Week 2 – Instrument SIG workshop

- Terminology:

  - Generic Template – a template intended for multiple uses, as opposed to specialized templates

  - Base, Core templates defined in Part 7. Depends on which reference data items are used to define template.

EqHub

- Owned by EPIM, which is a subsidiary of OLF

- Leverage SHAREcat technology

- Instrumentation scope to be done first

- No database system yet

  - PCA RDL is not intended for industrial-level use

- Outside companies are welcome to join review

- SHAREcat uses Object-Attribute-Value representation

- Fit into several patterns

  - Descriptions

  - Properties (Real + UoM)

  - Assembiles

  - Etc.

- IEC standards, etc.

  - Not Part 4 core classes

  - Necessary for most data exchange

- **Need to make relationship between library triangle and four-level lifecycle clear**

- "Installed at" relationship between FPO level and MPO level

- If you change the membership criteria you define a new class

- Rosemount 3051 Gauge Pressure Transmitter

    o Template IDs defined

    o Details remain to be done

    o Need to harmonize with Emerson

- Data sheets typically have cells that combine several pieces of data into a single string, e.g. "-40 – 200 C", which is undesirable. Application systems are less likely to do this.

Emerson Modeling

- Transmitter class diagram

    o Pick the "what" to specialize on (functionally what is being measured)

    o Next specialize on what technology is being used

    o Use OtherRelationship, ClassofRelationshopWithSignature, and ClassOfClassOfRelationship for relationships that are not predefined in Part 2

        ▪ Can't specialize OtherRelationship. Classify it with ClassofRelationshopWithSignature

        ▪ Make "can act as" for relationship between DP TRANSMITTER and LEVEL TRANSMITTER, and between DP TRANSMITTER and FLOW TRANSMITTER

    o Minimum criteria for a new class

        ▪ Name

        ▪ Definition

        ▪ Parent (not Artifact)

        ▪ Entity type

    o Emerson should submit classes to PCA via PCA ticket system

- Compare iRINGTools and PCA spreadsheet formats and evaluate whether PCA spreadsheet can replace iRINGTools spreadsheet

    o Certificates problem – multiple certifications will be requested

        ▪ Multiple instances of one template

        ▪ One template with a list role

- Part 7 section 8.2 addresses representation of templates as class of multidimensional object in RDL

Q on string ID slide: does RDL item CoCo relationship have any members in the RDL?

Tuesday

Emerson (continued)

- Approvals and Certificates

    o Approval is for class; certificates are for individuals

    o Part 2 Approval is a relationship between individuals

        ▪ Use dm:approval for certificates

    o Use OtherRelationship for Approval of a class

        ▪ Relationship between a class and an individual

        ▪ Classify the OR by ClassOfRelationshipWithSignature, relationship type "Approval"

    o Need to consider this further and return to it tomorrow

- Inlet/outlet pressure

    o For design conditions use Upper and Lower Limit, not min and max

        ▪ Min and max are the smallest and largest member of a set

    o Instrument contains (containment relationship) a fluid stream

    o Granularity depends on application.

- Modeling Approach

    o Scope for EqHub is purchase of pieces of equipment. Whole system design also needs to be looked at.

    o A control loop is an object, not an attribute. There is an assembly relationship to the instruments that make up the loop.

    o Fieldbus changes the physical implementation of the loop, but the concept of a loop remains the same.

- All orthogonal aspects should be specialized from parent

- TAG NAME vs. TAG IDENTIFICATION

    o These are synonyms

    o Comment for TAG NAME should be used for TAG IDENTIFICATION

    o Can deprecate TAG NAME

    o Entity type should be changed to ClassOfClassOfIdentification

- Add another template similar to ClassifiedIdentification but with an additional role for a format string

    o Can be used for validation

    o The format of this string is up to the user, e.g. could use regular expressions

- MaterialOfConstruction

    o Classification for an individual

    o Specialization for a class

    o Example: steel elbow

        ▪ Subclass of PIPE ELBOW B16.9

        ▪ Subclass of ASTM A234 STEEL OBJECT

    o ClassOfCompound if material only

    o ClassOfInanimatePhysicalObject if includes heat treating, forging, etc.

Wednesday

- SupplyProperty

    o This is IndirectProperty

        ▪ Required supply voltage is an indirect property

    o Should use a range to specify voltage range instead of nominal voltage

- RangeProperty

- Proposed Classifications and Naming

- - Name Category A-D to avoid confusion with Level 0-2 for Individual-Class-ClassOfClass

  - Cat A has only tag and type

  - Tag type is at highest level, e.g. VALVE, not GATE VALVE

  - Relationships:

    - 1 -> 2 "Specified By" (or something like that) This is an OtherRelationship

    - 2 -> 3 Specialization

    - 3 -> 4 Classification

    - 1 -> 4 Installed? Performed? Materialized? Temporal whole-part

- Properties of Classes have ranges

- Need to come back to question of whether a calibrated transmitter is really a class because multiple transmitters can be calibrated alike

- Direct vs. Indirect properties

  - A property of a class are always an indirect property

  - A property of an individual is direct if it is something that can be measured, indirect if it

- Boolean properties

  - In some cases, Yes means specialize the class with an aspect

  - In some cases the Boolean tells whether a part is needed. This can be handled by creating an instance of an assembly relationship only if the value is Yes. The cardinality would be 0..1

- The Methodology Guide needs a brief explanation of punning, specifically for Part 2 in Part 4.

RDS Issues
- See separate document

Thursday

Rosatom
- Making iRING adapters for Intergraph Smart Plant products

- Catalog in 15926

  - Some similarities to EqHub

- o   Portal for suppliers

- Modeling

  - o   Need documentation (guidelines and examples) for modeling, i.e. Methodology document.

  - o   Want to collaborate with modeling community

    - ▪   Recommendation is to participate in SIGS

- TechInvestLab is center of 15926 activity in Russia

  - o   Nuclear (Rosatom)

  - o   Ship building industry

  - o   No oil & gas involvement currently

- Research activities

  - o   Process modeling

    - ▪   Modeling of life cycle activities (business processes)

    - ▪   Working with authors of ISO 24744

    - ▪   Connecting process model with information model

  - o   15926

    - ▪   DSL development

    - ▪   Alternate software oriented implementation to first-order logic

    - ▪   About 40-50 on-line participants in Russia

    - ▪   About 20 industrial participants

  - o   Category Theory

    - ▪   Based on an idea from Matthew West

EqHub
- Uses same methodology as IDS project, different scope

RDL comment process
- http://rdssupport.posccaesar.org/

- https://www.posccaesar.org/wiki/RdsMaintenanceProcedure

- Must have PCA account to submit or view

- MS Word form for RDL comments

  - Need to add this form to the RDS Support page

- TAB

  - Members are the chairs of the SIGs

  - Facilitate inter-SIG communication

- SIGs

  - Geometry – Active, Manoj

  - Instrument – Active, TBD

  - MMT – Active, Darius

    - Basic RDL (High level core classes) – Need to form and make active. Can be a part of MMT SIG.

  - Equipment(s) – AEX

  - Piping

  - Valves

  - Electrical

  - Risk Management?

Bentley

- For each object in the P&ID scope, mapped to RDL class

- Define required relationships based on connectivity or other type or relationship

- Scoping of concepts (objects and relationships) developed separately from 15926 templates

- Relationship templates

  - Define roles based on relationship being implemented

- Class editor

  - Used to map P&ID properties to template

  - Example:

- Pick P&ID Pump Rated Capacity

- Pick IndirectPropertyScaleReal template

- hasPossessor mapped to ECInstance

- hasPropertyType mapped to ECProperty

- hasScale mapped to Units

- valValue implicitly mapped to value

- Specialization

  - Example shown of specializing the possessor/object in focus

- Separate mappings of object types and property type

- See Action 11 for more on these relationships

Compliance – Levels of Precision

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