W3C LBD Community Group
Minutes - Call 18/12/2023

Attendees

- Mathias Bonduel (Neanex Technologies, Belgium)
- Katja Breitenfelder (Fraunhofer IBP/acatech, Germany)
- Janakiram Karlapudi (TU Dresden, Germany)
- Jan-Iwo Jäkel (RWTH Aachen)
- Claudio Mirarchi (Polimi, Italy)
- Irfan Čustović (TU Delft, Netherlands)
- Rahel Kebede (Jönköping University, Sweden)
- Al-Hakam Hamdan (A+S Consult GmbH, Germany)
- Marin Ljuban (Neanex Technologies, Belgium)
- Nicoleta Bocaneala (Birmingham City University, UK)
- Hervé Pruvost (Fraunhofer IIS/EAS, Germany)
- Melina Rohne (RWTH Aachen, Germany)
- Eva Heinlein (RWTH Aachen, Germany
- Diellza Elshani (University of Stuttgart, Germany)
- Asal Alikhani (Germany)
- Philipp Dohmen
- Philipp Hagedorn (RWTH Aachen, Germany)
- Irfan Custovic
- Klaus Linhard (HM München, Germany)
- Martin Jakob (HM München, Germany)
- Musa C.

Please join the W3C LBD CG and subscribe to the internal mailing list:
Linked Building Data Community Group (w3.org)

Presentation slides

- Slides: GitHub link

Date and time

- Monday 18th of December 2023, 15:00-16:30@UTC/ 16:00-17:30@CET/ 07:00-08:30@PST

Moderators

1. Mathias Bonduel

Agenda

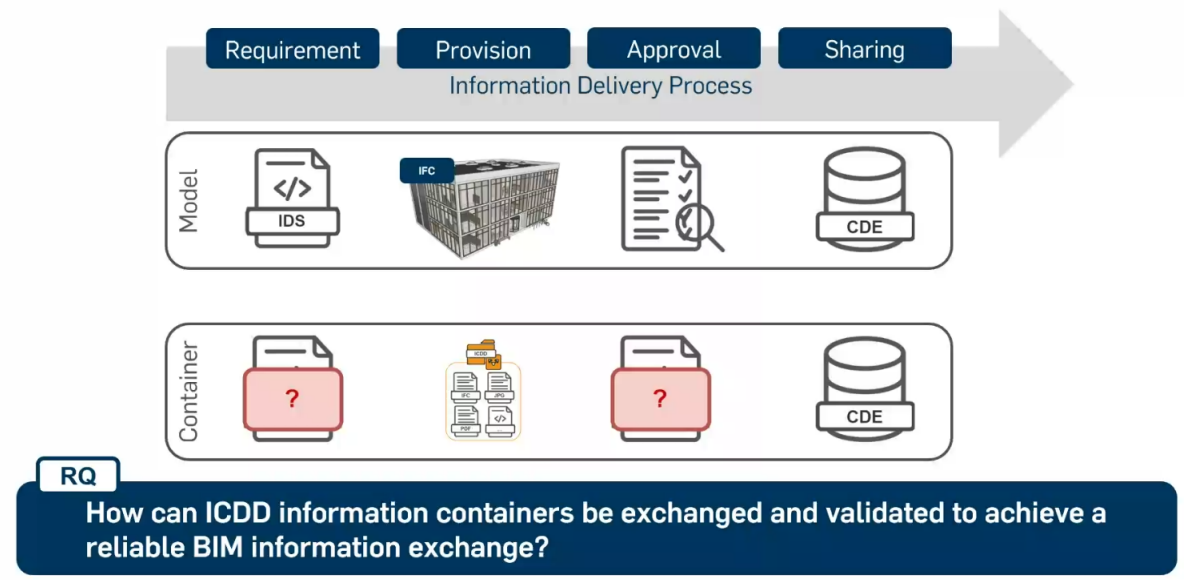
1. Introduction of new members
2. Philipp Hagedorn “Exchange Information Requirements for ICDD containers using SHACL”
3. Discussion

4. Further topics

Minutes

1. **Introduction of new members**
    - Janakiram Karlapudi: TU Dresden, worked at LD, met at LDAC and others, PhD candidate, and holding an industry position
    - Irfan Custovic: TU Delft Product and process Integration through digitalisation. Smart Mobile factories project (bringing digitalisation to the construction sights), met community at EC3 conference
    - Musa C.: Construction company, data strategies and integrated platform solutions. Looking forward to links to industry (further information on LinkedIn)
    - Meline Rohne: RWTH Aachen, PhD candidate, infrastructure focus.
    - Asal Alikhani: Working at an enterprise supporting companies …

2. **Philipp Hagedorn "Exchange Information Requirements for ICDD containers using SHACL"**
    - Recently defended > PhD will be online available early next year
    - Working at the "Computing and Engineering Research Group" at TU Aachen led by Prof. Markus König. Philip is leading the data management group.
    - Use of semantics as solution for heterogenous file and data management in the building asset's lifecycle
    - Solutions based on Information Management using BIM ISO 19650-1 an ICDD, Information Container for linked Document Delivery (add ISO)
    - Main research question

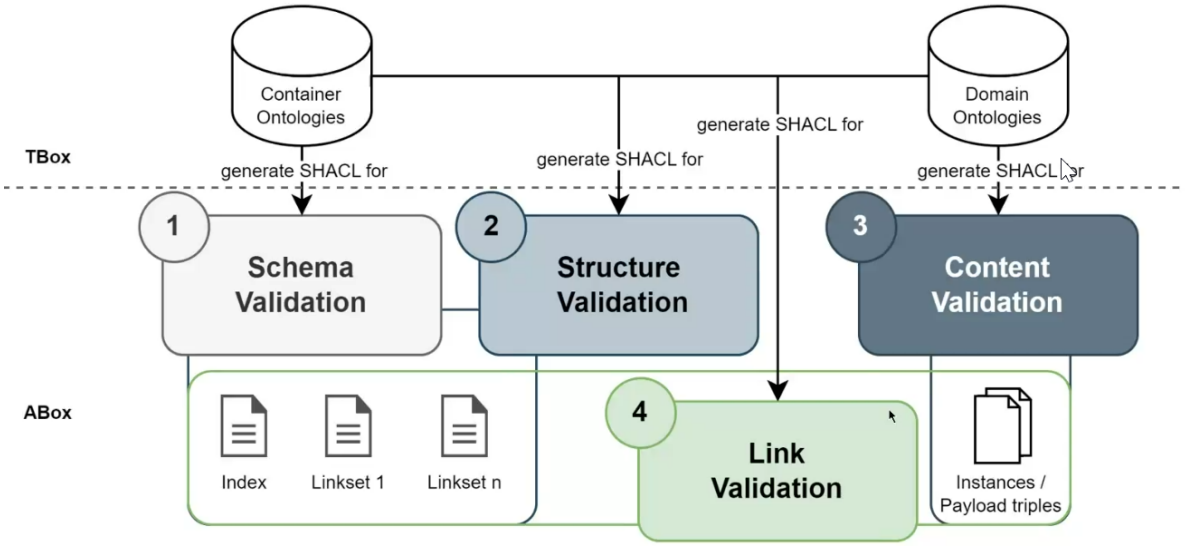


    - Use of Shapes Constraint Language (SHACL)
    - Input data, checking and validation, output: Validation report -> to be developed for bsdd
    - Requirements for BIM information exchange, data schema of information container, processes, information delivery and many others

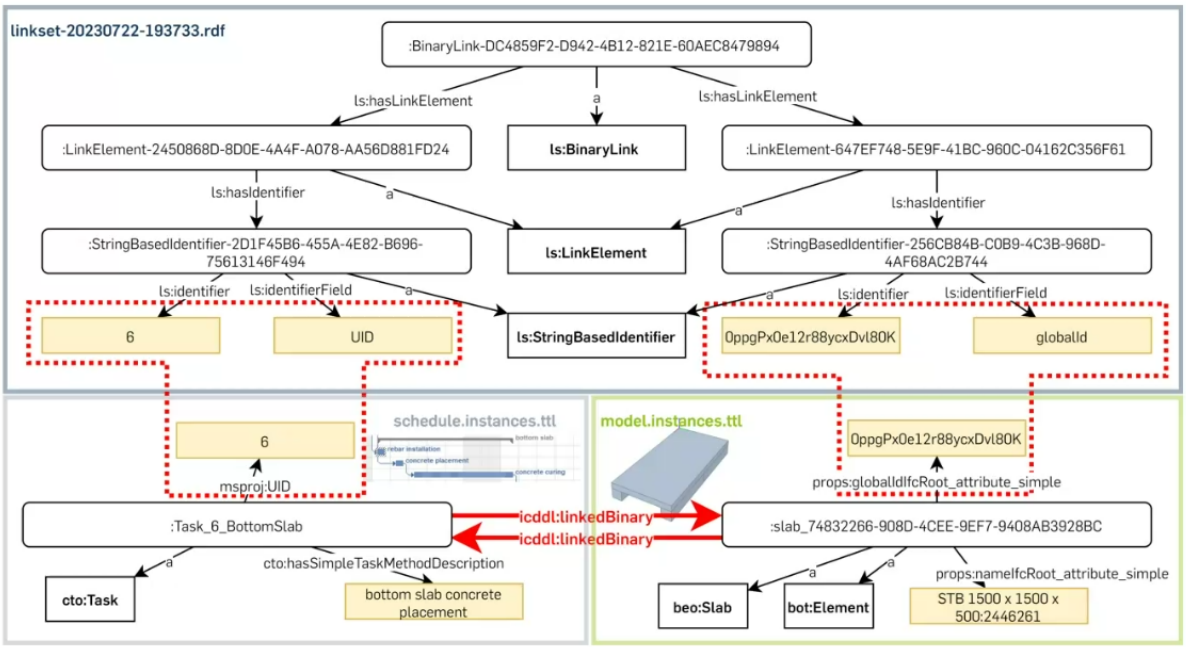
No.	ISO 19650-1,4 [124, 125] Information Management	ISO 29481-1 [130] IDM	ISO 21597-1 [126] ICDD	ISO/IEC 19510 [132] BPMN	PROV [149]
TM1	Information container (3.3.12)		Container (3.1.1)	Data object (Table 7.1)	Entity
TM2	Information exchange (3.3.7)	Transaction (3.20)		Activity / Message Event (Table 7.1)	Activity
TM3	Information Verification	Information Receipt		Activity (Table 7.1)	Activity / Usage
TM4	Information Delivery	Information Delivery		Activity (Table 7.1)	Activity / Generation
TM5	Actor (3.2.1)	Actor (3.1)	Party (Table 4)	Participant (Table 7.1)	Agent
TM6	Appointed party [124, 3.2.3] Information provider [125, 3.2.1]	Executor		Participant (Table 7.1)	Agent
TM7	Appointing party [124, 3.2.4] Information receiver [125, 3.2.2]	Initiator		Participant (Table 7.1)	Agent
TM8	Information (3.3.1)	Information unit (3.12)	Payload (3.1.2)		
TM9	Exchange information requirement (3.3.6)	Exchange requirement (3.9)			
TM10	Project / Asset	Project		Collaboration (Table 9.1)	
TM11	Status (3.3.13)				
TM12		Information constraint (3.5)			

Hagedorn, P., & König, M. (2021). BPMN-related Ontology for Modeling the Construction Information Delivery of Linked Building Data

- Development of “Information Delivery Processes Ontology (IDPO)
- BPMN to IDPO
- Validation Framework



- 1. Schema Validation (types)
- 2. Structure Validation
- 3. Content Validation (Code compliance)
- 4. Link Validation



- Natural language requirement: Each building must be linked to at least one task from the schedule

3. Discussion

- Q (Asal): Did you consider aspects of lifecycle assessment in your work? A: We are currently looking into that aspect (linked to ICDD), not published yet.
- Q (Asal): Have you found any solution for linking information on (requirements or properties) of products? A: Yes, we have been looking into material aspects of products.
- Q (Irfan): Did you look into how to use ICDD containers for construction phases? A: We have been focussing on the design- and operations phase. Currently we are looking into the construction phase by two projects: one on prefabricated concrete structures and the other dealing with precast element production; but there hasn't been any work dedicated to on-site construction so far.
- Q (Al-Hakam): Question concerning the "Validation Framework": Have SHACL Shapes been automatically or manually generated? A: The shapes in the research were manually created. We took steps towards answering the question of how to assist a user to define SHACL shapes, e.g. by using ontologies. This was part of a master thesis linked to my research work.
- Q (Mathias): ILS configurator - a project in the Netherlands: Linked ontology with concepts of a construction project (types of construction objects and properties), then feed with information on the project (project phases, responsible actors, etc). They are currently looking into machine-readable exports (mainly JSON, trying to get JSON-LD in there). Have you been looking into this project? A: Philip passed research time in the Netherlands, and became acquainted with the project but this has been too late in the development of the research project. Therefore, it did not play a role in his research focussing on the German case.
- Q (Mathias): Can you use your IDPO ontology without ICDD? A: Yes, you can define a container with an IfcOWL not being compliant with the ICDD standard…; Mathias was looking into it as part of his PhD, question of extension ("dynamic data", linking to databases and APIs instead of only files) not solved since ICDD standard explicitly

doesn't allow any extensions. Philip: Limited LB use is being the typical consequence. TU Dresden also proposes extensions of the ICDD standard in order to use the full power of Linked Data. Would like to propose an appendix to the ICDD standard.
- Q (Janakiram): Referring to the question of Al-Hakam sharing the information on SHACL Play tool to automatically convert RDF models: SHACL Play! (sparna.fr).
- Q (Asal): How did you create/validate SHACL in your research? A: By using the SHACL Dotnet RDF engine
- Q (Mathias): Question concerning the "Validation steps", given the example of "an XML file has to be delivered at a certain date": there's only in SHACL a validation of the extension while each XML can adhere to a certain structure (e.g. defined in an XSD). Why not triggering a non-SHACL shape based validation of the xml file, e.g. against a certain XSD? A: Good idea but was not a specific topic in the selected use cases. The XMLs of the use cases were already converted to RDF in previous steps, so already did an early check on the actual XML format.
- Q (Mathias): You wrote several libraries for your application. They are available on Github? A: Yes. Q: Outlook of testing, extending and validating the developed solution(s)? A: Will continue working in research, not too much time for it. Use of dynamic data (extending ICDD) in further use cases would be the outlook.

4. **Further topics**
    - Upcoming LBD CG presentation in January 2024 by Dimitris Mavrokapnidis (UCL) see below.

Next Call

- 15/01/2024, Monday, 15:00-16:30@UTC/ 16:00-17:30@CET/ 07:00-08:30@PST

  Agenda: Dimitris Mavrokapnidis, UCL

  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://github.com/w3c-lbd-cg/lbd/tree/gh-pages/minutes