W3C LBD Community Group
Minutes - Call 12/10/2022

Attendees:

- Mathias Bonduel (KU Leuven and Neanex Technologies)
- Alex Donkers (Eindhoven University of Technology)
- Karl Hammar (Microsoft)
- Sebastian Seiß (Bauhaus - Universität Weimar)
- Edlira Vakaj (Birmingham City University)
- Irfan Custovic
- Philipp Hagedorn

Presentation slides

- Slides in PDF

Date and time

- 12/10/2022, Wednesday, 14:00-15:30@UTC/ 16:00-17:30@CEST/ 07:00-08:30@PST

Moderators

1. Karl Hammar

Agenda

1. Introduction of new members
2. Presentation: Sebastian Seiß “An ontology for construction quality assurance”
3. Questions
4. Further topics

Minutes

1. **Introduction of new members**
    a. No new members at the call.
2. **Presentation: Sebastian Seiß “An ontology for construction quality assurance”**
    a. PhD researcher at Bauhaus Universität Weimar. Also works for I2, estimation software (mainly BoQ)
        i. Started creating an ontology > why does it make sense?
        ii. Construction execution <> quality assurance
        iii. Link al kinds of information, from design, but also do QA
    b. Problem definition
        i. Costs due to bad quality increases (construction becomes more complex)

    ii. Example case: 22 defects over range of 100 buildings + minimum 2 verifications are missing
    iii. Quality assurance > definition according ISO 9000
        1. All measurements to assure quality
            a. Plan inspections
            b. Execute inspections
            c. Evaluate inspections
        2. NOT
            a. Quality control: how much effort to reach certain quality
            b. Quality planning: defines which qualities we want to reach
c. Research gap
    i. Quality inspections in more detail, incl planning
        1. What, how, how often, where, etc. a certain planned inspection is about
    ii. Cost and time for inspections > should become more clear to the construction project
    iii. Automate inspection planning
    iv. Focus on work preparation and execution phase (following design, before operations)
d. Pro's for ontology for construction quality assurance (OCQA)
e. Levels of inspection planning
    i. Manual > write text
    ii. Catalog-based > predefined checklist (currently as we now create semi-automatically a BoQ)
    iii. Rule-based >
        1. Assignment of inspection catalogs (similar to estimation software)
        2. Full > automated => derive inspections completely by rules instead of filling a checklist. Goal of the research
f. OCQA - ontology
    i. Information to plan inspections
        1. Inputs from design
        2. Schedule
        3. Standards and guidelines
        4. Known defects
    ii. Information to describe inspections
        1. How frequent
        2. How many inspections
        3. With which tools
        4. When > need to fix the construction planning
        5. risk value > input for "why" an inspection should be done
        6. …
    iii. Challenge to reuse ontologies <> redefining concepts in different ontologies

iv. In other domains inspections are planned in more detail (e.g. automotive industry)

g. Linking of OCQA > important since the ontology starts from existing ontologies
   i. 3 methods to deal with linking ontologies
      1. Complete import > need to follow all definitions and restrictions => currently follow this in the approach
      2. Partial import > refer to specific classes and recreate a class, linked to each other
      3. Alignment > separate ontology
   ii. Full import of existing DiCon ontology (has alignments to BOT and other DiCon alignments). Added one for regulation and contract as well
      1. Ideally also module for BoQ, but did not find anything yet to reuse
      2. Trade specific modules: specialization of inspection (types of inspections) > idea is that they contain rules that are stored in a triple store. Link the rules to specific trade
   iii. How does it look? > focus on planning, procedure and inspection equipment (less focus on inspection output or records)
      1. Example data
      2. SHACL rules > linked to source of the rules (regulation or contract)

3. Questions

A. [Sebastian] question the audience: Methods to deal with linking ontologies
   a. [Mathias] you can reference directly, e.g. rdfs:domain for your property “isInspectedBy” can point to bot:Element.
      i. Full import makes your end result less reusable, as the other user needs to reuse the entire imported ontology
   b. [Alex] follows the method of above. Can also reference indirectly in an example
      i. [Mathias] also possible to reference an external concept without using a property that are implicating reasoners (e.g. schema:domainIncludes instead of rdfs:domain)
   c. [Karl] section 6.4 in PhD thesis > methods for ontology reuse. Also method of extracting ontology design patterns

B. [Alex] to deeply modularize or not? All QA companies have other methods? Will they create their own extensions?
   a. Rules can be company specific > expert knowledge based on experience
   b. [Alex] who will manage those ontologies?
      i. Small companies will have issues, but should work for larger ones
   c. [Mathias] view from industry > ontologies are used and managed by companies. In Dutch context they are often called OTL (Object Type Library) containing the bulk amount of definitions, extending a shared core ontology. They cannot create the shared core ontology by themselves as that requires a broad, independent look on the domain.

        i. Both independent organizations and companies can create OTLs, and they can be related to each other.
    C. [Alex] question concerning slide 21 > example. Issue with property descriptions was mentioned
        a. [Sebastian] simplified in the diagram.
        b. [Alex] object property > blank node which then points to value and unit
4. **Further topics**

Next Call

- 16/11/2022, Wednesday, 14:00-15:30@UTC/ 16:00-17:30@CEST/ 07:00-08:30@PST

  Agenda: TBD

  We are interested in getting suggestions from the community about potential agenda items and **Elevator Pitches** for the following calls. Please send your suggestions to the chairs or to internal-lbd@w3.org, whether you have a short presentation to bootstrap the discussion, and an approximate duration you think the discussion will last.

Previous minutes

https://www.w3.org/community/lbd/meeting-minutes/