Entity

General

Item An article in a collection, enumeration, or series.

Label A descriptive name used to identify something.

Meta A prefix used on a concept to mean beyond or about its own concept, e.g. metadata is data about data.

Section A part of a (requirements) document.

Term A word or group of words having a particular meaning.

Context

Actor A human or machine that communicates with a system.

App A computer program, or group of programs designed for end users, normally with a graphical user interface. Short for application.

Component A composable part of a system. A reusable, interchangeable system unit or functionality.

Domain An application area. A product and its surrounding entities.

Module A collection of coherent functions and interfaces.

Product Something offered to a market.

Release A specific version of a system offered at a specific time to end users.

Resource A capability of, or support for development.

Risk Something negative that may happen.

Service Actions performed by systems and/or humans to provide results to stakeholders.

Stakeholder Someone with a stake in the system development or usage.

System A set of interacting software and/or hardware components.

User A human interacting with a system.

Requirement

DataReq

Class An extensible template for creating objects. A set of objects with certain attributes in common. A category.

Data Information stored in a system.

Input Data consumed by an entity,

Member An entity that is part of another entity, eg. a field in a in a class.

Output Data produced by an entity, e.g. a function or a test.

Relationship A specific way that entities are connected.

DesignReq

Design A specific realization or high-level implementation description (of a system part).

Screen A design of (a part of) a user interface.

MockUp A prototype with limited functionality used to demonstrate a design idea.

FunctionalReq

Function A description of how input data is mapped to output data. A capability of a system to do something specific.

Interface A defined way to interact with a system.

State A mode or condition of something in the domain and/or in the system. A configuration of data.

Event Something that can happen in the domain and/or in the system.

GeneralReq

Epic A large user story or a collection of stories.

Feature A releasable characteristic of a product. A (high-level, coherent) bundle of requirements.

Goal An intention of a stakeholder or desired system property.

Idea A concept or thought (potentially interesting).

Issue Something needed to be fixed.

Req Something needed or wanted. An abstract term denoting any type of information relevant to the (specification of) intentions behind system development. Short for requirement.

Ticket (Development) work awaiting to be completed.

WorkPackage A collection of (development) work tasks.

QualityReq

Breakpoint A point of change. An important aspect of a (non-linear) relation between quality and benefit.

Barrier Something that makes it difficult to achieve a goal or a higher quality level.

Quality A distinguishing characteristic or degree of goodness.

Target A desired quality level or goal .

ScenarioReq

Scenario A (vivid) description of a (possible future) system usage.

Task A piece of work (that users do, maybe supported by a system).

Test A procedure to check if requirements are met.

Story A short description of what a user does or needs. Short for user story.

UseCase A list of steps defining interactions between actors and a system to achieve a goal.

VariabilityReq

VariationPoint An opportunity of choice among variants.

Variant An object or system property that can be chosen from a set of options.

RelationType

binds Ties a value to an option. A configuration binds a variation point.

deprecates Makes outdated. An entity deprecates (supersedes) another entity.

excludes Prevents a combination. An entity excludes another entity.

has Expresses containment, substructure. An entity contains another entity.

helps Positive influence. A goal helps to fulfil another goal.

hurts Negative influence. A goal hinders another goal.

impacts Some influence. A new feature impacts an existing component.

implements Realisation of. A module implements a feature.

interactsWith Communication. A user interacts with an interface.

is Sub-typing, specialization, part of another, more general entity.

precedes Temporal ordering. A feature precedes (is implemented before) another feature.

requires Requested combination. An entity is required (or wished) by another entity.

relatesTo General relation. An entity is related to another entity.

superOf Super-typing, generalization, includes another, more specific entity.

verifies Gives evidence of correctness. A test verifies the implementation of a feature.

Attribute

StringAttribute

Code A collection of (textual) computer instructions in some programming language, e.g. Scala. Short for source code.

Comment A note that explains or discusses some entity.

Deprecated A description of why an entity should be avoided, often because it is superseded by another entity, as indicated by a 'deprecates' relation.

Example A note that illustrates some entity by a typical instance.

Expectation The required output of a test in order to be counted as passed.

FileName The name of a storage of serialized, persistent data.

Gist A short and simple description of an entity, e.g. a function or a test.

Image (The name of) a picture of an entity.

Spec A (detailed) definition of an entity. Short for specification

Text A sequence of words (in natural language).

Title A general or descriptive heading.

Why A description of intention. Rationale.

IntAttribute

Benefit A characterisation of a good or helpful result or effect (e.g. of a feature).

Capacity The largest amount that can be held or contained (e.g. by a resource).

Cost The expenditure of something, such as time or effort, necessary for the implementation of an entity.

Damage A characterisation of the negative consequences if some entity (e.g. a risk) occurs.

Frequency The rate of occurrence of some entity.

Min The minimum estimated or assigned (relative) value.

Max The maximum estimated or assigned (relative) value.

Order The ordinal number of an entity (1st, 2nd, ...).

Prio The level of importance of an entity. Short for priority.

Probability The likelihood that something (e.g. a risk) occurs.

Profit The gain or return of some entity, e.g. in monetary terms.

Value An amount. An estimate of worth.

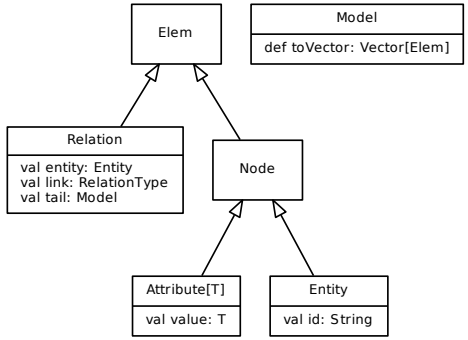
StatusValueAttribute

Status A level of refinement of an entity (e.g. a feature) in the development process.

VectorAttribute

Constraints A collection of propositions that restrict the possible values of a set of variables.

Tree-like Model Structure



Model Scripting

Model Construction

A Model has a body within parentheses with a comma-separated sequence of zero or more Elems. A relation links an Entity with a submodel body including a sequence of zero or more Elems.

```
var m = Model(
  Title("example"),
  Feature("helloWorld") has
    Spec("Print hello msg."),
  Stakeholder("x") requires (
    Req("nice") has (
      Prio(10),
      Gist("gimme this")),
    Req("cool") has (
      Prio(5),
      Gist("better have it")
    )
  )
)
```

Model Operations

Add element to a Model m:

```
m + (Req("r") has Prio(42))
```

Remove elements from a Model m:

```
m - Req("nice") - Title
```

Collecting Int values in a Vector[Int]:

```
m.collect{case Prio(i) => i}
```

Collecting entities in a new Model:

```
m.collect{case r: Req => r}.
    toModel
```

Transforming Entity type in a new Model:

```
m.transform{
  case Req(id) => Feature(id)
}
```

Release Constraint Solving

```
val simplePlan = Model(
  Stakeholder("X") has (
    Prio(1),
    Feature("1") has Benefit(4),
    Feature("2") has Benefit(2),
    Feature("3") has Benefit(1)),
  Stakeholder("Y") has (
    Prio(2),
    Feature("1") has Benefit(2),
    Feature("2") has Benefit(1),
    Feature("3") has Benefit(1)),
  Release("A") precedes Release("B"),
  Resource("dev") has (
    Feature("1") has Cost(10),
    Feature("2") has Cost(70),
    Feature("3") has Cost(40),
    Release("A") has Capacity(100),
    Release("B") has Capacity(100)),
  Resource("test") has (
    Feature("1") has Cost(40),
    Feature("2") has Cost(10),
    Feature("3") has Cost(70),
    Release("A") has Capacity(100),
    Release("B") has Capacity(100)),
  Feature("3") precedes Feature("1"))
val problem = csp.releasePlan(simplePlan)
val solution =
  problem.maximize(Release("A")/Benefit)
val sortedSolution =
  solution.sortByTypes(Release, Feature,
      Stakeholder, Resource)
```

Model Export

```
reqT.export.toGraphVizNested(m).
  save("filename.dot")
```

Available exporters:

```
toGraphVizNested
toGraphVizFlat
toPathTable
toHtml
toText
toLatex
toQuperSpec
```