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ProRail | PLDN
Slimmer samenwerken door Linked Data

RENE WUBBELS | 6-12-2017 | DATA DRIVEN ASSET MANAGEMENT

BIM

Collaborative | Data Driven
Engineering | Construction | Asset Management

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INTRO

COINS

USE CASE

MENU

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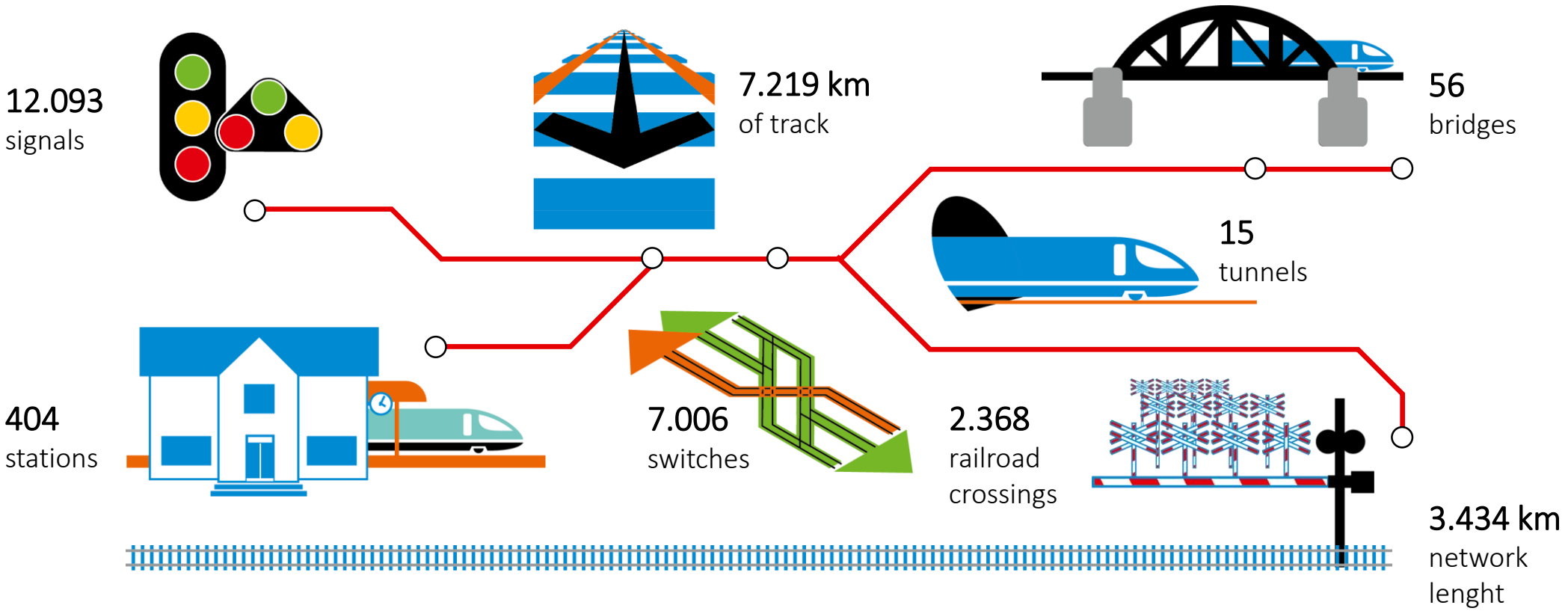
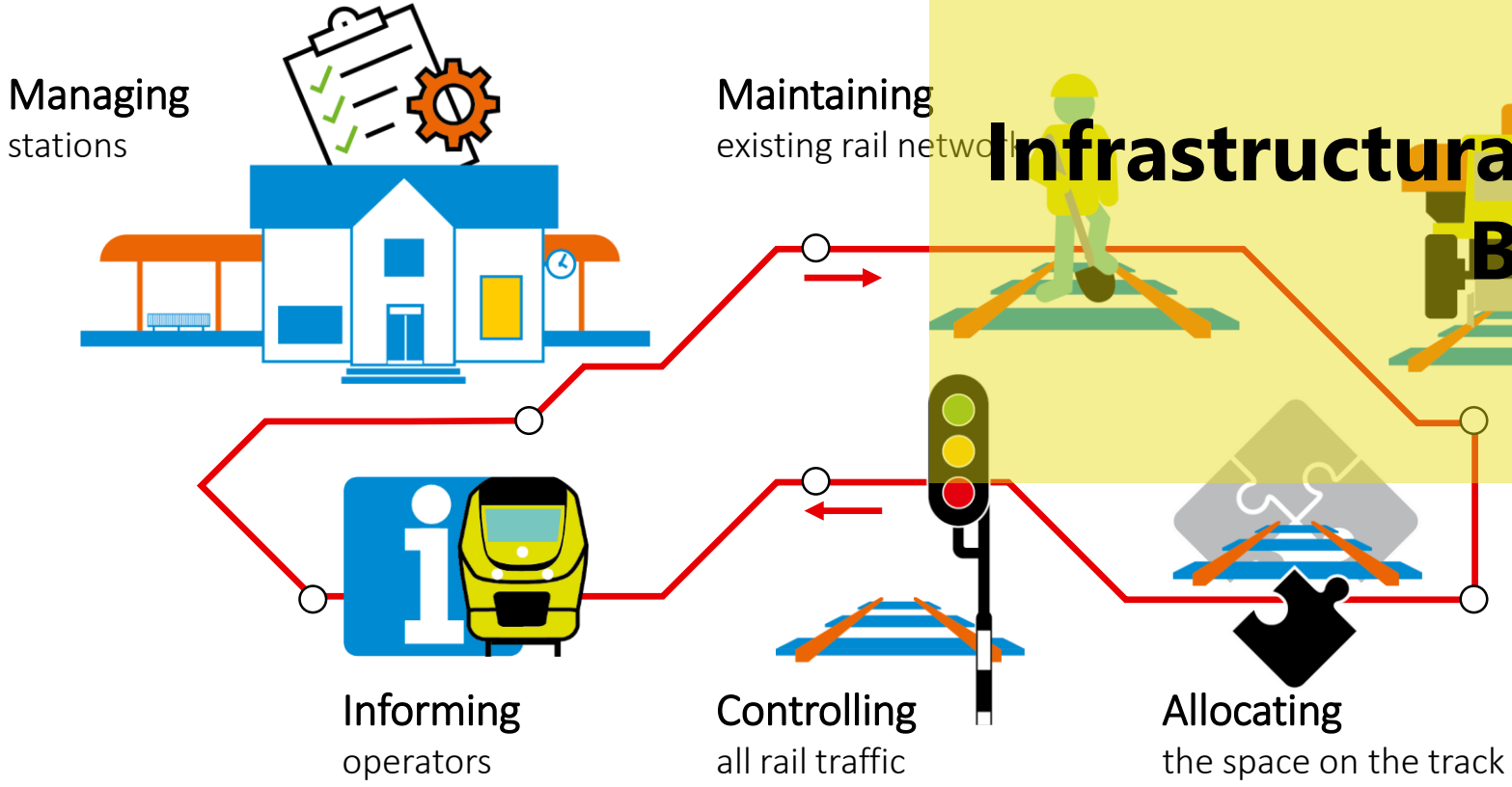
Infrastructure



Introduction ProRail

What we do



Infrastructural Projects using BIM

Construction
laying new track,
building new stations

BIM Characteristics

Characteristics of BIM from an information management perspective

- **Sharing of information across organisational boundaries**

- **Interoperability**

Definition: the ability of organisations (and their processes and systems) to share information with their environment effectively and efficient.

- **Integration**
  - **Assumption: The more integrated the better (better information, less costs)**

Definition: Standardisation of data/information structures and -definitions through the use of the same conceptual model by different data/information sources.

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Levels of standardisation

Level 0: Non standardisation
- agreements on an infra projectlevel; bilateral
  - 250 infra projects each year
- many transformations
- Document Driven

Level 1: Exchange standards
- agreements on a industry level; e.g. COINS
- use of libraries (reuse of information/knowledge); e.g. OTL Spoor
- less transformations
- Data and Document Driven

Level 2: Shared conceptual schema
- agreements on an industry level
- no transformations
- Sharing of data (Linked Data)
- Data Driven

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Levels of standardisation

Problem:
- Manual data entry (inefficiency)
- Errors
- Human interpretation

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Our ambition:
from level 0 → level 1

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COINS

Constructive Objects and the INtegration of processes and Systems

ISO (new working item): Information Container for Data Drop (ICDD)

- **Container (Information Container)**

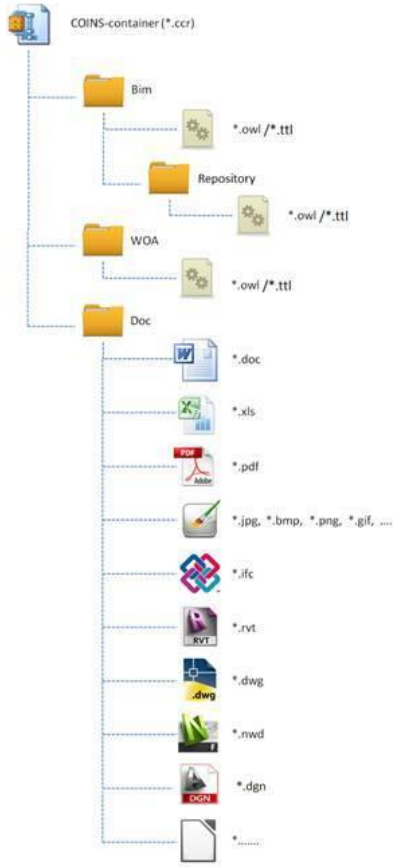
- **Semantic model (RDF / OWL)**

COINS Container a .CCR file

ZIP file with standardised structure

BIM folder
- (project) data file
  - **Repository folder**
    - semantic models (e.g. COINS core)

DOC folder
- All kinds of documents



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COINS Core 2.0 characteristics

- Generic (scope: Dutch Engineering and Construction Industry)
- Extension of the OWL Ontology Structure
- Can be extended with:
  - Object Type Libraries
  - Reference Frameworks

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Use Case participants

Movares	Engineering company
SEMMTECH	IT company
Strukton	Construction company
ProRail	Dutch Rail authority

Use Case Raalte

“safety in rural eara”

Use Case Raalte

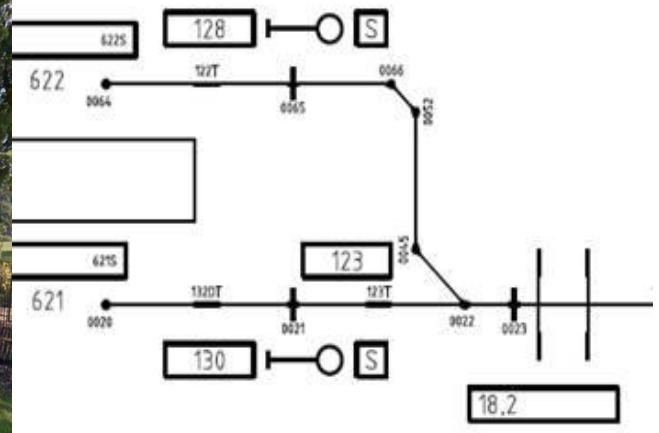
“Ganzeboomlaan”

Level crossing 18.2

ProRail schematic representation Level crossing 18..2

“Level crossing 18.2 to be replaced by under crossing”

Level crossing 18.2



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Exchanged Projectdata (three organisations, two ontologies)

COINS

OTL Spoor (Endpoint)

Movares
Strukton

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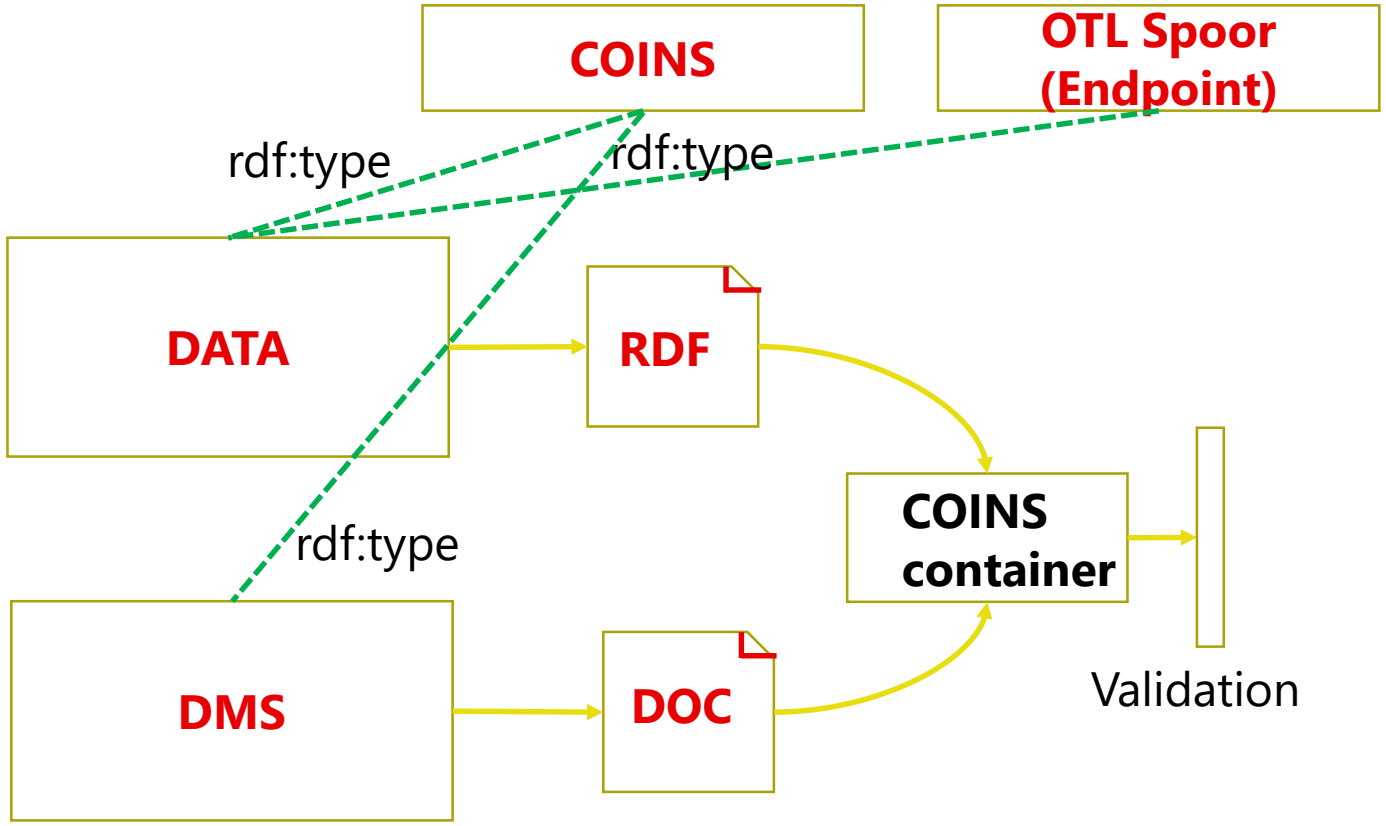
Exchanged Projectdata (datatyping, container creation and validation)



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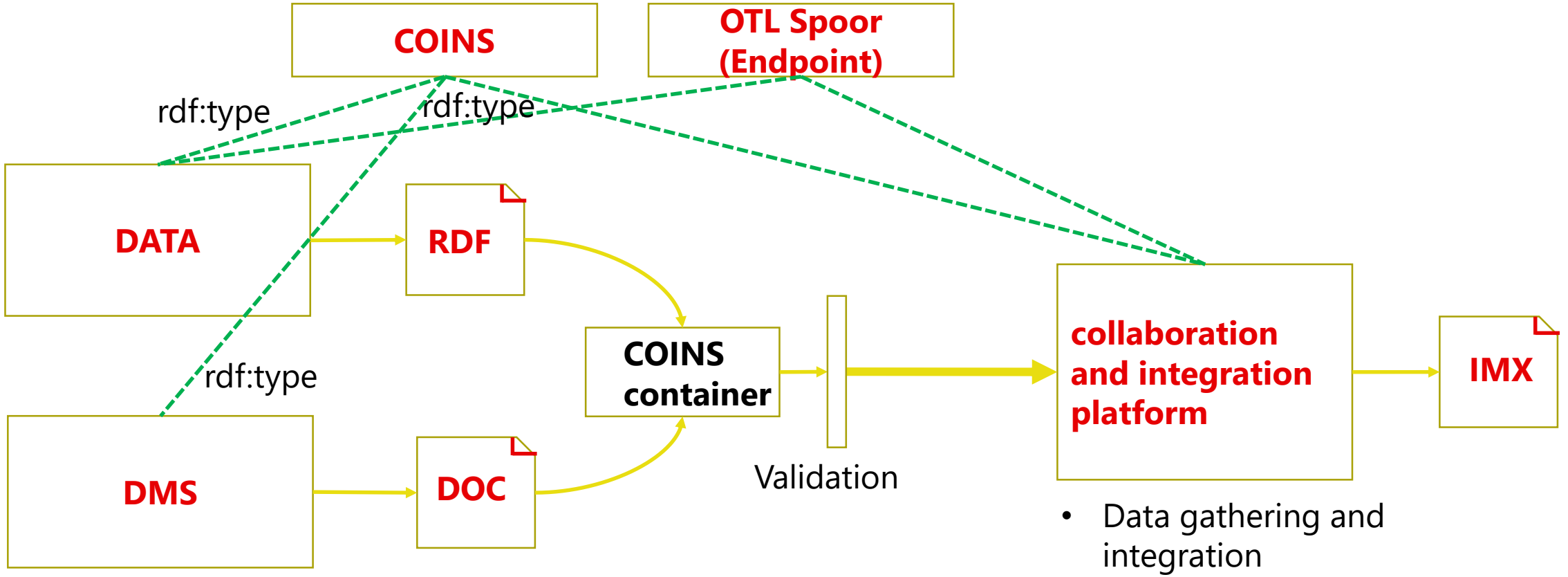
Exchanged Projectdata (data exchange, validation, storage and distribution)



- Data gathering and integration
- Data distribution

Movares Strukton

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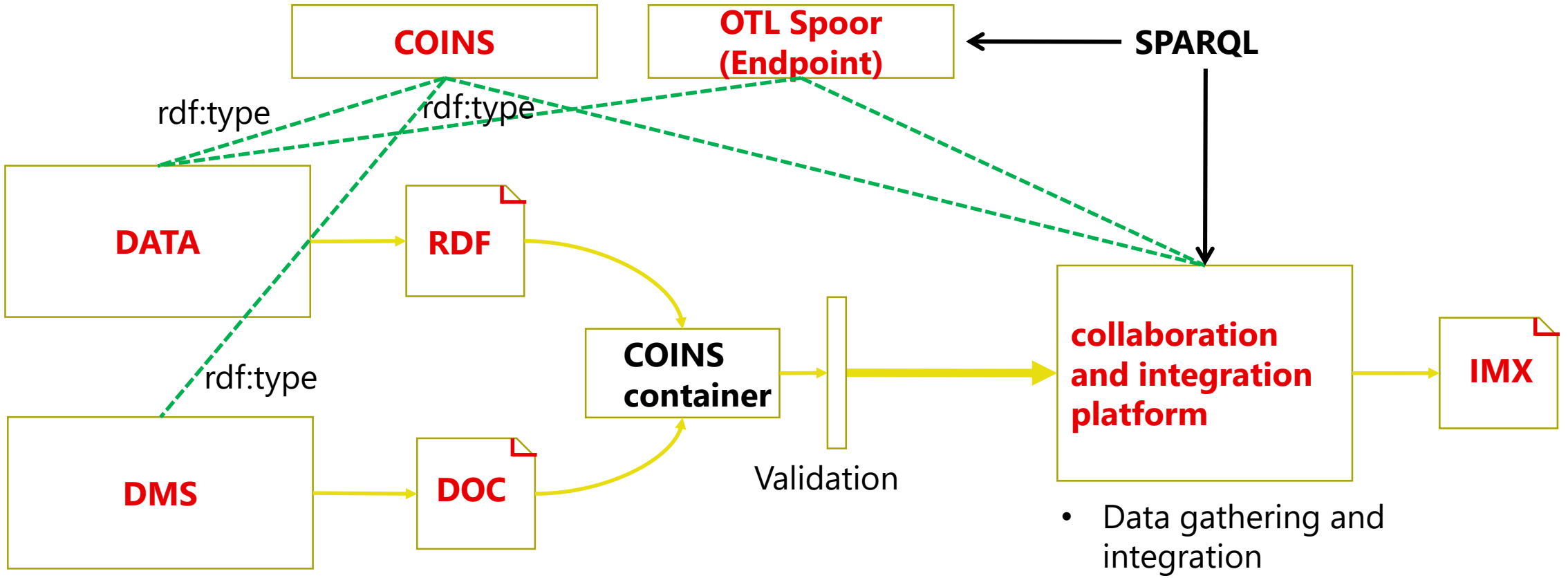
Exchanged Projectdata (quering schema and data)



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- Data distribution

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Exchanged Projectdata (conclusions)

- We succeeded in the exchange of information by using the open semantic standard COINS thus creating semantic interoperability.
- Improved data quality through validation early in the exchange process.
- Validation of data calls for a closed world and unique naming assumption (CWA, UNA)
- Efficiency (less costs) and better adoption of COINS can be improved through better software support. More suppliers, software less technically driven, better user interfaces, hiding complexity from users.