Team 7

Challenge: Managing heterogeneous data

How should such a distributed system which uses heterogeneous backend data structuring, be configured so that it can seamlessly capture and maintain up-to-date information, at all times?
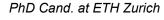
TEAM 7

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Ørsted A/S

Alessandra Corneli
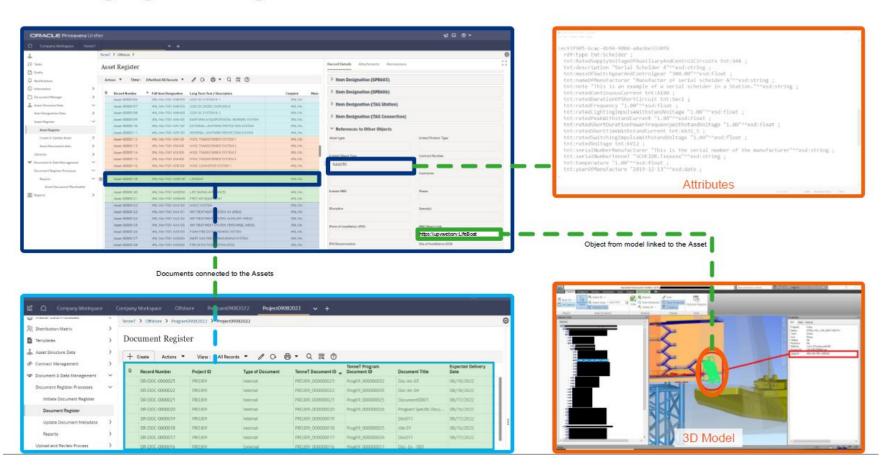
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PhD Cand. & T.A. Norwegian University of Science and Technology

Managing Heterogeneous Data

Attributes

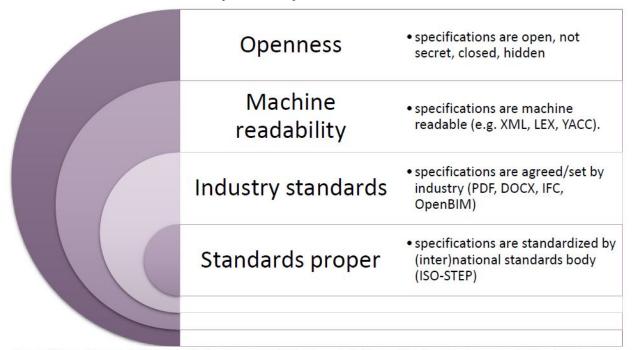Documents connected to the Assets

Object from model linked to the Asset

3D Model

3
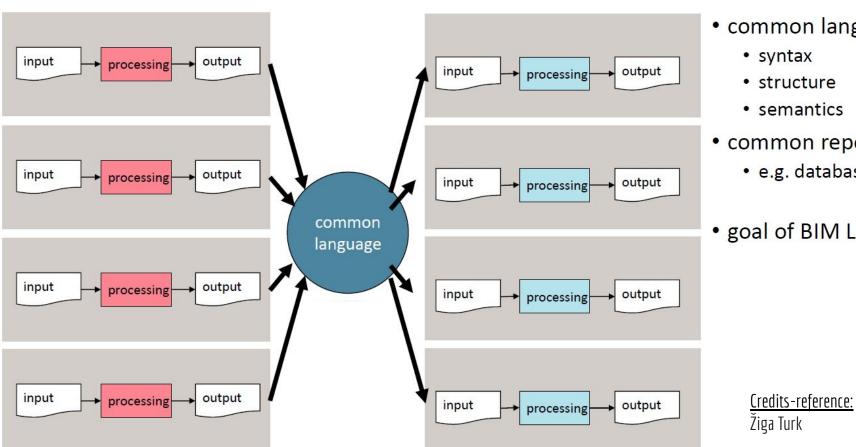
Integrated

- common language
  - syntax
  - structure
  - semantics
- common repository
  - e.g. database

- goal of BIM Level 3

4

How to achieve Interoperability?

Openness	• specifications are open, not secret, closed, hidden
Machine readability	• specifications are machine readable (e.g. XML, LEX, YACC).
Industry standards	• specifications are agreed/set by industry (PDF, DOCX, IFC, OpenBIM)
Standards proper	• specifications are standardized by (inter)national standards body (ISO-STEP)

- Level 3 – Domain based interoperability in an integrated environment. Systems are connected via wide area networks. Information is exchanged between independent applications using shared domain-based data models. This level enables common business rules and processes as well as direct database-to-database interactions. It also supports group collaboration on fused information.

- Level 4 – Enterprise-based interoperability in a universal environment: Systems are capable of using a global information space across multiple domains. Multiple users can access complex data simultaneously. Data and applications are fully shared and distributed. Advanced forms of collaboration are possible. Data has a common interpretation regardless of format.

ICDD

Information Container for linked
Document Delivery

ISO 21597-1:2020

Information container for linked document delivery
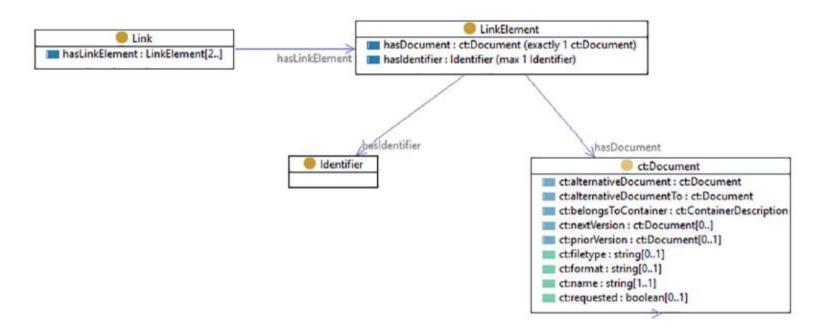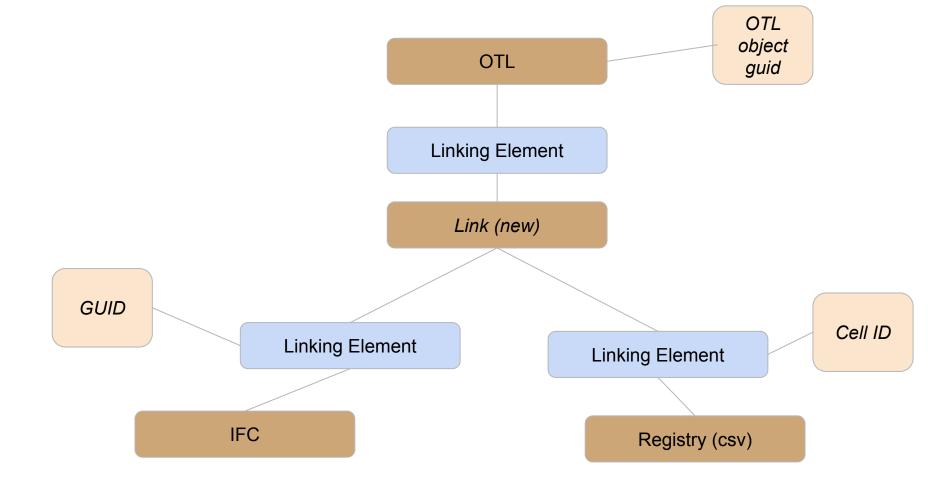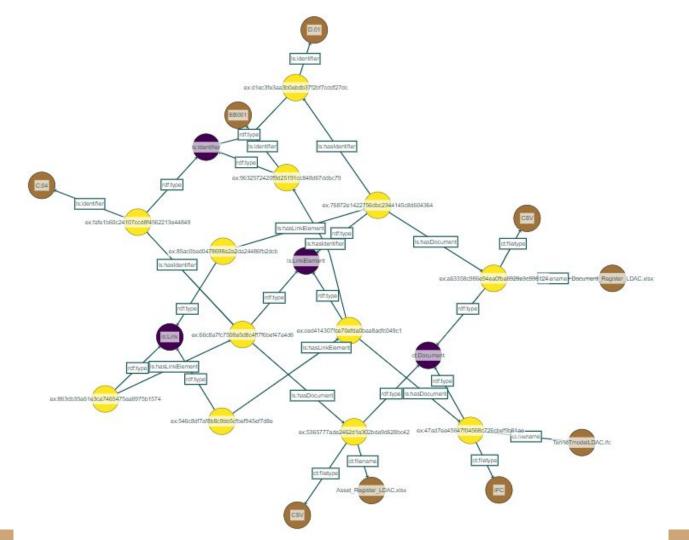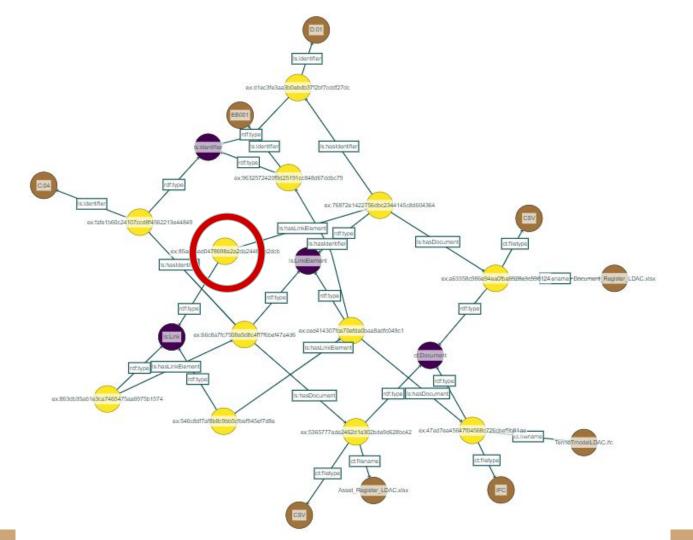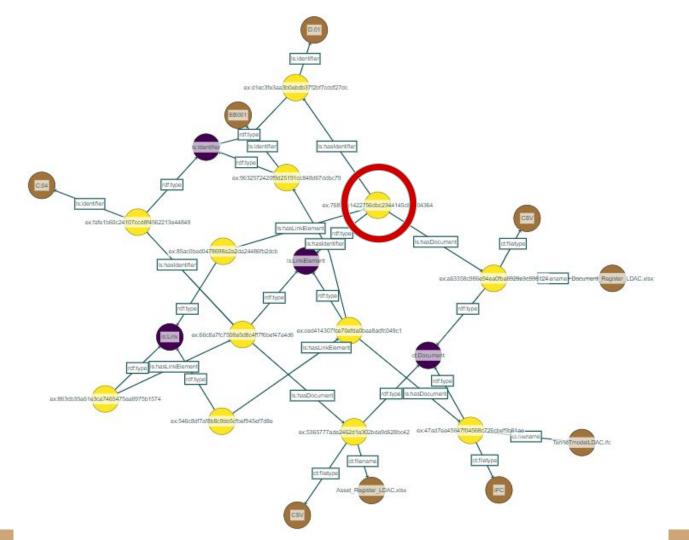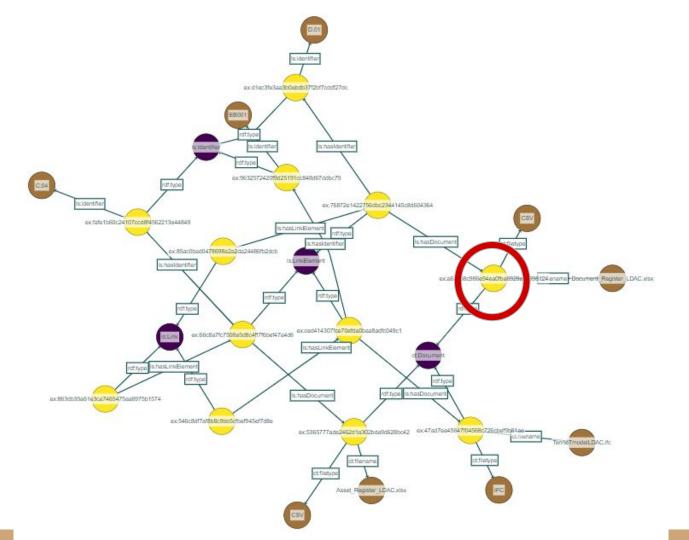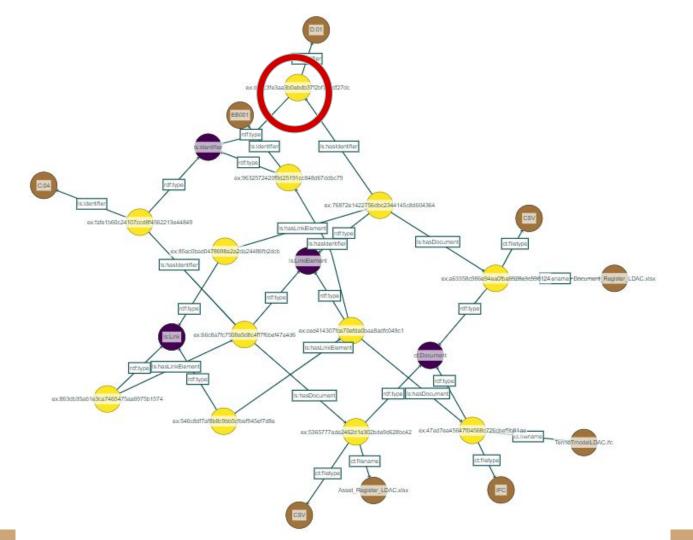Exchange specification

Part 1: Container

Figure 10 — *ls:Link* context
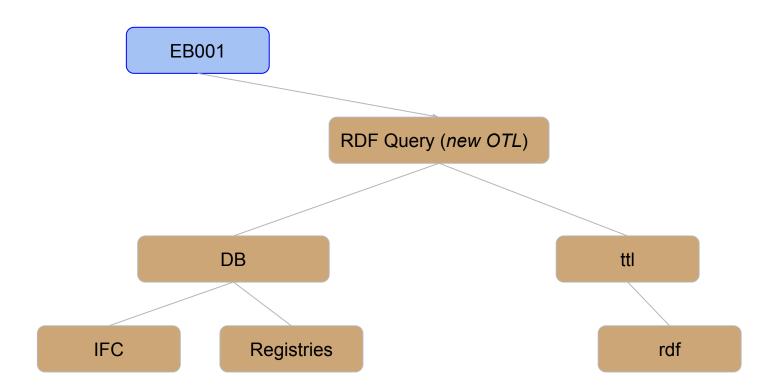
Using Graph DB

Querying the Graph

TenneTmodelLDAC — loaded

Asset_register — loaded

Document_register — loaded

Asset_to_IFC — loaded

Asset_to_Document — loaded
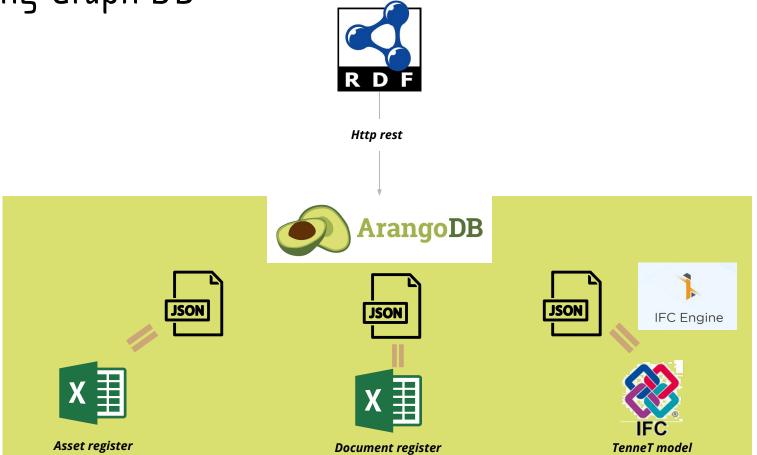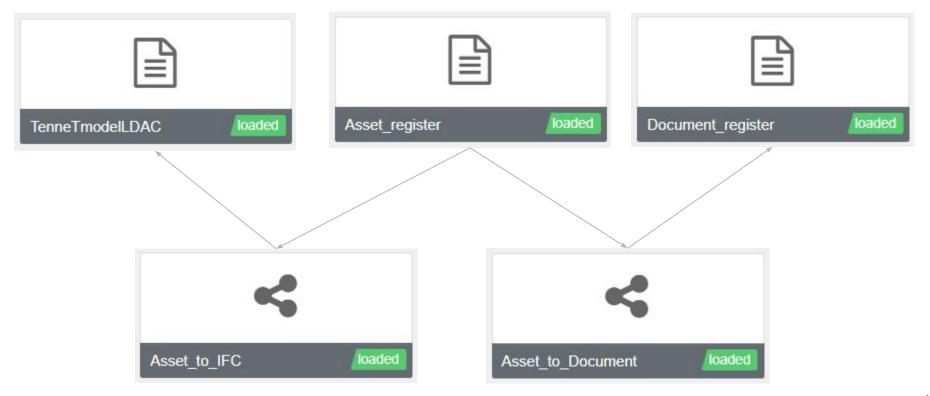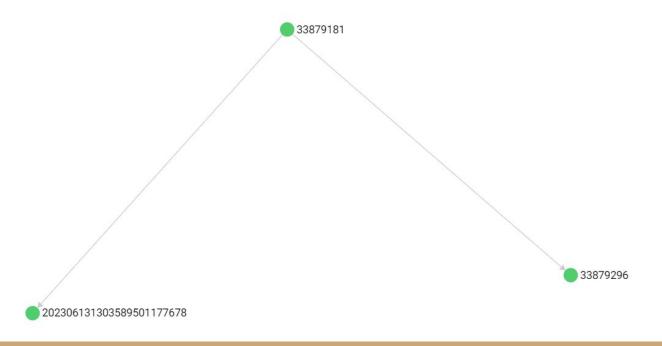
Querying the Graph

LET jj = (FOR i IN Asset_register FILTER i.`Full Item Designation` == "=T001 AZA10 EB001-EB001" RETURN i)

FOR i IN jj FOR v,e,p IN 0..3 ANY i Asset_to_Document,Asset_to_IFC RETURN p

18

THANK YOU FOR YOUR ATTENTION