

Practical use of ISO 15926

Session 2

“The life of an electric motor”

+

“Levels 0-2 (n)”

June 7, 2011

Magne Valen-Sendstad, DNV

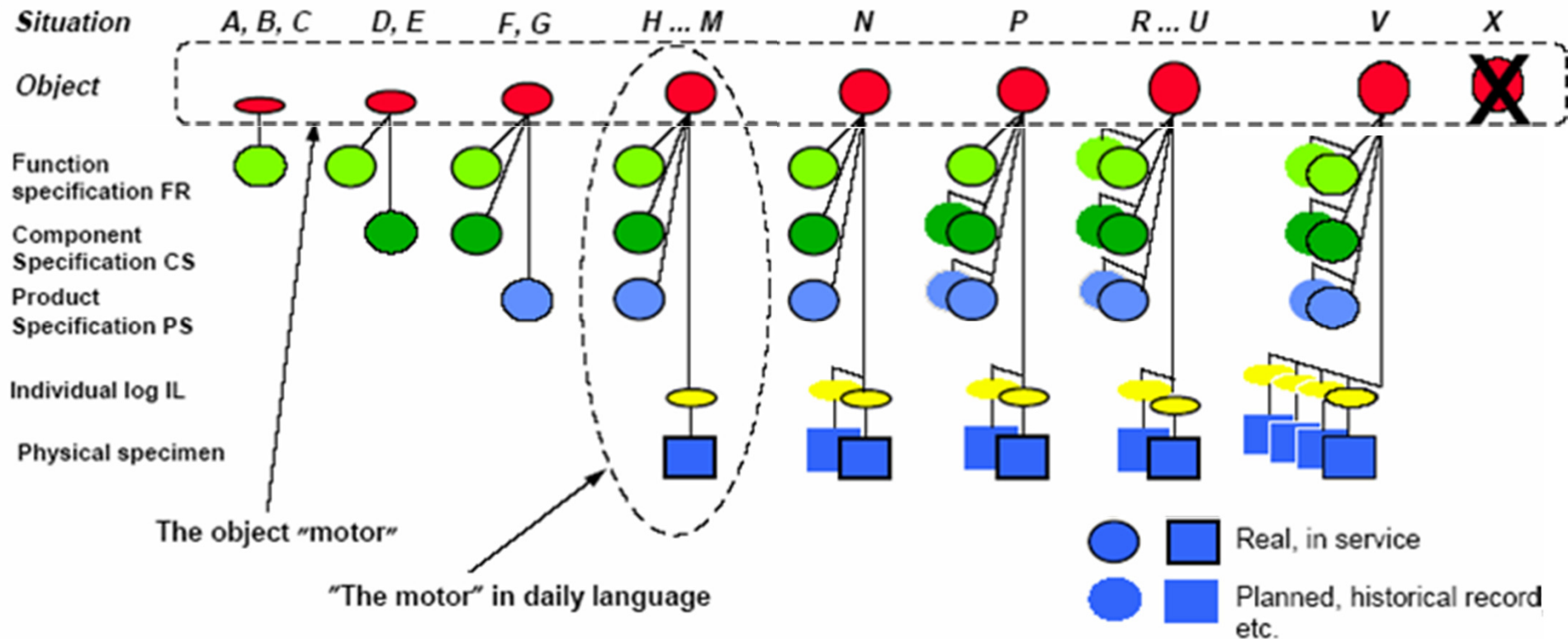
with

Johan W. Klüwer, DNV

“The Life Of An Electric Motor”

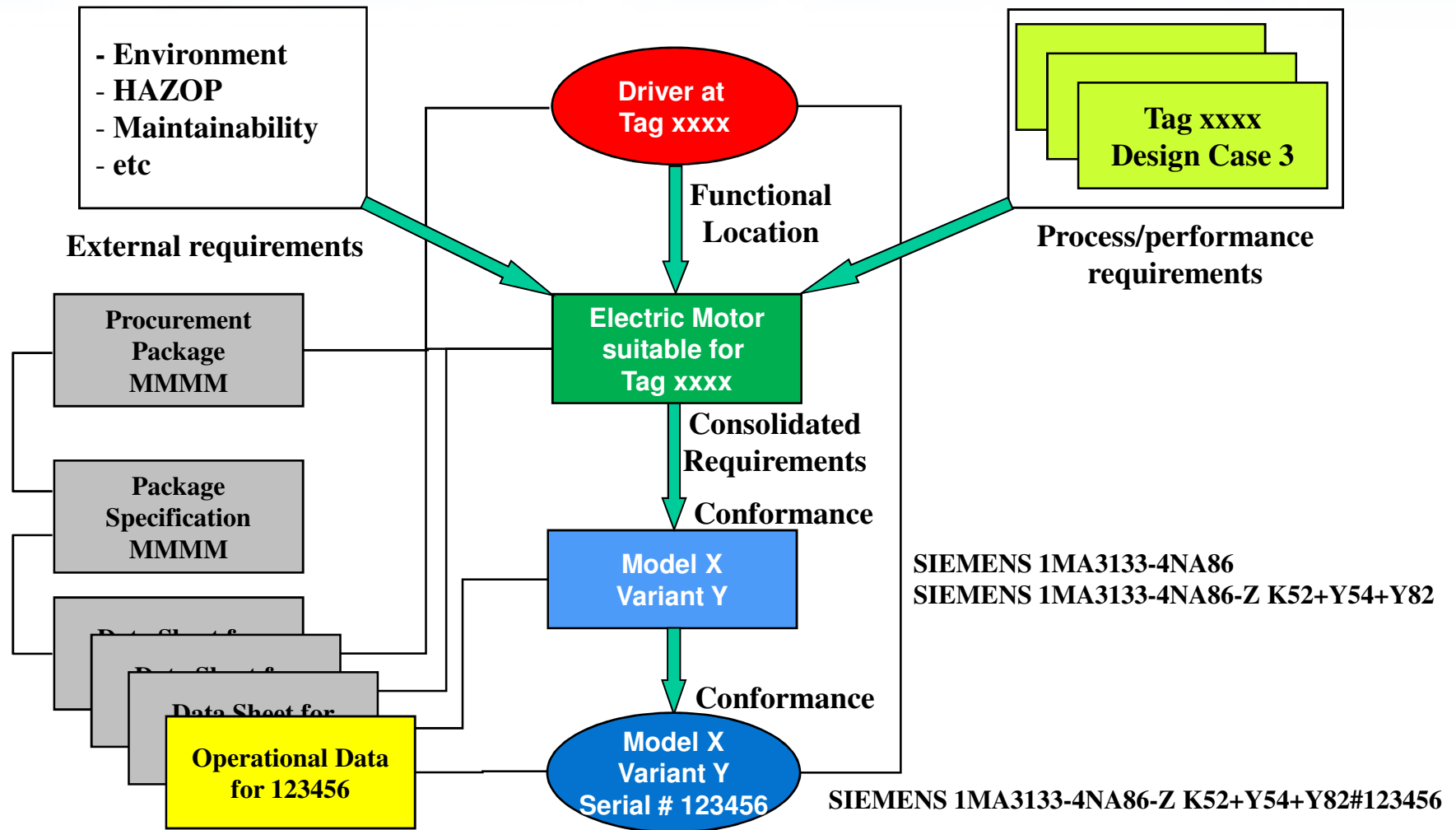


The Life Cycle According to IEC 61346-4



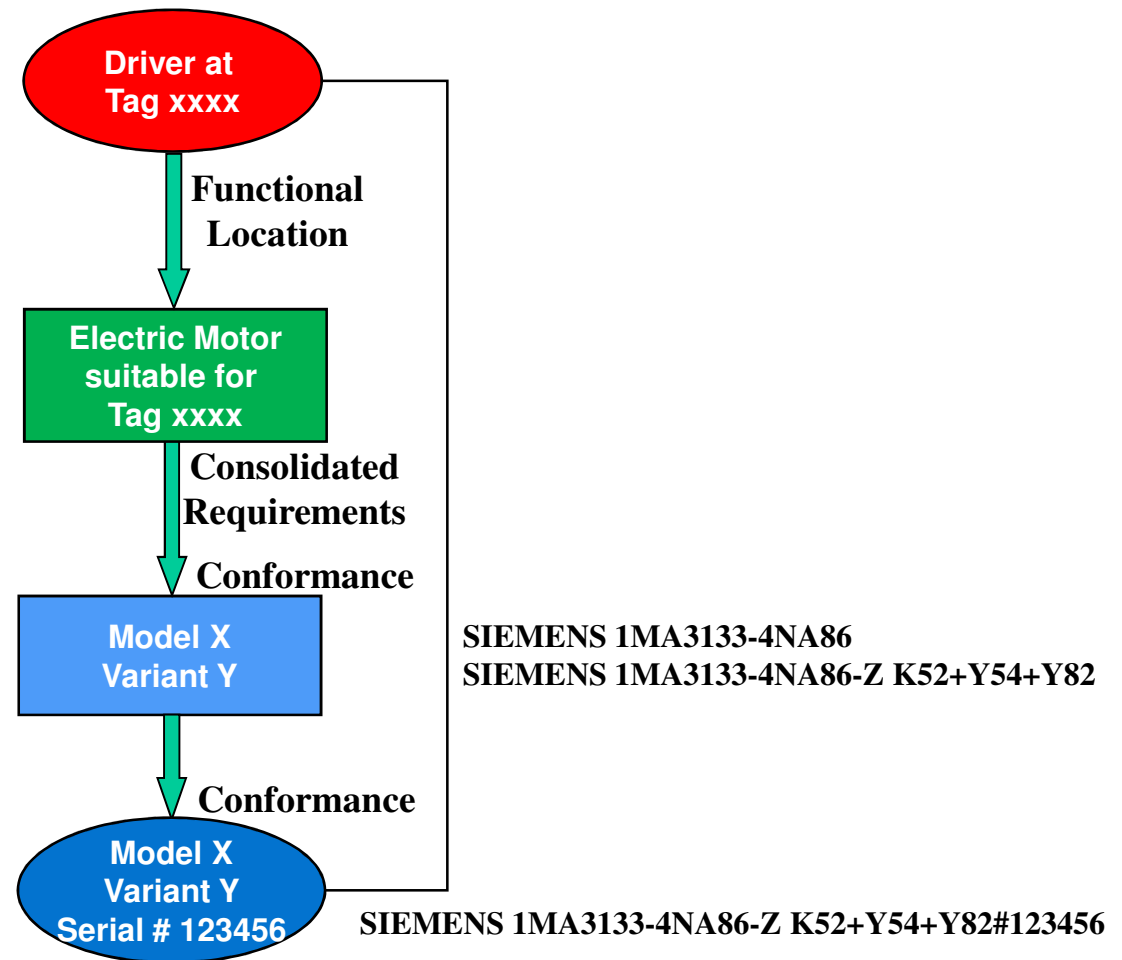
Both objects and specifications have individual lifecycles!

Electric Motor Lifecycle Objects and Process



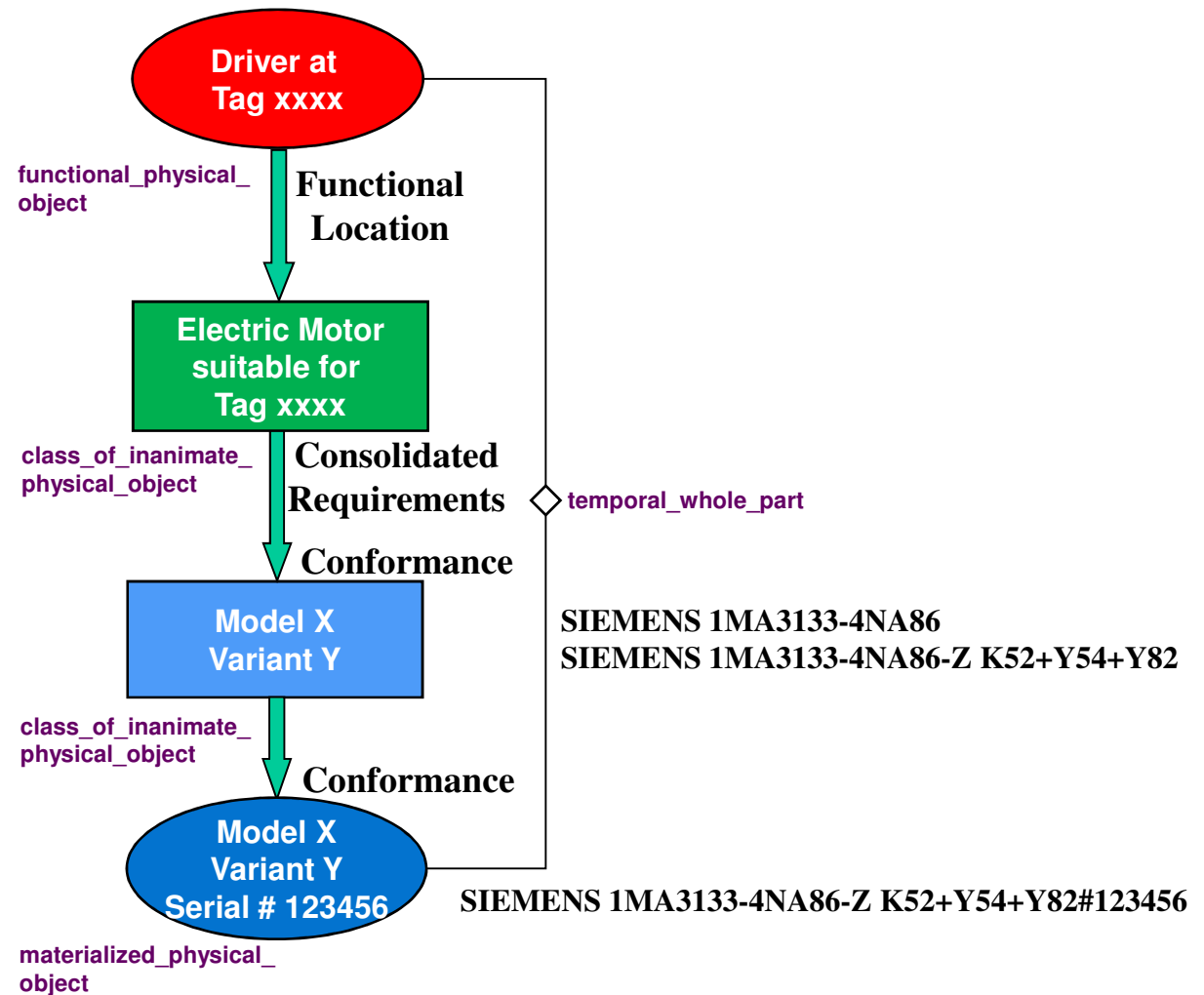
Both objects and specifications have individual lifecycles!

Electric Motor Lifecycle Objects, simplified to cover only the objects that are currently of interest to us

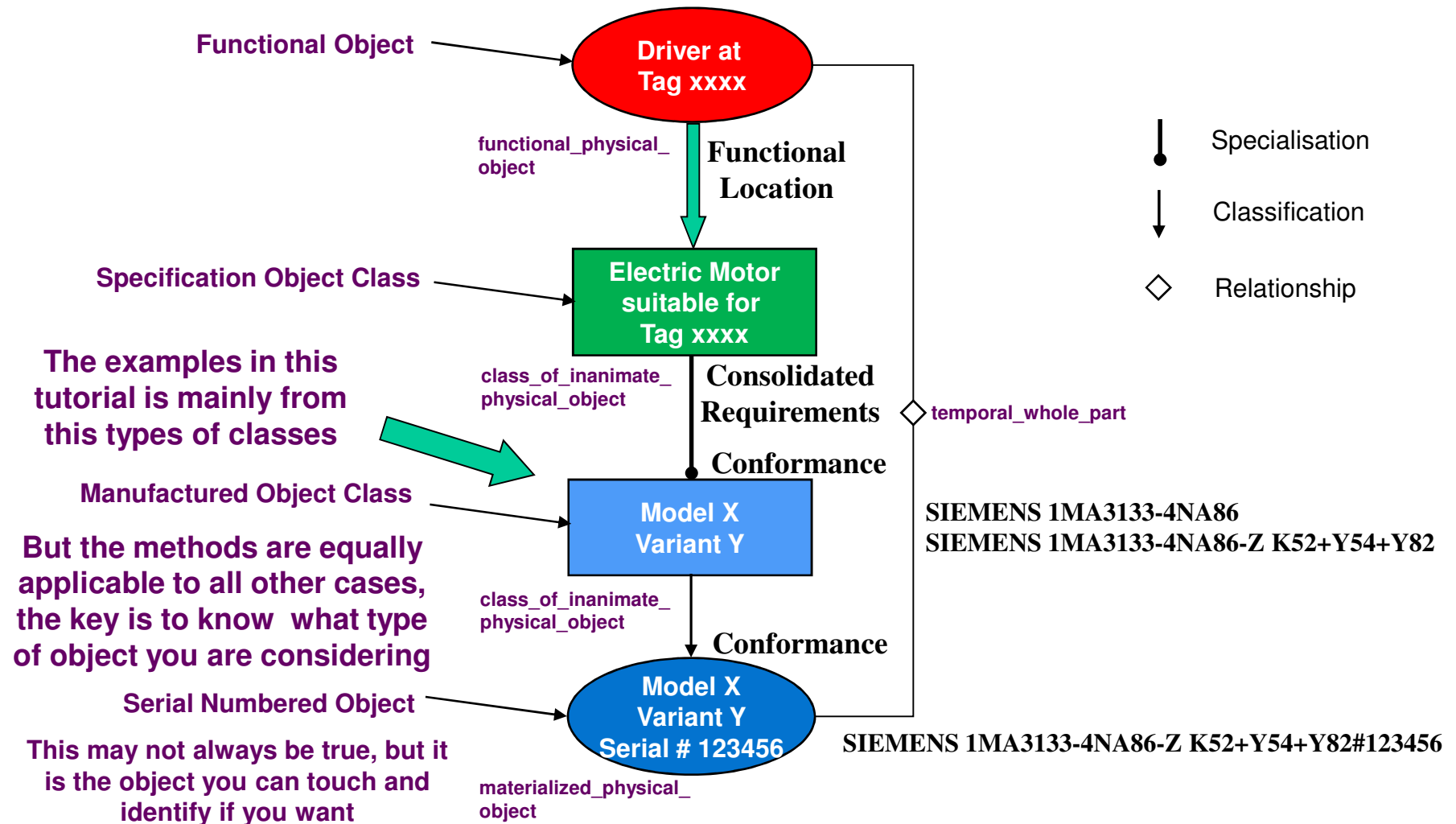


All objects and specifications have separate lifecycles!

Electric Motor Lifecycle Objects, with entity types



Electric Motor Lifecycle Objects, with entity types and proposed “names”



Entity types required to describe the aspects of “The life of an electric motor” presented here

- **We have seen the need for**

- | | | |
|--------------------------------------|-------------------------|--------------------|
| ● functional_physical_object | Individual object | (Level 0) |
| ● class_of_inanimate_physical_object | Class | (Level 1) |
| ● materialized_physical_object | Individual object | (Level 0) |
| ● Specialisation | Between classes | (Level 1,2 etc) |
| ● Classification | Between levels | (Level 0 to 1 etc) |
| ● temporal_whole_part | Individual relationship | (Level 0) |

- **There are more in other contexts**

- Most of these will covered in due course (but not here)

RDL Explorer - Microsoft Internet Explorer provided by Det Norske Veritas

File Edit View Favorites Tools Help

Address <http://193.212.132.108/apps/rdsclient.html>

Address <http://193.212.132.108/rds/> Log out Magne Valen Sendstad

Search Search

Advanced search

Result(1)

Search result - 93 Hits

...	RDL Designation	Entity type
65	SIEMENS FRAME SIZE CODE 317	CLASS_OF_INA...
66	SIEMENS FRAME SIZE CODE 83	CLASS_OF_INA...
67	SIEMENS FRAME SIZE CODE 90	CLASS_OF_INA...
68	SIEMENS FRAME SIZE CODE 96	CLASS_OF_INA...
69	SIEMENS FRAME SIZE CODE 163	CLASS_OF_INA...
70	SIEMENS FRAME 1LA3 163	CLASS_OF_INA...
71	SIEMENS FRAME SIZE CODE 164	CLASS_OF_INA...
72	SIEMENS FRAME SIZE CODE 166	CLASS_OF_INA...
73	SIEMENS ELECTRICAL ROTATING MACHINE FRAME	CLASS_OF_INA...
74	SIEMENS FRAME SIZE CODE 353	CLASS_OF_INA...
75	SIEMENS FRAME SIZE CODE 355	CLASS_OF_INA...
76	SIEMENS FRAME SIZE CODE 70	CLASS_OF_INA...
77	SIEMENS FRAME SIZE CODE 73	CLASS_OF_INA...
78	SIEMENS 1MA5106-4CA81-Z K46+Y82	CLASS_OF_INA...
79	SIEMENS 1MA3133-4NA86	CLASS_OF_INA...
80	SIEMENS 1MA3133-4NA86-Z K52+Y54+Y82	CLASS_OF_INA...
81	SIEMENS 1MA5133-4NA86	CLASS_OF_INA...
82	SIEMENS 1LA3106-2AA61-Z Y82	CLASS_OF_INA...
83	SIEMENS 1MA MOTOR	CLASS_OF_INA...
84	SIEMENS 1MA7133-4BA66	CLASS_OF_INA...
85	SIEMENS 1MJ MOTOR	CLASS_OF_INA...
86	SIEMENS 1LA MOTOR	CLASS_OF_INA...
87	SIEMENS 1UA MOTOR	CLASS_OF_INA...
88	SIEMENS 1LG MOTOR	CLASS_OF_INA...
89	SIEMENS 1MA6223-4BC81	CLASS_OF_INA...
90	SIEMENS MOTOR CLASS	CLASS_OF_CLA...
91	SIEMENS CODE CLASS	CLASS_OF_CLA...
92	SIEMENS CLASS	CLASS_OF_CLA...

SIEMENS 1MA3133-4NA86 SIEMENS 1MA3133-4NA86-Z K52+Y54+Y82

CLASS OF INANIMATE PHYSICAL OBJECT External references Search global

RDL Designation: SIEMENS 1MA3133-4NA86

PCA ID: RDS8636146

Creation Date: 2002.06.05

Creator: u82237

Registration status: Incomplete

RDL Definition: A Siemens 1MA motor code 1MA3133-4NA86.

Note(s): Siemens Catalog M11

First relation

- CLASS_OF_INDIRECT_PROPERTY.class_of_possessor (16)
 - BREAK DOWN TORQUE MULTIPLIER: 3.7 1 (0)
 - DRY WEIGHT: 53 kg (0)
 - LOCKED ROTOR TORQUE MULTIPLIER: 3.3 1 (0)
 - NUMBER OF ALLOWABLE CONSECUTIVE COLD STARTS: 3 1 (0)
 - NUMBER OF ALLOWABLE CONSECUTIVE HOT STARTS: 2 1 (0)
 - RATED CURRENT: 14 A (0)
 - RATED EFFICIENCY: 87 % (0)
 - RATED FREQUENCY 50 HZ (0)
 - RATED OUTPUT AT DUTY TYPE S1: 7.8 kW (0)
 - RATED SPEED AT 1/1 LOAD: 1445 rev/min (0)
 - RATED TORQUE: 45 N.m (0)
 - SOUND POWER LEVEL AT NOMINAL LOAD: 74 dB (0)
 - SOUND PRESSURE LEVEL AT NOMINAL LOAD: 62 dB (0)
 - STARTING CURRENT MULTIPLIER: 7.7 1 (0)
 - TEMPERATURE RISE: 100 degC (0)
 - TIME CONSTANT MULTIPLIER: 1.6 1 (0)
- SPECIALIZATION.subclass (7)
 - ELECTRICAL ROTATING MACHINE 1500 RPM AT 50 HZ (3)
 - ELECTRICAL ROTATING MACHINE DELTA CONNECTED 400 VOLTS (2)
 - ELECTRICAL ROTATING MACHINE STAR CONNECTED 690 VOLTS (2)
 - IM 2001 FOOT AND FLANGE (1)

Second relation

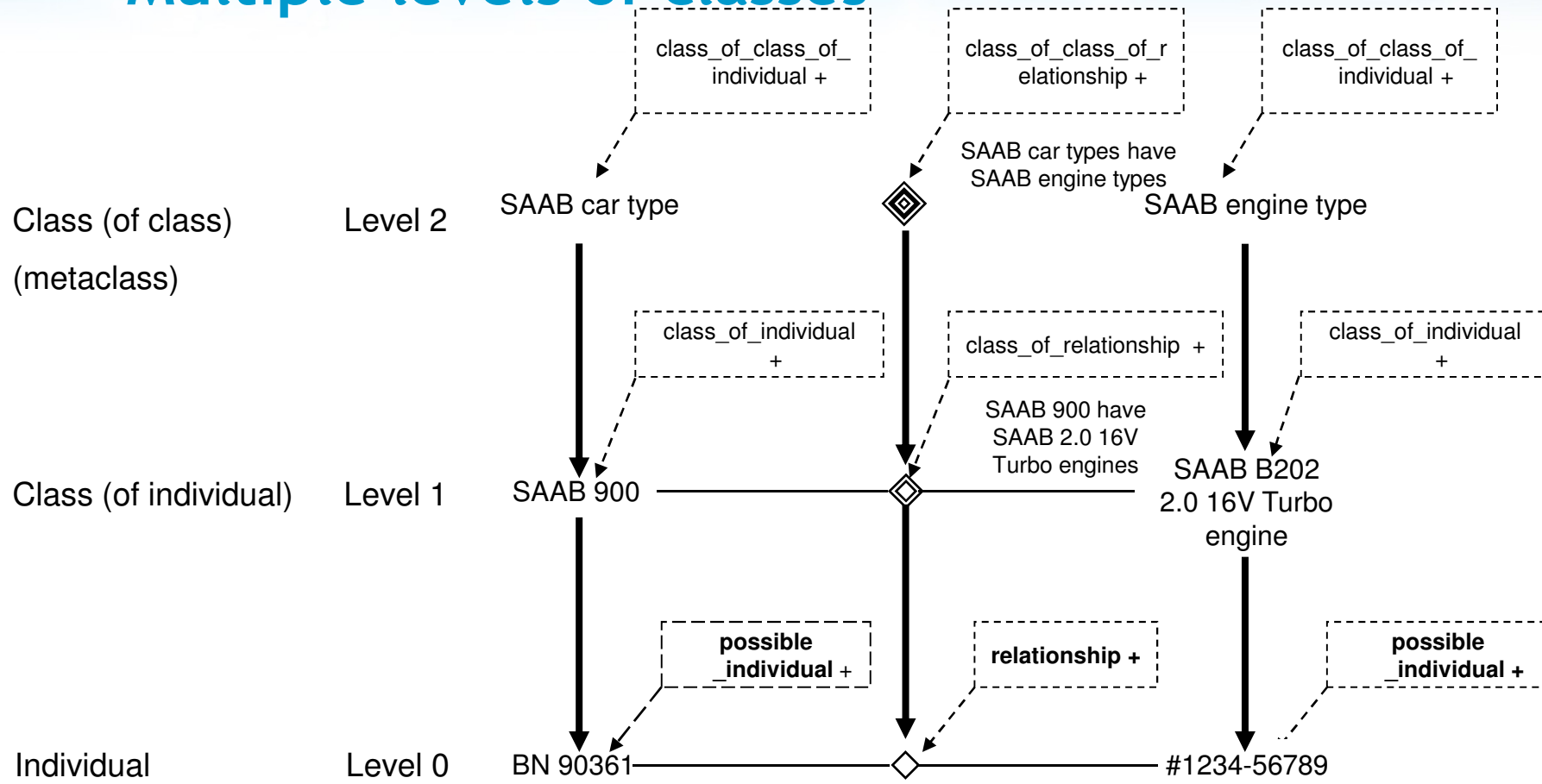
- SIEMENS 1MA3133-4NA86 (4)
 - CLASS_OF_ARRANGEMENT_OF_INDIVIDUAL.class_of_whole (1)
 - CLASS_OF_ASSEMBLY_OF_INDIVIDUAL.class_of_whole (6)
 - BEARING 6208 ZC3 (0)
 - BEARING 6208 ZC3 (0)
 - SIEMENS FRAME SIZE CODE 133 (0)
 - SST NAME PLATE (0)
 - TERMINAL BOX SIEMENS TYPE GK 230 (0)
 - THERMOPLAST COOLING FAN (SIEMENS CODE 1LY7 028) (0)
 - CLASS_OF_IDENTIFICATION.represented (1)
 - SPECIALIZATION.superclass (1)
 - SIEMENS 1MA3133-4NA86-Z K52+Y54+Y82 (0)

RDL Explorer 1.6.2 Memory (Available/Total) 12,55 Mb / 30,37 Mb

Applet ictoffice.ui.ObMainApplication started Internet

start Micro... H:\ Inbox... RE: U... Agen... RDL ... 0809... 0809... NC 07:05

Multiple levels of classes

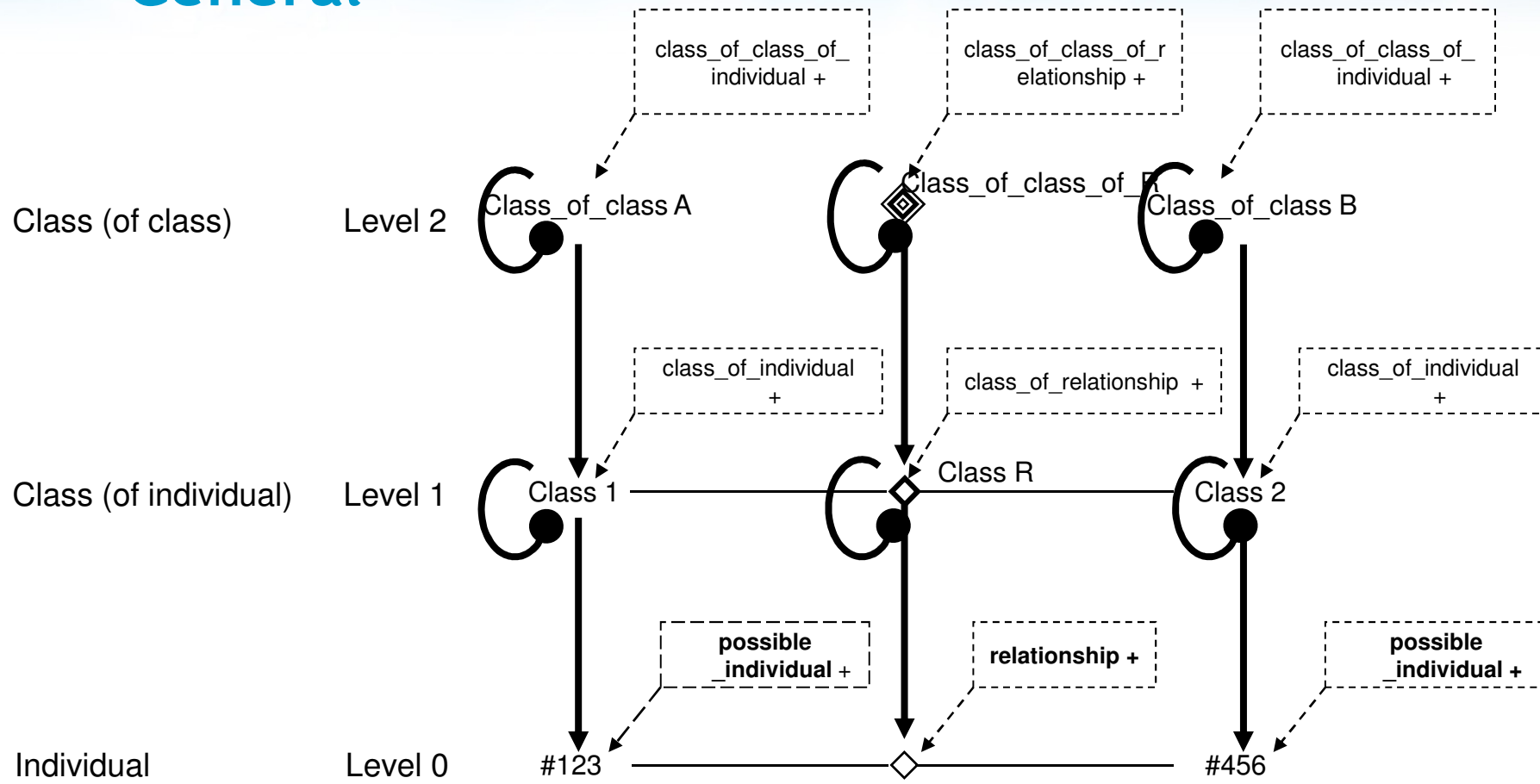


↓ = Classification (pointing at the member)

Part 2 DM entity types

NOTE - Language and notation here is non-normative

General



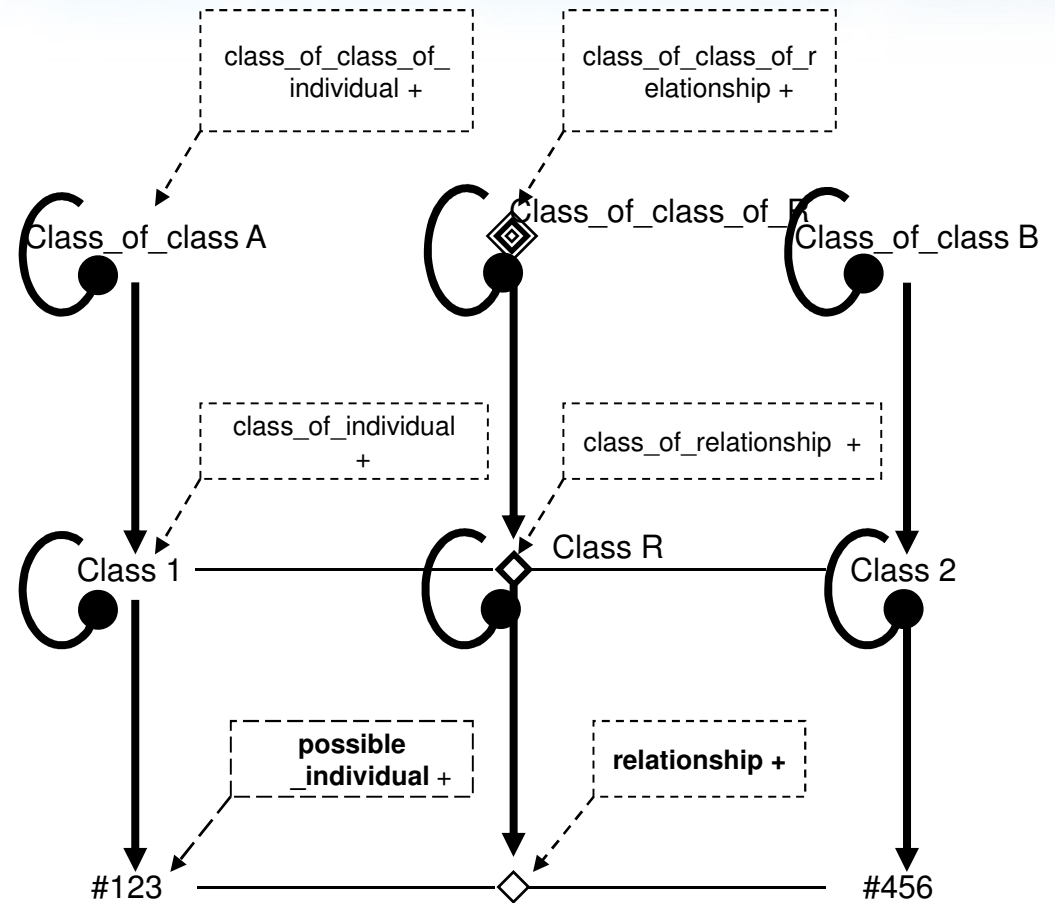
= Specialisation

↓ = Classification (pointing at the member) Part 2 DM entity types

NOTE - Language and notation here is non-normative

General

NOTE
Classes of Class always "Specialise" other Classes of Class
AND
Classes always "Specialize" other Classes
AND
"Classification" applies between levels
BUT
One shall not "classify" across levels, i.e. from Level 0 to Level 2



= Specialisation

= Classification (pointing at the member) Part 2 DM entity types

NOTE - Language and notation here is non-normative

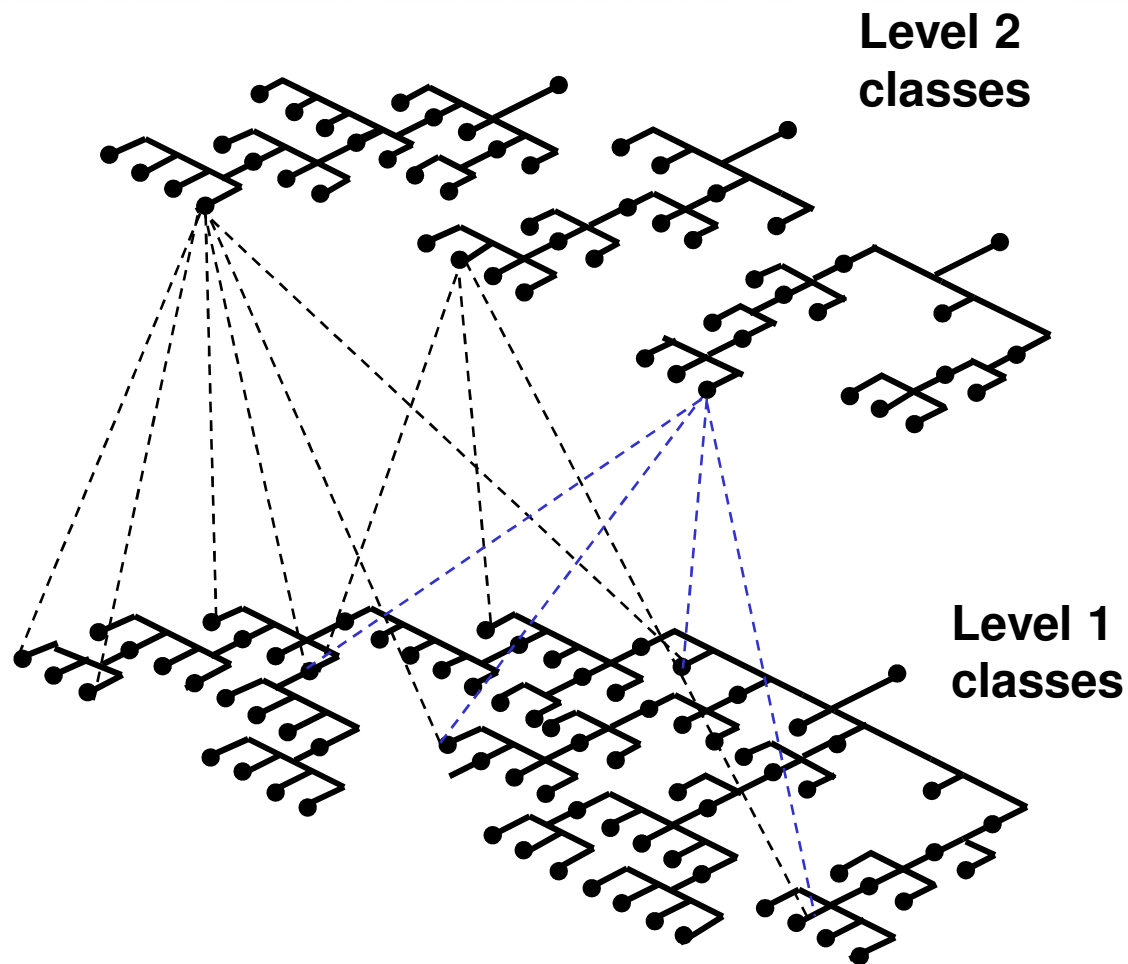
What RDL usage rules do we need ?

- When to use levels 0, 1 & 2 (Individual, Class and Class of Class) when mapping (pointing) to an RDL Item from a business domain, and when proposing and linking a new RDL Item to existing content.
- What level of "specialization" is appropriate when doing this.
 - (Appropriate covers usual questions of efficiency, economy, manageability, ... normalization, referential integrity, versioning, etc ... What to persist where, when.)
 - (Appropriate applies to both RDL content management *and* project content.)
- ***The "methodology" will describe "HOW" to relate business content to these resources.***

What RDL usage rules have we discovered so far ?

- A MANDATORY relation for an individual is to ***classify*** it.
(To say using a Classification relation which Class it is a member of.)
(That Class should be as specialized as possible / appropriate)
- A MANDATORY relation for a Class is to ***specialize*** it.
(To say using a Specialization relation which Class it is a subtype of.)
- A MANDATORY relation for a Class of Class is to ***specialize*** it.
(To say using a Specialization relation which Class of Class it is a subtype of.)
- An OPTIONAL relation for a Class is to ***classify*** it.
(To say using classification which Class or Class it is a member of.)
- A MANDATORY relation for any object is to ***identify*** it ... Etc ...

ISO 15926 & Classification Systems



Classification systems

- Business dependent views
- Many are in use
- Overlap
- Used for grouping

NB!! Implemented as a Level 2 structure

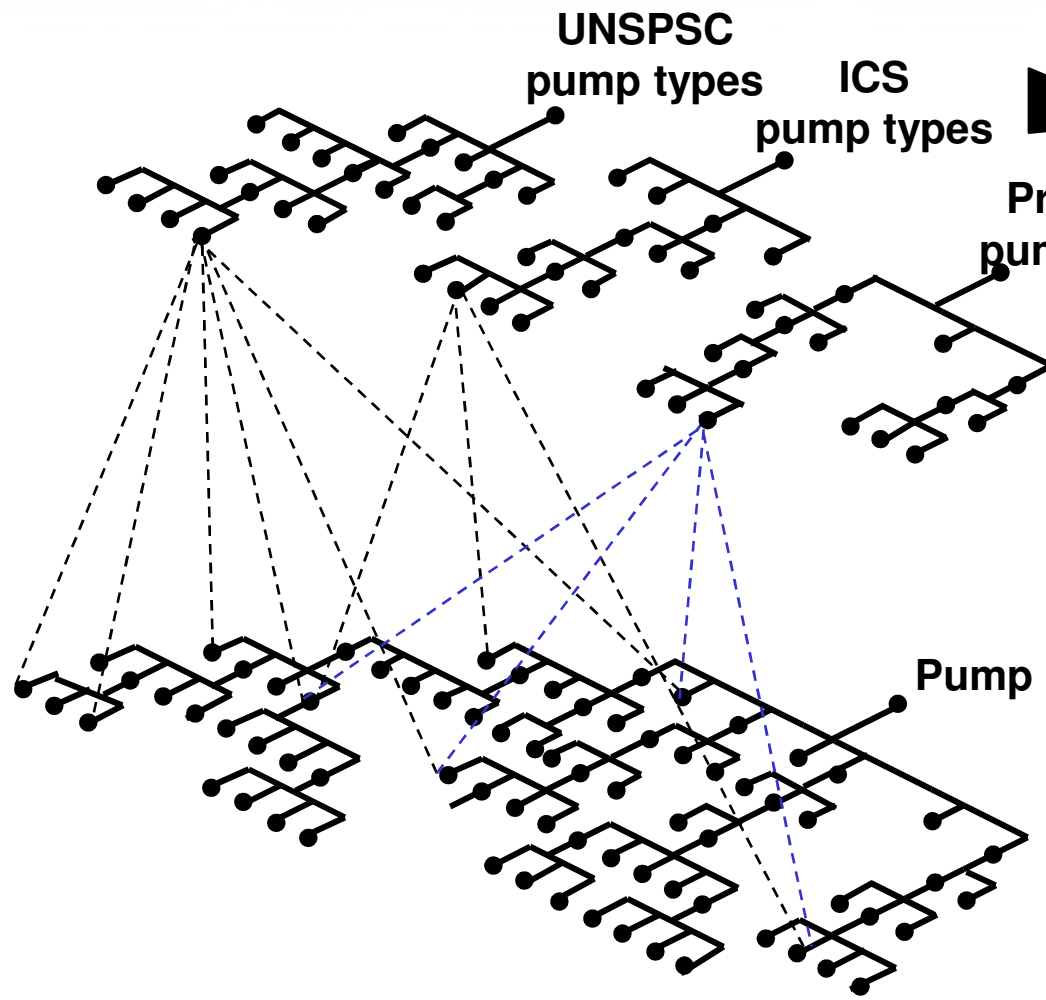
Extensively used to record options and limitations for role fillers

RDL standard structure

- Ontology
- Independent of a particular view
- Supports any views

Business Benefits

ERP/ Business Access



**Technical Access
/
Specifications**

**Both held within
the same RDL**

Other Industries

ERP/ Business Access

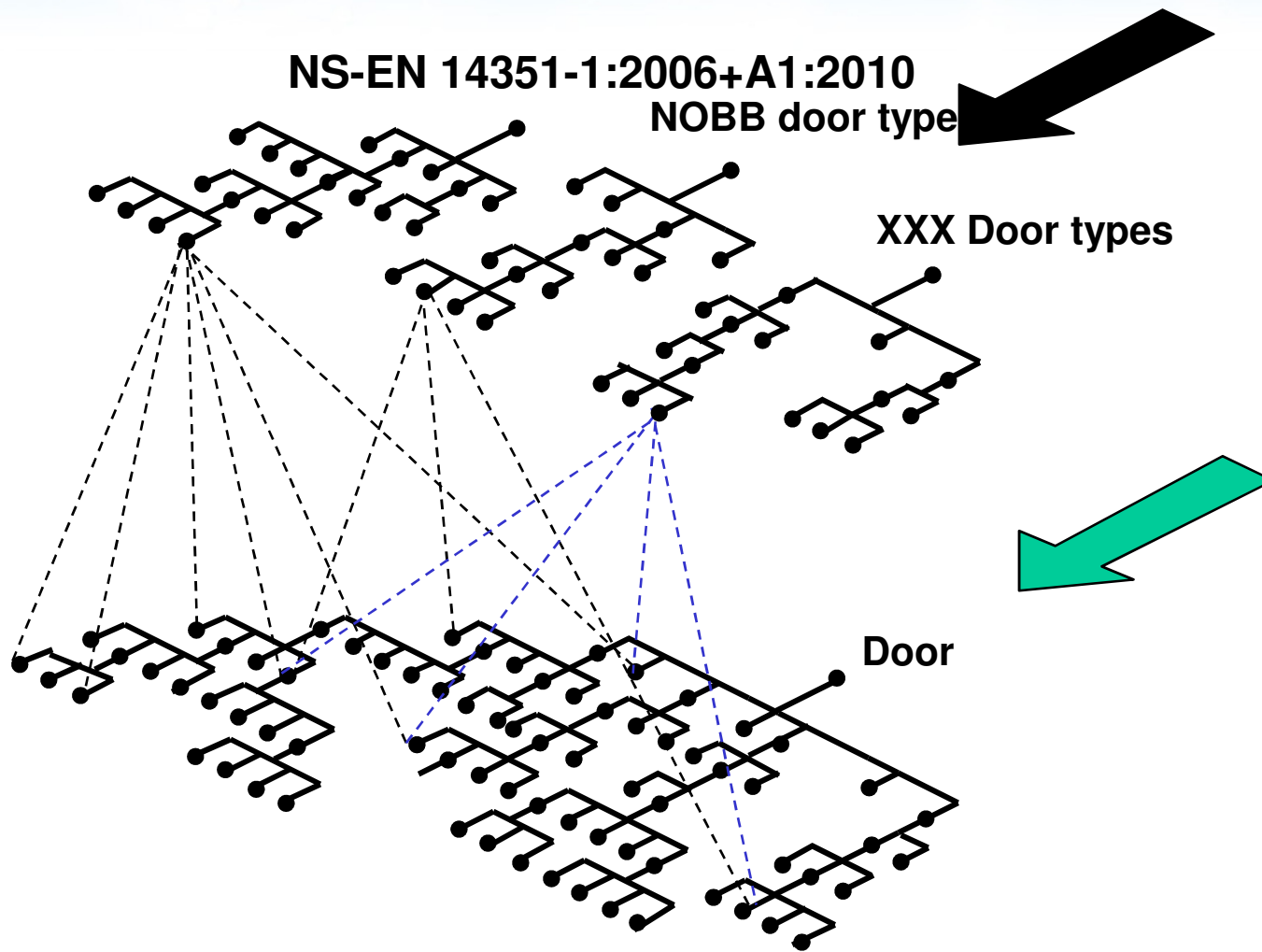
**NS-EN 14351-1:2006+A1:2010
NOBB door type**

XXX Door types

**Technical Access
/
Specifications**

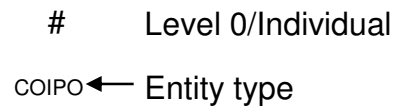
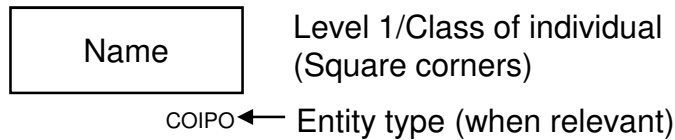
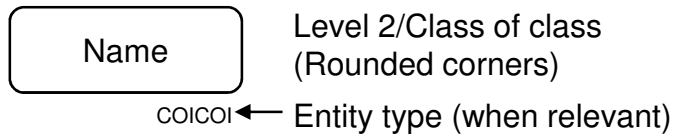
Door

**Both held within
the same RDL**



Symbols for instance data modelling

Classes



Relationships

