RSMO: MEM Sub-ontology's Competence Questions

Some of the competence questions this MEM sub-ontology should be able to answer are:

CQ1. What is the type of a measurable entity?

CQ2. Which are the measurable elements ["attributes"] that characterize all measurable entities of a same type?

CQ3. Which are the measurable elements ["attributes"] of a measurable entity?

CQ4. Which measures ["measurement models"] can be used to quantify a measurable element?

/* In the remaining, let us define/redefine for RSMO some concepts or recall concepts that at this point the ISSSR class should know, which sometimes are denoted by different words (["different word"]). */

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M. Perini Barcellos *et al.*, 2010

RSMO: **MEM Sub-ontology (Fragment)**

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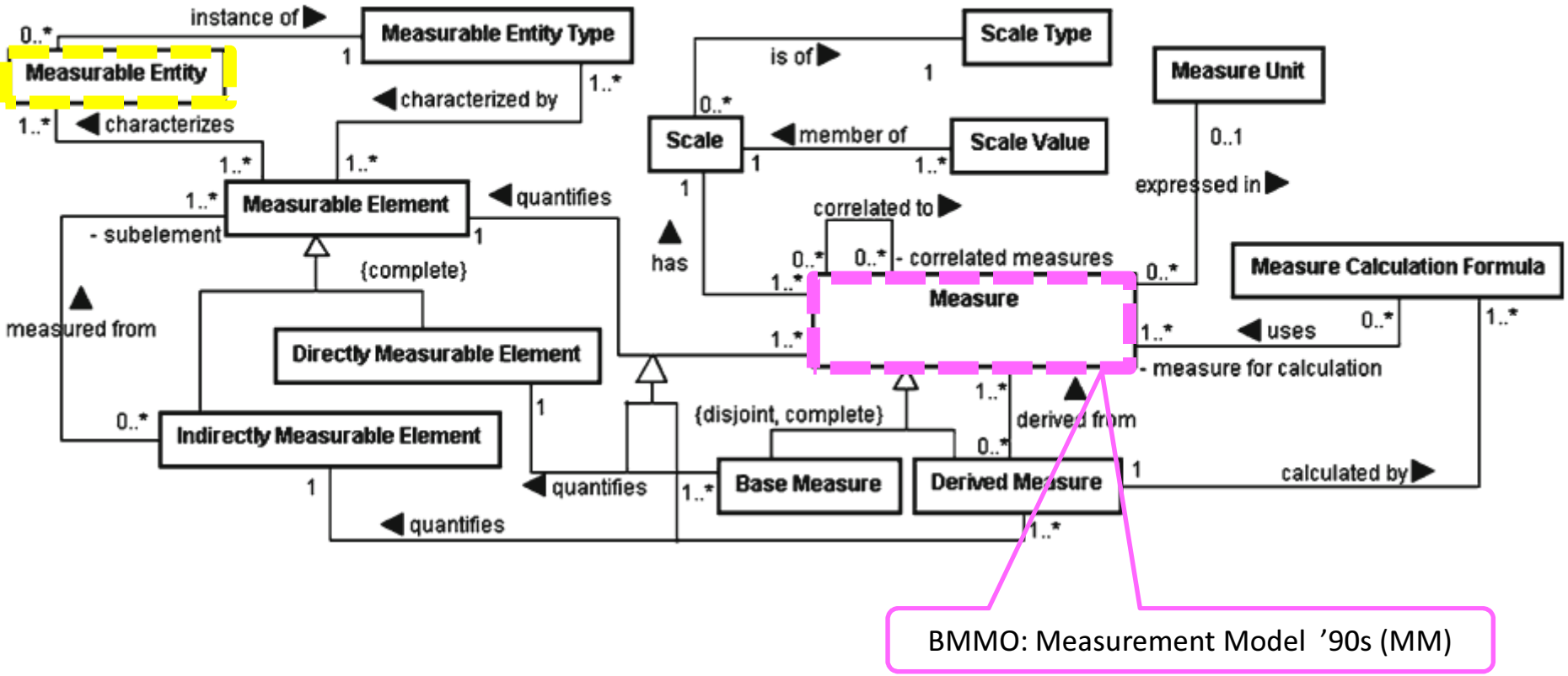

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RSMO: **MEM Sub-ontology's Glossary**

Measurable Entity: it is anything that can be measured, such as a process, an artifact, a project and a resource. Measurable Entities are characterized by *Measurable Elements*.

Measurable Entity Type: Measurable entities can be classified according to types. For instance, process is a type of measurable entity.

Measurable Element ["Attribute"]: it is a property of a Measurable Entity that can be distinguished, and, thus, measured. Size and productivity are examples of measurable elements. Measurable Elements can be directly (e.g., size) or indirectly (e.g., productivity) measured.

Indirectly Measurable Elements are measured by means of other measurable elements, said to be their sub-elements.

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RSMO: MEM Sub-ontology Glossary

Measure ["Measurement Model"]: it is an instrument that allows associating Measurable Elements with *Scale Values* of a *Scale*. For instance, the measure number of requirements can be used to associate a value to the measurable element size that characterizes the measurable entity type project. Thus, a Measure quantifies a Measurable Element and has a Scale composed by Scale Values. Moreover, a Scale is of a *Scale Type* (e.g., absolute, nominal).

Correlated measures: a measure can be correlated to other measures, indicating, for instance, that they are related to the same goal, or that they have a cause effect relationship.

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RSMO: MEM Sub-ontology Glossary

Base Measures: a class of measures, which are functionally independent of other measures (e.g., number of requirements) and used to quantify Directly Measurable Elements.

Derived Measures: the complement of the set of Base measures (e.g., requirements changing rate, given by the ratio of the number of changed requirements to the number of requirements), which are defined as a function of other measures and used to quantify Indirectly Measurable Elements.

A Measure can be expressed in a **Measure Unit**, (e.g., hours, function points). **Derived Measures** are calculated by **Measure Calculation Formulas**, which, in turn, use other measures as **measures for calculation**.

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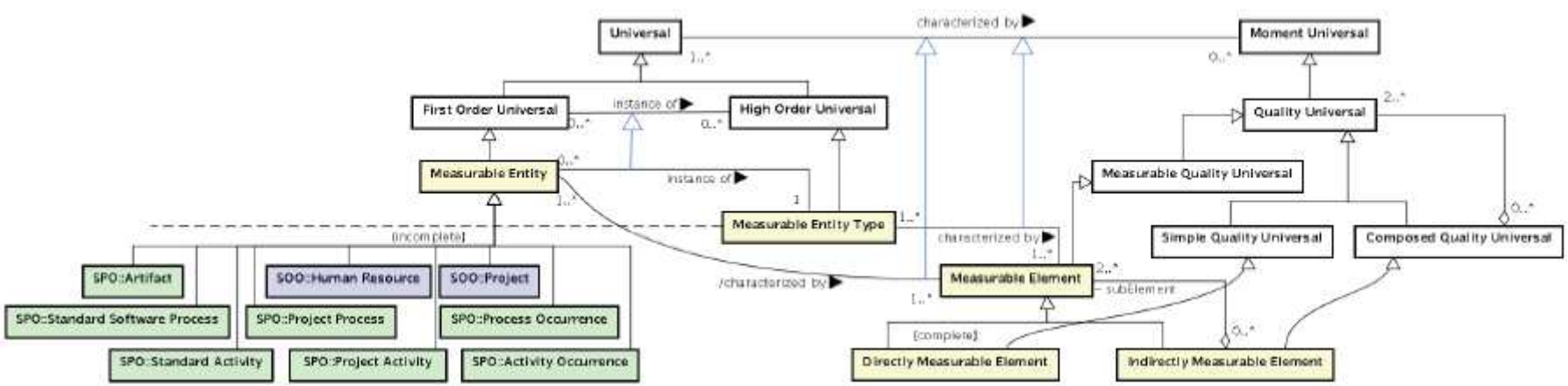
RSMO: Measurable Entities & Measures Sub-ontology



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RSMO: Measurable Entities & Measures Sub-ontology

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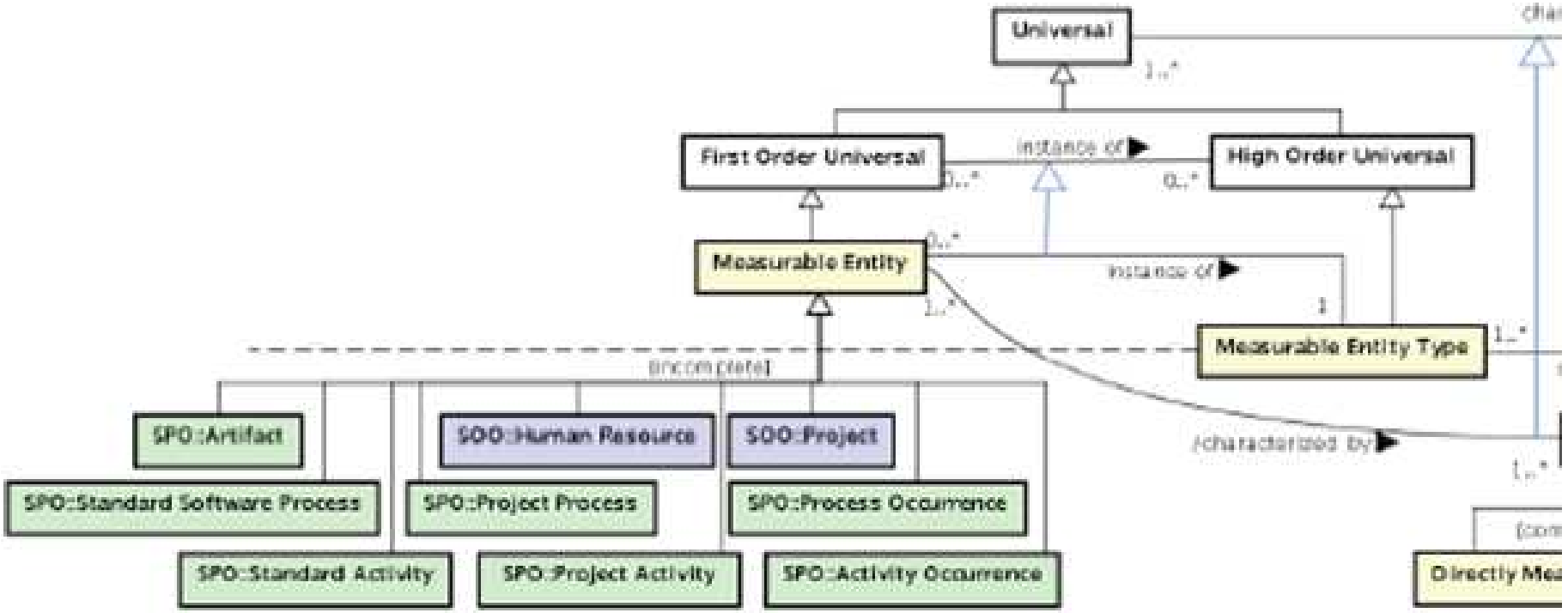

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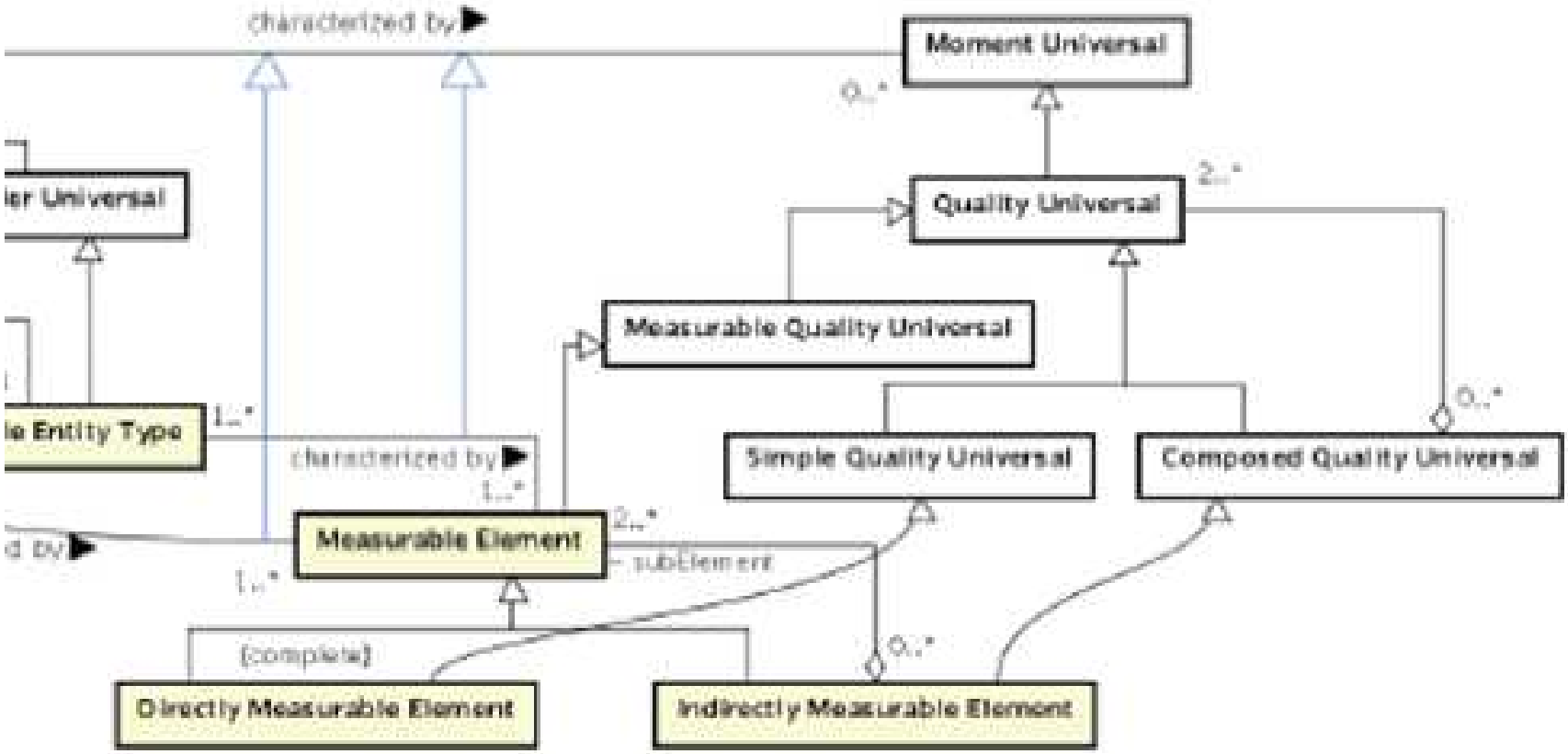
RSMO: Measurable Entities & Measures Sub-ontology



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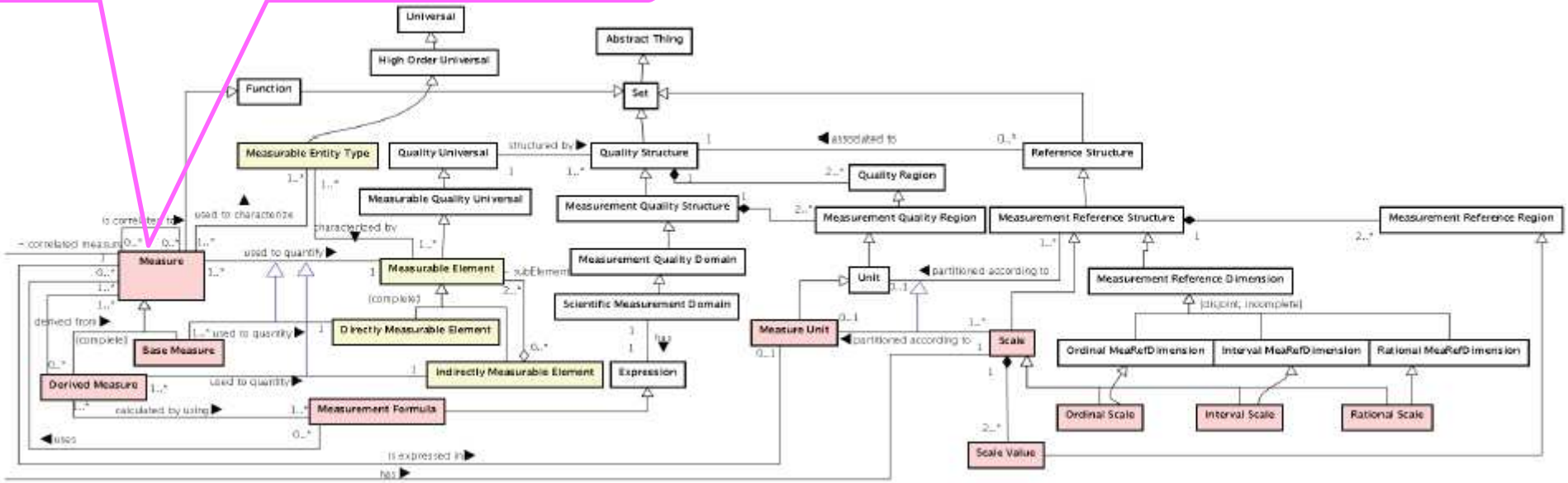
BMMO: Measurement Model ’90s (MM)



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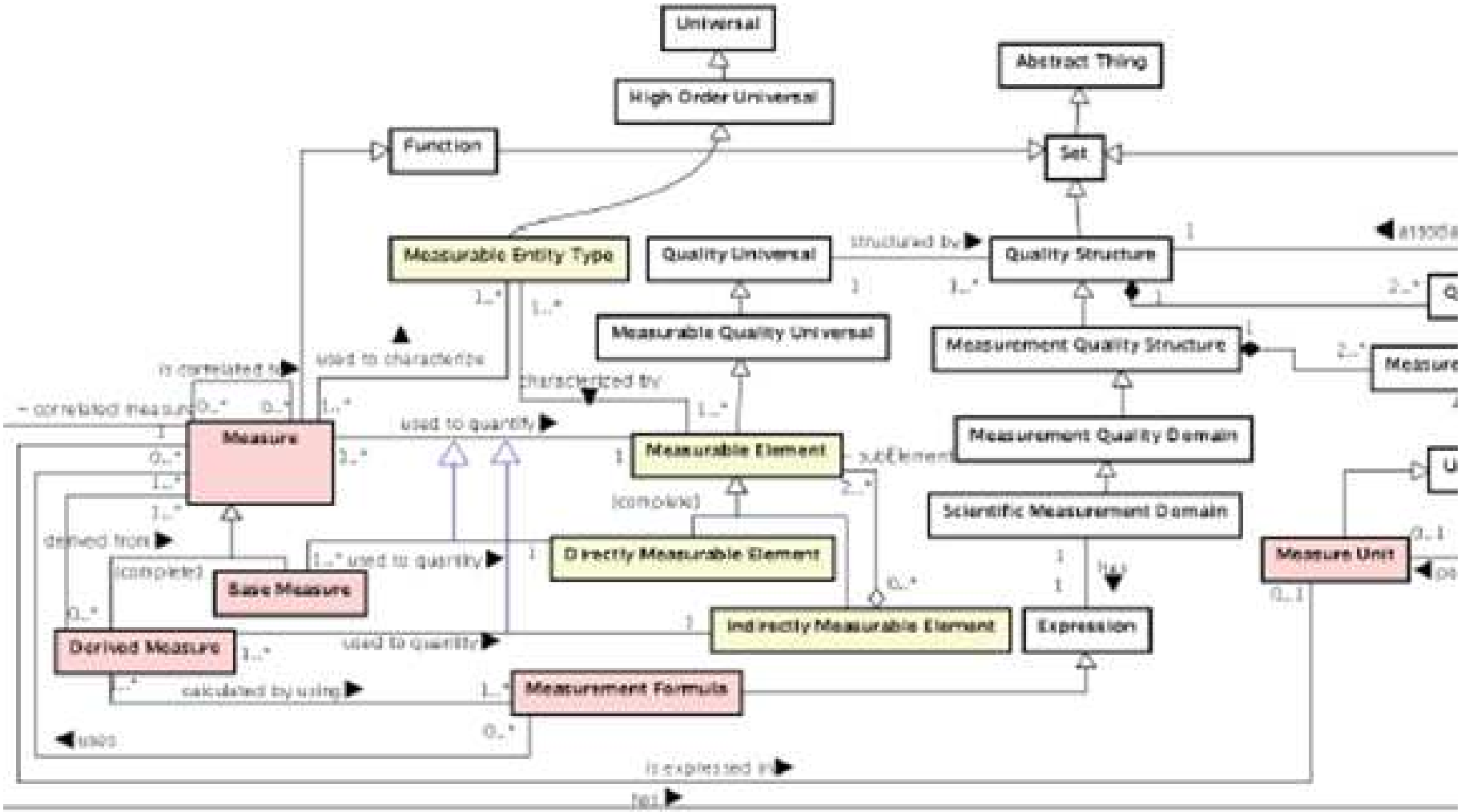
RSMO: Measurable Entities & Measures Sub-ontology



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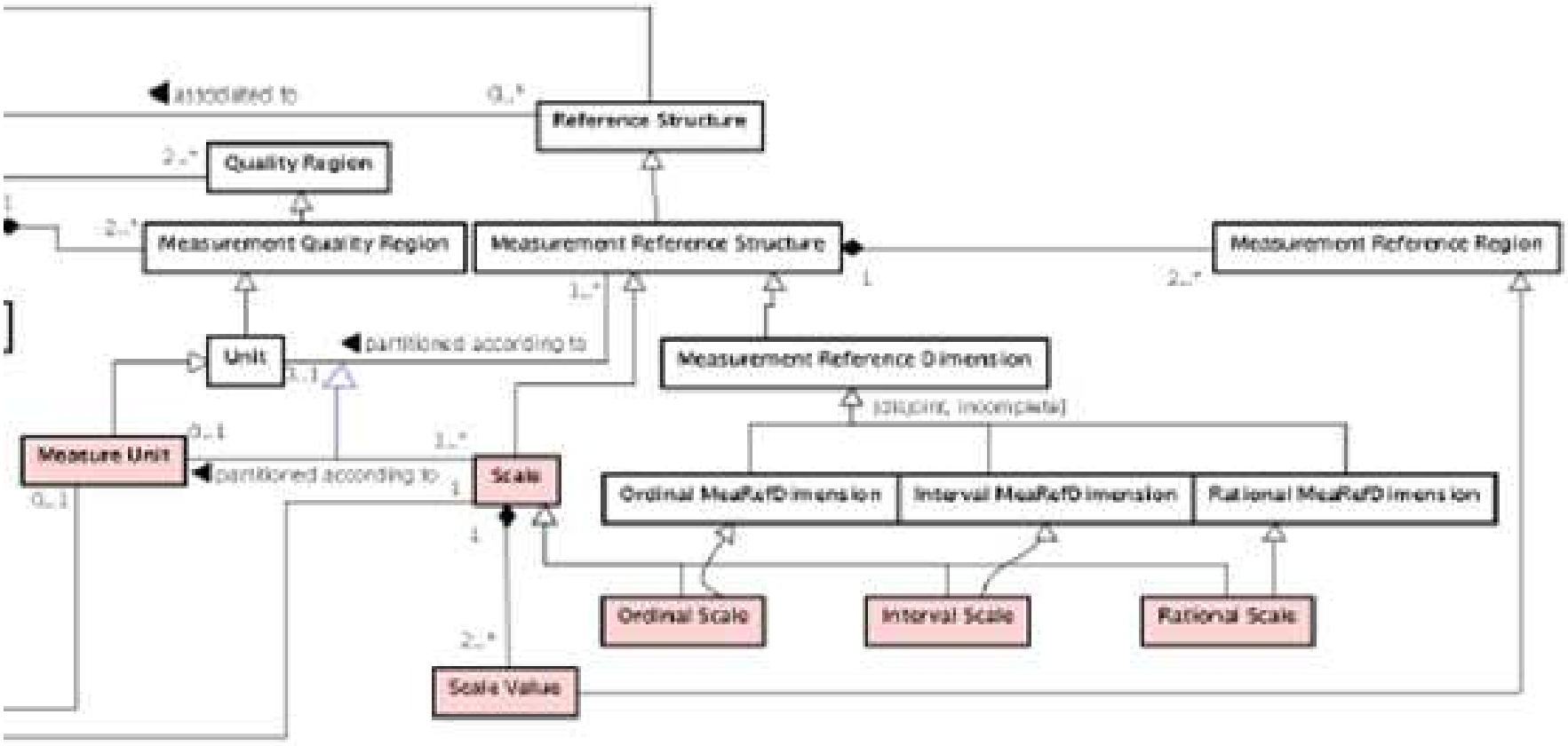
RSMO: Measurable Entities & Measures Sub-ontology



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RSMO: On Measurement Goal Sub-ontology

Again, let us continue to define/redefine for RSMO some concepts or recall concepts that at this point of the course the ISSSR class should already know, which sometimes are denoted by different words (["different word"]). Additionally, some times the same word is used to denote different concepts.

Measurement should be aligned to organizational goals in order to produce useful data for decision-making, goals monitoring, activities management and process performance analysis.

The Measurement Goals sub-ontology addresses concepts, relationships and constraints related to the alignment between measurement and goals.

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RSMO: Measurement Goal Sub-ontology (Fragment)

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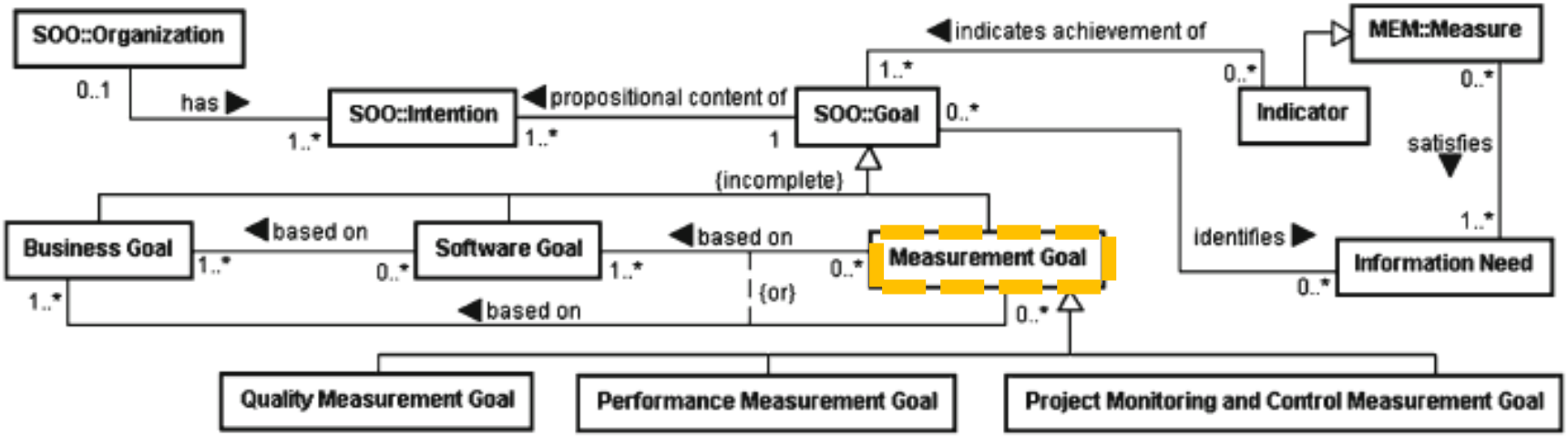

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RSMO: MGO Sub-ontology's Glossary

Intention: it is the purpose for which actions are planned and performed in an **Organization**.

Goal: it is the propositional content of an Intention. In the RSMO context of software measurement, a goal can be a *Business Goal*, a *Software Goal* ["Organizational goal"] or a *Measurement Goal*. Software and measurement goals are defined based on business goals. Measurement goals can also be defined from software goals.

Business Goal: it expresses the intention for which strategic actions are planned and performed (e.g., increase 10% the # of clients).

A **Software Goal**: it expresses the intention for which actions related to the software area are planned and performed (e.g., achieve the CMMI level 4).

Measurement Goal: it expresses the intention for which actions related to software measurement are planned and performed (e.g., stabilize the behavior of the critical processes).

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RSMO: MGO Sub-ontology's Glossary

Project Monitoring and Control Measurement Goal: it is a kind of Measurement Goal (e.g., improve the adherence to projects plans).

Quality Measurement Goal: it is one more kind of Measurement Goal (e.g., reduce the number of delivered defects).

Performance Measurement Goal: it is a further kind of Measurement Goal (e.g., stabilize the behavior of the critical processes).

Information Needs: they are identified from goals and are satisfied by Measures. For instance, the measurement goal improve the adherence to projects plans could identify the information need know the requirements stability after their approval by the client, which could be satisfied by the measure requirements changing rate.

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RSMO: MGO Sub-ontology's Glossary

Indicator: it is the role fulfilled by a measure that is used to indicate the achievement of goals.

Considering the example cited above, if the measure requirements changing rate is used for monitoring the achievement of the goal improve the adherence to projects plans, then, in this context, it is an indicator.

Constraint: limits or relationships or others (e.g., an obligation to exist) that are imposed to goals, measures or some other kinds of entities.

For instance: If a measure *m* is an indicator of achievement of the goal *g,* then there should exist an information need *in*, identified from the goal *g*, which is satisfied by *m.*

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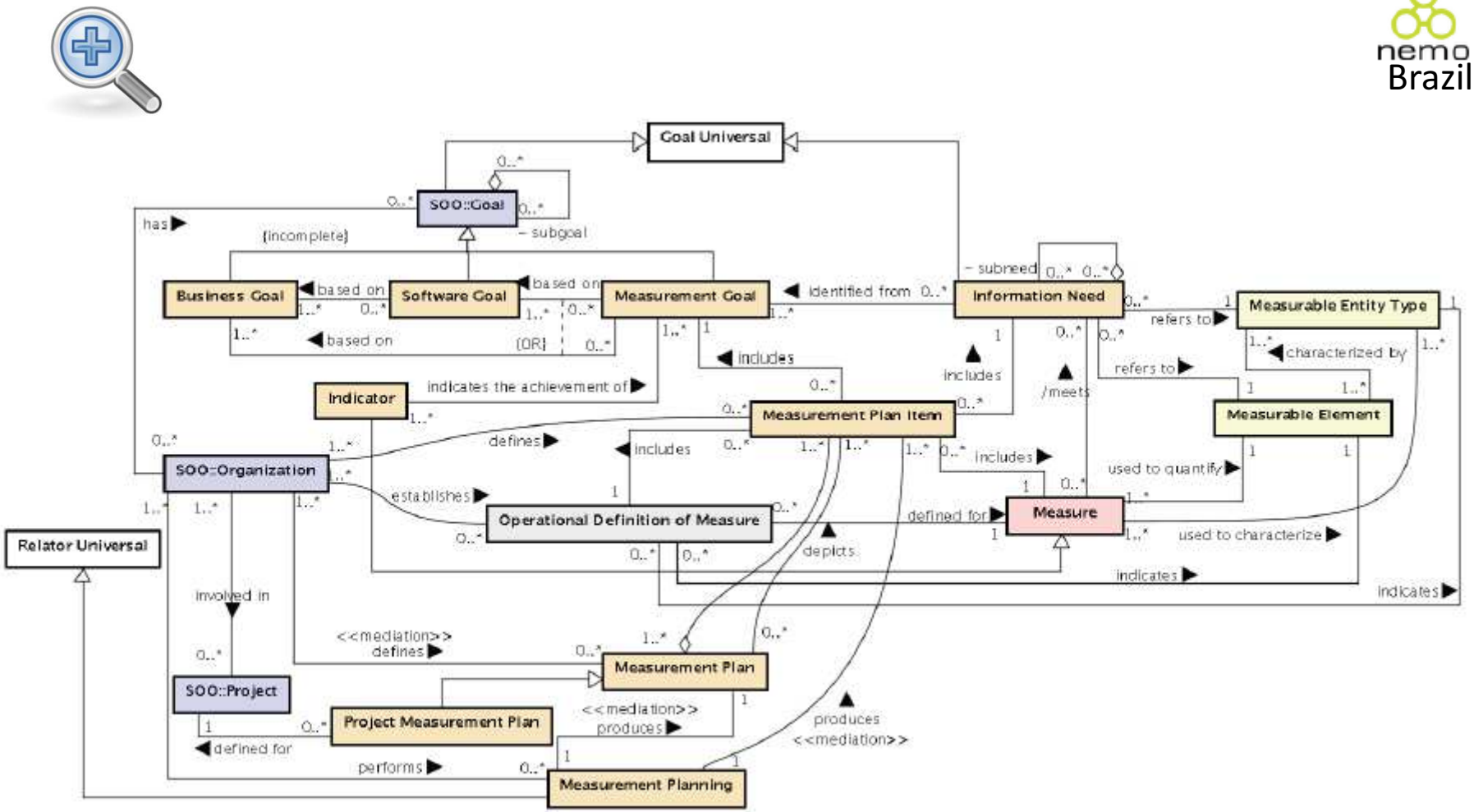
RSMO: Measurement Goal Sub-ontology



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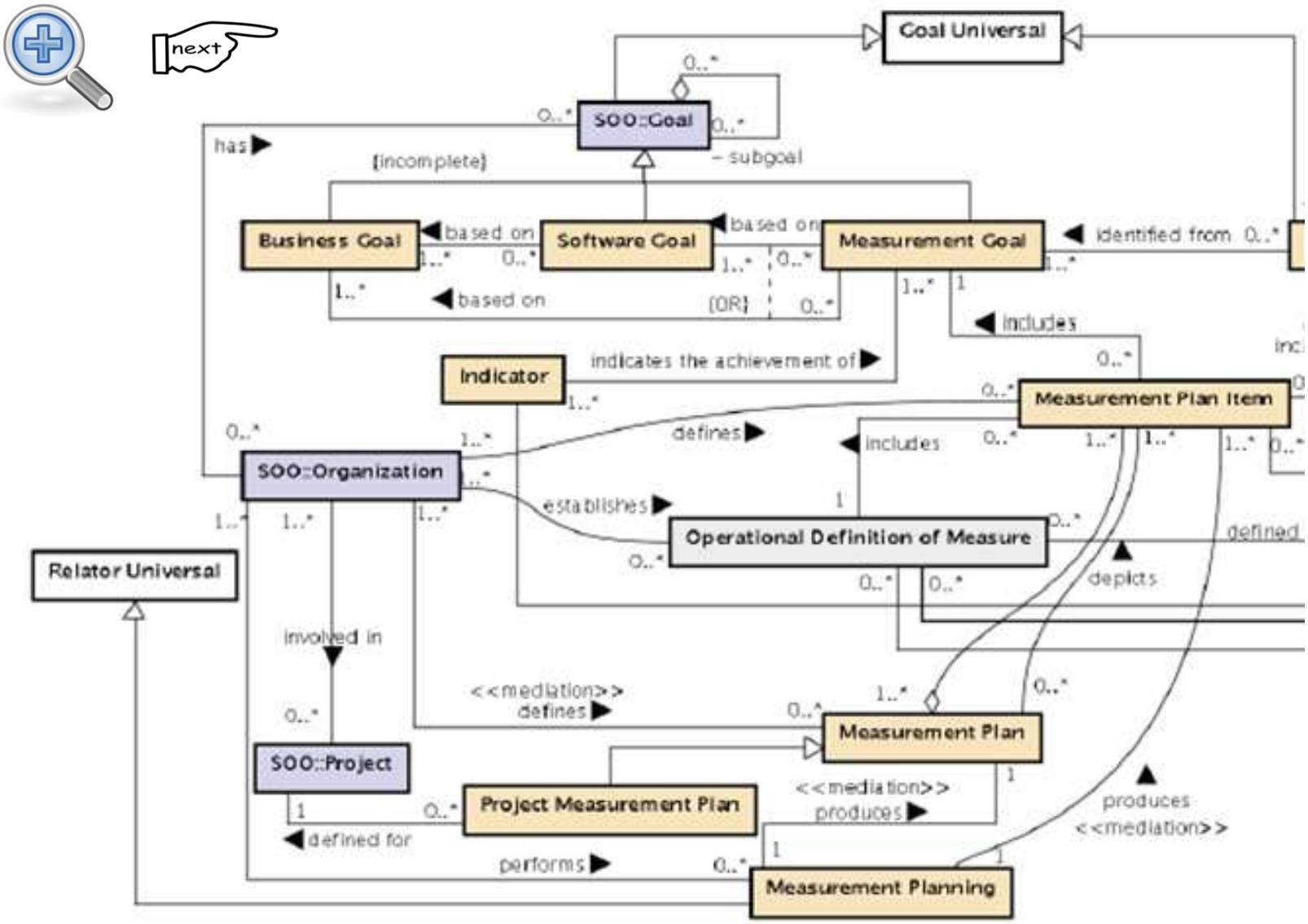
RSMO: Measurement Goal Sub-ontology



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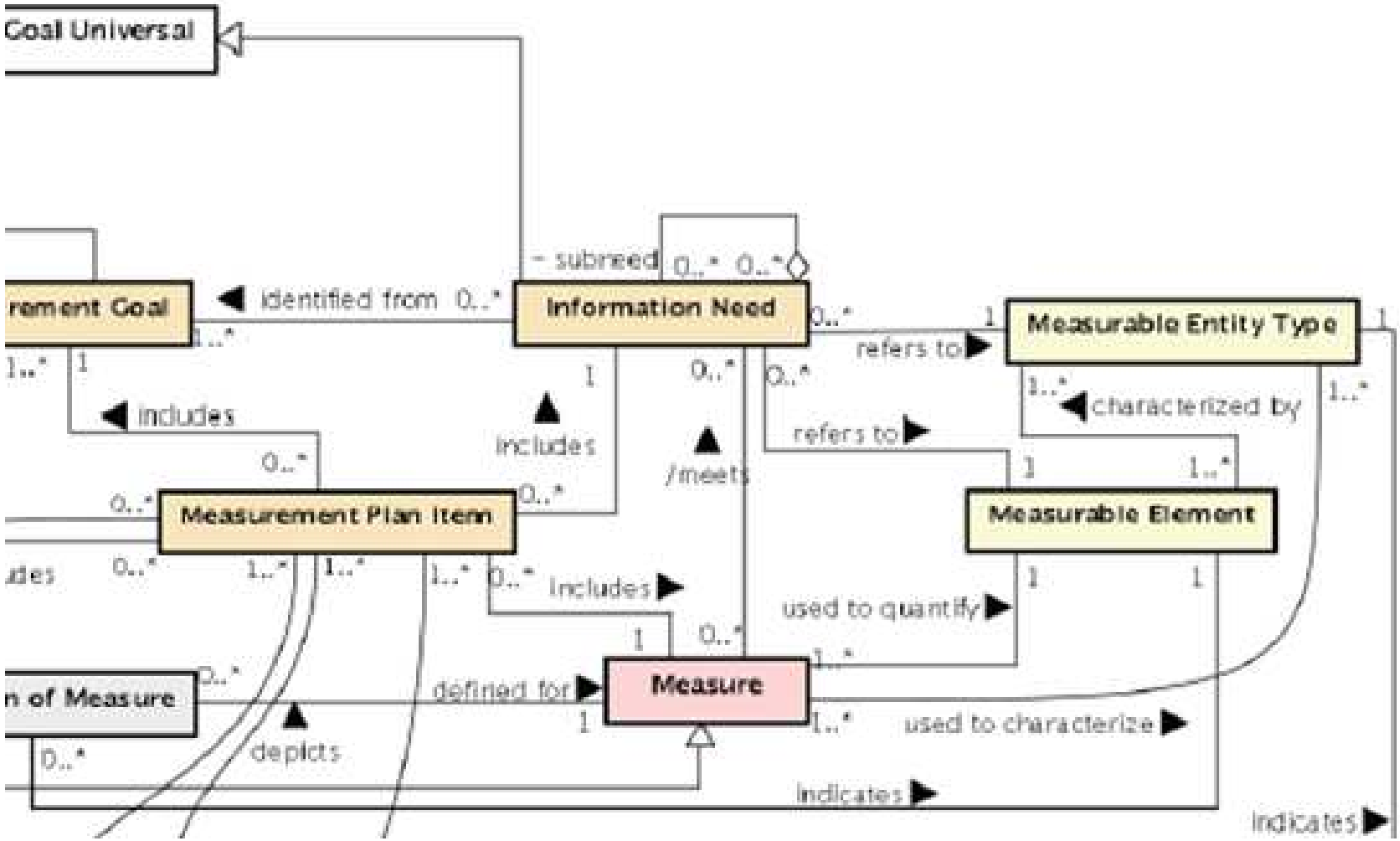

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