



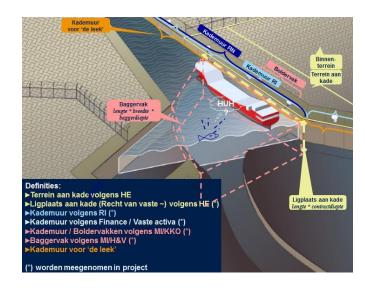


Integration of GIS and BIM

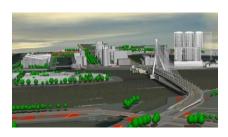
Sisi Zlatanova, TUDelft Jacob Beetz, TUe Anne Jan Boersma, Albert Mulder, Port Rotterdam Joris Goos, City of Rotterdam

Large infrastructure projects

- Large spectrum of objects (GIS BIM)
- Many actors: public and private stakeholders, companies and other institutions
- Current 2D systems are confronted with available 3D data and BIM



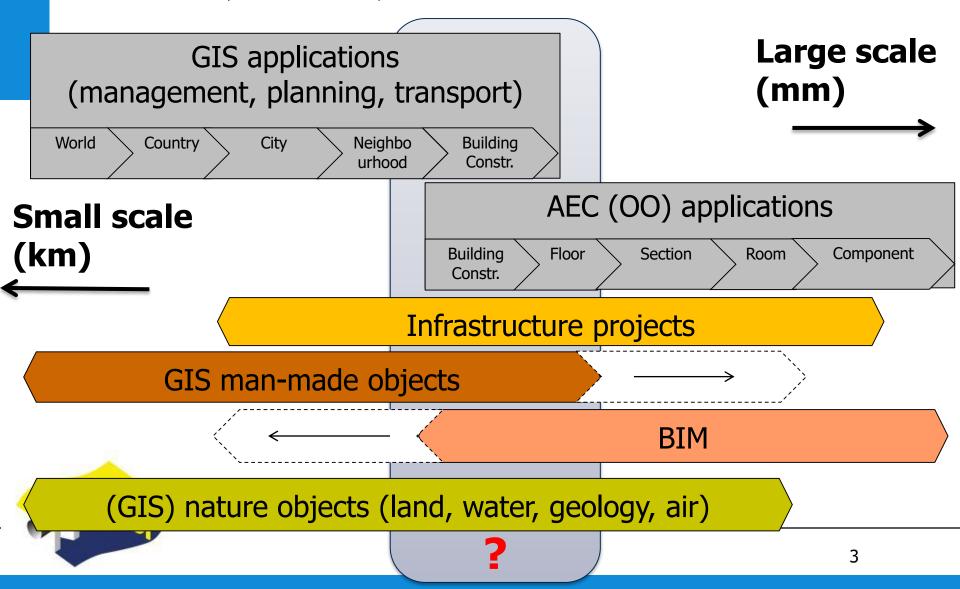








Above, below, on surface



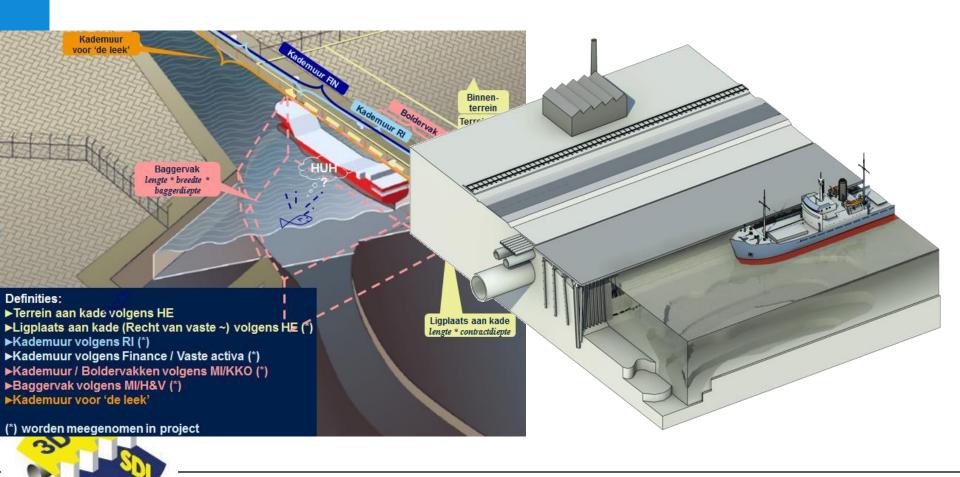
Many different standards

Table 2: Comparison of 3D standards

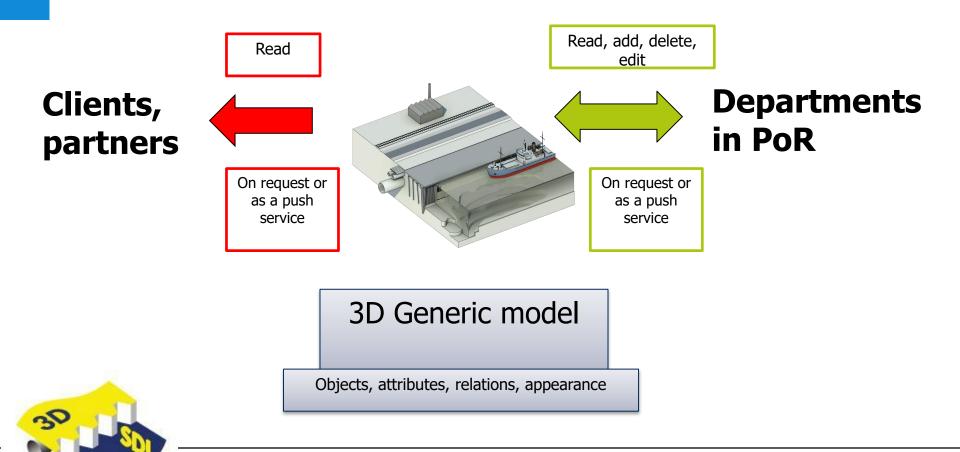
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Topology	-	-	0	0	-	+	+	+	1
Texture	-	-	++	++	0	++	-	+	+
LOD	-	-	+	+	-	-	-	+	-
Objects	0	+	+	+	-	-	+	+	+
Semantic	+	+	0	0	0	0	++	++	+
Attributes	-	+	0	0	0	-	+	+	+
XML based	-	-	-	+	-	-	+	+	-
Web	-	-	+	++	++	+	-	+	0
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Acceptance	++	++	++	0	++	+	0	+	++



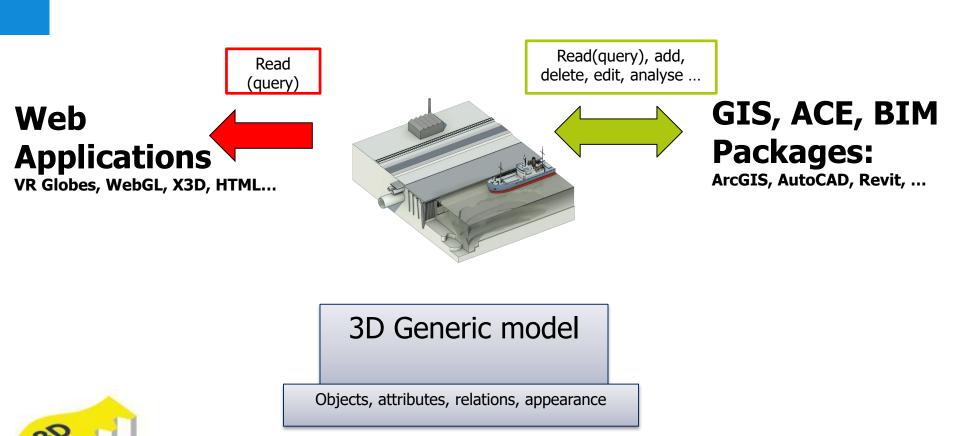
Port of Rotterdam: from 2D to 3D



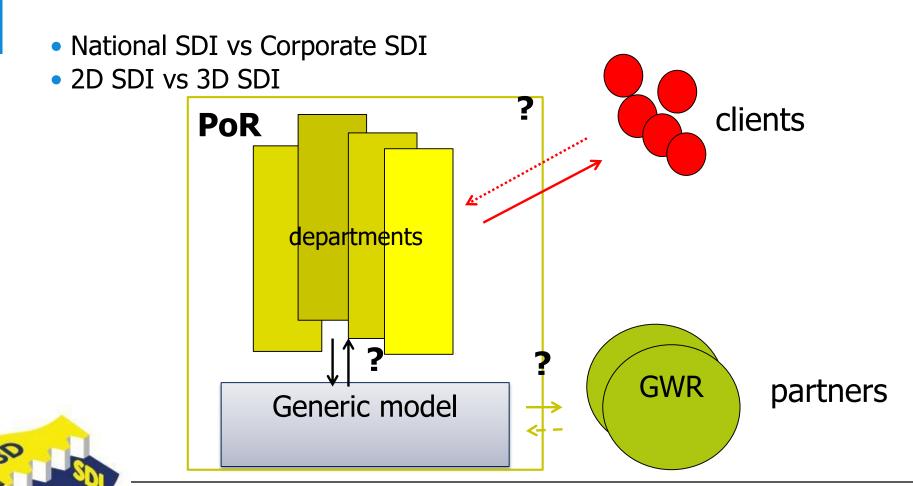
Main goal: 3D information model



Applications



Advise on 3D SDI: interfaces



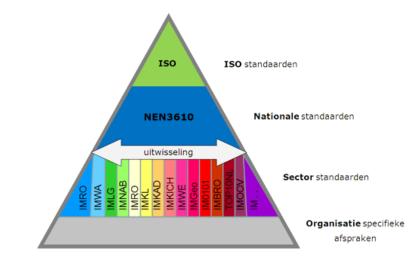
3D Model: principles

- Define an object only once
- Re-use of existing standards (GIS and BIM) for objects that are already specified
- Define new objects if not available
- Consider national and international tendencies (OGC, buildingSMART, Web3D)
- Intelligent objects



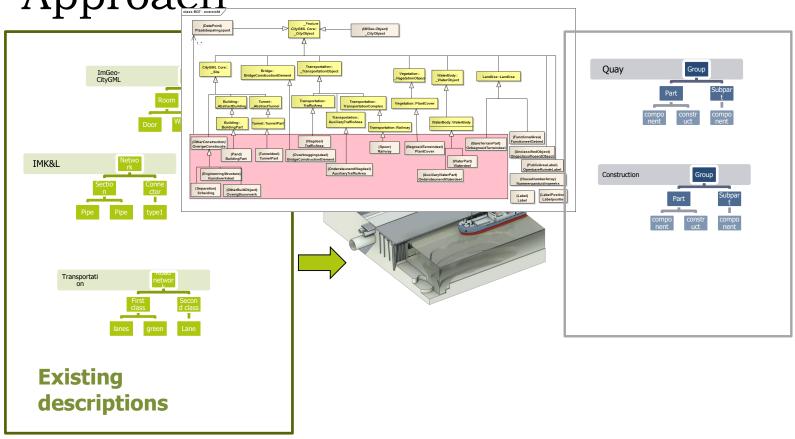






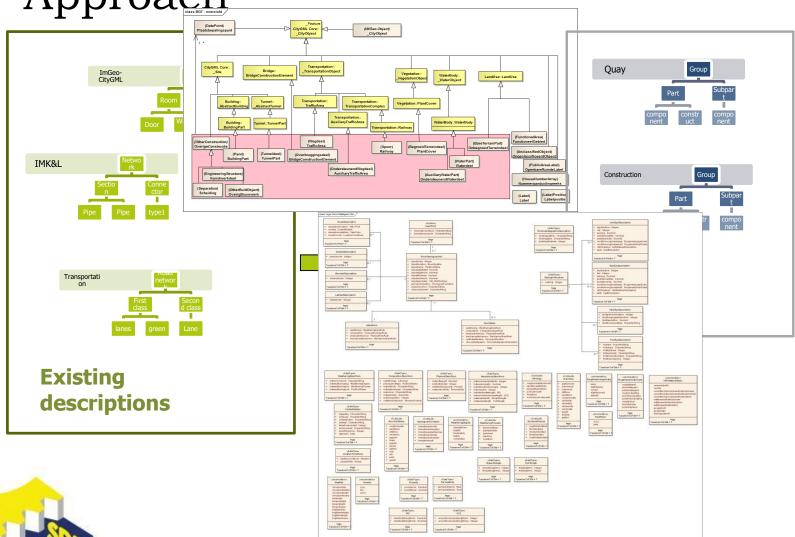


Approach





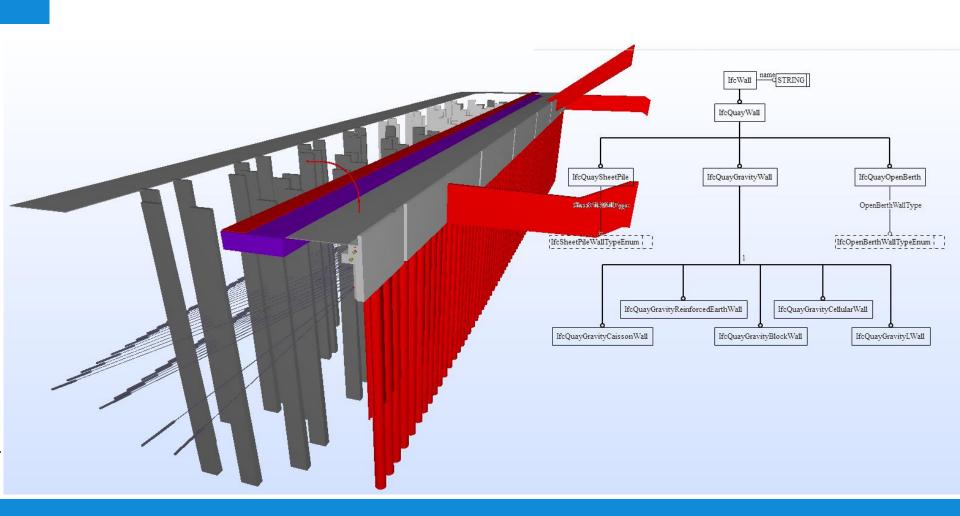
Approach | sas BGT - OVERSIANT



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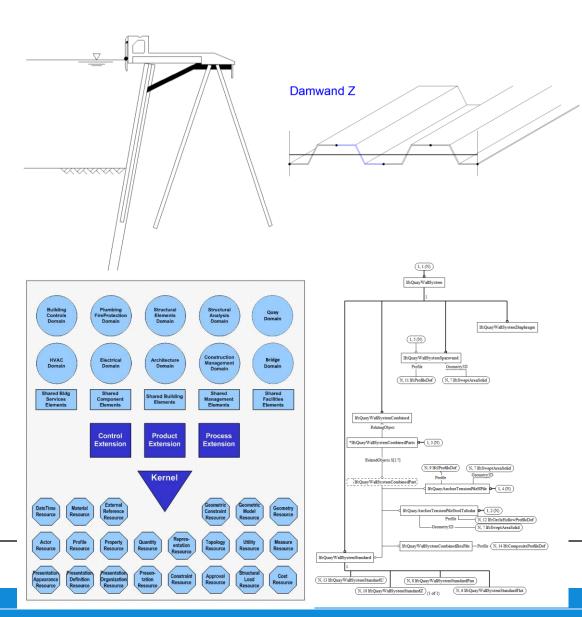
Definition of IfcQuay



IfcQuay

- •Industry Foundation Classes (IFC) standard (BIM)
- •Only Civil Engineering domain model up to now: Bridge (IfcBridge)
- •This project adds a domain model for quays and quay walls
- world-wide only project
- •Lots of interest from 3rd parties already







Roadmap

- •Initial model schema ISO 10303-11 created
- •Initial implementation for creation and visualization
- •coupling with GIS models taken into account on conceptual level
- •Feedback from domain experts (CE TU Delft, PoR, international community)

WebGL demo: Mississipihaven

http://mapster.com.mx:8080/reddrop/





HBR: MV2 Study area

demo.

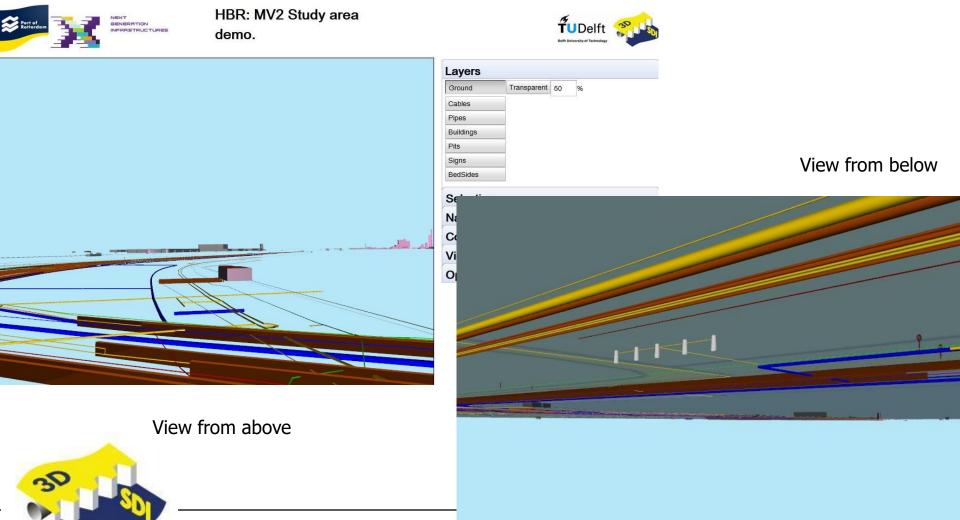




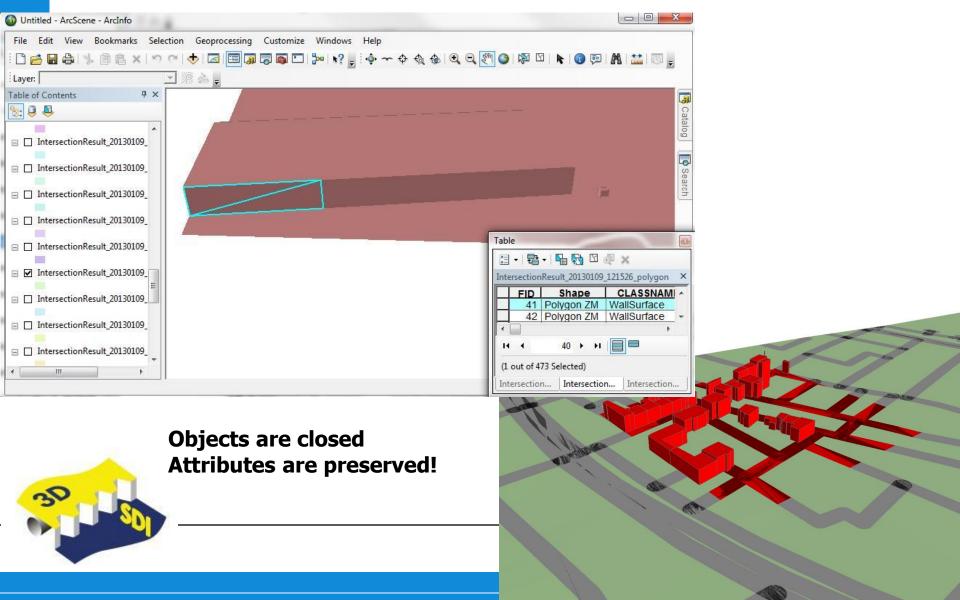
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WebGL demo: Mississipihaven

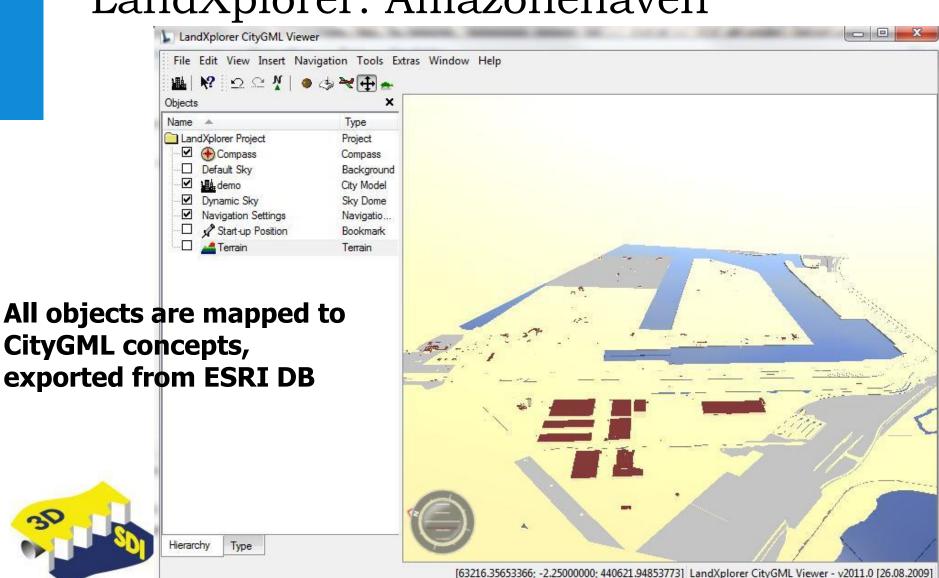
http://mapster.com.mx:8080/reddrop/



ESRI 3D Clip and Cross section



LandXplorer: Amazonehaven



Final demo (Flee3D): Amazonehaven

In 5 steps

- **1. Define** area for development (coordinates MinMaxBox)
- Query and Clip existing 2D data (prepare them for integration with 3D)
- Query and Clip existing 3D data and integrate with upgrated'2D data (send to design office)
- **4. Import** design BIM model (quay Amazonehaven)
- 5. **Check** the desing againts newlly queried existing 2D/3D data. Return for corrections
- **6. Export** (simplified) 3DGIS and (final) BIM of the quay



Final demo Flare3D

http://www.buildingbits.nl/projecten/NGI/v10/HBR CaseSDI.html







Follow the developments at:

http://maasvlakte2-3dsdi.ddss.nl

