# Github issues sprint - BOT

29th of June 2021

# Agenda

- Introduction of new group participants
- Elevator pitch by Madhumitha Senthilvel (RWTH Aachen)
- Github issues sprint - BOT
- Next meeting: 13th of June

Elevator pitch by Madhumitha Senthilvel (RWTH Aachen):

# Information Containers in CDEs

Common Data Environments (CDEs):

- important step towards ensuring better data interoperability and reducing information loss during data exchange

Information Containers:

- storing, retrieving, manipulating such information to cater to different tools and workflows.

- **Focus topic**
  - **Linked Data-supported Information Containers for managing federated, heterogeneous data in Common Data Environments**
- **Presentation title**
  - **Information Containers in CDEs**
- **Presented by**

  - Madhumitha Senthilvel
  - RWTH Aachen University
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# Information Containers in CDEs

- Linked Data Platform
  - -basic definitions of Containers, requirements
  - -no standardized vocabulary for defining detailed links
  - -broad definitions of Server-Client functionalities

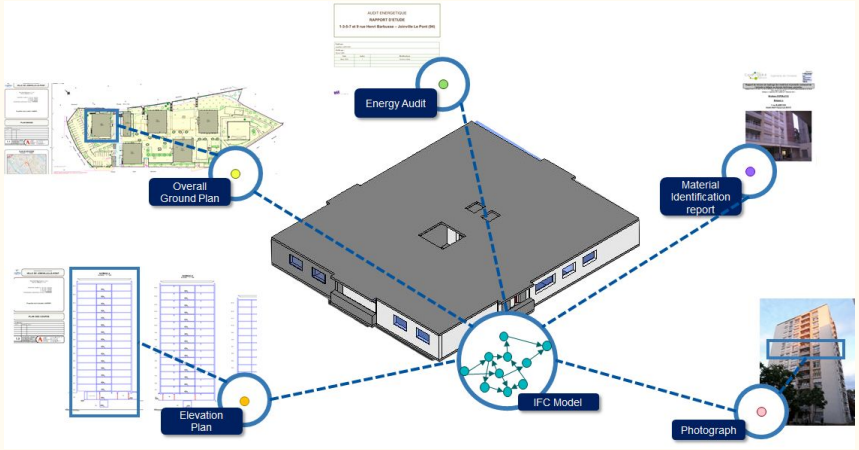
- ISO 21597: Information Container for linked Document Delivery
  - -intended as file-based containers
  - -limited link vocabulary
  - -not for federated dataset

- DIN SPEC 91391, ISO 19650, OpenCDE-API……...

- The best of both worlds?

“What are the requirements for Information Containers?”
“What are the requirements for process architecture of container in CDEs?”

“How to build a functional Information Container, supporting Linked Data for a CDE?”




Joinville Pilot Site, France, BIM4Ren

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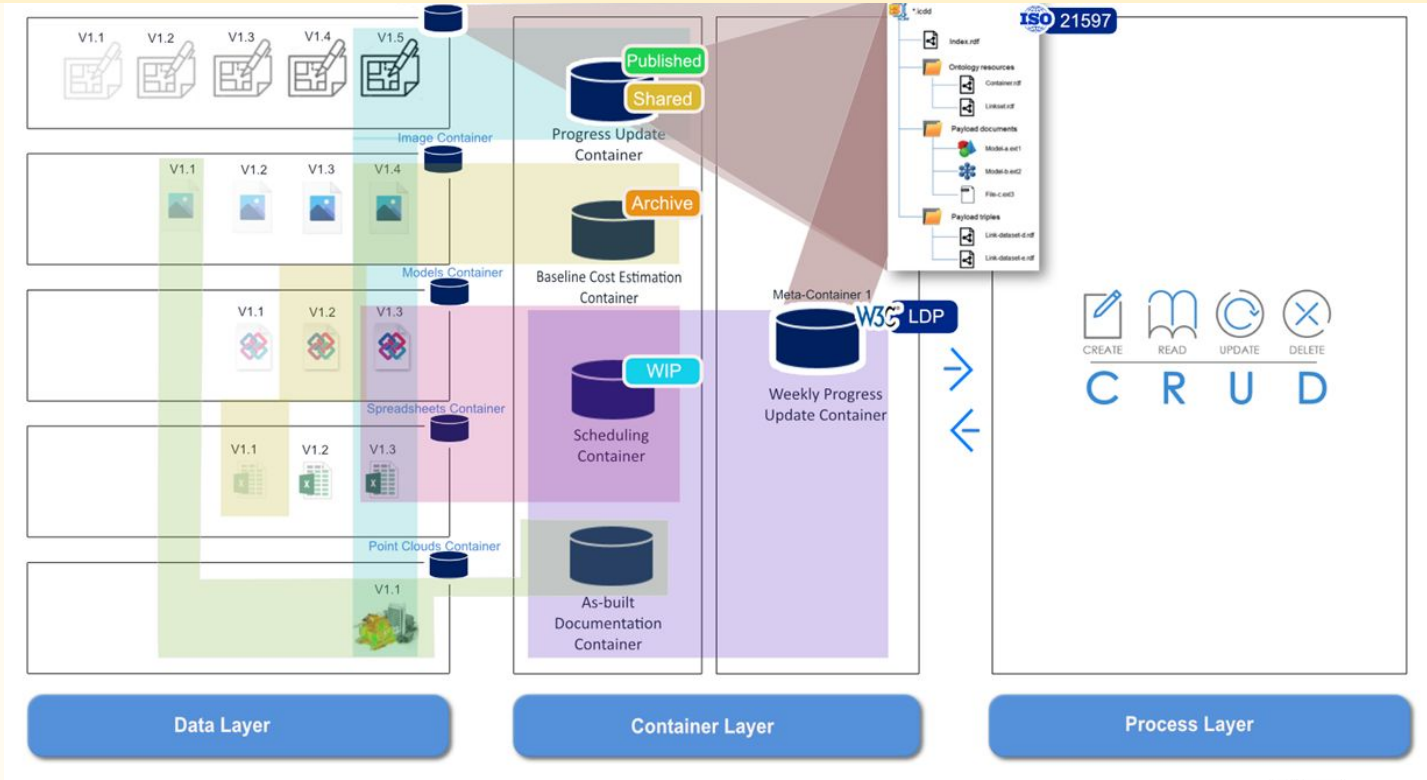
# Information Containers in CDEs

Information as the primary source (data blobs), which are encapsulated in containers (which are considered virtual)

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# Information Containers in CDEs

Data and process architecture for Container, Files, Graphs

Vocabularies/Data Architecture:

- Meta-data of files/graphs,
- Containers,
- Version management,
- File-naming conventions,
- Data structuring,
- Link history,
- Link Types

Functionalities/Process Architecture:

- CRUD,
- Access control,
- Federated information storage,
- Link integrity,
- Data integrity between versions,
- Data Validation

Initial step towards development of container-based information management for decentralized linked data, using open BIM and linked data principles.

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# Github issues sprint - BOT

- https://github.com/w3c-lbd-cg/bot/issues
- Call of 23rd of March 2021
  - https://github.com/w3c-lbd-cg/bot/issues/72 => closed
  - https://github.com/w3c-lbd-cg/bot/issues/74 => in process (new branch “version_0.4.0”)
  - https://github.com/w3c-lbd-cg/bot/issues/24 => still open and unresolved
- Other issues: 14# open

Closed

# Issue 72 - reintroduce deprecated properties

- Reintroduced bot:hostsElement (replaced by bot:hasSubElement)
- Reintroduced bot:aggregates (replaced by bot:hasSubElement)

In process

# Issue 74 - bot:hasSubElement transitive

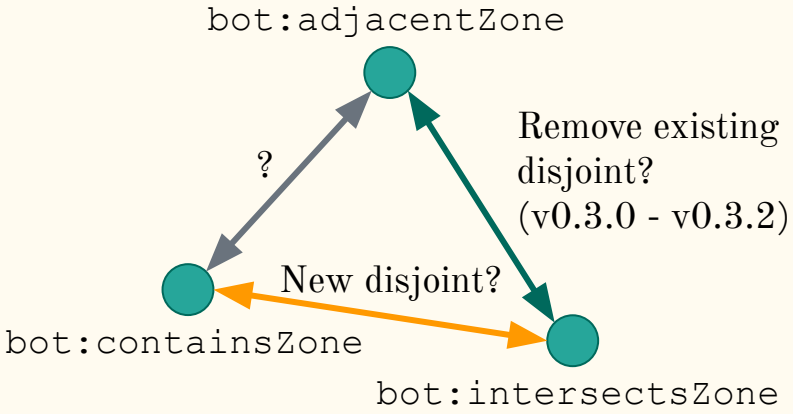
- Added `owl:TransitiveProperty` axiom in “version_0.4.0” branch
- Property chain axiom **not** added:

```
bot:containsElement owl:propertyChainAxiom
(bot:containsElement bot:hasSubElement)
```

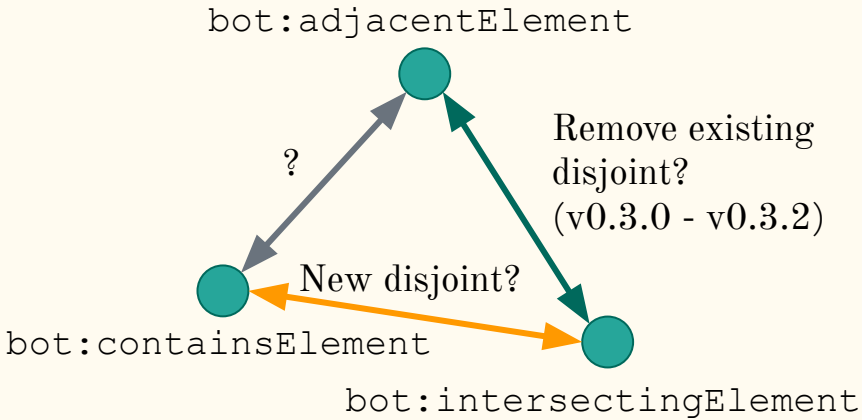
Open

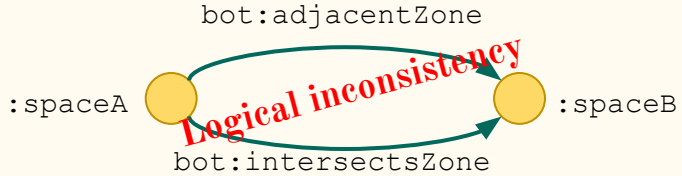
# Issue 24 - disjointness for building topological relations

Relations between two bot:Zone instances




Relations between bot:Zone and bot:Element instances



# Issue 24 - disjointness for building topological relations

- Definition of bot:containsZone/bot:containsElement should be updated to “entirely contains” (issue 116)
- Maxime Lefrançois indicated that he used bot:containsZone/bot:adjacentZone and bot:intersectsZone/bot:adjacentZone
- The topological BOT relations cannot be compared 1-1 to the RCC8 relations between geometries, as we make certain assumptions/generalizations (e.g. for bot:adjacentZone and bot:adjacentElement)
- New disjointness axioms can:
  - Break existing applications (reasoners working with a dataset that already uses these combinations result in logical inconsistencies)
  - Increase the complexity of the ontology for reasoners (more advanced reasoners, more expensive to calculate)
- **Open questions:**
  - Lift existing disjointness axiom between: bot:adjacentZone/bot:intersectsZone ?
  - New disjointness axiom between: bot:containsZone/bot:intersectsZone ?
  - Spatial extent of bot:Space/bot:Storey/bot:Building/bot:Site is unclear and determines possible relations between bot:Zone and bot:Element => full 3D building example required (issue 76)

Open

# Issue 116 - update definition of bot:containsZone/bot:containsElement

rdfs:comment of bot:containsZone:

- **Currently**: Relationship to the subzones of a major zone. A space zone could for instance be contained in a storey zone which is further contained in a building zone. bot:containsZone is a transitive property. This implies that in the previous example a bot:containsZone relationship holds between the space zone and the building zone.
- **Proposed**: Relationship to the subzones of a major zone. A space zone [...] The relation bot:containsZone is only valid between two spatial building zones if the smallest zone is entirely contained in the other zone.

rdfs:comment of bot:containsElement:

- **Currently**: Relation to a building element contained in a zone.
- **Proposed**: Relation to a building element contained in a zone. The relation bot:containsElement is only valid between a spatial building zone and a building element if the element is entirely contained in the zone.

Open

# Issue 76 - examples in BOT documentation

- Add examples to RDF description of BOT using vann:example/skos:example with literals containing RDF
- HTML documentation:
  - Remove depreciated concepts ⇔ add new concepts
- Relate examples to a simple building description with 3D geometry for each described bot:Zone and bot:Element
  - How to model stairwells and stairs?
  - How to model a balcony or accessible roof?
  - what is the spatial extent of
    - a bot:Storey ? (to the inner/center/outer side of external elements such as walls, floors, roofs, windows, etc?)
    - a bot:Building ? (to the inner/center/outer side of external elements such as walls, floors, roofs, windows, etc?)
  - how to model that a bot:Element or bot:Zone is exterior?
  - are two bot:Spaces adjacent when they are separated by a floor element?
  - are two bot:Spaces adjacent when they are separated by a suspended ceiling element, plenum zone and floor element?
  - how to model a wall that is shared by two buildings?
  - how to model the terrain (ground) and the relation to bot:Element(s) and bot:Zone(s)?
  - ... (please add your modeling questions below)

Open

# Issue 80 - redirects of BOT version IRIs in Protégé

- https://w3id.org/bot/0.2.0 => the (old?) pattern for version IRIs of BOT
  - Resolves in Postman
  - Does not resolve in Protégé
- https://w3id.org/bot-0.2.0 => this is the current pattern for version IRIs
  - Does not resolve in Postman => rewrite rule wrong?
    - `^/?-?([0-9]+\.[0-9]+\.[0-9]+)$`
    - `^(.+)$`
  - Does not resolve in Protégé => 303 instead of 302?
- All redirect rules seem to work for the OMG ontology, set up by Anna Wagner => use as template instead?

# Next meeting 13th of June

- Presentation by María Poveda (UPM) on the BIMERR H2020 project: application of Linked Data during energy renovations
- Call for elevator pitches