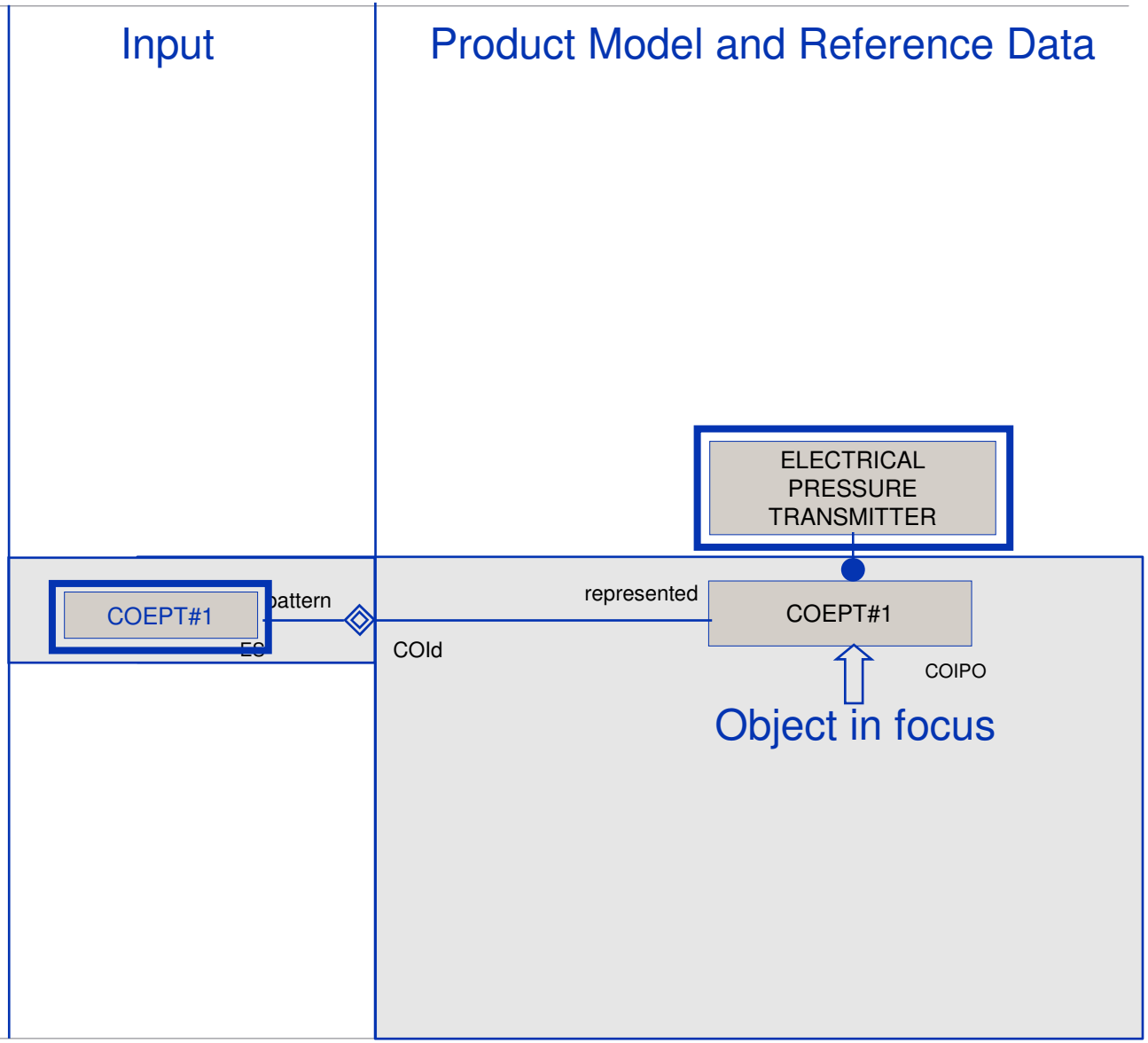
MANAGING RISK

EqHub Stage 2 Mapping

Magne Valen-Sendstad
Q2 2010

1. Define Object In Focus

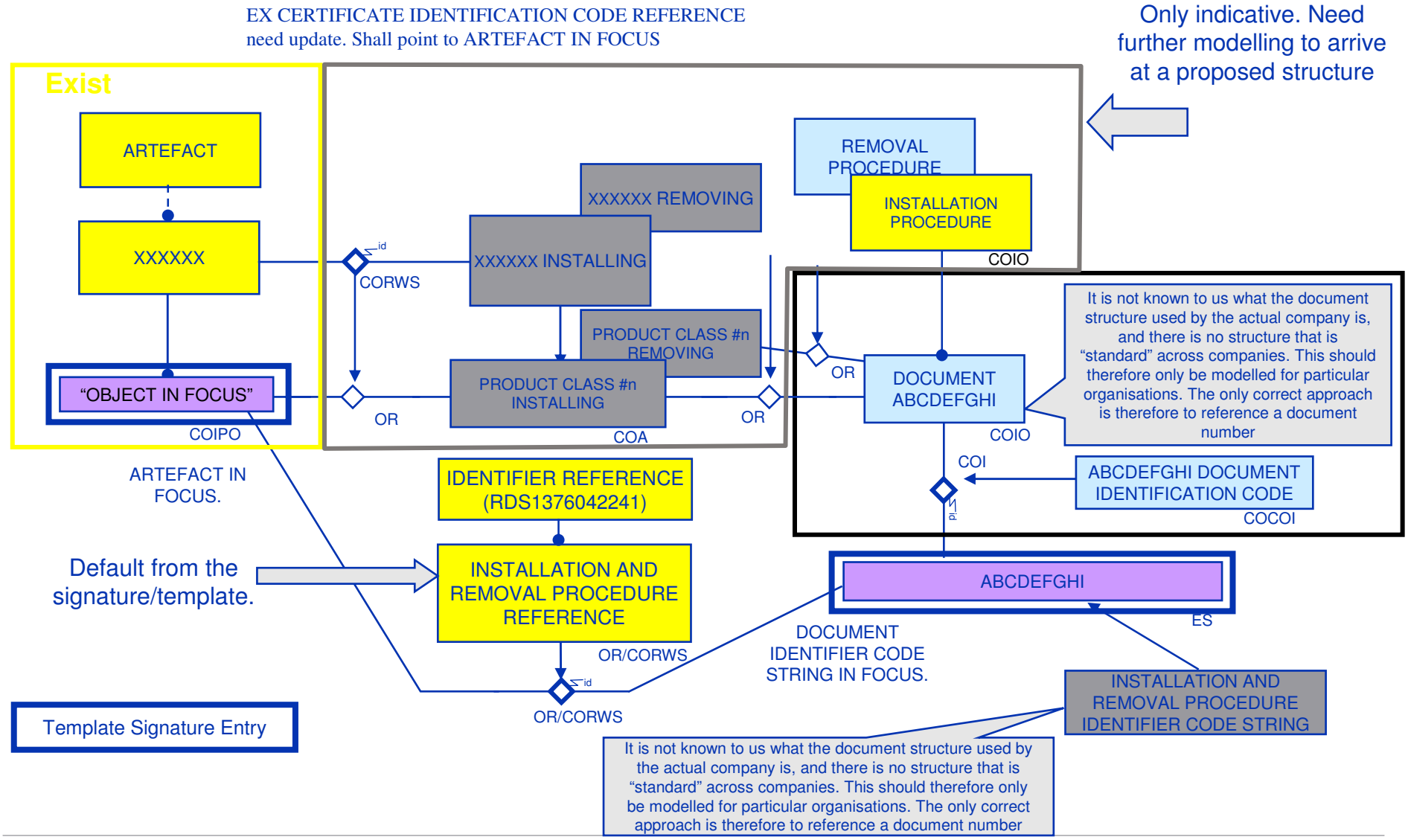
MANAGING RISK



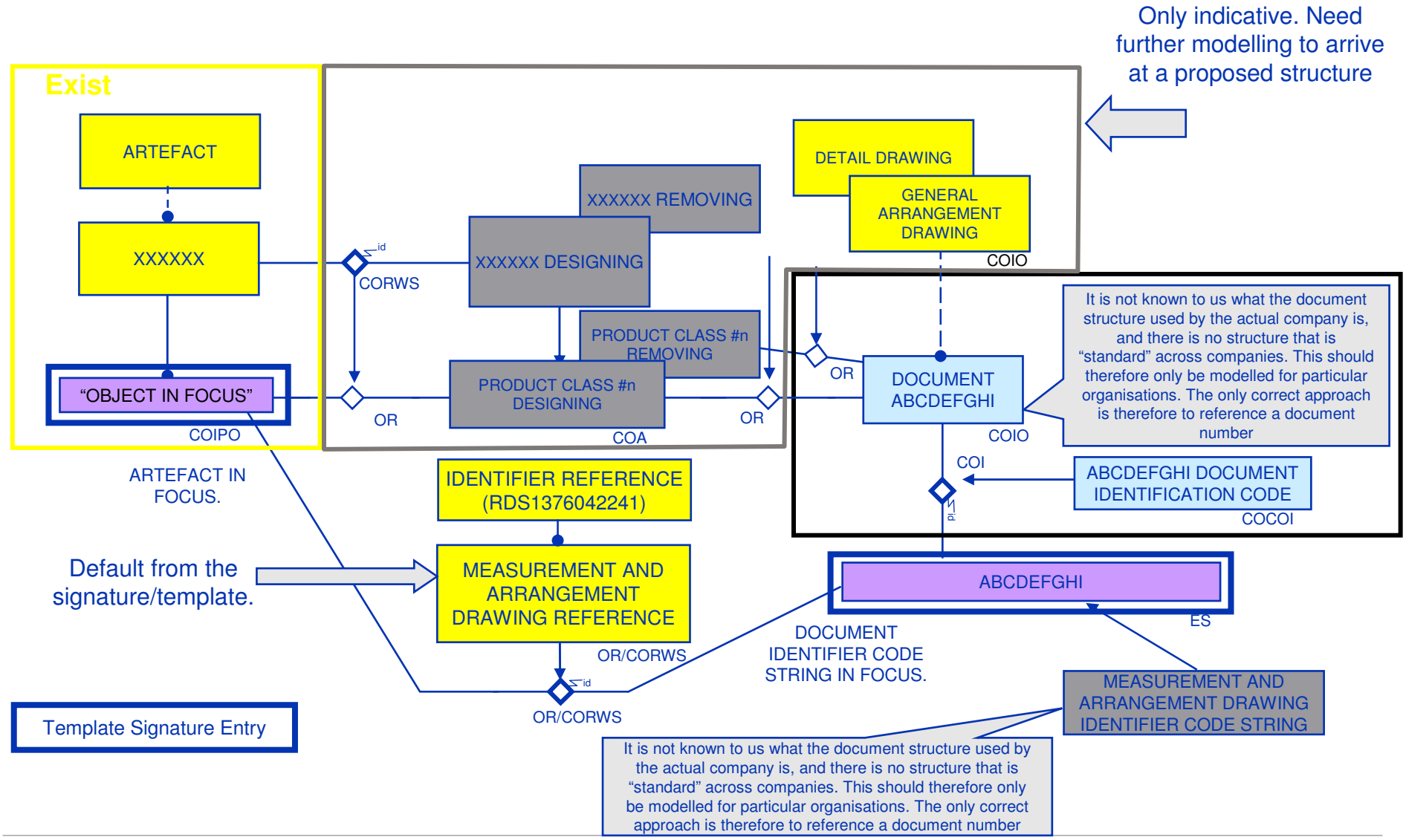
Template Signature Instances

Document & Other Identifiers References

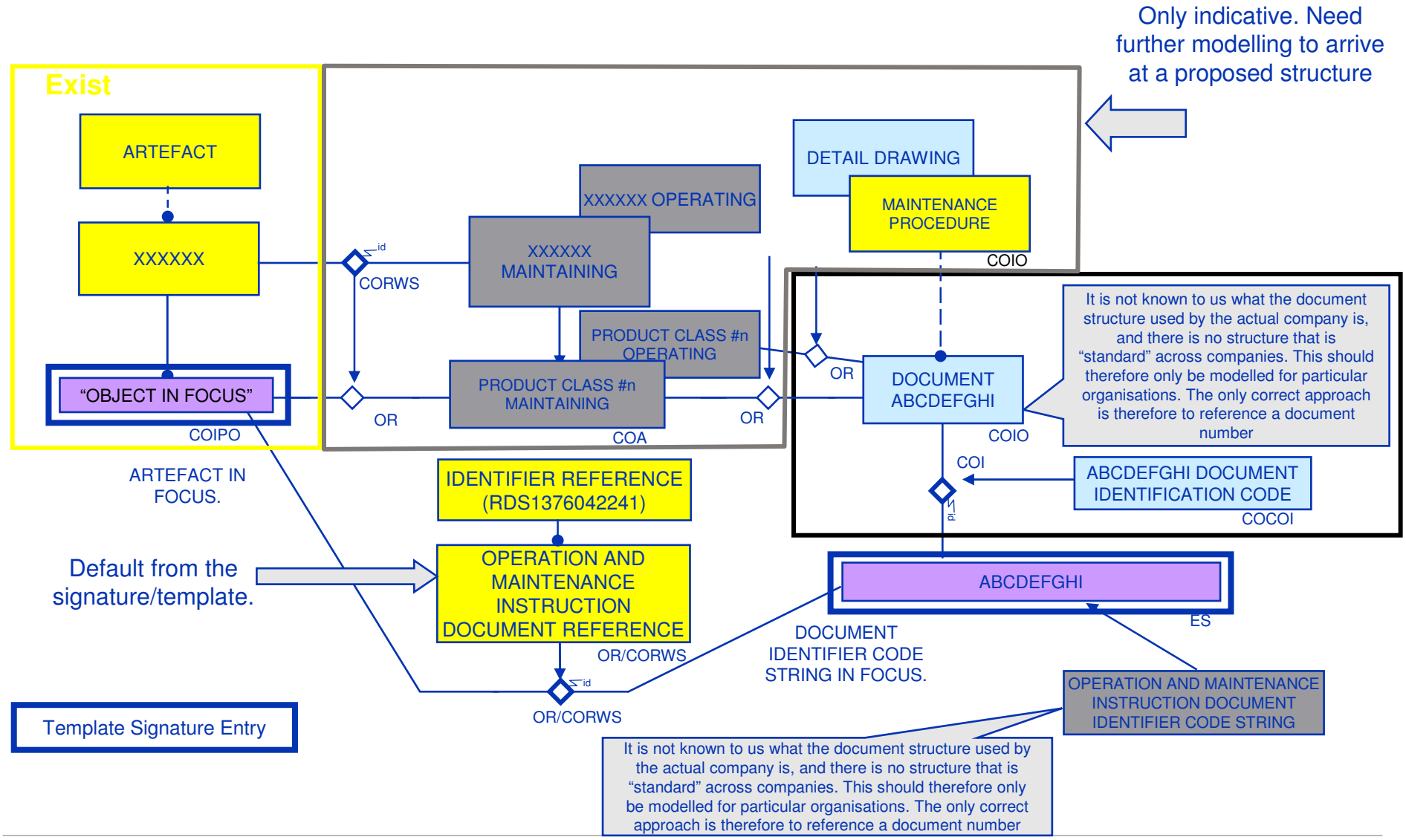
2 “Installation and removal procedures”



3 “Measurement and arrangement drawing”



4 “Operation and maintenance instructions”



5 “Product description and ordering information”

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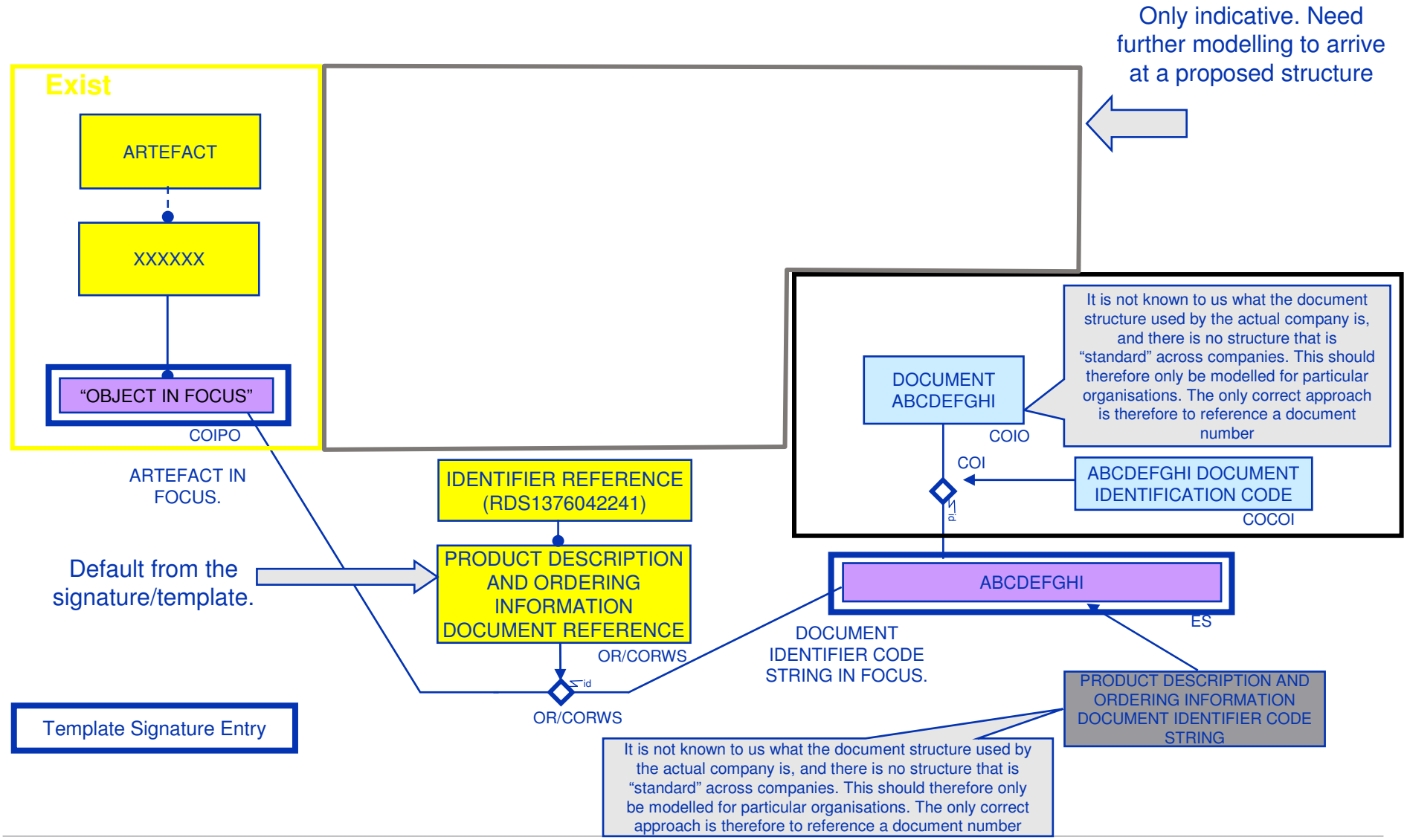
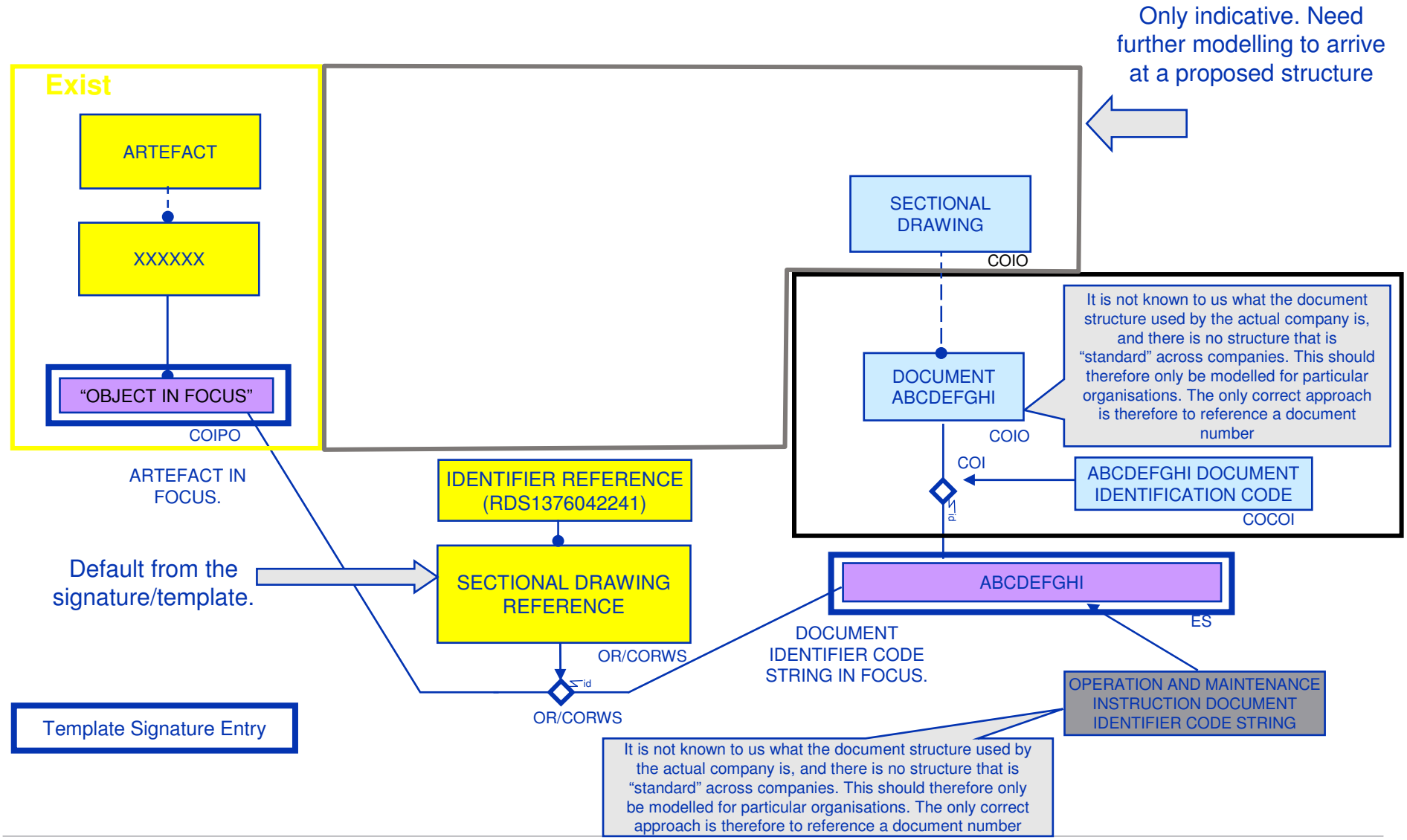
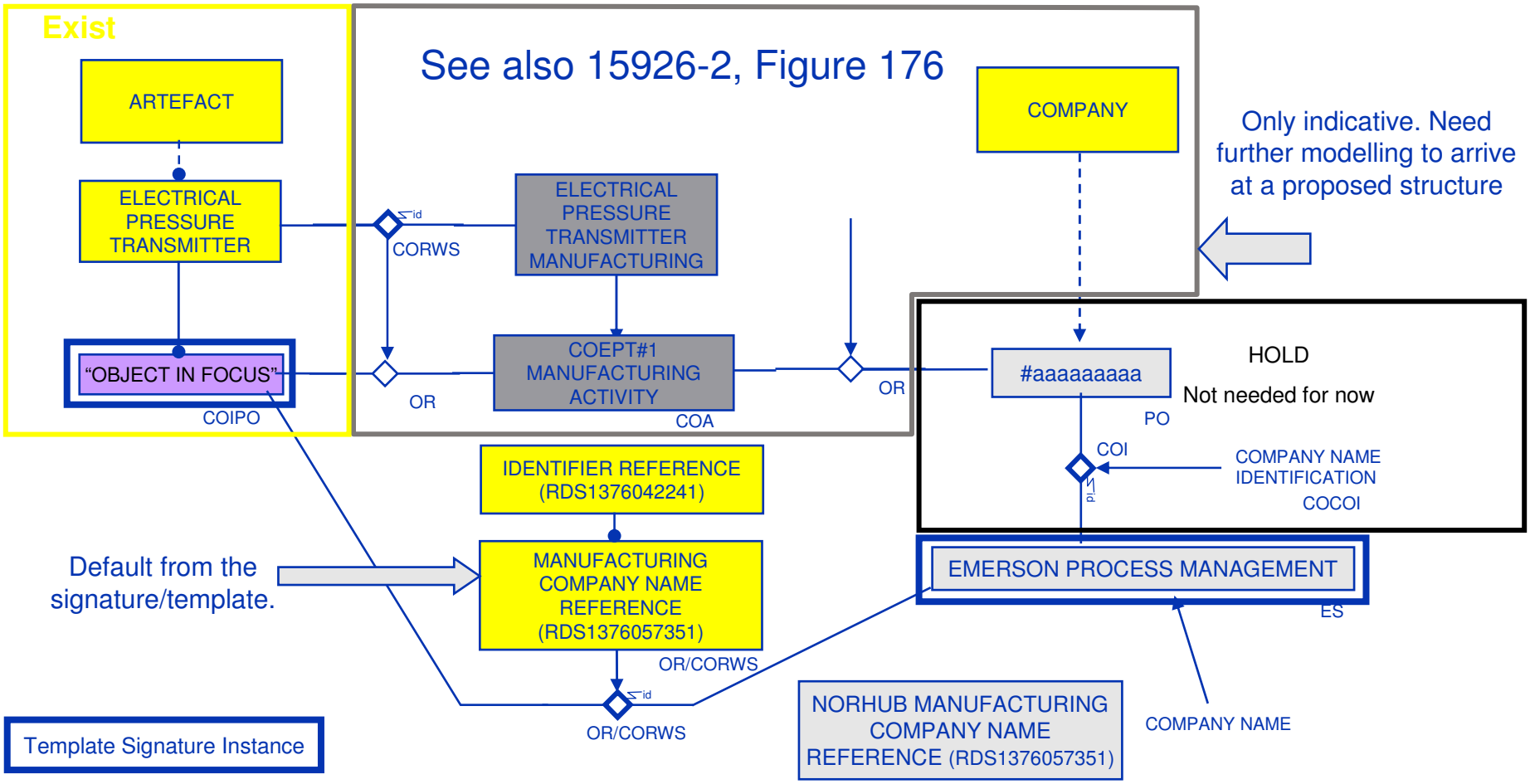


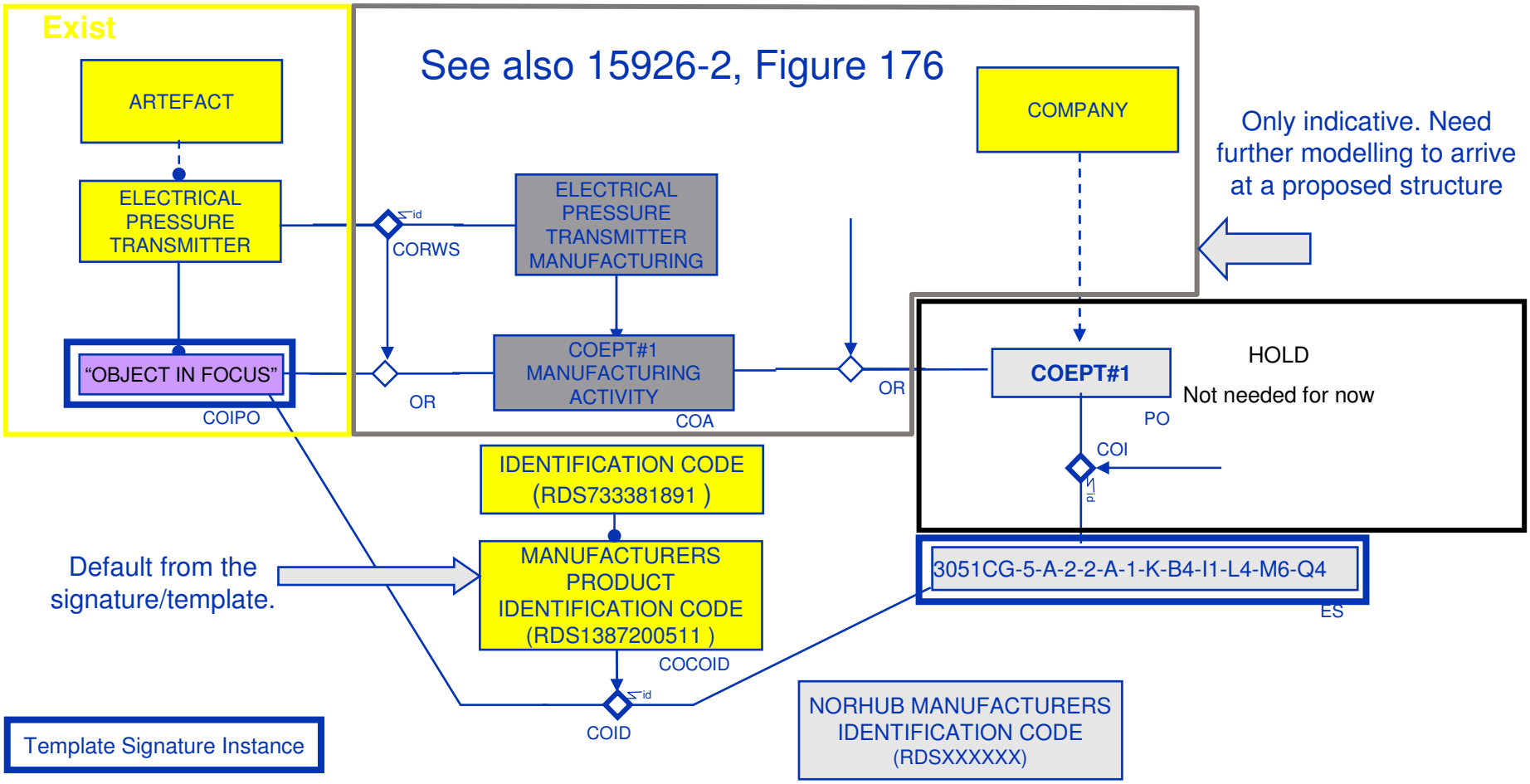
6 “Sectional drawing”



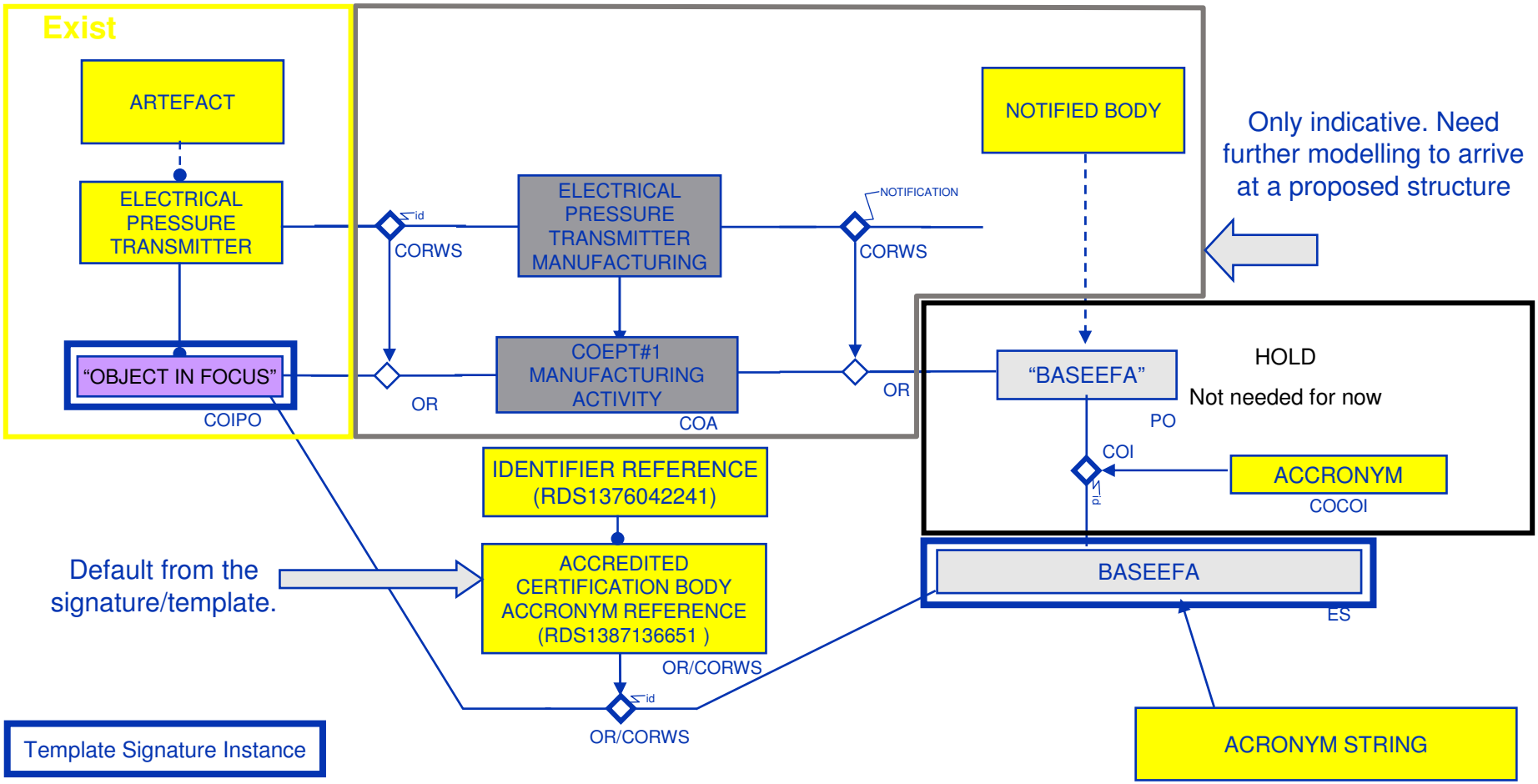
Label “Manufacturer”



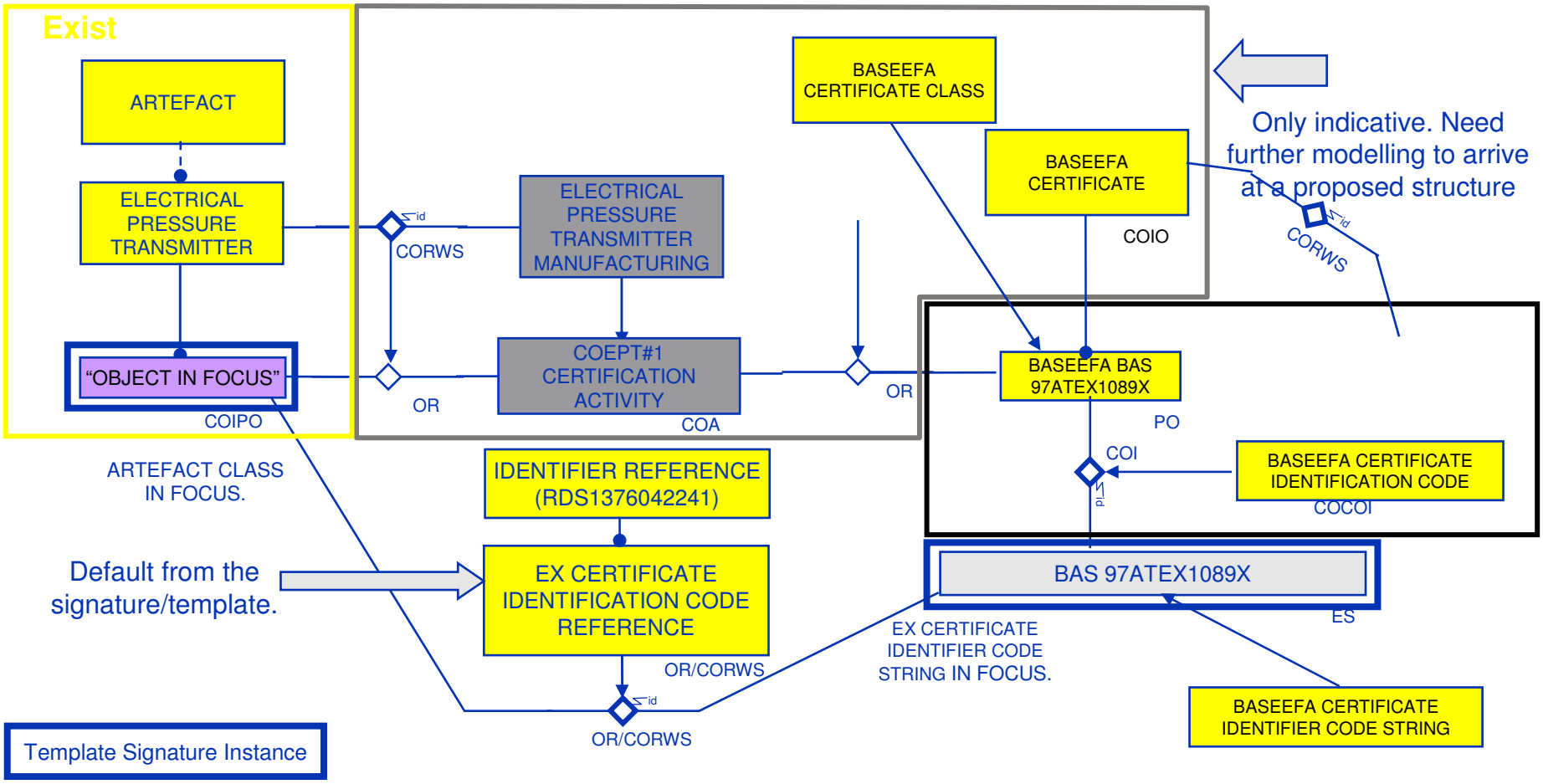
Label “Manufacturer’s Partnumber”



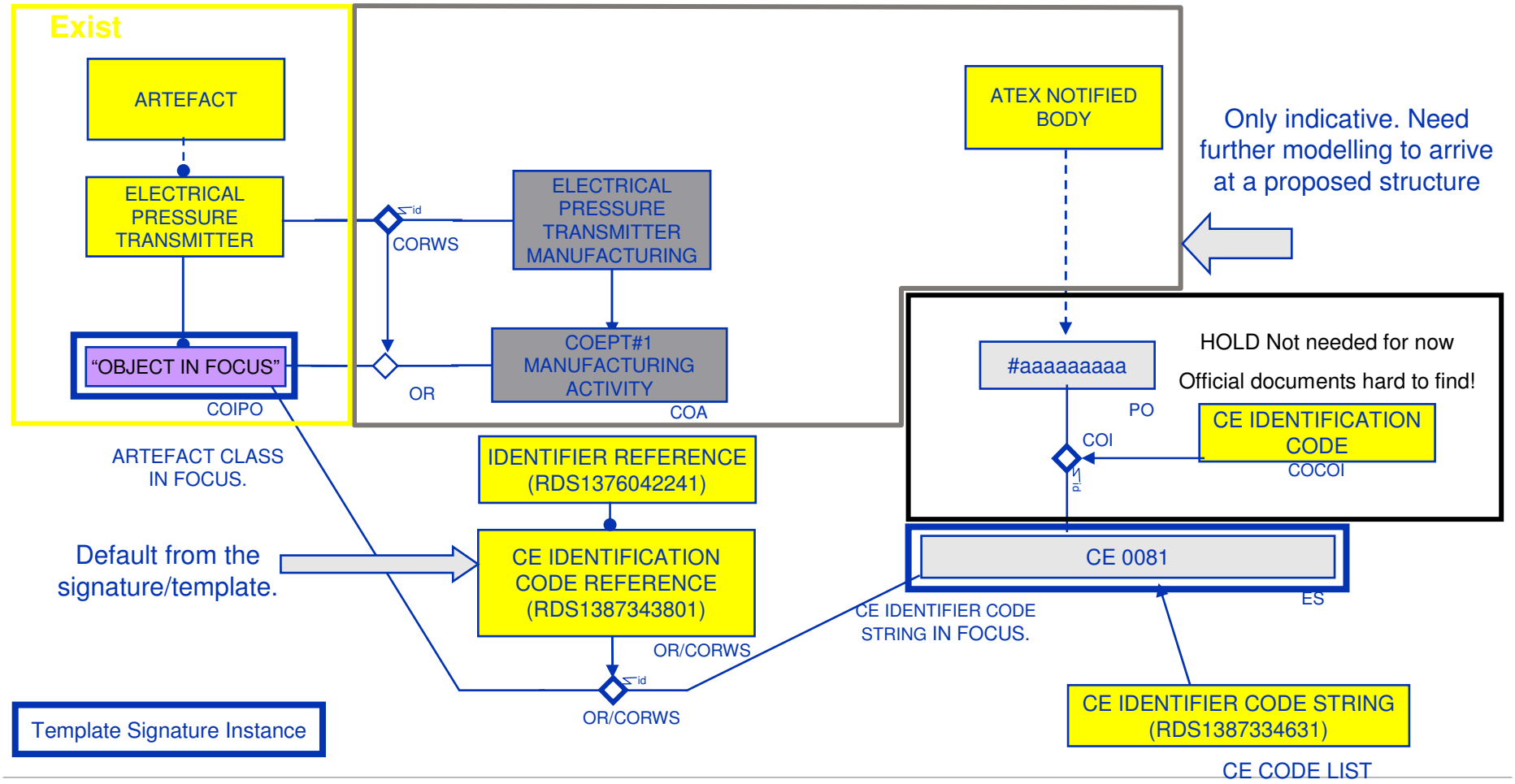
28. “Approval authority”



33 “EX certificate number”



32 “CE marking”



Product

7 “Actuator service”

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ACTUATOR SERVICE CODE ASSIGNMENT CLASS

ACTUATOR SERVICE CODE STRING CLASS

RF

COCOID

ACTUATOR CLASS

COCOInd

ACTUATOR

Actuator service

1

Modulating

ES

pattern

represented

COId

2

MODULATING ACTUATOR

COF

ON-OFF ACTUATOR

STEPPING ACTUATOR

On/Off

Stepping

specialisation

ARTEFACT CLASS

ACTUATOR CLASS

OBJECT IN FOCUS”

OBJECT IN FOCUS”

8 “Fail action”

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9 “Manual override”

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10 “Shut-off mechanism”

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ACTUATOR SHUT-OFF MECHANISM CODE ASSIGNMENT CLASS

ACTUATOR SHUT-OFF MECHANISM CODE STRING CLASS

RF

COCOID

ACTUATOR CLASS

COCOInd

ACTUATOR

Shut-off mechanism

1

Rack & Pinion

ES

pattern

represented

COId

2

RACK AND PINION ACTUATOR

COIPO

??????????

.....

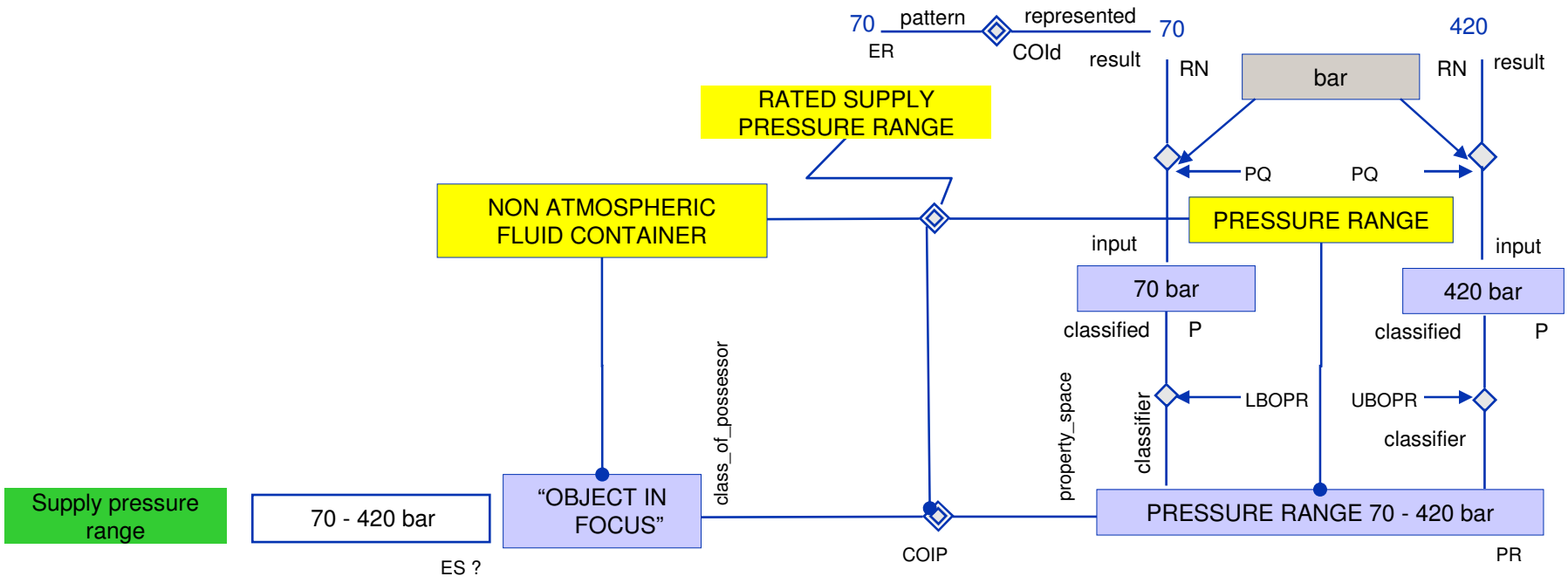
COIPO

.....

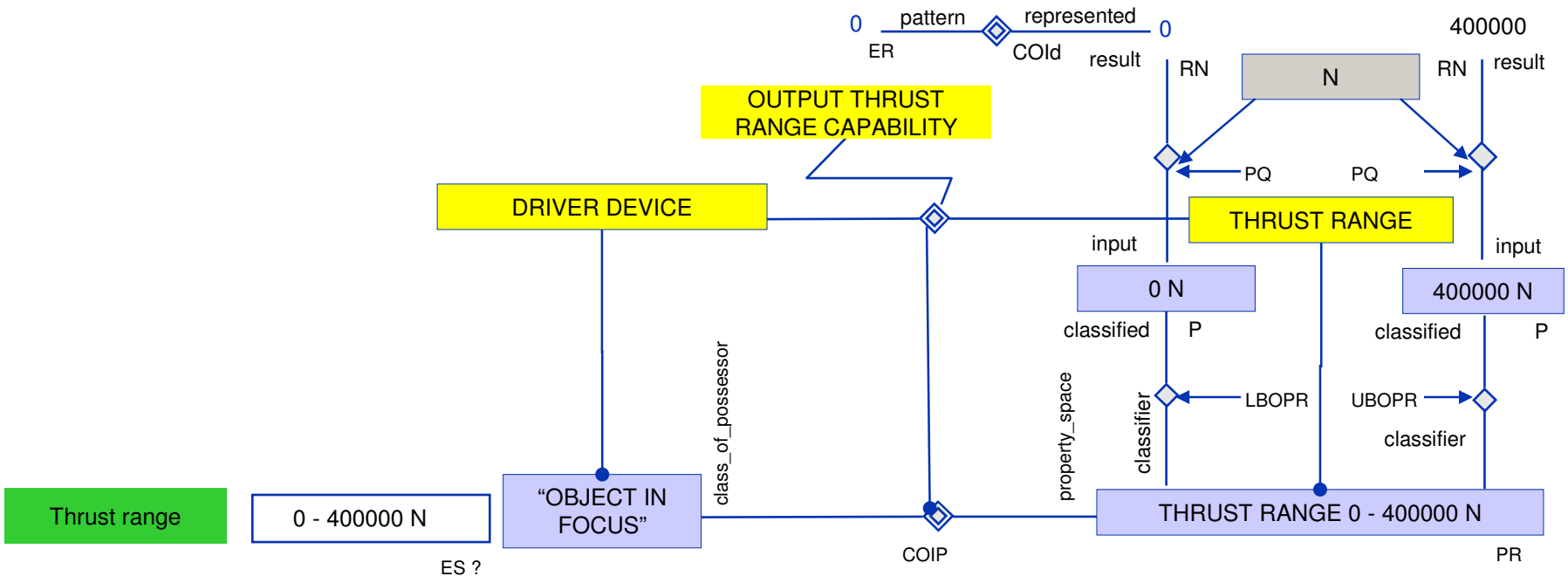
COIPO

OBJECT IN FOCUS”

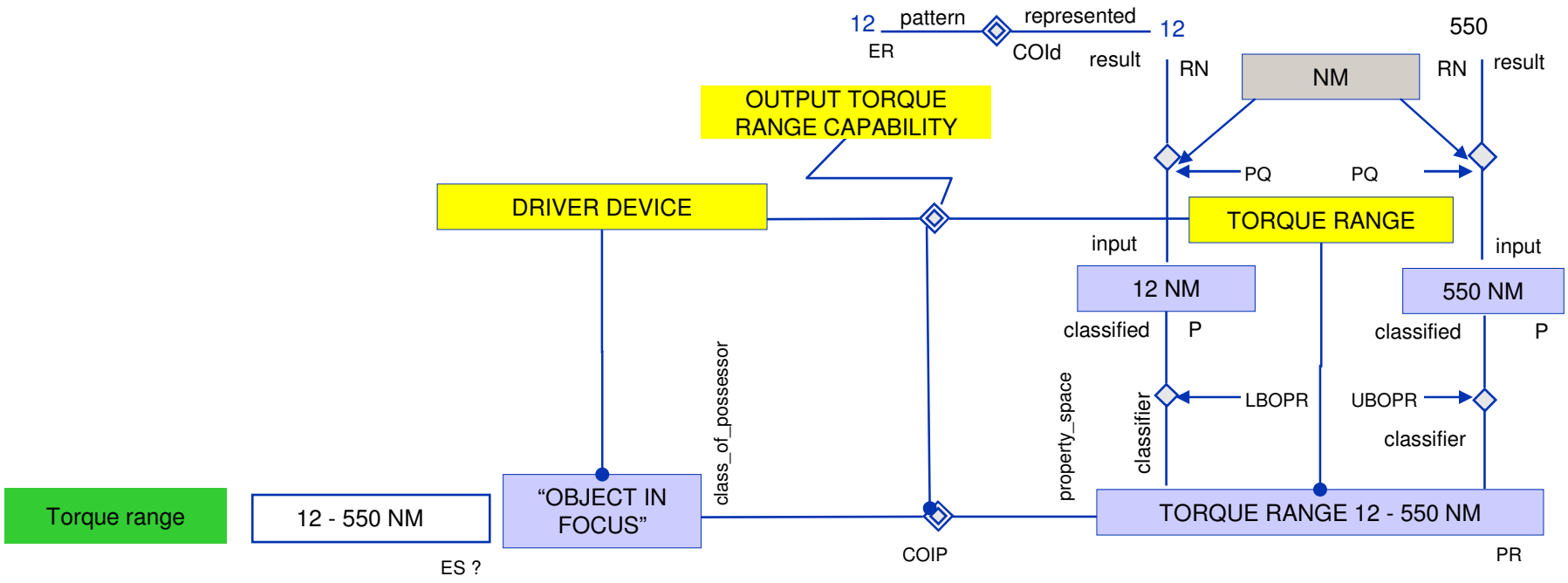
11 “Supply pressure range”



12 “Thrust range”



13 “Torque range”



14 “Antenna shape”

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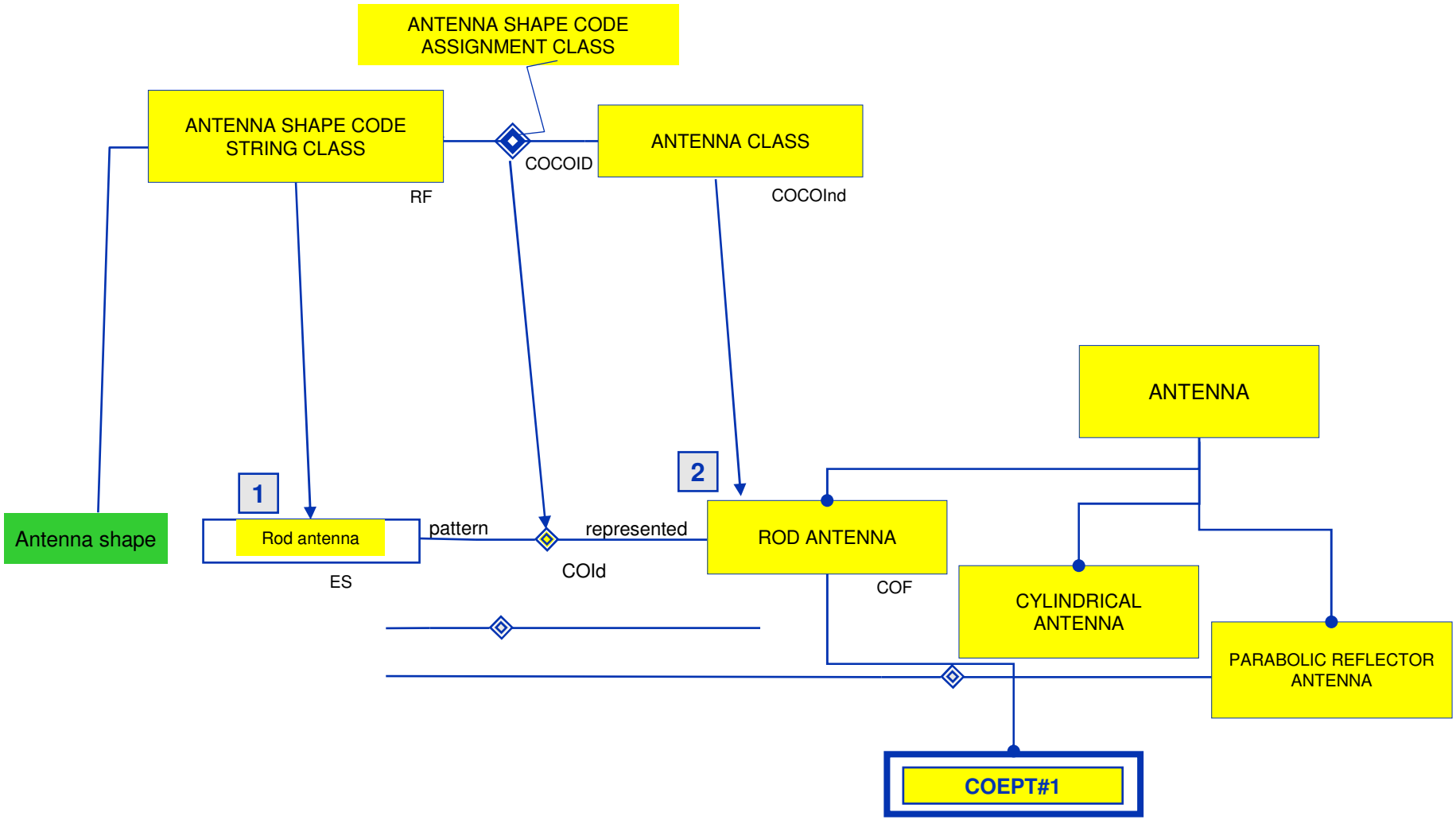
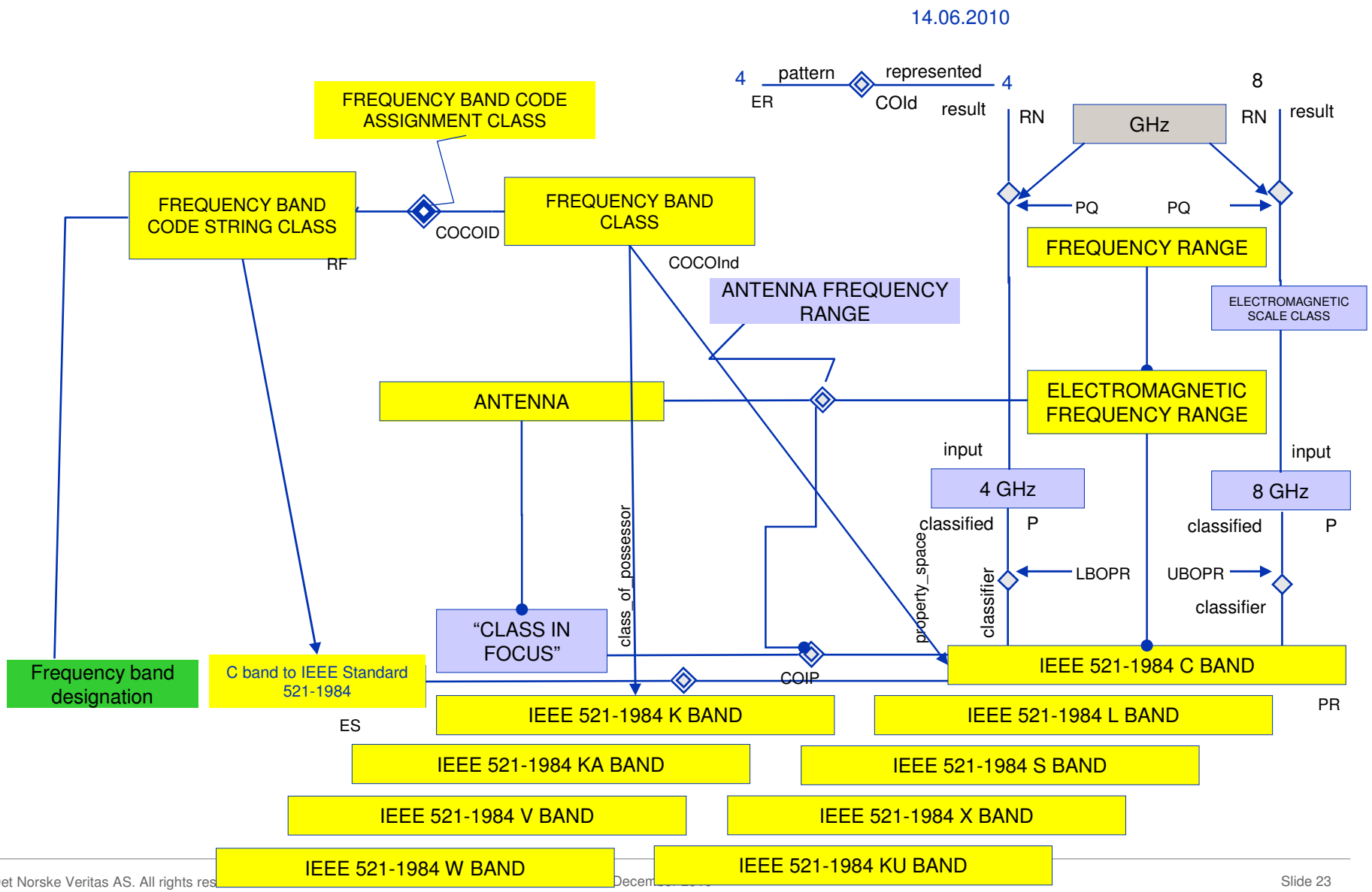


16 “Frequency band designation”

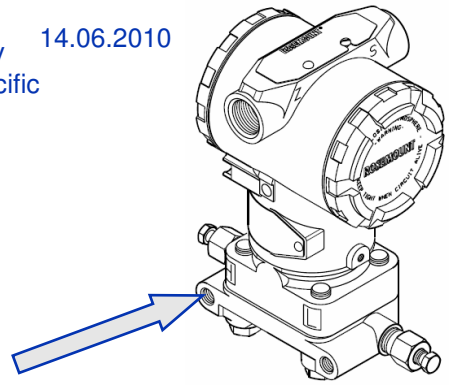


17 “High pressure side connection design”

MANAGING RISK

Note: We have “rolled” all classes of holes etc into one class (PROCESS CONNECTION SIZE CODE STRING and PROCESS CONNECTION CLASS) to allow multiple classes of connections to appear in one list. If one would like to subdivide the list by types of connections this can be done at a later stage, provided the structure is reorganised. The list could be made specific to EqHub to hold the list of classes referenced by EqHub, but as it is it is made generic. This might be revisited.

14.06.2010

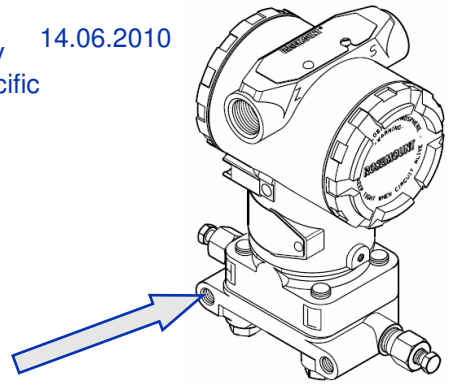


18 “Low pressure side connection design”

MANAGING RISK

Note: We have “rolled” all classes of holes etc into one class (PROCESS CONNECTION SIZE CODE STRING and PROCESS CONNECTION CLASS) to allow multiple classes of connections to appear in one list. If one would like to subdivide the list by types of connections this can be done at a later stage, provided the structure is reorganised. The list could be made specific to EqHub to hold the list of classes referenced by EqHub, but as it is it is made generic. This might be revisited.

14.06.2010



PROCESS CONNECTION SIZE CODE ASSIGNMENT CLASS

PROCESS CONNECTION SIZE CODE STRING CLASS

PROCESS CONNECTION CLASS

LOW PRESSURE PROCESS CONNECTION SIZE CODE ASSIGNMENT CLASS

LOW PRESSURE PROCESS CONNECTION SIZE CODE STRING CLASS

COCOID

RF

LOW PRESSURE PROCESS CONNECTION CLASS

COCOInd

Dictionary compliance

LOW PRESSURE PROCESS CONNECTION

Probably some other relationship (class_of_intended_role_and_domain)

ANSI/ASME B1.20.1 THREAD CLASS

RDS1442382761

3

ANSI/ASME B1.20.1 NPT-F THREAD

Low pressure side connection design

1

1/2 - 14 NPT-F

ES

pattern

represented

COId

2

THREADED HOLE ANSI/ASME B1.20.1 1/2 - 14 NPT-F

whole

COFWP

part

ANSI/ASME B1.20.1 1/2 - 14 NPT-F

THREADED HOLE 1/2 - 14 NPT-F

2

COF

Note: The list of thread classes sent to EqHub is the list of thread shapes, not the list of threaded holes (female) or cylinders (male).

COEPT#1-P2

whole

part

COEPT#1-P2-F1

COFWP

1

3

Needs to be modelled like this. The threaded hole class states only the fact that it is a hole and the shape of the threads. **COEPT#1-P2-F1 p**ossess multiple additional properties, e.g. thickness, orientation etc.

19 “Process Connection”

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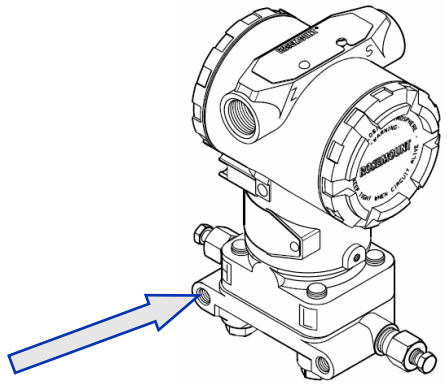
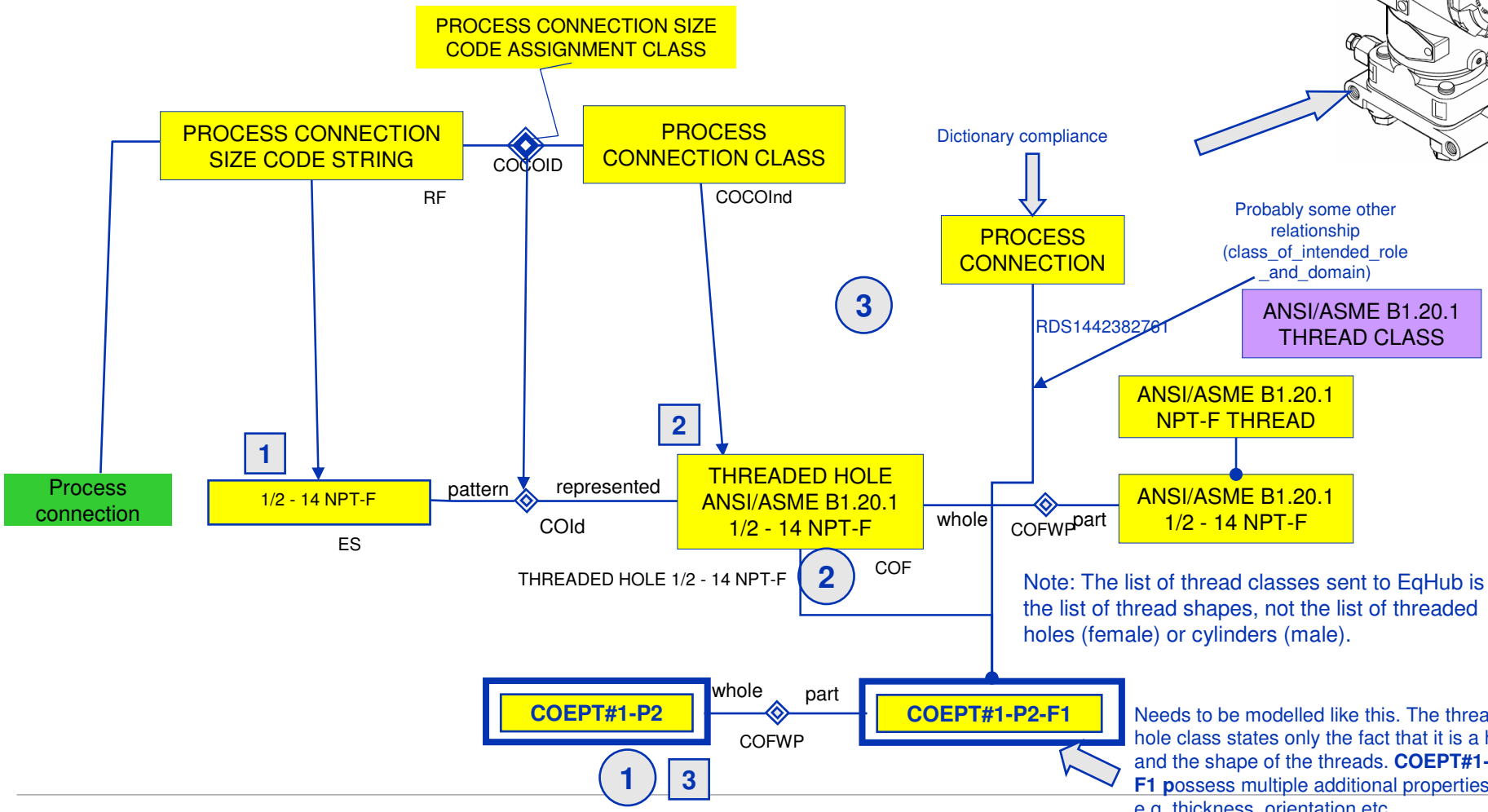
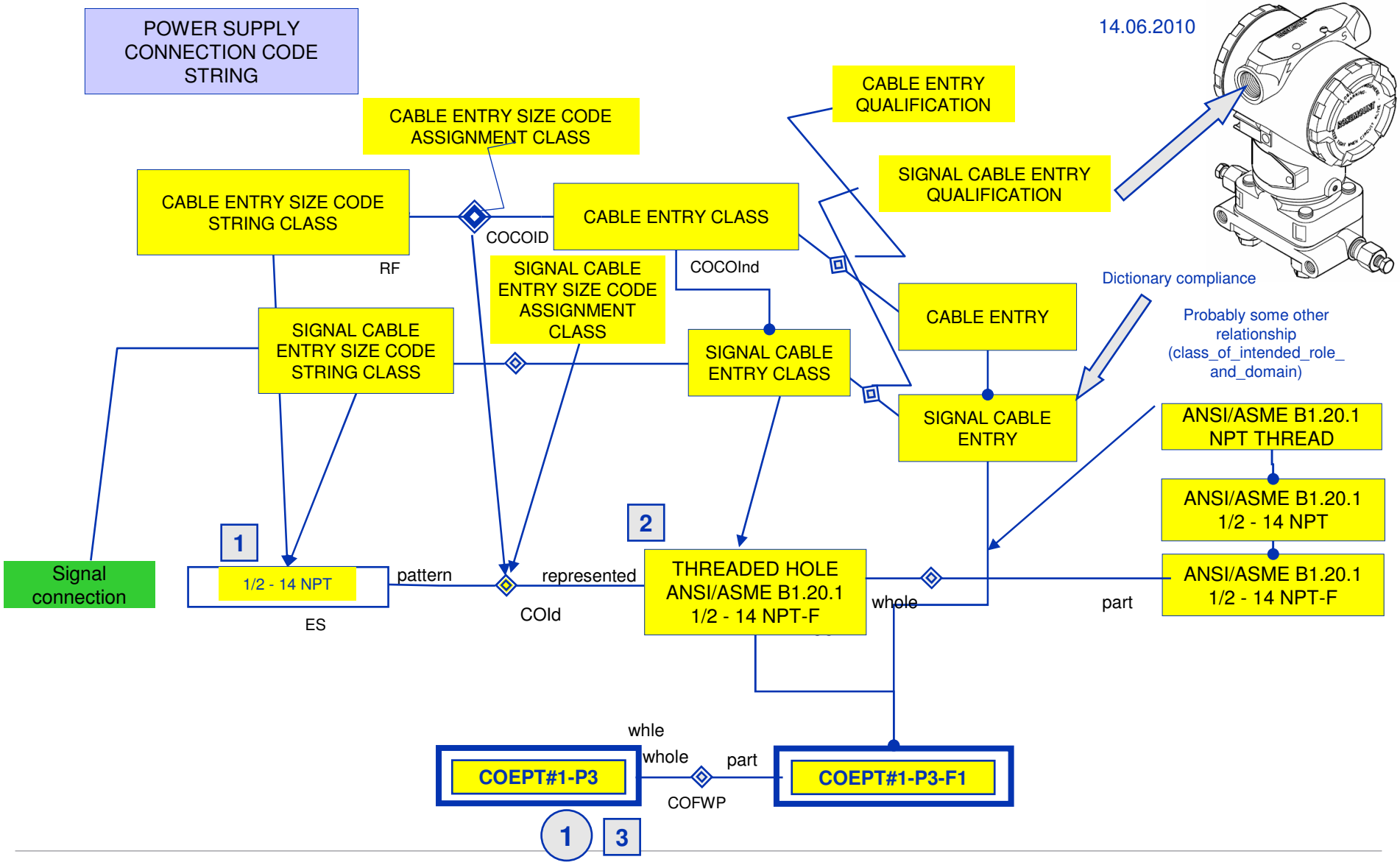
Note: We have “rolled” all classes of holes etc into one class (PROCESS CONNECTION SIZE CODE STRING and PROCESS CONNECTION CLASS) to allow multiple classes of connections to appear in one list. If one would like to subdivide the list by types of connections this can be done at a later stage, provided the structure is reorganised. The list could be made specific to EqHub to hold the list of classes referenced by EqHub, but as it is it is made generic. This might be revisited.

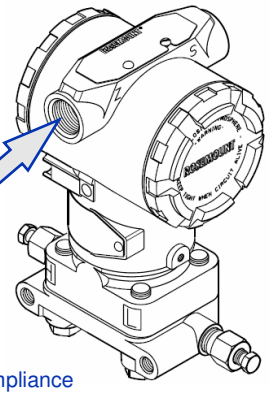




20 “Signal connection”



21 “Supply Connection”



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CABLE ENTRY SIZE CODE ASSIGNMENT CLASS

CABLE ENTRY QUALIFICATION

POWER CABLE ENTRY QUALIFICATION

CABLE ENTRY SIZE CODE STRING CLASS

COCOID

CABLE ENTRY CLASS

RF

POWER CABLE ENTRY SIZE CODE ASSIGNMENT CLASS

COCOInd

Dictionary compliance

CABLE ENTRY

Probably some other relationship (class_of_intended_role_and_domain)

POWER CABLE ENTRY SIZE CODE STRING CLASS

POWER CABLE ENTRY CLASS

POWER CABLE ENTRY

ISO 68-1 THREAD

M20X1.5

M20 x 1.5-F

Supply connection

1

M20 x 1.5

ES

pattern

represented

COId

2

THREADED HOLE M20 x 1.5-F

COF

whole

part

whle

whole

part

COEPT#1-P3

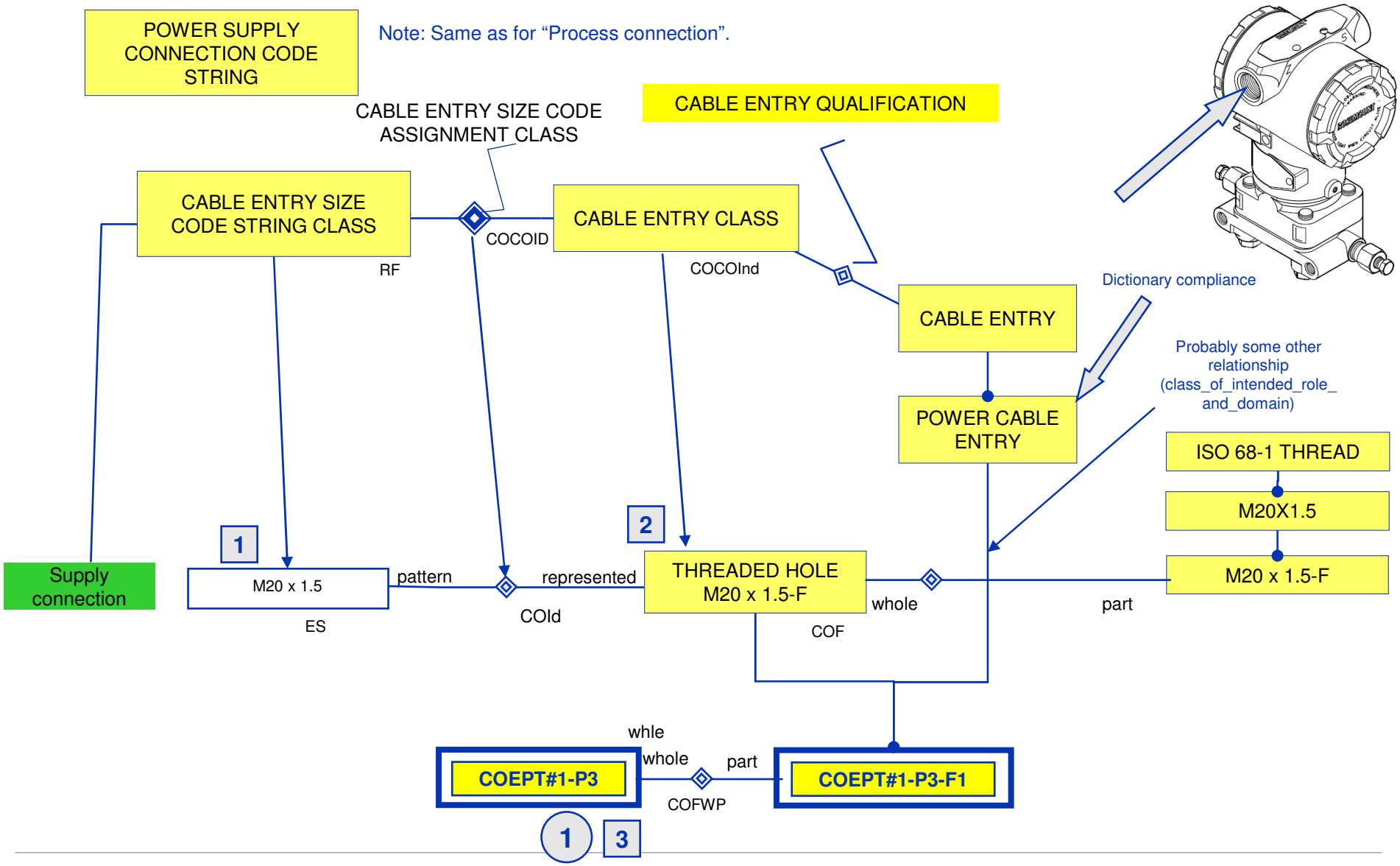
COEPT#1-P3-F2

COFWP

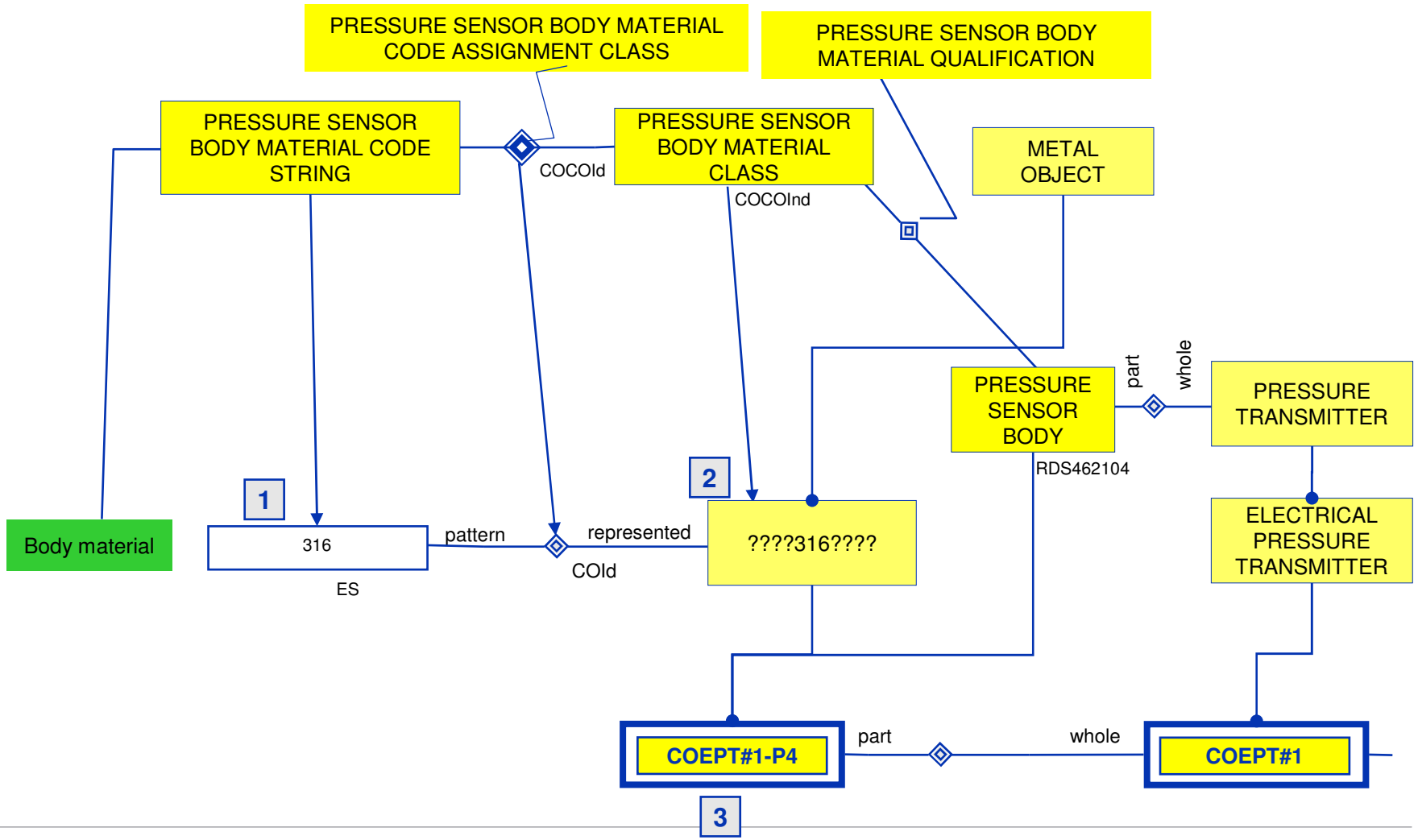
1

3

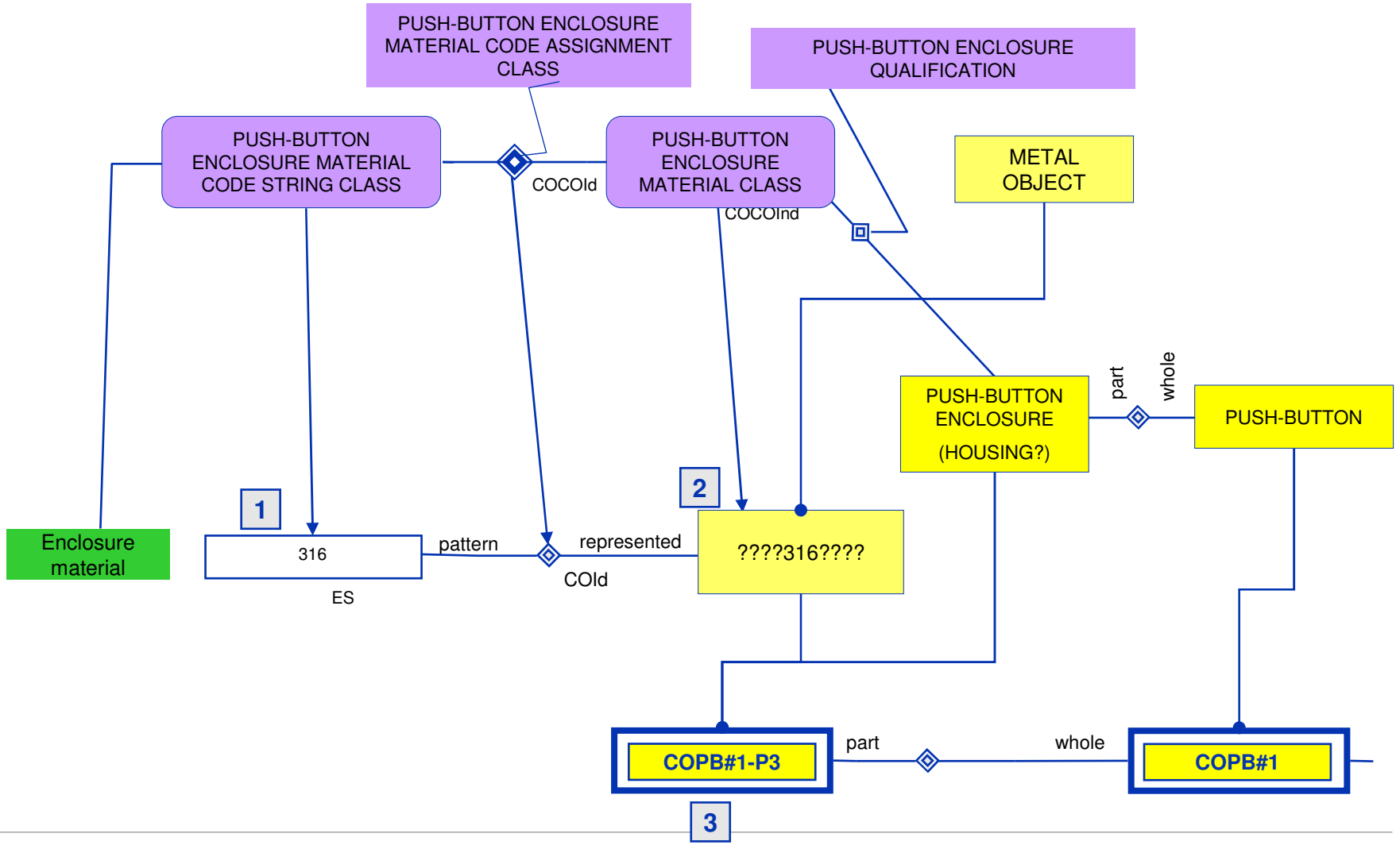
21 “Supply Connection” SUPERSEEDED



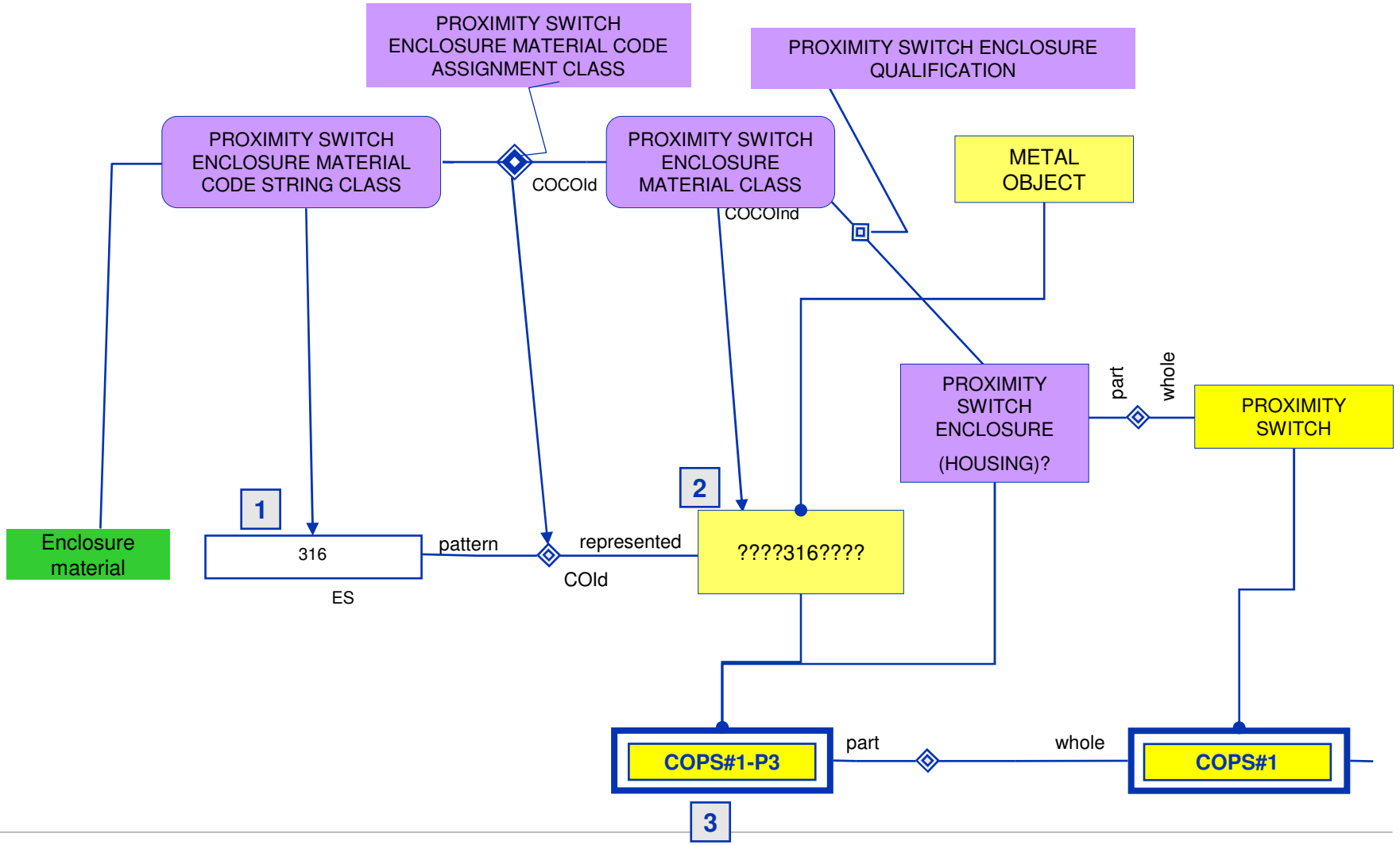
25 “Body material”



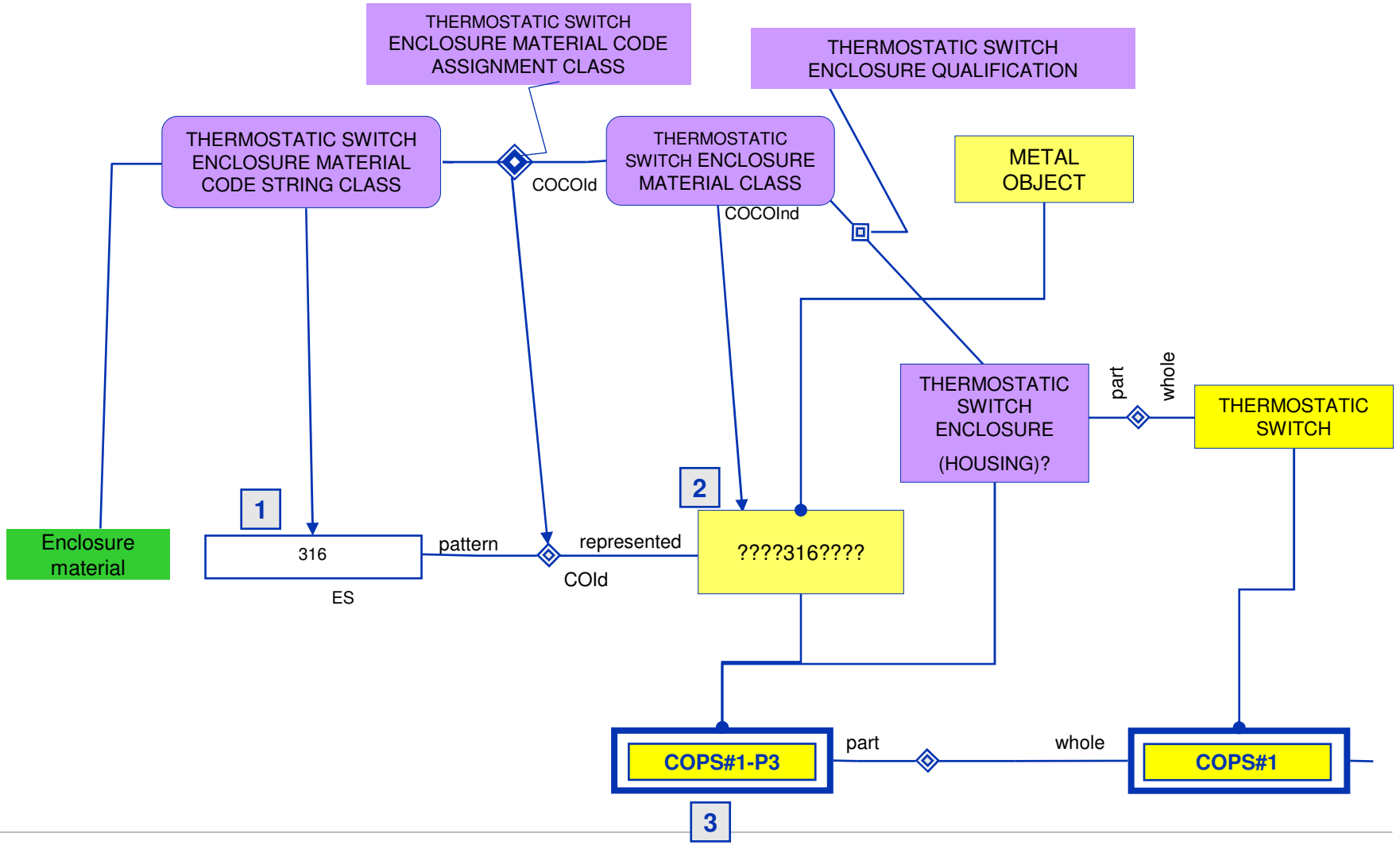
26 a “Enclosure material” (PUSH-BUTTON)



26 b “Enclosure material" (PROXIMITY SWITCH)

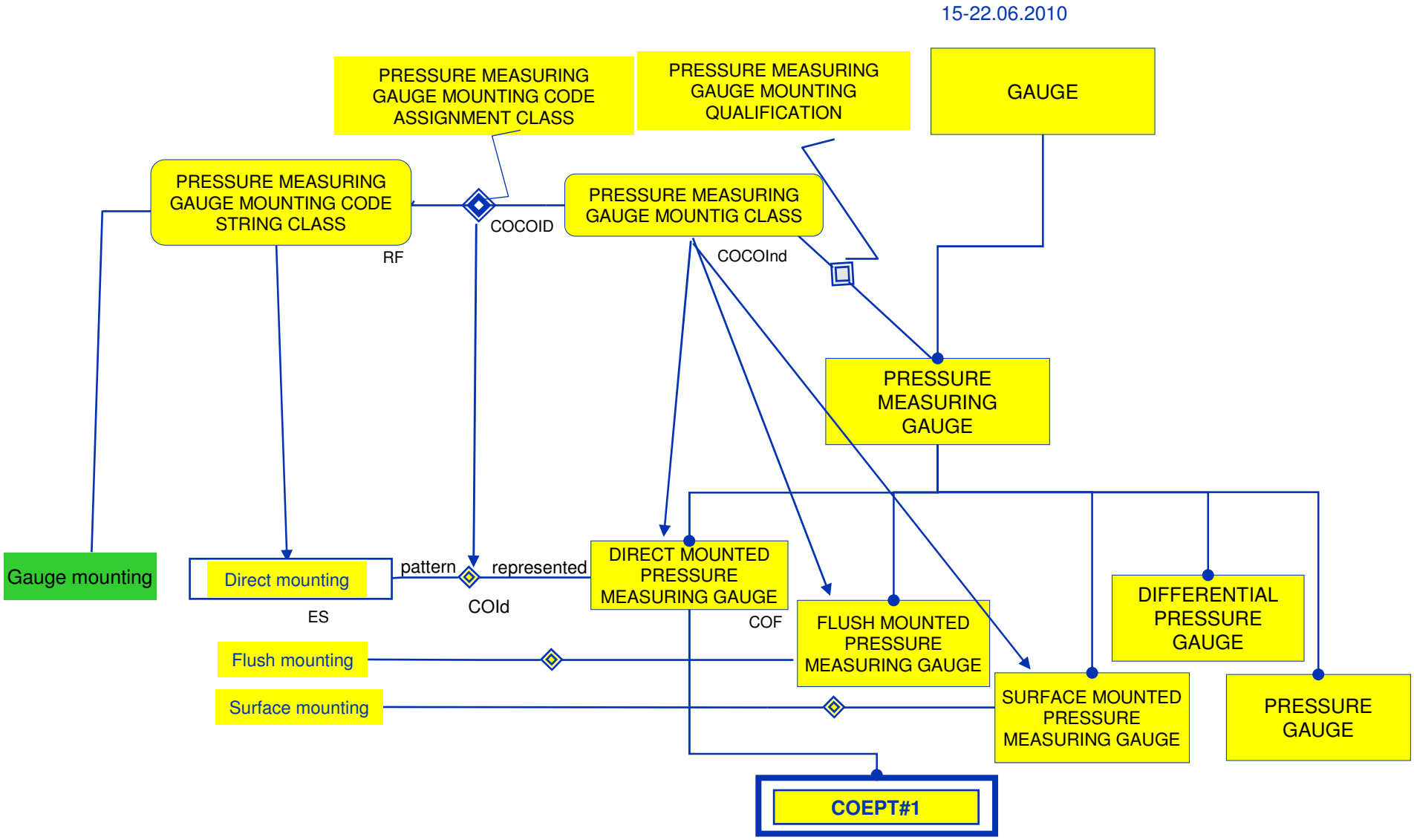


26 c “Enclosure material“ (THERMOSTATIC SWITCH / THERMOSTAT)

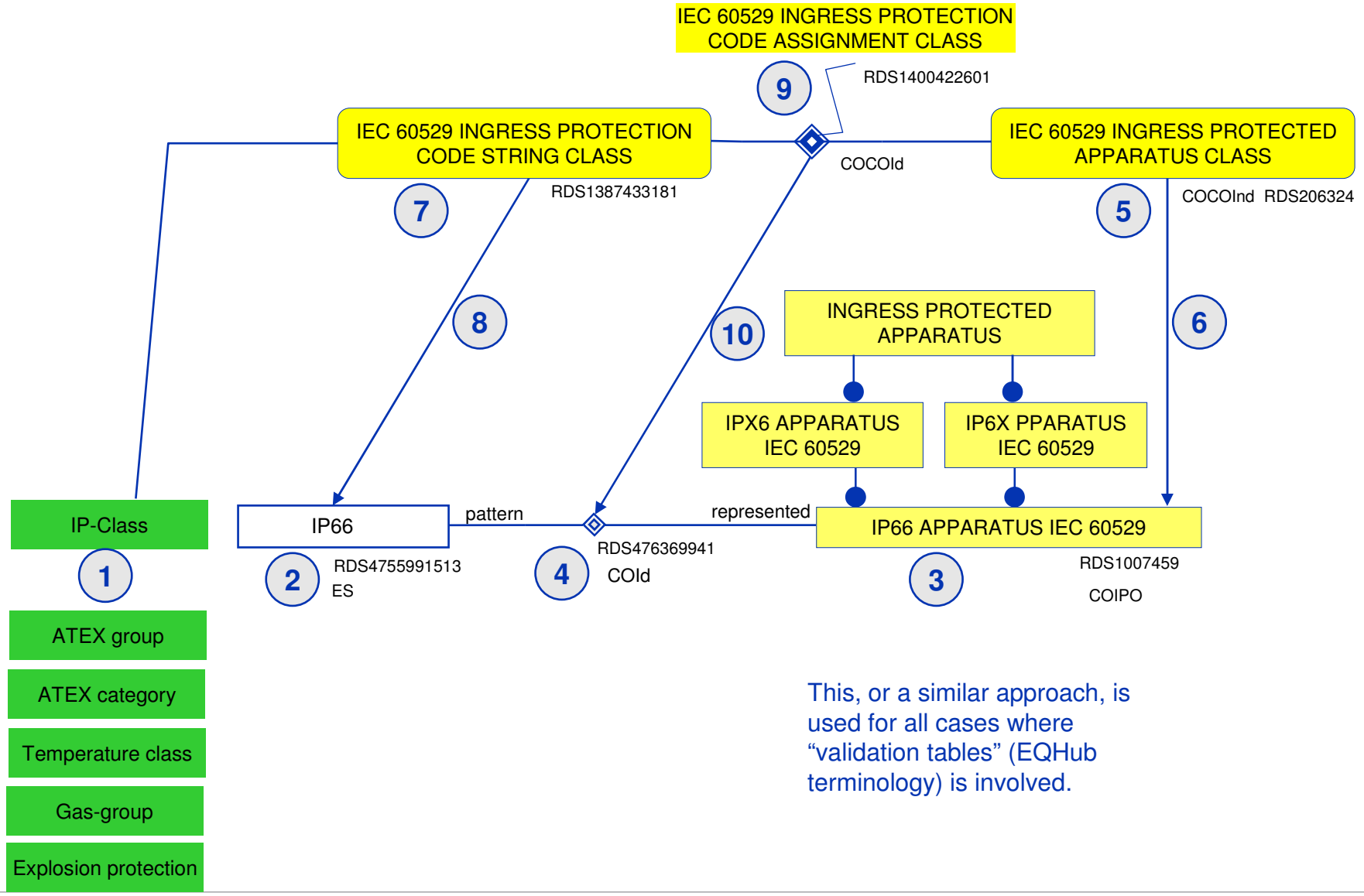


27 “Gauge mounting”

MANAGING RISK



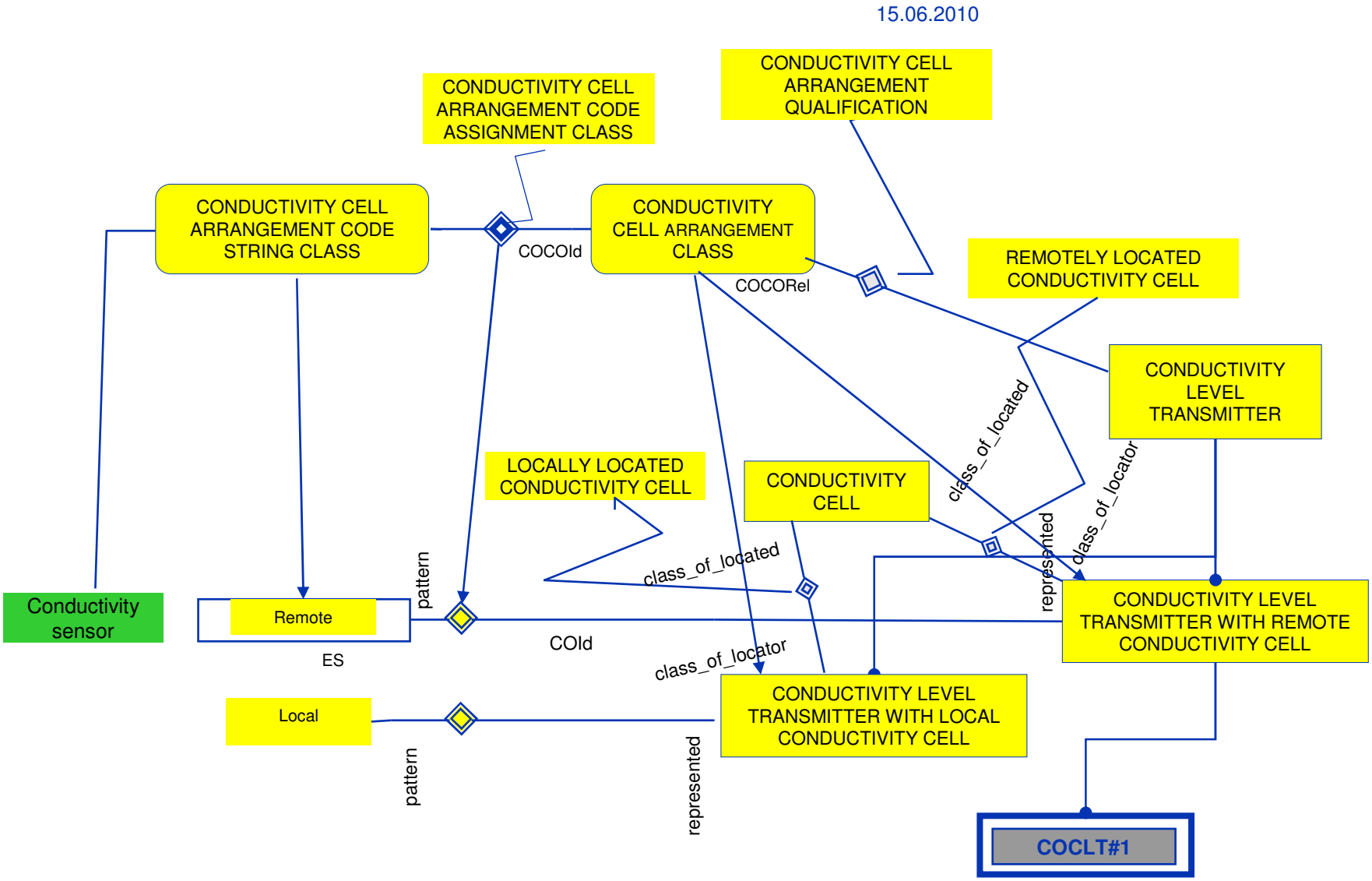
29, 30, 31, 34, 35, 36, 86 Pattern for interface relating engineering domain codes for classes.



This, or a similar approach, is used for all cases where "validation tables" (EQHub terminology) is involved.

37 “Conductivity sensor” (Transmitter, Level, Conductivity)

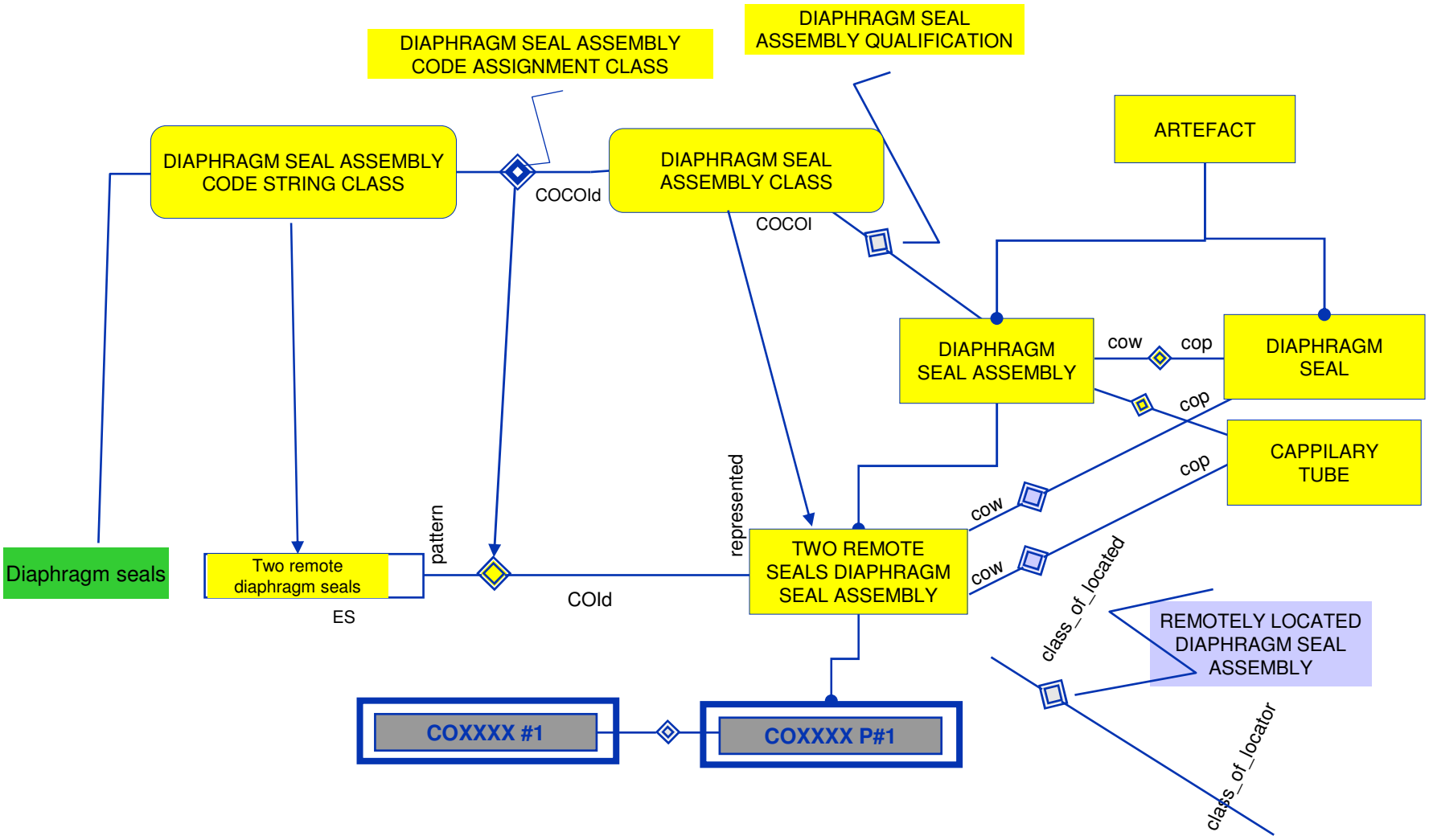
MANAGING RISK



38 “Diaphragm seals”

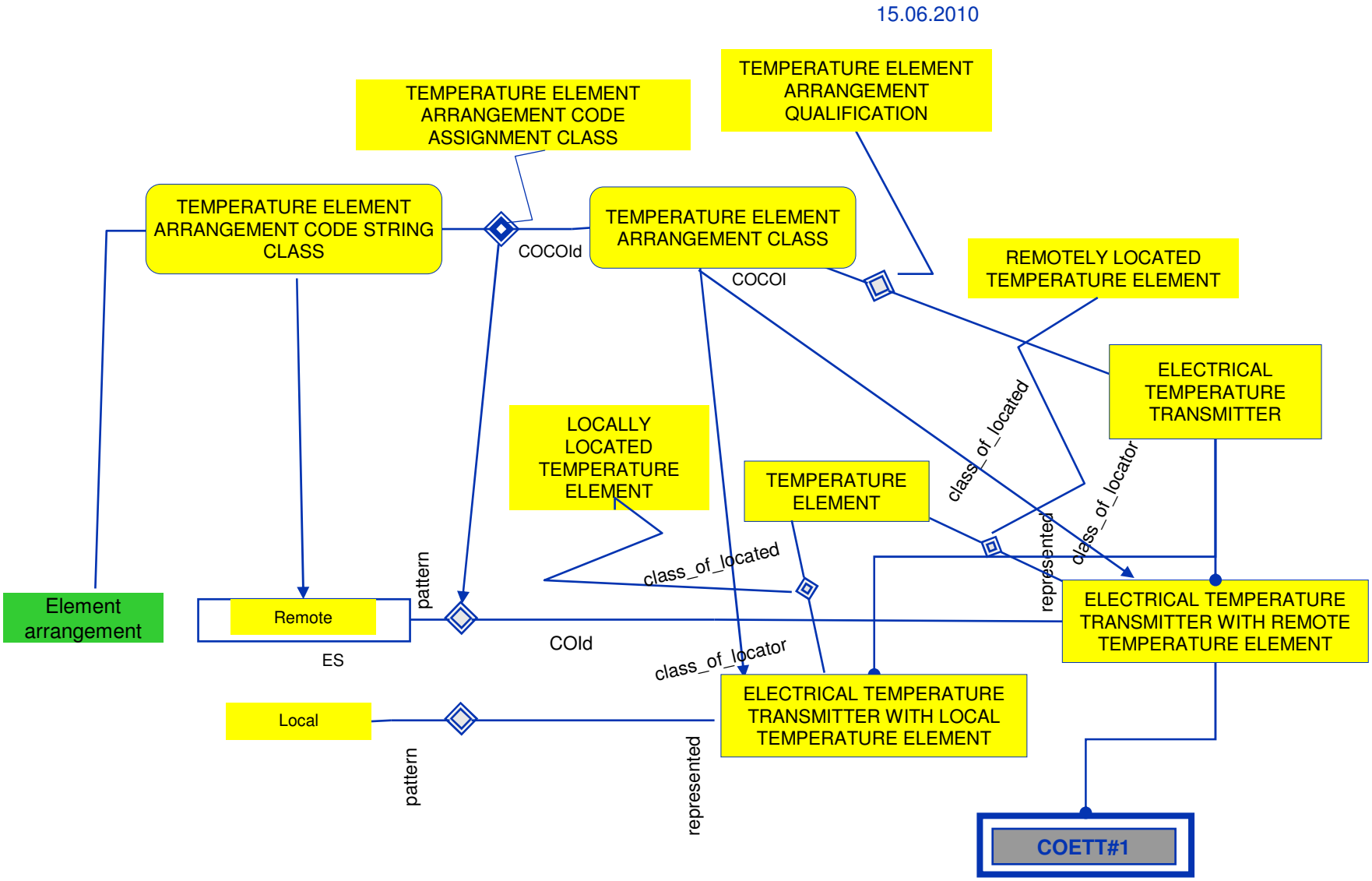
MANAGING RISK

27.06.2010



39 “Element arrangement” (ELECTRICAL TEMPERATURE TRANSMITTER)

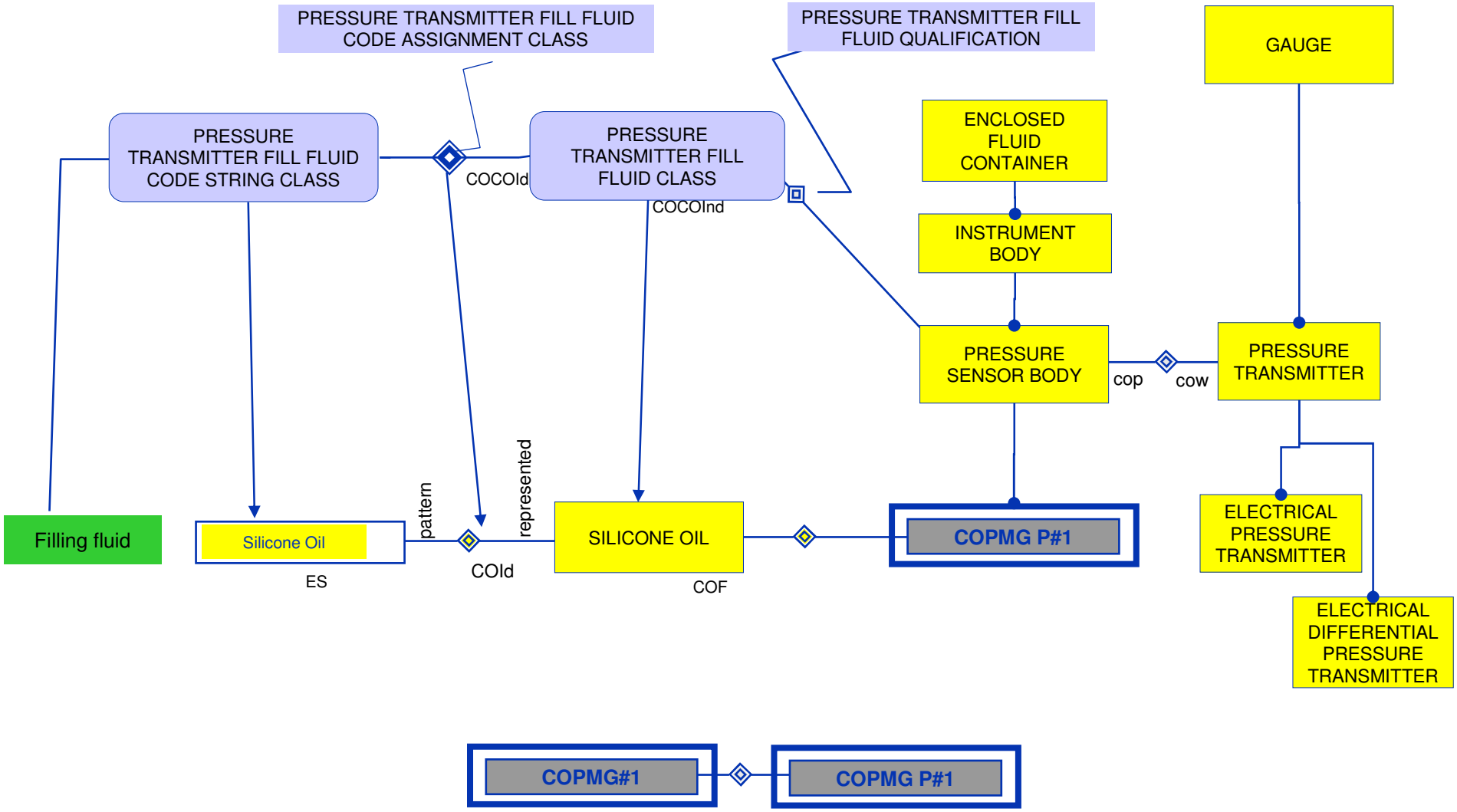
MANAGING RISK



42 a “Filling fluid”, Pressure transmitters

MANAGING RISK

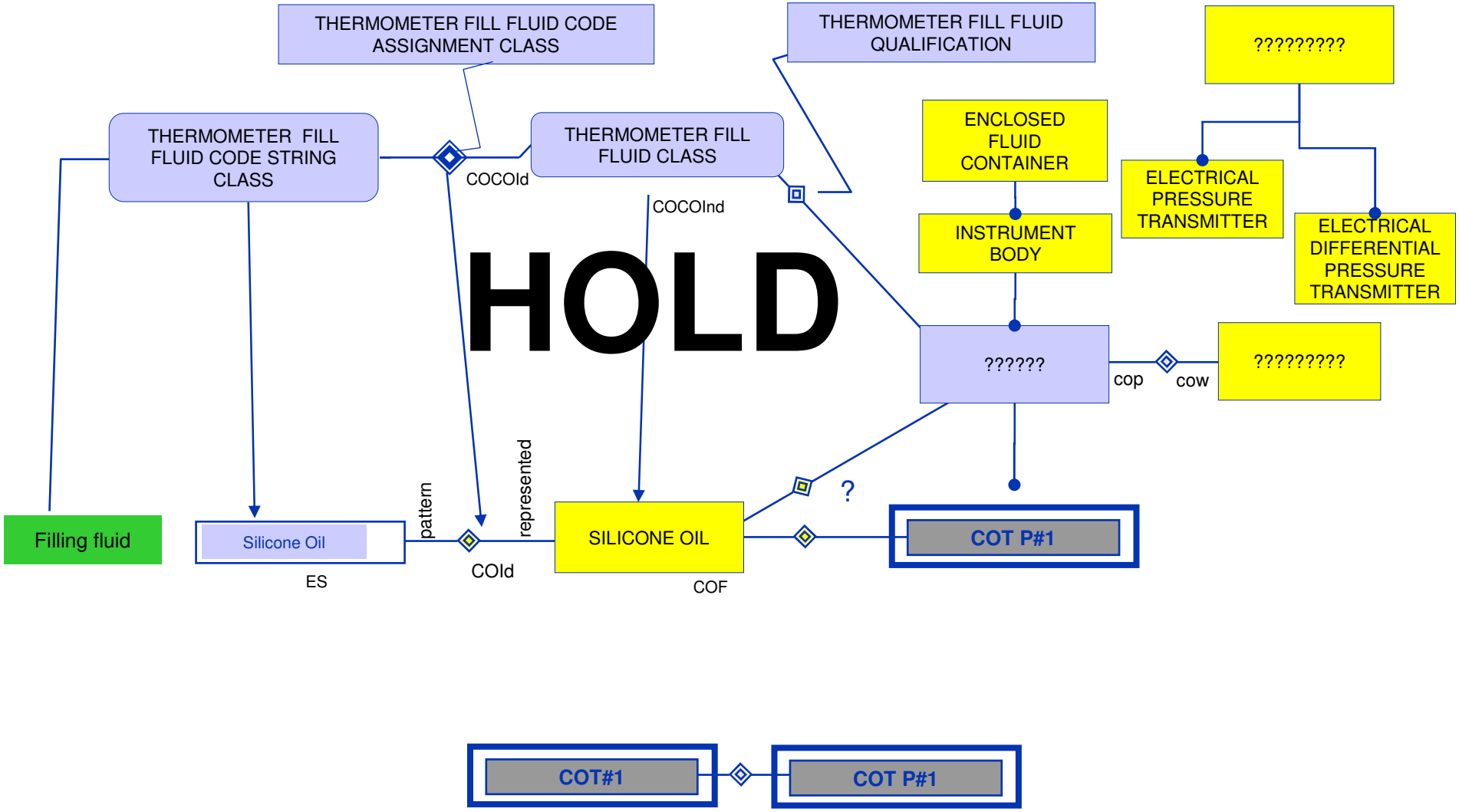
15.06.2010



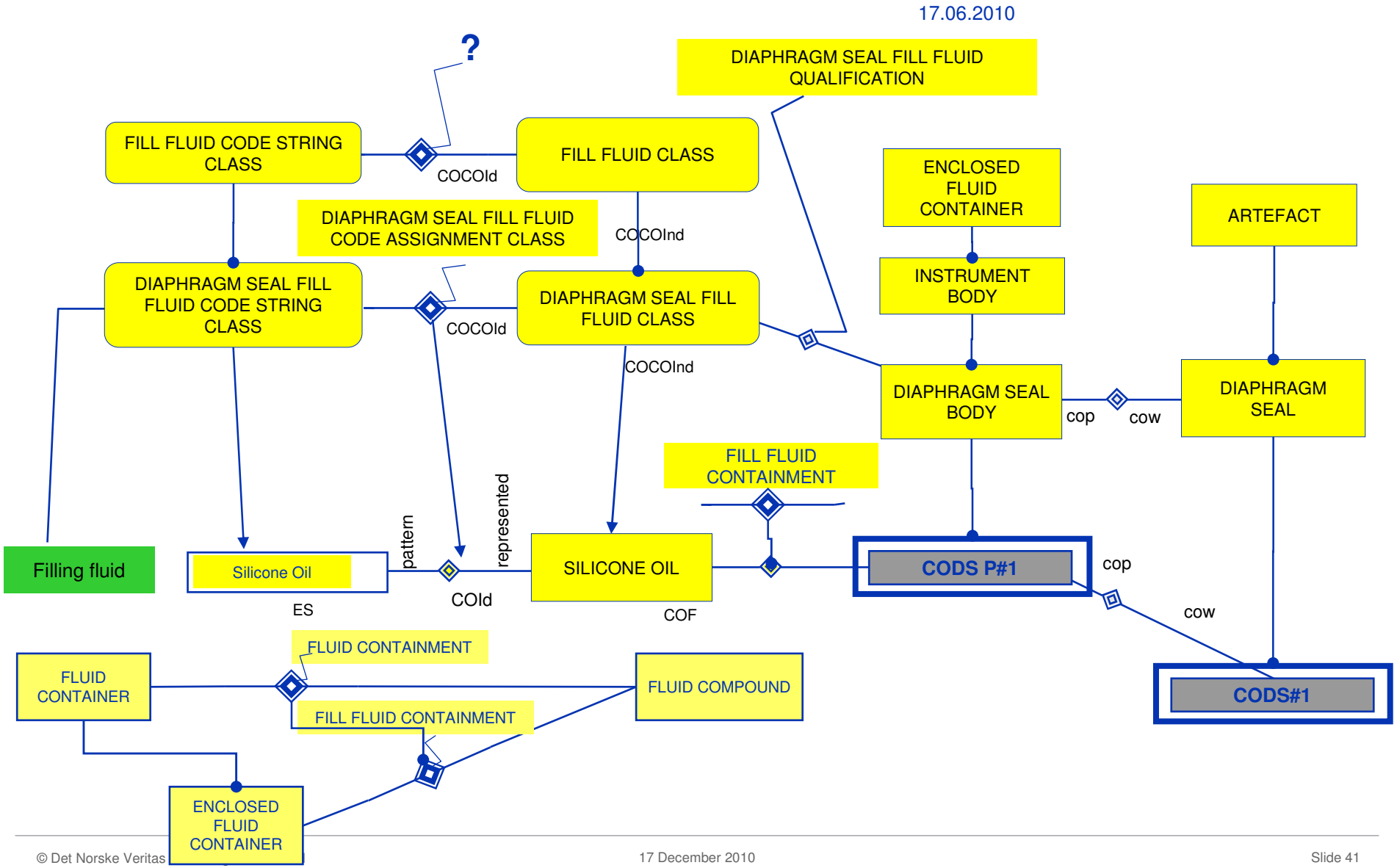
42 b “Filling fluid”, Thermometer

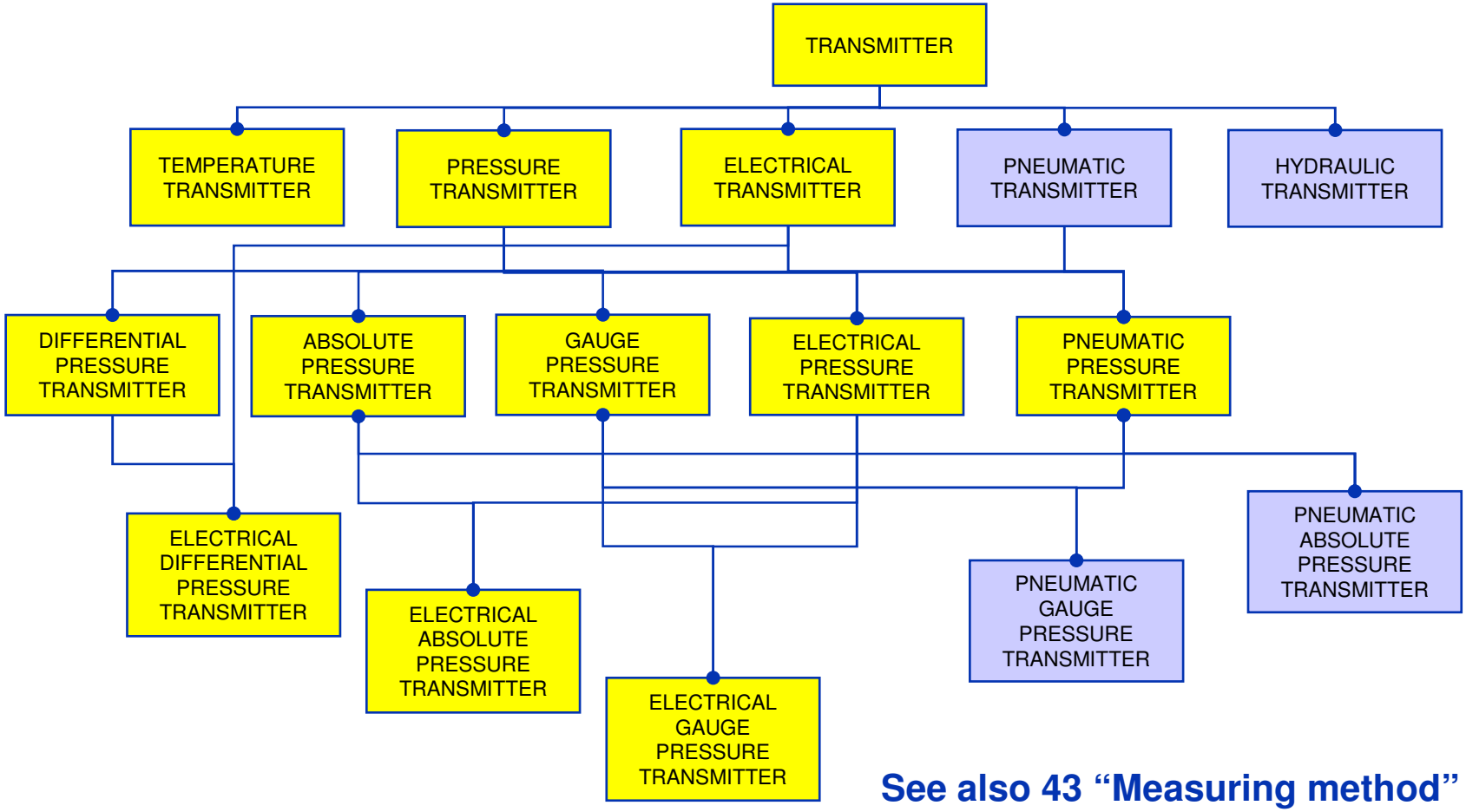
MANAGING RISK

16.06.2010



42 C “Filling fluid”, Diaphragm seal

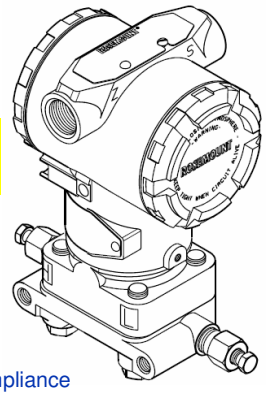




See also 43 “Measuring method”

43 “Measuring method”

MANAGING RISK



15-23.06.2010

ELECTRICAL PRESSURE TRANSMITTER MEASURING METHOD CODE ASSIGNMENT CLASS

ELECTRICAL PRESSURE TRANSMITTER MEASURING METHOD CLASS REFERENCE

ELECTRICAL PRESSURE TRANSMITTER MEASURING METHOD CODE STRING CLASS

COCOID

ELECTRICAL PRESSURE TRANSMITTER MEASURING METHOD CLASS

COCOInd

Dictionary compliance

ELECTRICAL PRESSURE TRANSMITTER

Measuring method

1

Absolute

ES

pattern

represented

COId

2

ELECTRICAL ABSOLUTE PRESSURE TRANSMITTER

Gauge

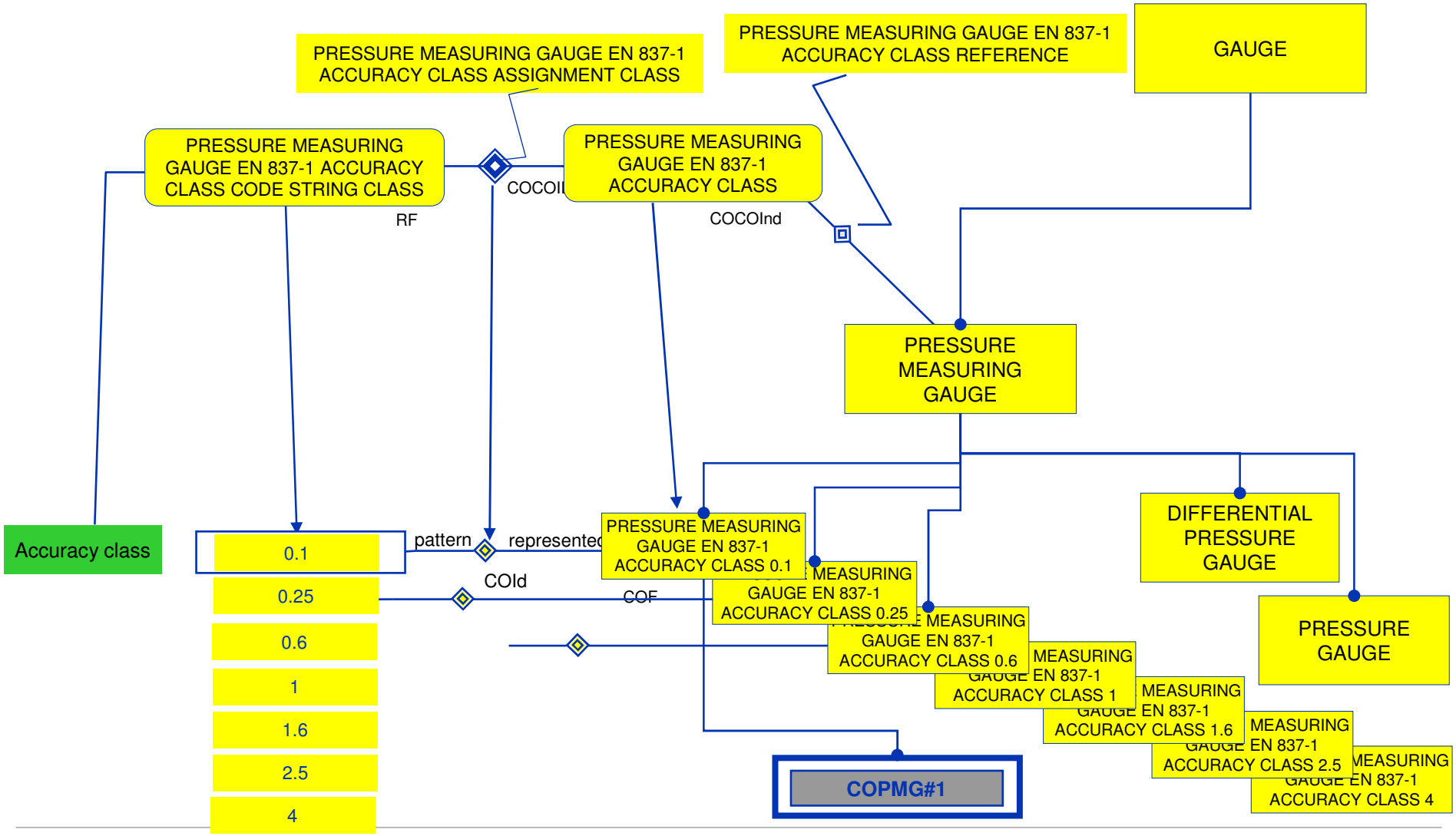
ELECTRICAL GAUGE PRESSURE TRANSMITTER

COEPT#1

44 “Accuracy class”

MANAGING RISK

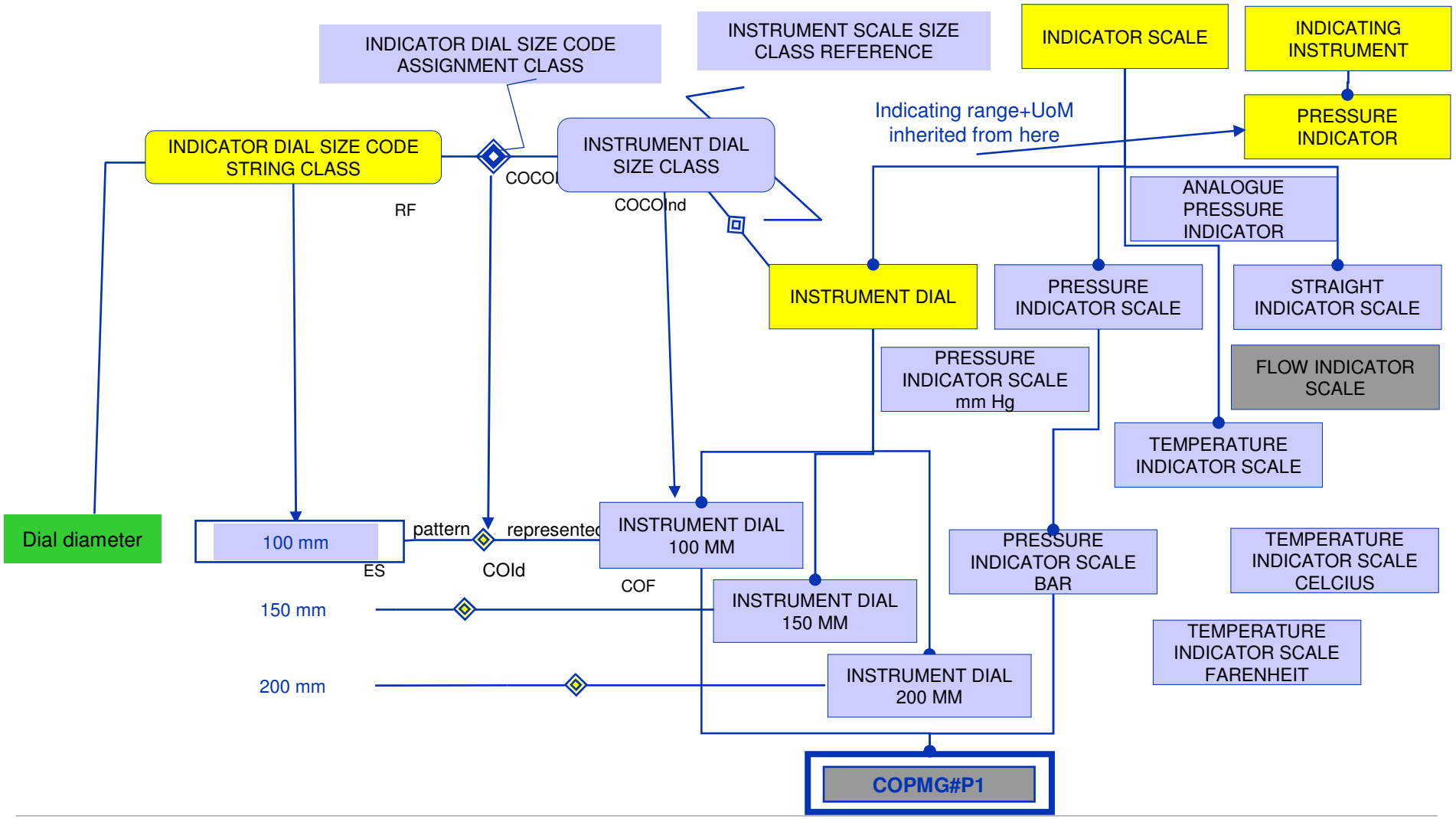
15-23/24.06.2010



46 “Dial diameter”

MANAGING RISK

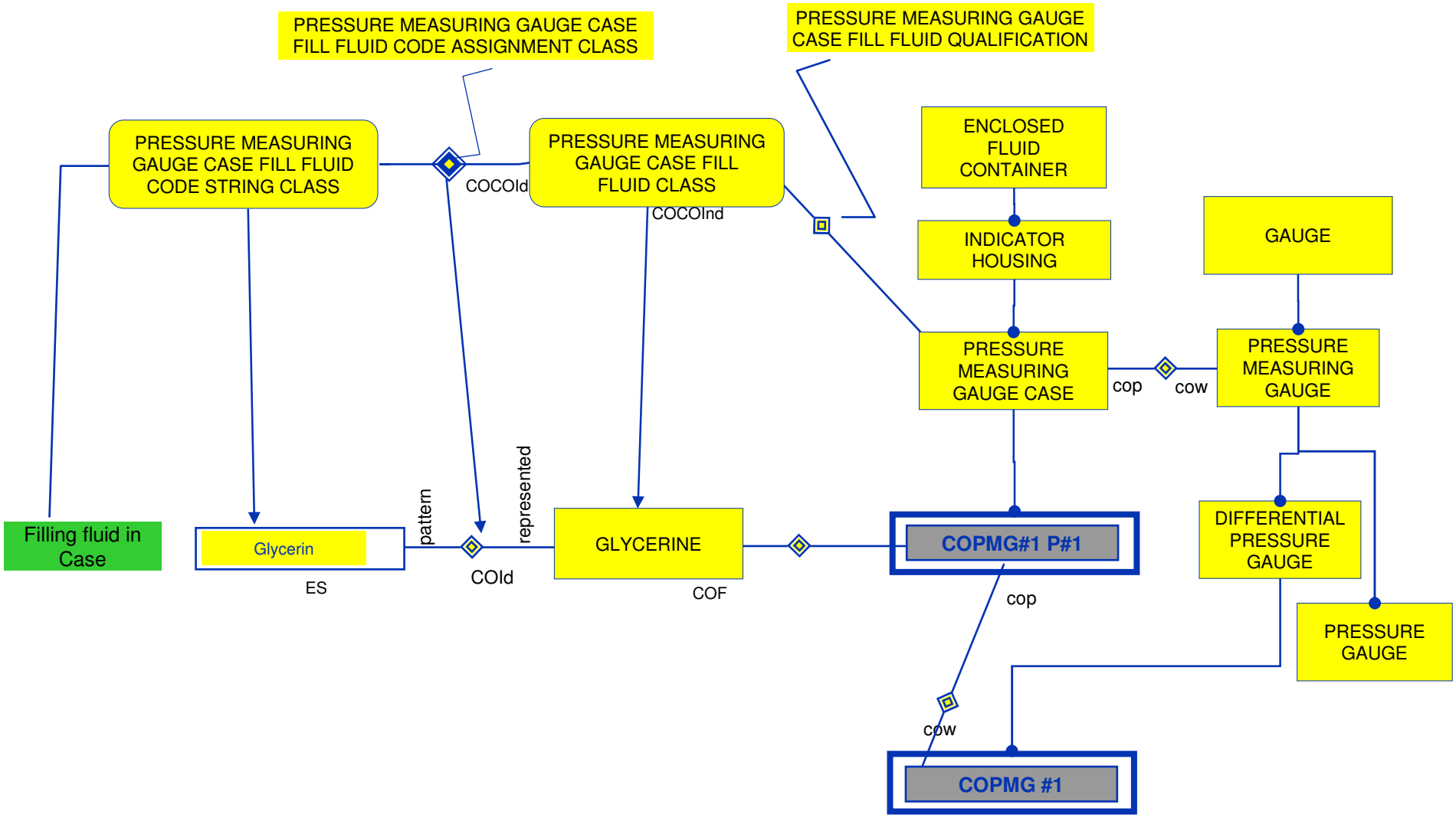
25-26.06.2010



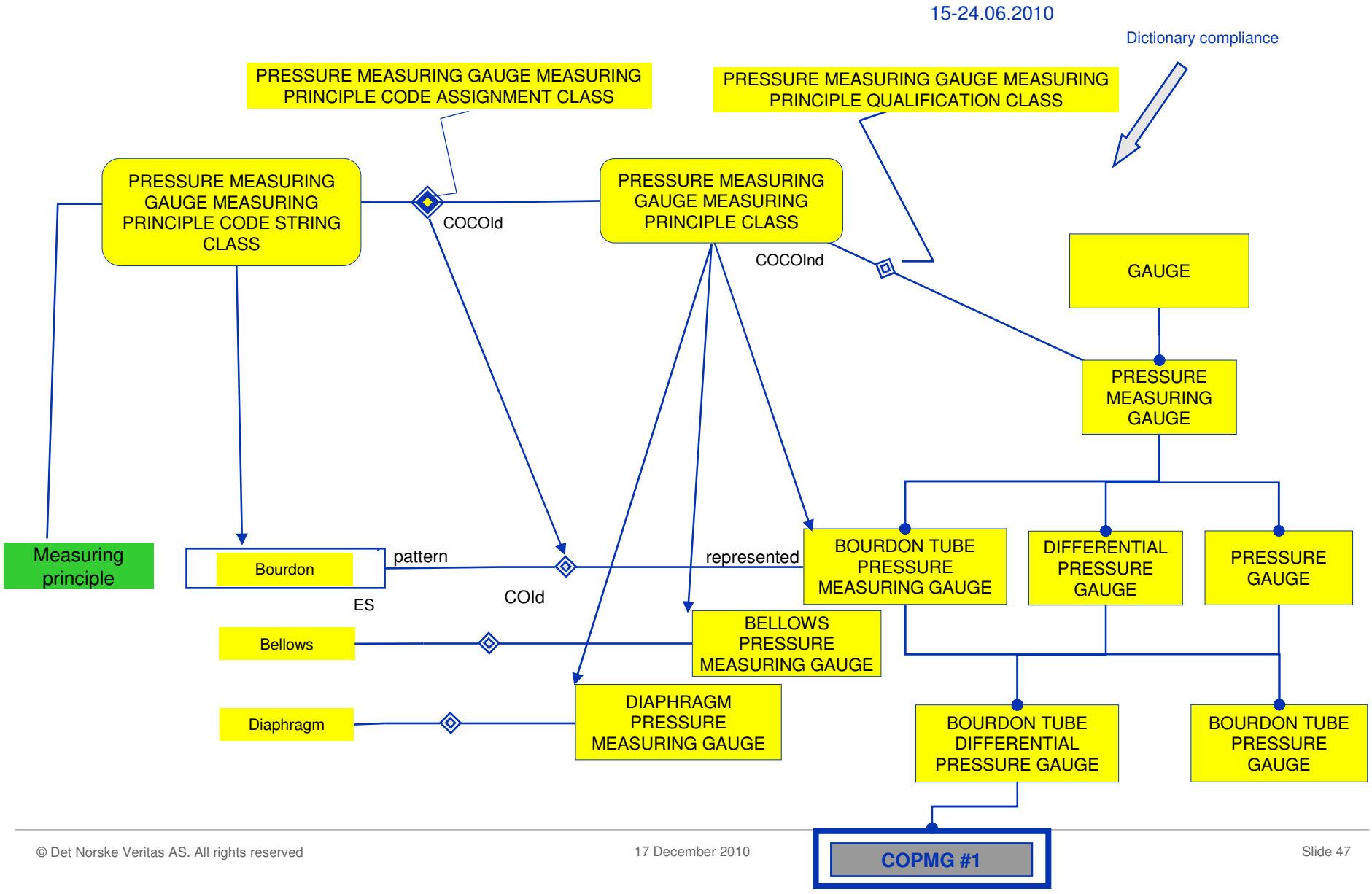
48 “Filling fluid in Case”

MANAGING RISK

15-24.06.2010



52 “Measuring principle”

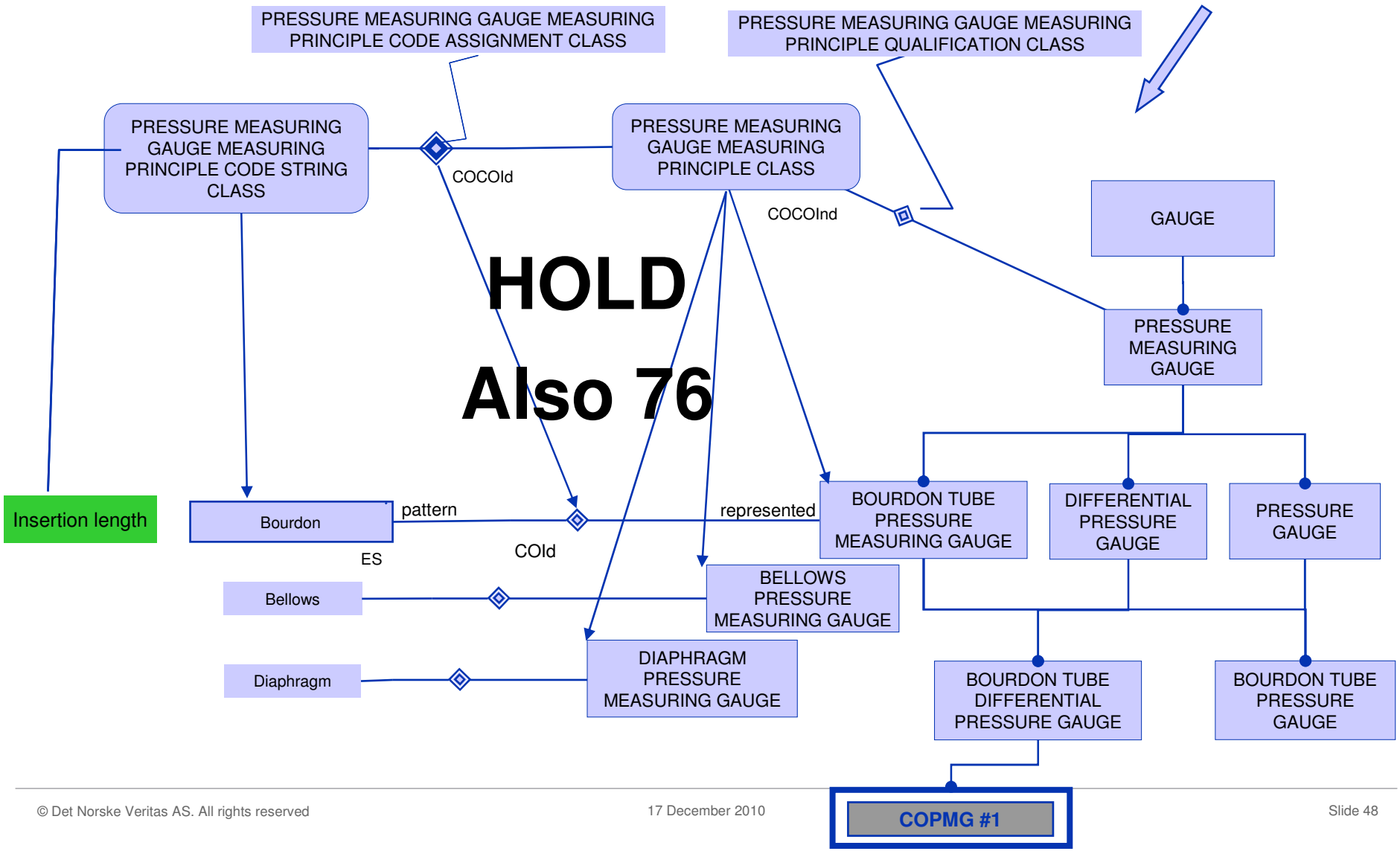


54 “Insertion length”

MANAGING RISK

15-24.06.2010

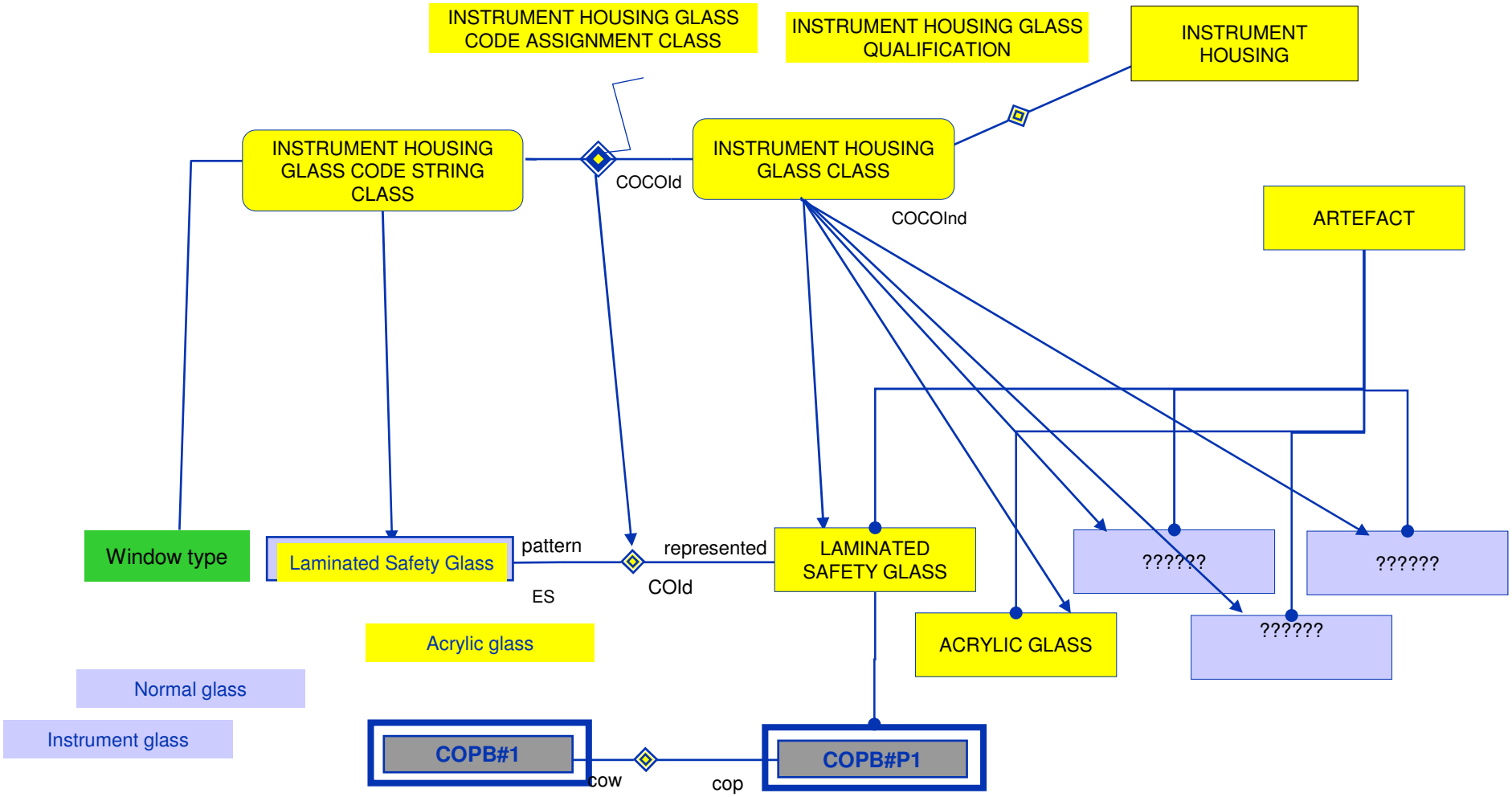
Dictionary compliance



58 “Window type”

MANAGING RISK

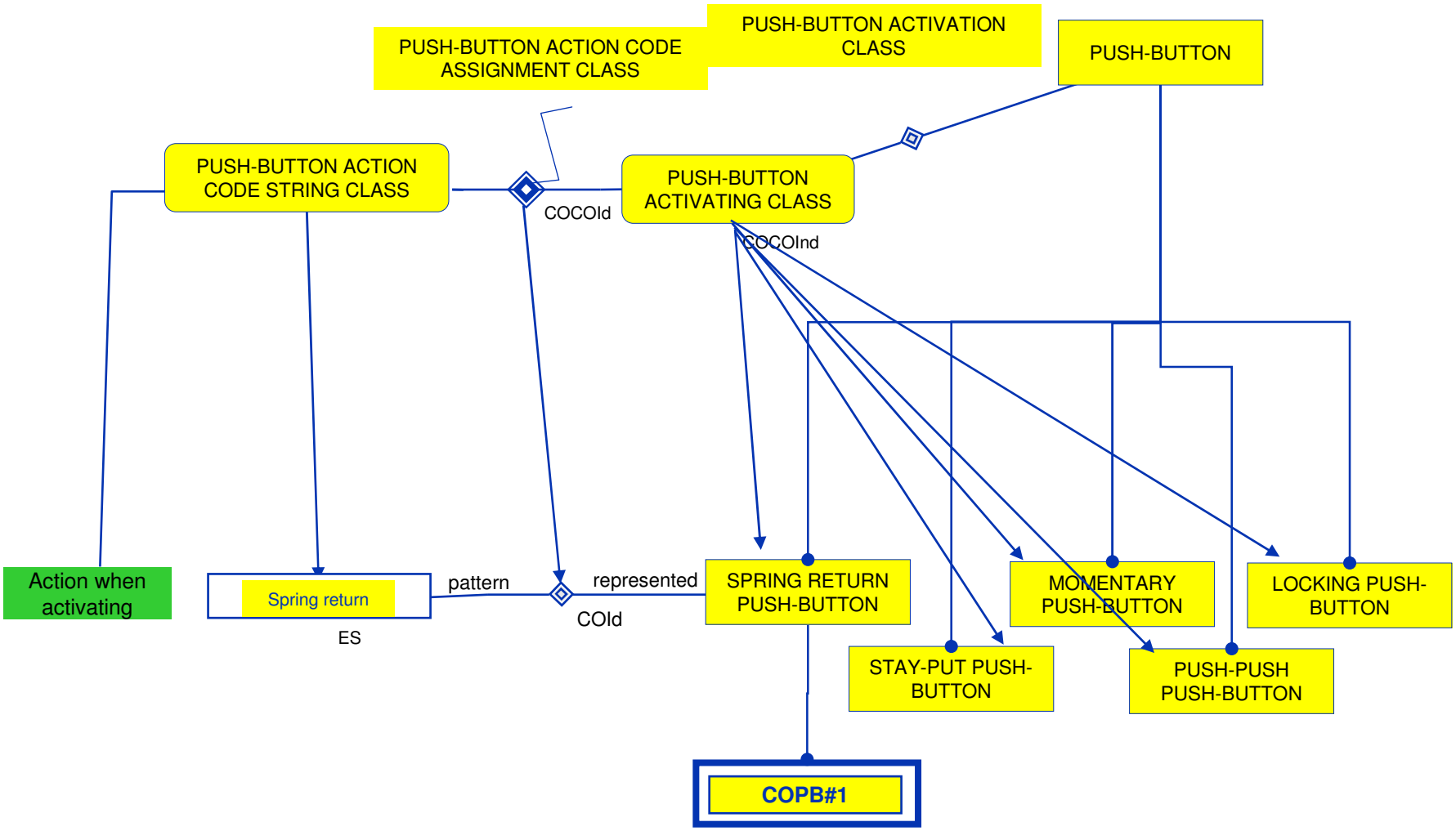
15-22-29.06.2010



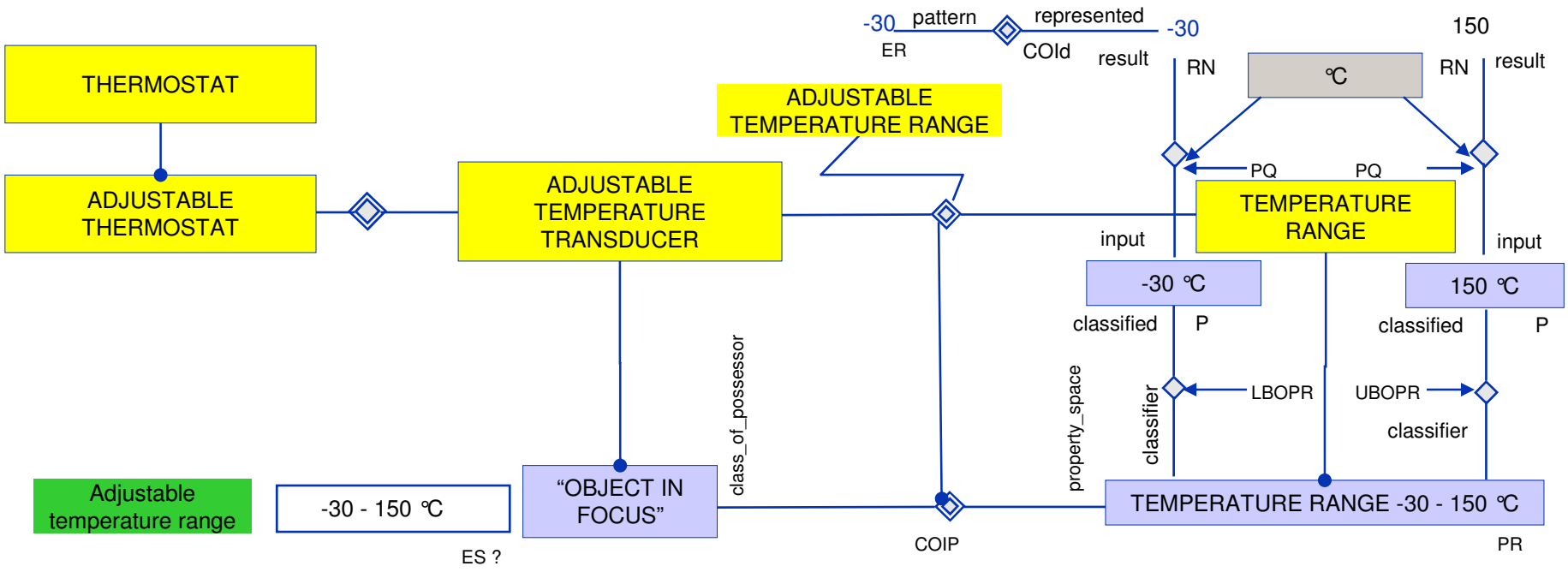
59 “Action when activating”

MANAGING RISK

15-22.06.2010



60 “Adjustable temperature range”

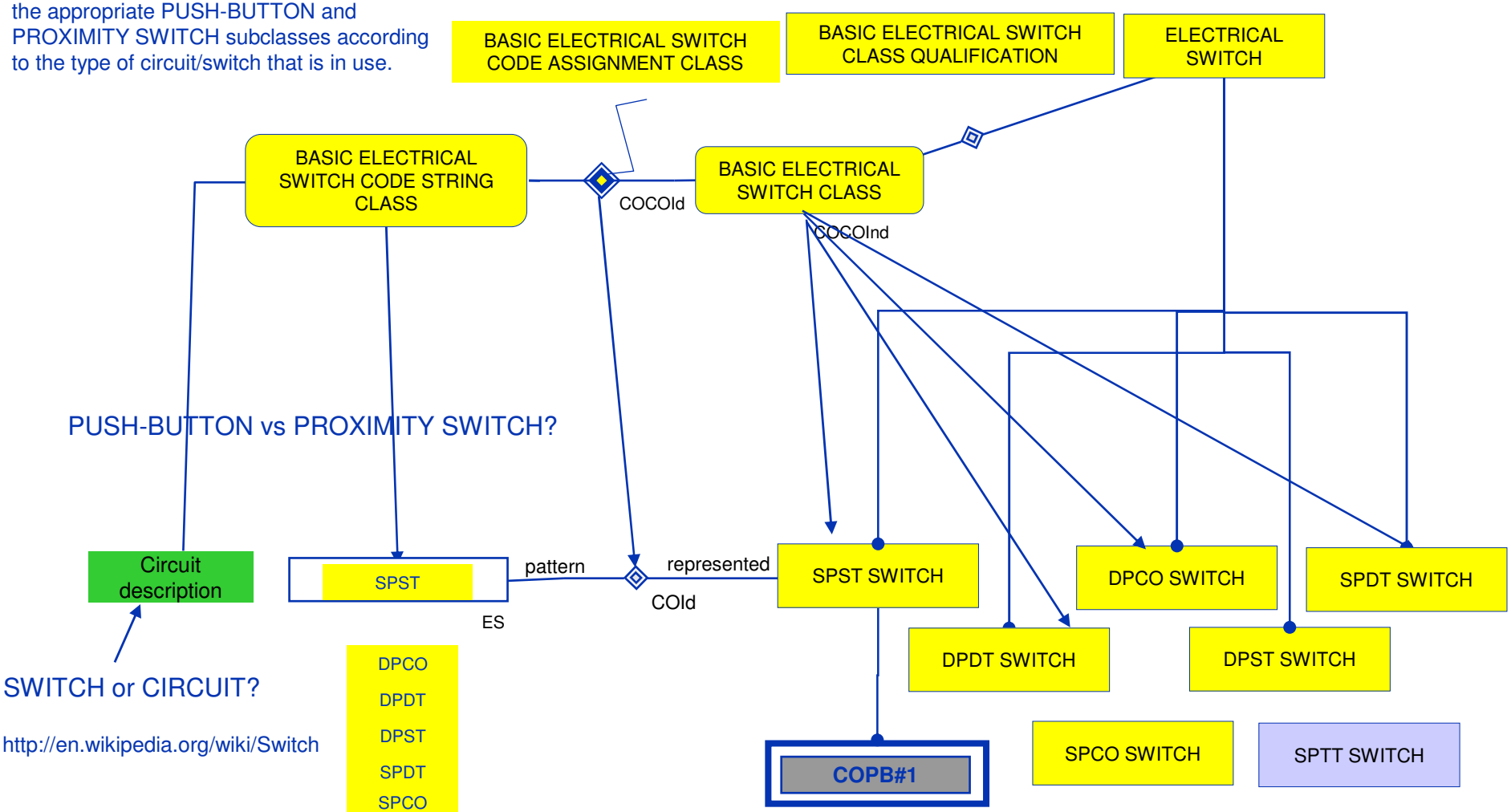


61 “Circuit description”

MANAGING RISK

These are the switches. Need to establish also the corresponding circuits, and further the appropriate PUSH-BUTTON and PROXIMITY SWITCH subclasses according to the type of circuit/switch that is in use.

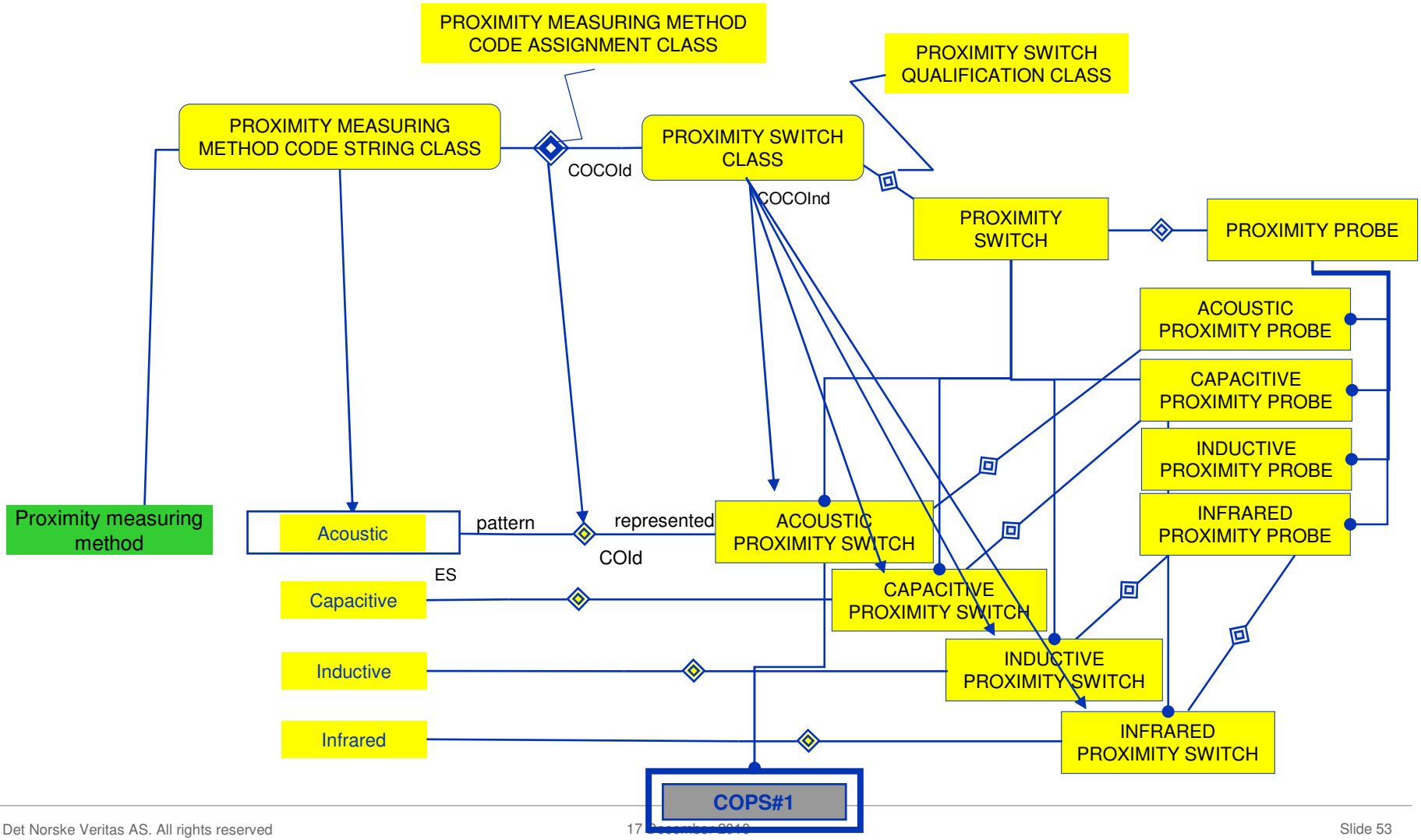
15-29.06.2010



62 “Proximity measuring method”

MANAGING RISK

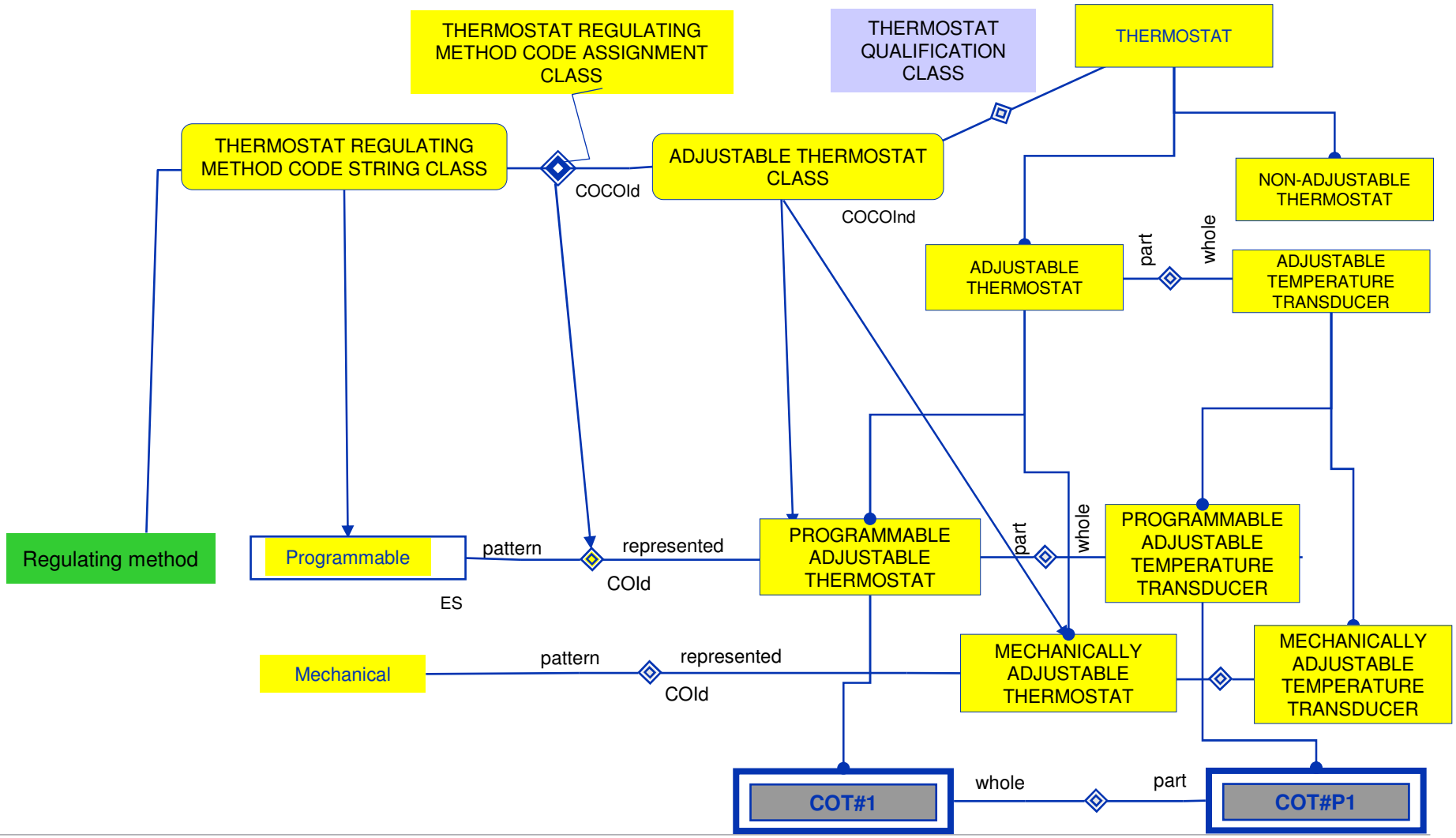
15-22.06.2010



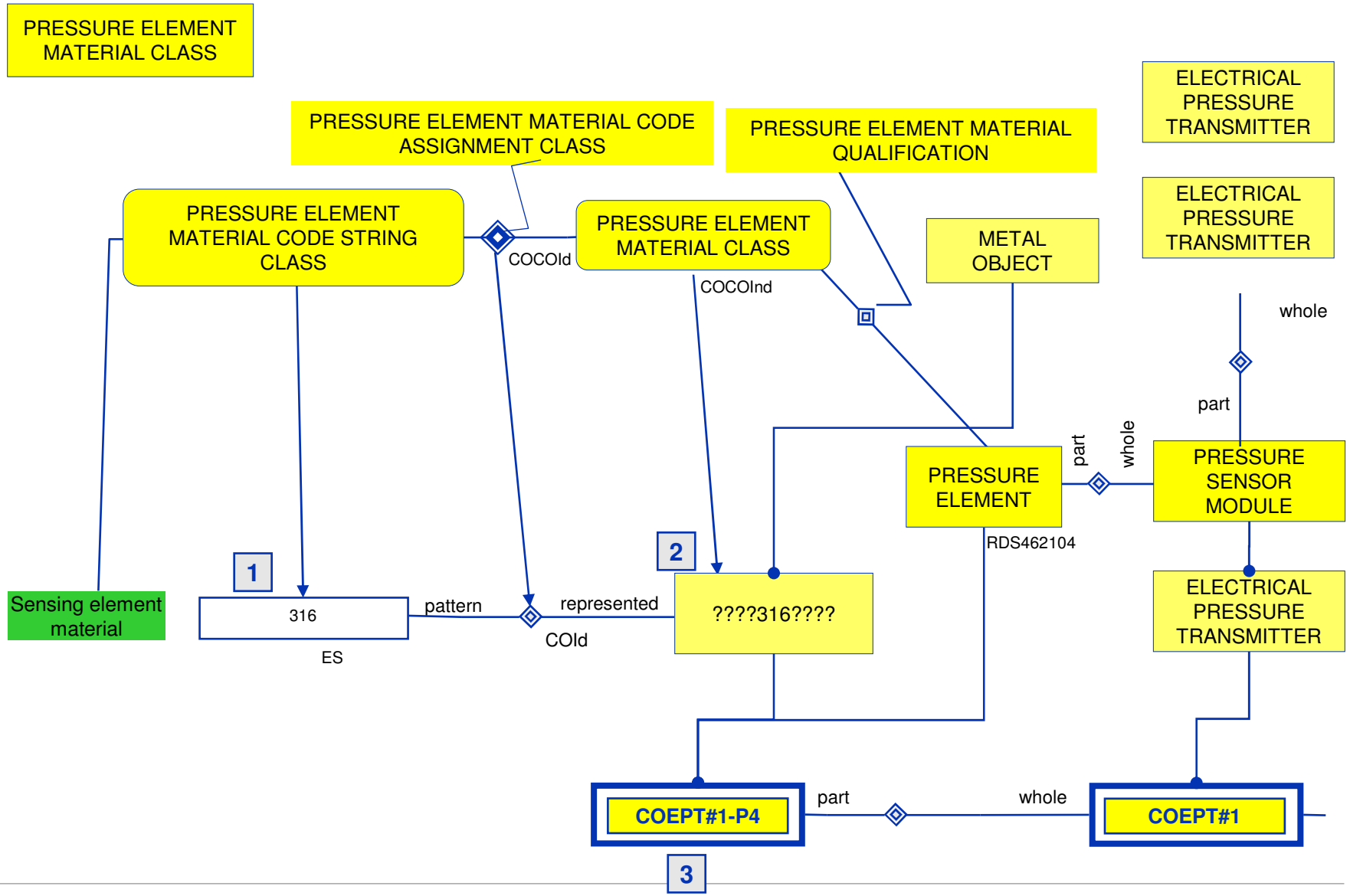
63 “Regulating method”

MANAGING RISK

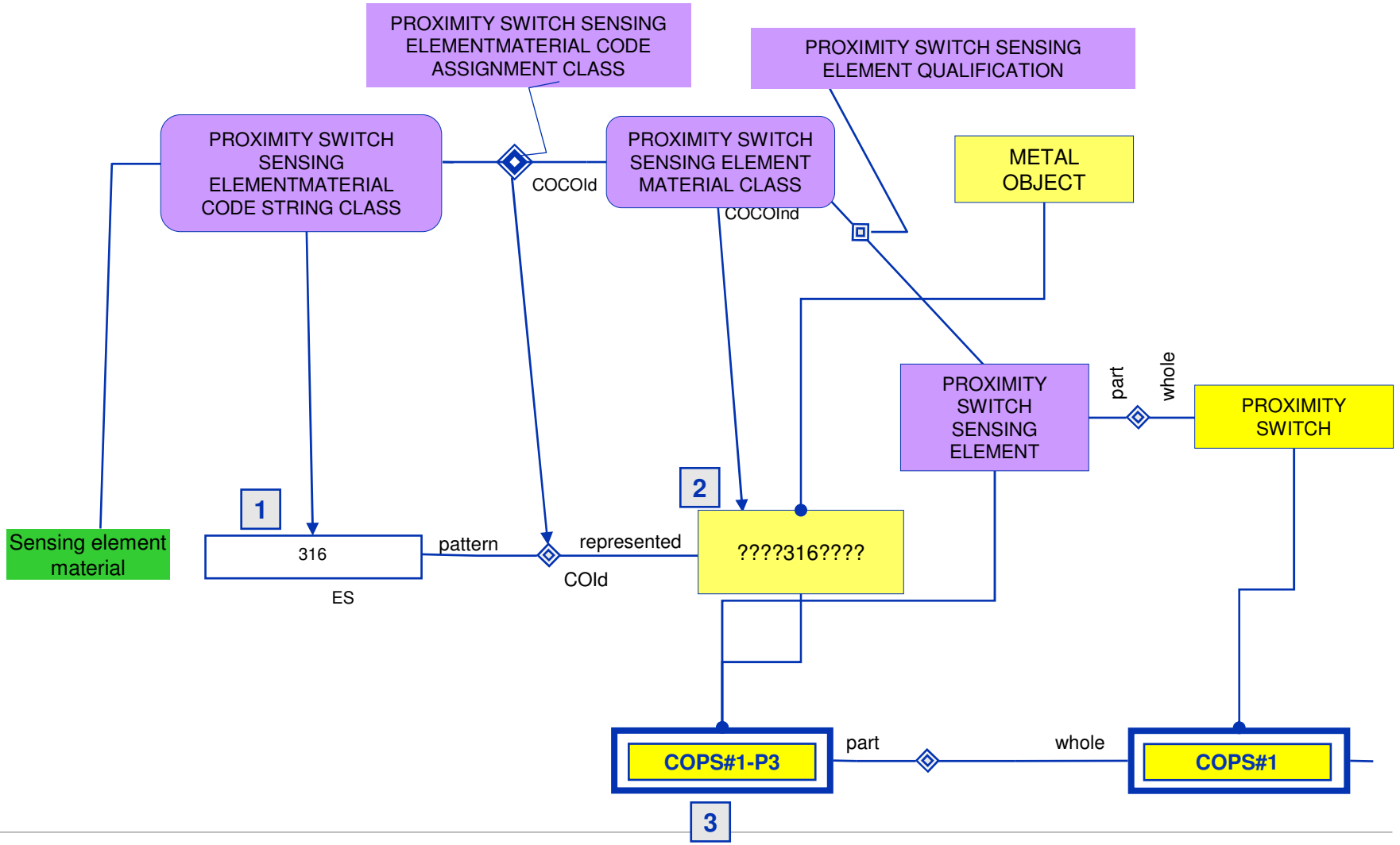
18.06.2010



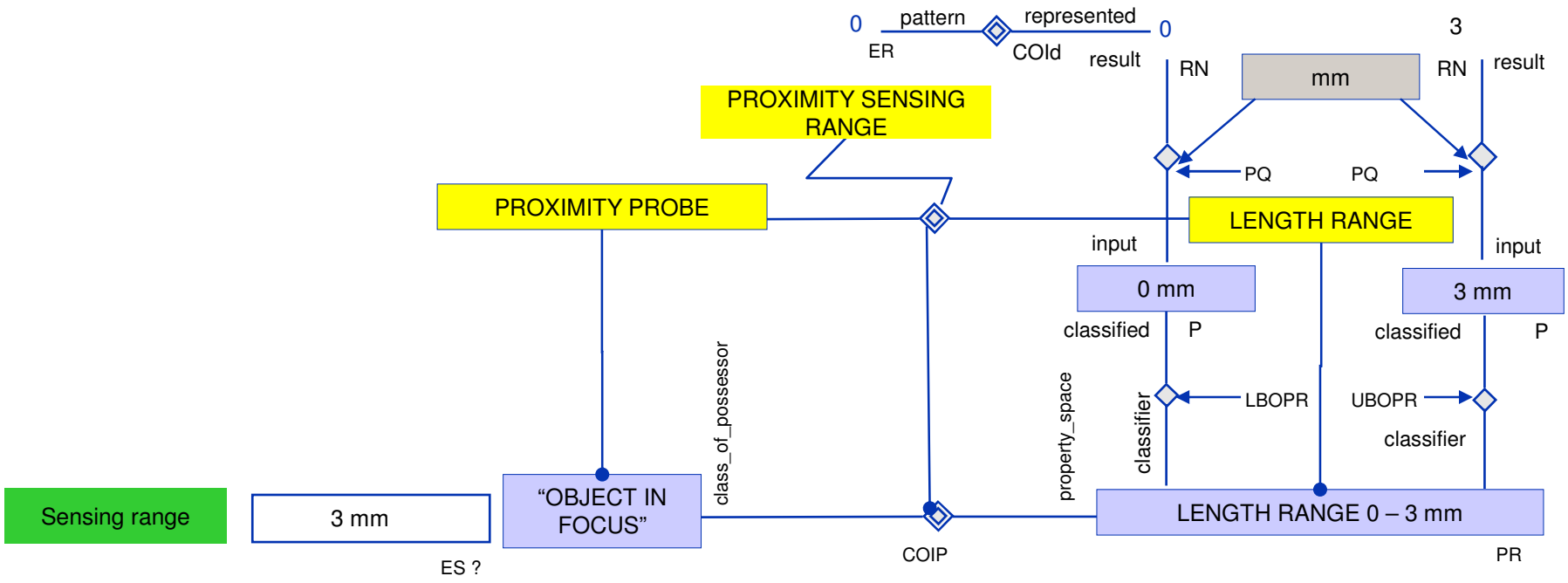
64 Sensing element material (ELECTRICAL PRESSURE TRANSMITTER, ELECTRICAL DIFFERENTIAL PRESSURE TRANSMITTER, PRESSURE GAUGE, DIFFERENTIAL PRESSURE GAUGE)



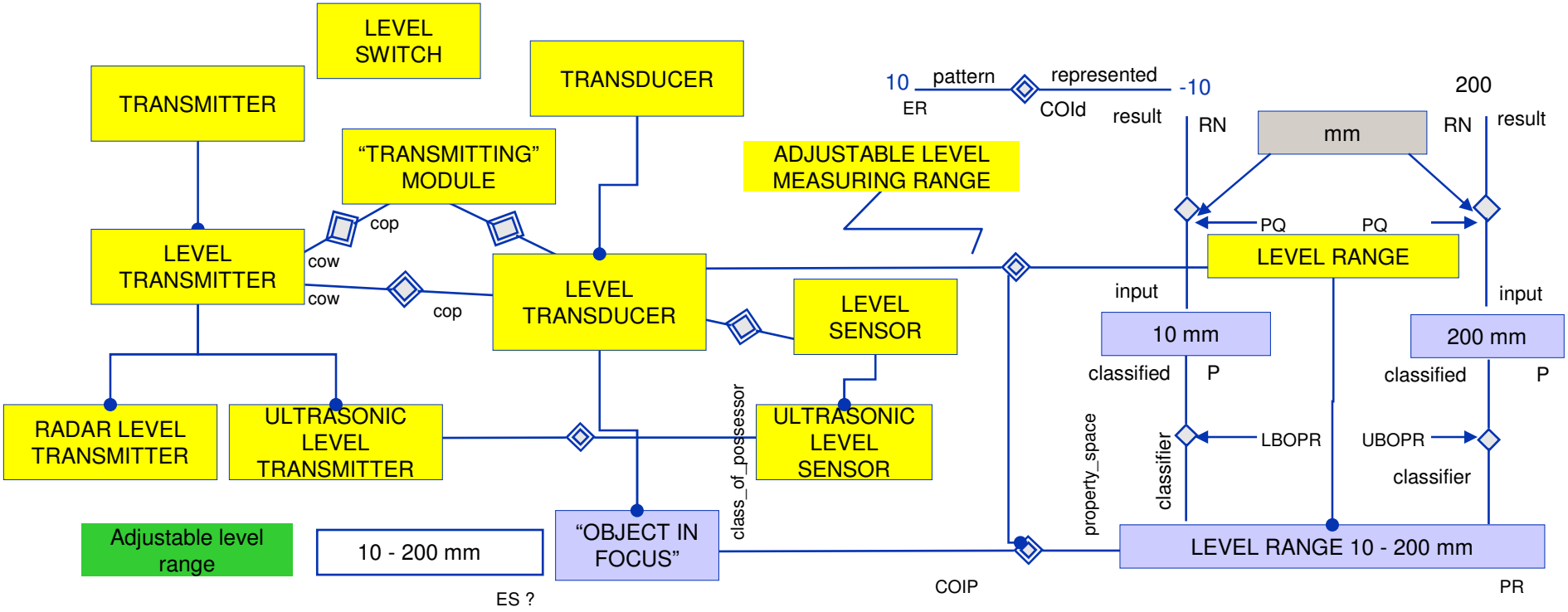
64 “Sensing element material” (PROXIMITY SWITCH)



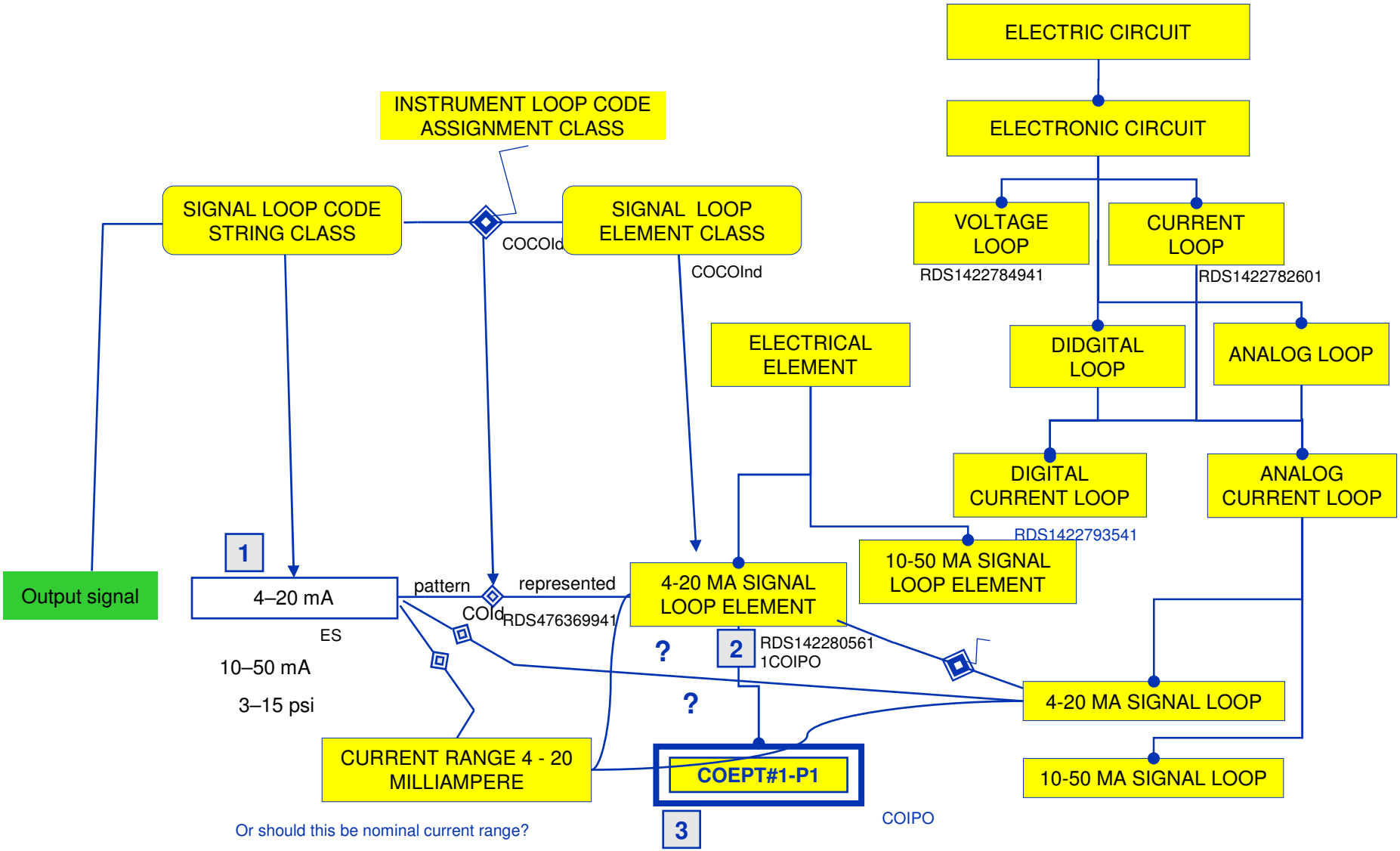
65 “Sensing range”



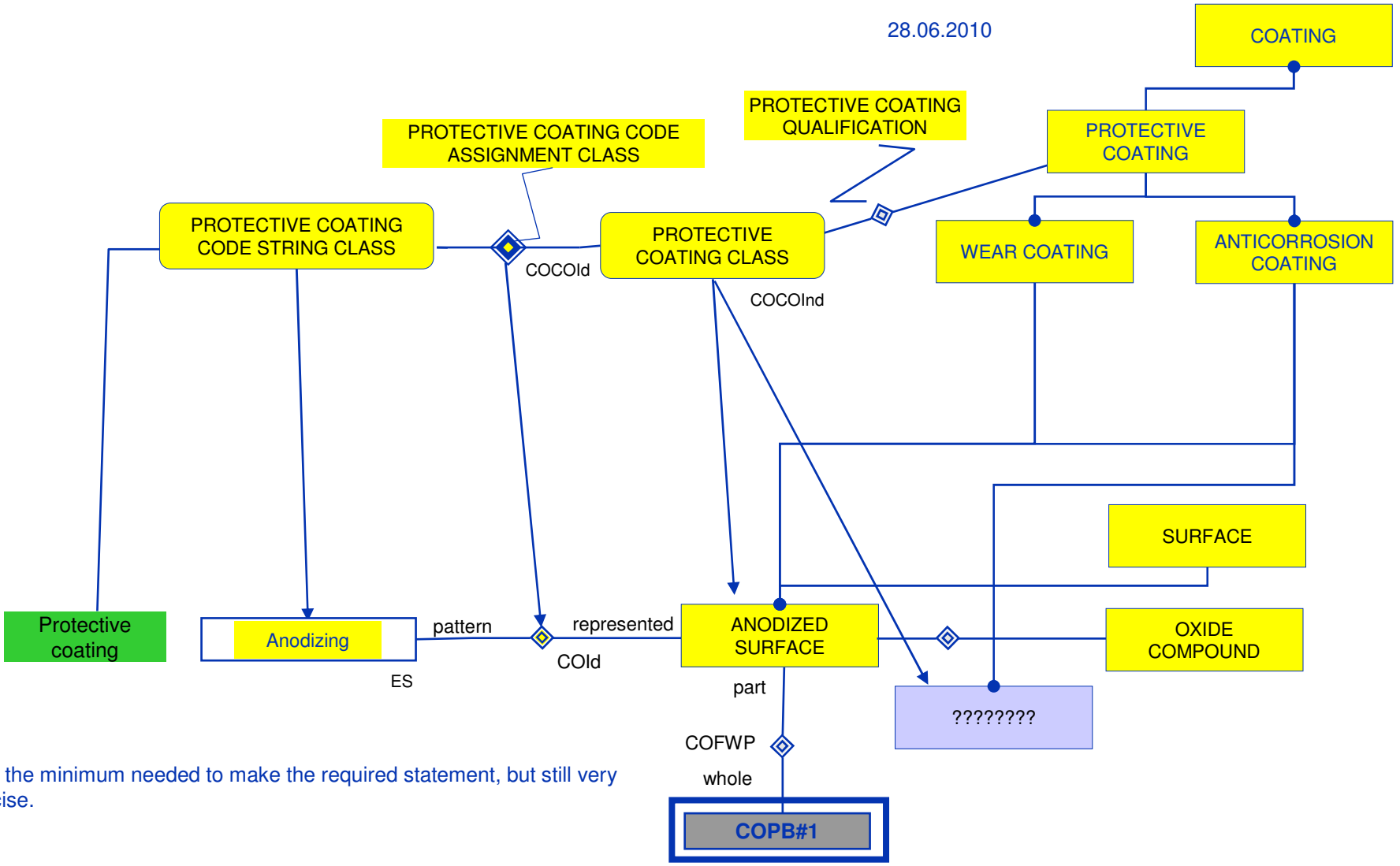
67 “Adjustable level range”



77 “Output Signal”



79 “Protective coating”

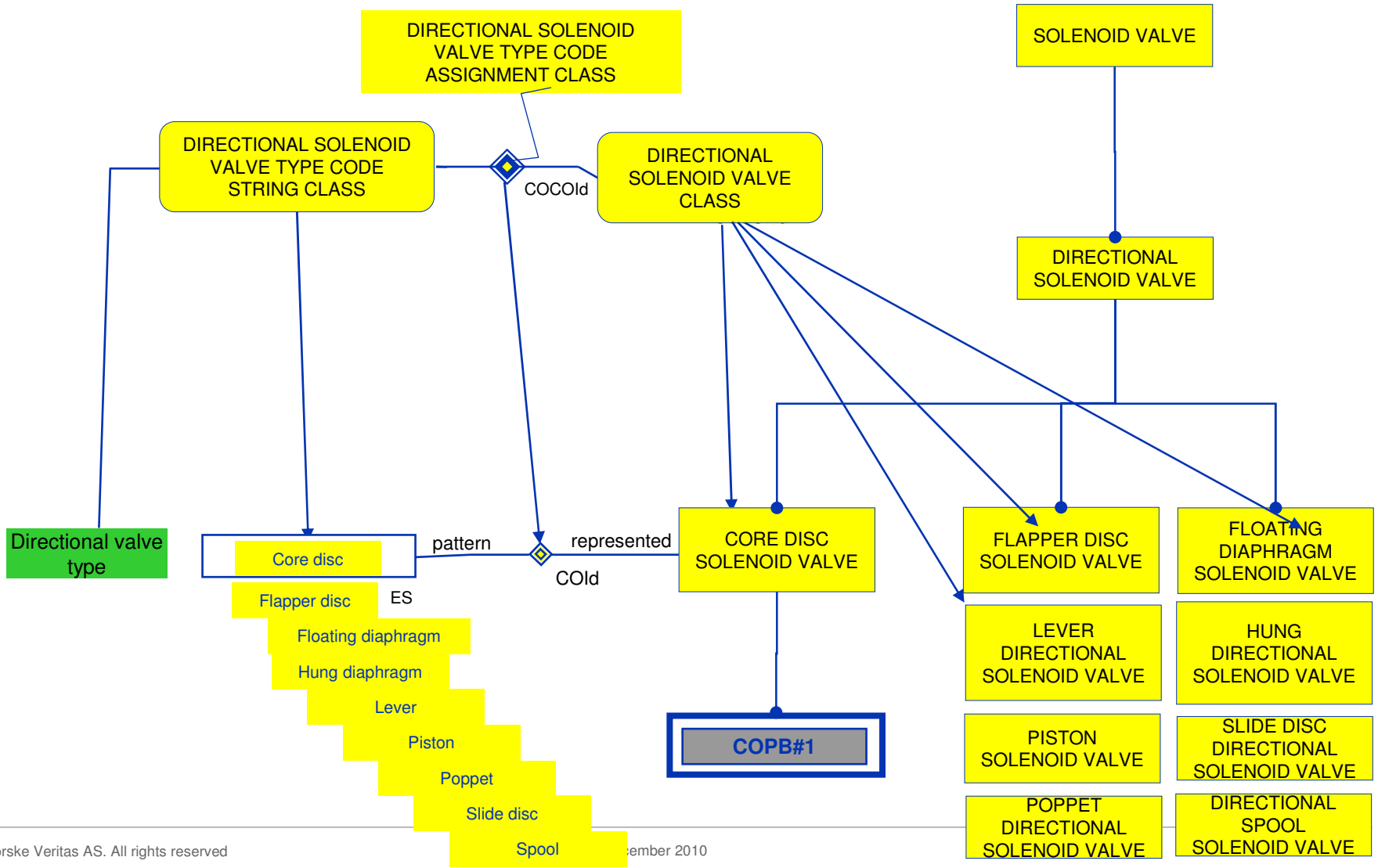


This is the minimum needed to make the required statement, but still very imprecise.

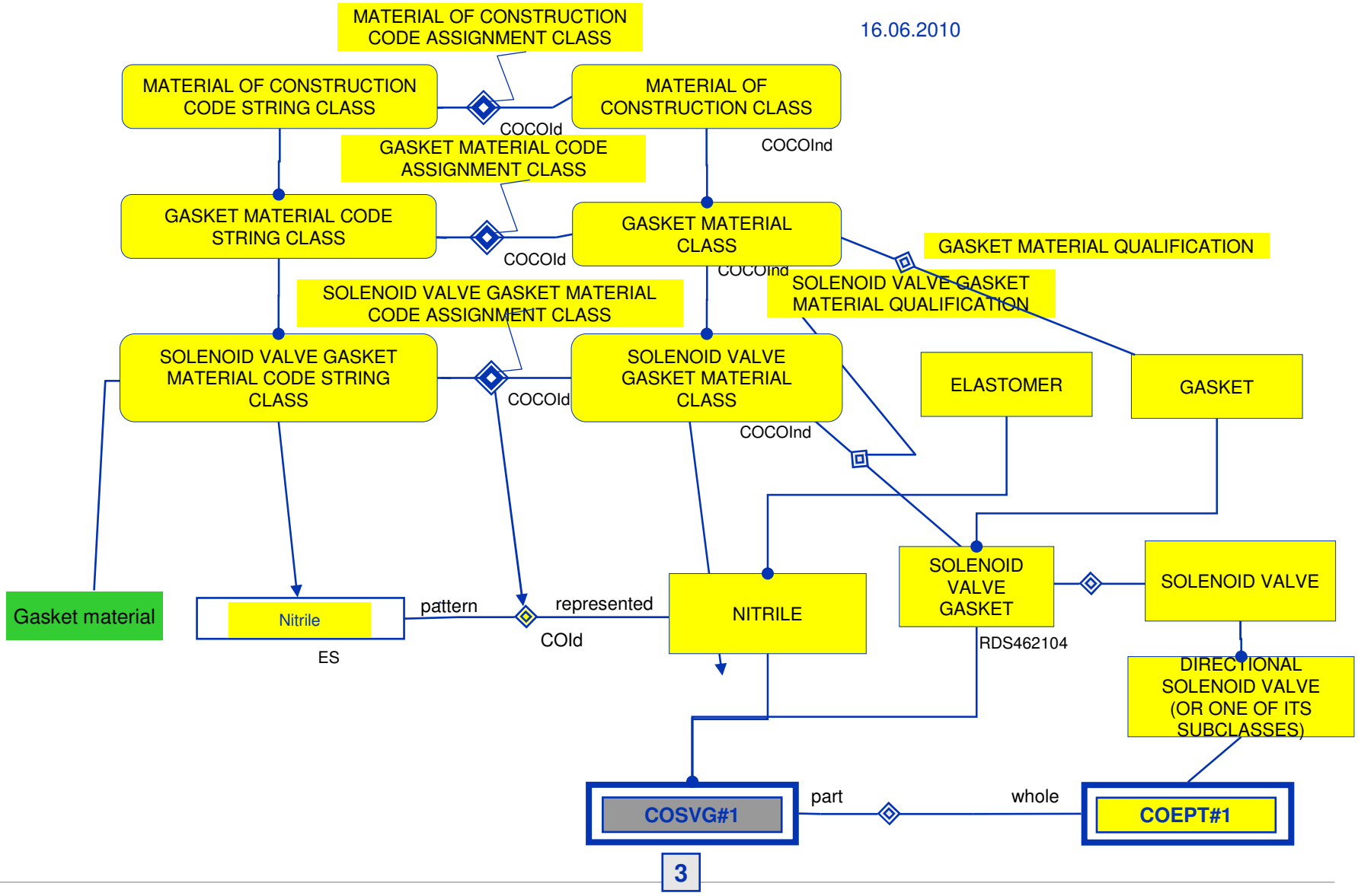
81 “Directional valve type”

MANAGING RISK

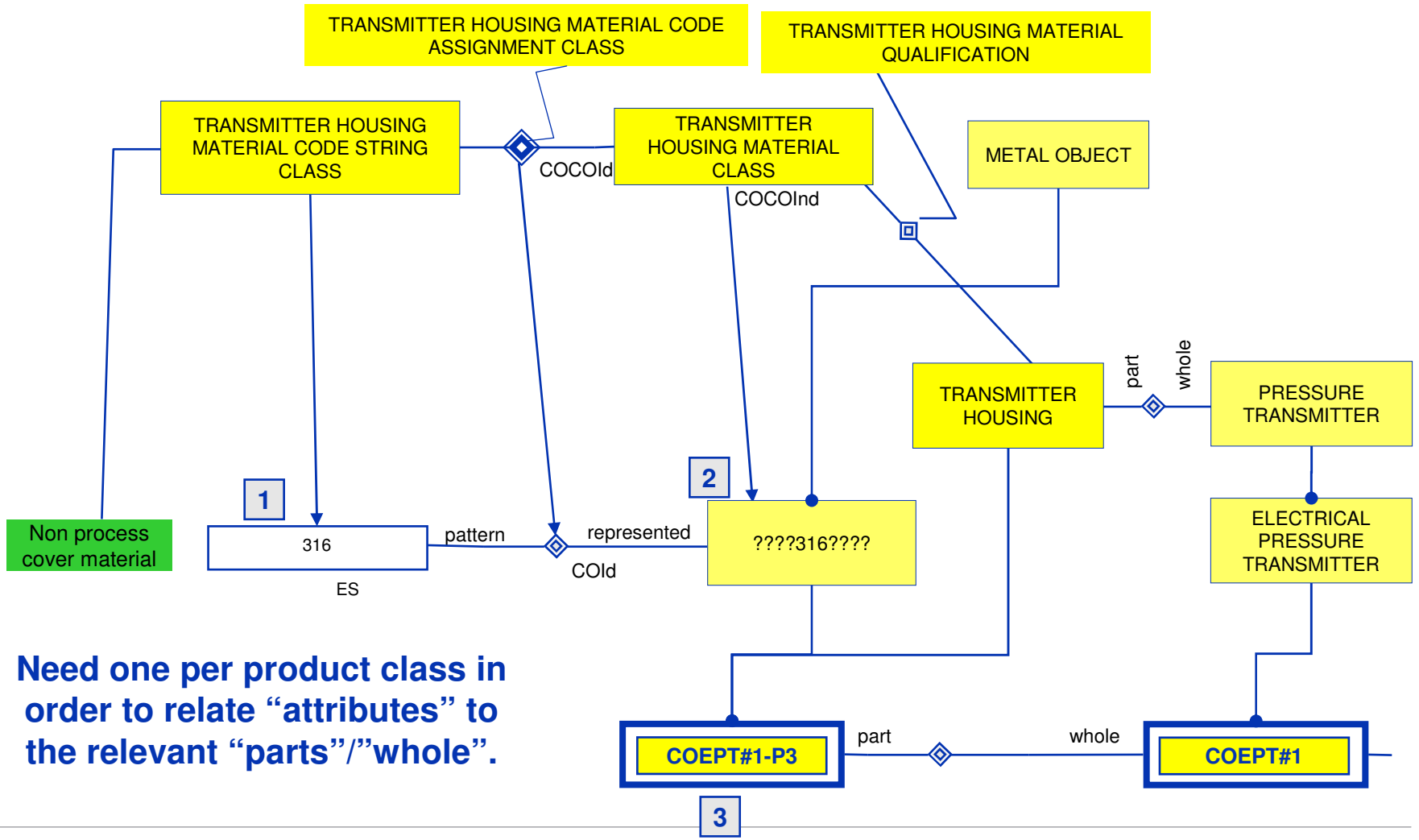
16-22.06.2010



85 “Gasket material”



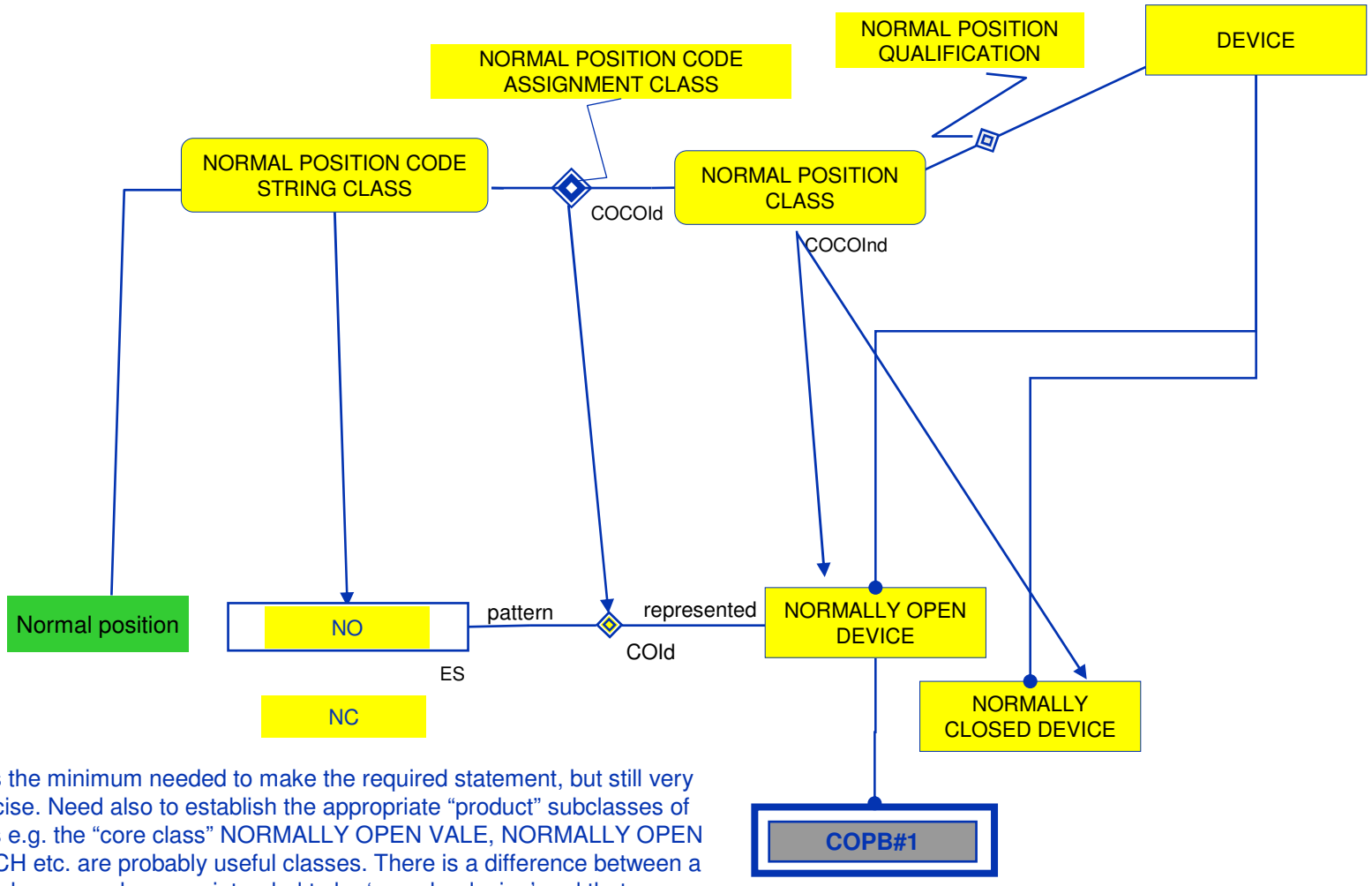
87 “Non process cover material”



Need one per product class in order to relate “attributes” to the relevant “parts”/”whole”.

88 “Normal position”

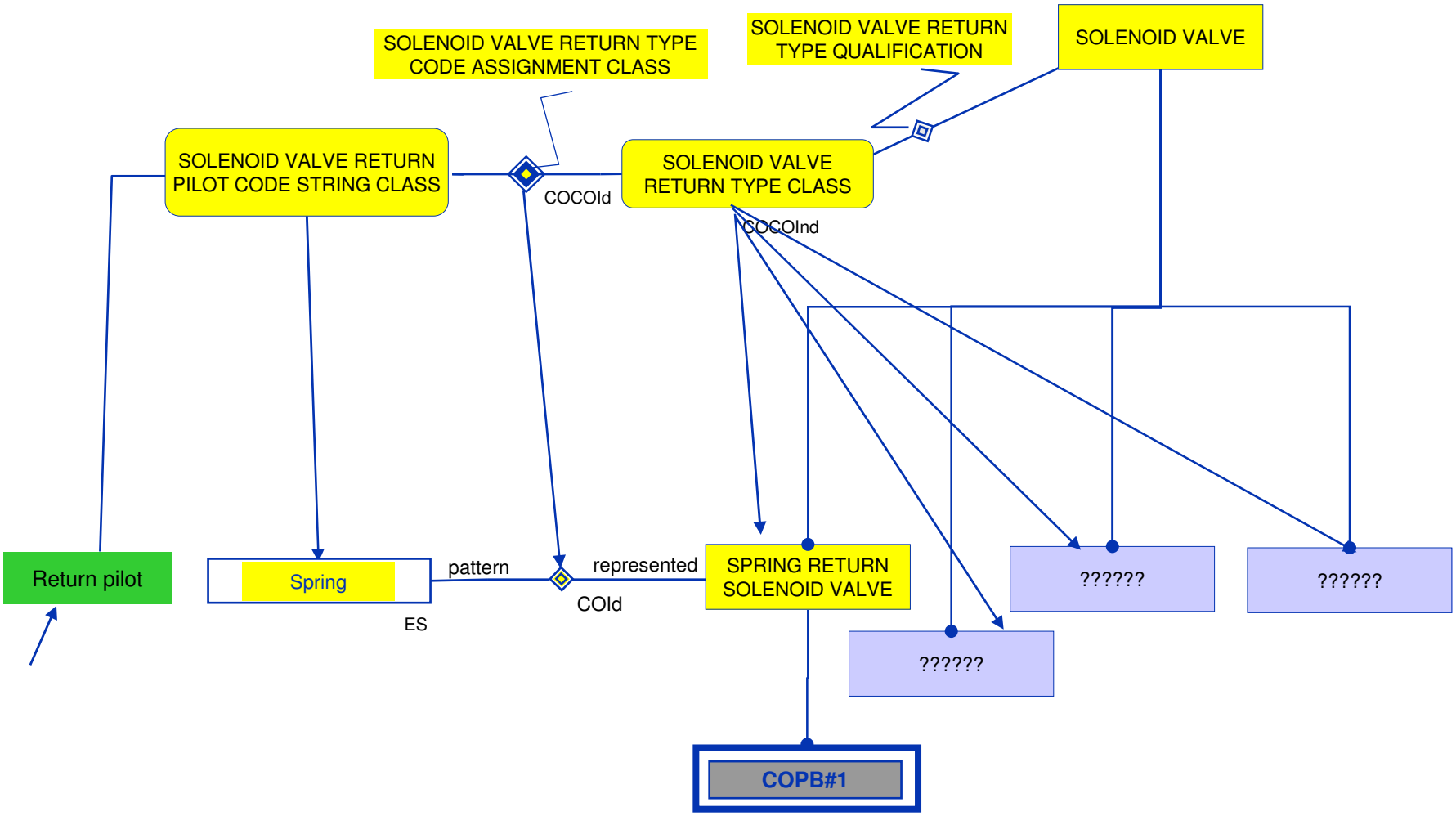
28.06.2010



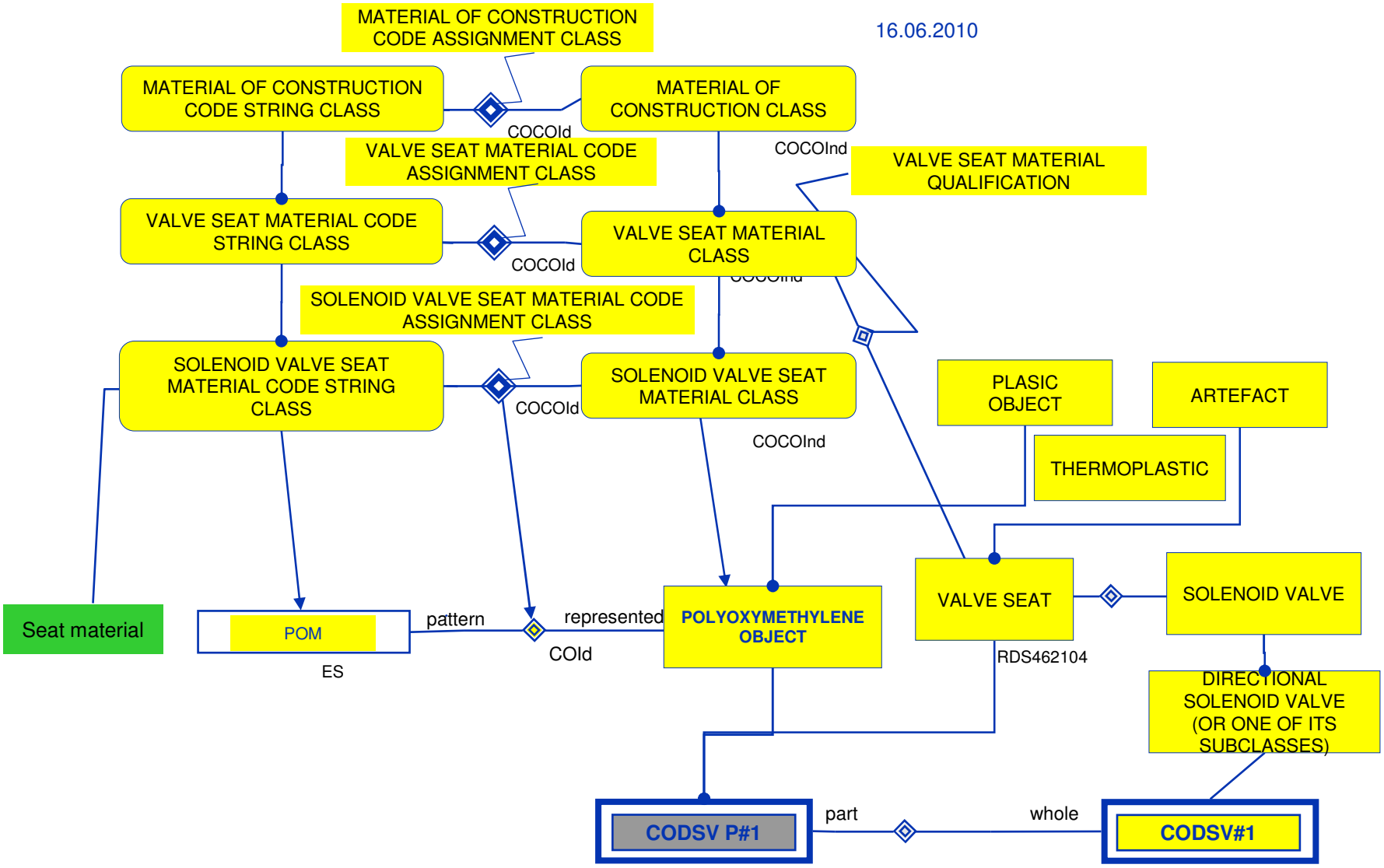
This is the minimum needed to make the required statement, but still very imprecise. Need also to establish the appropriate “product” subclasses of this as e.g. the “core class” NORMALLY OPEN VALE, NORMALLY OPEN SWITCH etc. are probably useful classes. There is a difference between a class whose members are intended to be ‘open by design’ and that something that can take any position is put in an ‘open’ position.

92 “Return pilot”

28.06.2010

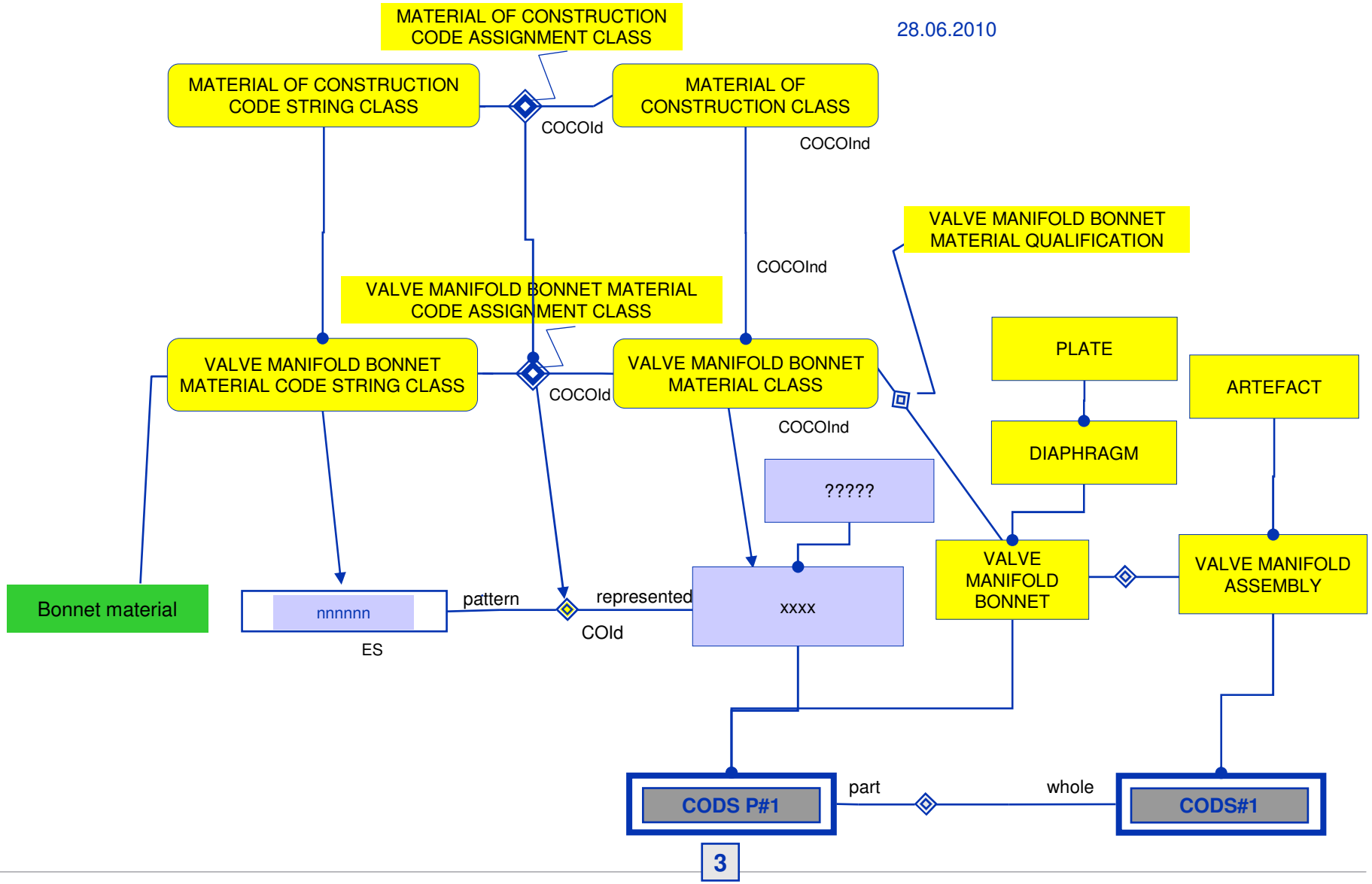


93 “Seat material”



97 “Bonnet material”

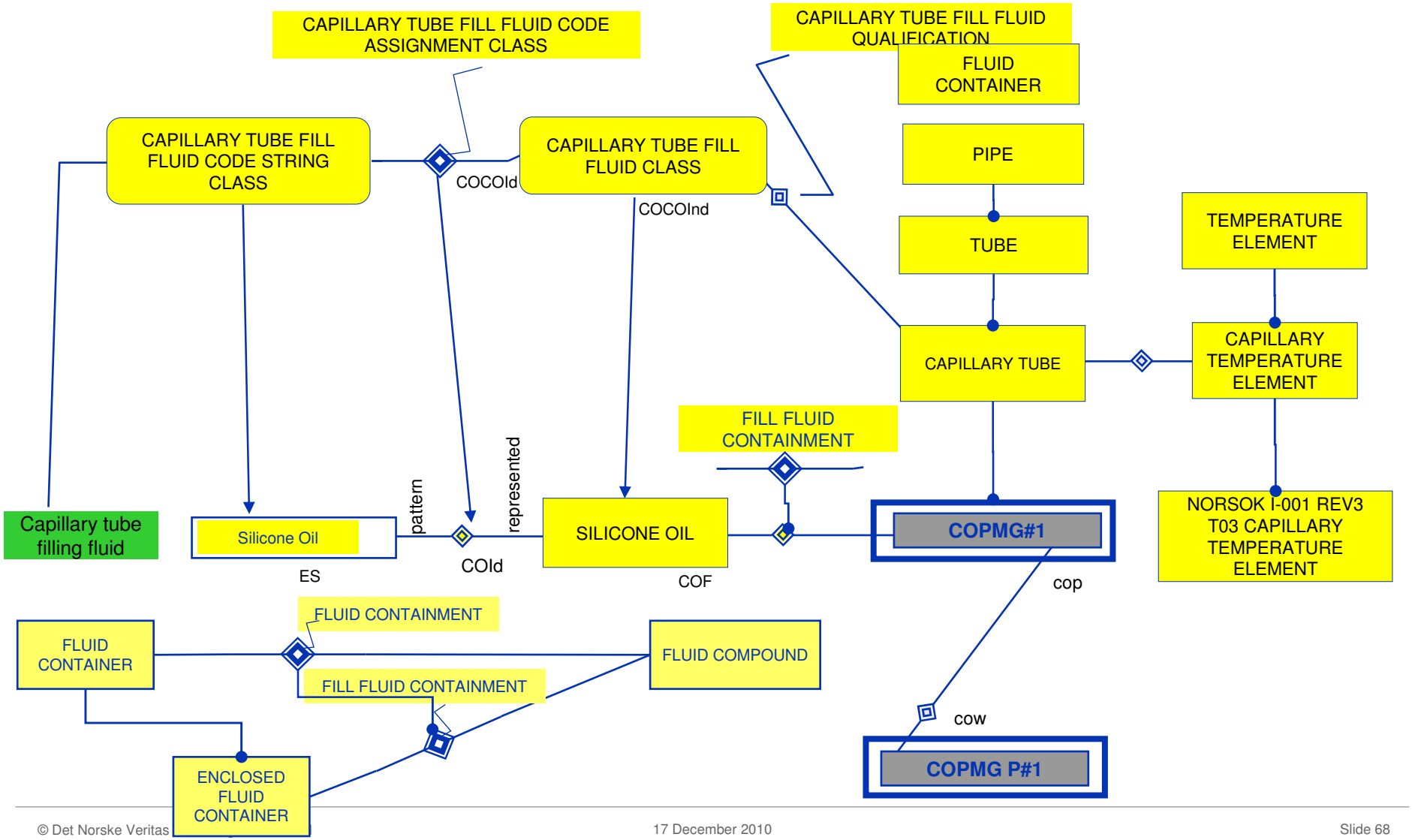
MANAGING RISK



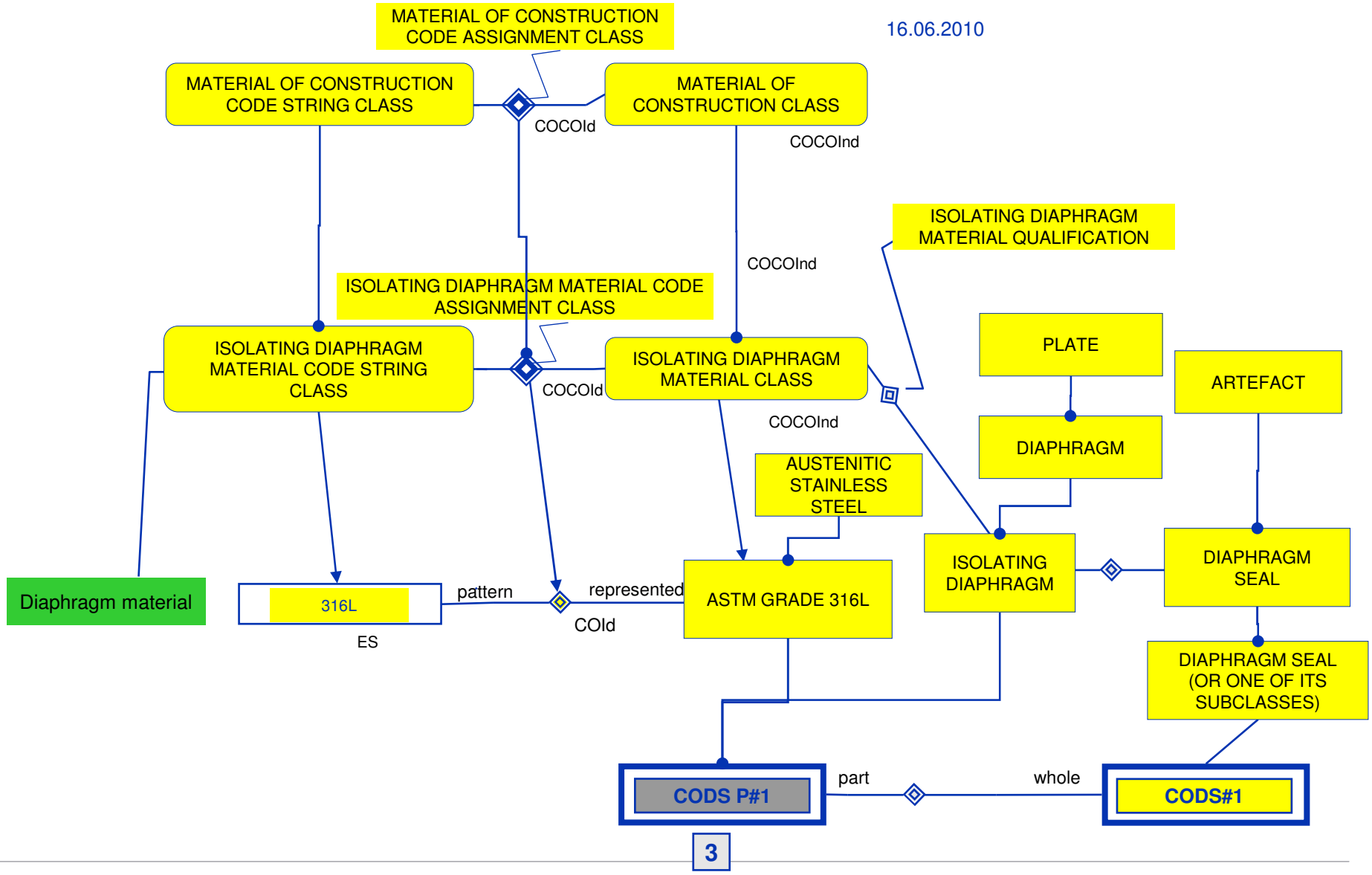
99 “Capillary tube filling fluid”

MANAGING RISK

16.06.2010

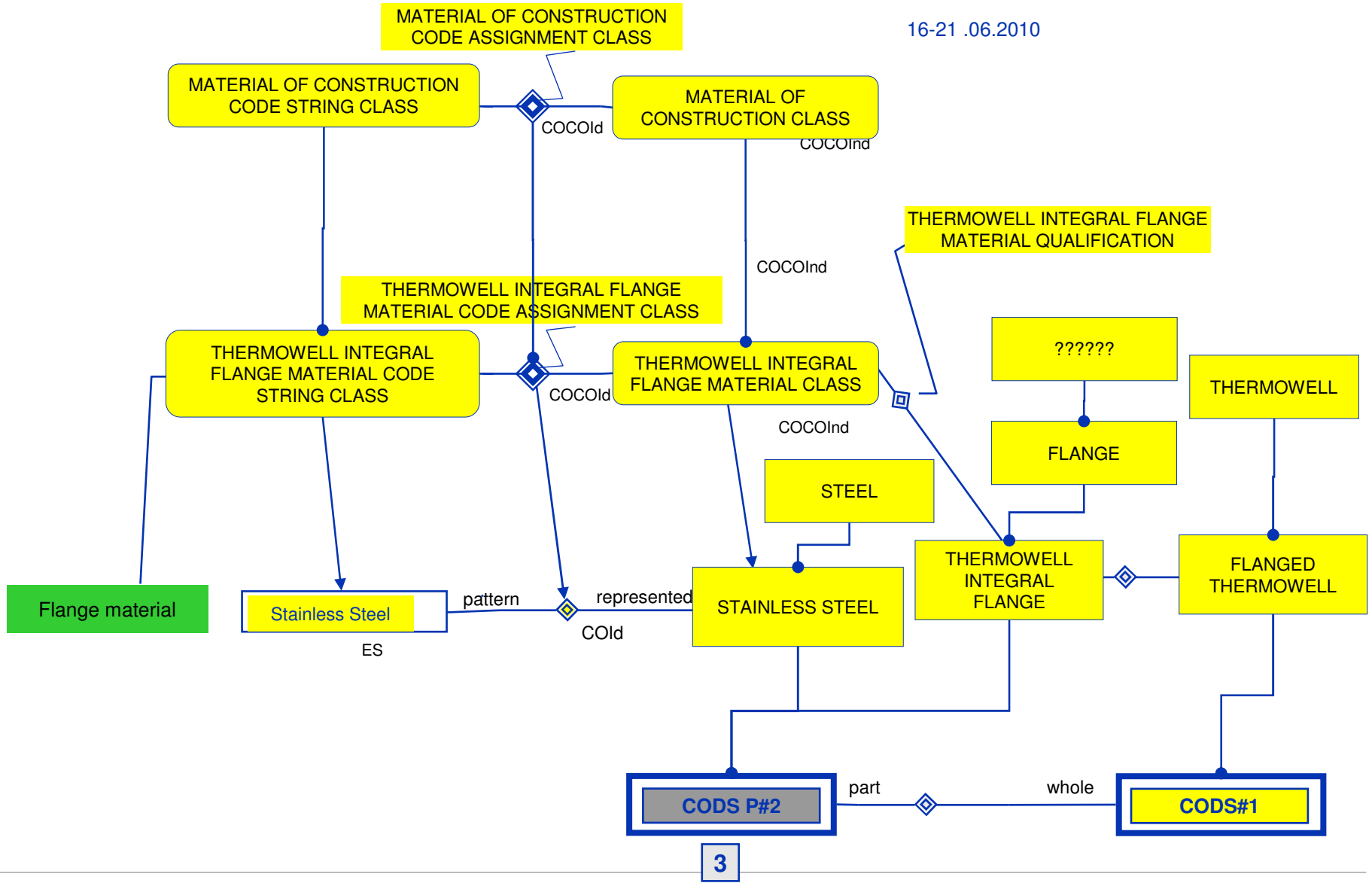


101 “Diaphragm material”



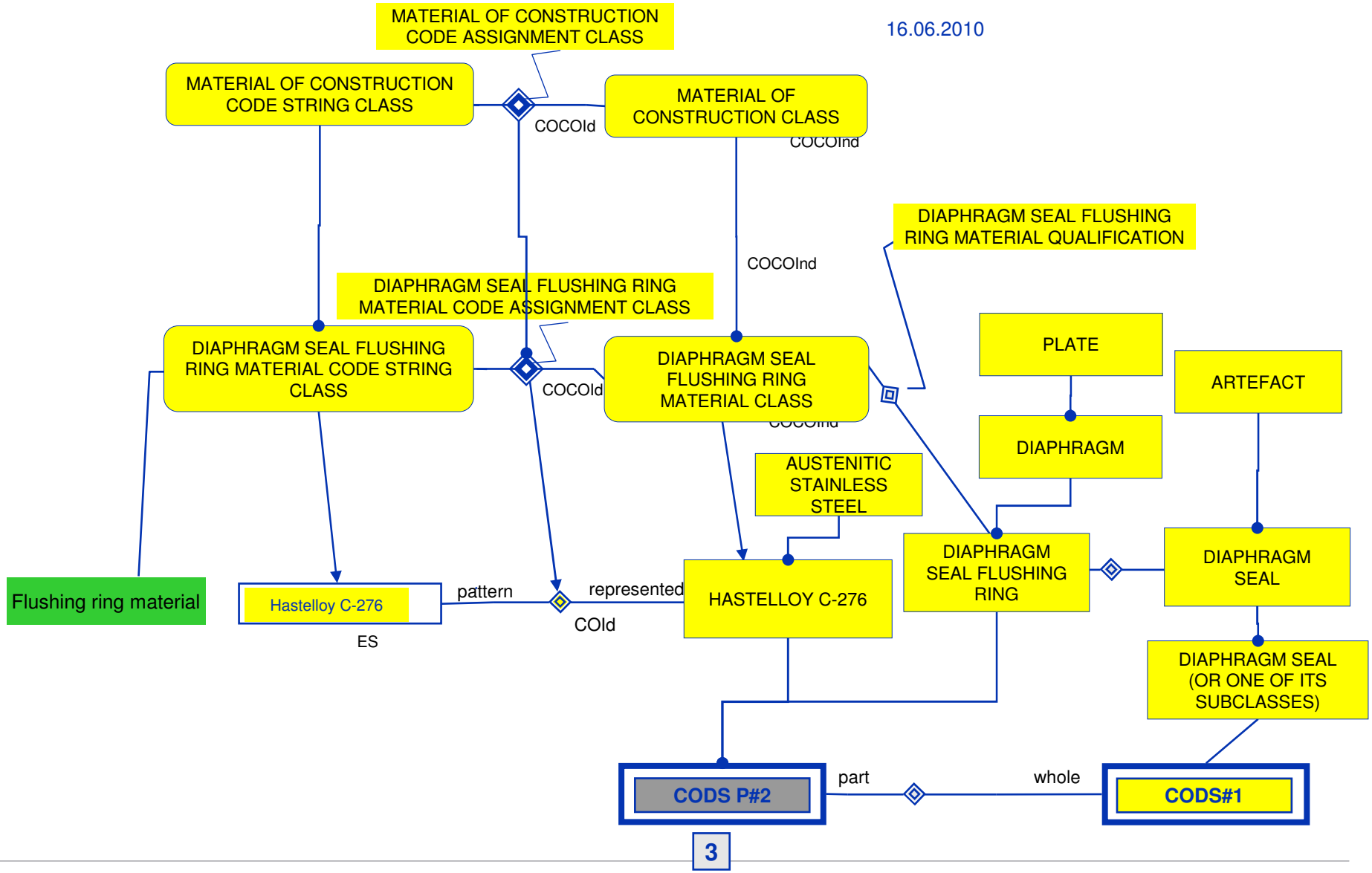
102 “Flange material”

MANAGING RISK

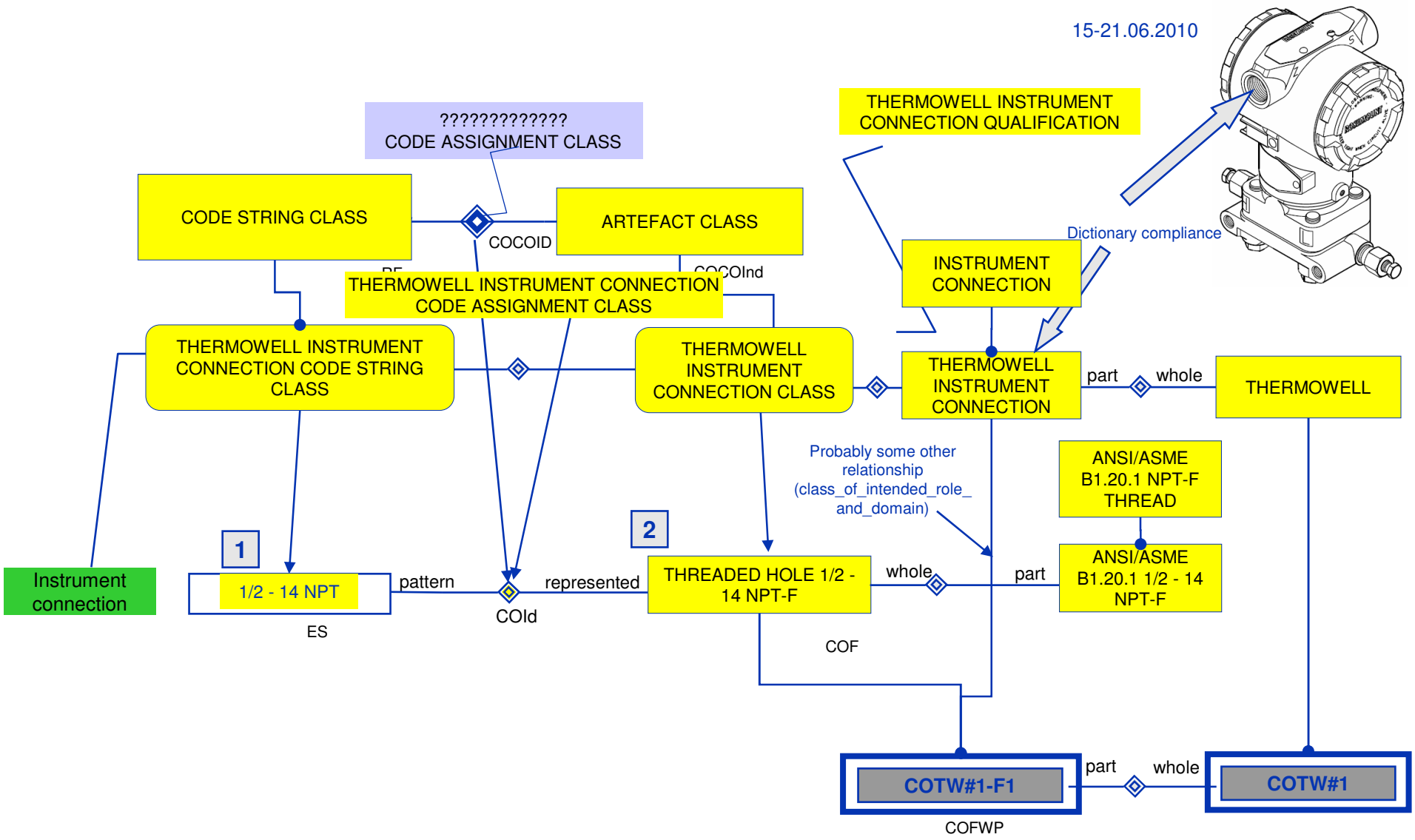


103 “Flushing ring material”

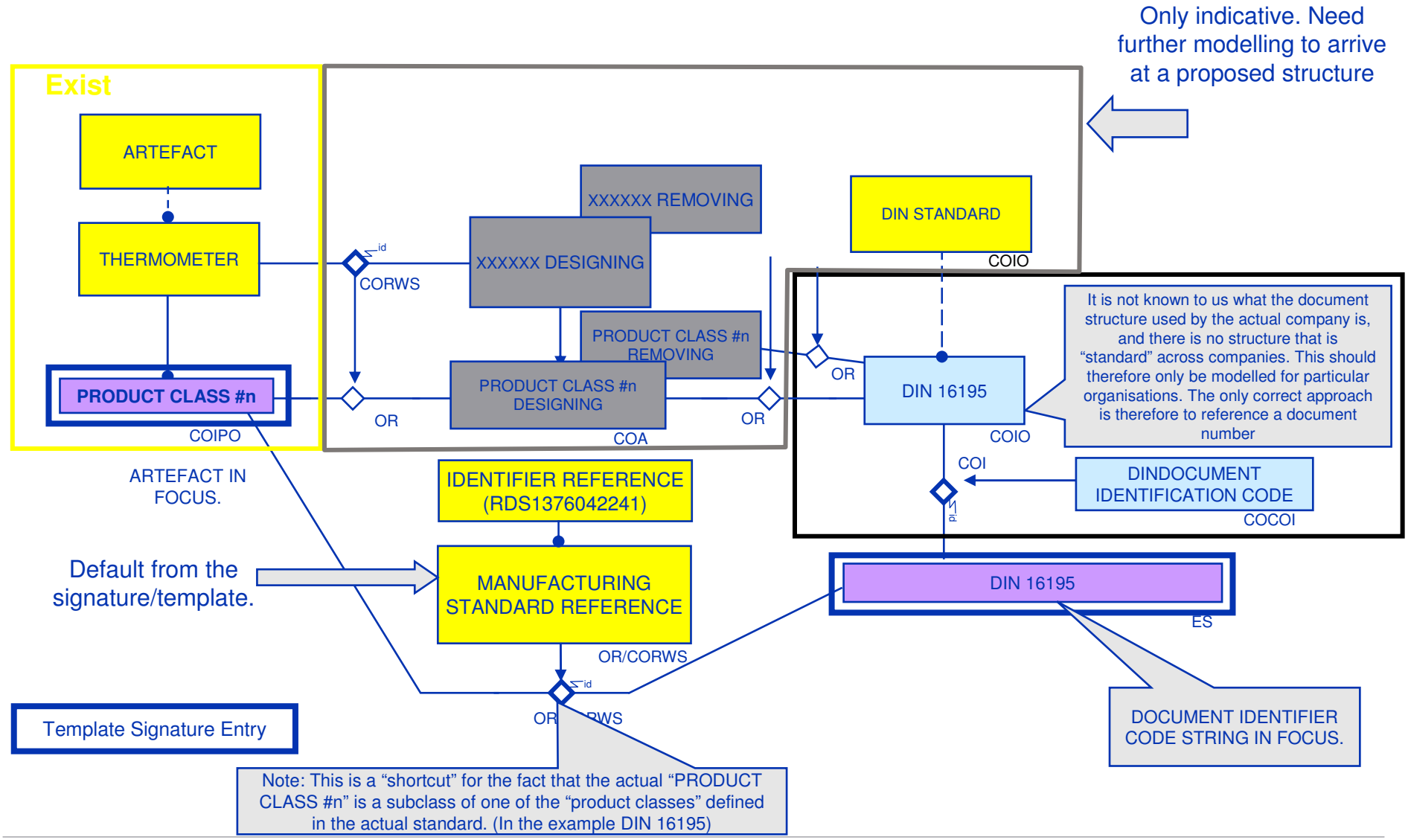
MANAGING RISK



106 “Instrument connection”

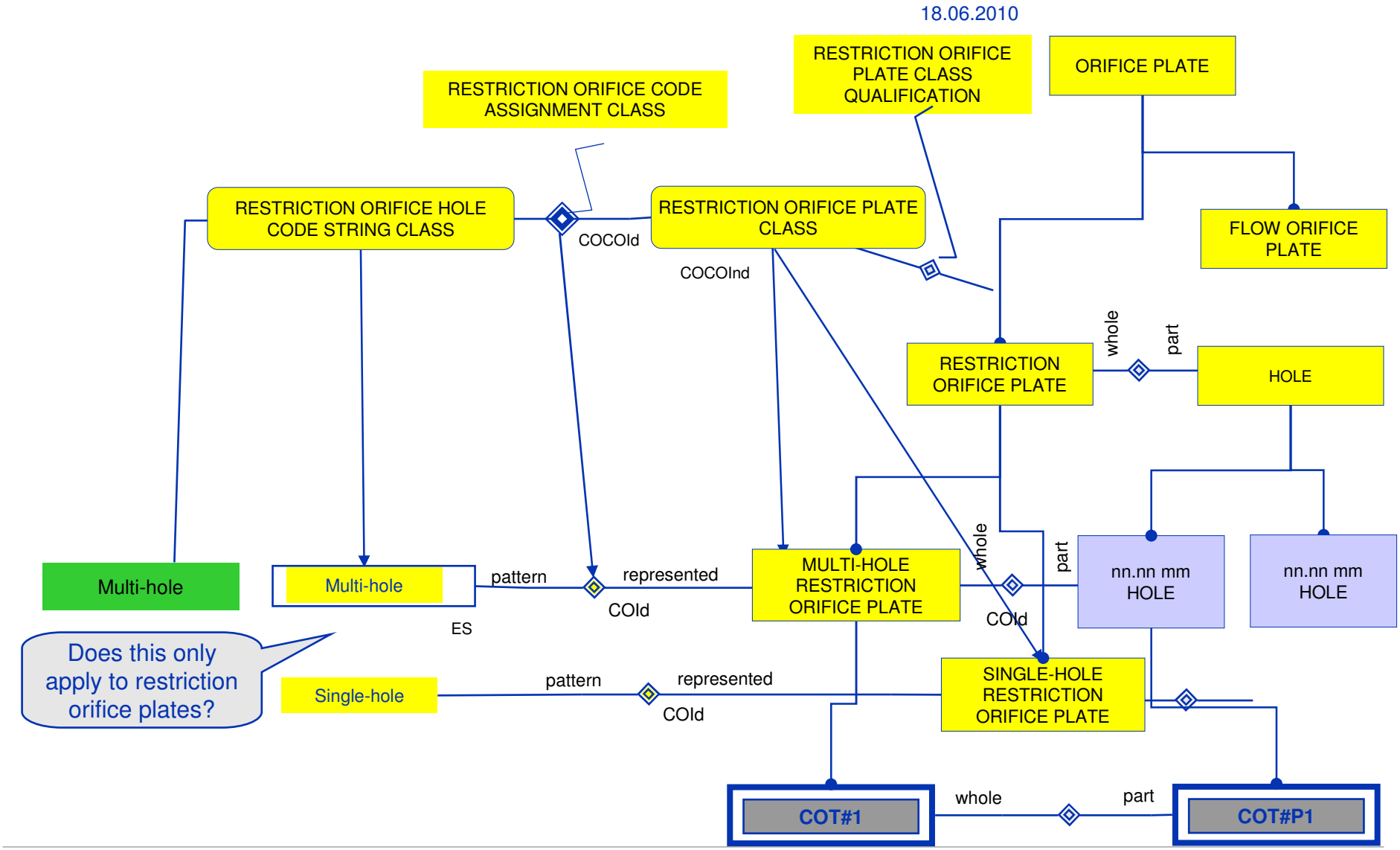


109 “Manufacturer reference standard”



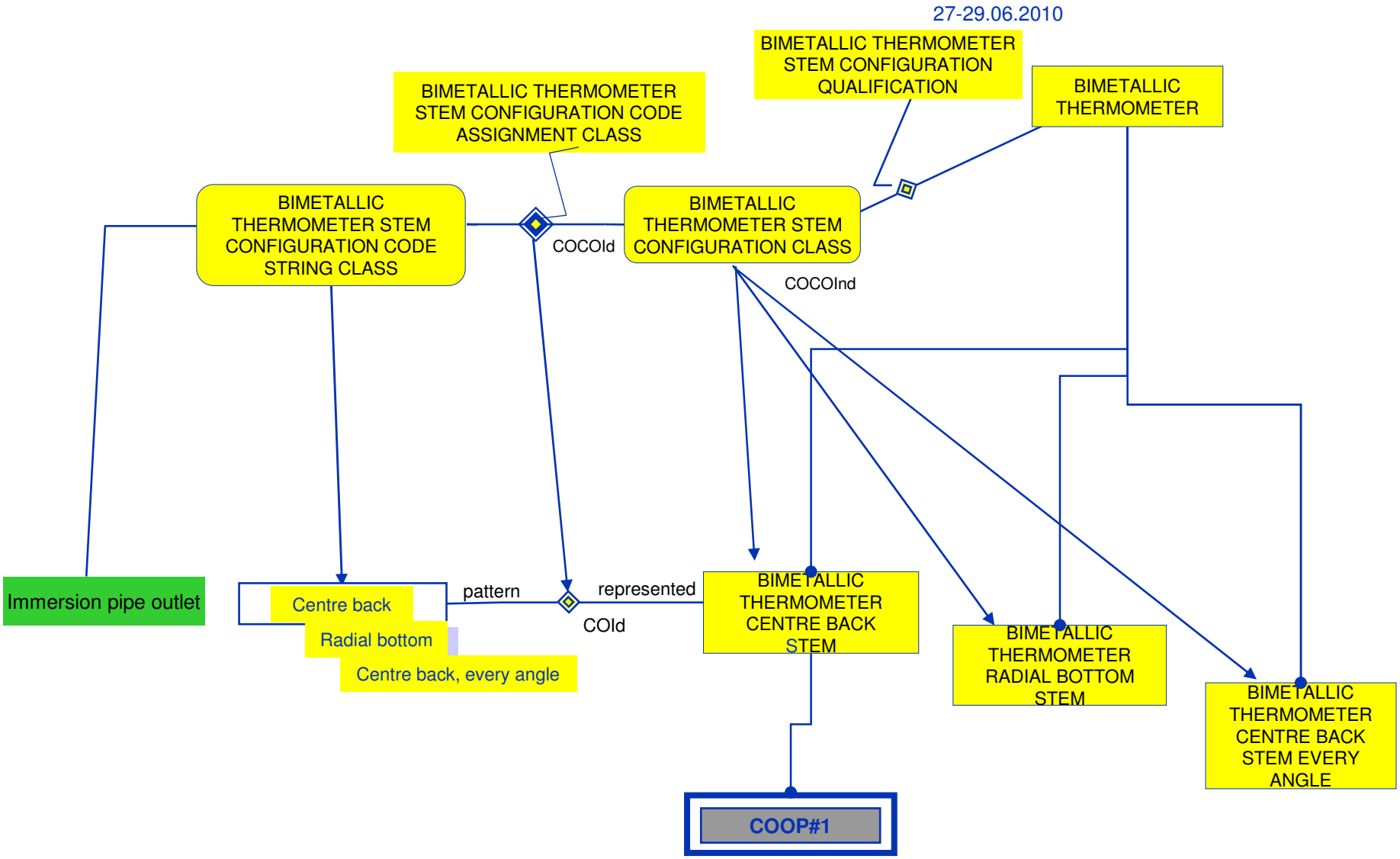
110 “Multi-hole”

MANAGING RISK



104 “Immersion pipe outlet”

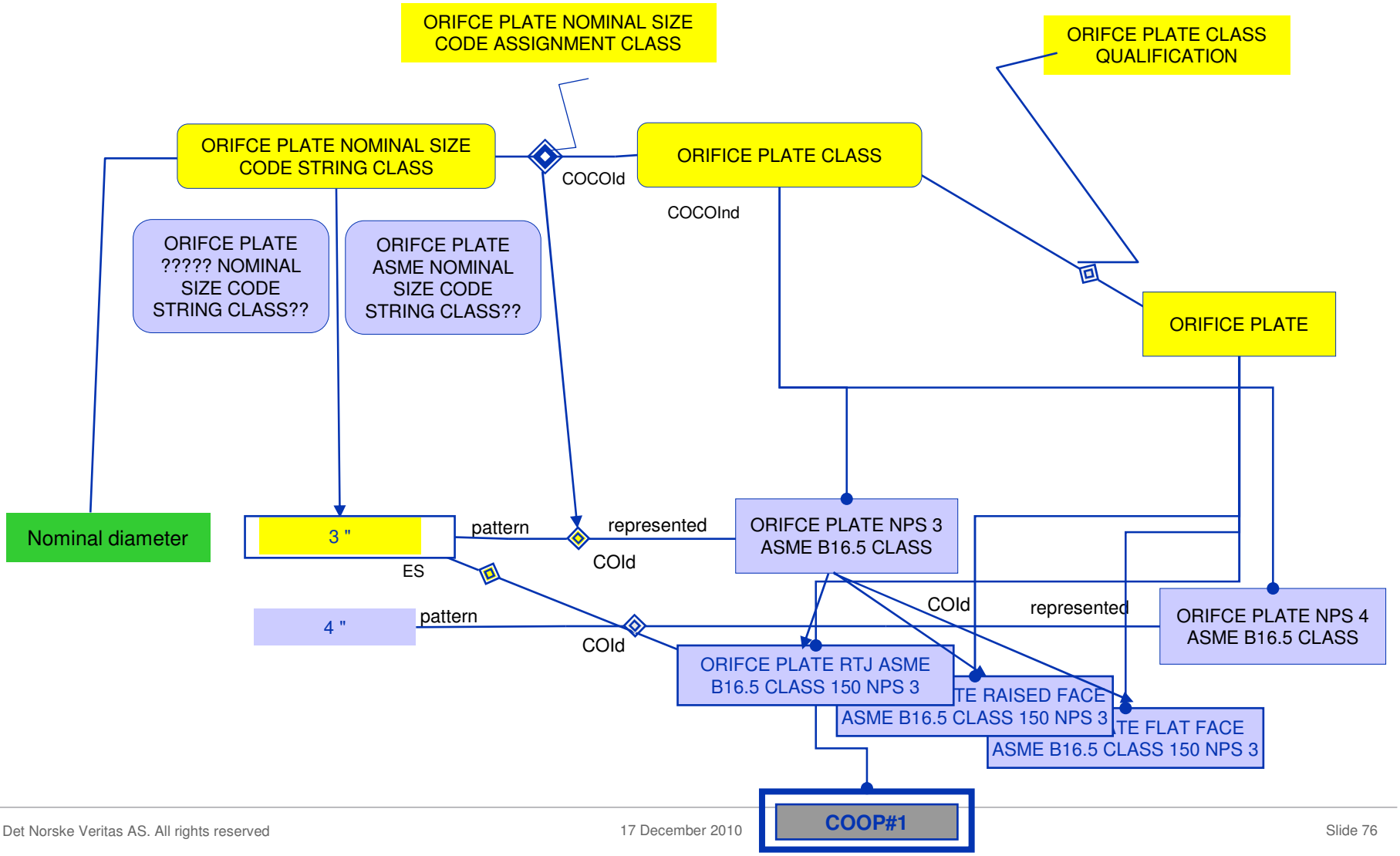
MANAGING RISK



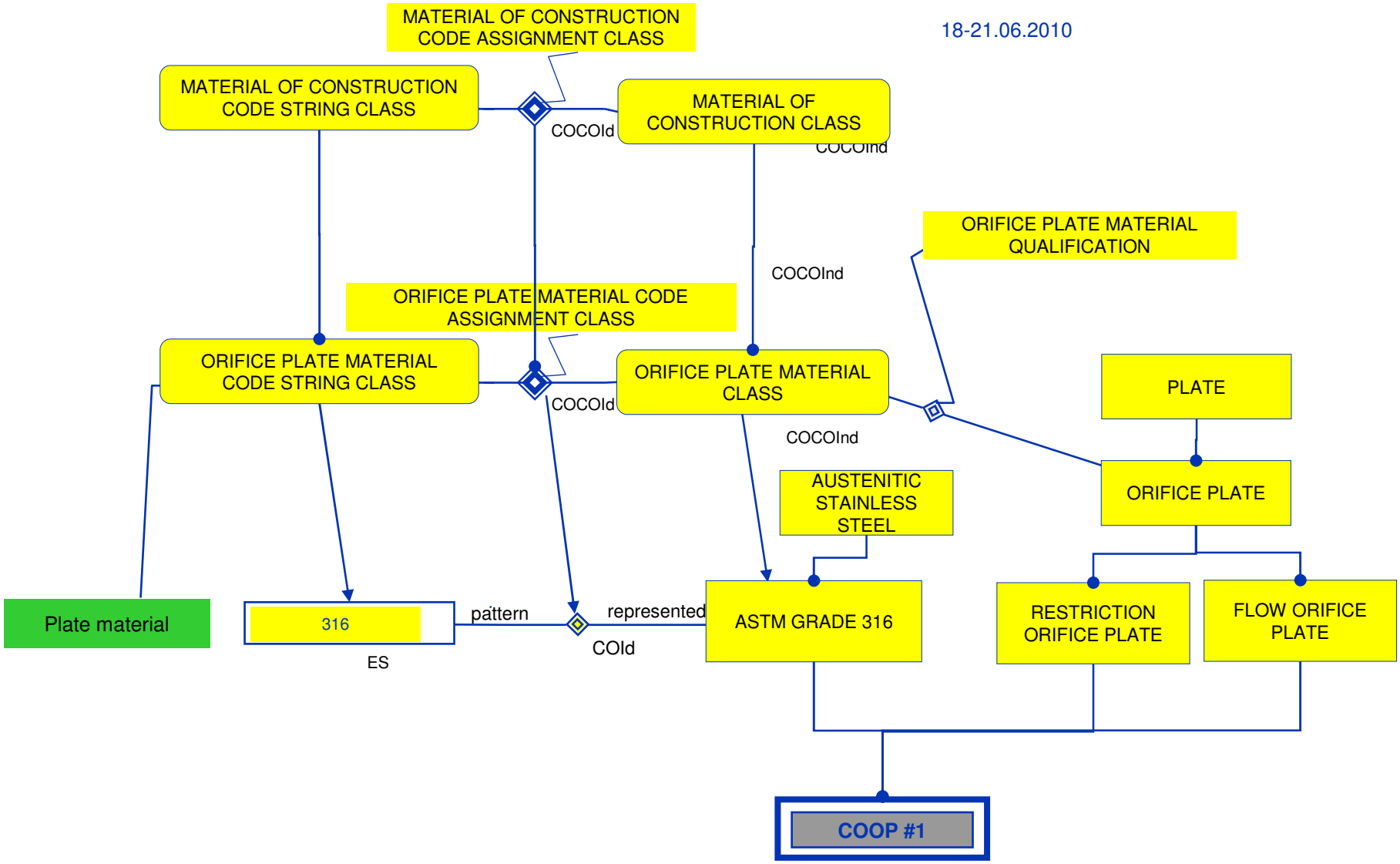
111 “Nominal diameter”

MANAGING RISK

26.06.2010

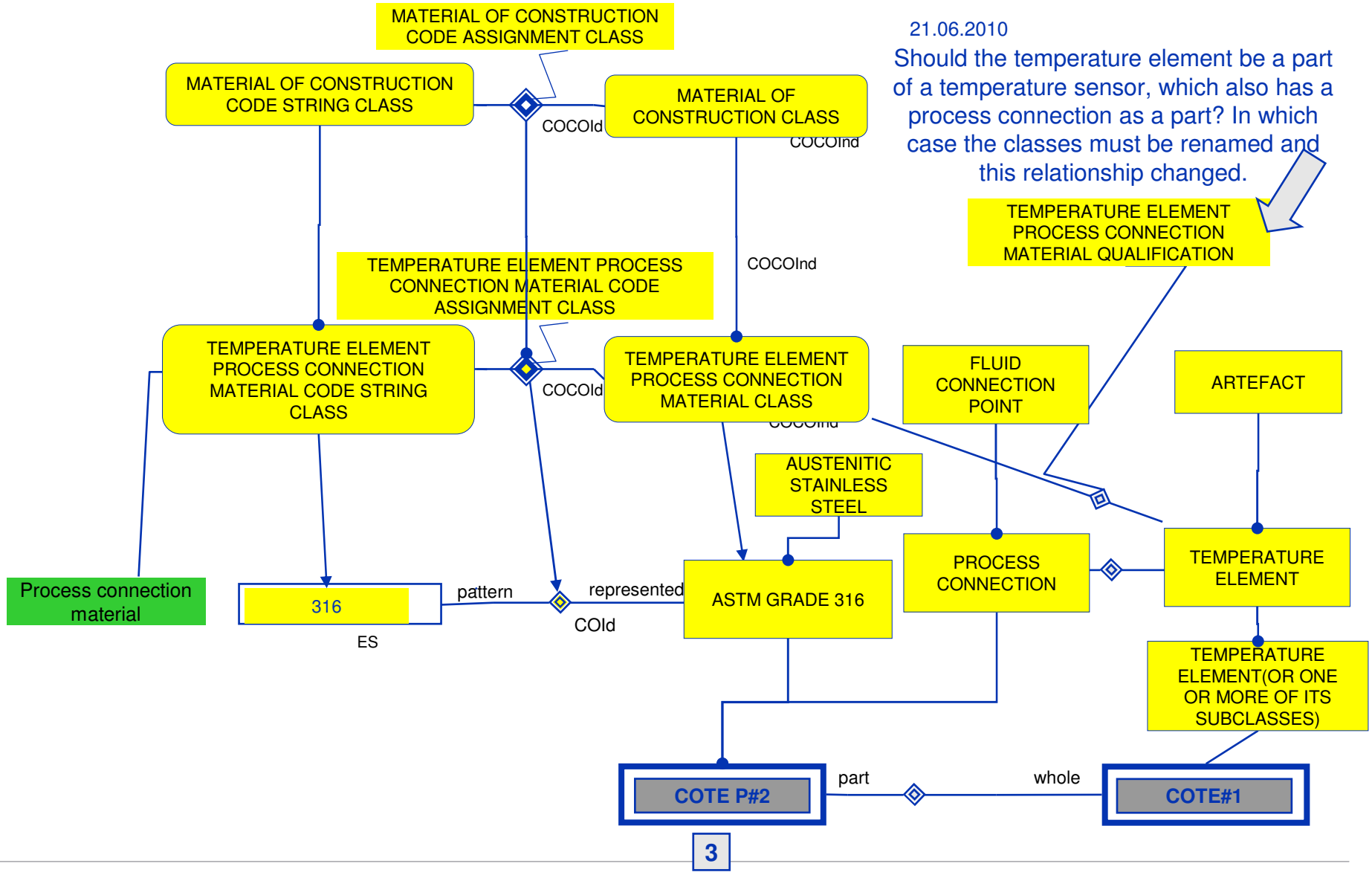


114 “Plate material”



117 “Process connection material”, Temperature element

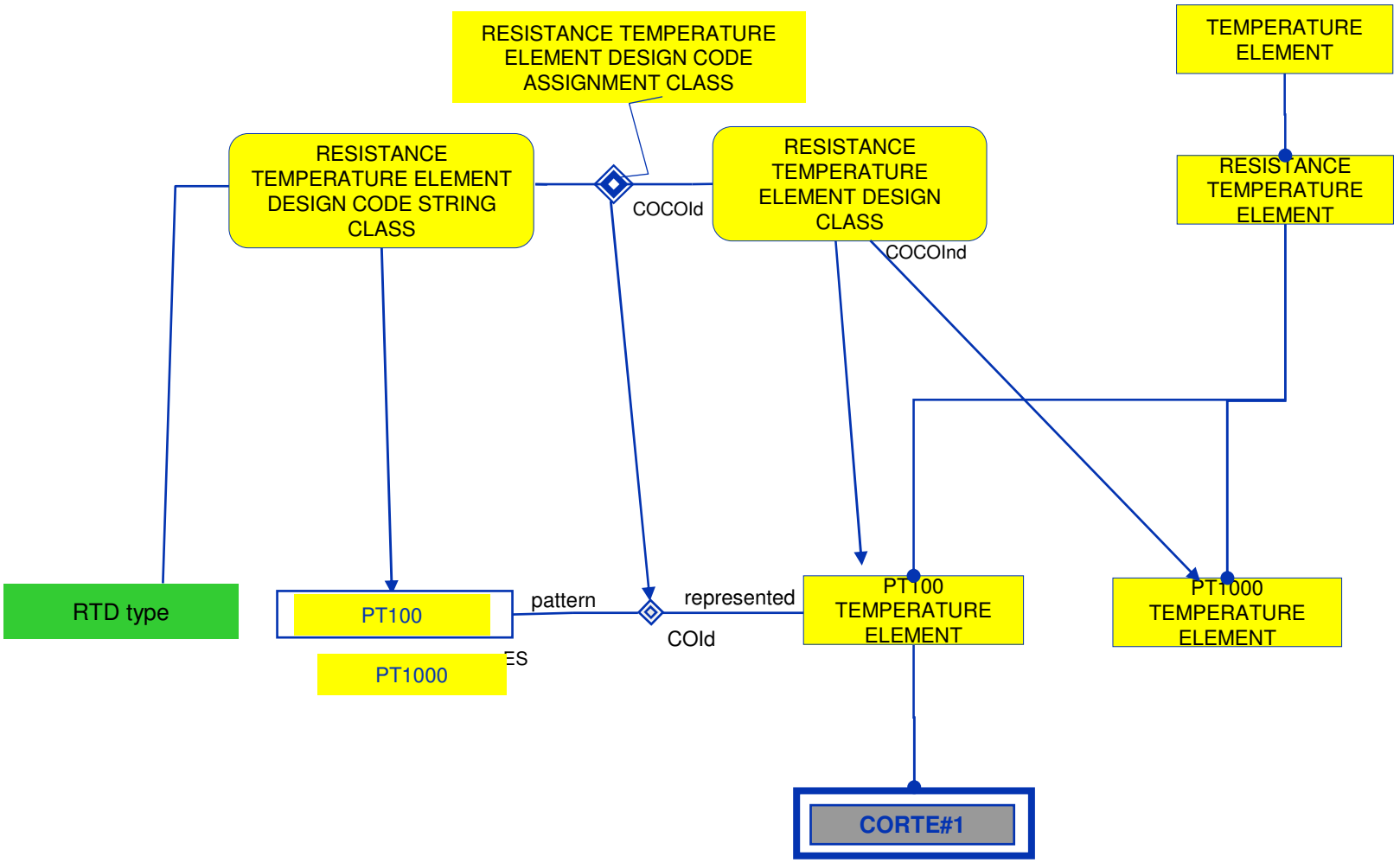
MANAGING RISK



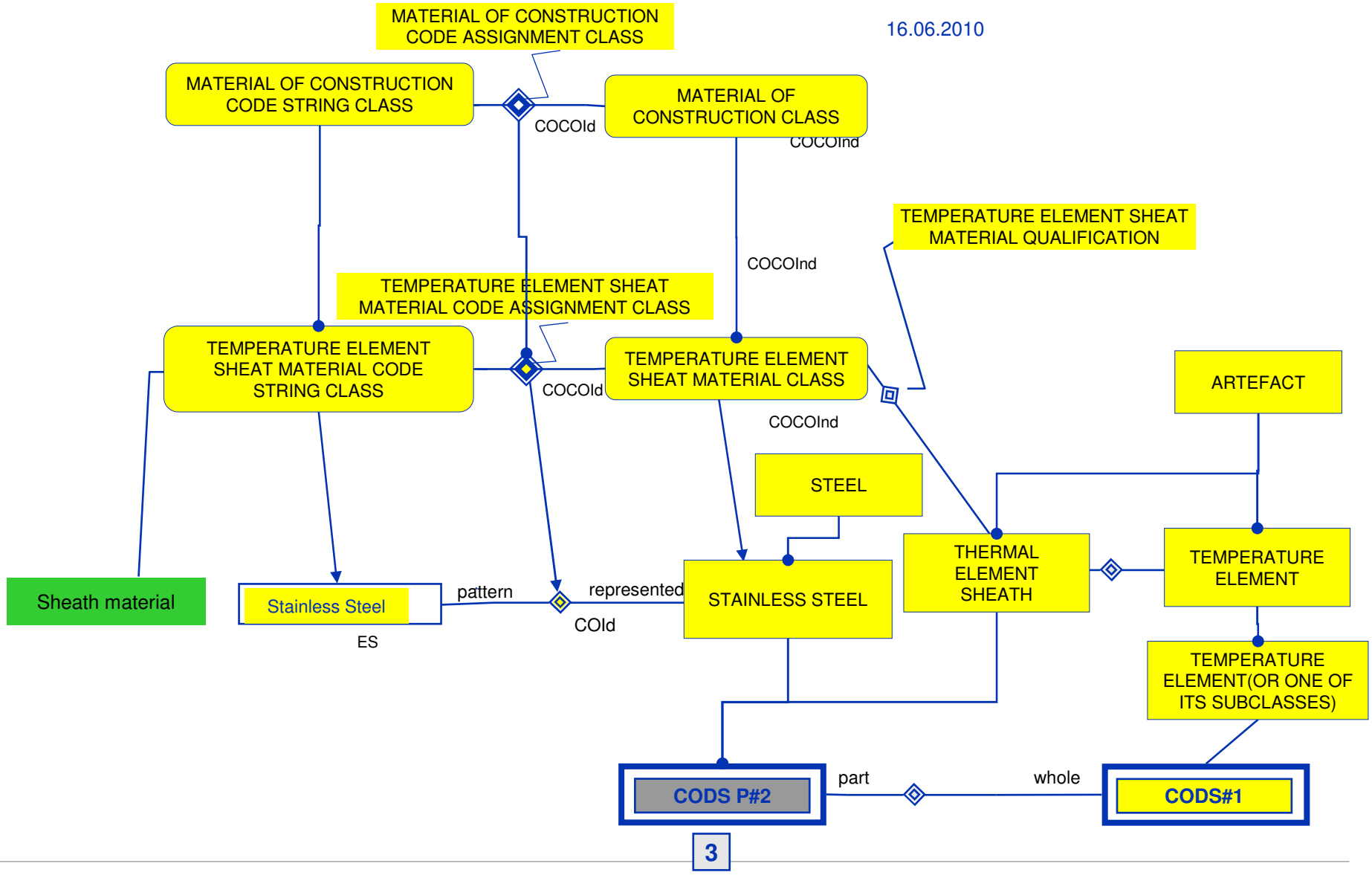
118 “RTD type”

MANAGING RISK

19-21.06.2010

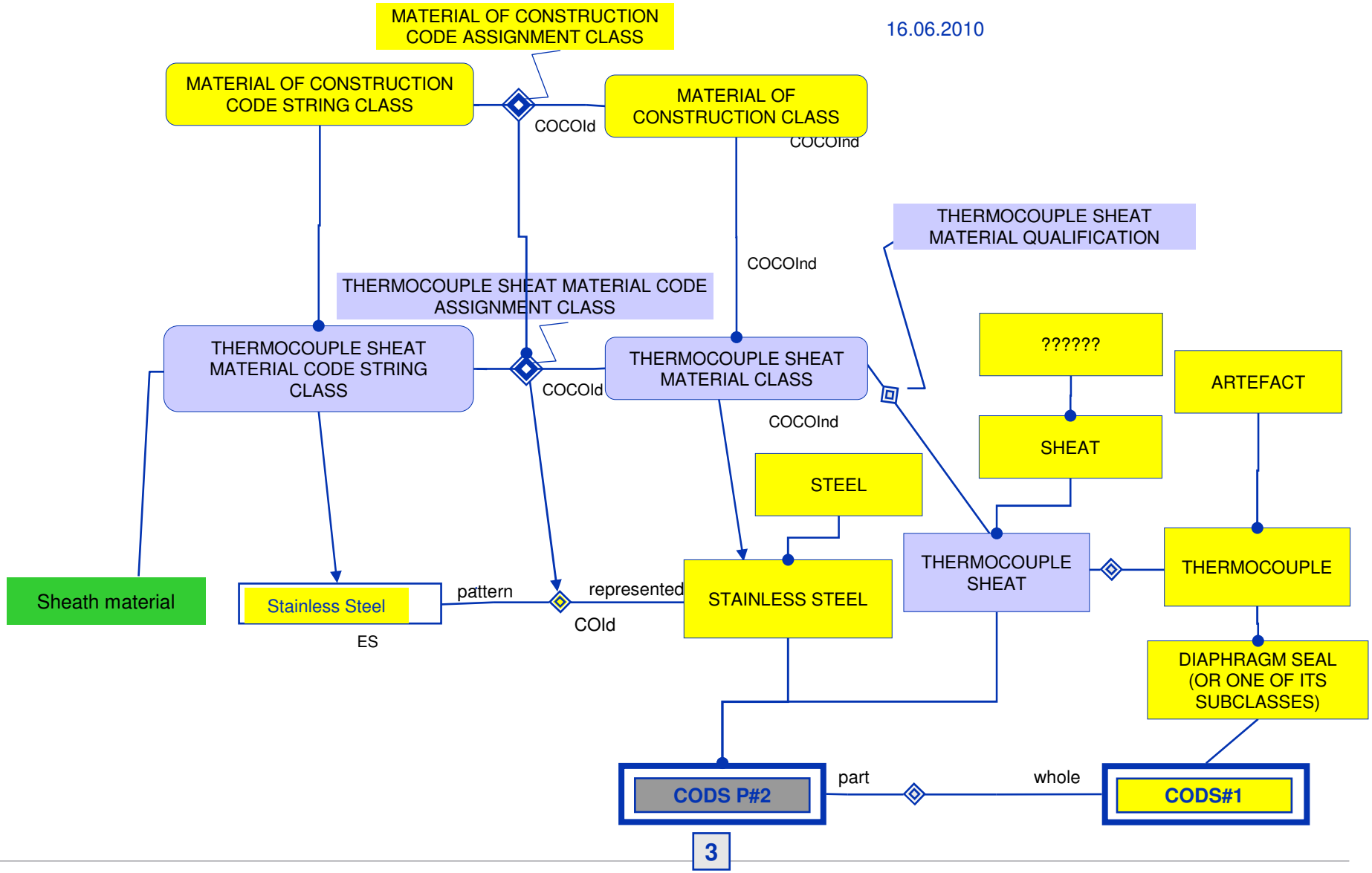


119 “Sheath material”, Temperature element

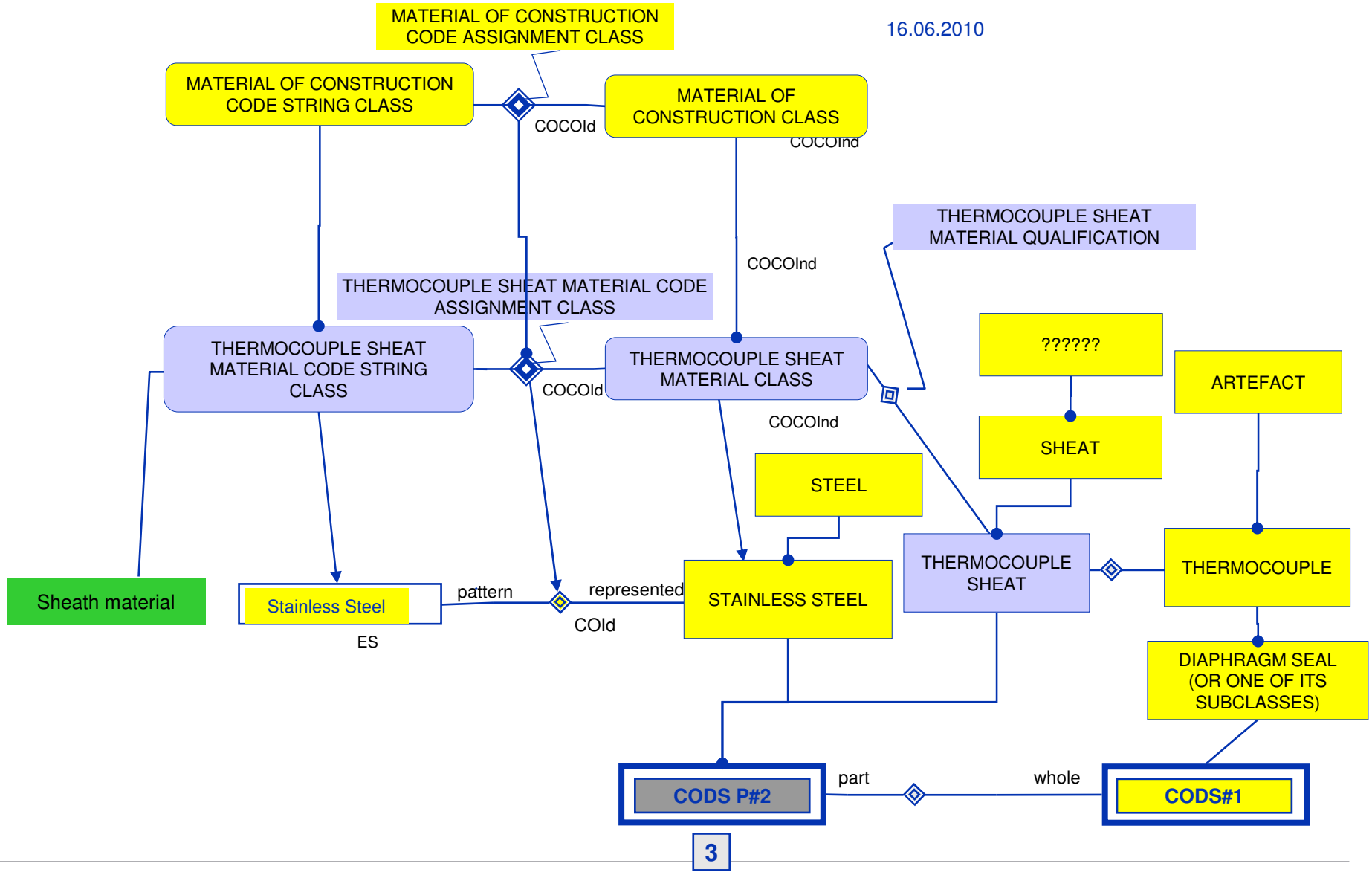


119a “Sheath material”, Optional extension for Thermocouple

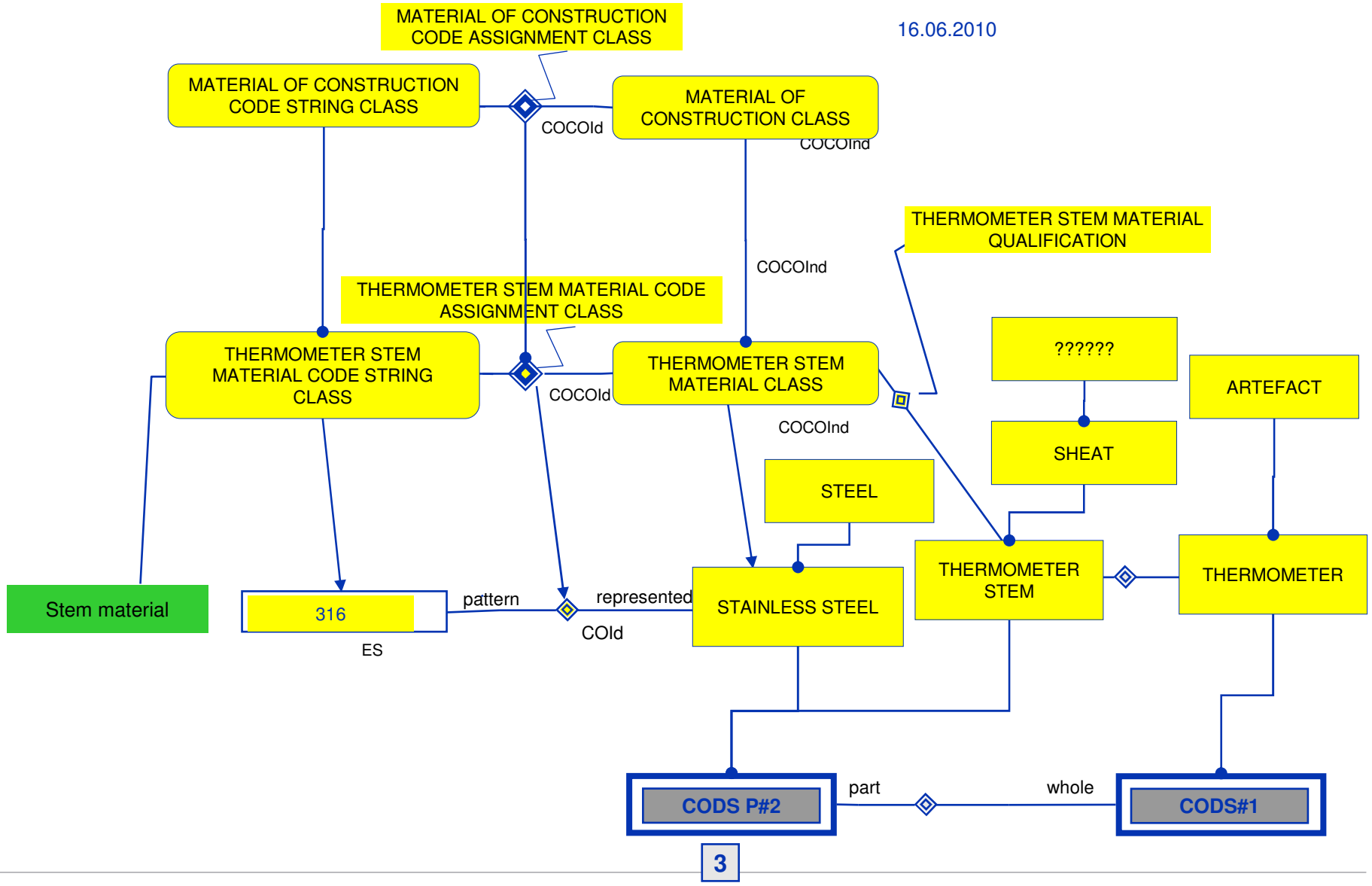
MANAGING RISK



119b "Sheath material", Optional extension for Resistance temperature element????



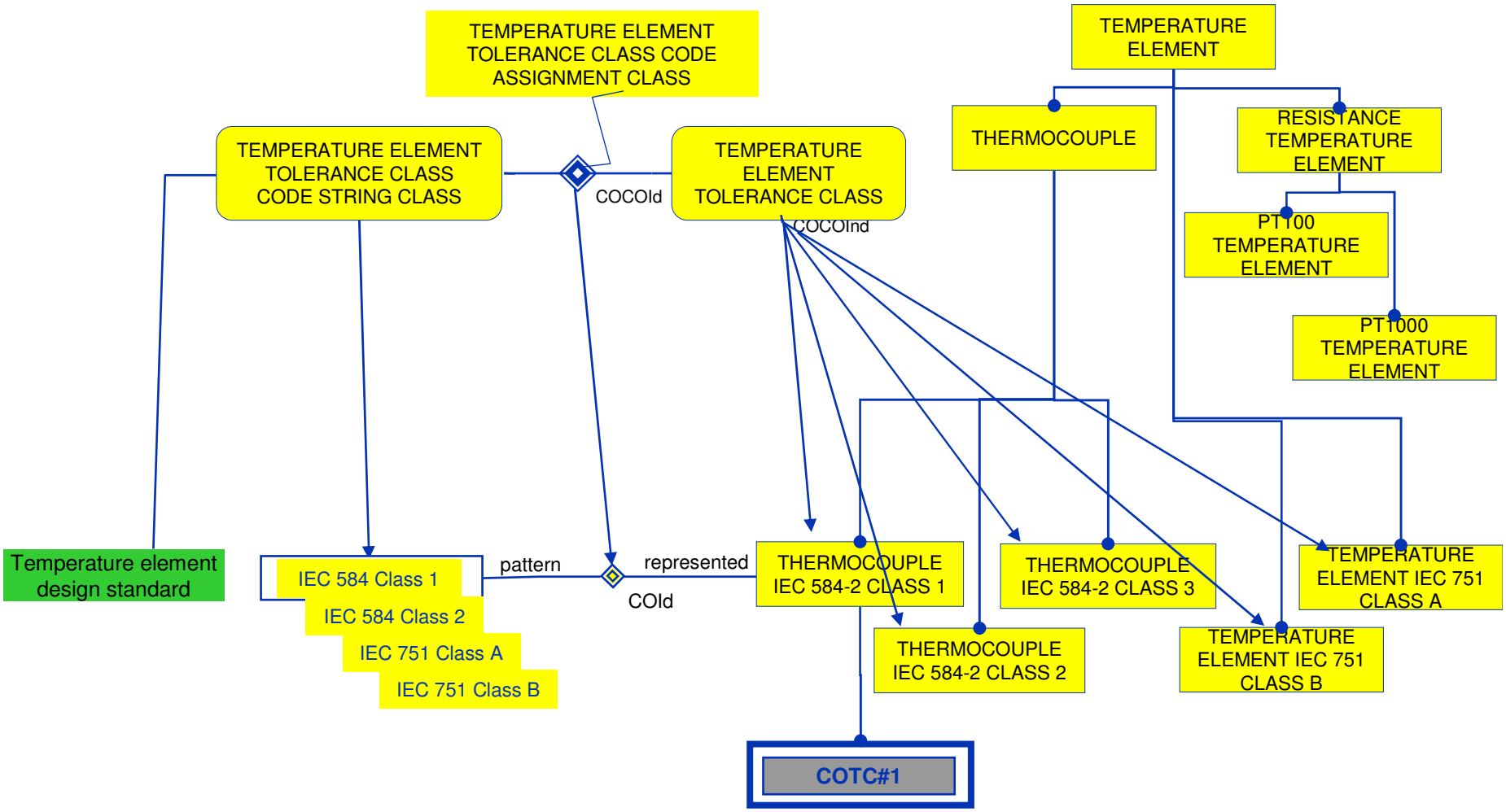
124 “Stem material



125 “Temperature element design standard”

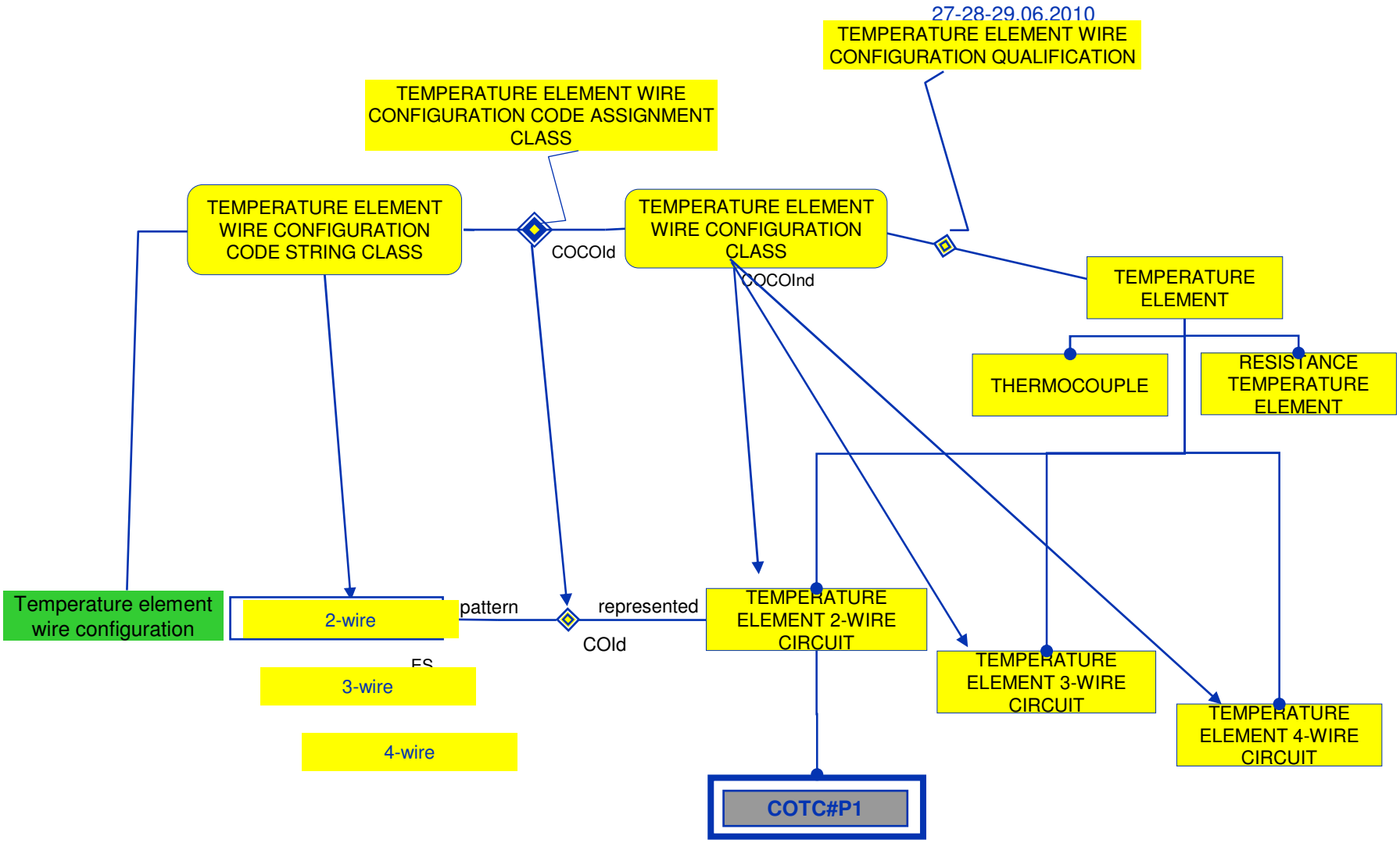
MANAGING RISK

19-21.06.2010



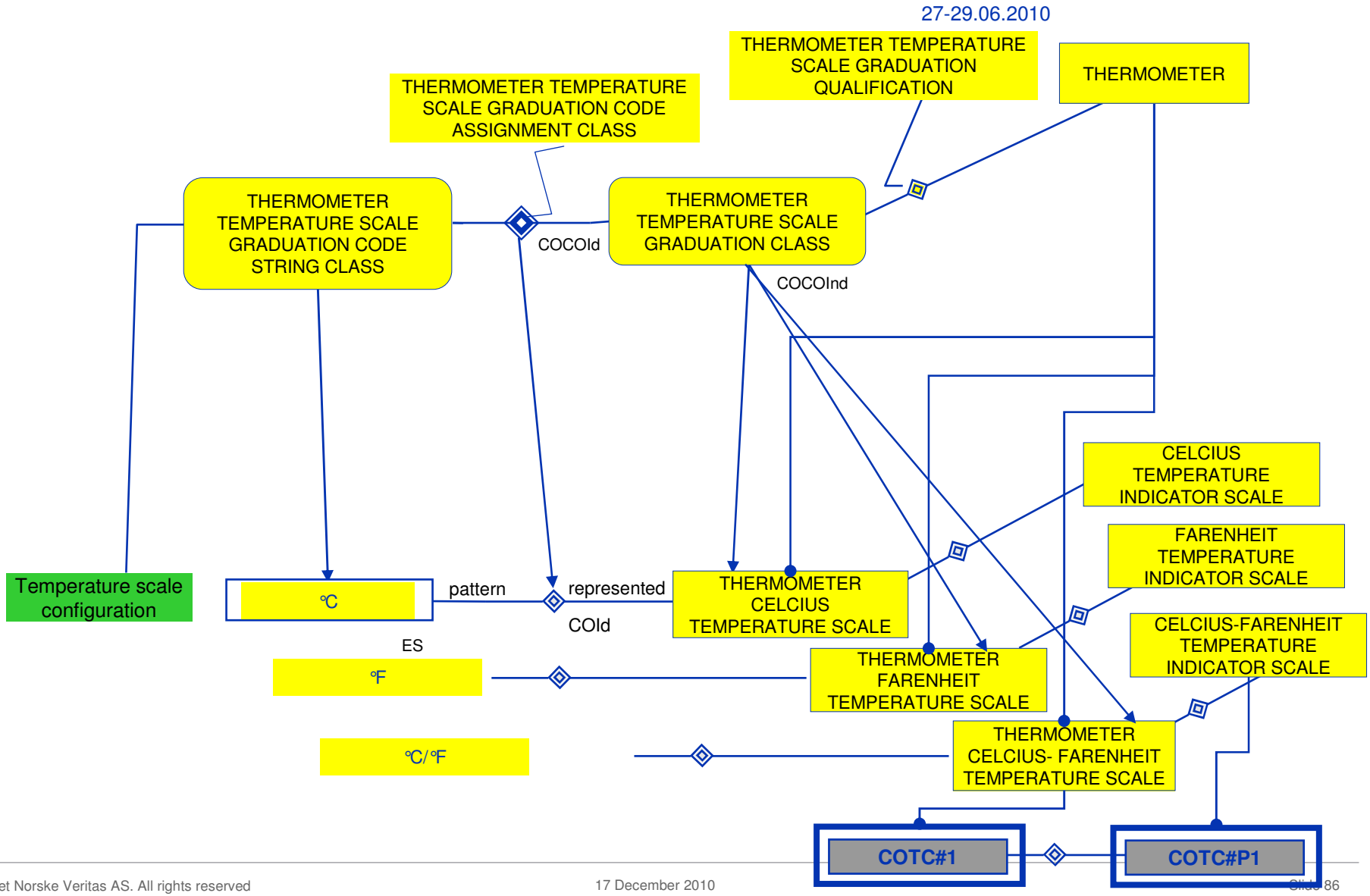
IEC 584-2 for thermocouple classes only?

128 “Temperature element wire configuration”



129 “Temperature scale configuration”

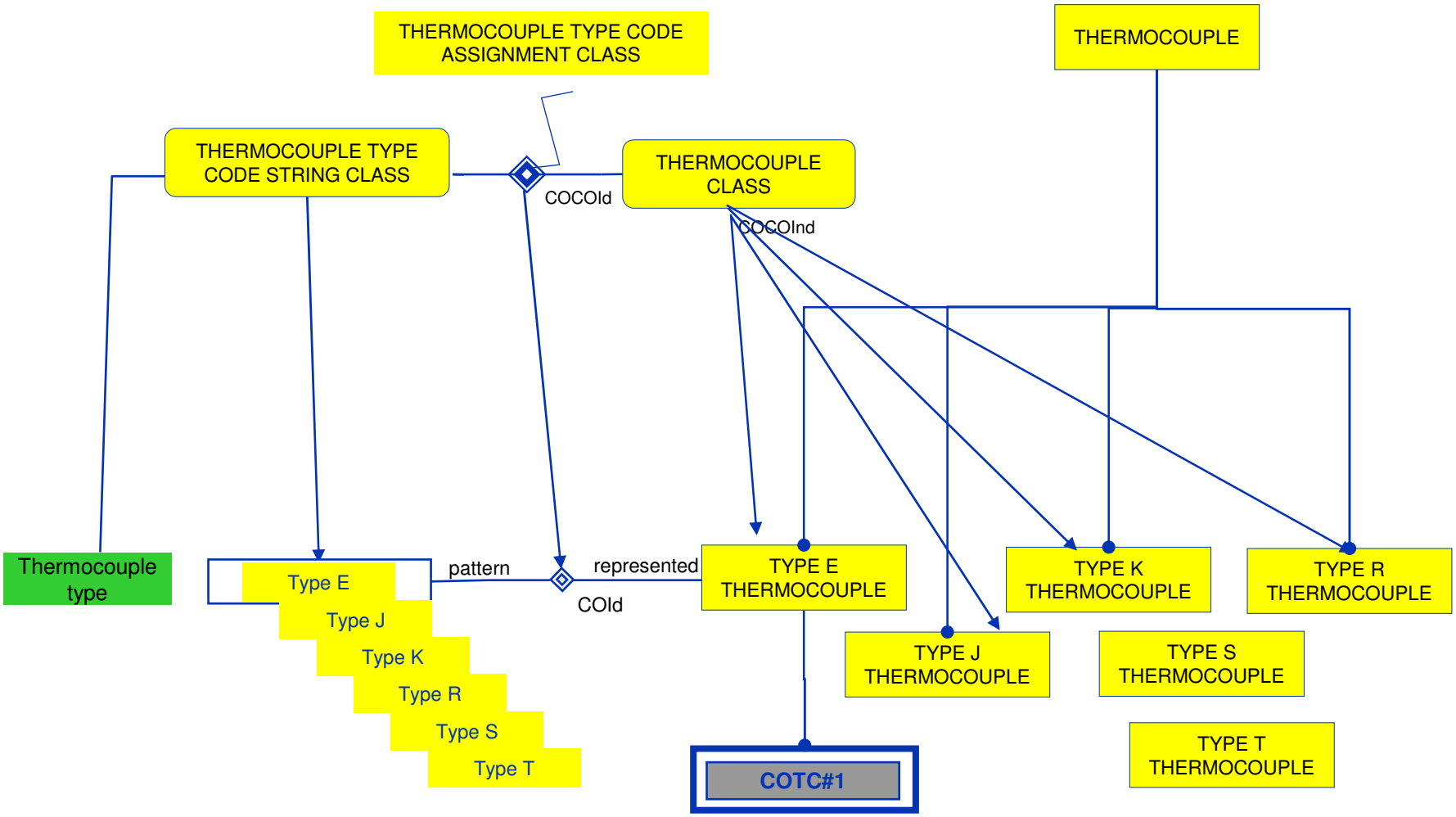
MANAGING RISK



130 “Thermocouple type”

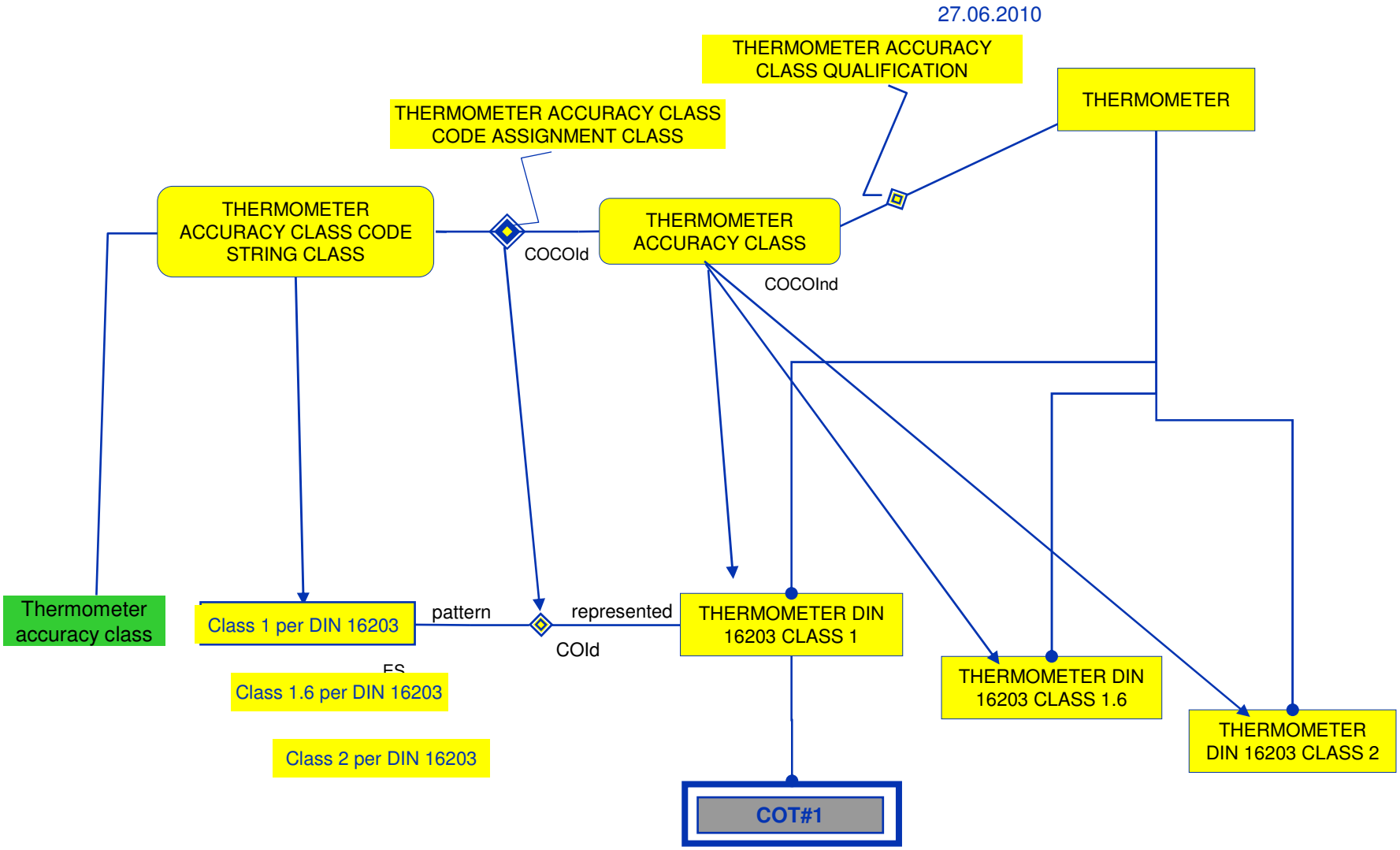
MANAGING RISK

19-21.06.2010



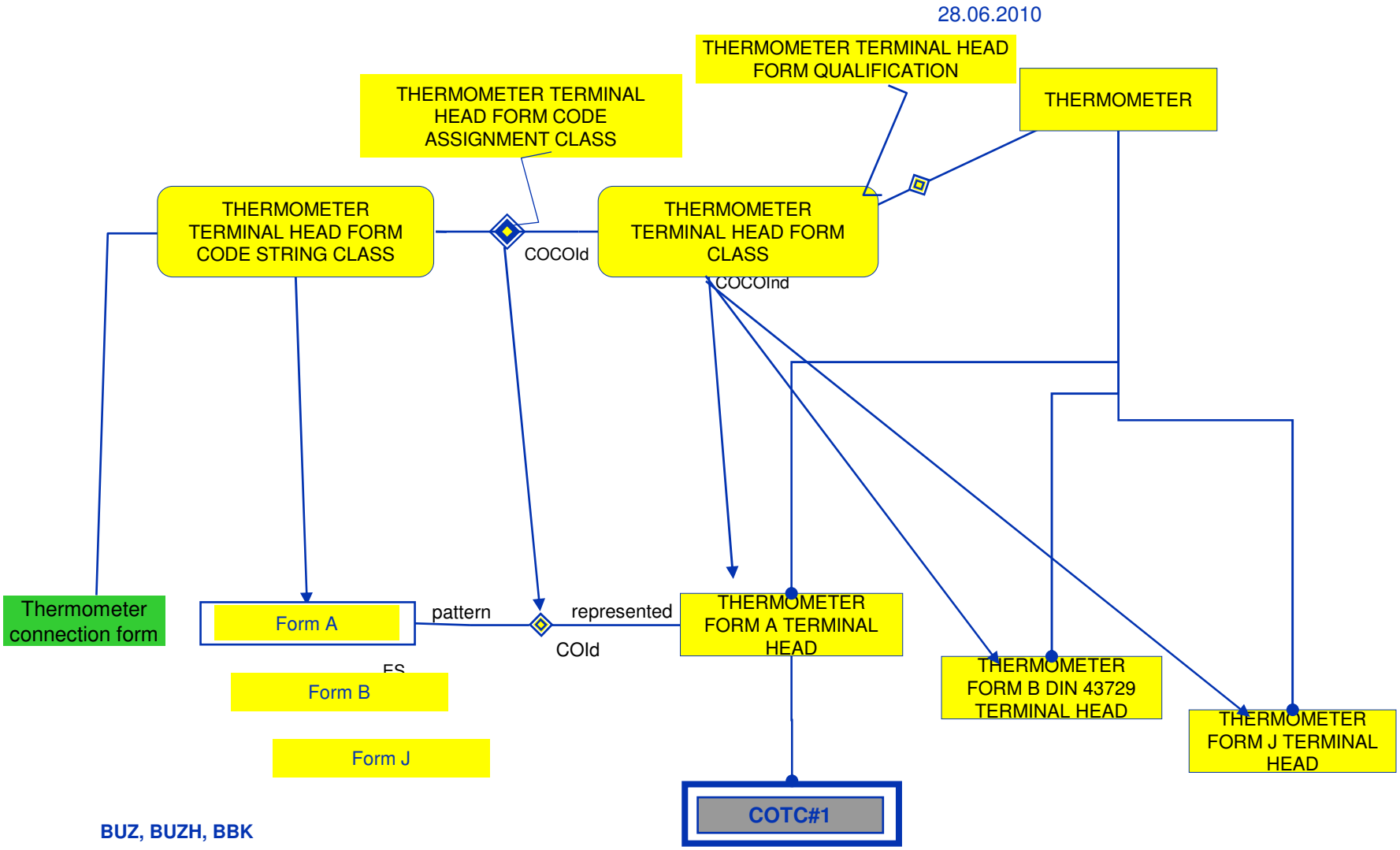
131 “Thermometer accuracy class”

MANAGING RISK

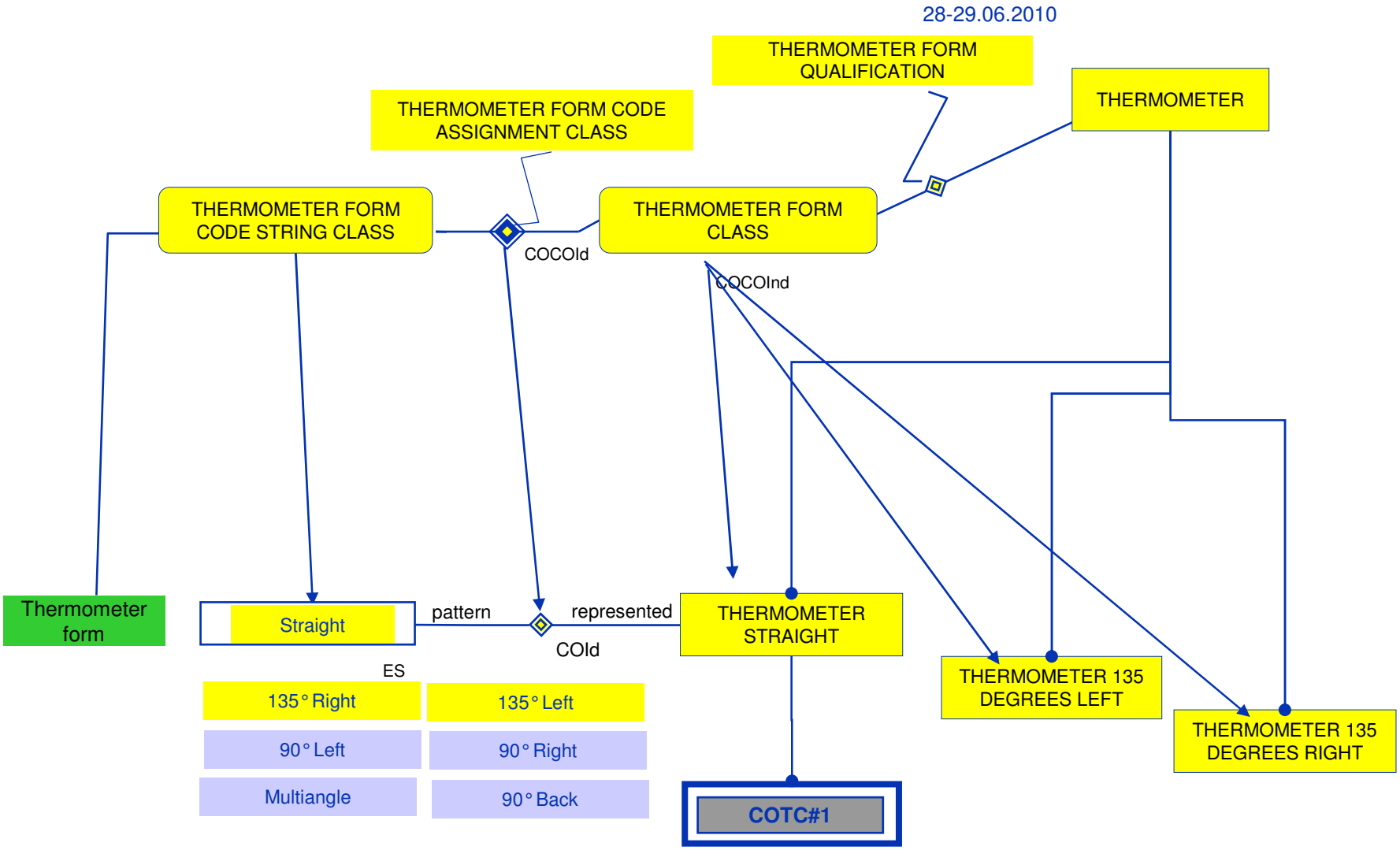


132 “Thermometer connection form”

MANAGING RISK



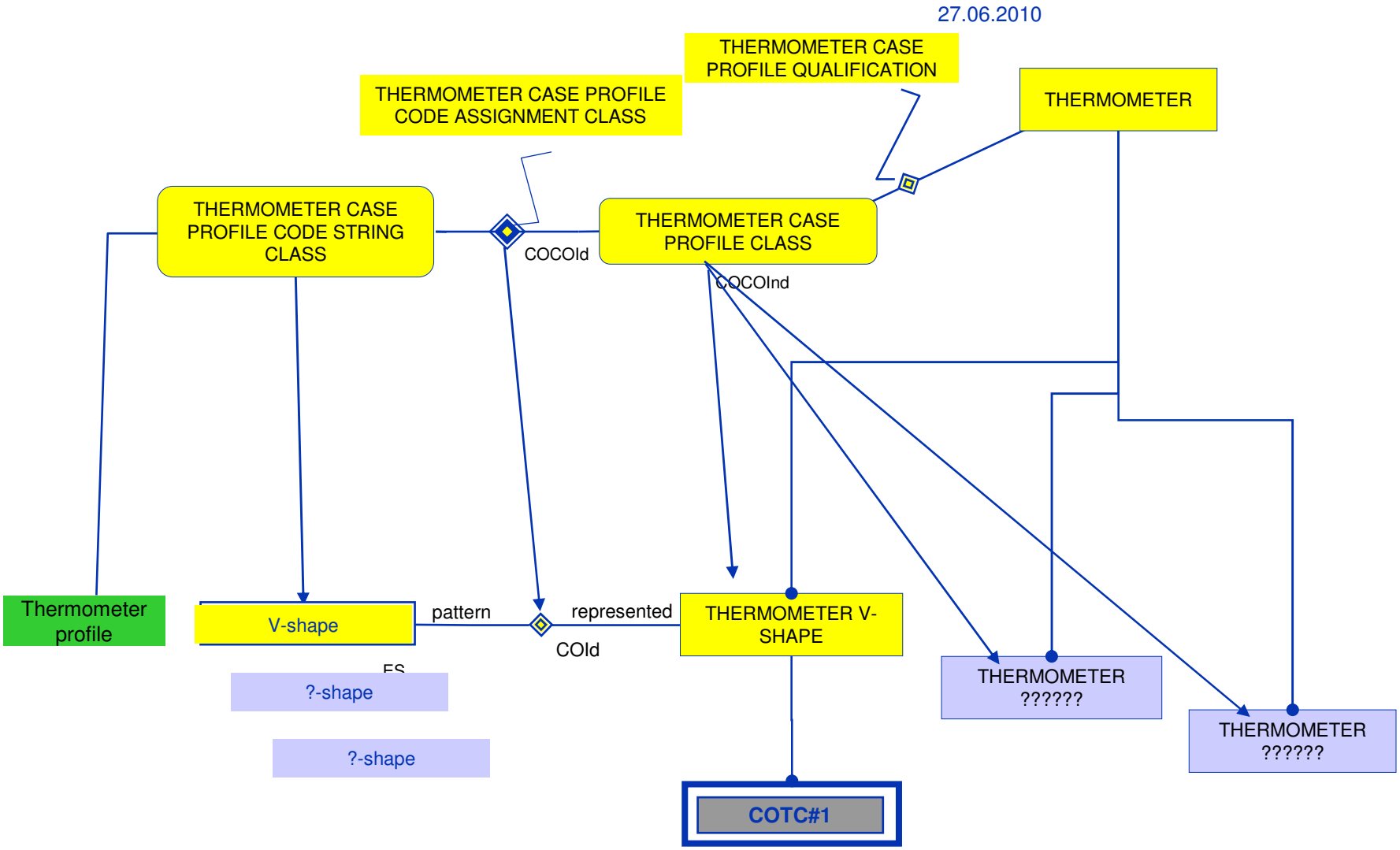
133 “Thermometer form”



http://www.wisnercontrols.com/pdfs/Taylor%20thermometer%20specs%20pdf.pdf

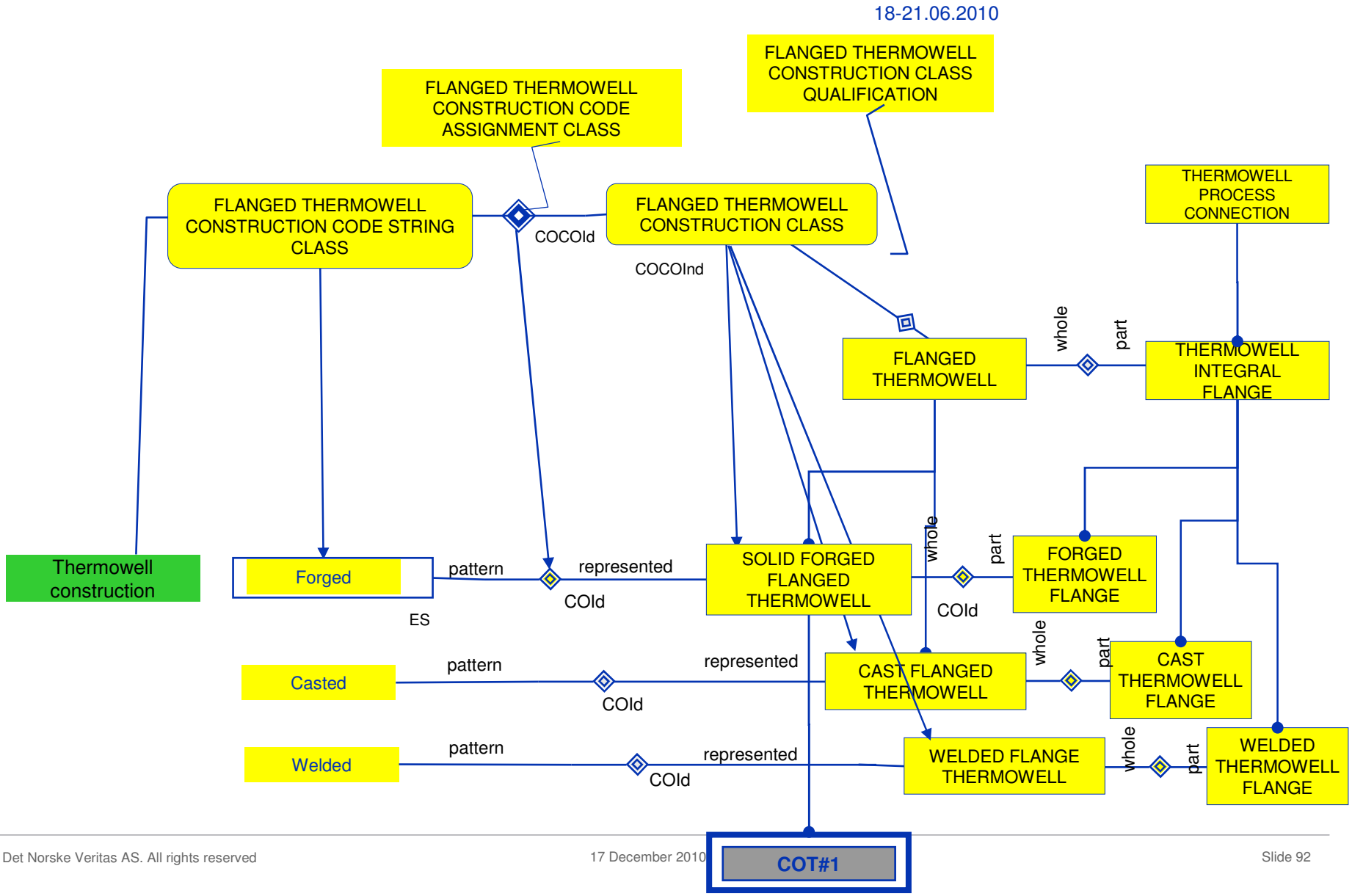
135 “Thermometer profile”

MANAGING RISK



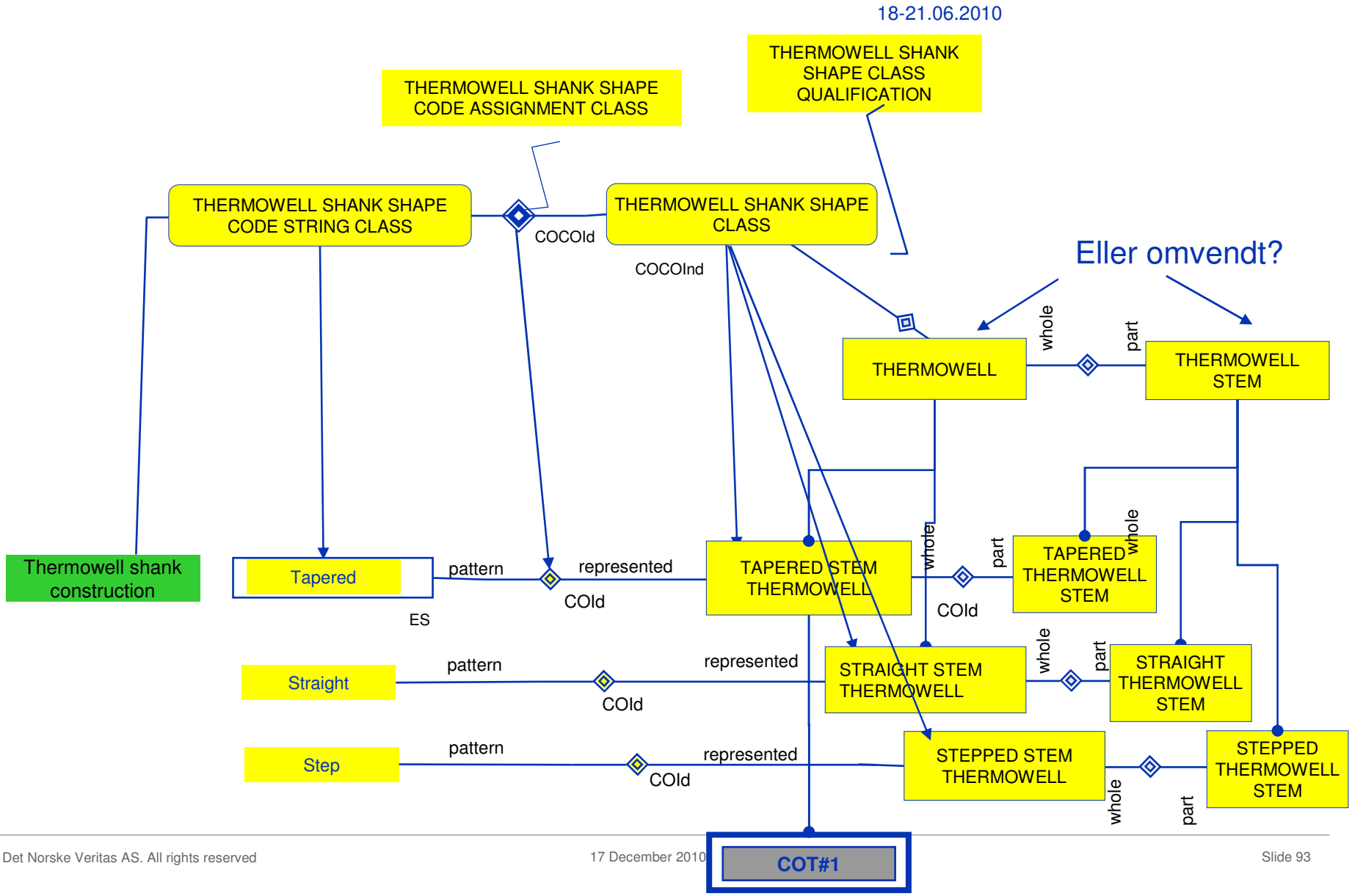
137 “Thermowell construction”

MANAGING RISK



138 “Thermowell shank construction”

MANAGING RISK



NOTES

ATEX Group and Category

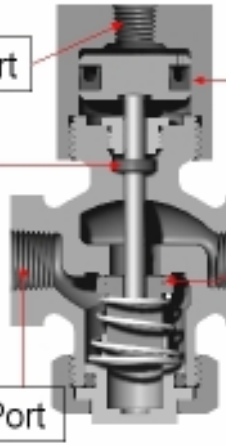
MANAGING RISK

LEVEL OF PROTECTION	CATEGORY GROUP I	CATEGORY GROUP II	PERFORMANCE OF PROTECTION	CONDITIONS OF OPERATION*
Very High	M 1		Two independent means of protection or safe even when two faults occur independently of each other.	Equipment remains energised and functioning when explosive atmosphere present
Very High		1	Two independent means of protection or safe even when two faults occur independently of each other.	Equipment remains energised and functioning in Zones 0,1,2 (G) and/or 20, 21, 22 (D)
High	M 2		Suitable for normal operation and severe operating conditions. If applicable also suitable for frequently occurring disturbances or for faults which are normally taken into account.	Equipment de-energised when explosive atmosphere is recognised
High		2	Suitable for normal operation and frequently occurring disturbances or equipment where faults are normally taken into account.	Equipment remains energised and functioning in Zones 1, 2 (G) and/or 21, 22 (D)
Normal		3	Suitable for normal operation.	Equipment remains energised and functioning in Zone 2 (G) and/or 22 (D)

Source: atexguidelines_may2007.pdf

Poppet Valves

2-Way Normally Closed



Pilot Port

Pilot Piston U-cup

PolyPak™ stem seal assures pilot chamber is isolated from the main body media.

Outlet Port

Poppet features a captive, "crimped-in" seal design for high resistance to extrusion under pressure.

Pressure assisted sealing assures bubble tight operation.

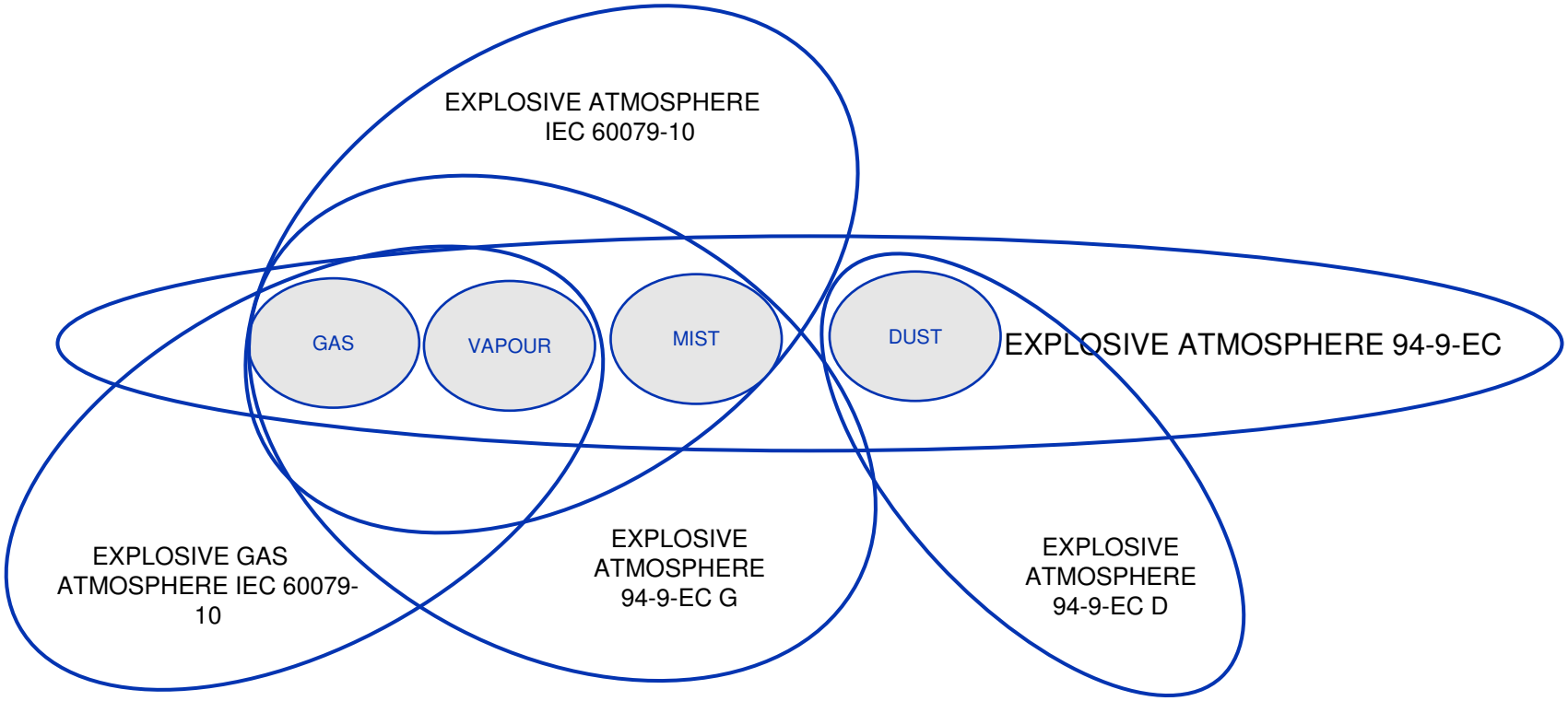
Inlet Port

This valve is representative of a typical direct pilot operated model. Air or liquid pressure is applied to the pilot port which causes the pilot piston to push the stem downward. The movement of the stem pushes the poppet off of its seat opening the flow path through the valve.

1

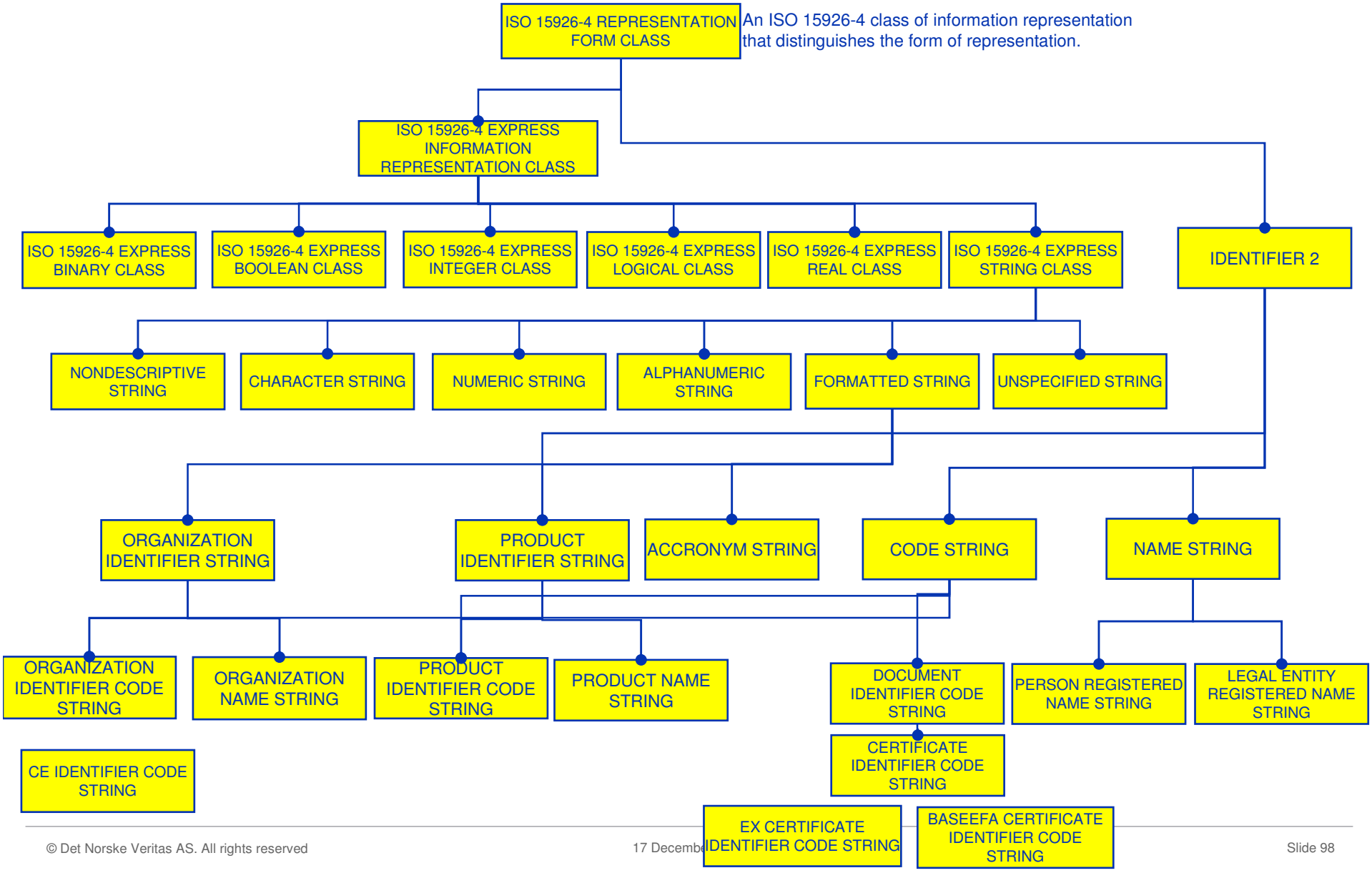
PolyPak™ is a registered trademark of the Parker Hannifin Corporation's Seal Group.

Explosive Atmospheres



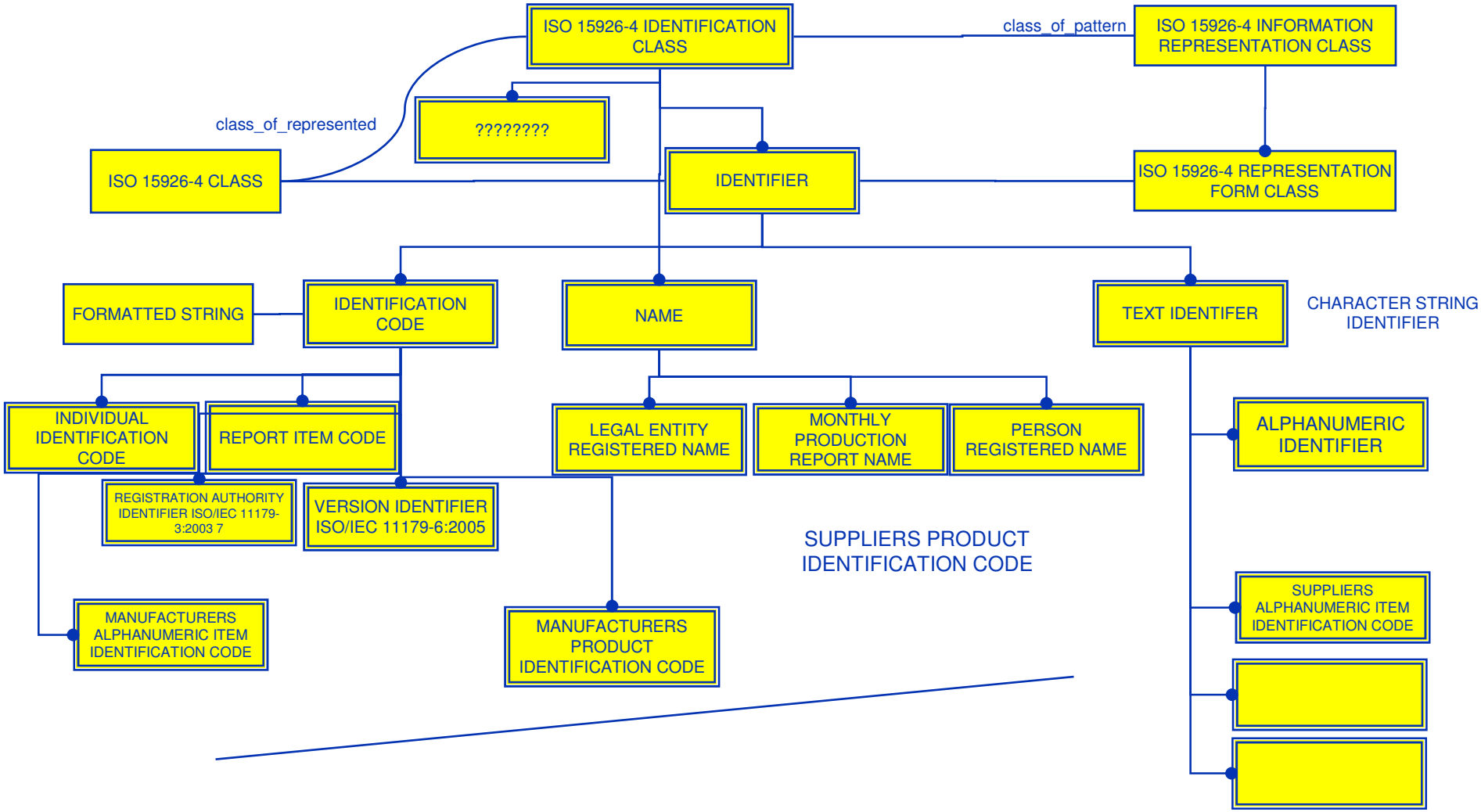
ISO 15926-4 REPRESENTATION FORM CLASS

MANAGING RISK



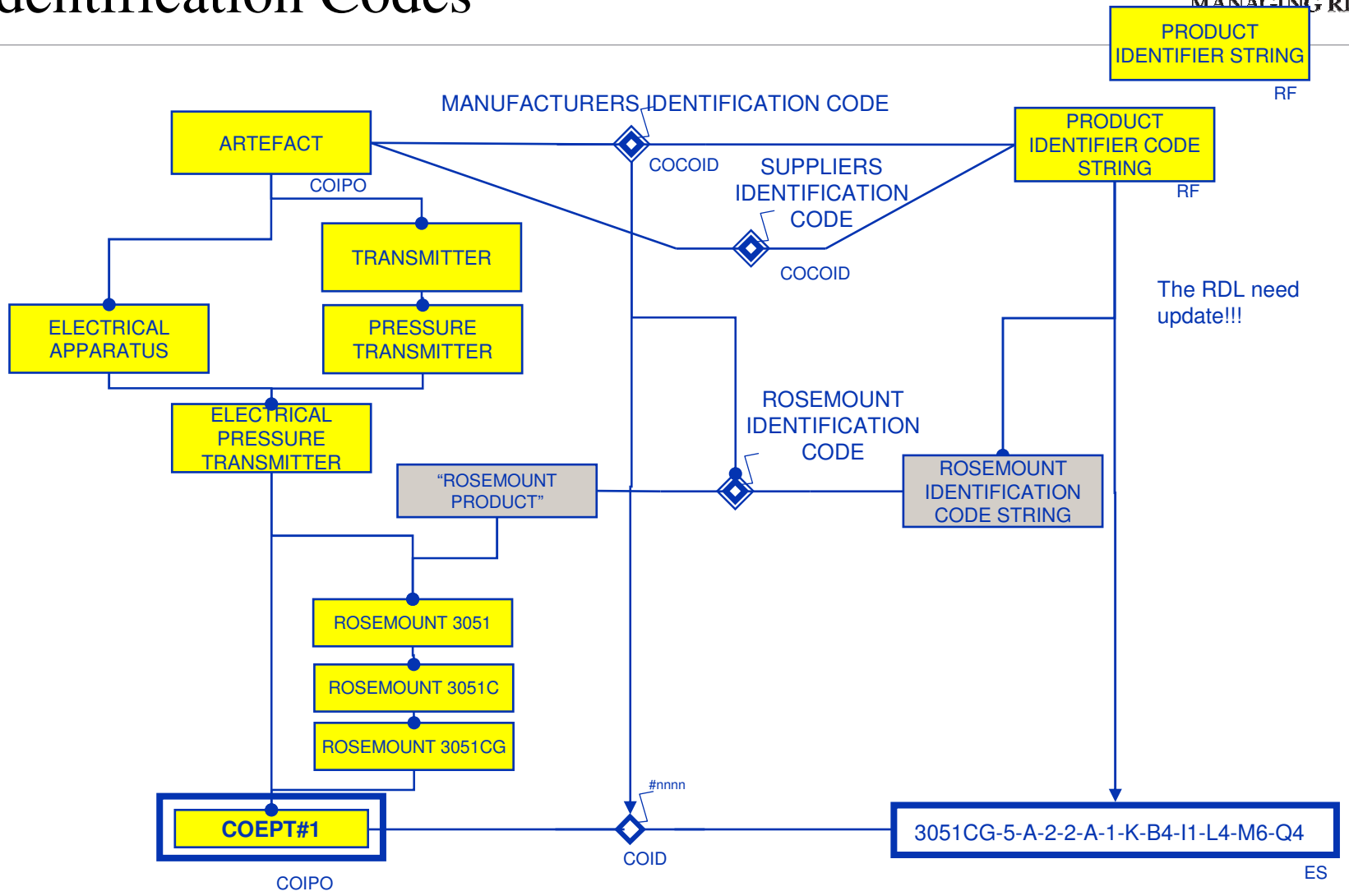
ISO 15926-4 CLASS OF IDENTIFICATION

MANAGING RISK



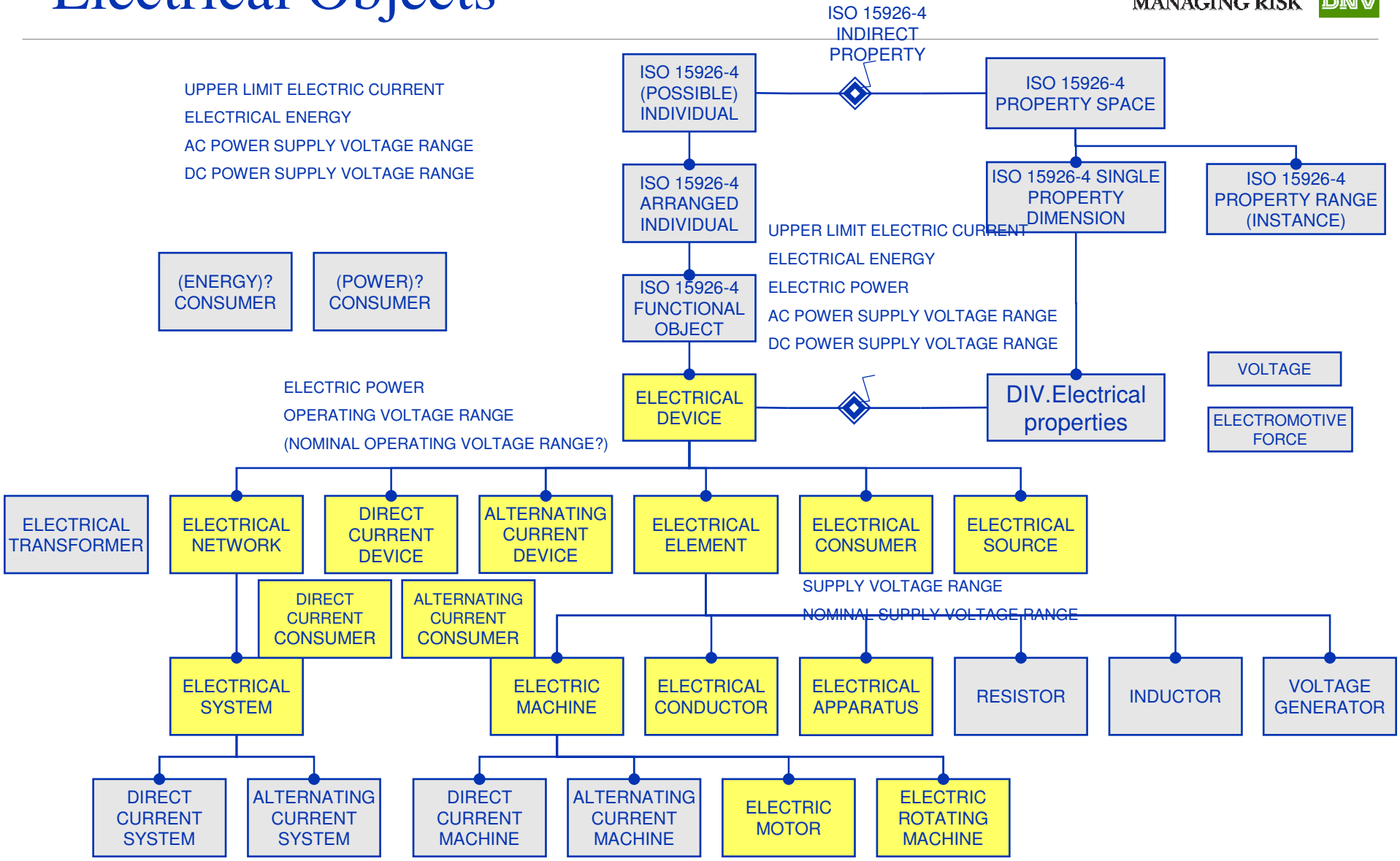
ISO 15926-4 CLASS OF REPRESENTATION OF THING

Identification Codes

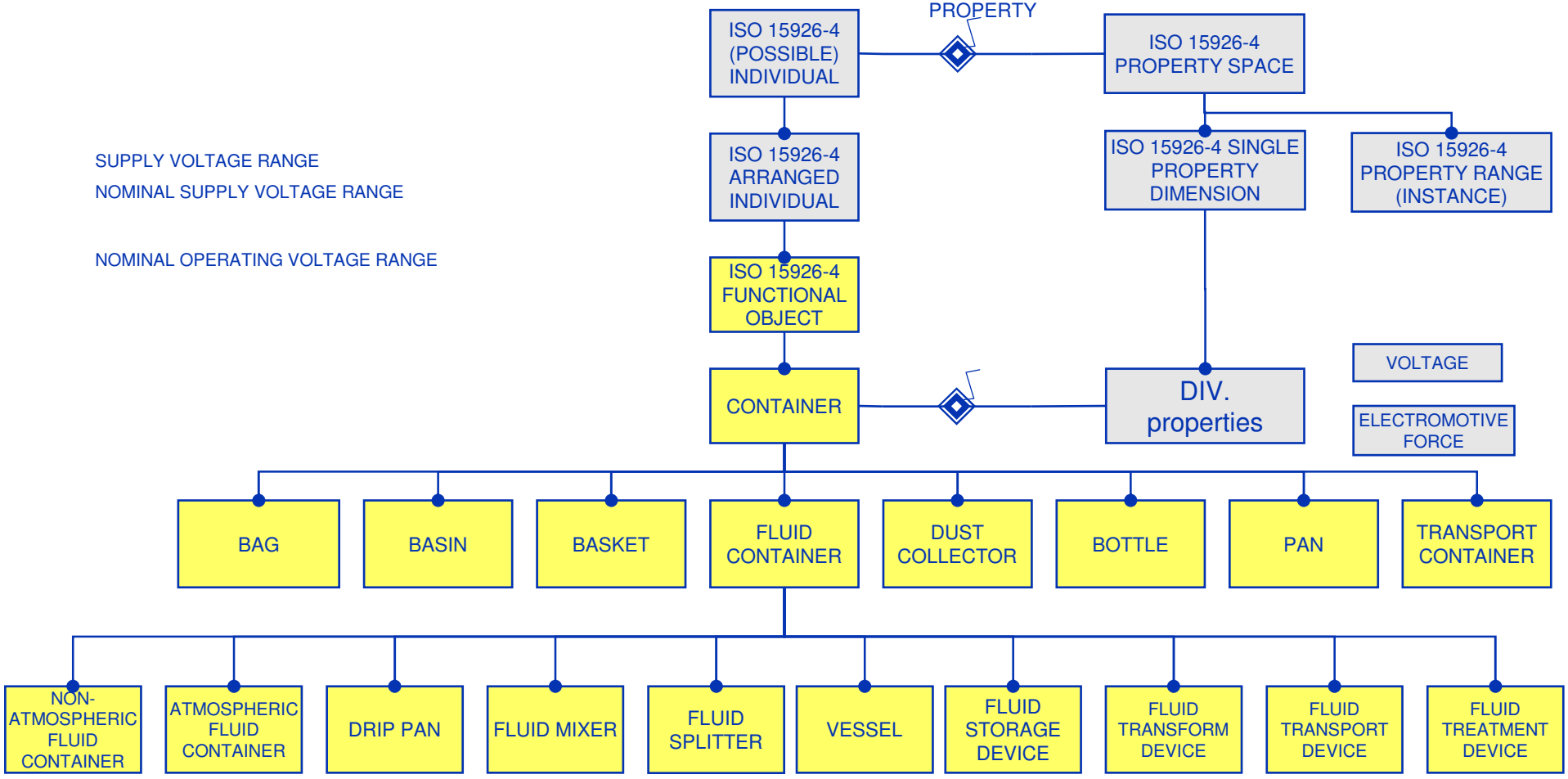


This need further consideration. All we actually know is that the string is a MANUFACTURERS IDENTIFICATION CODE, we do not know the basis for the format, is it as defined by Emerson Process Management, or is it a SHAREcat format. The answer to these questions will give rise to more precise mapping. (Use of subclasses)

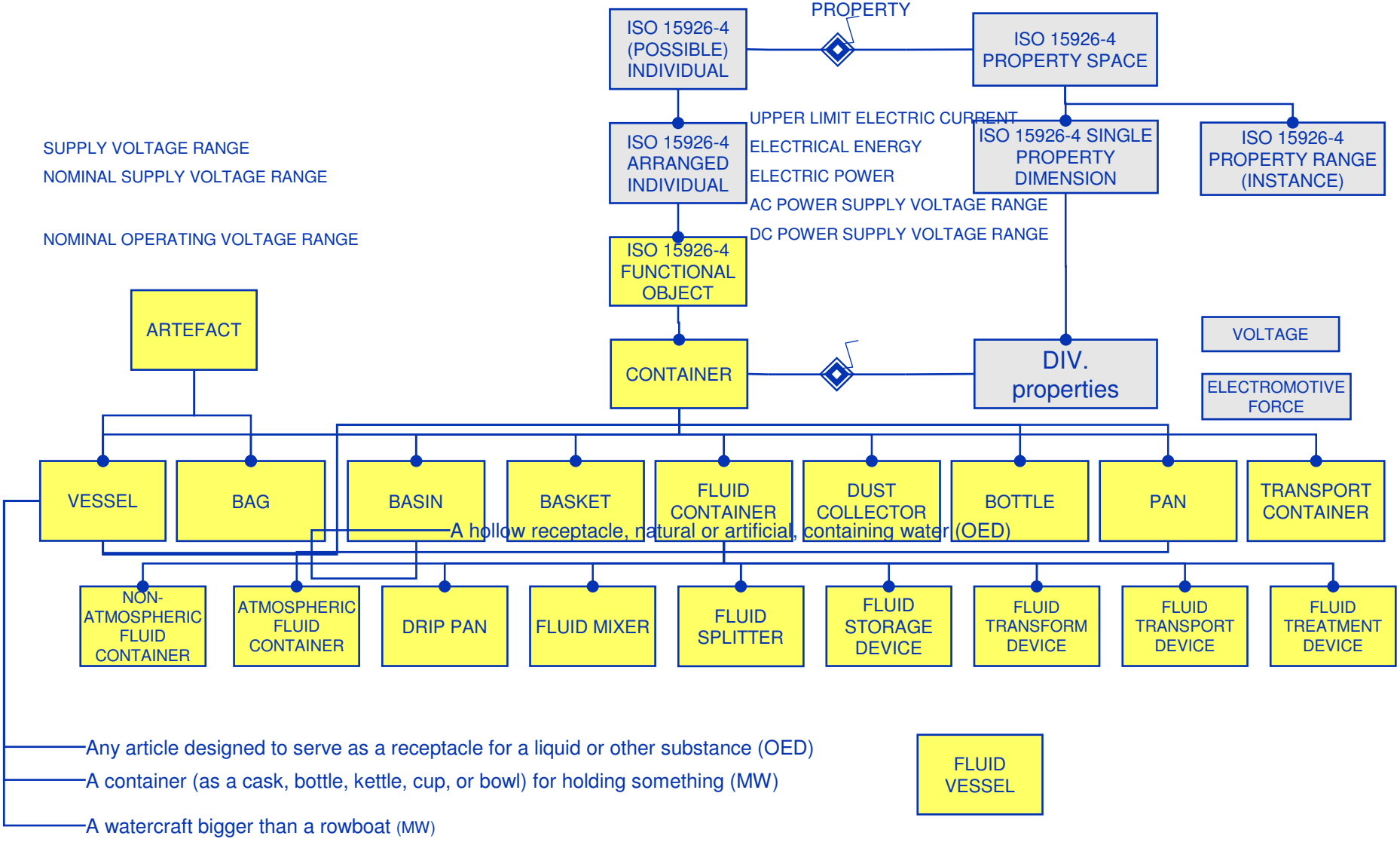
Electrical Objects



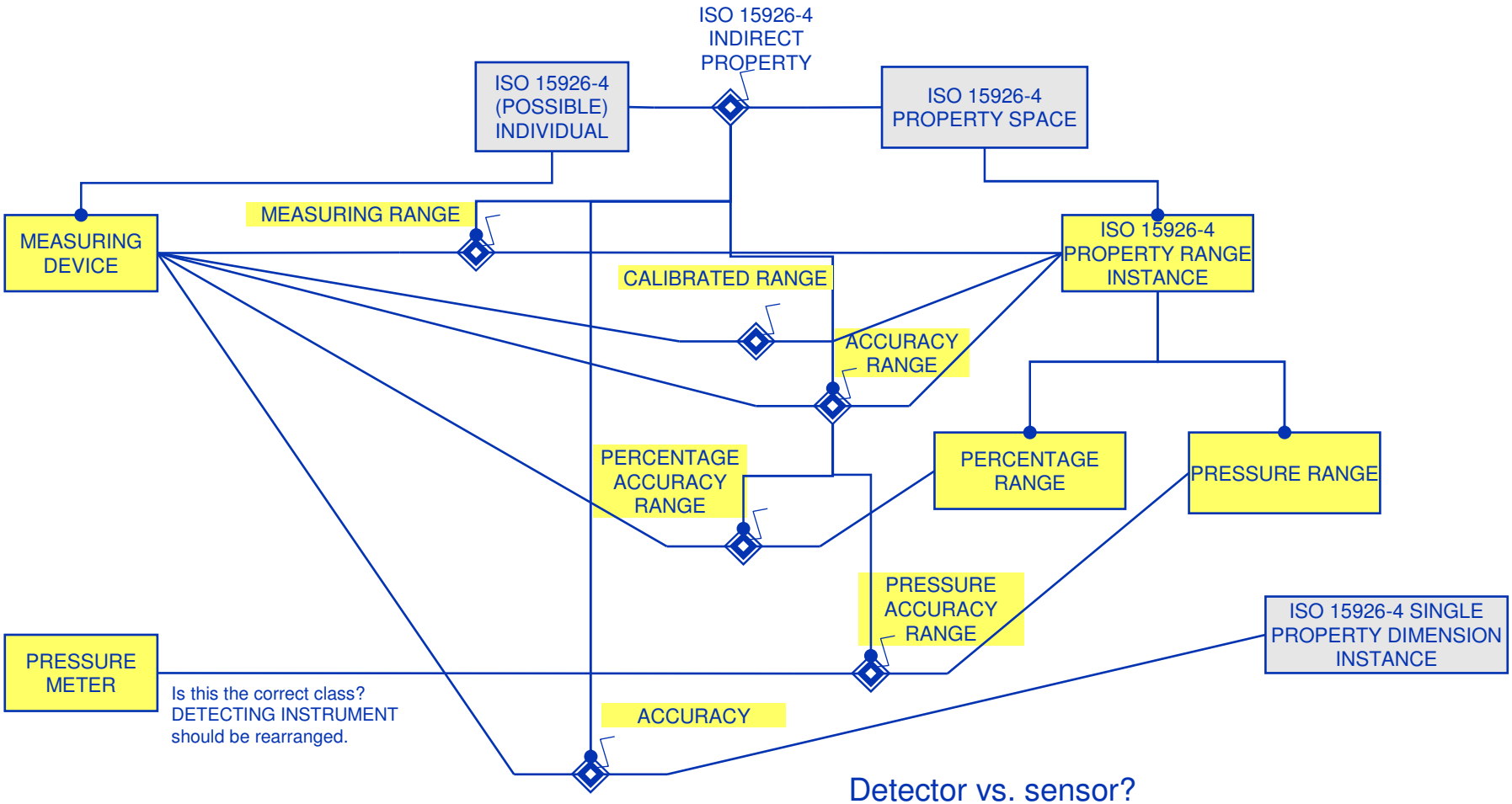
Pressurised Objects, as is



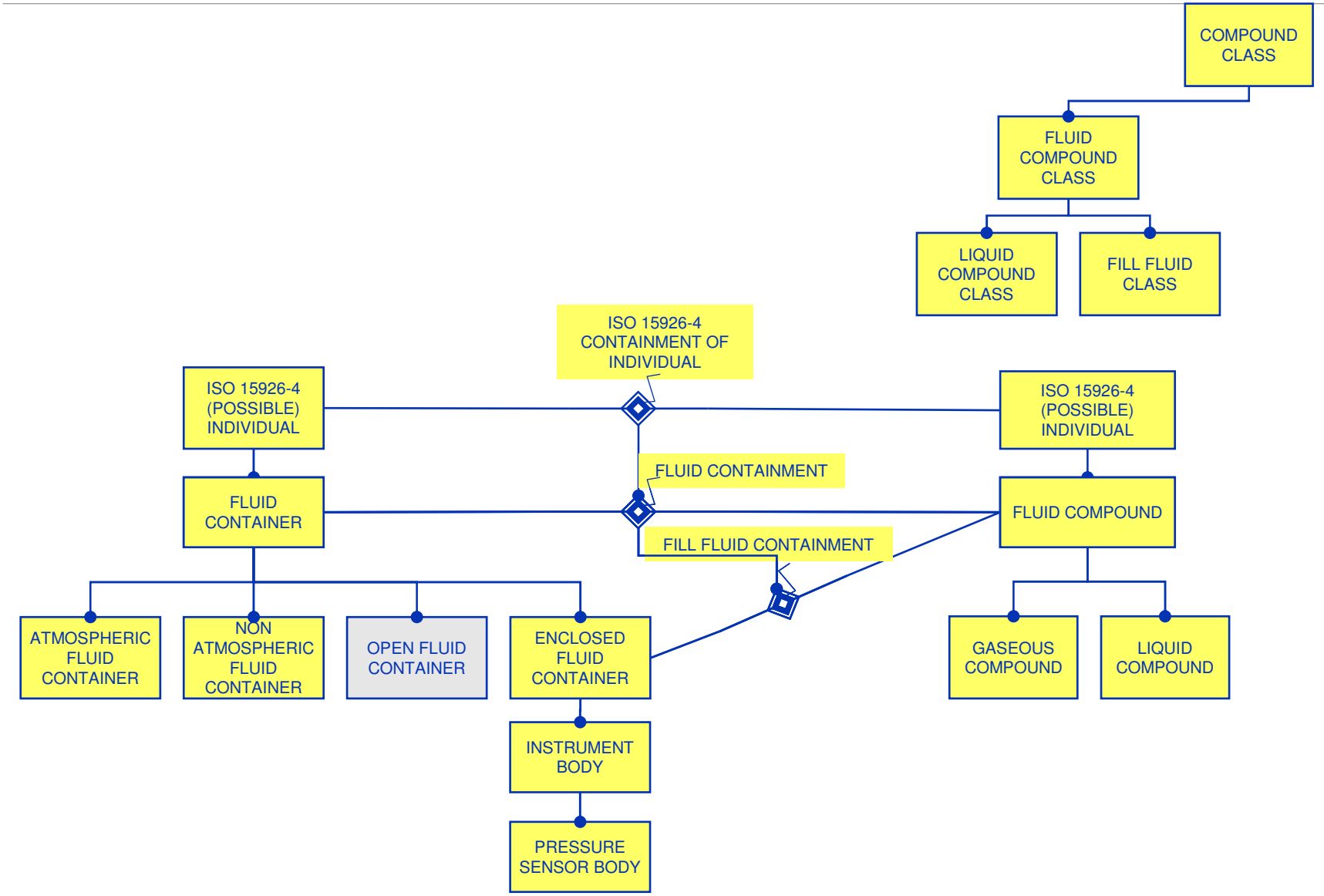
Pressurised Objects, to be

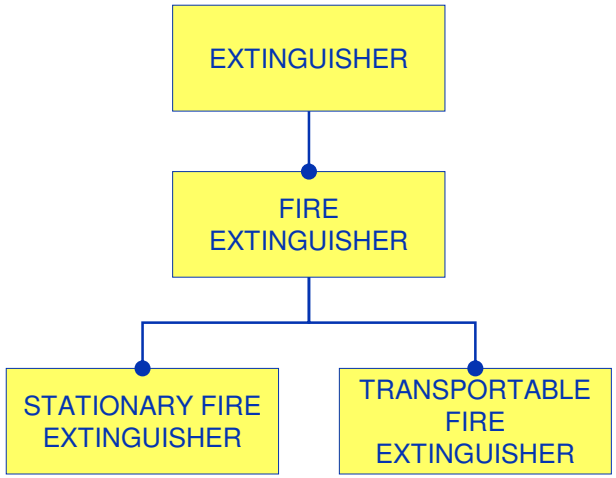


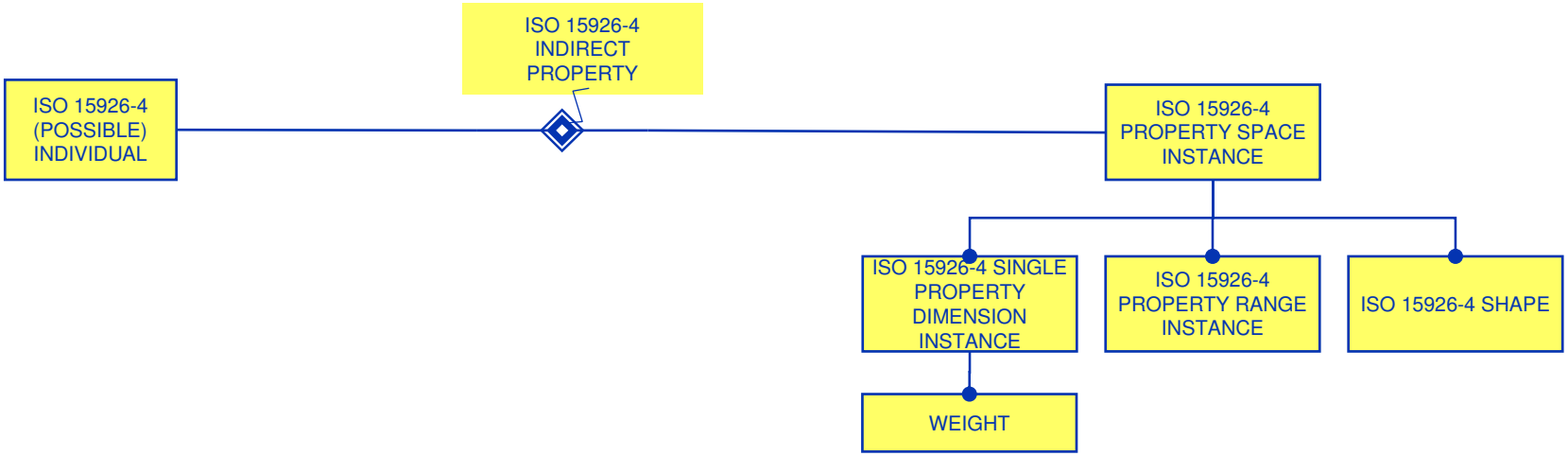
Measuring, calibrated, accuracy range and accuracy

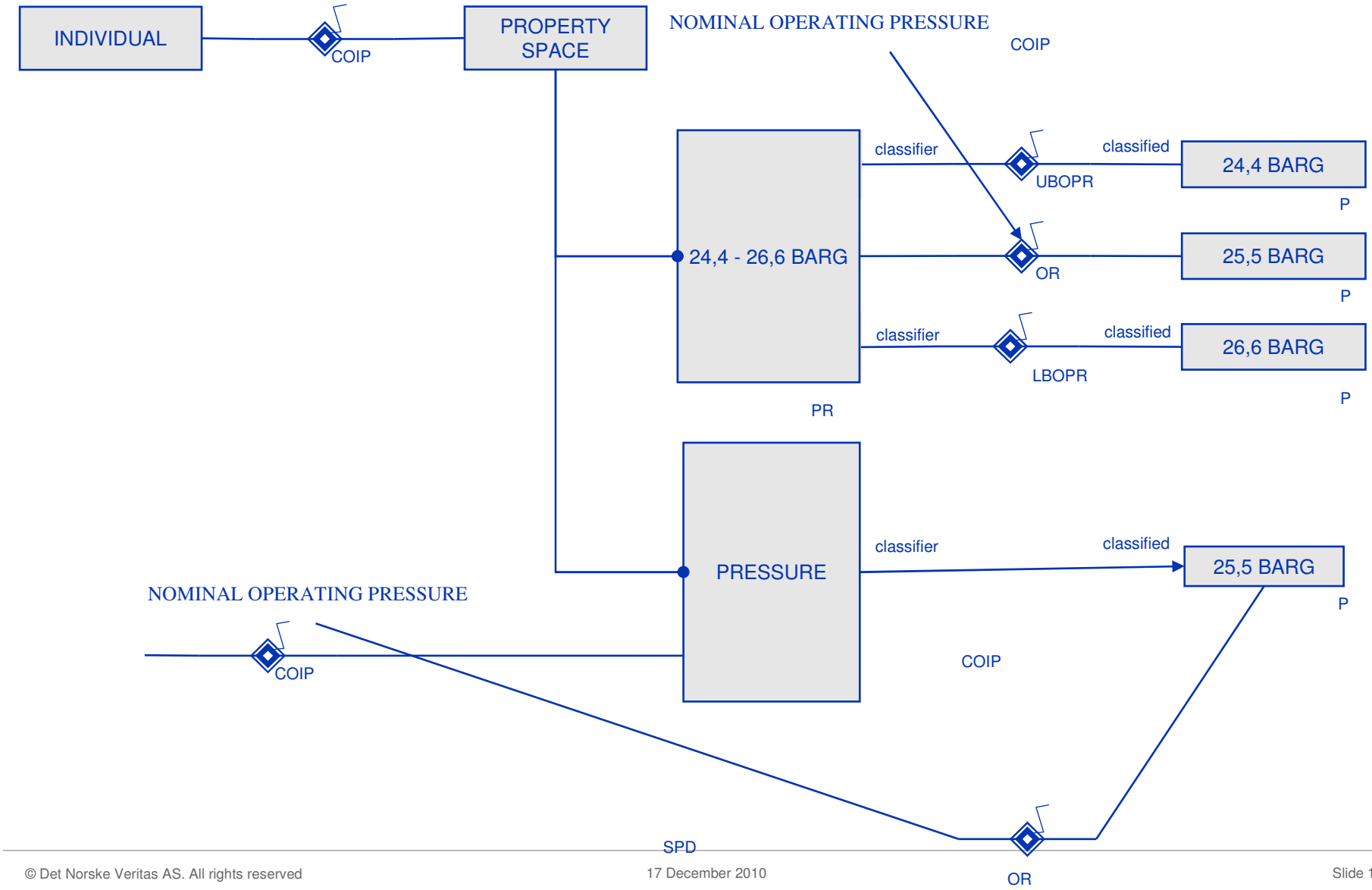


Containment

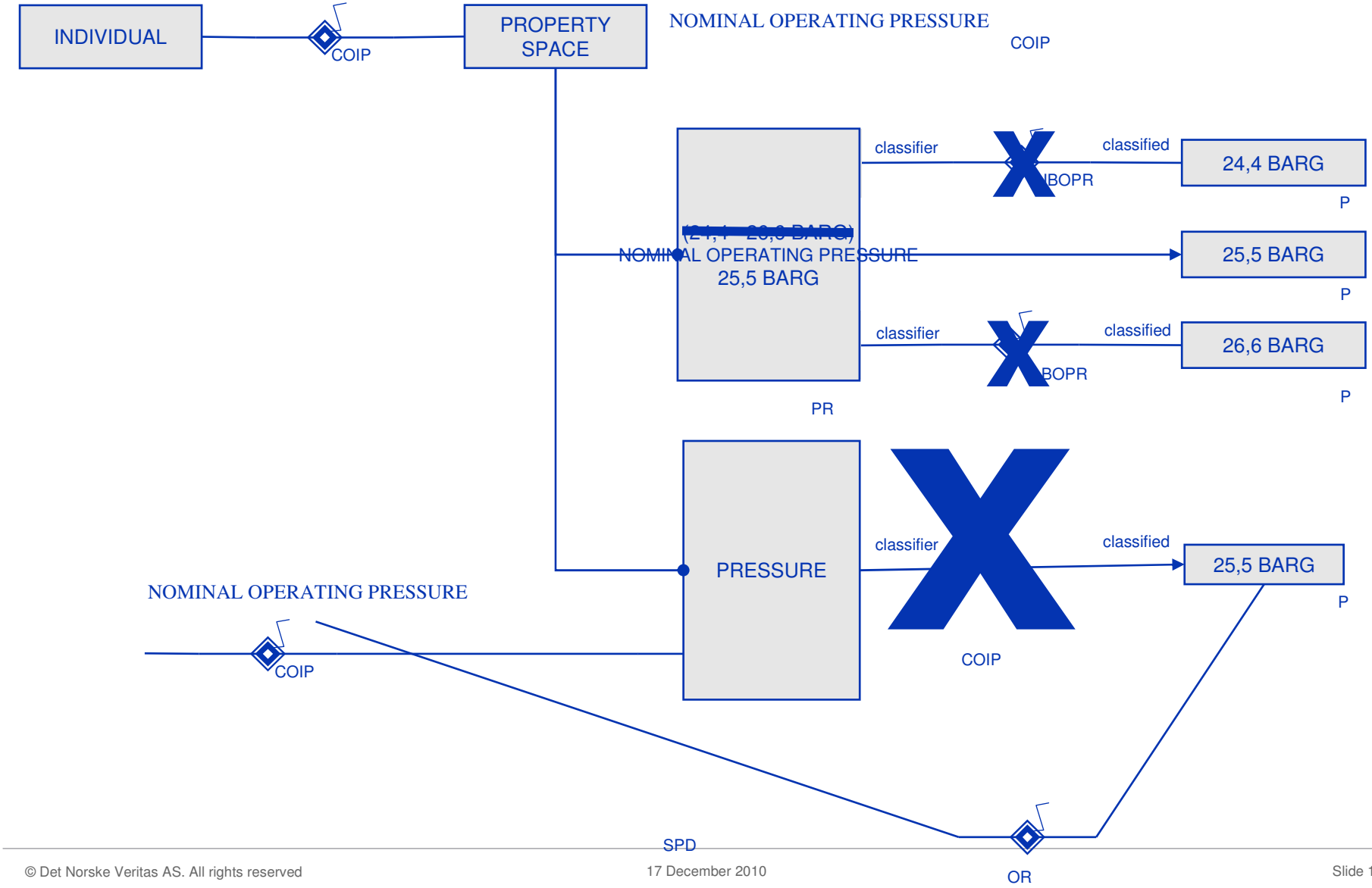




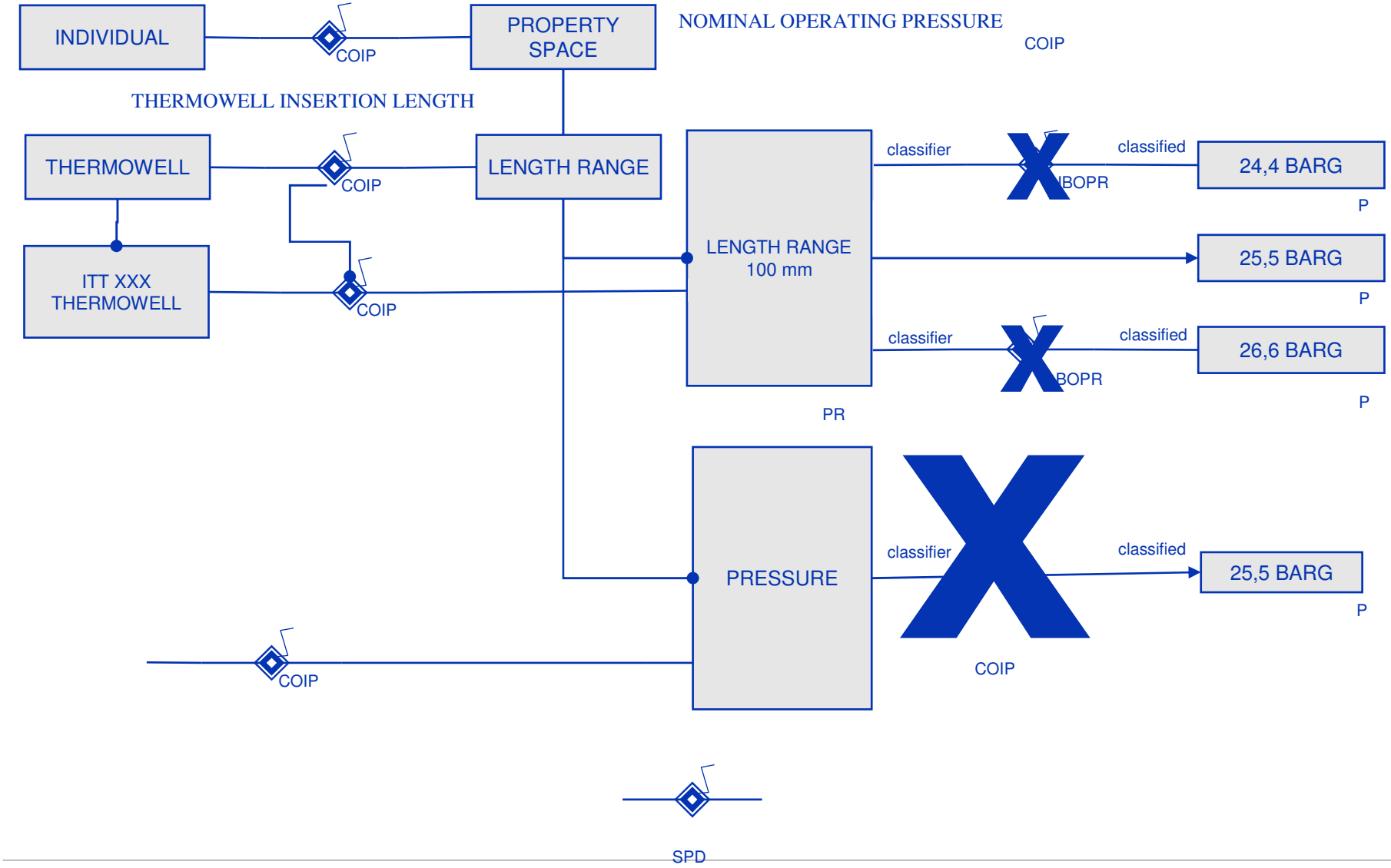




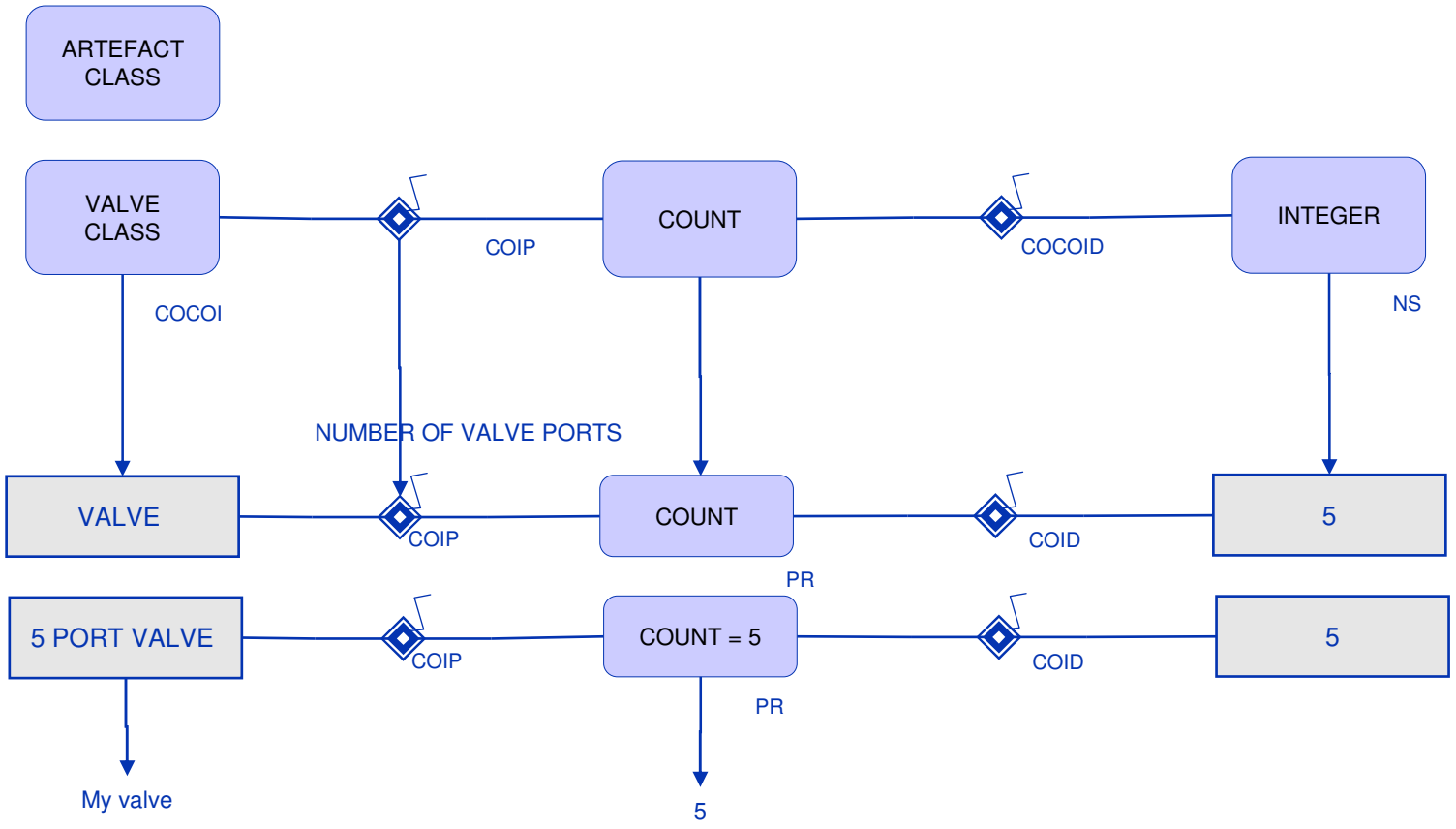
Jan's migration of point values from Snapshot E



Jan's migration of point values from Snapshot E

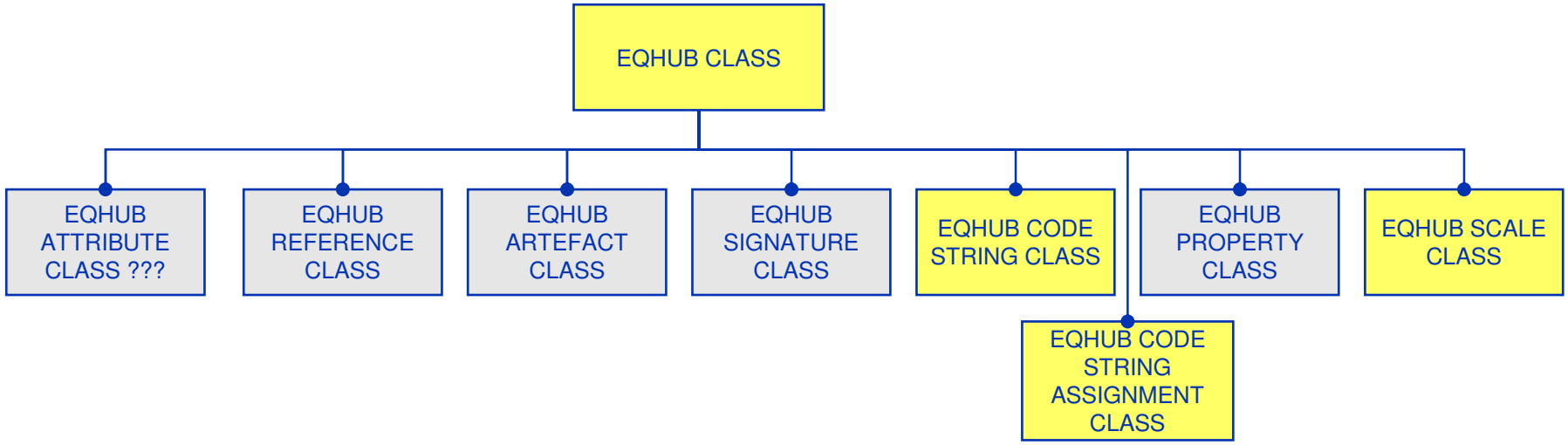


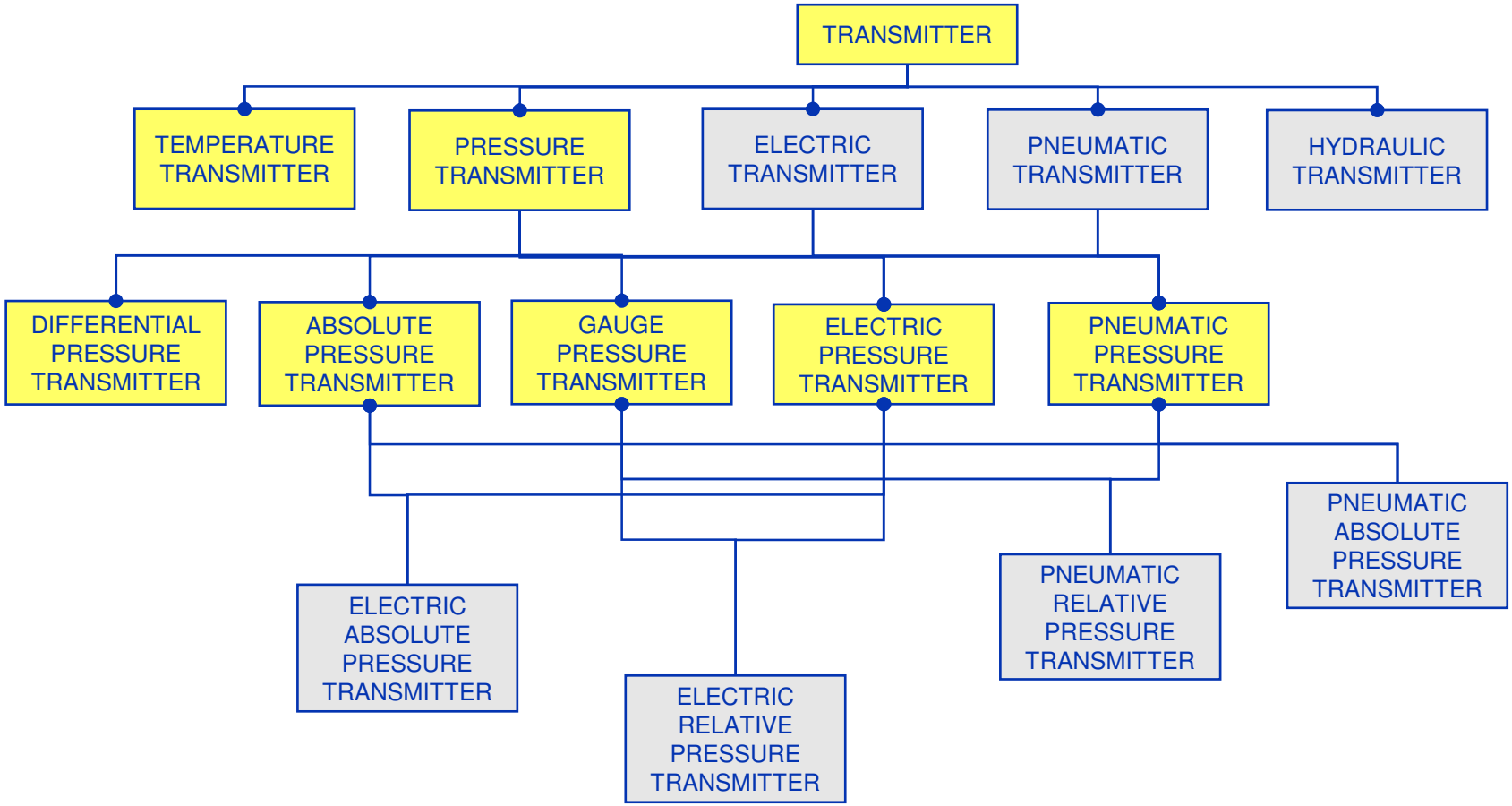
Count

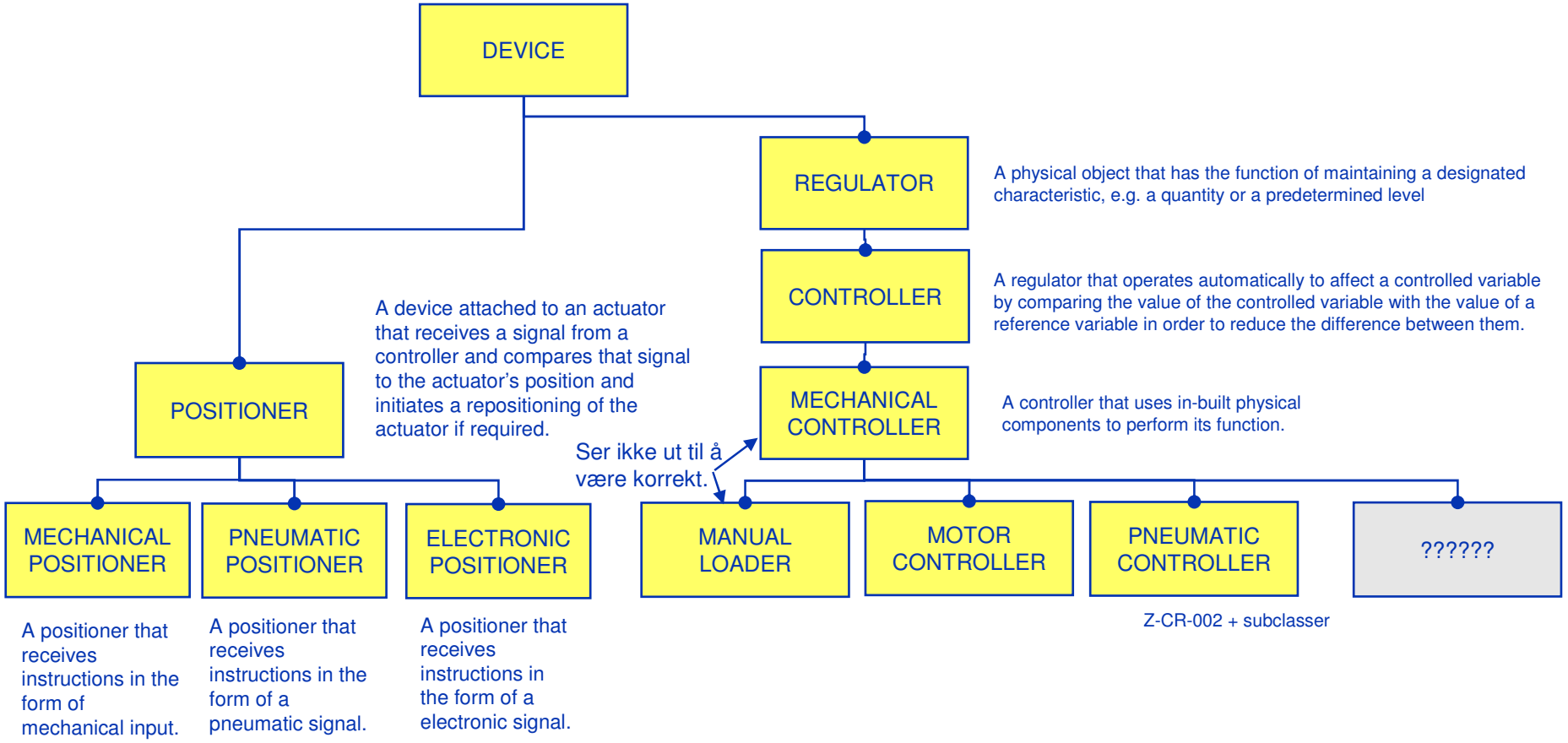


Inconsistency Part 2/Part 3 on integer and real

Inconsistency between Jan's migration to RDS and Part 7, e.g. Figure 2 – Relation: Permitted Ambient Temperature







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