User driven WG AR bSI
Working toward GIS
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Elevating spatial intelligence
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Working with the Information Management team of the Asset Management Department of Schiphol. Aiming on the validation of the delivered information and on the integration of 3D information within the GIS department and the other Stakeholders of the Airport.

BIM/GIS Consultant at Tensing GIS Consultancy.

MSc Geomatics for the Built Environment in TU Delft.

Diploma in Surveying Engineering in NTUA, with specialization in Photogrammetry.
Working toward GIS

✓ Weekly meetings
✓ Meetings with:
  • Birgitta Foster
  • Alexander Worp
  • Adam Rendek
  • Birgitta Schock
  • Hans Hendriks
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The doors of the model in a GIS platform:

E.g. door as point:

Only the doors from the model:

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1. IFC export settings
2. Model at the correct position (geo-referencing)
3. Units (usually from mm to m)
4. Properties:
   • Missing entities (IFC schema itself, IFC schema versus software limitations)
   • User defined property sets
   • User defined enumeration types
5. Geometry
6. Topological spatial relations
Coordinate Reference System (positioning)

RD new – national map grid coordinate system

Local coordinate system

0-point coordinates in local: x=0m, y=0m

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Coordinate Reference System (positioning)

2D Helmert Transformation

BUT Airport site is Large!!!

AND Earth is not Flat!!!

Distortions exist! → 3D Helmert Transformation
Coordinate Reference System (positioning)

User defined property sets
Implementing Model Setup (IFC 2x3)
IFC flexibility - Custom defined property sets

“bSI Airport Wall” property set with properties like “bSI01.Phase”, “bSI01.Type” etc.
IFC flexibility - Custom defined enumeration type

“USERDEFINED” enumeration with our value “MyType”
Wrong enumerations

The following 3 rows show the Type Mapping that results using the automatic, “by Element Type” method in a software:

<table>
<thead>
<tr>
<th>Railing</th>
<th>IFCRailing</th>
<th>IFCRailingType</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baluster</td>
<td>IFCMember</td>
<td>IFCMemberType</td>
</tr>
<tr>
<td>Handrail</td>
<td>IFCMember</td>
<td>IFCMemberType</td>
</tr>
</tbody>
</table>

While the IFC schema says:
Geometry and topology (Important for GIS)

- Point
- Line
- Polygon

Valid topology is the foundation of spatial analyses!
Requirement analysis

Possible stakeholders:
- Operations
- Safety and Security
- Fire
- Space management
Existing Model View Definitions (MVDs)
Examples of MVDs

GIS MVD
- Interior
  - Column
  - Chase
  - Door
  - Floor
  - Room
  - Space
  - Stair
  - Wall
  - Window
- Baggage Carousel
- Baggage Conveyor
- Elevator
- Escalator
- Furnishing
- Interior Sign
- Moving Sidewalk
- Passenger Gate
- Passenger Loading Bridge

Security
- Access Control Lock
- Alarm Device
- Credential Verification Device
- Surveillance Camera

Life Safety
- Automated External Defibrillator
- Egress Lighting
- Emergency Call Box
- Eye Wash Station
- Fire Cabinet
- Fire Control Panel
- Extinguisher

Wayfinding
- Navigational Aids

Security MVD
- Column
- Door
- Floor
- Room
- Wall
- Window
- Access Control Lock
- Alarm Device
- Credential Verification Device
- Surveillance Camera

Life Safety MVD
- Column
- Door
- Floor
- Room
- Wall
- Window
- Automated External Defibrillator
- Egress Lighting
- Emergency Call Box
- Eye Wash Station
- Fire Cabinet
- Fire Control Panel
- Extinguisher

Wayfinding MVD
- Column
- Door
- Floor
- Room
- Wall
- Window
- Navigational Aids
IfcDoc software to create a MVD

IFC Documentation Generator
Different organizations - similar challenges
Wayfinding - Use case

1. Explore the needs from a user perspective
2. List the needed objects
3. Create a MVD for Wayfinding

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Future of openBIM

“The benefits from using the vast amount of data that nowadays are available are many. openBIM is the answer to get them.”