ProductOffering that incorporates the delivery of an Outcome to a Customer.

the package also includes a Category subtype for categorizing ProductOfferings.

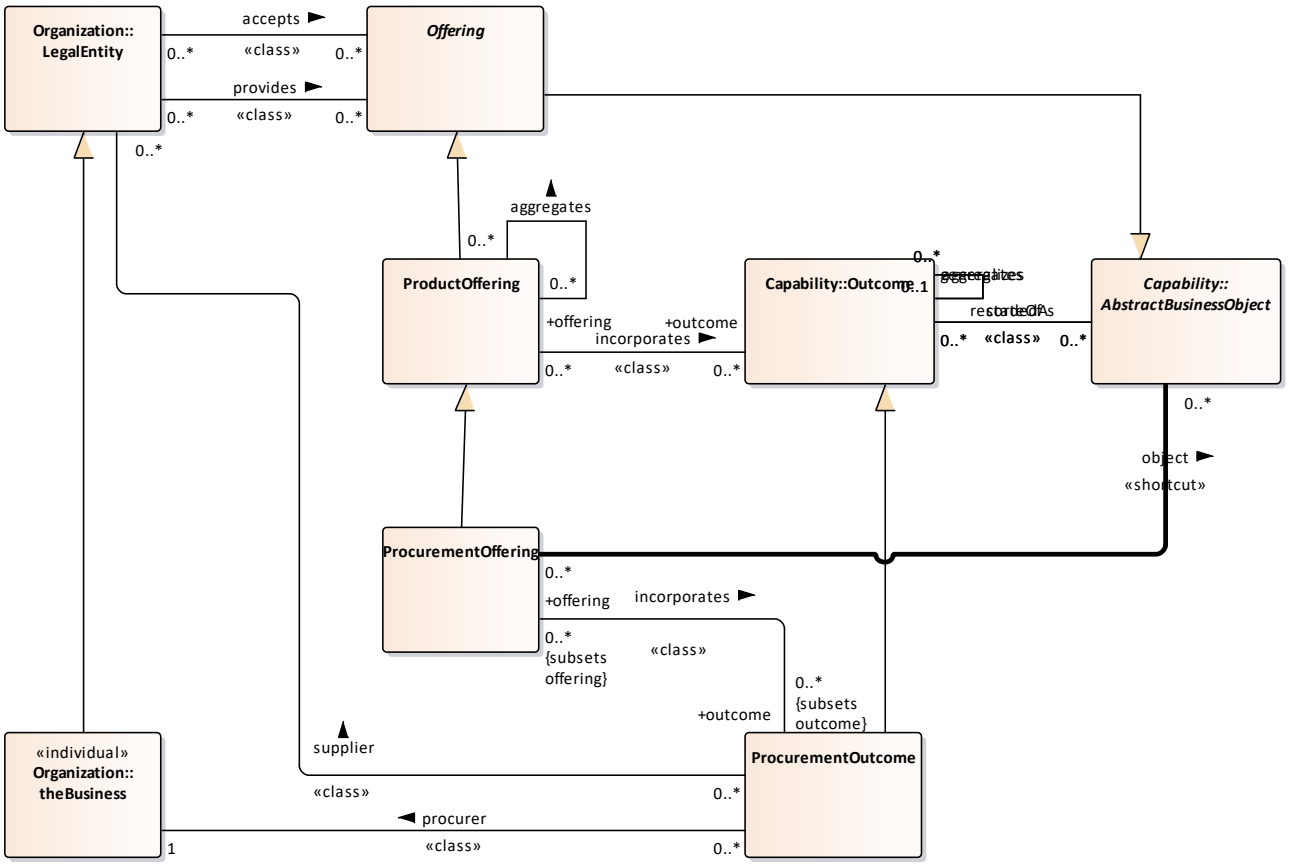
7.3.6.1 *Diagram: MerchandiseOffering*



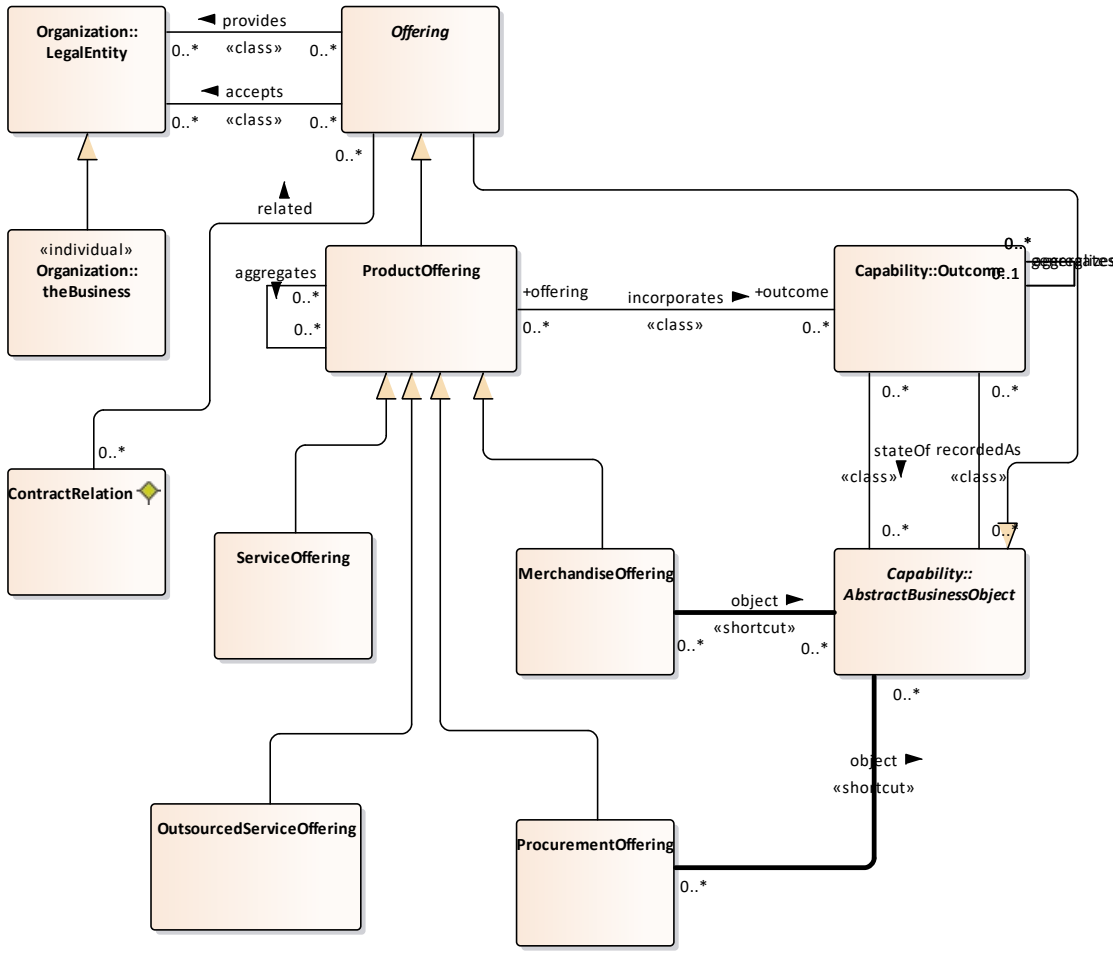
7.3.6.2 ***Diagram:*** *OutsourcedServiceOffering*



7.3.6.3 ***Diagram:*** *ProcurementOffering*



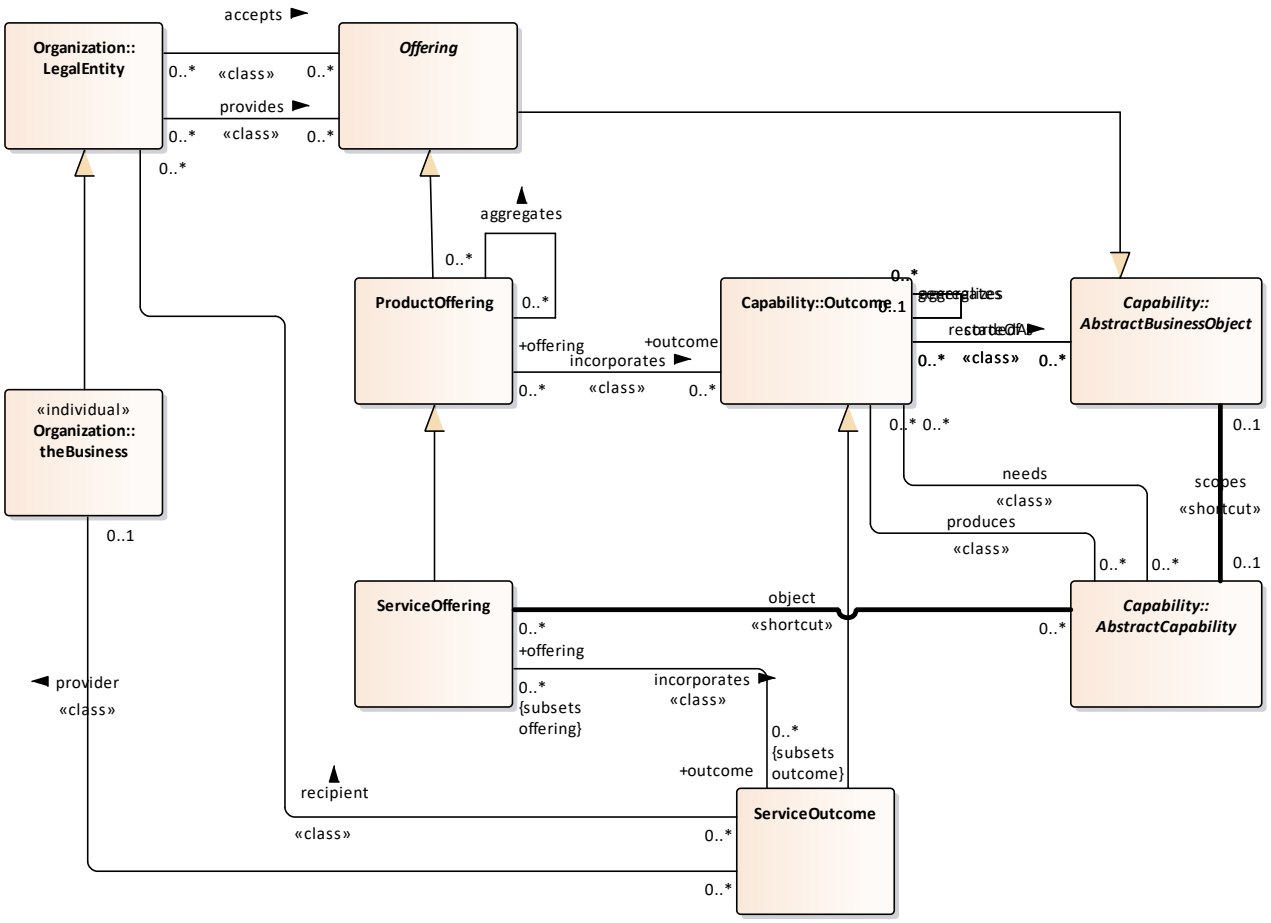
7.3.6.4 *Diagram:* Product



The metamodel uses a single syntax to express three different patterns:

1. GoodOffering - Possession of an AbstractBusinessObject is changed and the customer experiences Outcomes associated with the AbstractCapabilities possessed by the AbstractBusinessObject in a post-change-of-possession JourneyStage. The Outcome incorporated in the GoodOffering represents the pledged state of the AbstractBusinessObject that is the object of the ProductOffering (e.g. that the AbstractBusinessObject is complete and functional).
2. ServiceOffering - The customer experiences the Outcome of a ServiceOffering provided by the business through some of its AbstractCapabilities. This experience is associated with both the activities at the Touchpoint (i.e. while the Service is being rendered) and at a JourneyStage subsequent to the completion of the Service. These situations would be modeled by two different Outcomes and not by a single Outcome that is experienced at both a Touchpoint and a JourneyStage. In the Service case, the Outcome incorporated in the ProductOffering is produced by the AbstractCapability that is the object of the Service.
3. OutsourcingOffering - the Customer is solicited to provide Outcomes to the business. The OutsourcingOffering may specify processes (CapabilityBehaviors) and resources (CapabilityImplementations) that the Customer is asked to follow and use respectively.

7.3.6.5 *Diagram: ServiceOffering*



7.3.6.6 *Class Name: ContractRelation Class Type: Class Stereotype: «association»*

Base Classes: AbstractOperatingModel
Definition: *ContractRelation* represents any kind of relationship between Offerings.
Usage: *ContractRelation* should be instanced as a relationship between *Offferings* whose arity is determined by the architect. Each leg of such an instance effectively inherits from the relation association.

7.3.6.6.1 Attributes, Methods and Connectors:

Association Name: related **Association Type:** Association **Stereotype:**
Source Class: ContractRelation **[**0..*] **Target Class:** Offering **[**0..*]
Definition: The relation association reresents a leg of a potentially n-ary relationship that may exist among multiple *Offerings*.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ContractRelation **[]** **Target Class:** AbstractOperatingModel **[]**

7.3.6.7 *Class Name: MerchandiseOffering Class Type: Class Stereotype:*

Base Classes: ProductOffering
Definition: A *MerchandiseOffering* irepresents an offering to sell or lease a good to a customer who may use the good to produce *Outcomes*.
Usage: The *MerchandiseOffering* is characterized by some *BusinessObjects* or *InformationItems* that would be transferred to the *Customer* for use by the *Customer*. The *BusinessObjects* and/or *InformationItems* are *objects* of the *MerchandiseOffering*.

7.3.6.7.1 Attributes, Methods and Connectors:

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: MerchandiseOffering **[**0..*] **Target Class:** MerchandiseOutcome **[**0..*]
Definition: This *incorporates* association refines the *incorporates* association between the parent meta-classes. It asserts that a *MerchandiseOffering* incorporates a *MerchandiseOutcome*.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: MerchandiseOffering **[]** **Target Class:** ProductOffering **[]**

Association Name: object **Association Type:** Association **Stereotype:** «shortcut»
Source Class: MerchandiseOffering **[**0..*] **Target Class:** AbstractBusinessObject **[**0..*]
Definition: The *object* association represents a shortcut relationship between a *MerchandiseOffering* and a *BusinessObject* or *InformationItem* offered for sale or lease to the *Customer*.
Usage: This shortcut implies that there is an unspecified *MerchandiseOutcome* of the *AbstractBusinessObject* that would describe the terms of ownership/use incorporated in the *MerchandiseOffering*.
Constraint: Let MOf1 be a MerchandiseOffering and BO1 be a BusinessObject associated by o1 an "object" association. Then MOf1 should incorporate MerchandiseOutcomes {MOj} that represent either the change of ownership of BO1 or the establishment of a limited right to use BO1.

7.3.6.8 *Class Name: MerchandiseOutcome Class Type: Class Stereotype:*

Base Classes: Outcome
Definition: *MerchandiseOutcome* represents the transfer of ownership and/or use between the business that is selling the merchandise via the *MerchandiseOffering* and the *LegalEntity* who receives the possession and/or use of the merchandise. The *LegalEntity* may also be a *Customer.*

7.3.6.8.1 Attributes, Methods and Connectors:

Association Name: buyer **Association Type:** Association **Stereotype:** «class»
Source Class: MerchandiseOutcome **[**0..*] **Target Class:** LegalEntity **[**0..*]
Definition: The *buyer* association is related to the *accepts* association and asserts that a *LegalEntity* (typically also a *Customer*) is the targeted buyer of the *MerchandiseOutcome*.
Usage: The buyer of the *MerchandiseOutcome* is not necessarily the *LegalEntity* that accepts the *MerchandiseOffering* in the case when the acceptor is acting as an agent for the buyer.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: MerchandiseOutcome **[]** **Target Class:** Outcome **[]**

Association Name: seller **Association Type:** Association **Stereotype:** «class»
Source Class: MerchandiseOutcome **[**0..*] **Target Class:** theBusiness **[**1]

Definition: The *seller* association asserts that *theBusiness* is the seller of the *MerchandiseOutcome* incorporated in the *MerchandiseOffering*.
Usage: This association does not imply that the *LegalEntity* providing the *MerchandiseOffering* is the same as the seller of the *MerchandiseOutcome*.

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: MerchandiseOffering **[**0..*] **Target Class:** MerchandiseOutcome **[**0..*]
Definition: This *incorporates* association refines the *incorporates* association between the parent meta-classes. It asserts that a *MerchandiseOffering* incorporates a *MerchandiseOutcome*.

7.3.6.9 *Class Name: Offering Class Type: Class Stereotype:*

Base Classes: AbstractBusinessObject
Definition: *Offering* represents the solicitation of business from a *Customer* by presenting *Outcomes* and *BusinessObjects* that the business is willing to provide in return for items of value received from the *Customer*.
Usage: *Offering* is abstract because the metamodel may eventually include subtypes other than *ProductOffering*.
Offering is *provided* by the business or a partner and the intended *consumer* is a type of *Customer*.
The business architecture does not include the concept of a sale directly. Sales are in the past of a business, and business architecture is focused on the possible futures of the business. Sales are useful as predictors of acceptance of future offering and as predictors of future liability for warranties.

7.3.6.9.1 Attributes, Methods and Connectors:

Association Name: Association Type: Generalization **Stereotype:**
Source Class: Offering **[]** **Target Class:** AbstractBusinessObject **[]**

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ProductOffering **[]** **Target Class:** Offering **[]**

Association Name: related **Association Type:** Association **Stereotype:**
Source Class: ContractRelation **[**0..*] **Target Class:** Offering **[**0..*]
Definition: The relation association reresents a leg of a potentially n-ary relationship that may exist among multiple *Offerings*.

Association Name: accepts **Association Type:** Association **Stereotype:** «class»
Source Class: LegalEntity **[**0..*] **Target Class:** Offering **[**0..*]
Definition: The acceptor relation represents a relationship between a party external to the business and an Offering intended to solicit business from the acceptor party represented by the Customer..
Usage: Note that offering dies not represent a sale; in a sale, each party gives something of value and receives something of value.

Association Name: provides **Association Type:** Association **Stereotype:** «class»
Source Class: LegalEntity **[**0..*] **Target Class:** Offering **[**0..*]
Definition: The provider relation represents a relationship between a LegalEntity and an Offering created by the LegalEntity that is intended to solicit the business of designated parties identified by the consumer relation.

7.3.6.10 *Class Name: OutsourcedServiceOffering Class Type: Class Stereotype:*

Base Classes: ProductOffering

Definition: *OutsourcedServiceOffering* represents an offering made by the business that solicits a service to be performed by another business.

7.3.6.10.1 Attributes, Methods and Connectors:

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOffering **[**0..*] **Target Class:** OutsourcedServiceOutcome **[**0..*]
Definition: The *incorporates* association designates that an *OutsourcedServiceOffering* incorporates some *OutsourcedServiceOutcomes*.
Usage: The *incorporates* association refines the *incorporates* association between *ProductOffering* and *Outcome*.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: OutsourcedServiceOffering **[]** **Target Class:** ProductOffering **[]**

Association Name: specifies **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOffering **[**0..*] **Target Class:** CapabilityImplementation **[**0..*]
Definition: The specifies association represents a relationship between an OutsourcingOffering and a CapabilityBehavior or Process or *CapabilityImplementation*, in which the *Customer* would be required or advised to perform the *CapabilityBehavior* or *Process* and/or provide *Performers* and *Resources* as specified by the *CapabilityImplementation* as an implementation of the *CapabilityBehavior* or *Process*..
Usage: This association is effectively combined with the two other *specifies* relation whose source is *OutsourcingOffering* so that the range of the combined associations is the union of *AbstractProcess*, *CapabilityBehavior* and *CapabilityImplementation*.

Association Name: specifies **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOffering **[**0..*] **Target Class:** CapabilityBehavior **[**0..*]
Definition: The specifies association represents a relationship between an OutsourcingOffering and a CapabilityBehavior or Process or *CapabilityImplementation*, in which the *Customer* would be required or advised to perform the *CapabilityBehavior* or *Process* and/or provide *Performers* and *Resources* as specified by the *CapabilityImplementation* as an implementation of the *CapabilityBehavior* or *Process*..
Usage: This association is effectively combined with the two other *specifies* relation whose source is *OutsourcingOffering* so that the range of the combined associations is the union of *AbstractProcess*, *CapabilityBehavior* and *CapabilityImplementation*.

Association Name: specifies **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOffering **[**0..*] **Target Class:** AbstractProcess **[**0..*]
Definition: The specifies association represents a relationship between an OutsourcingOffering and a CapabilityBehavior or Process or *CapabilityImplementation*, in which the *Customer* would be required or advised to perform the *CapabilityBehavior* or *Process* and/or provide *Performers* and *Resources* as specified by the *CapabilityImplementation* as an implementation of the *CapabilityBehavior* or *Process*..
Usage: This association is effectively combined with the two other *specifies* relation whose source is *OutsourcingOffering* so that the range of the combined associations is the union of *AbstractProcess*, *CapabilityBehavior* and *CapabilityImplementation*.

7.3.6.11 *Class Name: OutsourcedServiceOutcome Class Type: Class Stereotype:*

Base Classes: Outcome
Definition: *OutsourcedServiceOutcome* represents the expected *Outcome* of the performance of an outsourced service (i.e. a service performed for the business by another business).

7.3.6.11.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: OutsourcedServiceOutcome [] **Target Class:** Outcome []

Association Name: recipient **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOutcome [0..*] **Target Class:** theBusiness [1]
Definition: The *recipient* association assserts that *theBusiness* is the intended recipient and beneficiary of the *OutsourcedServiceOutcome*.
Usage: The *recipient* is not necessarily the same *LegalEntity* that accepts the *OutsourcedServiceOffering*.

Association Name: provider **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOutcome [0..*] **Target Class:** LegalEntity [0..*]
Definition: The *provider* association asserts that a *LegalEntity* is the provider of the *OutsourcedServiceOutcome*.
Usage: The provider *LegalEntity* is not necessarily the same *LegalEntity* as the provider of the *OutsourcedServiceOffering*.

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: OutsourcedServiceOffering [0..*] **Target Class:** OutsourcedServiceOutcome [0..*]
Definition: The *incorporates* association designates that an *OutsourcedServiceOffering* incorporates some *OutsourcedServiceOutcomes*.
Usage: The *incorporates* association refines the *incorporates* association between *ProductOffering* and *Outcome*.

7.3.6.12 *Class Name: ProcurementOffering Class Type: Class Stereotype:*

Base Classes: ProductOffering
Definition: *ProcurementOffering* is an offering by *theBusiness* to purchase or lease a *BusinessObject* and/or *InformationItem* from a *LegalEntity*.

7.3.6.12.1 Attributes, Methods and Connectors:

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: ProcurementOffering [0..*] **Target Class:** ProcurementOutcome [0..*]
Definition: The *incorporates* association refines the *incorporates* association between the parent meta-classes and asserts that the *ProcurementOffering* incorporates the *ProcurementOutcomes*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ProcurementOffering [] **Target Class:** ProductOffering []

Association Name: object **Association Type:** Association **Stereotype:** «shortcut»
Source Class: ProcurementOffering [0..*] **Target Class:** AbstractBusinessObject [0..*]
Definition: The *object* shortcut association asserts that the *ProcurementOffering* incorporates unspecified *Outcomes* describing the states of *AbstractBusinessObjects*.
Usage: This association allows the business architect to omit the *Outcome* in the procurement of some *AbstractBusinessObjects* for use by *theBusiness* when those *Outcomes* are obvious or irrelevant to the purposes of the analysis that is using the business architecture model.
Constraint: Let POf1 be a ProcurementOffering and BO1 be a BusinessObject associated by o1 an "object" association. Then POf1 should incorporate ProcurementOutcomes {POj} that represent either the change of ownership of BO1 or the establishment of a limited right to use BO1.

7.3.6.13 *Class Name: ProcurementOutcome Class Type: Class* Stereotype:

Base Classes: Outcome
Definition: *ProcurementOutcome* represents the expected Outcome of the procurement. E.g. that the *BusinessObject/InformationItem* received has the characteristics needed by the procuring business.
Usage: *ProcurementOutcome* specifies such details and is associated with a *ProcurementOfferint* that should not duplicate the details of the *ProcurementOutcome*.

7.3.6.13.1 Attributes, Methods and Connectors:

Association Name: supplier **Association Type:** Association **Stereotype:** «class»
Source Class: ProcurementOutcome **[**0..*] **Target Class:** LegalEntity **[**0..*]
Definition: The *supplier* association asserts that the *LegalEntity* is to be the supplier of the *ProcurementOutcome*.
Usage: The supplier *LegalEntity* is not necessarily the same as the provider *LegalEntity* for the *ProcurementOffering* incorporating the *ProcurementOutcome*.

Association Name: procurer **Association Type:** Association **Stereotype:** «class»
Source Class: ProcurementOutcome **[**0..*] **Target Class:** theBusiness **[**1]
Definition: The *procurer* association asserts that *theBusiness* is the procurer of the *ProcurementOutcome*
Usage: The procurer *LegalEntity* is not necessarily the acceptor *LegalEntity* of the *ProcurementOffering*

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ProcurementOutcome **[]** **Target Class:** Outcome **[]**

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: ProcurementOffering **[**0..*] **Target Class:** ProcurementOutcome **[**0..*]
Definition: The *incorporates* association refines the *incorporates* association between the parent meta-classes and asserts that the *ProcurementOffering* incorporates the *ProcurementOutcomes*.

7.3.6.14 *Class Name: ProductOffering Class Type: Class* Stereotype:

Base Classes: Offering
Definition: *ProductOffering* represents the terms and conditions associated with the acquisition of a product or service by a customer. It would typically include price, delivery terms, warranty and other aspects of these terms. The *ProductOffering* incorporates *Outcomes* such as change of possession for a product (*BusinessObject* or *InformationItem*) that is sold.
Usage: A *ProductOffering* (and its specializations *Good* and *Service*) are a type of *BusinessObject*. This allows a *Customer* to experience the *ProductOffering* at a *Touchpoint* and develop a reaction (such as the *ProductOffering* being a good deal). Such a reaction can be represented as a *CustomerSegment* associated with the *Customer* and the *JourneyStage* that includes the *Touchpoint*.

7.3.6.14.1 Attributes, Methods and Connectors:

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: ProductOffering **[**0..*] **Target Class:** Outcome **[**0..*]
Definition: The *incorporates* association represents that an *Outcome* is included in a *ProductOffering*.
Usage: It may be implied that the *BusinessObject* whose state is represented by the *Outcome* is also included in the *ProductOffering*. In the case of a service offering, the *Outcome* instance represents the intended result of performing the capability as a service for a customer (as opposed to performing the capability for the immediate benefit of the business).

Association Name: Association Type: Generalization **Stereotype:**

Source Class: ProductOffering **[]** **Target Class:** Offering **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ProductOffering **[**0..*] **Target Class:** ProductOffering **[**0..*]
The aggregates association allows a ProductOffering to be composed of other ProductOfferings.

Association Name: of **Association Type:** Association **Stereotype:** «shortcut»
Source Class: ValueProposition **[**0..*] **Target Class:** ProductOffering **[**0..*]
Definition: The *of* association links a *VslueProposition* to a *ProductOffering* and represents that is the *ValueProposition* is about the *ProductOffering*.
Constraint: Let VP1 be a ValueProposition and PO1 be a ProductOffering associated by o1, an "of" association. Then for some subset of ValueItems {VIj} aggregated by VP1 such that each VIj values an Outcome O1 that is incorporated in the ProductOffering PO1. Note that the ProductOfferings typically include Outcomes that are experienced by the Customer at a Touchpoint.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: OutsourcedServiceOffering **[]** **Target Class:** ProductOffering **[]**

Association Name: Association Type: Generalization **Stereotype:**
Source Class: MerchandiseOffering **[]** **Target Class:** ProductOffering **[]**

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ServiceOffering **[]** **Target Class:** ProductOffering **[]**

Association Name: Association Type: Generalization **Stereotype:**
Source Class: ProcurementOffering **[]** **Target Class:** ProductOffering **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: ProductOffering **[**0..*] **Target Class:** ProductOffering **[**0..*]
The aggregates association allows a ProductOffering to be composed of other ProductOfferings.

7.3.6.15 *Class Name: ServiceOffering Class Type: Class Stereotype:*

Base Classes: ProductOffering
Definition: *ServiceOffering* represents an offer to provide a service to a *Customer*. the busienss provides the *CapabilityImplementations* and *CapabilityBehaviors* needed to effect the *Outcome* promised to the *Customer* by the *ServiceOffering*.
Usage: A *ServiceOffering* is a specialization of a *ProductOffering* such that a *Capability* or *CapabilityBehavior* or *Process* or *Activity* is performed to produce an *Outcome* that is incorporated into the service. Unlike a sale or lease, where some incorporated *Outcomes* represent a change of ownership or poseeseeion/use of a business object, the incorporated *Outcomes* (such as a cleaned residence) are the primary *Outcomes* desired by the customer.
A business that offers a *ServiceOffering* must incorporate or arrange for the *Capabilities* and or *Processes* needed to produce the promised *Outcomes*.

7.3.6.15.1 Attributes, Methods and Connectors:

Association Name: object **Association Type:** Association **Stereotype:** «shortcut»
Source Class: ServiceOffering **[**0..*] **Target Class:** AbstractCapability **[**0..*]

Definition: the *object* shortcut association designates an *AbstractCapability* possessed by *theBusiness* that is intended to produce the *ServiceOutcome incorporated* into the *ServiceOffering*.
Constraint: Let SOf1 be a ServiceOffering and C1 be a Capability that is associated by o1 an object association. Then there should exist a ServiceOutcome SO1 such that SO1 is incoporated in SOf1 and SO1 is produced by C1.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ServiceOffering **[]** **Target Class:** ProductOffering **[]**

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: ServiceOffering **[**0..*] **Target Class:** ServiceOutcome **[**0..*]
Definition: The *incorporates* assocation refines the *incorporates* association between the parent meta-classes and asserts that the *ServiceOffering* incorporates some *ServiceOutcomes*.

7.3.6.16 *Class Name:* ServiceOutcome *Class Type:* Class *Stereotype:*

Base Classes: Outcome
Definition: *ServiceOutcome* represents the expected *Outcome* of the performance of a service for a *Customer*.

7.3.6.16.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ServiceOutcome **[]** **Target Class:** Outcome **[]**

Association Name: provider **Association Type:** Association **Stereotype:** «class»
Source Class: ServiceOutcome **[**0..*] **Target Class:** theBusiness **[**0..1]
Definition: The *provider* association asserts that *theBusiness* is the provider of the *ServiceOutcome* incorporated into a *ServiceOffering*.
Usage: The provider *LegalEntity* is not necessarily the same as the *LegalEntity* that provides the *ServiceOffering* that incorporates the *ServiceOutcome*.

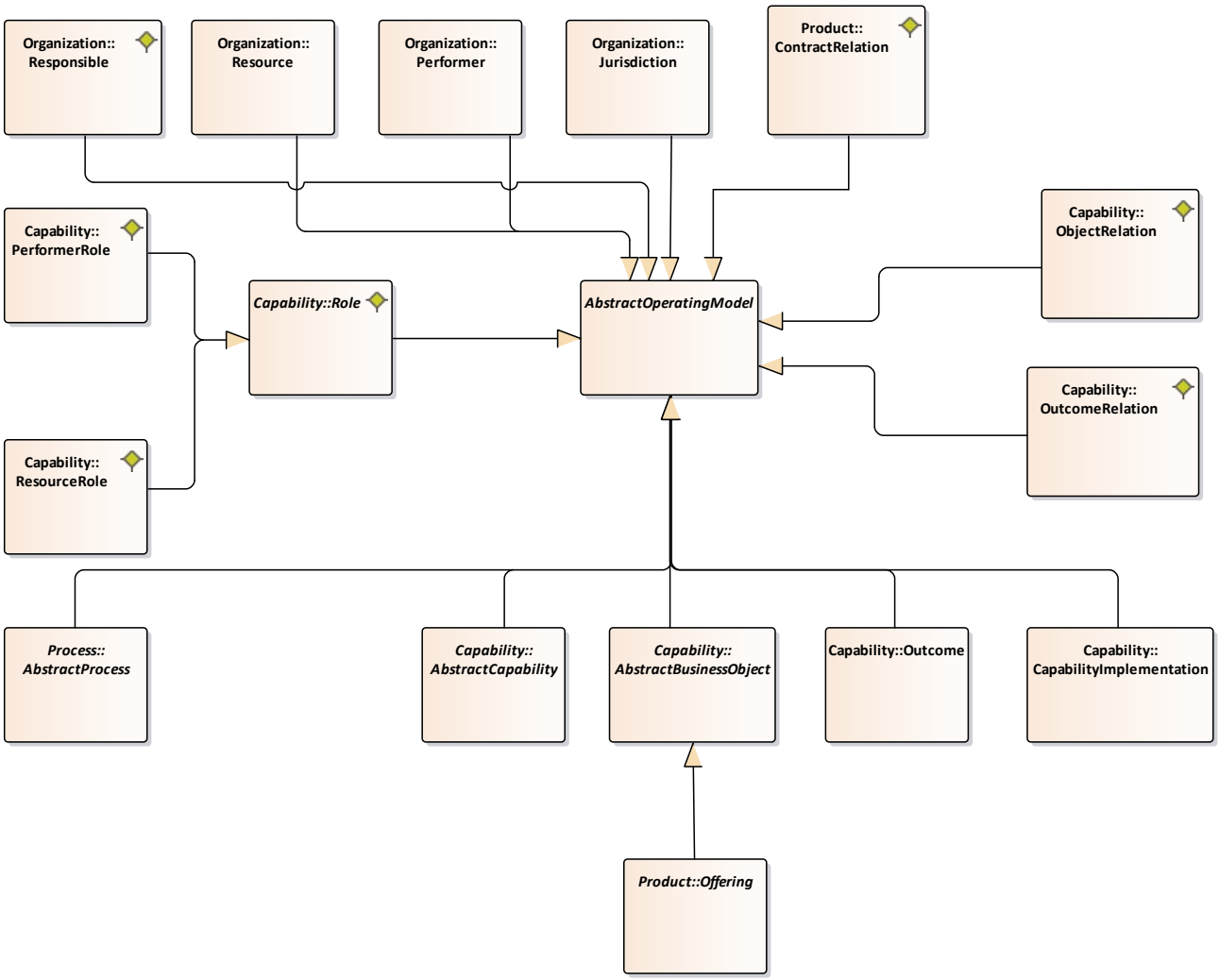
Association Name: recipient **Association Type:** Association **Stereotype:** «class»
Source Class: ServiceOutcome **[**0..*] **Target Class:** LegalEntity **[**0..*]
Definition: The *recipient* association asserts that the *LegalEntity* is the recipient of *ServiceOutcomes* incorporated into a *ServiceOffering*.
Usage: It is not necessarily the case that the recipient *LegalEntity* is the same as the accepting *LegalEntity* of the incorporating *ServiceOffering*.

Association Name: incorporates **Association Type:** Association **Stereotype:** «class»
Source Class: ServiceOffering **[**0..*] **Target Class:** ServiceOutcome **[**0..*]
Definition: The *incorporates* assocation refines the *incorporates* association between the parent meta-classes and asserts that the *ServiceOffering* incorporates some *ServiceOutcomes*.

7.3.7 Package: Strategy

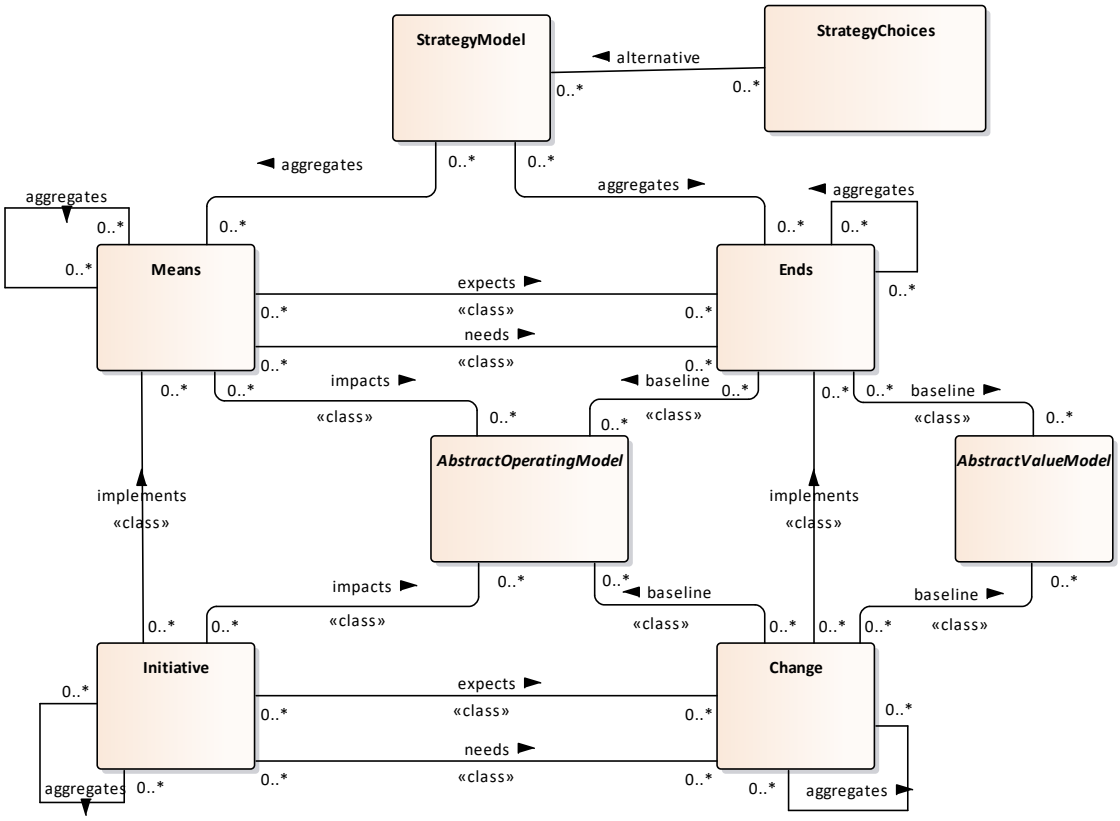
The Strategy package defines model element types for modeling strategy driven change.

7.3.7.1 ***Diagram:*** *OperatingModel*



The OperatingModel diagram defines metaclasses for the business entities that are changeable by a strategy and are part of the business operating model, but not part of the business value model (see the Strategy::ValueModel diagram)

7.3.7.2 *Diagram:* Strategy

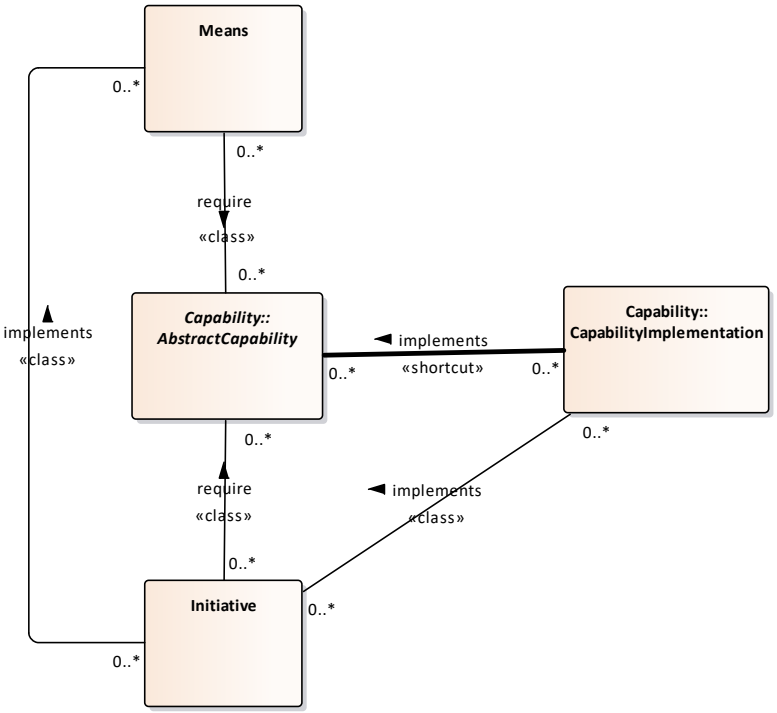


The Strategy diagram defines abstract syntax for modeling strategy driven change.
A strategy is represented by a *StrategyModel* that contains *Means* and *Ends*. A *StrategyModel* also contains the *Initiatives* and *Changes* that implement the *Means* and *Ends*.
Multiple *StrategyModels* are contained in *StrategyChoices*, allowing an analysis to evaluate *StrategyModels* and compare them with each other.
Ends represent desired changes to delivered value and/or business results. *Means* represent prospective ways to achieve the Ends.
Strategy is modeled at two levels:

1. High level strategy expressed as *Means* and *Ends*. *Ends* are statements primarily about value delivered to stakeholders (e.g. increased stock price, better customer satisfaction with a product). Means are high level statements about possible ways to achieve the *Ends* (e.g. reducing expenses, improving manufacturing quality).
2. Planned initiatives to implement a strategy, expressed as *Initiatives* and *Changes*. *Changes* represent specific objectives for *Outcomes*, *BusinessObjects*, *ProductOfferings*, *ValuePropositions*, *ValueCharacteristics* and *ValueItems*. *Initiatives* represent changes to be made to *Capabilities*, *CapabilityBehaviors*, *CapabilityImplementations*, *Roles*, *Processes*, *Activities*, *Flows* and assignments of *Performers* and *Resources* to achieve the *Changes*.

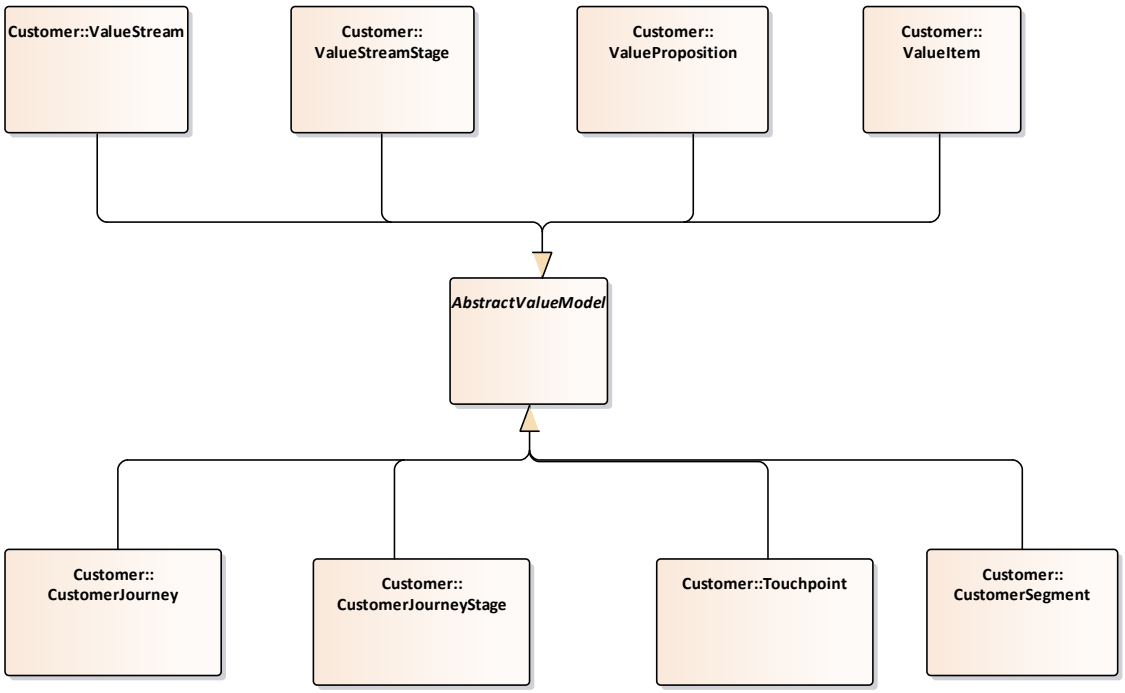
This abstract syntax does not distinguish the model elements changed by *Ends* from those changed by *Means*. For simplicity, it lumps these together as specializations of *AbstractOperatingModel* and *AbstractValueModel*. Implementors should follow the descriptions in items 1 and 2 above.
This abstract syntax also does not distinguish the model element changed by *Change* from those changed by *Initiative*.

7.3.7.3 *Diagram: StrategyNeeds*



The StrategyNeeds diagram displays the abstract syntax for representing that *Means* and *Initiatives* require *Capabilities*, *CapabilityBehaviors* and *CapabilityImplementations* for performance. This abstract syntax allows the business architect to establish abstract *Capability* requirements for performance of a *Means* and to establish both abstract and specific requirements for performance of an *Initiative*. The details of the *requires* and *implements* associations would be contained in strategy and initiative planning tools and their documents.

7.3.7.4 *Diagram: ValueModel*



The ValueModel diagram defines the BACM meta-classes whose instances can be used to model aspects of the business which represent value or which represent characteristics of the customer.
The concrete specializations of *AbstractValueModel* can be changed by the *Ends* instance of a *StrategyModel* instance.

7.3.7.5 *Class Name: AbstractOperatingModel Class Type: Class Stereotype:*

Base Classes: BusinessElement
Definition: *AbstractOperatingModel* is an abstract metaclass whose concrete specializations are the model elements of the operating model (see the AbstractOperatingModel diagram). This metaclass groups together the concrete metaclasses that may be *impacted* by a *Means* or *Initiative* or *baselined* by *Ends* or *Changes*
Usage: *Means* and *Initiatives* describe behaviors that will impact parts of the operating model of the business to achieve the *Ends* and *Changes* associated with the *Means* and *Initiatives*. While the behaviors are described by the *Means* and *Initiatives*, the affected operating model components are represented by the *impacts* relationship to facilitate analysis of these impacts for feasibility, risk, cost and other measures.
Ends and *Change* describe the new state and behavior of the baselined parts of the operating model of the business. For example, an *End* may be the improvement of throughput and reduction of wait time for a *CapabilityImplementation*. The *Means* may be the addition of personnel and upgrading of an application. The *End* describes a new baseline for the *CapabilityImplementation* (relative to the existing baseline associated with the *CapabilityImplementation*). The *Means* describes the behaviors to be carried out with respect to the staffing and resourcing of the *CapabilityImplementation*.

7.3.7.5.1 Attributes, Methods and Connectors:

Association Name: Association Type: Generalization **Stereotype:**
Source Class: AbstractOperatingModel **[]** **Target Class:** BusinessElement **[]**

Association Name: Association Type: Generalization **Stereotype:**
Source Class: Responsible **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: AbstractProcess [] **Target Class:** AbstractOperatingModel []

Association Name: impacts **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative [0..*] **Target Class:** AbstractOperatingModel [0..*]
Definition: The *impacts* association links *Initiatives* (planned changes to operating model elements) to the operating model elements impacted (changed) by the *Initiatives*.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: AbstractBusinessObject [] **Target Class:** AbstractOperatingModel []

Association Name: baseline **Association Type:** Association **Stereotype:** «class»
Source Class: Change [0..*] **Target Class:** AbstractOperatingModel [0..*]
Definition: The *baseline* association links one or more operating model elements representing business results to change objectives represented by the *Changes*.
Usage: An operating model *Outcome* (e.g. cost of executing an activity) is the baseline for a *Change* (e,g, a 5% reduction in the cost of executing the activity as a result of purchasing a new robot).

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ContractRelation [] **Target Class:** AbstractOperatingModel []

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Performer [] **Target Class:** AbstractOperatingModel []

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ObjectRelation [] **Target Class:** AbstractOperatingModel []

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Role [] **Target Class:** AbstractOperatingModel []

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Jurisdiction [] **Target Class:** AbstractOperatingModel []

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Resource [] **Target Class:** AbstractOperatingModel []

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: OutcomeRelation [] **Target Class:** AbstractOperatingModel []

Association Name: baseline **Association Type:** Association **Stereotype:** «class»
Source Class: Ends [0..*] **Target Class:** AbstractOperatingModel [0..*]
Definition: The *baseline* association links one or more operating model elements representing business results to change objectives represented by the *Ends*.
Usage: An operating model *Outcome* (e.g. cost of executing an activity) is the baseline for an *End* (e,g, a 10% reduction in the cost of executing the activity).

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: AbstractCapability **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: CapabilityImplementation **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Outcome **[]** **Target Class:** AbstractOperatingModel **[]**

Association Name: impacts **Association Type:** Association **Stereotype:** «class»
Source Class: Means **[**0..*] **Target Class:** AbstractOperatingModel **[**0..*]
Definition: The *impacts* association links a *Means* (description of changes to be made to business operations) to the operating model elements that will be impacted (changed).

7.3.7.6 *Class Name: AbstractStrategy Class Type: Class Stereotype:*

Base Classes: BusinessElement
Definition*: AbstractStrategy* represents any element type that may be used to represent a strategy.

7.3.7.6.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: AbstractStrategy **[]** **Target Class:** BusinessElement **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Change **[]** **Target Class:** AbstractStrategy **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Means **[]** **Target Class:** AbstractStrategy **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Ends **[]** **Target Class:** AbstractStrategy **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: StrategyModel **[]** **Target Class:** AbstractStrategy **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Initiative **[]** **Target Class:** AbstractStrategy **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: StrategyChoices **[]** **Target Class:** AbstractStrategy **[]**

7.3.7.7 *Class Name: AbstractValueModel* *Class Type: Class* *Stereotype:*

Base Classes: BusinessElement
Definition: The *AbstractValueModel* represents the value-related concepts that the *Means* and *Initiative* behaviors seek to achieve by changes made to the *AbstractOperatingModel*.
Usage: *AbstractValueModel* model elements represent perceptions of value as seen by a *Customer* or imagined by *theBusiness* to be seen by the *Customer*. As such, they cannot be directly changed by the business, so *Means* and *Initiatives* do not directly *impact* them. For example, the *ValueProposition* and *ValueCharacteristic* of an *Offering* may be improved by lowering its price, but this result is not guaranteed as the price action may be viewed as a signal of inflated worth or diminished quality. The architect may express a conviction that this result will occur in the *expects* association that links the price *Means* to the new *Ends* baseline for the *ValueProposition* and *ValueCharacteristic*.

7.3.7.7.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: AbstractValueModel **[]** **Target Class:** BusinessElement **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ValueProposition **[]** **Target Class:** AbstractValueModel **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ValueStreamStage **[]** **Target Class:** AbstractValueModel **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Touchpoint **[]** **Target Class:** AbstractValueModel **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: CustomerSegment **[]** **Target Class:** AbstractValueModel **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ValueItem **[]** **Target Class:** AbstractValueModel **[]**

Association Name: baseline **Association Type:** Association **Stereotype:** «class»
Source Class: Change **[**0..*] **Target Class:** AbstractValueModel **[**0..*]
Definition: The *baseline* association links a value model element (e.g. a *ValueProposition* where the price of a product is equal to the competitive average price) to a change (e.g. a change that reduces the price of a product by 5%).

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: ValueStream **[]** **Target Class:** AbstractValueModel **[]**

Association Name: baseline **Association Type:** Association **Stereotype:** «class»
Source Class: Ends **[**0..*] **Target Class:** AbstractValueModel **[**0..*]
Definition: The *baseline* association links a value model element (e.g. a *ValueProposition* where the price of a product is equal to the competitive average price) to an *End* (e.g. an *End* that reduces the price of a product to 5% below the competitive average).

Association Name: **Association Type:** Generalization **Stereotype:**

Source Class: CustomerJourney **[]** **Target Class:** AbstractValueModel **[]**

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: CustomerJourneyStage **[]** **Target Class:** AbstractValueModel **[]**

7.3.7.8 *Class Name: Change* *Class Type: Class* *Stereotype:*

Base Classes: AbstractStrategy
Definition: *Change* represents desired states of business value and results as represented by the *baselined* elements of the *AbstractOperatingModel* and the *AbstractValueModel*. These states are expected to result from the changes described by the Initiatives.
Usage: *Changes* can be decomposed and share sub-*Changes*.

7.3.7.8.1 Attributes, Methods and Connectors:

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Change **[]** **Target Class:** AbstractStrategy **[]**

Association Name: baseline **Association Type:** Association **Stereotype:** «class»
Source Class: Change **[**0..*] **Target Class:** AbstractOperatingModel **[**0..*]
Definition: The *baseline* association links one or more operating model elements representing business results to change objectives represented by the *Changes*.
Usage: An operating model *Outcome* (e.g. cost of executing an activity) is the baseline for a *Change* (e,g, a 5% reduction in the cost of executing the activity as a result of purchasing a new robot).

Association Name: baseline **Association Type:** Association **Stereotype:** «class»
Source Class: Change **[**0..*] **Target Class:** AbstractValueModel **[**0..*]
Definition: The *baseline* association links a value model element (e.g. a *ValueProposition* where the price of a product is equal to the competitive average price) to a change (e.g. a change that reduces the price of a product by 5%).

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: Change **[**0..*] **Target Class:** Ends **[**0..*]
This "implements" meta-association links a desired end of a strategy to the specific changes that are expected to result in the achievement of the end.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Change **[**0..*] **Target Class:** Change **[**0..*]

Association Name: needs **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** Change **[**0..*]
Definition: The *needs* association represents that one or more *Changes* are needed to enable the performance of the Initiatives.
Usage: This association must be instanced as an association classifier so that the modeler can express:

- a rationale for the expectation;
- note the likely influences of environmental factors, including competitive responses and regulatory actions
- risks and risk avoidance activities

Expressing these concerns may require the modeler to define additional properties and association legs at the M1 model level.

Association Name: expects **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** Change **[**0..*]
Definition: The *expects* association links one or more Changes that are expected to result from the Means described changes.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Change **[**0..*] **Target Class:** Change **[**0..*]

7.3.7.9 *Class Name: Ends Class Type: Class* ***Stereotype:***

Base Classes: AbstractStrategy
Definition: *Ends* represent changes to elements representing business values, such as *ValueProposition*s., *ValueItems* and *ValueCharacteristics*. *Ends* also represent changes to business results (i.e. *Outcomes*, *BusinessObjects*, *InformationItems* and *ProductOfferings*). These element types derive from *AbstractOperatingModel* and *AbstractValueModel*.
Usage: A *Ends* element will typically state the desired result (e.g. improved customer satisfaction) relative to the currently achieved (*baselined*) result (customer satisfaction represented as an *Outcome*).
Ends can be decomposed into subordinate *Ends*. Subordinate *Ends* may be shared by one or more parent *Ends*.

7.3.7.9.1 Attributes, Methods and Connectors:

Association Name: needs **Association Type:** Association **Stereotype:** «class»
Source Class: Ends **[**0..*] **Target Class:** Means **[**0..*]
Definition: The *needs* association represents that one or more Ends are needed to enable the performance of the Means
Usage: This association must be instanced as an association classifier so that the modeler can express:

- a rationale for the expectation;
- note the likely influences of environmental factors, including competitive responses and regulatory actions
- risks and risk avoidance activities

Expressing these concerns may require the modeler to define additional properties and association legs at the M1 model level.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: Ends **[]** **Target Class:** AbstractStrategy **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Ends **[**0..*] **Target Class:** Ends **[**0..*]
The "aggregates" meta-association allows the aggregation of End instances into summary End instances. End instance may be shared across parent Ends and StrategyModel instances.

Association Name: baseline **Association Type:** Association **Stereotype:** «class»
Source Class: Ends **[**0..*] **Target Class:** AbstractOperatingModel **[**0..*]
Definition: The *baseline* association links one or more operating model elements representing business results to change objectives represented by the *Ends*.
Usage: An operating model *Outcome* (e.g. cost of executing an activity) is the baseline for an *End* (e,g, a 10% reduction in the cost of executing the activity).

Association Name: baseline **Association Type:** Association **Stereotype:** «class»
Source Class: Ends **[**0..*] **Target Class:** AbstractValueModel **[**0..*]

Definition: The *baseline* association links a value model element (e.g. a *ValueProposition* where the price of a product is equal to the competitive average price) to an *End* (e.g. an *End* that reduces the price of a product to 5% below the competitive average).

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: StrategyModel **[**0..*] **Target Class:** Ends **[**0..*]
This "aggregates" association represents participation of End instances in a StrategyModel instance. This "aggregates" association and the "aggregates" association that summarizes End instancea to other End instances are not exclusive.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Ends **[**0..*] **Target Class:** Ends **[**0..*]
The "aggregates" meta-association allows the aggregation of End instances into summary End instances. End instance may be shared across parent Ends and StrategyModel instances.

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: Change **[**0..*] **Target Class:** Ends **[**0..*]
This "implements" meta-association links a desired end of a strategy to the specific changes that are expected to result in the achievement of the end.

Association Name: expects **Association Type:** Association **Stereotype:** «class»
Source Class: Means **[**0..*] **Target Class:** Ends **[**0..*]
Definition: The *expects* association represents that one or more Ends are expected to result from the changes described in the Means.
Usage: This association must be instanced as an association classifier so that the modeler can express:

- a rationale for the expectation;
- note the likely influences of environmental factors, including competitive responses and regulatory actions
- risks and risk avoidance activities

Expressing these concerns may require the modeler to define additional properties and association legs at the M1 model level.

7.3.7.10 *Class Name: Initiative Class Type: Class* ***Stereotype:***

Base Classes: AbstractStrategy
Definition: *Initiatives* represent plans to change business functions in order to achieve the business results described by *Changes*. *Initiatives* should be linked to the expected *Changes* with the expects association.
Usage: *Initiatives* may be decomposed and may share sub-*Initiatives*.

7.3.7.10.1 Attributes, Methods and Connectors:

Association Name: needs **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** Change **[**0..*]
Definition: The *needs* association represents that one or more *Changes* are needed to enable the performance of the Initiatives.
Usage: This association must be instanced as an association classifier so that the modeler can express:

- a rationale for the expectation;
- note the likely influences of environmental factors, including competitive responses and regulatory actions
- risks and risk avoidance activities

Expressing these concerns may require the modeler to define additional properties and association legs at the M1 model level.

Association Name: impacts **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** AbstractOperatingModel **[**0..*]

Definition: The *impacts* association links *Initiatives* (planned changes to operating model elements) to the operating model elements impacted (changed) by the *Initiatives*.

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** Means **[**0..*]
Definition: The *implements* association represents the assertion that an *initiative* implements a *Means*.

Association Name: expects **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** Change **[**0..*]
Definition: The *expects* association links one or more Changes that are expected to result from the Means described changes.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Initiative **[**0..*] **Target Class:** Initiative **[**0..*]

Association Name: require **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: The *require* association represents that a *Capability* and/or *CapabilityBehavior* is required for performance of the *Initiative*.
Usage: Definition of this association in an M1 level model allows the business architect to record and analyze such requirements.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Initiative **[]** **Target Class:** AbstractStrategy **[]**

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Initiative **[**0..*] **Target Class:** Initiative **[**0..*]

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: CapabilityImplementation **[**0..*] **Target Class:** Initiative **[**0..*]
Definition: The *implements* association represents an assertion that one or more *CapabilityImplementations* are required to perform the *initiative*.
Usage: Definition of this association in an M1 level model allows the business arcitect to record that specific *CapabilityImplementations* are needed to perform the Initiative.

7.3.7.11 *Class Name: Means Class Type: Class Stereotype:*

Base Classes: AbstractStrategy
Definition: *Means* represent possible behaviors that will change functional elements of the business (represented by *Capabilities*, *CapabilityBehaviors*, *CapabilityImplementations*, *Processes*, *Activities*, *Roles*, *Performers* and *Resources*). These changes are expected to produce the changes represented by the *Ends*. Each *End* should be *expected* to result from the changes described by one or more *Means*.
Usage: *Means* can be decomposed and subordinate *Means* may be shared by parent *Means*.

7.3.7.11.1 Attributes, Methods and Connectors:

Association Name: require **Association Type:** Association **Stereotype:** «class»
Source Class: Means **[**0..*] **Target Class:** AbstractCapability **[**0..*]
Definition: The *require* association represents that a *Capability* and/or *CapabilityBehavior* is required for performance of the *Means*.

Usage: Definition of this association in an M1 level model allows the business architect to record and analyze such requirements.

Association Name: **Association Type:** Generalization **Stereotype:**
Source Class: Means **[]** **Target Class:** AbstractStrategy **[]**

Association Name: impacts **Association Type:** Association **Stereotype:** «class»
Source Class: Means **[**0..*] **Target Class:** AbstractOperatingModel **[**0..*]
Definition: The *impacts* association links a *Means* (description of changes to be made to business operations) to the operating model elements that will be impacted (changed).

Association Name: expects **Association Type:** Association **Stereotype:** «class»
Source Class: Means **[**0..*] **Target Class:** Ends **[**0..*]
Definition: The *expects* association represents that one or more Ends are expected to result from the changes described in the Means.
Usage: This association must be instanced as an association classifier so that the modeler can express:

- a rationale for the expectation;
- note the likely influences of environmental factors, including competitive responses and regulatory actions
- risks and risk avoidance activities

Expressing these concerns may require the modeler to define additional properties and association legs at the M1 model level.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Means **[**0..*] **Target Class:** Means **[**0..*]
The "aggregates" meta-association represents the decomposition of Means instances into other Means instances.

Association Name: needs **Association Type:** Association **Stereotype:** «class»
Source Class: Ends **[**0..*] **Target Class:** Means **[**0..*]
Definition: The *needs* association represents that one or more Ends are needed to enable the performance of the Means
Usage: This association must be instanced as an association classifier so that the modeler can express:

- a rationale for the expectation;
- note the likely influences of environmental factors, including competitive responses and regulatory actions
- risks and risk avoidance activities

Expressing these concerns may require the modeler to define additional properties and association legs at the M1 model level.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: StrategyModel **[**0..*] **Target Class:** Means **[**0..*]
The "aggregates" meta-association represents the inclusion of Means instances into a StrategyModel instance.

Association Name: implements **Association Type:** Association **Stereotype:** «class»
Source Class: Initiative **[**0..*] **Target Class:** Means **[**0..*]
Definition: The *implements* association represents the assertion that an *initiative* implements a *Means*.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: Means **[**0..*] **Target Class:** Means **[**0..*]
The "aggregates" meta-association represents the decomposition of Means instances into other Means instances.

7.3.7.12 *Class Name: StrategyChoices Class Type: Class* Stereotype:

Base Classes: AbstractStrategy
Definition: The *StrategyChoices* represents a suite of strategies that can be evaluated for selection. Each *StrategyModel* in a *StrategyChoices* element shall be considered as alternatives. Alternative *StrategyModels* may share *Means*, *Ends*, *Initiatives* and *Changes*.
Usage: There may be at most a single instance of *StrategyChoices* in a BACM model.

7.3.7.12.1 Attributes, Methods and Connectors:

Association Name: alternative **Association Type:** Association **Stereotype:**
Source Class: StrategyChoices **[**0..*] **Target Class:** StrategyModel **[**0..*]
The *alternatives* association connects two or more *StrategyModels* to a *StrategyChoices*. Each *StrategyModel* alternative contained in a *StratecyChoices* should be taken as alternative strategies for evaluation and comparison.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: StrategyChoices **[]** **Target Class:** AbstractStrategy **[]**

Association Name: strategy_choices **Association Type:** Association **Stereotype:**
Source Class: BACM_Model **[**1] **Target Class:** StrategyChoices **[**0..*]
Definition: *strategy_choices* links a set of *StrategyChoices* to a *BACMModel*.
Usage: To facilitate reuse of the BACM model in different strategy situations, multiple *StrategyChoices* may be associated with a *BACMModel*.

7.3.7.13 *Class Name: StrategyModel Class Type: Class* Stereotype:

Base Classes: AbstractStrategy
Definition: *StrategyModel* is a collection of *Means* and *Ends* and the *Initiatives* and *Changes* implementing the *Means* and *Ends*. It represents a single, coherent and complete strategy.
Usage: *StrategyModels* each represent a particular strategy choice. *StrategyModels* may share sub-*StrategyModels*. The set of *StrategyModels* as prepared by the architect and strategist is represented by the *StrategyChoices* model element and the *alternative* associations linking it to each *StrategyModel*

7.3.7.13.1 Attributes, Methods and Connectors:

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: StrategyModel **[**0..*] **Target Class:** Means **[**0..*]
The "aggregates" meta-association represents the inclusion of Means instances into a StrategyModel instance.

Association Name: aggregates **Association Type:** Association **Stereotype:**
Source Class: StrategyModel **[**0..*] **Target Class:** Ends **[**0..*]
This "aggregates" association represents participation of End instances in a StrategyModel instance. This "aggregates" association and the "aggregates" association that summarizes End instancea to other End instances are not exclusive.

Association Name: Association Type: Generalization **Stereotype:**
Source Class: StrategyModel **[]** **Target Class:** AbstractStrategy **[]**

Association Name: alternative **Association Type:** Association **Stereotype:**
Source Class: StrategyChoices **[**0..*] **Target Class:** StrategyModel **[**0..*]
The *alternatives* association connects two or more *StrategyModels* to a *StrategyChoices*. Each *StrategyModel* alternative contained in a *StratecyChoices* should be taken as alternative strategies for evaluation and comparison.

8 Shortcuts and Touchpoints (normative)

8.1 Shortcuts

8.1.1 Definition

UML allows properties such as attributes and owned ends to be defined as virtual; associations may also be marked as virtual. This means that the value of the property or the links of the association are to be computed according to some specification rather than being represented explicitly. However, the computation may simply consist of retrieving the stored value or retrieving an explicit link. This mechanism can be used, along with a constraint language such as OCL, to insure that a high level association is grounded in a chain of lower level associations and classes.

The mechanism is represented in the metamodel abstract syntax by applying a "<<shortcut>>" stereotype to a UML association. The stereotype is accompanied by documentation that describes the constraint that should be applied to insure that details involving the same endpoint classes are consistent with the intent of the <<shortcut>> association. Since the architect is not required to provide details when asserting a <<shortcut>> association, these constraints are not invariants, but should be evaluated on demand by the architect to check the model for consistency and completeness.

The normative XMI expresses these constraints in OCL. A conforming implementation may use OCL or may use an equivalent mechanism.

8.1.2 Compliance

An implementor may but is not required to implement a mechanism to evaluate the consistency of a shortcut constraint with respect to a model as described in this section. However, an implementor must represent, make visible and preserve across model saves, import and export, any shortcuts specified in this metamodel or defined by users. A conforming implementation may advise a user that a model contains shortcuts that will not be validated by the implementation. For example, a conforming implementation may implement a meta-model shortcut as a class-association or an n-ary class-association and preserve the specification of the shortcut semantics as a tagged text value or a similar scheme.

8.2 Touchpoints

Touchpoints are intended to link a BACM model to one or more other models. A touchpoint shall be able to access elements of another model and specify the potentially complex relationship that may exist between multiple BACM model elements and multiple elements or sections in the external model, document or dataset. Touchpoints are specified as external relationships. As a default, an IRI may be used to identify or dereference a resource and a natural language description may be given as the external reference specification that describes the mapping between the BACM elements and information or model elements in the external model.

A BACM model does not represent everything that is interesting about a business. It does not adequately represent strategic planning, resource management, business processes, IT architecture or market campaigns for example. It should be able to link to models of such domains and extract information from those models. In addition, the BACM model should serve as a guide to details about the business that are represented in other models. This guide function reduces the need for the analyst to search through unorganized business models looking for information relevant to the current analysis project.

9 Alignment with OMG Specifications (non-normative)

9.1 Alignment with BPMN

9.1.1 Methodology

The proposed alignment of BACM elements and BPMN elements is presented below, based on: (1) a minimalistic approach to asserting elements in the latter that have counterparts in the former, leaving future efforts room to refine and/or to extend these mapping; and (2) the use of the proposed BACM Proxy Mechanism (described elsewhere) for implementing such mappings, which uses a relevant Proxy concept to house query results of the source BPMN model in which BPMN elements are assembled for mapping to target BACM model elements. In addition, the alignments asserted herein are for the purposes of aligning BACM models and BPMN models within the same business domain. The Proxy Mechanism approach is assumed in order to achieve the desired mappings, with the Proxy element mapping and the associated query logic identified in the last two columns of the Table of BPMN-BACM Mappings presented below.

BPMN elements considered for mapping are those that have identifiable relationships to BACM elements under the minimalistic interpretation logic being applied here. This includes: Process, Activity (includes Sub-Process and Task), Event (covers all variations of Events), Data (includes Data Objects, Data Input/Data Output, and Data Stores), Participant (is visualized by a Pool to show containment of a public or private Process), Lane (is per typical modeler usage seen as a subdivision of Participant into Roles), Choreography, and Choreography Activity (includes Sub-Process and Task variations).

The concept of Process in BACM is at least seen at the Supplier/Input/Process/Output/Consumer, or SIPOC, level, and has scope that separates it from other things that also have scope and governs its internal operational behaviors and how it interacts with other things that also have scope. When needed, Process can be decomposed into lower-level elements that make the description of its operational behaviors for that Process more granular in the detail. It is not shown here, but such "elaboration through decomposition" can lead to decomposition into Subprocess or (atomic) Activity – also with scope – that still fit within the mapping framework below, but enable finer-grained analyses: e.g., filling out a heat map based on more detailed evaluations, or creating more detailed mappings to related BACM elements like Value Stream or Value Stream Stage. BPMN supports modeling Process at any of these levels, which makes BACM-BPMN mappings possible.

Process scope has its own granularity and internal structure for describing operational behaviors, which may or may not line up cleanly and/or wholly with related BACM concepts like Value Stream or constituent Value Stream Stage. Methodology may be used to drive this mapping from the top-down, making Process subordinate to Value Stream or constituent Value Stream Stage, or from the bottom-up, making Process inform construction of Value Stream or constituent Value Stream Stage, or some hybrid combination. A many-to-many set of relationships is to be understood as applicable, which is the key reason for using the minimalistic approach being taken here so mapping is not overly prescriptive, and for using the Proxy Mechanism to enable the modeler to resolve scope differences.

9.1.2 BPMN-BACM Mapping Table

This Table is to be read from left-to-right, as the relevant BPMN element is identified and characterized in the first three columns, followed by the mapped-to BACM elements, from the BACM Proxy elements to a simple description of the logic for the mapping queries. Named BPMN XML elements are enclosed as "<…>" using Camel case in the element naming, but element names are labeled with Lead Caps when expressed as regular text. BPMN elements are uniquely identified by a semantic ID, which can be found using an XML query tool based on useful search terms such as Name. (In some cases, below, <semantic id> is specifically mentioned as it is needed to traverse the indirection in associated BPMN XML elements.) BACM elements are also uniquely identified and searchable using terms such as Name. Alignment of the various elements is enabled through the use of these identifiers.

Table of BPMN-BACM Mappings Using BACM Proxy Mechanism						
BPMN Element	**Visualized/ Hidden?**	**BPMN Mapping Notes**	**BACM Proxy Element**	**BACM Element**	**Mapped-To BACM Core Element**	**Mapping Query Logic**
Process	Hidden, including Name	Covers <process>, which includes <name>, is a <flowElementContainer> with scope, and is a subtype of <callableActivity>	BACM:Process:Proxy	BACM:Process	BACM:CapabilityBehavior, which is a subtype of BACM:Capability, which can also be seen through the Shortcut Mechanism that maps to the parent BACM:Capability	Processes from a BPMN model are selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element.
Activity	Visualized by a rounded rectangle icon with Name and internal markers to indicate type and behaviors	Covers <activity>, which includes <name>, is a <flowElementContainer> and subtypes into <callActivity>, <subprocess>, and <task>, and covers specific Task Types, including Abstract Task (with no type marker)	BACM:Activity:Proxy	BACM:Activity	BACM:CapabilityBehavior, which is a subtype of BACM:Capability, which can also be seen through the Shortcut Mechanism that maps to the parent BACM:Capability	Activities from a BPMN model are selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element.

Table of BPMN-BACM Mappings Using BACM Proxy Mechanism						
BPMN Element	**Visualized/ Hidden?**	**BPMN Mapping Notes**	**BACM Proxy Element**	**BACM Element**	**Mapped-To BACM Core Element**	**Mapping Query Logic**
Event	Visualized by a circle with single or double lines (and unbolded or bolded, and solid or dashed), with Name and an inner icon to identify the event type that indicates its behavior	Covers <event>, which includes <name>, is a <flowElementContainer> and subtypes by different types of <eventDefintion> for messages, signals, timer, etc. Start Event and End Event of a Process associate with the Process-level, as do Start Event and End Event of any included Event Suprocess Intermediate Event associates with the Process as does Intermediate Event of any included Event Subprocess Boundary Event associate with the Activity to which it is attached	BACM:Outcome:Proxy	BACM:Outcome	BACM:Outcome	Events from a BPMN model are selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element; BPMN Catching Events map to BACM (Needed) Outcomes, while BPMN Throwing Events map to BACM (Produced) Outcomes.

Table of BPMN-BACM Mappings Using BACM Proxy Mechanism						
BPMN Element	**Visualized/ Hidden?**	**BPMN Mapping Notes**	**BACM Proxy Element**	**BACM Element**	**Mapped-To BACM Core Element**	**Mapping Query Logic**
Data Object with Data Output Association *Note that this is intentionally ignoring Input Set.*	Visualized by a notched page icon that is the target of a Data Output Association	At the level of <process>, <dataOutput> is within the <ioSpecficiation> for a <activity> or applicable <event>, includes <name>, and has… …<semanticID>, which points to… …<dataOutputAssociation> with <sourceRef> and <targetRef>, where… …<targetRef> is the <semanticID> of the <dataObjectReference>, which points to… …<semanticID> of the <dataObject>, which has <semanticID>, <name>, and <itemSubjectRef> (which is only really meaningful if <itemDefinition> is supplied along with the data representations)	BACM:Outcome:Proxy	BACM:Outcome	BACM:Outcome	Data Object element accepting output from a Process in a BPMN model is selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element; BPMN Data Object as the target of an Output Flow is mapped to a BACM (Produced) Outcome that is produced by the associated BACM Capability Behavior.
Data Object with Data Input Association *Note that this is intentionally ignoring Input Set.*	Visualized by notched page icon that is the source of a Data Input Association	At the level of <process>, <dataInput> is within the <ioSpecficiation> for a <activity> or applicable <event>, includes <name>, and has… …<semanticID>, which points to… …<dataInputAssociation> with <sourceRef> and <targetRef>, where… …<sourceRef> is the <semanticID> of the <dataObjectReference>, which points to… …<semanticID> of the <dataObject>, which has <semanticID>, <name>, and <itemSubjectRef> (which is only really meaningful if <itemDefinition> is supplied along with the data representations)	BACM:Outcome:Proxy	BACM:Outcome	BACM:Outcome	Data Object element supplying input to a Process in a BPMN model is selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element; BPMN Data Object as the source of an Input Flow is mapped to a BACM (Needed) Outcome that is needed by the associated BACM Capability Behavior.

Table of BPMN-BACM Mappings Using BACM Proxy Mechanism						
BPMN Element	**Visualized/ Hidden?**	**BPMN Mapping Notes**	**BACM Proxy Element**	**BACM Element**	**Mapped-To BACM Core Element**	**Mapping Query Logic**
Data Output *Note that this is intentionally ignoring Output Set.*	Visualized by notched page icon with shaded arrow	At the level of <process>, <dataOutput> (the representations of an Output Data Object at the process-level, with shaded inner-arrow on the notched page icon) is within an <ioSpecification> for the <process>, and has <semanticID>, <name>, and <itemSubjectRef> (which is only really meaningful if <itemDefinition> is supplied along with the data representation).	BACM:Outcome:Proxy	BACM:Outcome	BACM:Outcome	Data Output element accepting output from a Process in a BPMN model is selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element; BPMN Data Output is mapped to a BACM (Produced) Outcome that is produced by the associated BACM Capability Behavior.
Data Input *Note that this is intentionally ignoring Input Set.*	Visualized by notched page icon with hollow arrow	At the level of <process>, <dataInput> (the representations of an Input Data Object at the process-level, with unshaded inner-arrow on the notched page icon) is within an <ioSpecification> for the <process>, and has <semanticID>, <name>, and <itemSubjectRef> (which is only really meaningful if <itemDefinition> is supplied along with the data representation).	BACM:Outcome:Proxy	BACM:Outcome .	BACM:Outcome	Data Input element supplying input to a Process in a BPMN model is selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element; BPMN Input Flow is mapped to a BACM (Needed) Outcome that is needed by the associated BACM Capability Behavior.

Table of BPMN-BACM Mappings Using BACM Proxy Mechanism						
BPMN Element	**Visualized/ Hidden?**	**BPMN Mapping Notes**	**BACM Proxy Element**	**BACM Element**	**Mapped-To BACM Core Element**	**Mapping Query Logic**
Data Store with Data Output Association	Visualized by drum icon that is the target of a DataOutputAssociation	The element <dataStore> can exist inside or outside of a <process> and its scope, via each specific representation of <dataStoreReference>, includes <name>, and has… …<semanticID> which points to… …<dataOutputAssociation> with <sourceRef> and <targetRef>, where… …<targetRef> is the <semanticID> of the <dataObjectReference>, which points to… …<semanticID> of the <dataStore>, which has <semanticID>, <name>, and <itemSubjectRef> (which is only really meaningful if <itemDefinition> is supplied along with the data representations)			BACM:Outcome	Data Store accepting output from an Activity in a BPMN model is selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element; BPMN Data Store as the target of an Output Flow is mapped to a BACM (Produced) Outcome that is produced by the associated BACM Capability Behavior.
Data Store with Data Input Association	Visualized by drum icon that is the source of a Data Input Association	The element <88atastore> can exist inside or outside of a <process> and its scope, via each specific representation of <dataStoreReference>, includes <name>, and has… …<semanticID> which points to… …<dataInputAssociation> with <sourceRef> and <targetRef>, where… …<sourceRef> is the <semanticID> of the <dataObjectReference>, which points to… …<semanticID> of the <88atastore>, which has <semanticID>, <name>, and <itemSubjectRef> (which is only really meaningful if <itemDefinition> is supplied along with the data representations)	BACM:Outcome:Proxy	BACM:Outcome	BACM:Outcome	Data Store supplying input to an Activity in a BPMN model is selected via a query to be bundled together into the Proxy, which then maps to the corresponding BACM element; BPMN Data Store as the source of an Input Flow is mapped to a BACM (Needed) Outcome that is needed by the associated BACM Capability Behavior.

Table of BPMN-BACM Mappings Using BACM Proxy Mechanism						
BPMN Element	**Visualized/ Hidden?**	**BPMN Mapping Notes**	**BACM Proxy Element**	**BACM Element**	**Mapped-To BACM Core Element**	**Mapping Query Logic**
Participant	Visualized by pool.	The element <participant> includes <name>, and is an organizational or system entity.	BACM:Performer:Proxy Or BACM:Customer:Proxy	BACM:Performer Or BACM:Customer	BACM:Performer Or BACM:Customer	Query would have to be based on modeler's assessment of equivalences between Participants and BACM Performer or Participants and BACM Customer.
Lane	Visualized by lane.	The element <lane>, which has <name>, is a essentially a modeler-specified decomposition or disaggregation of <participant>, with its most common use being to define an operational performer role within the organizational representation as <participant> (visualized as a pool).	BACM:Role:Proxy *Note that this applies only to Lanes in Participant that is mapped to BACM Performer.*	BACM:Role *Note that BACM Role is an association class.*	BACM:Role *Note that BACM Role is an association class.*	Query would have to be based on modeler's assessment of equivalences between Lane and BACM Role.
Choreography	Hidden, including Name	Covers <choreography>, which has <name>, is a <flowElementContainer> with scope, and is a subtype of <collaboration>.	BACM:CustomerJourney: Proxy	BACM:CustomerJourney	BACM:CustomerJourney	Choreography from a BPMN model is selected via a query to populate the Proxy, which then maps to the corresponding BACM element, which in this case is proposed to be BACM Customer Journey.
Choreography Activity	Visualized by rounded rectangle with top and bottom bands for sending and receiving Participants, respectively, with markers to indicate type and behaviors.	The element <choreographyActivity> includes <name>, and is subtyped as <choreographyTask>, <callChoreography>, and <subChoreography>.	BACM:Touchpoint:Proxy	BACM:Touchpoint	BACM:Touchpoint	Choreography Activity from a BPMN model is selected via a query to populate the Proxy; it is an abstraction of underlying things on either side of the set of interactions that it actually represents but without a traceability, so Touchpoint is the better mapped-to element than Customer Journey Stage.

9.1.3 Future Work on BACM-BPMN Alignment

This set of mappings is presented as a demonstration of alignment for the express purpose of satisfying the optional alignment requirement in the RFP. Differences in granularity of elements and scope definitions for use of those elements from BPMN to BACM make discrete mappings challenging, so some of the mappings above are at essentially the "container" level, leaving either BACM or BPMN to further specify internal structural rules and intended operational behaviors. It is recognized that further research and development of these mapping is likely needed and is encouraged.

Future work includes seeing a potential harmonization of core business action concepts like Process and Activity across the various OMG operational modeling languages (BPMN, DMN, and CMMN). Such harmonization might render simpler means for mapping than the Proxy Mechanism or alternative means of demonstrating alignment by explicitly resolving scope differences of these concepts across the OMG modeling languages.

Future work also includes a potential rethinking of related concepts Event (in BPMN/CMMN), Data Input and Decision (in DMN), and Outcome (in BACM) that harmonizes how these are used and interpreted across related models even when done in different modeling languages. Consider the following thinking:

- Process or Activity in has a boundary with respect to things outside its scope, which are understood as I/O as items are exchanged across this boundary, which is an Outcome as experienced at the Process or Activity level, which is, understood as the conveyance of a Business Object in a particular state (i.e. Outcome) as I/O for a Process (or one if its decomposed elements), as opposed to Outcome that Capability achieves or is needed by Capability. A Process or Activity in a BPMN model that map to Process in BACM carry Data representations that map to Outcome, enabling the mappings described above.

- Process or Activity I/O flow is understandable only in relation to the Process or Activity scope that consumes it or produces it, whereas Outcome (and Capability) endure without reliance on such context, relying instead on the business domain to provide any context. Outcome may have attribution and state to further describe it, and as experienced at the Process level or Activity level can have definitions of structure, format, and state that provide more behavioral information that matches with Process or Activity I/O, especially as understood in BPMN. Structure, type and format of flow may also be present in Business Object and Information Item in the BACM model, but are often omitted, and the associated process description may provide such detail when needed by the analyst.

- Outcome also has a boundary with respect to the context in which it occurs, which might be perceived at a concrete level through the occurrence of an associated Process-related or Activity-related Event that conveys state. In this case Outcome maps to an Event that conveys the associated flow as I/O for a Process or Activity,

9.1.4 Example of BPMN-BACM Mapping

A detailed example is presented in Annex B.2 and can be used as guidance when aligning a BACM model with behavioral specifications in BPMN, CMMN and DMN.

9.2 Alignment with VDML

There is conceptual overlap between concepts in the BACM metamodel and concepts in the VDML metamodel. VDML provides a concept of value exchange that is only partly and abstractly available in BACM. Consequently, it is recommended that a process be created in BACM for each value chain in VDML where the process structure matches the VDML value chain and the BACM process is then aligned with the corresponding BACM value streams and stages.

The capability concept of BACM exists in VDML as a capability definition, but VDML does not have equivalents for the need and production of outcomes for capability definitions. Consequently, those parts of a BACM capability must be aligned with VDML capabilities and capability offerings that are based on the corresponding capability definition. Note that VDML does not follow the business architecture rules for the definition of capabilities, so it may not be possible to align all of the capabilities in a BACM model with those of a VDML model of the same business type.

VDML has an analysis facility which allows for systematic variations of a business to be represented and supports variational business analysis (e.g. which model is cheaper to implement, which model offers the best improvement of value). A BACM model will often be compatible with all variations of a VDML model, but note that a variation in a

VDML model may contain capabilities (e.g. resulting from an acquisition) that are not present in a BACM model, along with related value chains also not present in the BACM model.

9.3 Alignment with BMM

The Strategy package defines elements and abstract syntax that is compatible with strategy models that use the Business Motivation Metamodel as a base. Means and Ends in the BACM are not stratified as in the BMM, and can be considered as generalizations of the BMM metaclasses and meta-associations. BMM concepts such as Influencer and Assessment would be aligned with the expects association classifier that expresses risks, rationale, and environmental influences on the expectation of the Means achieving the Ends.

9.4 Alignment with UAF (provisional)

A provisional alignment with UAF is based on alignment of BACM value streams with UAF value streams and alignment of BACM capabilities with UAF value streams. Additional guidance will be provided in the form of a revision of this specification and additional, non-normative guidance documentation jointly developed by the BACM submission team and the UAF RTF team.

9.5 Alignment with IT Architectures

The RFP (bmi/17-03-07) section 6.7.3 requests submitters to discuss types of touchpoints (alignment) mechanisms relevant to aligning BACM models to IT architectures. It is generally accepted that business models are an important way to document the ways that a business organization intends to use an information technology. The BACM is an abstract model of a business and will not be sufficiently specific to be the source of detailed requirements for an information technology. BACM models should be aligned with detailed operating models of a business (e,g. in BPMN, VDML) which are better suited as a source of requirements for an information technology architecture.

However, aligning existing and proposed IT architecture models to a BACM model can be very useful in managing overlap and duplication of function with respect to business behavior and structure in IT architectures. In addition, IT strategy should be closely coupled with business strategy and aligning IT initiatives with broader business initiatives in the BACM model facilitates understanding and management of timelines, impacted business structure and behavior and cross-initiative conflicts.

The external relationship mechanism defined in this specification can be used to identify IT architectural resources that correspond to or support business entities such as capability, process, performer, outcome and business object. Annotations and stereotypes can be applied to external relationship elements to designate the kind of relationship that the external relationship represents.

Annex A:

(normative)

A.1 Glossary

Term	Meaning
Annotation	**Definition:** *Annotation* provides the modeler an ability to associate tag/value pairs to any *BACMElement* in a BACM model.
BACM_Model	**Definition:** The *BACMModel* represents the root element of a BACM model (i.e. the element from which a tool or person can navigate to every other element in the model)
BACMElement	**Definition:** The *BACMElement* represents the class of all elements in a BACM model. It provides elements with a name and description and allows elements to be annotated.
BusinessElement	**Definition:** *BusinessElement* represents a concept or entity that existing or is planned to exist in the business.
ExternalData	
ExternalRelationship	**Definition:** ExternalRealtionship represents a relationship between a BusinessElement in a provider tool or repository to ExternalData in another tool or Repository. The external data may be a BusinessElement (or a linked collection of BusinessElements) or some other element (or linked collection of elements) from a model that is not a BACM model. The IRI must identify a resource to which the specification String can be applied to identify the element (or linked set of elements) in that resource. The language attribute of the ExternalRelationship identifies the language of the specification String. Note that BusinessElement classifies all BACM metaclasses and metaassociations that are intended to represent business concepts (as opposed to model concepts or analysis concepts).
IRI	Specializes PrimitiveTypes#String to match the regular expression defining a legal IRI.
Term	**Meaning**
AbstractBusinessObject	**Definition:** *AbstractBusinessObject* represents *BusinessObjects* or *InformationItems*.
AbstractCapability	**Definition:** *AbstractCapability* is not intended to represent a business concept. It is a metamodeling device to provide relationships to *Capability* and *CapabilityBehavior* that would otherwise be duplicated.
BusinessObject	**Definition:** *BusinessObject* represents a tangible thing that is of significance to a business.
Capability	**Definition:** *Capability* represents generalization over variations in behavior and variations in structure applied to the behavior where the same general *Outcome* is produced by the behavior.. A *Capability* represents the ability a business has to produce an *Outcome* without specifying how that *Outcome* is produced.
CapabilityBehavior	**Definition:** *CapabilityBehavior* represents a behavior description or specification, such as process diagrams, procedures manuals and other means of recording and publishing expected business practices.
CapabilityImplementation	**Definition:** The *CapabilityImplementation* represents a collection of *Resources* and *Performers* that may be used to implement a *Capability* or *CapabilityBehavior* (see the Roles diagram).

InformationItem	**Definition:** The *InformationItem* represents a kind of information.
ObjectRelation	**Definition:** *ObjectRelation* represents any relationship of any arity among *BusinessObjects* and *InformationItems*.
Outcome	**Definition:** An *Outcome* represents a fact or collection of facts about an experienced state of affairs pertaining to one or more *BusinessObjects* and/or *InformationItems*. *Outcomes* are produced/needed by Iand outputs/inputs of *AbstractProcesses*.
OutcomeRelation	**Definition:** *OutcomeRelation* represents any kind of semantic relationship between *Outcomes*.
PerformerRole	**Definition:** *PerformerRole* represents skills, knowledge and willingness to use these in the production of the *Outcomes* of a *Capability*.
ResourceRole	**Definition:** *ResourceRole* represents the set of roles that must be fulfilled by business entities that are passive participants in the *Capability*, *CapabilityBehavior*, *Process* or *Activity*. This includes tools, locations and materials that are used in the behavior but do not become incorporated into the *Outcome* of the behavior. Any materials or entities that are incorporated into a *BusinessObject* or *InformationItem* whose *Outcomes* are produced by the *Capability* or *CapabilityBehavior* should be represented as *BusinessObjects* or *InformationItems* associated with *Outcomes* needed by the *Capability* and not represented as *Resources* in this context.
Role	**Definition:** *Role* represents a specified way for an entity to participate in producing the *Outcome* of a *Capability* or a *Process*. However, only the concrete subclasses of *Role* may be used in a model.
Term	**Meaning**
Customer	**Definition:** *Customer* represents a customer type or a class of customers. *Customer* also represents partner businesses and other forms of contracted business relationships.
CustomerJourney	**Definition:** A *CustomerJourney* represents a sequence of stages through which a *Customer* may pass with respect to a *ProductOffering* and its *ValueProposition*. The *CustomerJourneyStages* of the *CustomerJourney* capture the notion that the customer experience is cumulative.
CustomerJourneyStage	**Definition:** The *CustomerJourneyStage* represents a significant stage in the *CustomerJourney*. An example of the stages of a customer journey would be: awareness, seeking a solution, weighting alternatives, acquiring the solution, using the solution, disposing the solution.
CustomerSegment	**Definition:** The *CustomerSegment* represents a characteristic of the *Customer* or a component of customer state of mind. *CustomerSegments* are owned by the Customer they describe.
Touchpoint	**Definition:** The *Touchpoint* represents an interaction between the business and the *Customer*.
ValueCharacteristic	**Definition:** *ValueCharacteristic* represents the fit between the *ValueProposition* of a *ProductOffering* targeted at a *Customer*.
ValueItem	**Definition:** A *ValueItem* represents the business belief that a *Customer* will value one or more *Outcomes* that are experienced by the *Customer*.
ValueProposition	**Definition:** The *ValueProposition* represents a collection of values the business believes it is offering to customers, partners and other stakeholders through a *ProductOffering*.
ValueStream	**Definition:** A *ValueStream* represnts a set of stages that accumulate value represented by the *ValueProposition*.
ValueStreamStage	**Definition:** *ValueStreamStages* represent significant points of value creation in a *ValueStream*.
Term	**Meaning**

Jurisdiction	**Definition:** The *Jurisdiction* represents a legal jurisdictions with powers to charter and/or regulate businesses.
LegalEntity	**Definition:** *LegalEntity* represents a human organization that is subject to the laws and regulations of a *Jurisdiction*..
OrgUnit	**Definition:** The OrgUnit meta-class represents the various types of human organizations and individuals capable of acting as performers.
Performer	**Definition:** The *Performer* represents entities that are capable of performing *PerformerRoles*. *Performer* has two specializations: *OrgUnit* and *System*, representing a human components of the business or a system.
Resource	**Definition:** *Resource* represents an entity that is required or needed by a *ResourceRole* but is not a *Performer* and does not become a part of a *BusinessObject* or *InformationItem* associated with any *Outcome* produced by the *Capability* or *CapabilityBehavior*.
Responsible	**Definition:** *Responsible* represents an unspecified kind of responsibility relationship between a source *OrgUnit* and a target *OrgUnit*. This relationship may also include a *BusinessElement* that defines the nature of the association.
System	**Definition:** The *System* represents the concept of a non-human performer, such as an IT system or a robot. Tools such as jigs and drills are not considered *Perfomers* for the purpose of business architecture. They should be modeled as *Resources*.
theBusiness	**Definition:** *theBusiness* represents the particular business that is the subject of the business architecture model.
Term	**Meaning**
AbstractProcess	**Definition:** *AbstractProcess* is not intended to represent a busines concept. It is a metamodeling technical device to share relationships with *Process* and *Activity* that would otherwise need to be duplicated.
Activity	**Definition:** *Activities* represent atomic (non-decomposable) activities.
Process	**Definition:** *Process* represents an aggregation of *Activities* and other *Processes*.
Term	**Meaning**
ContractRelation	**Definition:** *ContractRelation* represents any kind of relationship between Offerings.
MerchandiseOffering	**Definition:** A *MerchandiseOffering* irepresents an offering to sell or lease a good to a customer who may use the good to produce *Outcomes*.
MerchandiseOutcome	**Definition:** *MerchandiseOutcome* represents the transfer of ownership and/or use between the business that is selling the merchandise via the *MerchandiseOffering* and the *LegalEntity* who receives the possession and/or use of the merchandise. The *LegalEntity* may also be a *Customer.*
Offering	**Definition:** *Offering* represents the solicitation of business from a *Customer* by presenting *Outcomes* and *BusinessObjects* that the business is willing to provide in return for items of value received from the *Customer*.
OutsourcedServiceOfferi ng	**Definition:** *OutsourcedServiceOffering* represents an offering made by the business that solicits a service to be performed by another business.
OutsourcedServiceOutco me	**Definition:** *OutsourcedServiceOutcome* represents the expected *Outcome* of the performance of an outsourced service (i.e. a service performed for the business by another business).
ProcurementOffering	**Definition:** *ProcurementOffering* is an offering by *theBusiness* to purchase or lease a *BusinessObject* and/or *InformationItem* from a *LegalEntity*.
ProcurementOutcome	**Definition:** *ProcurementOutcome* represents the expected Outcome of the procurement. E.g. that the *BusinessObject/InformationItem* received has the characteristics needed by the procuring business.
ProductOffering	**Definition:** *ProductOffering* represents the terms and conditions associated with the acquisition of a product or service by a customer. It would typically include price, delivery terms, warranty

	and other aspects of these terms. The *ProductOffering* incorporates *Outcomes* such as change of possession for a product (*BusinessObject* or *InformationItem*) that is sold.
ServiceOffering	**Definition:** *ServiceOffering* represents an offer to provide a service to a *Customer*. the busienss provides the *CapabilityImplementations* and *CapabilityBehaviors* needed to effect the *Outcome* promised to the *Customer* by the *ServiceOffering*.
ServiceOutcome	**Definition:** *ServiceOutcome* represents the expected *Outcome* of the performance of a service for a *Customer*.
Term	**Meaning**
AbstractOperatingModel	**Definition:** *AbstractOperatingModel* is an abstract metaclass whose concrete specializations are the model elements of the operating model (see the AbstractOperatingModel diagram). This metaclass groups together the concrete metaclasses that may be *impacted* by a *Means* or *Initiative* or *baselined* by *Ends* or *Changes*
AbstractStrategy	**Definition***: AbstractStrategy* represents any element type that may be used to represent a strategy.
AbstractValueModel	**Definition:** The *AbstractValueModel* represents the value-related concepts that the *Means* and *Initiative* behaviors seek to achieve by changes made to the *AbstractOperatingModel*.
Change	**Definition:** *Change* represents desired states of business value and results as represented by the *baselined* elements of the *AbstractOperatingModel* and the *AbstractValueModel*. These states are expected to result from the changes described by the Initiatives.
Ends	**Definition:** *Ends* represent changes to elements representing business values, such as *ValuePropositions*., *ValueItems* and *ValueCharacteristics*. *Ends* also represent changes to business results (i.e. *Outcomes*, *BusinessObjects*, *InformationItems* and *ProductOfferings*). These element types derive from *AbstractOperatingModel* and *AbstractValueModel*.
Initiative	**Definition:** *Initiatives* represent plans to change business functions in order to achieve the business results described by *Changes*. *Initiatives* should be linked to the expected *Changes* with the expects association.
Means	**Definition:** *Means* represent possible behaviors that will change functional elements of the business (represented by *Capabilities*, *CapabilityBehaviors*, *CapabilityImplementations*, *Processes*, *Activities*, *Roles*, *Performers* and *Resources*). These changes are expected to produce the changes represented by the *Ends*. Each *End* should be *expected* to result from the changes described by one or more *Means*.
StrategyChoices	**Definition:** The *StrategyChoices* represents a suite of strategies that can be evaluated for selection. Each *StrategyModel* in a *StrategyChoices* element shall be considered as alternatives. Alternative *StrategyModels* may share *Means*, *Ends*, *Initiatives* and *Changes*.
StrategyModel	**Definition:** *StrategyModel* is a collection of *Means* and *Ends* and the *Initiatives* and *Changes* implementing the *Means* and *Ends*. It represents a single, coherent and complete strategy.

Annex B: Examples

(non-normative)

B.1 Example Shortcut

The following figure shows an example of a shortcut used in the metamodel. The shortcut association named VSAlignmentCJ relates the Customer::ValueStream metaclass to the Customer::CustomerJourney metaclass. The detail underlying this meta-association is a chain of metaclasses and meta-associations between Customer::ValueStream and Customer::CustomerJourney, including Customer::ValueProposition, Customer::ValueCharacteristic and Customer::CustomerSegment.

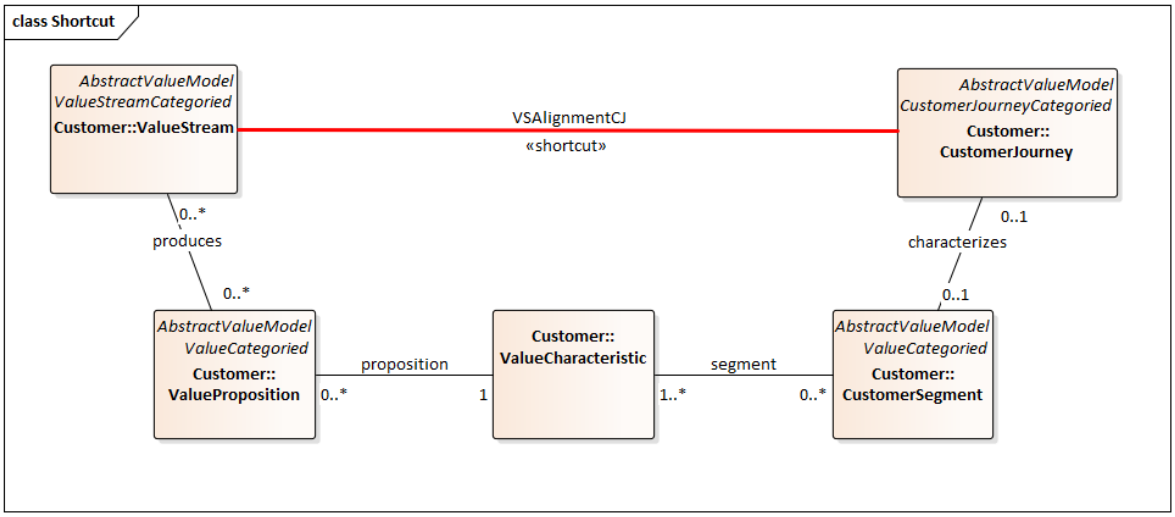


Figure 1 - Metamodel shortcut example

The following query, expressed in the openCypher graph query language, is the query template:

```
MATCH (vs:ValueStream {id: $1 })-[:produces]->(vp:ValueProposition)<-
[:proposition]-(vc:ValueCharacteristic)-[:segment]->(cs:CustomerSegment)-
[:characterizes]->(cj:CustomerJourney {id: $2 })

RETURN vs.id, vp.id, vc.id, cs.id, cj.id
```

The template variables $1 and $2 are substituted when a link of type *VSAlignmentCJ* is instantiated in the model. Let 1234 be the id of the *ValueStream* instance and 5678 be the id of the *CustomerJourney* instance connected by this link. The resulting actual query associated with the link is:

```
MATCH (vs:ValueStream {id: "1234" })-[:produces]->(vp:ValueProposition)<-
[:proposition]-(vc:ValueCharacteristic)-[:segment]->(cs:CustomerSegment)-
[:characterizes]->(cj:CustomerJourney {id: 5678 })

RETURN vs.id, vp.id, vc.id, cs.id, cj.id
```

The result set returned by executing the actual query consists of zero or more rows of 5 items that are the ids of the links and instances connecting id:1234 to id:5678 and matching the pattern of links and instances specified by the query MATCH clause.

B.2 Example touchpoint proxy

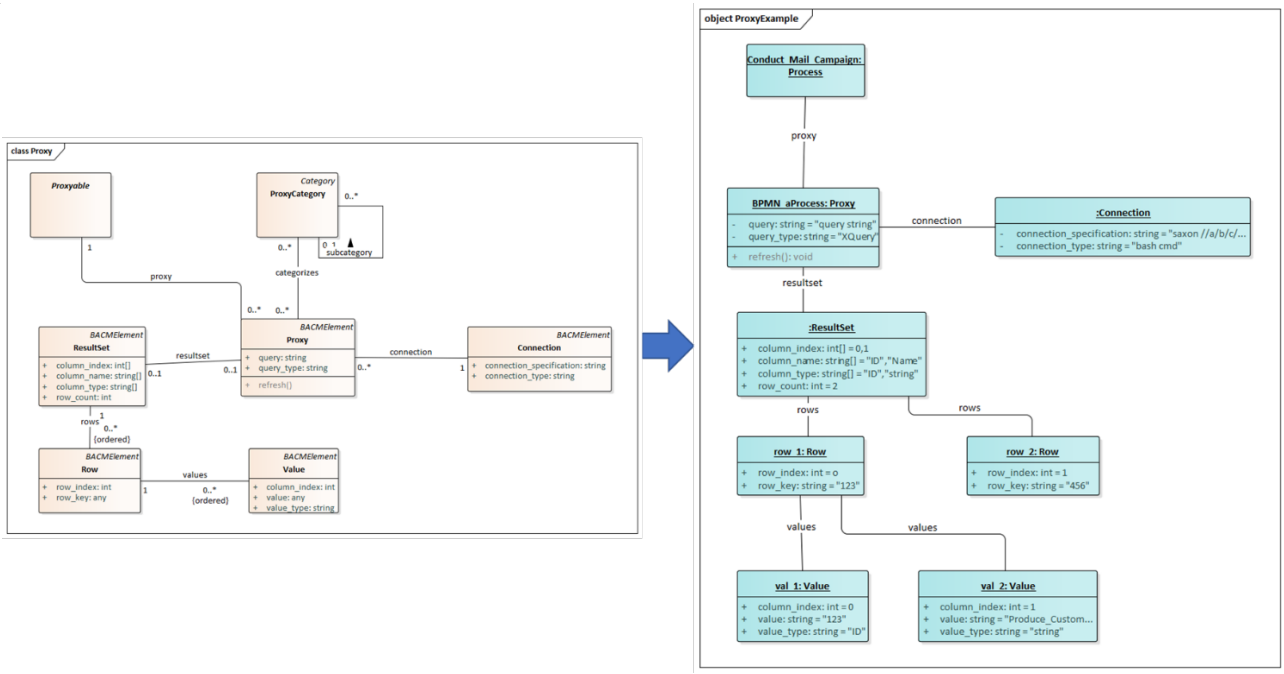
The RFP calls for a “touchpoint” mechanism to facilitate a linkage at the model element level between a BACM model and a foreign model of interest to the business (e.g., a business process model). In Section 9.2, two different types of approaches are identified:

- Using a query of foreign model elements to populate the proxy of a proxyable element in the BACM model (as described in Section 8.2.1), which requires direct, in-the-moment selection by the modeler/architect via the query of the foreign model elements to map to the proxy.
- Integrating a BACM model with a foreign model using an intermediate metamodel that defines the mapping of a foreign model element to a BACM model element (as described in Section 8.2.2), which requires the mapping relationship to be defined and implemented as a kind of API call from the BACM model to the foreign model to establish the integration.

Proxy-based Approach Description

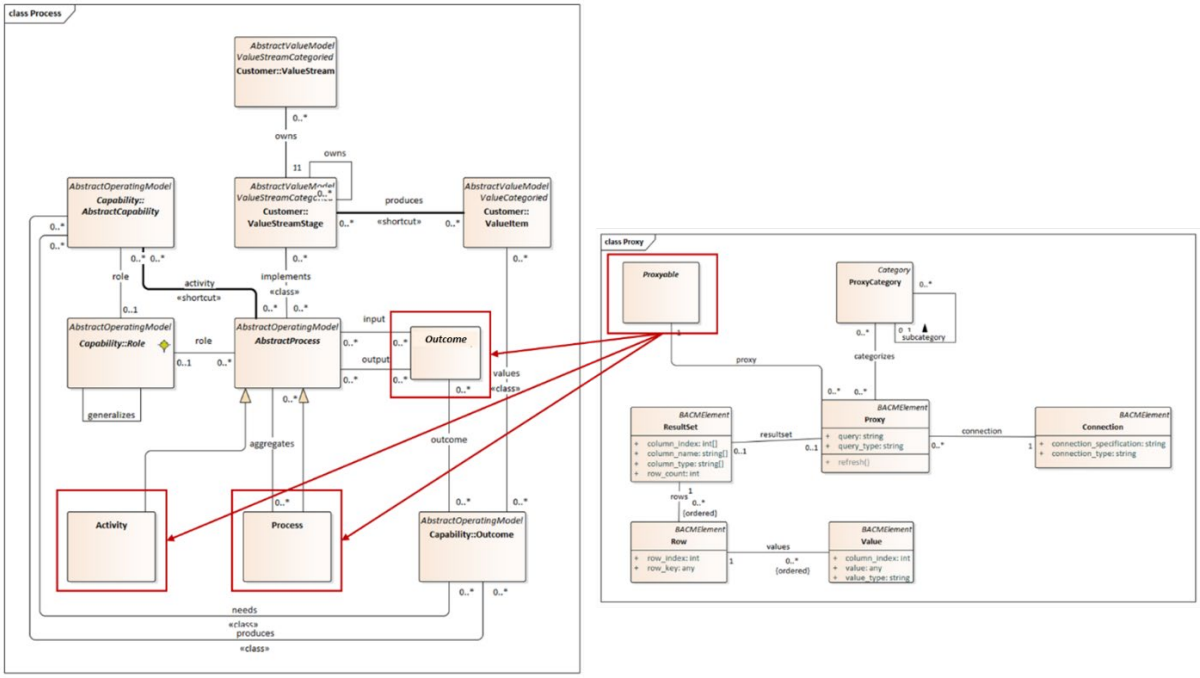
A description and illustration of the Proxy-based approach is presented here as applied between a BACM model and a BPMN process model.

The key aspect of the proxy-based approach is to use a specific Proxy for a proxyable BACM model element into which a specific ResultSet from the conducted query is assembled. The Proxy metaclass diagram and an object example are presented below.



The example shows a BACM Process element (Conduct_Mail_Campaign) that the modeler wishes to align to a process specification in BPMN. The attached Proxy (BPMN_Conduct_Mail_Campaign) contains a query string and a query language specification string (note that the value of the query attribute in this example is not an actual query in the XQuery language). The Connection element specifies an XQuery processor (Saxon) and a local file specification (//a/b/c/) and specifies that the connection specification is to be executed as a command by a command shell processor. On execution of the refresh method, the ResultSet and contained Row and Value elements are created in the BACM model. The value elements of the ResultSet could be attributes of the BPMN process, the ID and name of the BPMN activity in this case.

The characteristic nature of the treatment presented here is largely determined by the problem space that is also simultaneously its inspiration – namely, the mapping of Process-related elements in a Process model to Capability-related elements in a BACM model. Enabling the generalized ability to conduct this kind of analysis is central to aligning Business Process Management (BPM) perspectives with Business Architect (BA) perspectives, but granularity and scope differences between these different perspectives make such alignment tricky to pull off. Using the Proxy-based approach requires knowing the proxyable elements present in a BACM model, as suggested in the graphic below.



As an abstract class, *AbstractProcess* must be realized through a concrete subtype of that class, which in this case is an atomic-level Activity and/or a Process or Subprocess. These are proxyable elements to which analogous elements in a Process model can be mapped. In this case, these Process model elements are the Process model's version of Activity and/or Process or Subprocess elements. For example, in BPMN, an atomic BACM Activity would be one or more BPMN Tasks, a BACM Process would be one or more BPMN Processes, and a BACM Subprocess would be one or more BPMN Subprocesses.

As instantiated state of *Outcome*, *Flow* represents either inputs to or outputs from *AbstractProcess*, which means that *Flow* connects *Activities* and *Processes* or Subprocesses to each other in terms of informational or physical dependencies between them. Therefore, *Flow* is also a proxyable element to which analogous elements in a Process model can be mapped. In this case, the Process model elements are Data representations as inputs and outputs or Event representations as catching or throwing moments with payloads. For example, BACM *Flow* as input or output would be one or more <dataInput> or <dataOutput>, respectively, at the BPMN Process-level or BPMN Activity-level.

Query Language for Assembling ResultSet

A query language is required for the Proxy-based approach to work, which means the foreign model elements must be accessible via the query language. This is typically the case without much issue when the process modeling language used is standards-based with schema for defining model structure. For example, a BPMN model expressed in serial form as a *.BPMN XML file, can be explored with Xquery, or if converted to semantic form in RDF, can be explored with SPARQL. The example presented below assumes the use of XQuery, but presents only the XQuery results and not the XQuery logic itself.

Proxy-Based Approach Example

Resolving BPM and BA alignment issues is done using one of two variants of the Proxy-based approach. The first variant, using the generalized Shortcut-based mapping between AbstractCapability and AbstractProcess shown in Section 7.1.4, is discussed, and presented in the example that follows. The second approach, using the more detailed Outcome-based mapping, is discussed next in theoretical terms only based on BPMN semantics and without a supporting example.

Aligning BACM Capabilities and Processes with BPMN Processes

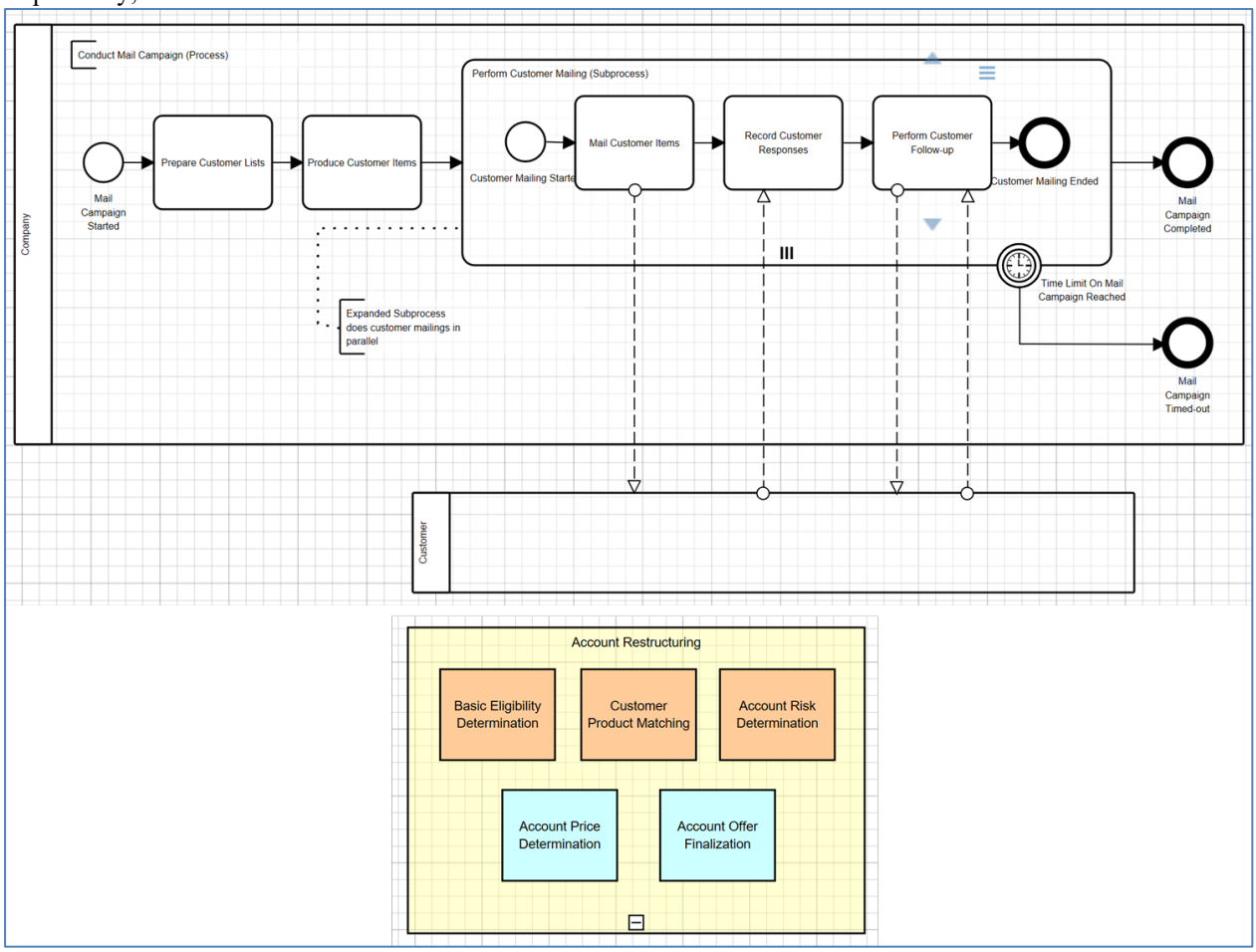
In the example presented here, a sample set of Level 2 Capabilities within a Level 1 Capability in a BACM model are presented (as columns) and asserted as cross-referenceable in a tabular manner with a sample set of Activities contained in a set of Processes (as rows). The assertion can be at either the Activity-level or at the Process-level, as shown in the graphic below.

Example Mapping of Operational-Level Business Processes and Activities To Related Capabilities		Account Restructuring Capabilities				
		Basic Eligibility Determination	Customer Product / Matching	Account Risk Determination	Account Price Determination	Account Offer Finalization
Conduct Mailing Campaign Process and Activities	• Prepare mailing lists of prospective customers	X				
	• Produce items to mail to prospective customers		X			
	• Mail items to prospective customers		X			
	• Record received customer responses		X			
	• Perform response follow-up to customers			X		
Mine Customer Purchases Process and Activities	• Perform periodic queries of recent purchases	X				
	• Determine potential new purchases by customers		X			
	• Update customer purchase profiles		X	X		
Provide Customer Quote Process and Activities	• Record customer quote request				X	
	• Prepare customer quote response				X	
	• Deliver customer quote response					X

OR

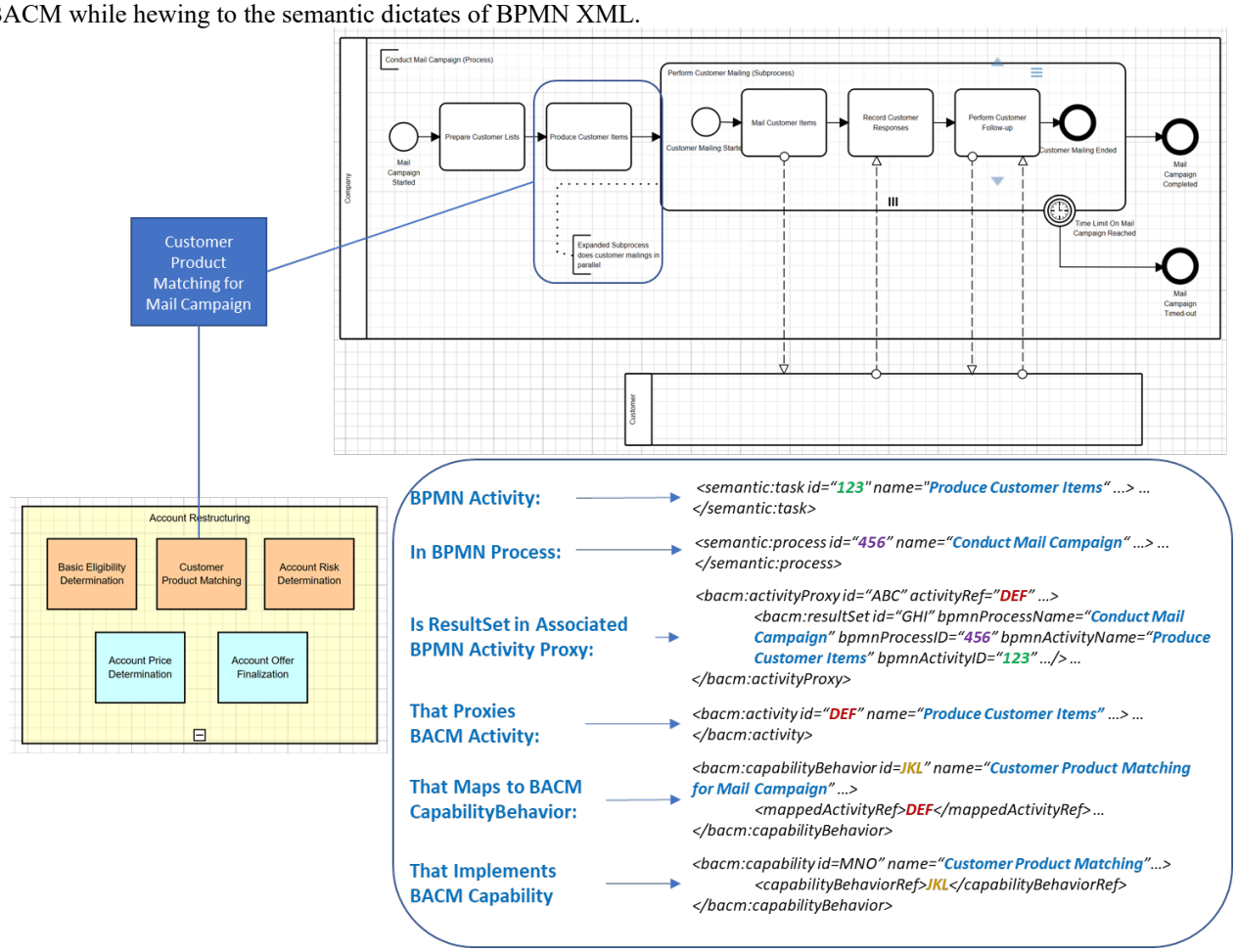
Example Mapping of Operational-Level Business Processes and Activities To Related Capabilities		Account Restructuring Capabilities				
		Basic Eligibility Determination	Customer Product / Matching	Account Risk Determination	Account Price Determination	Account Offer Finalization
Conduct Mailing Campaign Process and Activities	• Prepare mailing lists of prospective customers	X				
	• Produce items to mail to prospective customers		X			
	• Mail items to prospective customers		X			
	• Record received customer responses		X			
	• Perform response follow-up to customers			X		
Mine Customer Purchases Process and Activities	• Perform periodic queries of recent purchases	X				
	• Determine potential new purchases by customers		X			
	• Update customer purchase profiles		X	X		
Provide Customer Quote Process and Activities	• Record customer quote request				X	
	• Prepare customer quote response				X	X
	• Deliver customer quote response					X

The example presented here focuses on the "Conduct Mailing Campaign" Process and constituent five Activities that describe a set of operational behaviors for carrying out a mailing campaign to customers, and on the "Account Restructuring" Capability and constituent five Capabilities that describe a set of abilities within the business for restructuring customer accounts. The Process can be represented in a BPMN process model and visualized as a business process diagram (BPD), while the Capabilities can be represented in a BACM model and visualized as a Capability Map, respectively, as shown below.

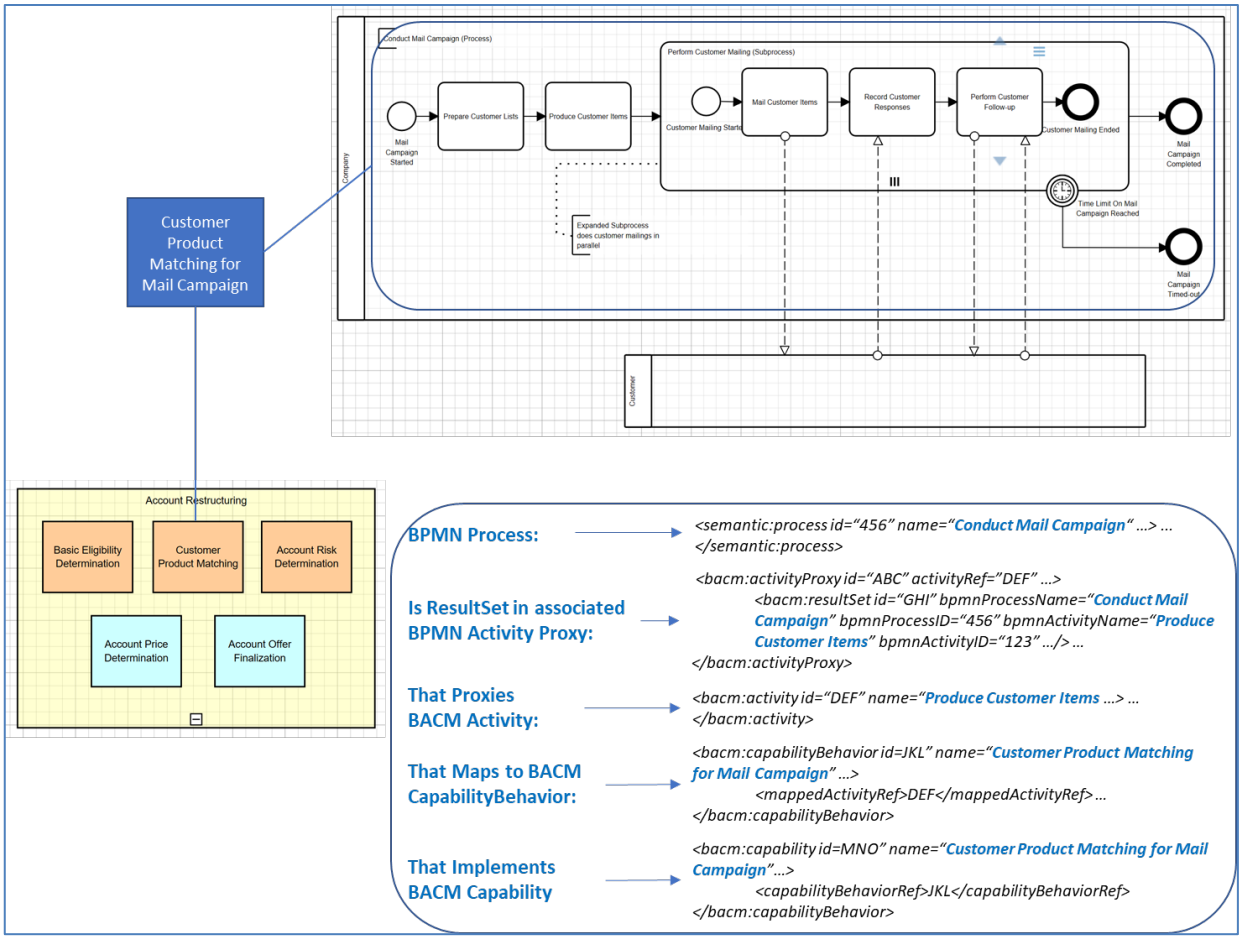


In the case of Activity-level mapping from the BPMN process model, an XQuery crafted query of the BPMN model would return a ResultSet that would be mapped via the Proxy to the associated proxyable BACM element, which in the example below is the BPMN Activity "Produce Customer Items" that is eventually mapped to "Customer Product Matching" Capability by way of the directed association with the "Customer Product Matching for Mail Campaign" CapabilityBehavior. These mappings/associations are visualized on the BPMN BPD and the BACM Capability Map. Note that the XML examples are constructed to fill out the example, and assume a concrete syntax not yet defined for

BACM while hewing to the semantic dictates of BPMN XML.



In the case of Process-level mapping from the BPMN process model, an XQuery crafted query of the BPMN model would return a ResultSet that would be mapped via the Proxy to the associated proxyable BACM element, which in the example below is the BPMN Process "Conduct Mail Campaign" that is eventually mapped to "Customer Product Matching" Capability by way of the directed association with the "Customer Product Matching for Mail Campaign" CapabilityBehavior. These mappings/associations are visualized on the BPMN BPD and the BACM Capability Map. Note that the XML examples are constructed to fill out the example and assume a concrete syntax not yet defined for BACM while hewing to the semantic dictates of BPMN XML.



While the Activity-level mapping is undoubtedly more precise, it is still the judgment of the modeler/architect, and just as importantly the methodology being followed, as to whether an Activity-level query or a Process-level query is more appropriate to use.

Outcome-based Mapping

While a query-based mapping is easier to do, it is largely dependent on the skill, experience, and knowledge of the modeler/architect to make the correct assertions, whether at the Process-level or at the Activity-level. However, since most process models created by practitioners, including those using BPMN, often do not bother with explicit data representations in the foreign model, there is little in the way of improving upon this approach. On the other hand, if explicit data representations are made in the foreign model, then a more accurate but harder to achieve Outcome-based mapping can be done.

While "Outcome is King" can be said within the context of BACM, Outcome is not a concept with which most process modelers are familiar, even when the connection of a Produced Outcome from a Capability is made with an output from a mapped Activity that generates it, or of a Required Outcome for a Capability is made with an input to a mapped Activity that uses it. However, such associations must be implicitly understood in order to construct the queries to instantiate them.

The following treatment is based on what can be done using BPMN semantics to achieve that result.

- First, Proxies for *Flow* elements in BACM, as inputs to or outputs from the Proxies for associated *Processes* or *Activities*, would all be populated via the same query.
- Second, the *Flow* Proxy metaclass instances of data representations in the BPMN model, as input or output *Flow* elements in the BACM model, are mapped to *Outcome*.
    - Input *Flow* is mapped to an *Outcome* that is needed by a *CapabilityBehavior*, and/or

    - Output *Flow* is mapped to an *Outcome* that is produced by a *CapabilityBehavior*.

- Third, thus Processes or Activities can be dragged by association to be mappable to a *CapabilityBehavior*, which is the concrete subtype of *AbstractCapability*.

The result is a mapping of Processes or Activities to *Capabilities* based on the relationship between *Flow* and *Outcome*, which means being able to correctly query for the right data representations is essential.

In the case of a BPMN process model being the foreign model, the XML-based indirection of data representations makes for some challenging query logic for anything below the process-level elements.

- Different data representations are supported in BPMN, so a query would have to cover these variations. The key is <ioSpecification>, but in modeling tools this only happens if the modeler chooses to visualize the representation of data.
    - At the level of <process>, <dataInput> and <dataOutput> (the representations of a data object at the process-level, with unshaded inner-arrow and shaded inner-arrow, respectively, on the notched page icon) are within an <ioSpecification> for the <process>, and have *semanticID*, *name*, and *itemSubjectRef* (which is only really meaningful if <itemDefinition> is supplied along with the data representation). These have to be in the process scope, so extracting these is pretty straightforward.
    - At the level of <activity> (meaning <task> or <subprocess>), the previous simplicity breaks down and becomes quite difficult to sort out:
        - In the case of <dataInput> for a <task> or <subprocess>, it has…
            - …*semanticID*, which points to…
            - …<dataInputAssociation> with *sourceRef* and *targetRef*, where…
            - …*sourceRef* is the *semanticID* of the <dataObjectReference>, which points to…
            - …*semanticID* of the <dataObject>, which has *semantic ID*, *name*, and *itemSubjectRef* (which is only really meaningful if <itemDefinition> is supplied along with the data representations)
        - In the case of <dataOutput> for a <task> or <subprocess>, it has…
            - …*semanticID*, which points to…
            - …<dataOutputAssociation> with *sourceRef* and *targetRef*, where…
            - …*targetRef* is the *semanticID* of the <dataObjectReference>, which points to…
            - …*semanticID* of the <dataObject>, which has *semantic ID*, *name*, and *itemSubjectRef* (which is only really meaningful if <itemDefinition> is supplied along with the data representations).
    - <datastore> can exist outside of the process scope, and the <dataStoreReference> can participate in <ioSpecification>, but it likely best to ignore this element since it is barely above annotation at this point and has no possibility of <itemDefintion>.
- Data scope is cumulative in a BPMN model, meaning that any data ingested (via from internal outputs upstream or inbound payloads upstream from outside the process scope) are available to any downstream flow node to use. Strictly speaking, data dependencies are thus not necessarily bound to whatever is visualized at the Activity-level or Event-level with a <dataObject>. At present, accounting for the effect on including or excluding BPMN elements in this regard from a query to populate the Proxy metaclass instance is topic still to be explored.

While BPMN semantics present challenges to constructing the query logic, it is foreseeable that modeling language specific query builder tools will be created to largely eliminate the need to know the details of the concrete syntax of the foreign model and of the query language.

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