2TDK – Second Track of Divača-Koper Railway Line
openBIM Supporting Evidence
ELEA iC

buildingSMART Awards
June 2021
BIM Model Segregation from software to IFC

- Geology & Geotechnics
  - based on investigation

- Excavation & Support
  - based on geology
  - simplified

- Catenary & Rail
  - sleeper and slab

- Inner Lining
  - very detailed
BIM Model Segregation

Architecture & Structures

And many others to create a federated model

Earthworks & Landscape
- for all portal precuts

Equipment
- in buildings
- in tunnels
Information in IFC models

Which type is the element?
CLASSIFICATION ATTRIBUTES

2TDK_Classification:
- ObjectType: PLA
- System: ZKU
- ElementType: Humus

Where is the element?
LOCATION ATTRIBUTES

2TDK_Location:
- Project: 2TDK
- ObjectCode: T2K
- ZoneType: POR
- ZoneCode: KP

What is the element made of?
DESCRIPTION ATTRIBUTES

2TDK_Attributes:
- PhaseStart: FinalTerrain
- PhaseEnd: FinalTerrain
- FileReference: TBD
- Volume_m3: 221.196
- Thickness_m: 0.2
- Area_m2: 1106.0

These attributes allowed us to set up:
- Automatic check rules
- Clash detection
- 4D and 5D links
Model Coordination

617 discipline models – 33 partial federated models – 1 master federated model

- **Setup discipline specific models**
- **Create & analyze discipline specific models**
- **Batch compile federated model (with partial federated models)**
- **Clash check and coordinate**

Each team uses their own specific design tools

- OPEN BIM
- AUTODESK REVIT
- AUTODESK CIVIL 3D
- GRAPHISOFT Archicad
- ALLPLAN
- SL-King
- ACAD-BAU
- NAVISWORKS
- revizto

IFC2x3 CV2.0
Model Coordination using openBIM standards

- 45+ versions of master federated model
- 1 day to compile with new IFCs
- Main BIM Coordinator checks for major issues
- Main BIM Coordinator checks for correct attributes with predefined rules
- BIM coordination communication in Revizto (5000+ issues)

Review process was done at least twice:
1. Internal by designers themselves
2. External by BIM reviewer

All communication had to be openBIM-based so it could be software-independent!
5D Modelling – Workflow using openBIM standards

1. **Attribute database**
   - Add and check attributes

2. **3D model**
   - BIM model (3D + data)

3. **Import**
   - BIM models in RIB iTWO
   - Element filters

4. **Get quantities**
   - Link with BOQ items

5. **Partial BOQ**
   - BOQ items database
   - Use to set up BOQ

6. **Export**
   - Project BOQ linked with BIM models through filters

7. **Reporting to designers**
   - Import and set up checks

8. **Check of linked BOQ items**

**Tools used:**
- Autodesk Revit
- Autodesk Civil 3D
- Graphisoft Archicad
- Allplan
- Autodesk Navisworks
- Autodesk RIB
- Autodesk Revizto
- Autodesk Bexel Manager