

LexGrid

Philosophy, Model and Interfaces

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Outline

- **Why the LexGrid model was created**
- **LexGrid approach and principles**
- **Key aspects of the LexGrid model**

Why LexGrid?

The situation in the late 1990's:

- **Multiple “terminologies” available**
 - **SNOMED-3 and SNOMED-RT**
 - **READ Codes**
 - **HCDA (ICD-8 w/ Mayo Extensions)**
 - **ICD-9-CM**
 - **...**

Why LexGrid?

The situation in the late 1990's:

- **DL was on the horizon**
 - **SNOMED-RT**
 - **GALEN**
 - **DAML+OIL beginning to emerge**

Why LexGrid?

Mayo Health Sciences Research

- **Multiple experiments and projects involving NLP, semi-automated record coding and classification, terminology-driven record retrieval, coded medical records, etc.**

Why LexGrid?

Mayo recognized the need for re-use

- **Terminologies have common characteristics**
- **Software should be reusable**
 - **Search and indexing**
 - **Query**
 - **Tree traversal**
 - **...**

Why LexGrid?

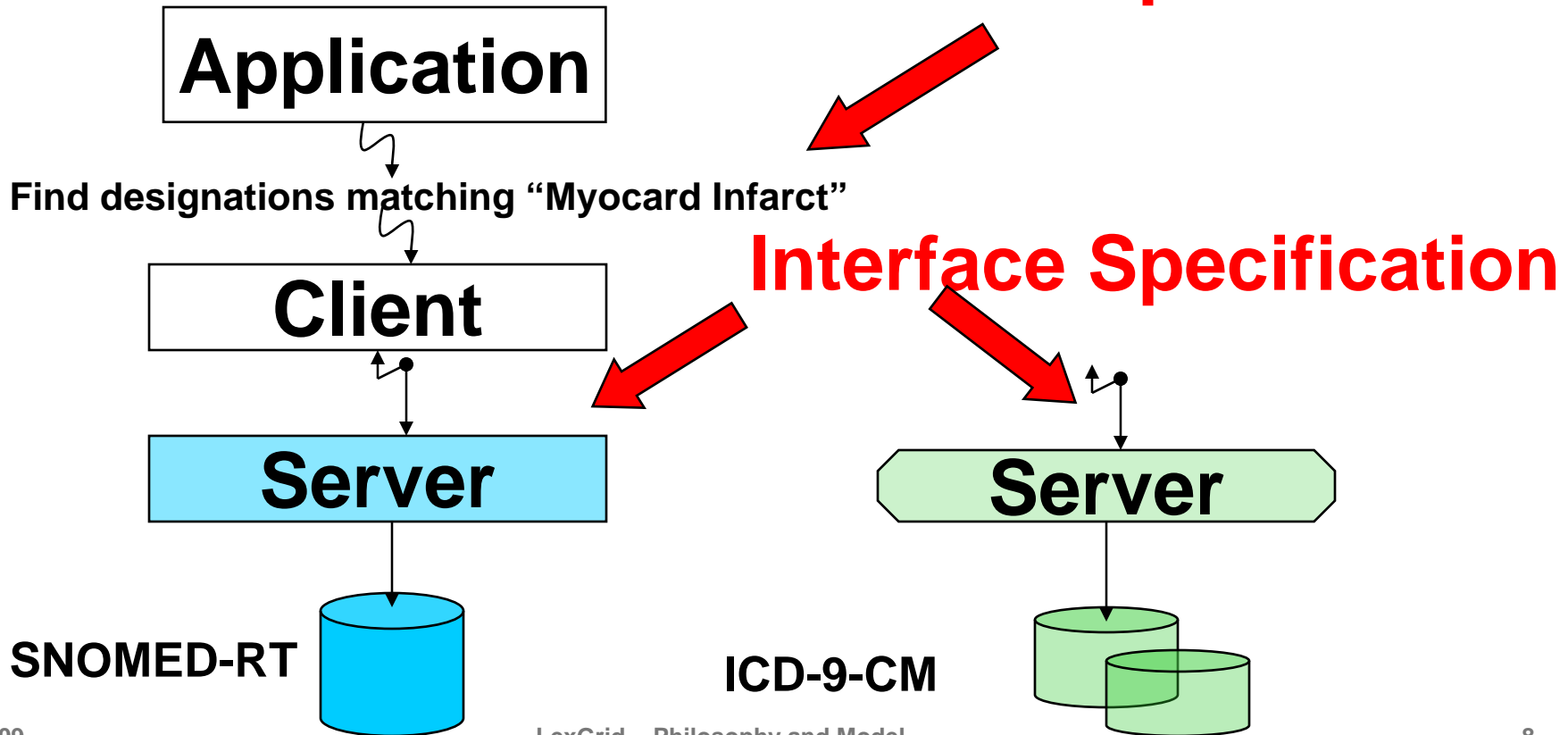
Part of the solution was the service oriented model:

- **Aka “Breadboard”**
- **API specifications (OMG’s LQS was primary example)**

Why LexGrid?

Service Oriented Model:

API Specification



Why LexGrid?

API/Interface Specification

Provides a common semantics

- **What is a “definition”, “designation”, “relationship”, ...**
- **Provides a common interface**

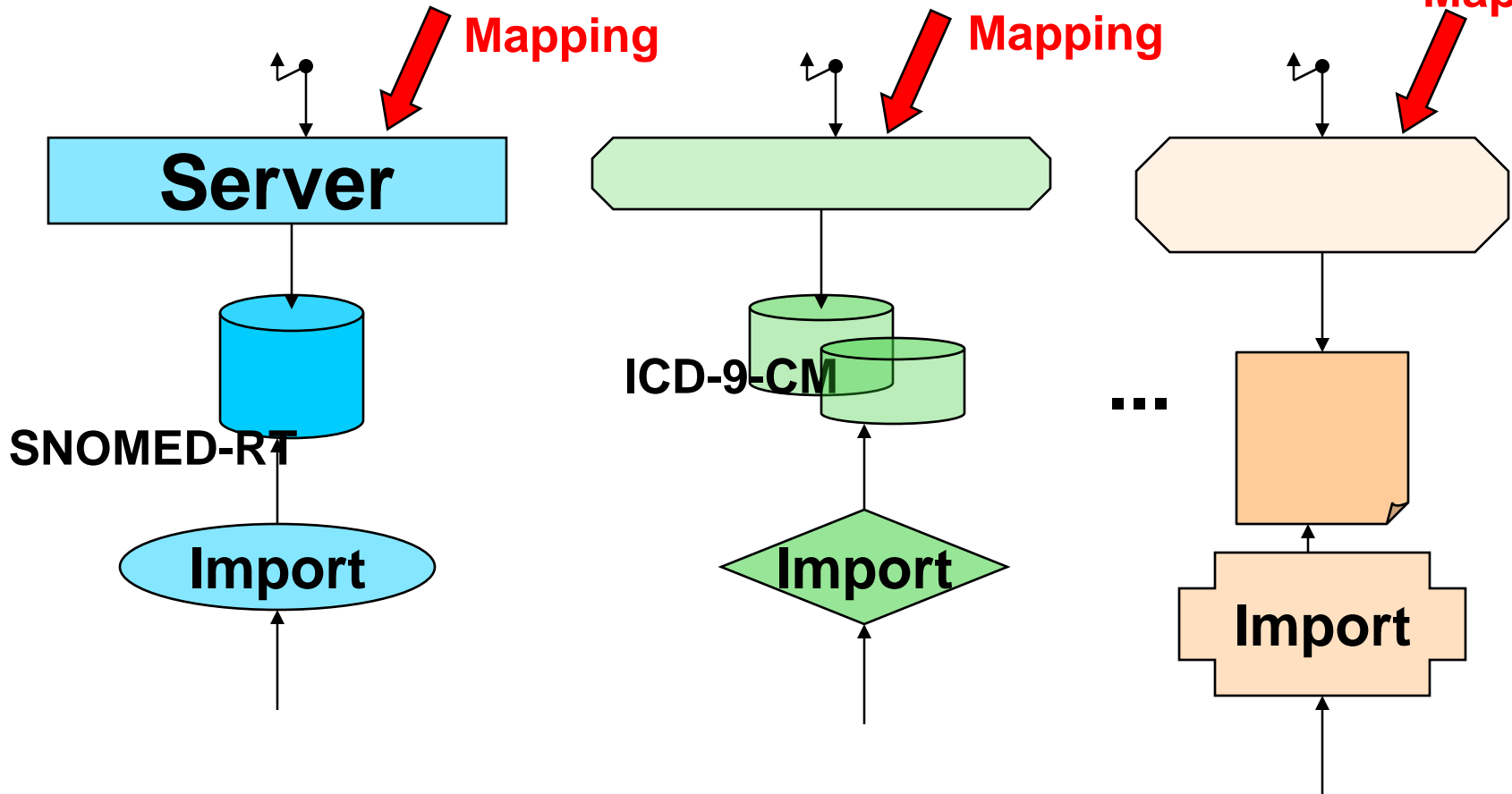
Allows implementation to be specific to the terminology...

Why LexGrid API/Interface Specification

Semantic Mapping

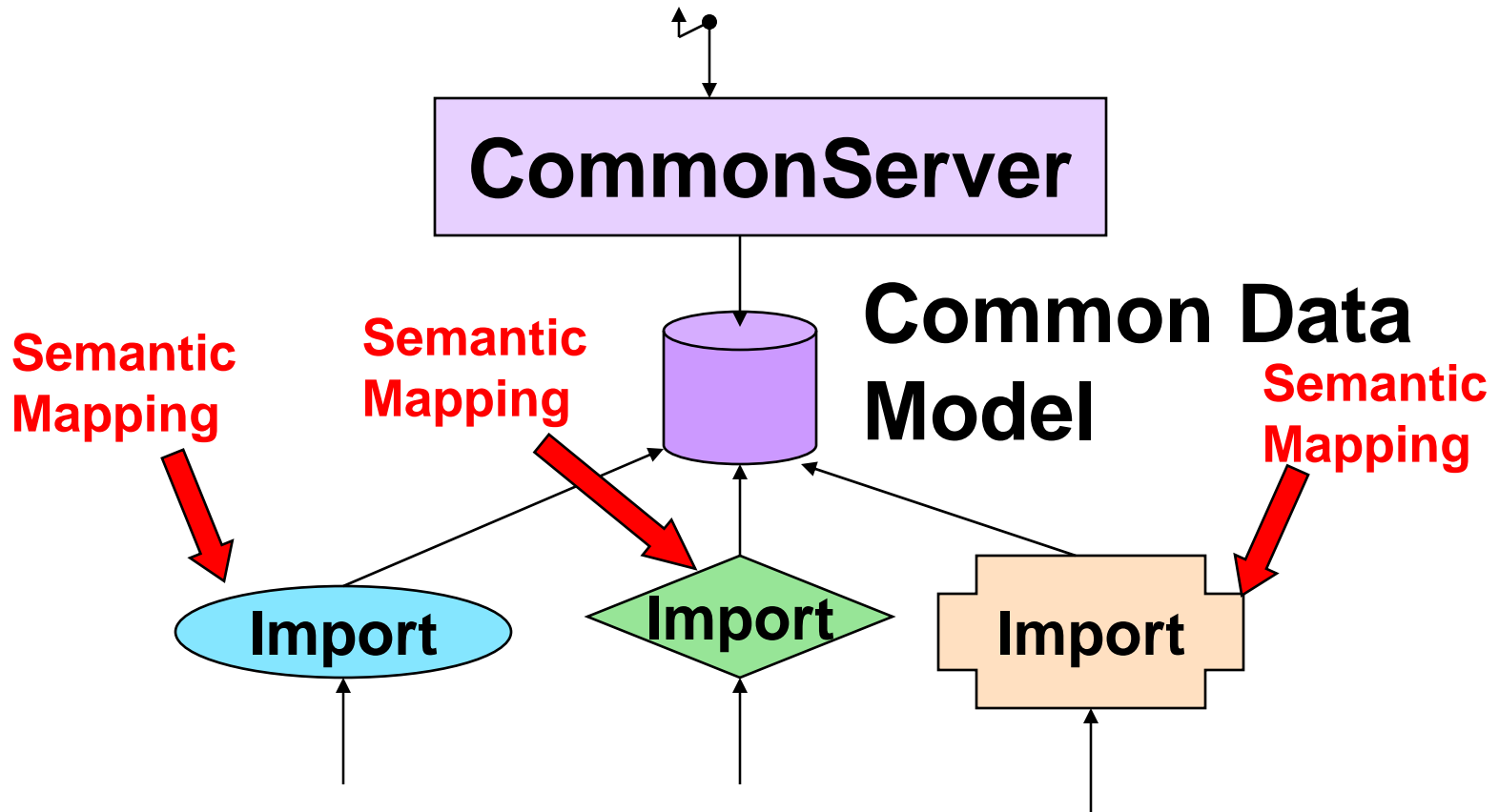
Semantic Mapping

Semantic Mapping



Why LexGrid?

Harmonization on the model level



Why LexGrid?

LexGrid:

A Common Terminology Data Model

Descriptive *not* Prescriptive

LexGrid Design Principles

Must span spectrum of “terminology”

- **Code/value lists**
- **Thesauri (BT/NT)**
- **Classification Schemes**
- **Ontology & DL**

LexGrid

Design Principles

Must provide common semantics for elements that are used in service API:

- **(Textual) Definitions**
- **Designations**
- **Comments**
 - **Language / context / character set**
- **Hierarchies**
- **Relationships**

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Design Principles

Must support non-API components as tag/value pairs.

Must map ALL internal semantics to external (terminological) definitions.

- **A property is useless if you don't know the meaning of the tag**
- **A relation is useless if you don't know its definition**

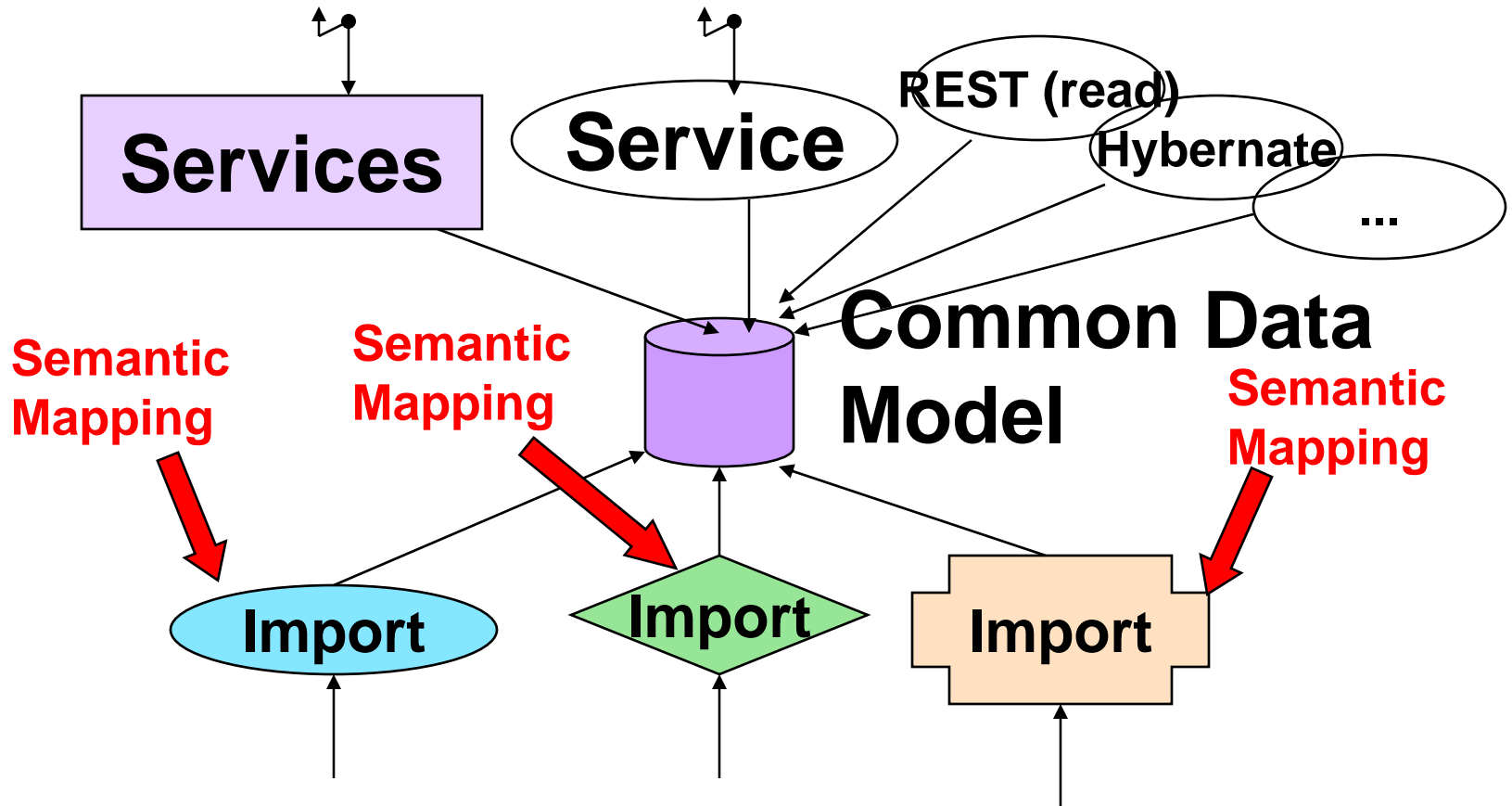
LexGrid Design Principles

**Focus should be in information model
vs. implementation:**

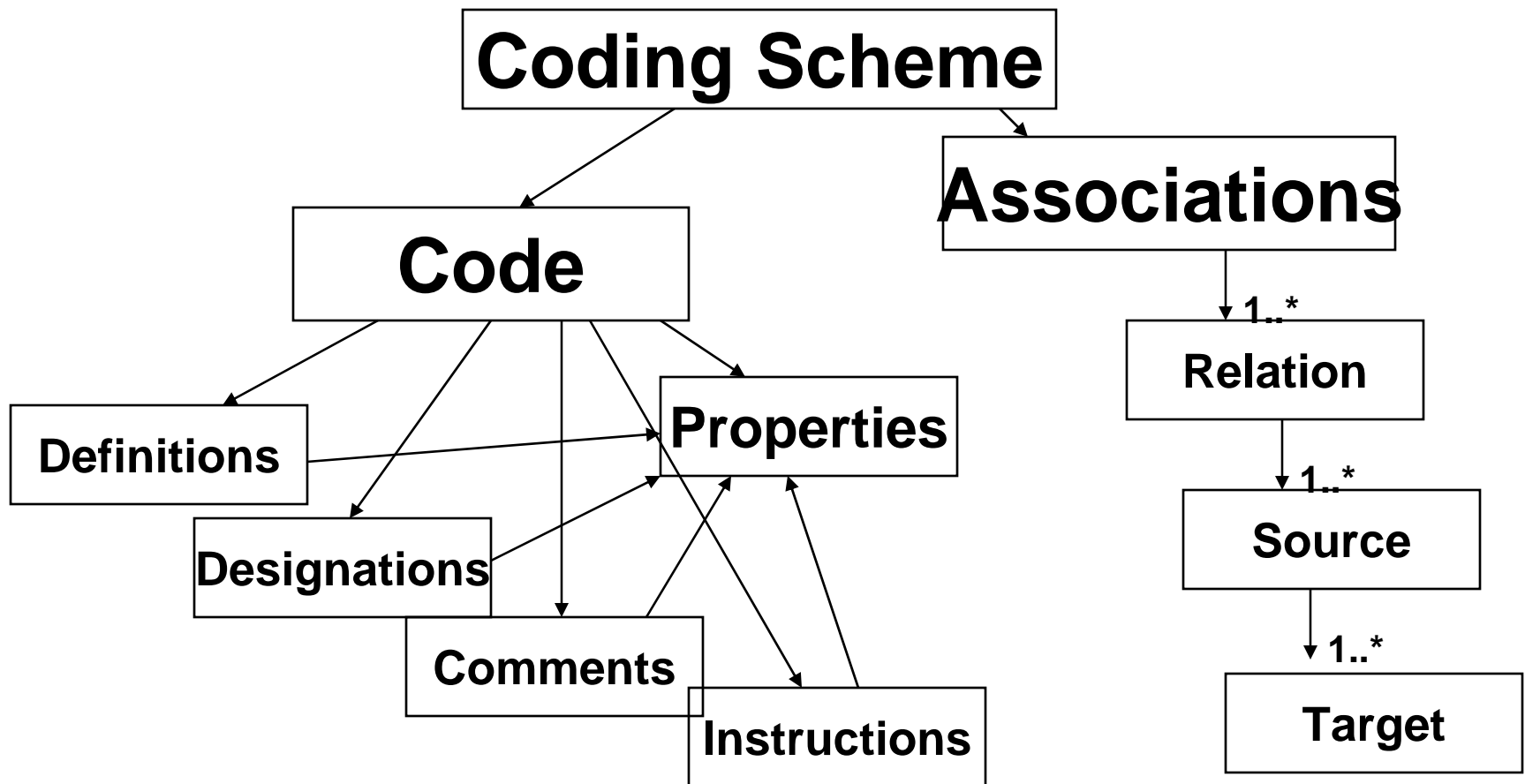
- **Originally implemented in LDAP**
- **XML Schema Model**
- **(Multiple) SQL Renderings to meet different user requirements**
- **Both Castor and Eclipse EMF renderings**

LexGrid Model

Service Layer becomes secondary!



LexGrid Key Components



LexGrid

Key Components

Mappings

- supportedCodingScheme
- supportedSource
- supportedProperty
- supportedAssociation
- supportedPropertyQualifier
-

Transform a “local name” to a URI

- supportedAssociation localId=“hasPart”
URI=“http://www.obofoundry.org/ro/ro.owl#part_of”>

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Future and Next Steps

Many loaders, interfaces available today

- **OBO, OWL, RDF, UMLS, CSV, Ontylog, custom...**

Several service API's and implementations

- **CTS, LexEVS (core of caBIG), LexWiki (sort of “implementation”)**

LexGrid

Future and Next Steps

LexRDF

- **OWL (2.0), DC, FOAF, SKOS (2008), RDF, RDFS, RO (to an extent) together now provide a reasonable overlay to LexGrid semantics**
- **Next step is to absorb and integrate**
 - **Mappings can now reference these**
 - **RDF import/export form that maintains model while using appropriate tags**

More Information

<http://LexGrid.org/>

https://cabig-kc.nci.nih.gov/Vocab/KC/index.php/Main_Page

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