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Mapping of Dictionary Data to bSDD

Wolfgang Wilkes
Semaino Technologies GmbH
Germany
wilkes@semaino.de

Background

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- Current activities related to bSDD:
  - Mapping of structures of German standard VDI 3805 and upcoming ISO 16757 to bSDD
  - Mapping of ECLASS advance structures to bSDD
  - Mapping ISO 23387 templates to bSDD

- Idea:
  - Use role models to describe overall structure of a dictionary

bSDD idea

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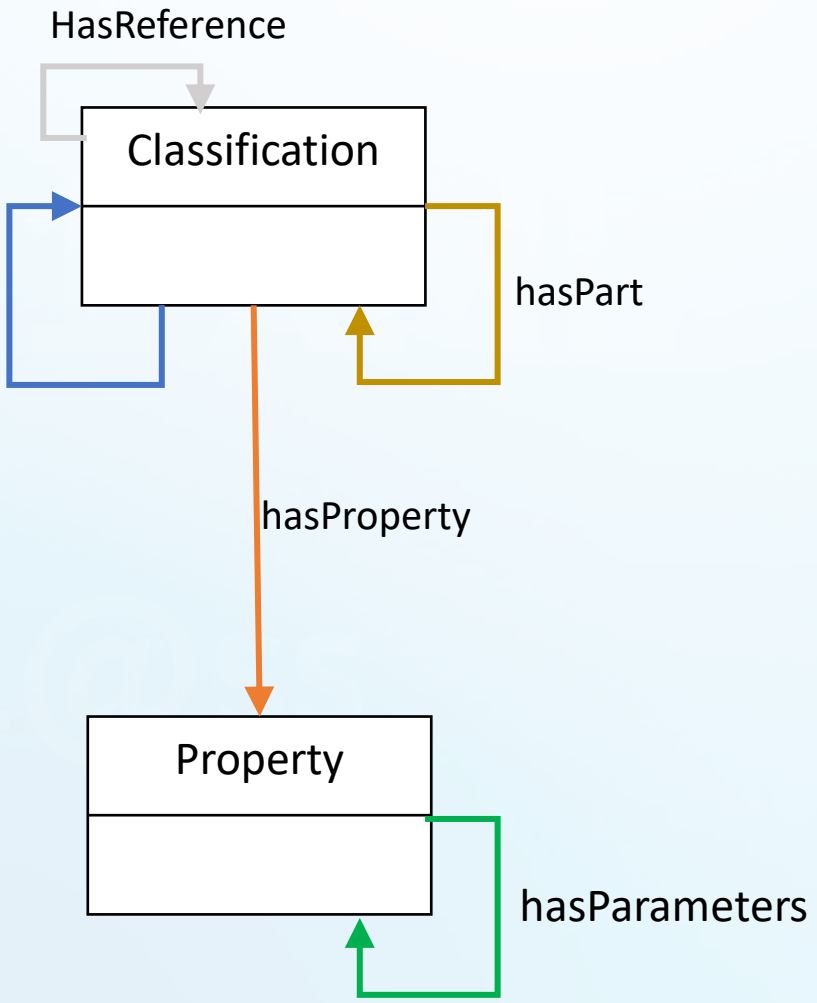
- bSDD is the container of several dictionaries
- They all have to be based on the same data model

- But how to get dictionary data into bSDD
  - If they have their own original structures?

- Creation of a „role model“
  - Gives classifications a role



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Requirements of Templates (EN ISO 23387)

Example: Window Data Template based on EN ISO 23387

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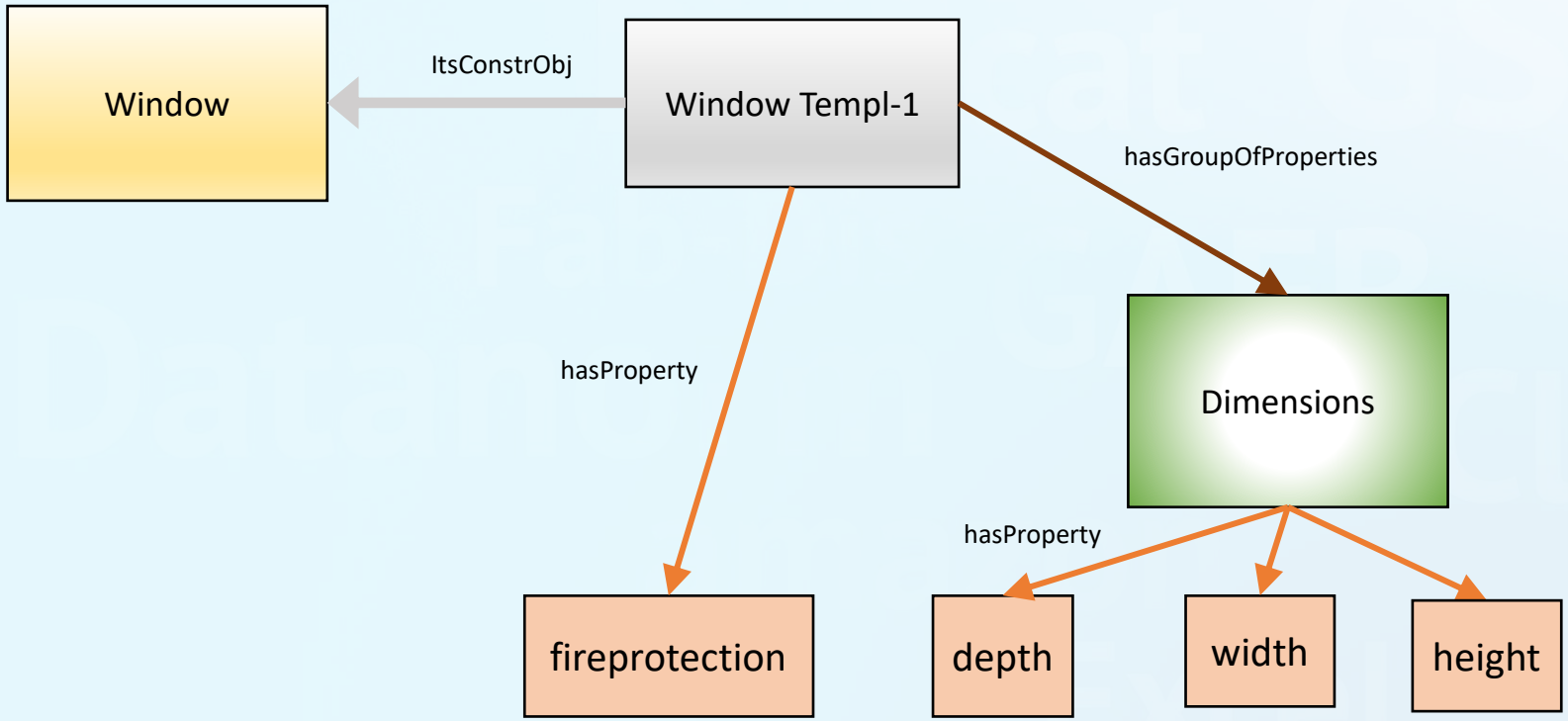

Role Model for Data Template (EN ISO 23387)

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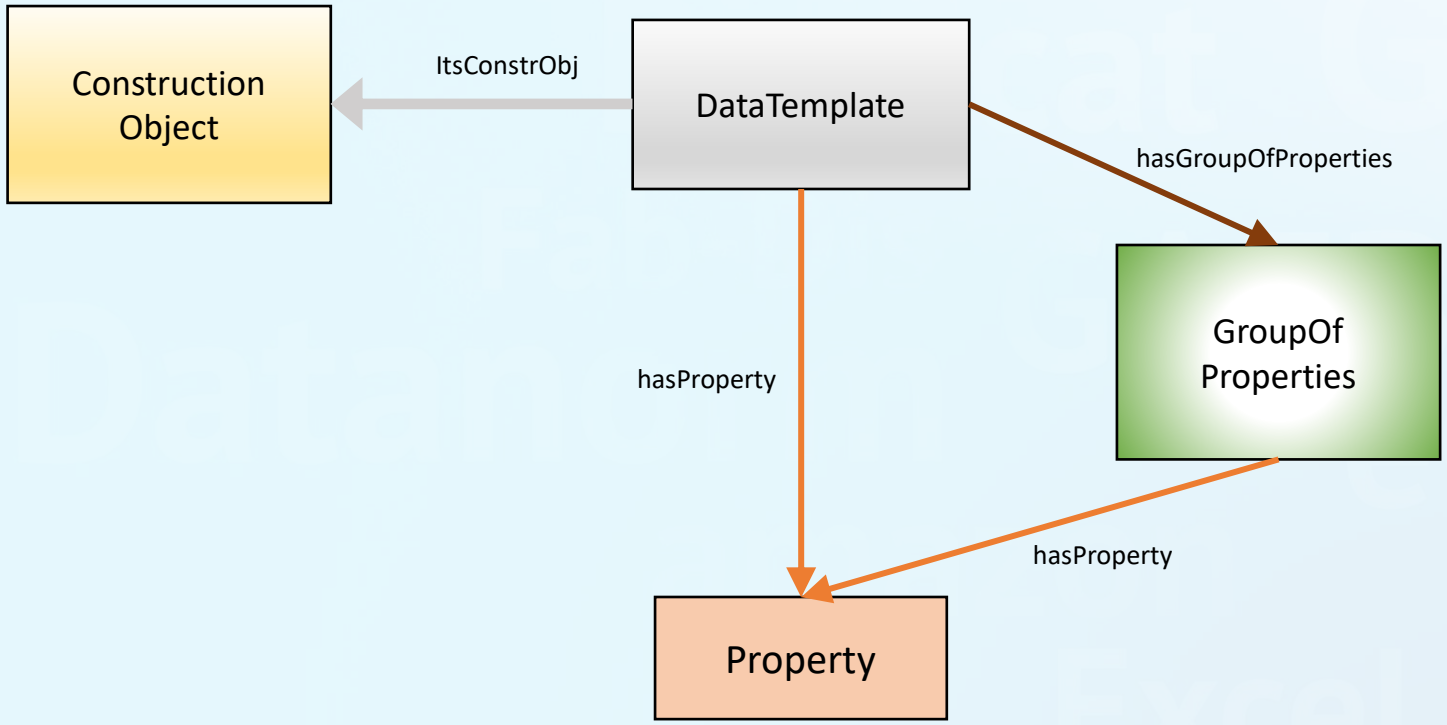

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Requirements VDI 3805 / ISO 16757

https://www.vdi3805.eu/

https://www.bim4hvac.com/en-gb/

Elements for VDI 3805 / ISO 16757 dictionaries

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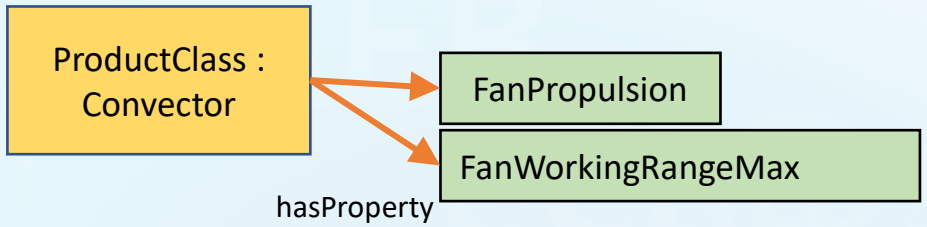

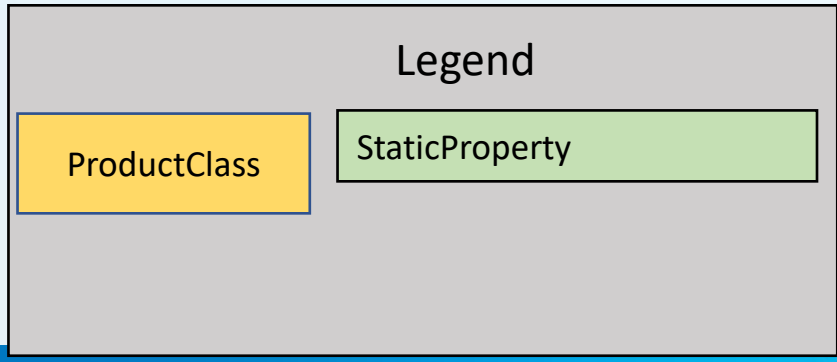

Elements for VDI 3805 / ISO 16757 dictionaries

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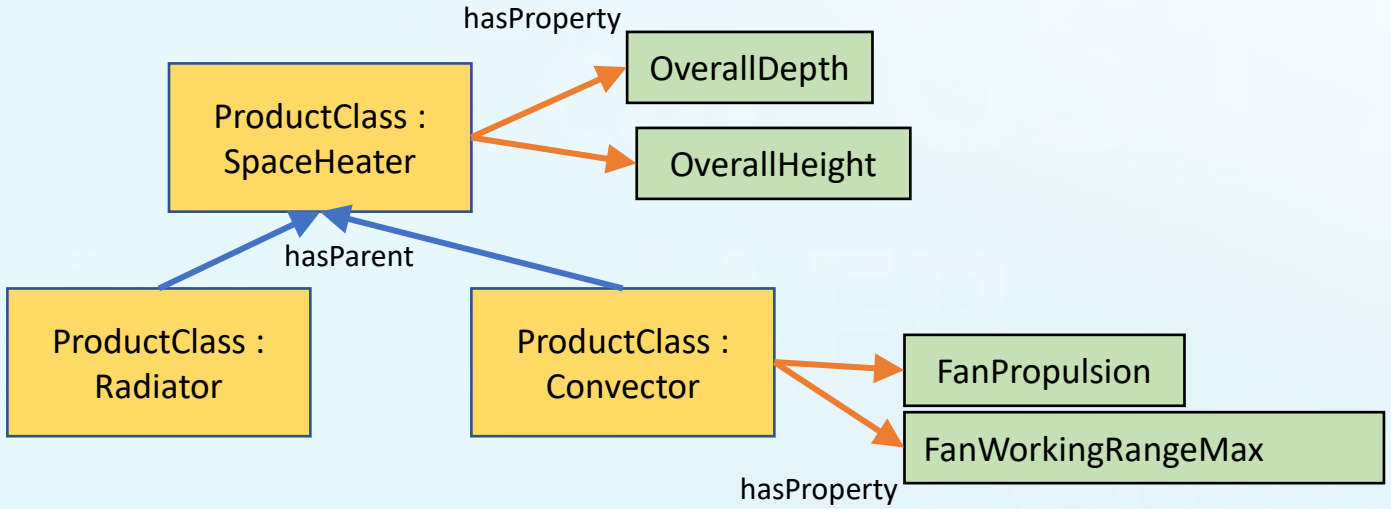

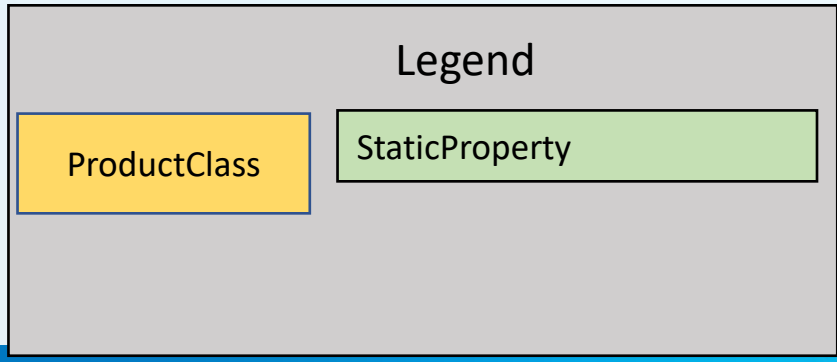

Elements for VDI 3805 / ISO 16757 dictionaries

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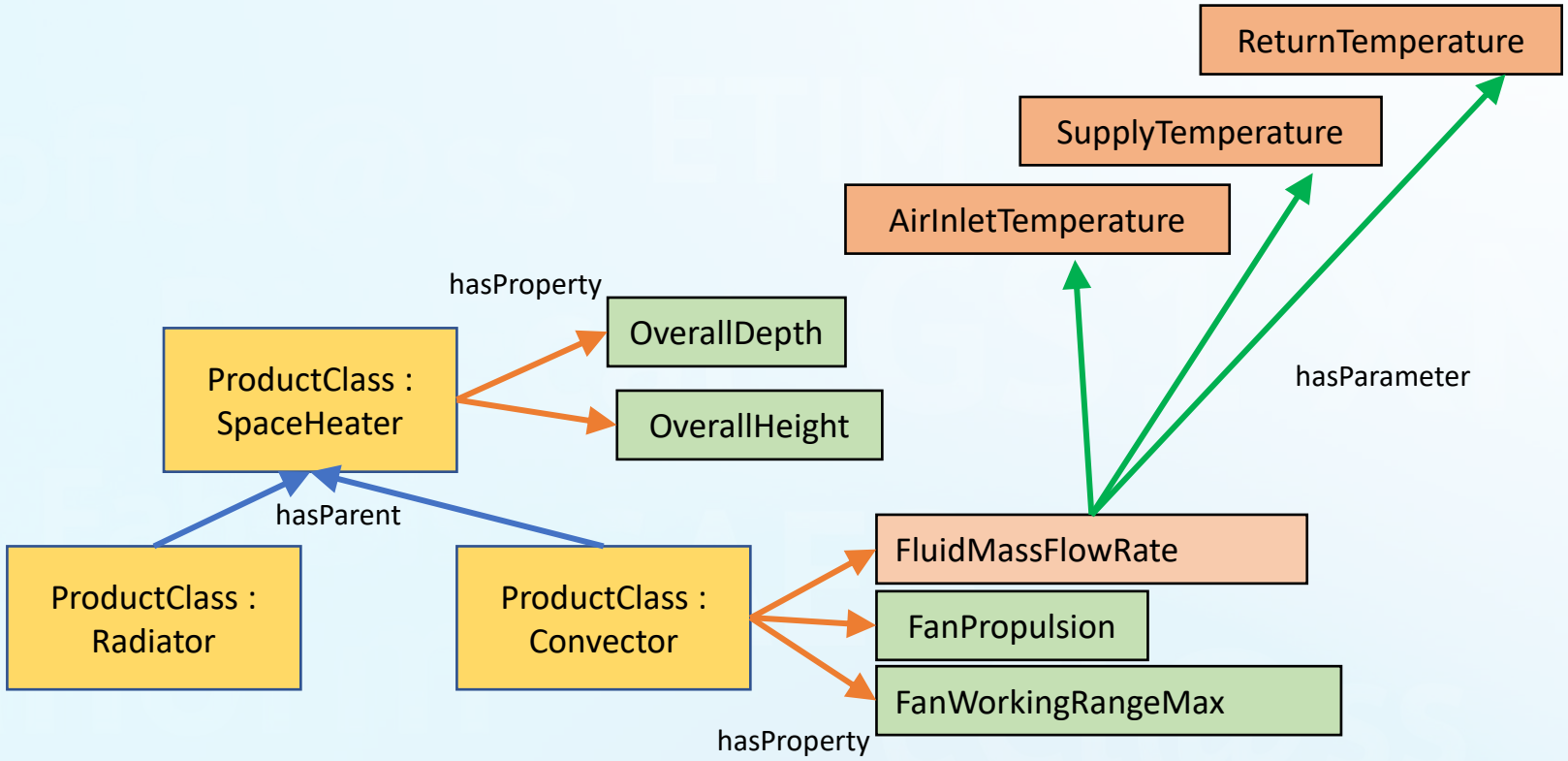

Elements for VDI 3805 / ISO 16757 dictionaries

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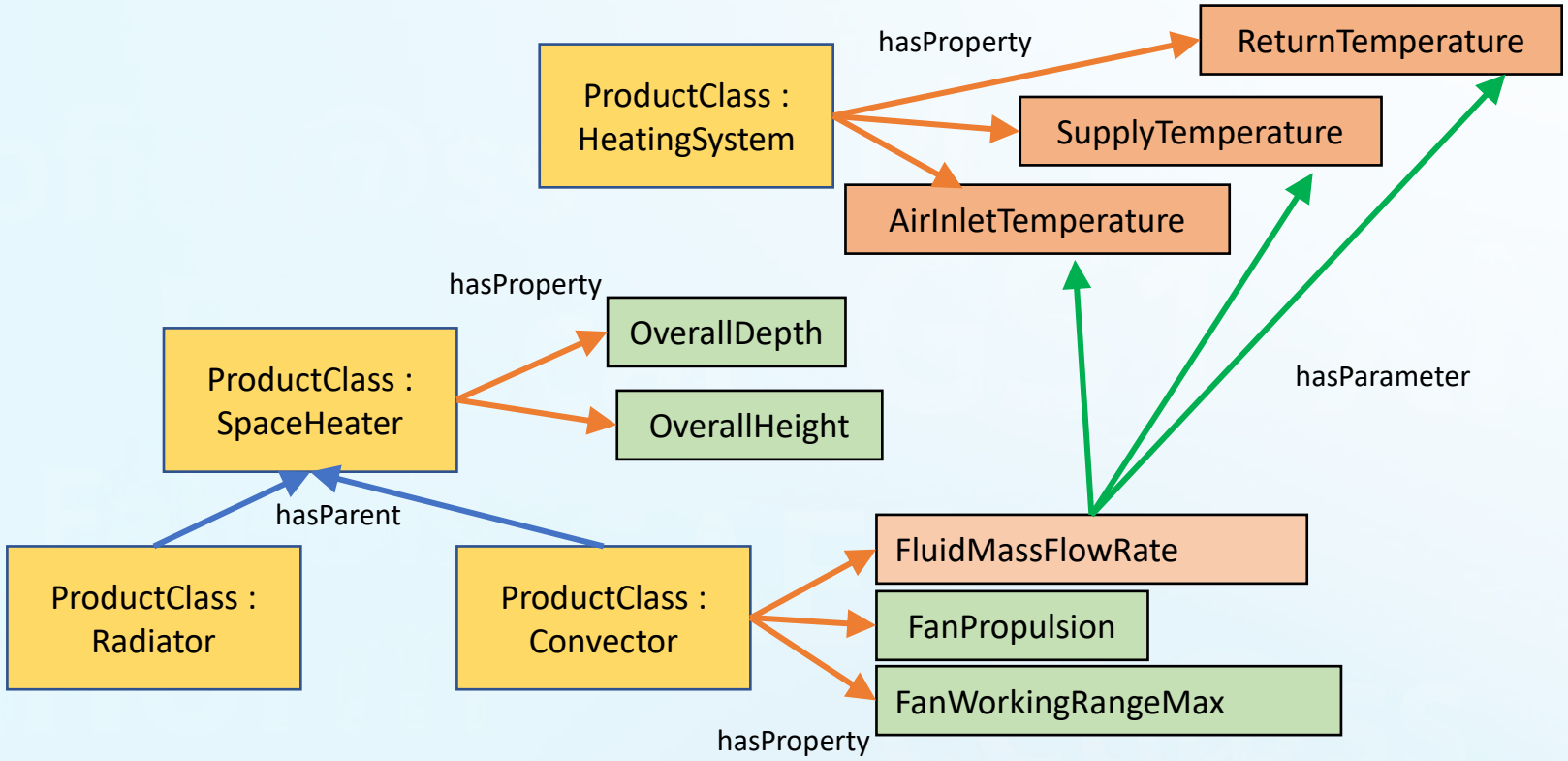

Legend

ProductClass

StaticProperty

DynamicProperty

Parameter for DynamicProp

Elements for VDI 3805 / ISO 16757 dictionaries

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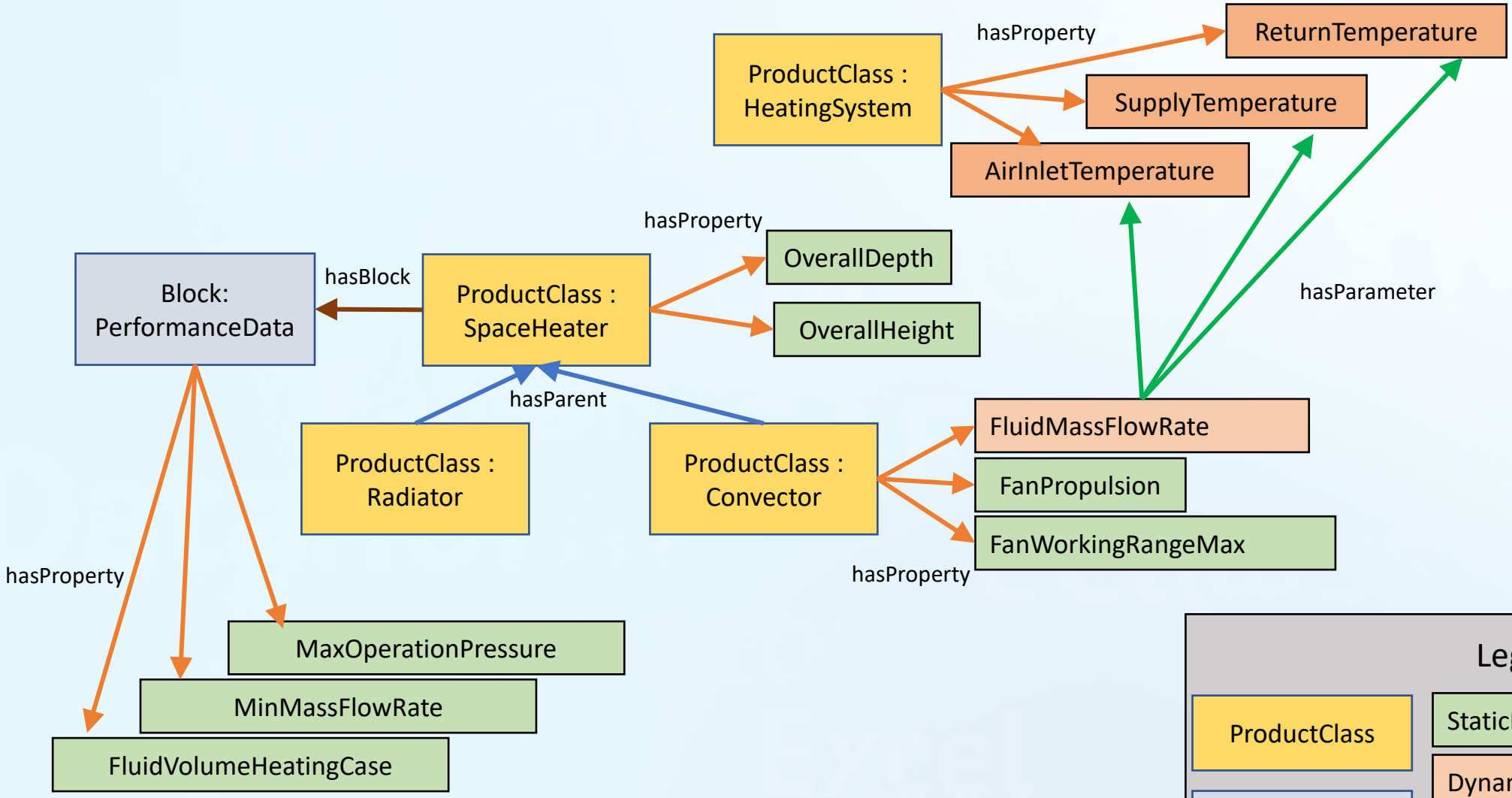

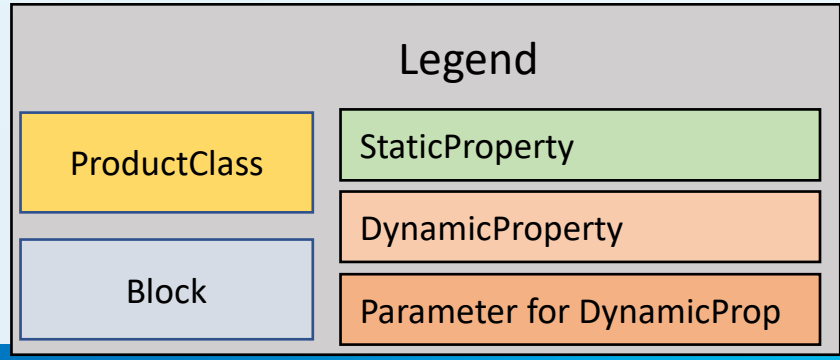

Elements for VDI 3805 / ISO 16757 dictionaries

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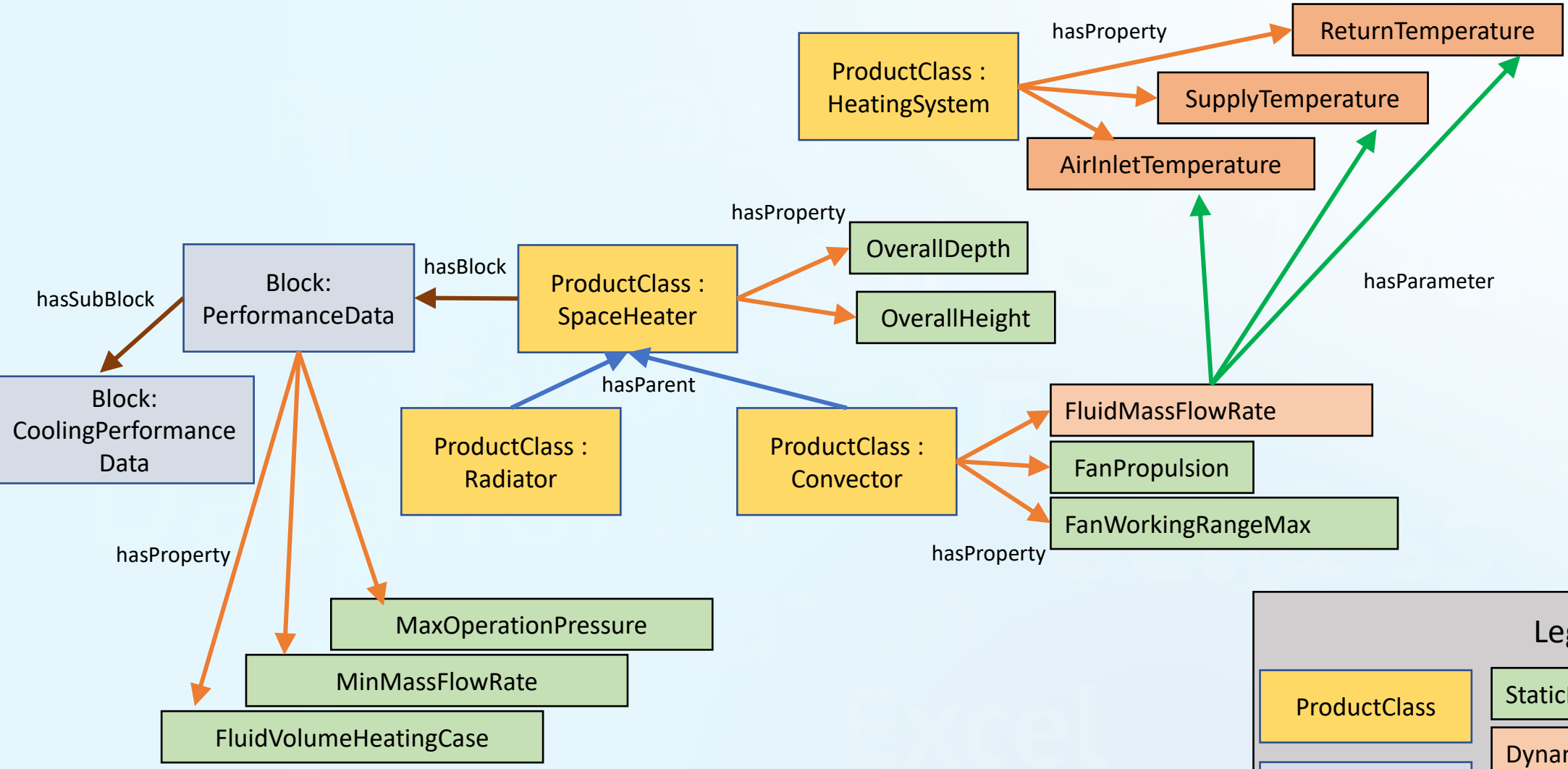
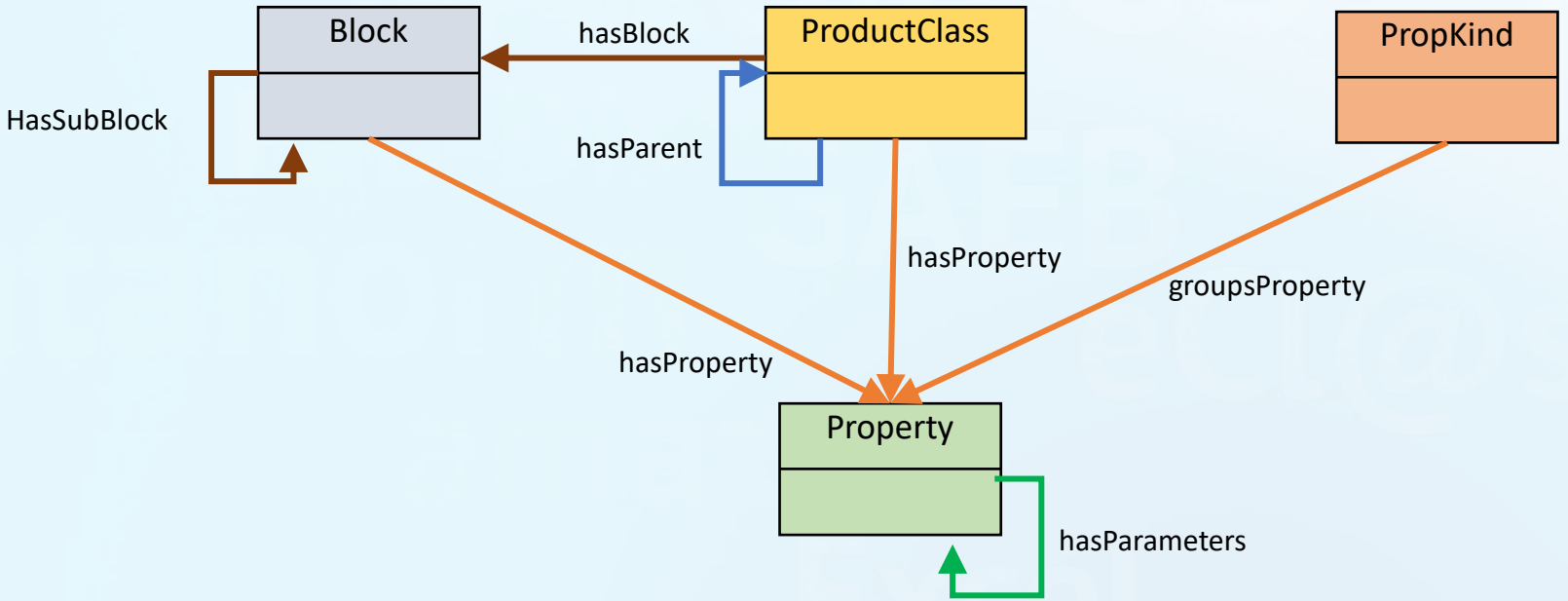


Legend

ProductClass	StaticProperty
	DynamicProperty
Block	Parameter for DynamicProp

Role model for VDI 3805



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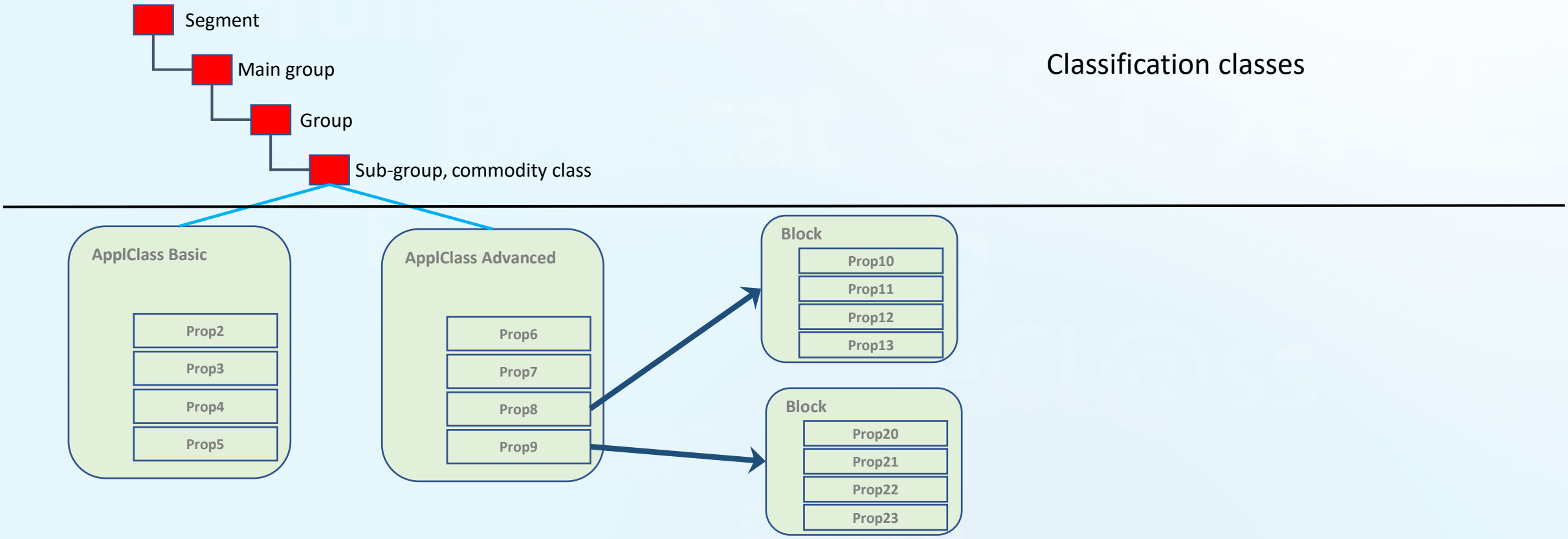
Requirements ECLASS

www.eclass.eu

Organisation of ECLASS data model



Blocks = complex properties or sub-components

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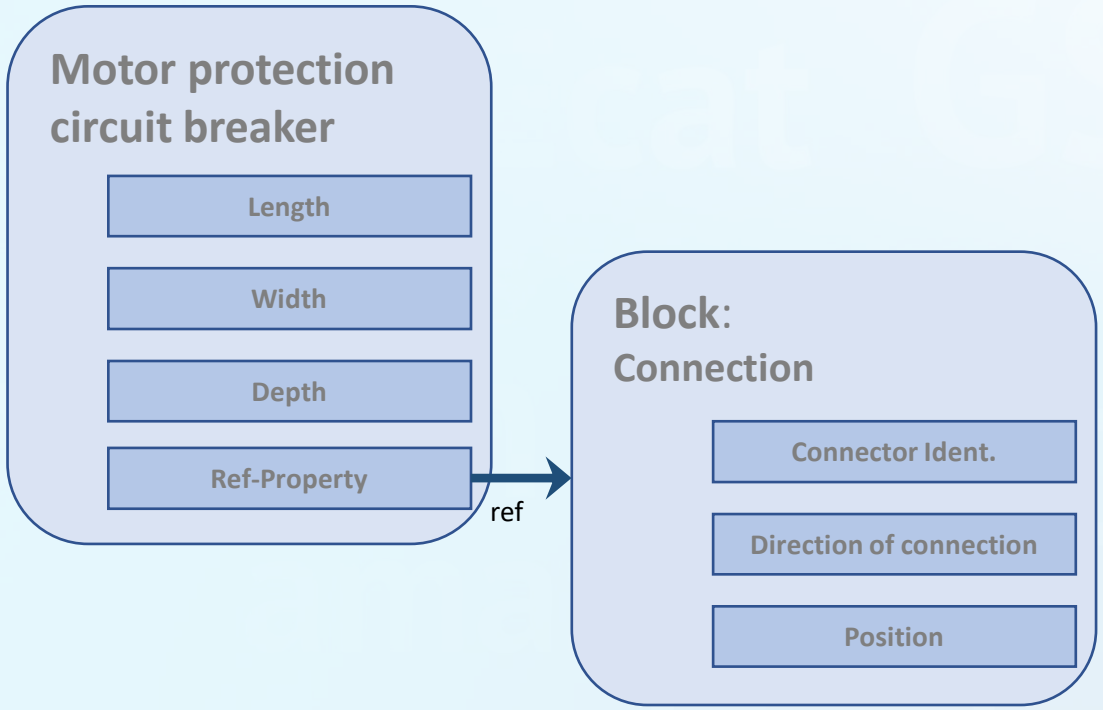

Multiple blocks (Cardinality)

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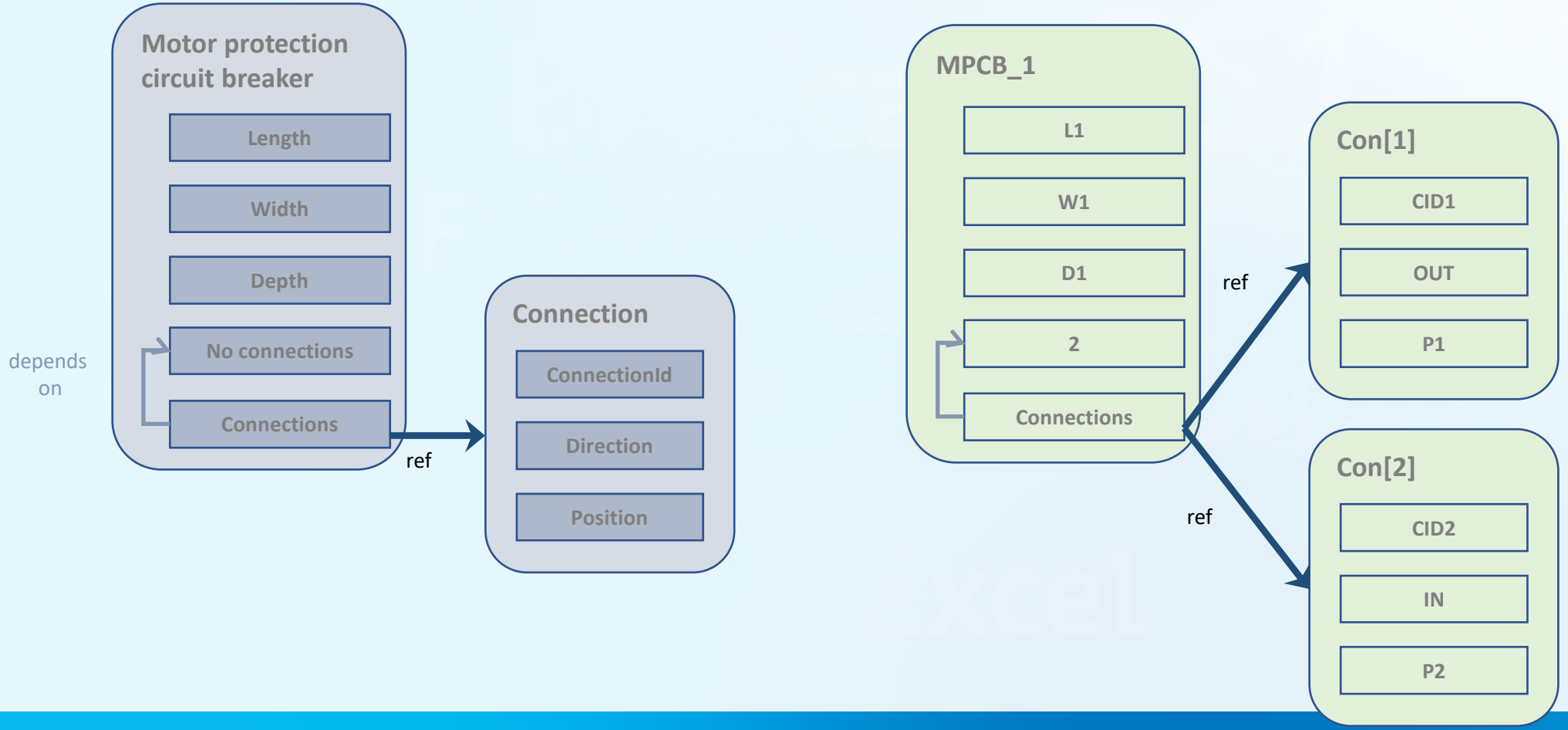

Polymorphism – Modelling of Variants

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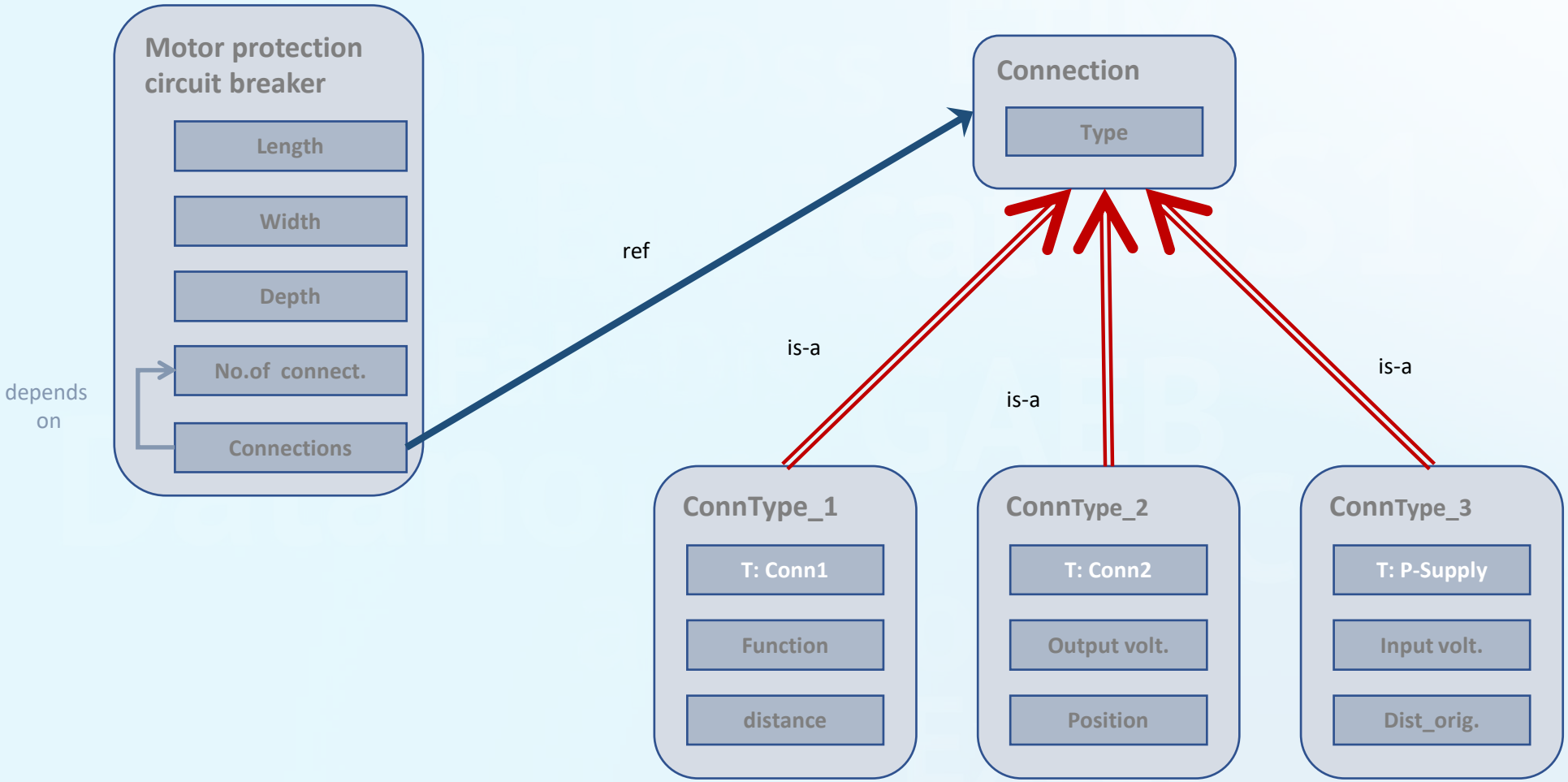

Polymorphism – Modelling of Variants

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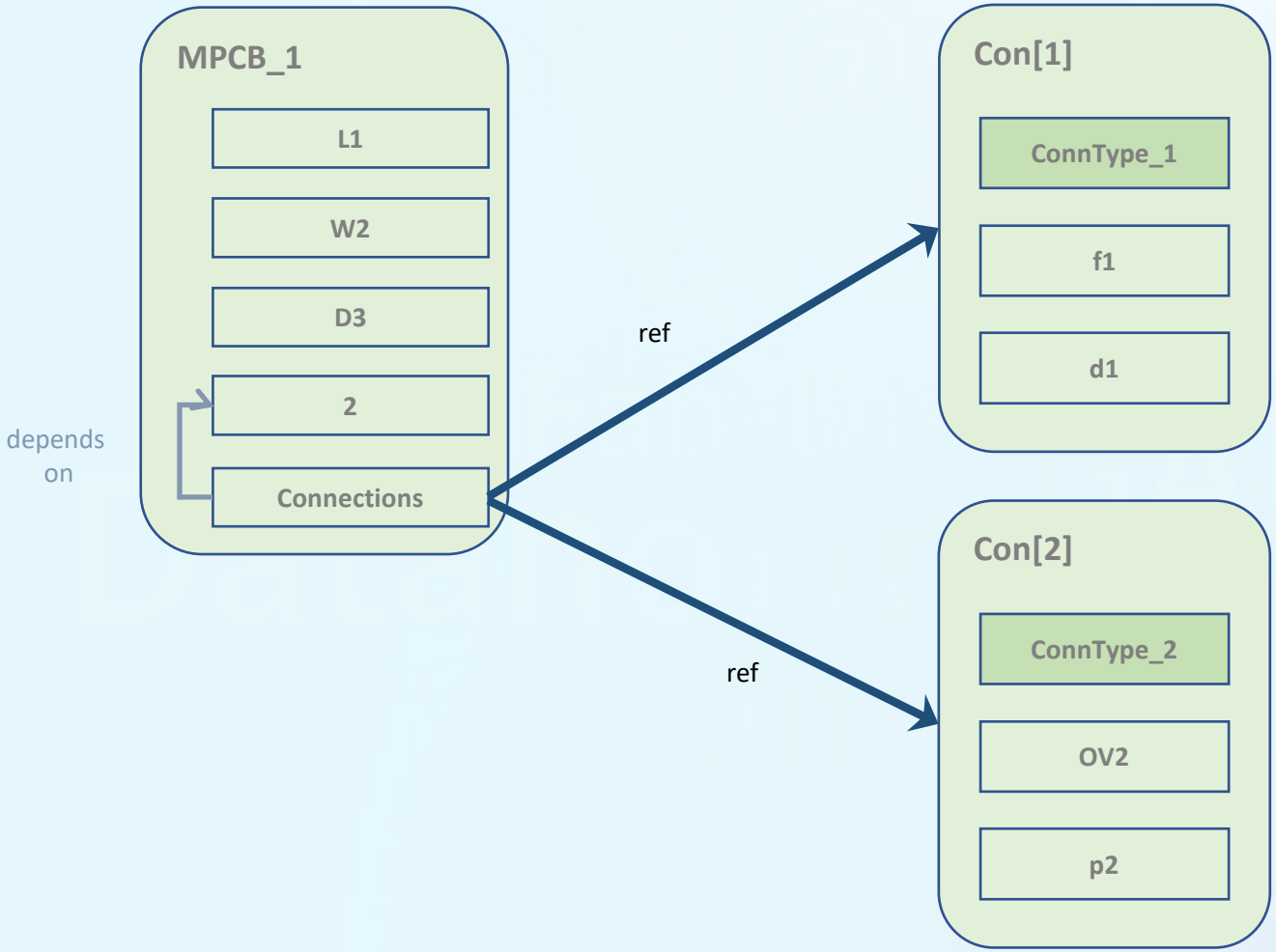

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ECLASS-10.0 27-37-04-01 Motor protection circuit-breaker

Title	Unit	Value
Motor protection circuit-breaker (ADVANCED)		
Information		
CAx connector and function		
number of connectors		12
(1) Connection		
(2) Connection		
(3) Connection		
(4) Connection		
(5) Connection		
(6) Connection		
(7) Connection		
(8) Connection		
(9) Connection		
(10) Connection		
(11) Connection		
(12) Connection		
Function group		
CAx basic		
Commercial		
Add on Documentation		
Identification		
Application standards		IEC 60947-2, IEC 60947-4-1
Connection type		Screw connection
Device type		Assembly
certificate/approval		CE
Greatest value of overload release adjustment range	A	1.6
Greatest value of tuning range short circuit tripper, undelayed	A	19.2
Lowest value of setting range for overload tripper	A	1
Integrated undervoltage tripper present		No

ECLASS-10.0 27-37-04-01 Motor protection circuit-breaker

Title	Unit	Value
Motor protection circuit-breaker (ADVANCED)		
Information		
CAx connector and function		
number of connectors		12
(1) Connection		
Type of connection		Single connector electrical
Wiring		
Electrical terminal material		
bridge circuit connector		No
color of electrical terminal		
Number of executions of the electric connector		1
(1) Execution of the electric connector		
Insulation stripped length	mm	10
Allowed types of conductors		eindrahtiger Leiter, feindrahtiger Leiter mit Spleißschutz
down force size		PZ 2
Conductor section (mm²)		
type of electrical terminal		Screw connection
Form of conductor		round
Conductor parameters (AWG/KCMIL)		
Flat conductor connection		
tightening torque		min=1,7 max=1,7
actuating vektor		x=8,2 y=80 z=50 (Orientierung: x=0 y=0 z=1)
number of rated values of device functions		0
Number of parts relations		0
connector group		
connector removible		No
Connector identification		1
direction of connection		from above
Position (in mm)		x=5,2 y=75,5 z=34,5 (Orientierung: x=0 y=1 z=0)
(2) Connection		
Type of connection		Single connector electrical
Number of parts relations		0
connector group		
connector removible		No
Connector identification		1.1
direction of connection		from above
Position (in mm)		x=11,5 y=75,5 z=34,5 (Orientierung: x=0 y=1 z=0)
(3) Connection		
(4) Connection		

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ECLASS Website

Role model for ECLASS

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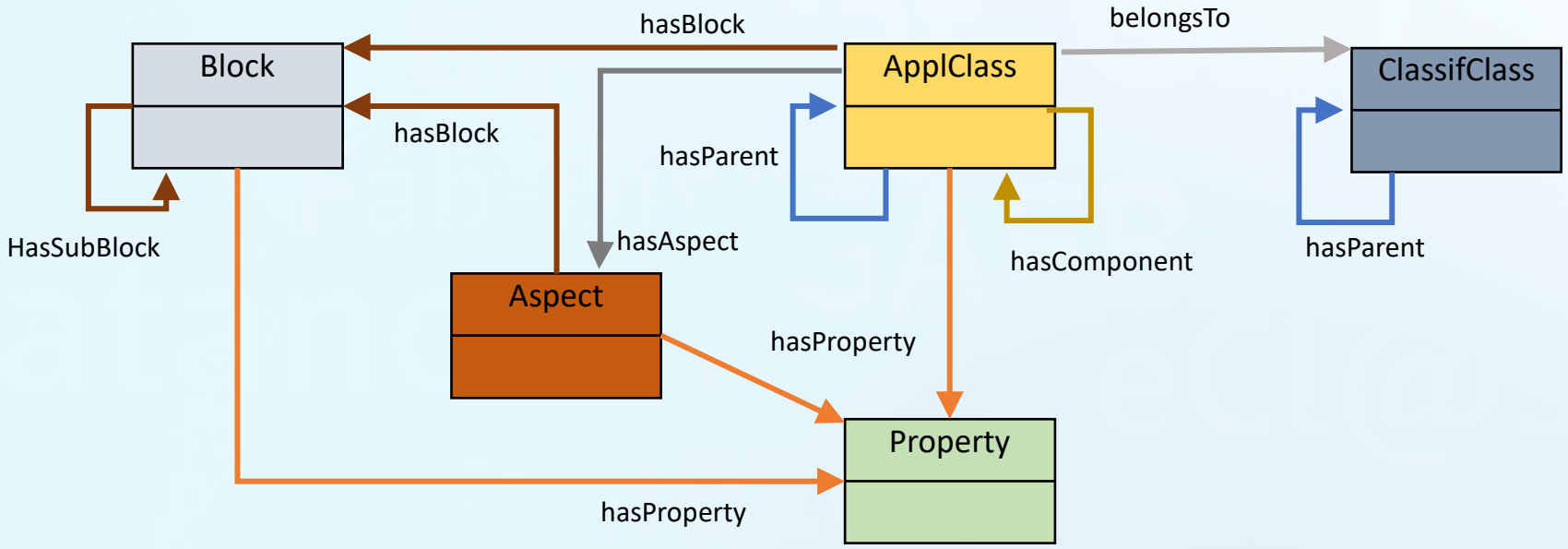

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Mapping to bSDD

Data Model of bSDD

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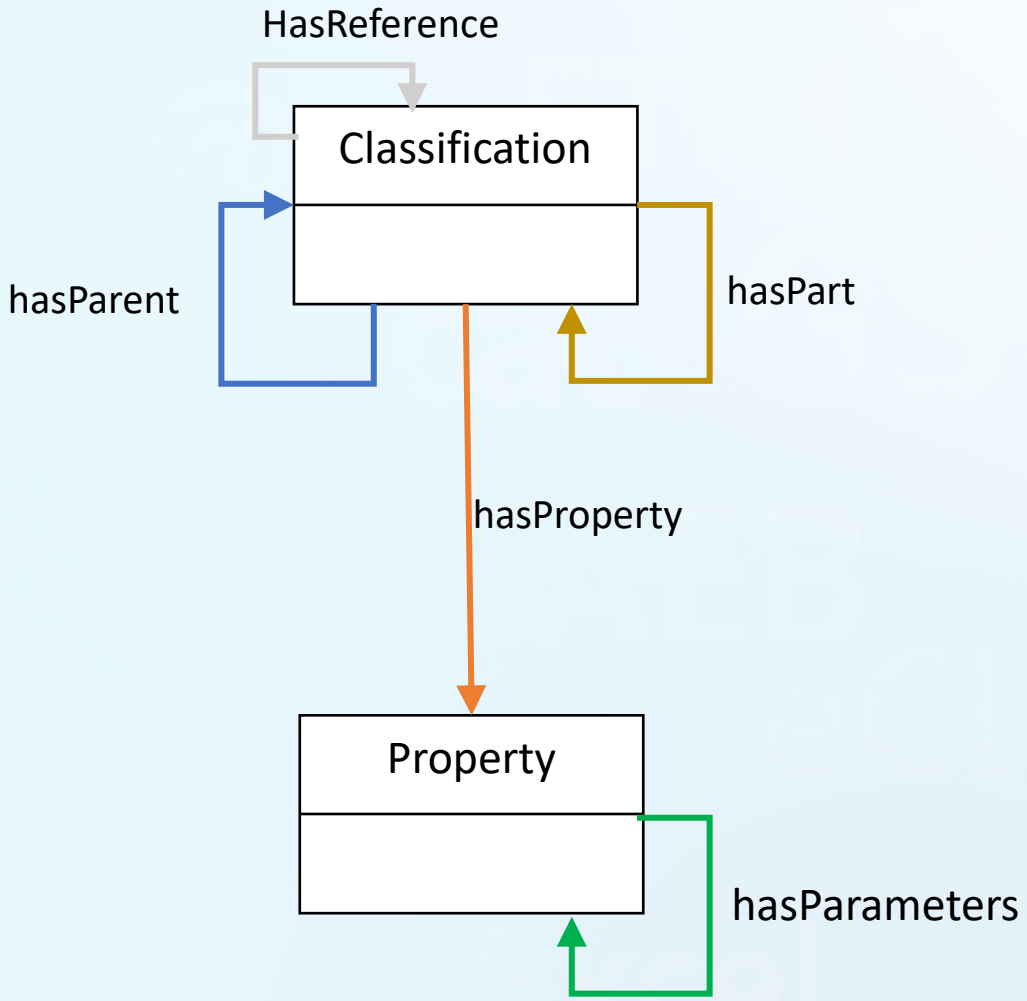
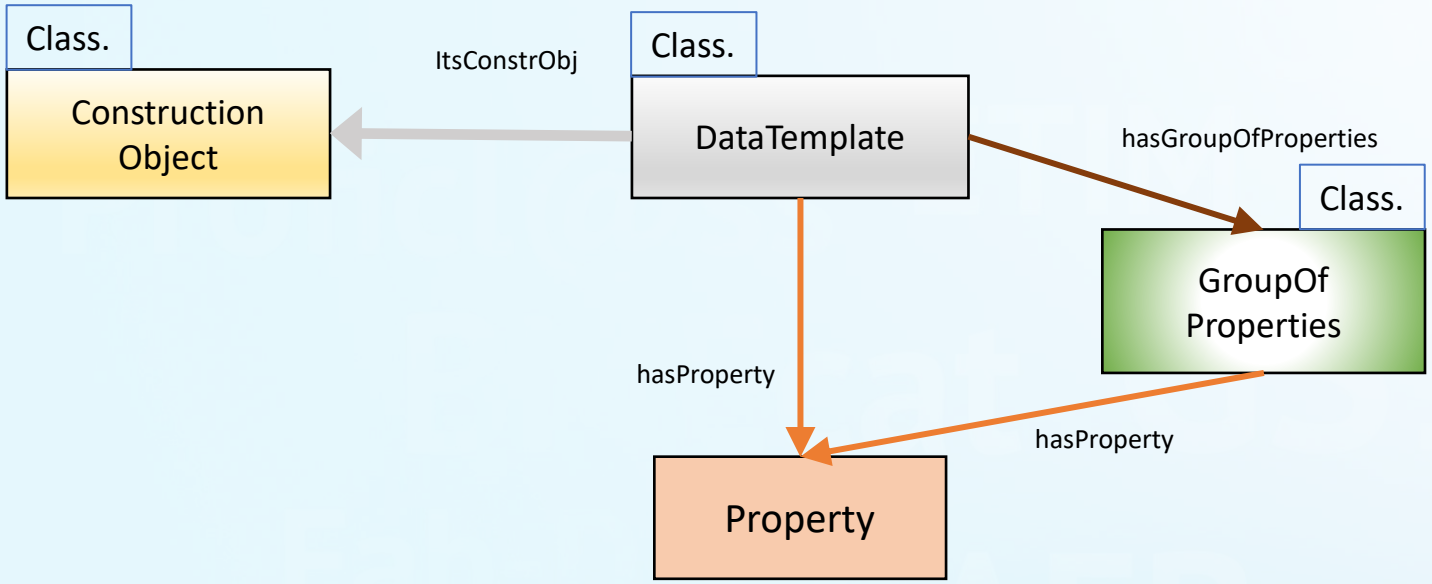


Mapping of Data Templates (ISO 23387) to bSDD



Relationships:

Data Templates (ISO 23387)	bSDD
itsConstrObj	reference
hasGroupOfProperties	hasPart
hasProperty	hasProperty

Role model and Data Templates (ISO 23387) in bSDD

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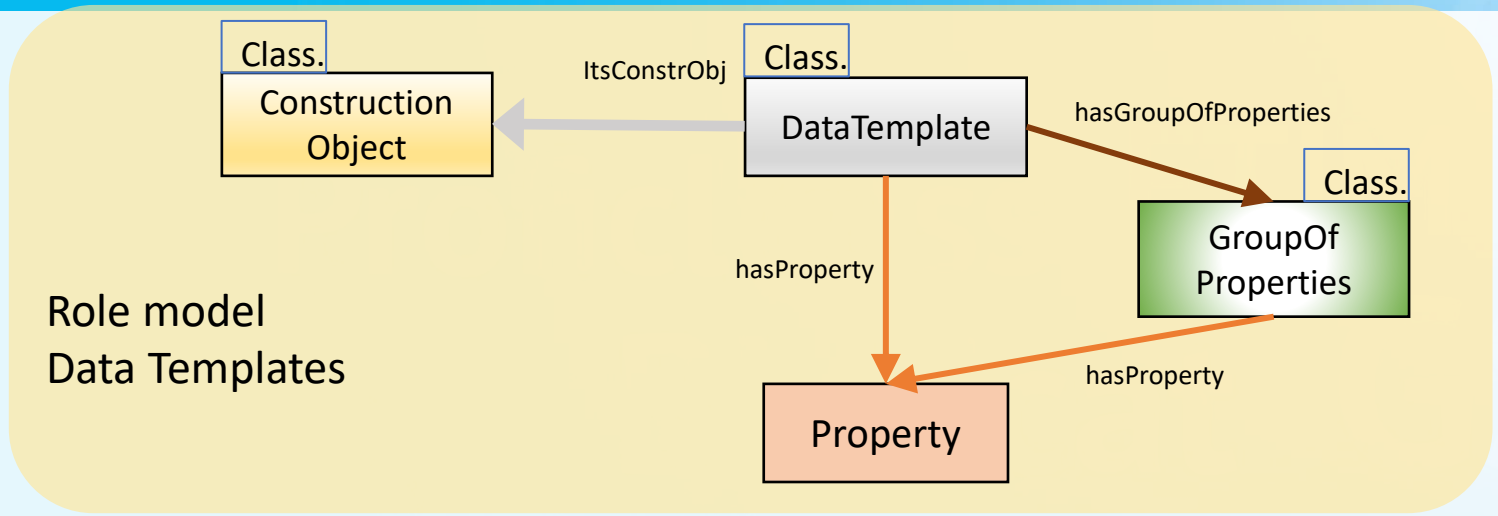

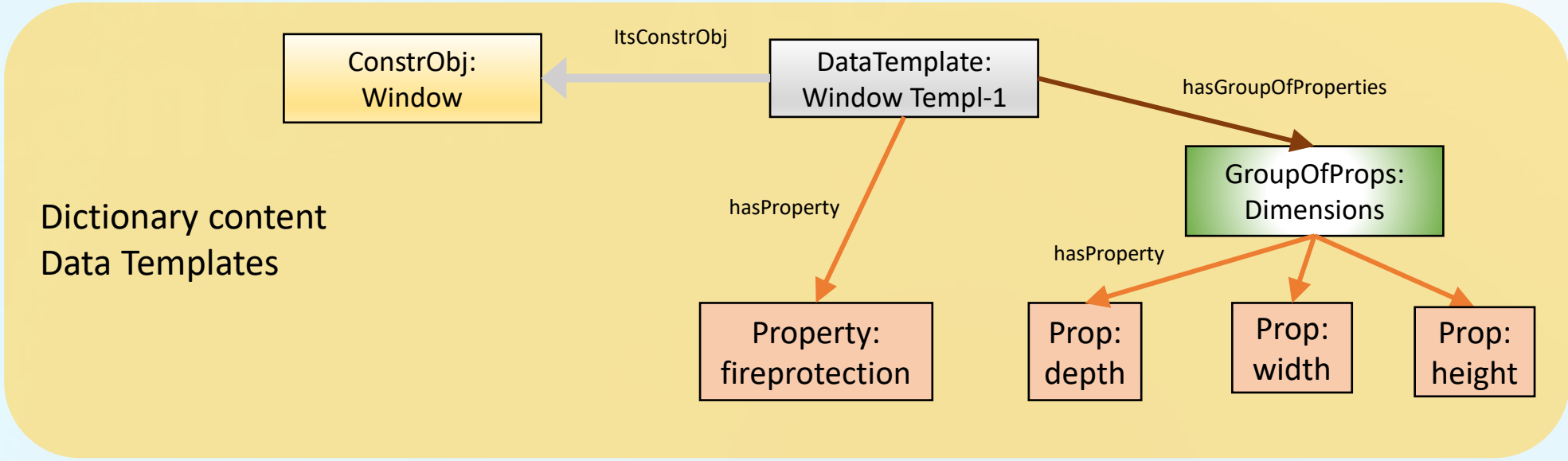

Mapping of VDI 3805 to bSDD

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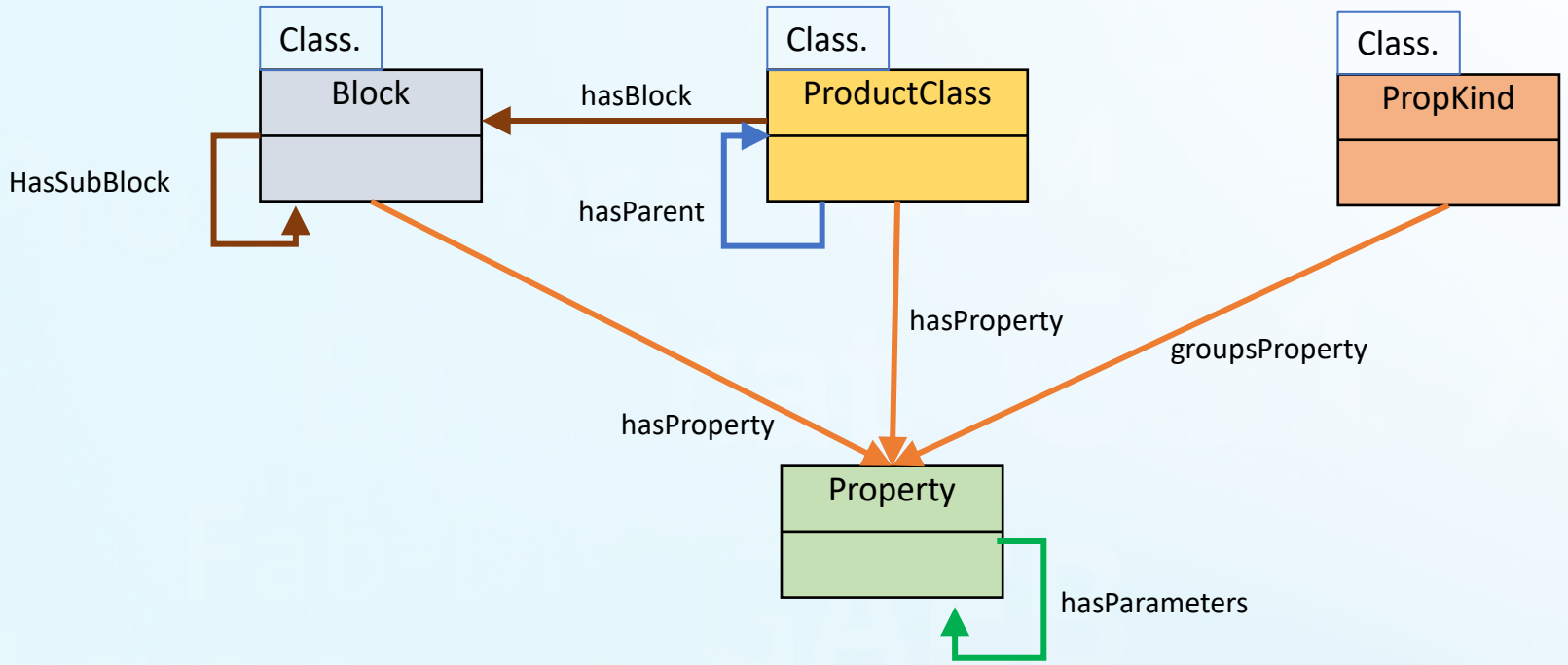

Relationships:

VDI 3805 / ISO 16757	bSDD
HasBlock, hasSubBlock	hasPart
hasParent	hasParent
groupsProperties	hasProperty
hasProperty	hasProperty
hasParameters	hasParameters

Role model and VDI 3805 dictionary in bSDD

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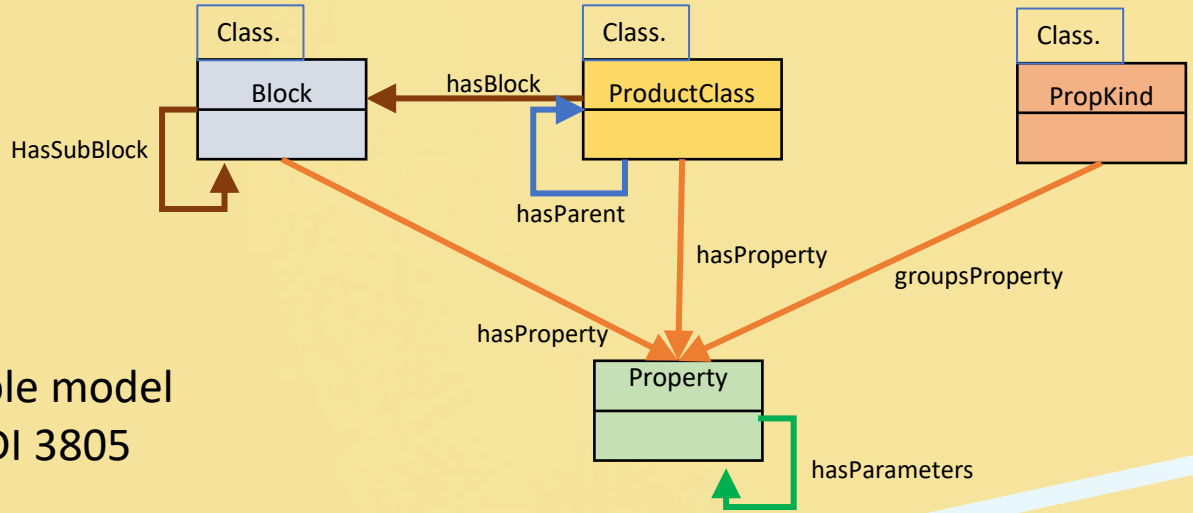
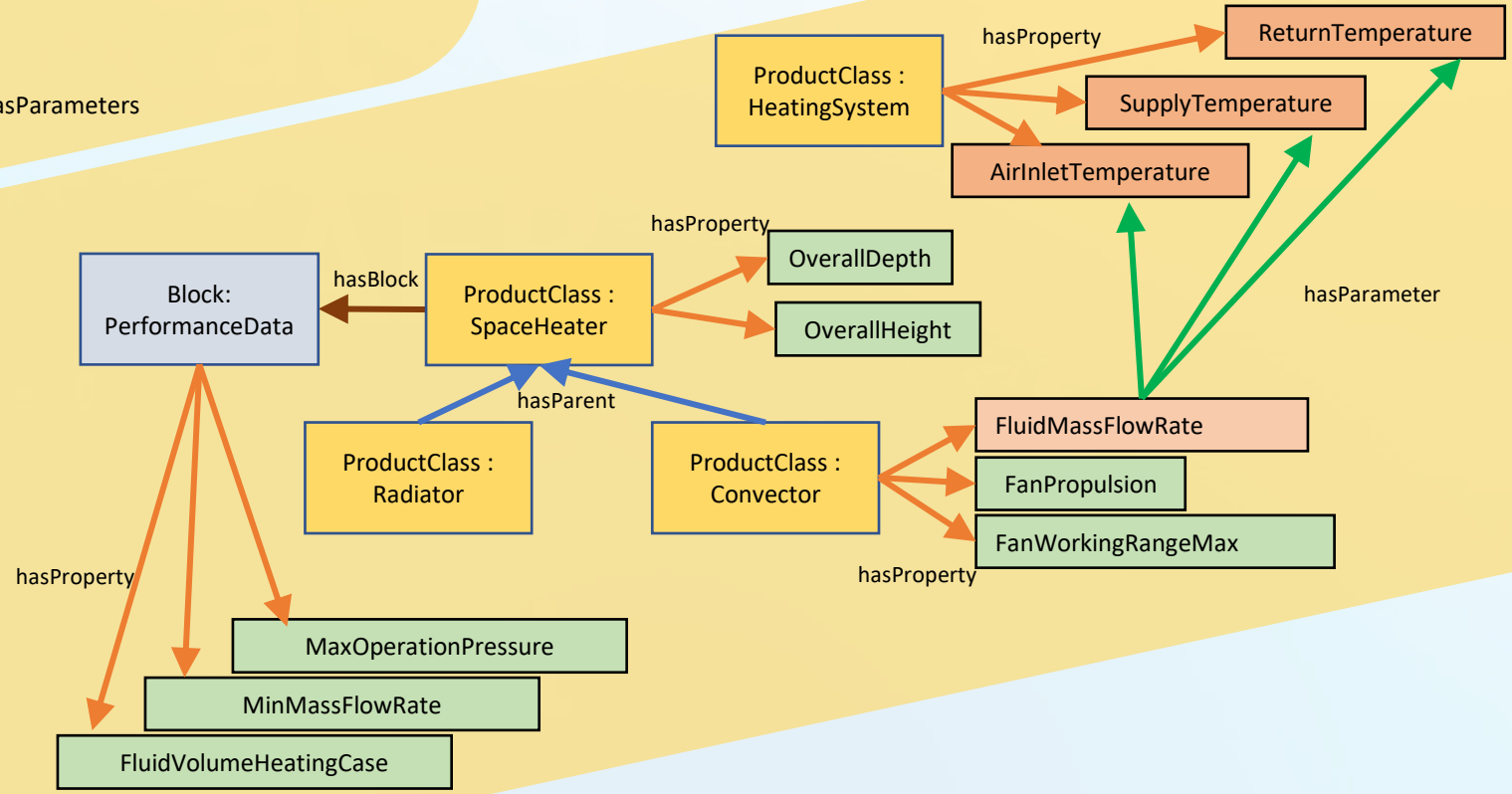
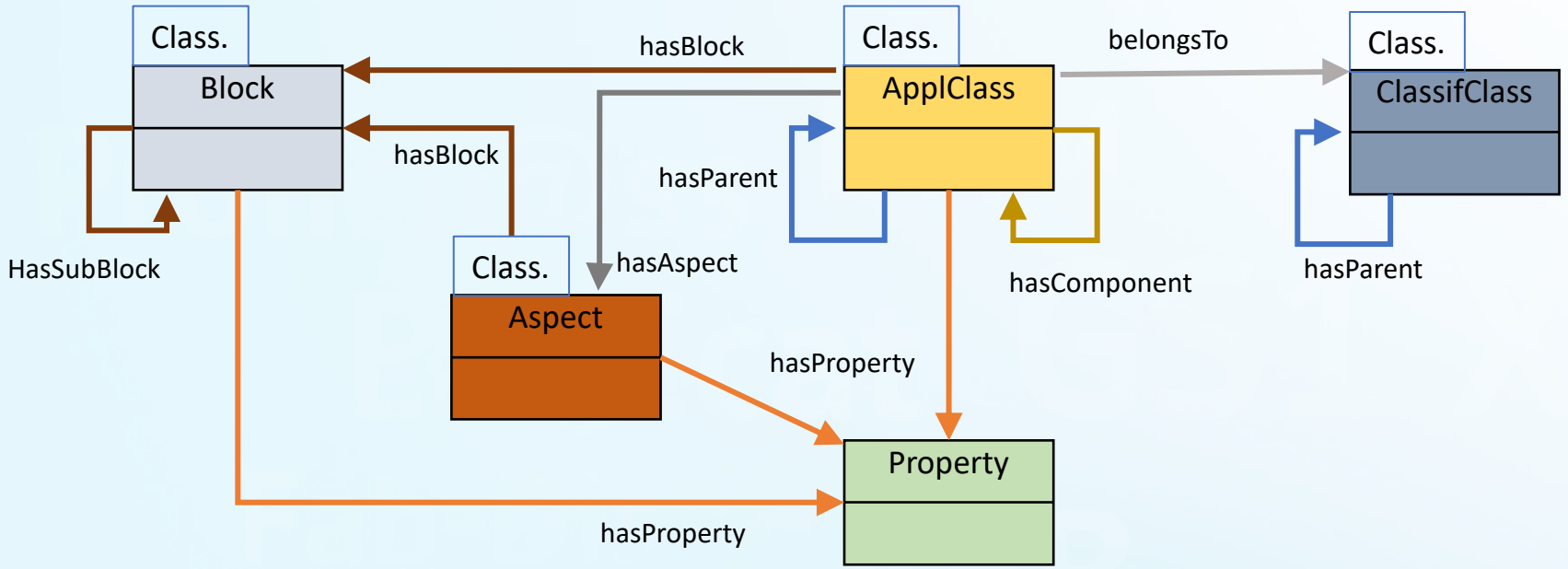
Role model
VDI 3805



Dictionary content
VDI 3805



Mapping of ECLASS to bSDD



Relationships:

ECLASS	bSDD
hasComponent	hasPart
HasBlock, hasSubBlock	hasPart
hasAspect	hasPart
isA	hasParent
hasProperty	hasProperty

Role model and ECLASS dictionary in bSDD

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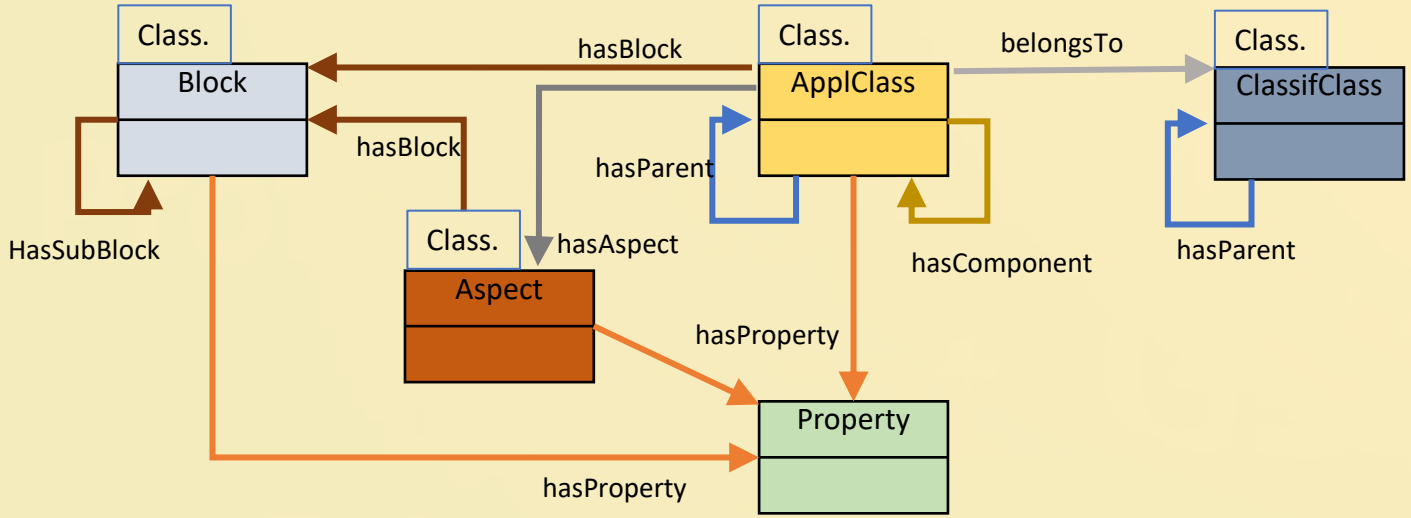
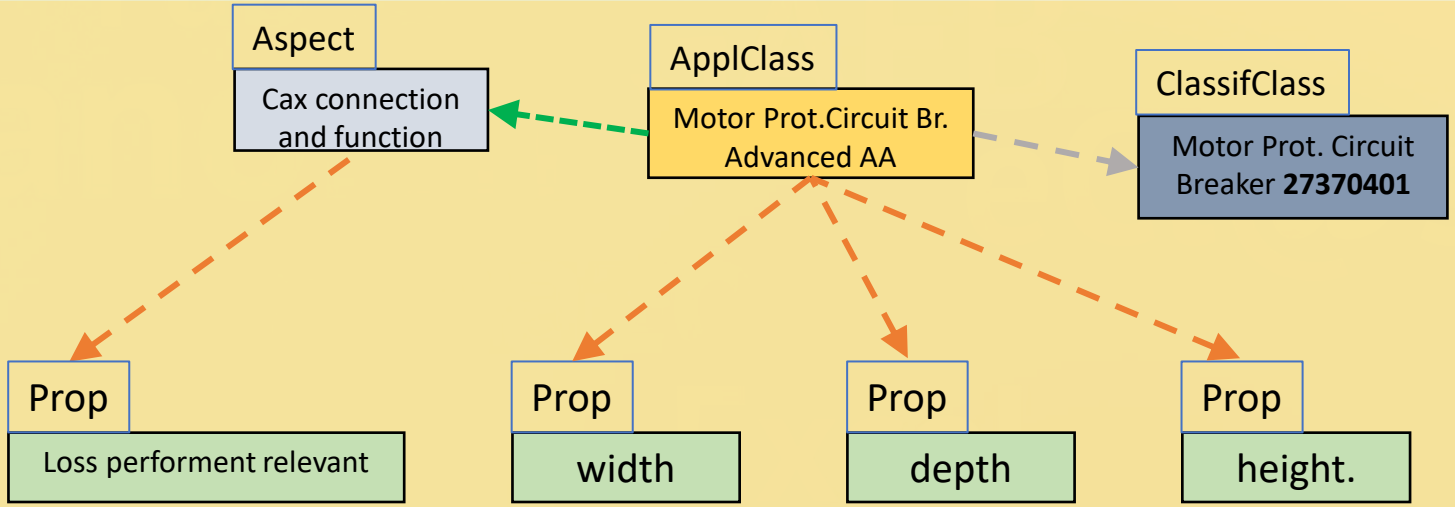
Role model ECLASS



Dictionary content ECLASS



What is the role model?

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- It is a description of the roles
- It is a mapping of the roles to the elements of the underlying data model of bSDD
- It is a pattern describing how roles are to be related to each other

  → it might contain further constraints

- Example: a block may be related via „hasSubBlocks“ to other Blocks, but not Aspects or ProductClasses

- How can it be documented?
  - In a document
  - In a more formal model

Role model and Data Templates (ISO 23387) Using 2nd Edition of IFD (ISO 12006-3)

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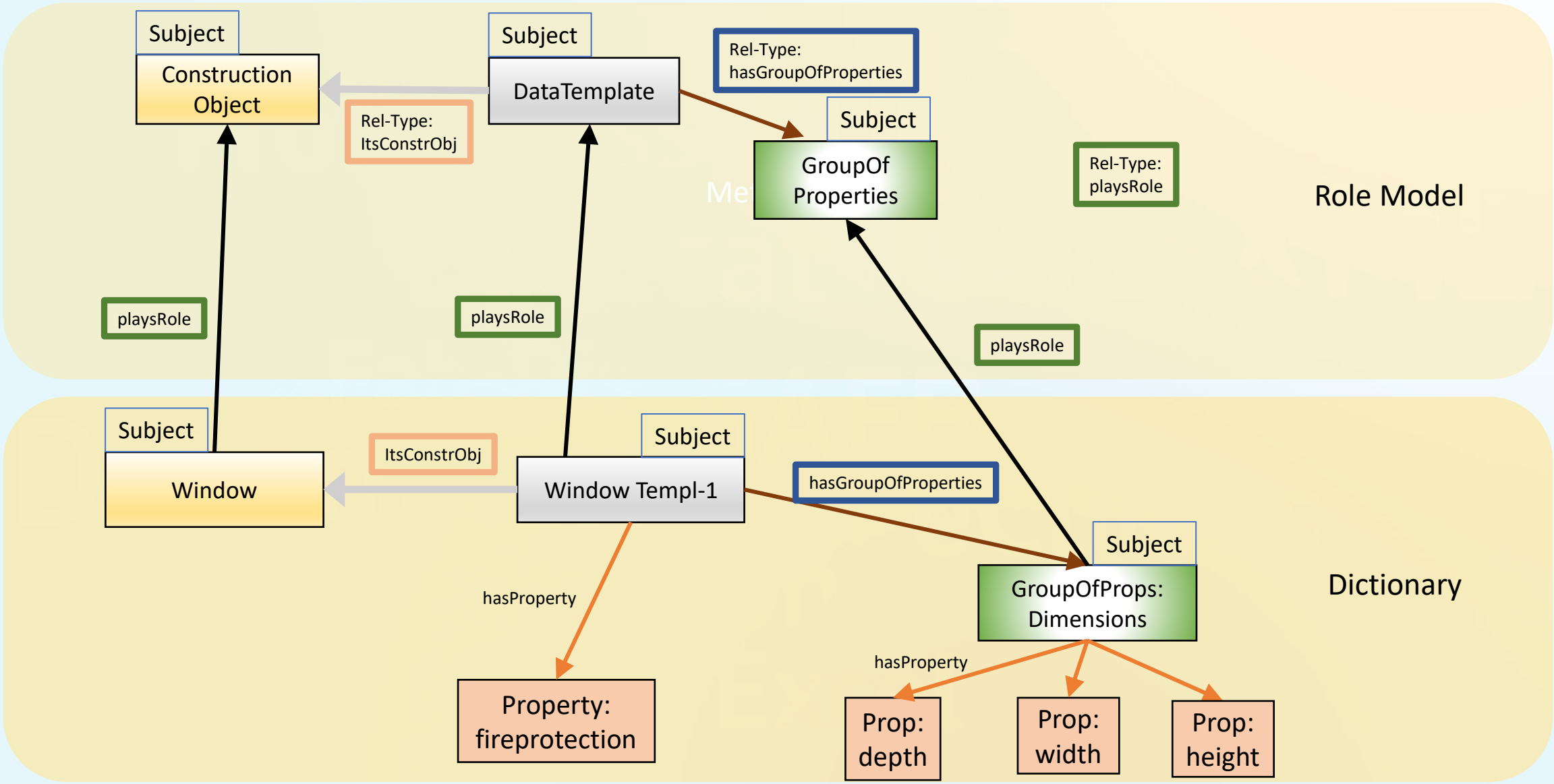

Summary

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- Role Models
  - Can support the structural mappings of external dictionaries to bSDD
  - Can support the understanding of the meaning of structures

- Role Models can be used as a pattern

- Idea:
  - Link dictionary elements directly to their role model
    - Possible (at least partly) with the new ISO 12006-3 (IFD)
    - Another example: UML Profiles
- Vision:
  - Have tools that understand role models and support user interfaces, correctness of dictionary content, etc.

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Thank you for your attention!

Wolfgang Wilkes
Semaino Technologies GmbH
Germany
wilkes@semaino.de