



Ministerie van Infrastructuur en Milieu

BIM-implementation at Rijkswaterstaat

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TEM

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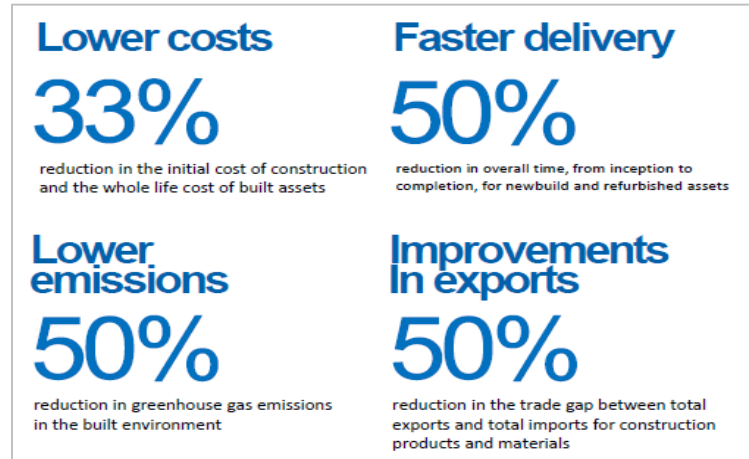
Content

- Ambition
- Aim: BIM in Building sector
- Roadmap BIM program RWS
- Procuring BIM using open BIM standards
- Example using Open BIM at Project SAA
- Training and practice
- Participation on National, European and International Level



Ambition

- Better information during life-cycle
- More efficiency: lower costs
- Higher quality
- More transparency and accountability
- More innovative and competitive European industry
- Create a level playing field for all parties

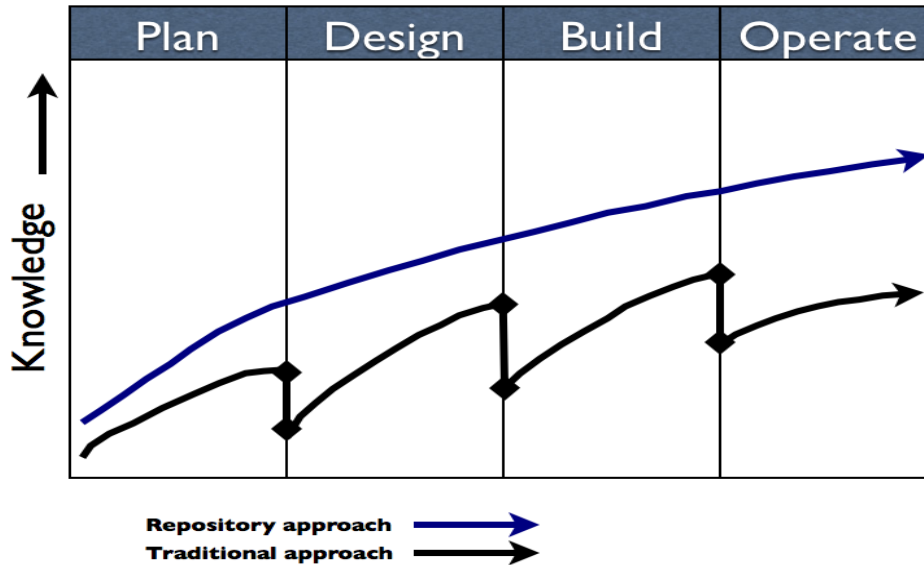


Benefits UK Government BIM Strategy 2025



Aim: Better information during life cycle

Information loss due to data exchange problems -> Failure costs!





How to achieve this?

Building Information Management with the use of open standards

“BIM: a digital representation of physical and functional characteristics of a facility/infrastructure. A BIM is a shared knowledge resource for information about the infrastructure forming a reliable basis for decisions during its life-cycle.”

(Open) BIM consists of:

- (Open) Information in structured datasets (object type libraries)
- Open data exchange standards (COINS standard, IFC)
- Software to use them (BIM tools)



Problem/Target BIM

- Data exchange from asset management system to project to contractor and vv is often a large/expensive effort
- Data in different ICT-systems at contractors and at clients
- Data in different ICT-systems during exploitation
- Potential risk of vendor locked in with IT systems based on proprietary standards
- Open standards are partly applicable for infrastructure
- Software tooling is not yet in place

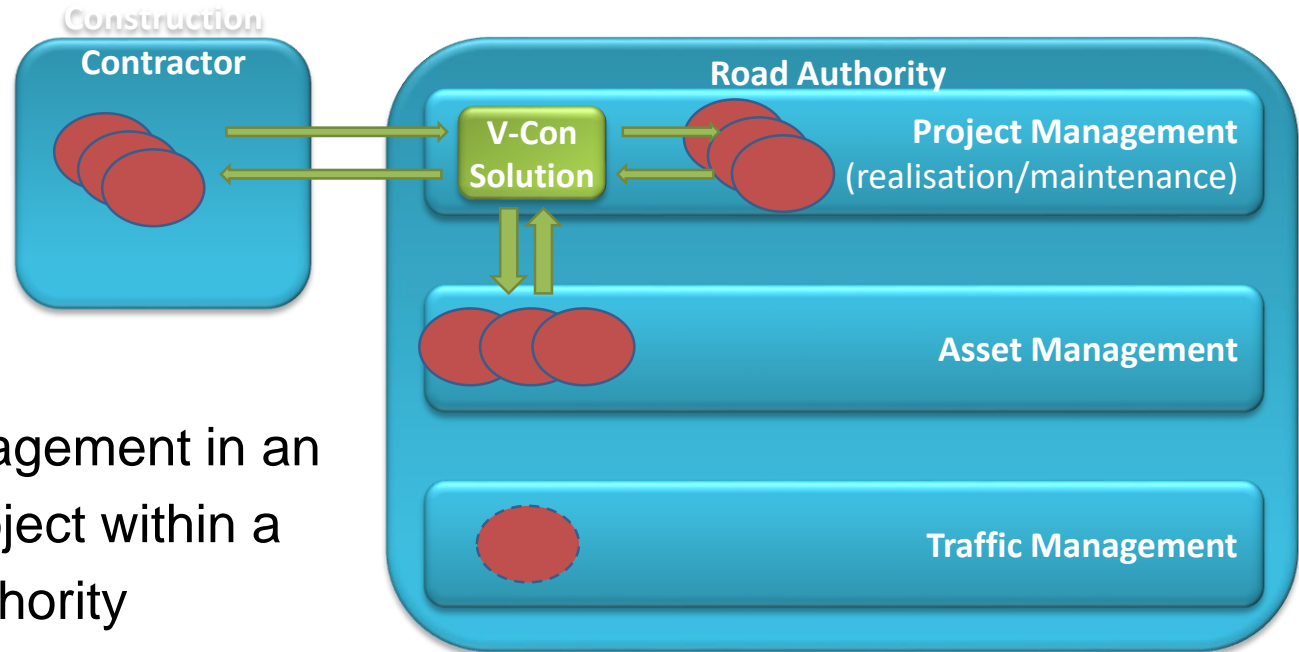


BIM at Rijkswaterstaat (internal)

- 25 mln EU BIM program at RWS 2012-2018 (21 large projects)
- Asset information in control
 - Up to date
 - Reliable
 - Correct
- Information flow in control
 - The right information
 - In the right form
 - At the right time



BIM at Rijkswaterstaat: Projectmanagement and EU project V-Con



- Information management in an infrastructure project within a national road authority



Information Delivery in the contract

- Which data
- When to deliver
- Way of delivery
- Format of delivery
 - Communicate/interact between client and constructor using IDM-part 2
 - Defines the process and roles
 - Transports written demands and documents



Object type libraries

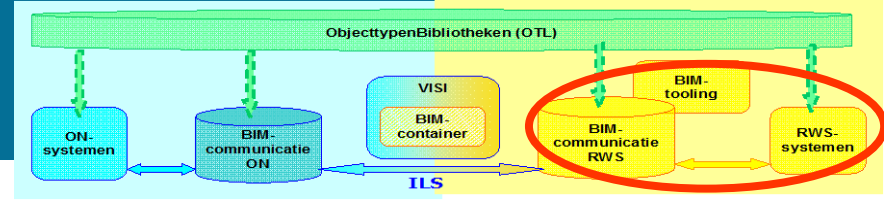
- OTL is a taxonomy of objects of infrastructure and their relation and properties
- Rijkswaterstaat OTL, supporting BIM-projects
- Joint development OTL Dutch construction sector (CB-NL)
- The need for OTL standards
 - It provides structure for the information delivery and the exchange
 - For stakeholders in value chain (contractors, suppliers, administrators)
 - For interoperability: not vendor or system specific
- Based on IFD (ISO 2006-3)



An example of using IDM-part 2, Objecttype library and COINS standard near Amsterdam

- A road infrastructure project near Amsterdam
- Contracting, Design, Built and Maintain by SAA-One contractor and for client Rijkswaterstaat
- Target: improve data traffic using BIM between contractor and RWS





Activities look and test with filter

CBIS ALFAmail more >

SAA, A1/A6 Diemen-Almere Havendreef (2013) - wim.verbruggen@rws.nl - I

BROWSE Changes Check In Check Out Monitor Reports

data MAP

Timeline

Entity Browser

Tree of PhysicalObject

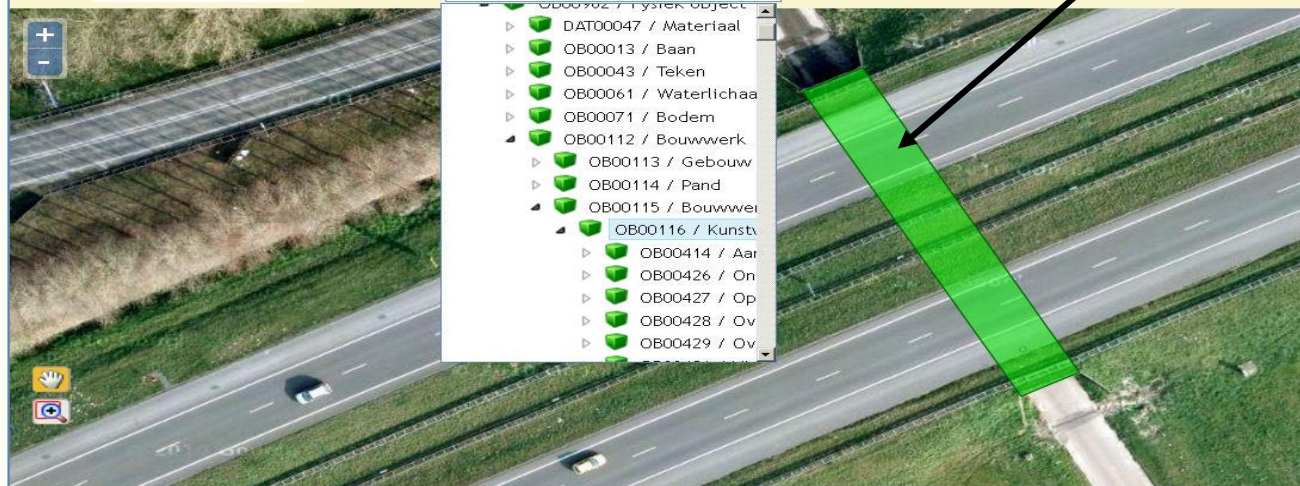
- Assets
 - Fysieke objecten
 - Weglichamen
 - Kunstwerken
 - OB01703.3 / Gooisekant viaduct
 - OB00436.3 / Viaduct
 - OB00418.3 / Brugdek
 - OB00424.2 / Landhoofd
 - OB00424.4 / Landhoofd
 - OB00430.1 / Pijler
 - OB00430.7 / Pijler
 - OB00518.1 / Bestrating
 - OB00518.10 / Bestrating
 - OB00518.12 / Bestrating
 - OB00518.17 / Bestrating
 - OB00518.23 / Bestrating
 - OB00518.24 / Bestrating
 - OB00518.25 / Bestrating
 - OB00518.31 / Bestrating
 - OB00518.32 / Bestrating
 - OB00518.48 / Bestrating
 - OB00973.3 / Talud

Map

Selected object: [Kunstwerken](#)

Viewer: OpenLayers WFS

Objecttype: OB00116 / Kunstwerk



Objecttype Bridge



Activities Import and validate data at Rijkswaterstaat

The screenshot displays the CBIS Server web application interface. The browser address bar shows the URL <https://cbis.infostrait.nl/Home/Map?>. The application has a navigation menu with 'BROWSE', 'Changes', and 'Reports' tabs, and sub-menus for 'data' and 'MAP'. A 'Timeline' section is visible above the main content area.

The main interface is divided into three panels:

- Entity Browser:** A tree view on the left showing a hierarchy of infrastructure objects. The selected object is 'vKunstwerk-11621 / Brug'. Other objects include 'FO-DAT00309 / Straatlinkers (gebakken)', 'FO-DAT00315 / Dicht asfaltbeton met gemodificeerde bitumen', and various 'vKunstwerk' entries.
- Map:** A central map view showing a 3D rendering of a bridge structure over a road. The selected object is 'vKunstwerk-11621 / Brug'. A tooltip for the selected object shows its name and description.
- Entity details of 'vKunstwerk-11621 / Brug':** A detailed view on the right showing metadata and aggregated properties. The 'Aggregated Properties' section is expanded to show 'Vaste Brug' with the following details:

Property	Value
Aantal overspanningen	No value defined.
Beheerder	RWS West-Nederland Noord
Belastingcoëfficiënt	No value defined.
Belastingklasse	No value defined.
Belastingklasse (tijdelijk)	No value defined.
Constructiebreedte (maximaal)	No value defined.
Constructiebreedte (minimaal)	No value defined.
Datum aanleg	04/27/2011 23:00:00
Datum opname geometrie	06/30/2011 23:00:00



Training and practice

- Training Project- and Maintenance organisation
- Training centres, e-learnings and Education at all levels
- Communication and Advisory

- BIM loket recently founded nationally on 30th April 2015
 - to improve adoption of Open BIM-standards in the Building Chain
 - to make sure these Open BIM-standards are maintained
 - to connect these standards to Building Smart, CEN and ISO



BIM at Rijkswaterstaat (international)

- Cedr S3 Standardisation of information: No, S, Dk, Fi, Uk, Ge, Fr, NI
- V-Con: EU project cofunded by EC (PCP with IT sector)
- EU Bim taskforce (european client org from construction industry)
- CEDR call: Development of European objecttypelibrary
- CEN TC 442: european standardisation of open BIM standards
- ISO new work item COINS (flexible information exchange standard)



BIM organized in the Netherlands

- A National program BIM with involvement of all stakeholders like Governments, Architects, Building companies (contractors), Consultancy firms and Installation sector (HVAC)
- BIM as motor for the Building sector in the Netherlands!
- 3 types of activities
 - Information technology BIM standards (IDM-p2, CB-NL and COINS, IFC for Infra) and processes
 - Management and organisation (Legislation, Maturity of BIM)
 - Cultural restrains (Communication, Education)
- In connection with Building Smart International (IFC Alignment and BSDD)



Conclusions

- BIM is information management rather than modelling
- And especially for clients: Information Transfer using open BIM-standards
- Requirements regarding information management in contracts is the way forward: demand driven.
- Public clients can play a vital role in market uptake of standards when they team up and jointly invest
- Uniformity of these standards and use in building practise should be promoted and thus adopting in the entire Building Chain
- Contractors and Public Clients should take the lead to guide Research needed on BIM
- This should be done on a European and International level



Invitation

- To practice in your project what is already available (standards, Objecttypelibraries, etc)
- To participate in CEDR S3, CEN TC 442, EU Bim task group
- To jointly as public clients create a market for open standards

A wide-angle shot of a highway construction site. In the foreground, a multi-lane highway is visible with white lane markings. A large concrete overpass structure is under construction on the left, with extensive scaffolding. In the middle ground, a blue steel truss bridge structure is being moved into place, supported by a concrete pier. The background shows a city skyline under a cloudy sky. The text 'QUESTIONS?' is overlaid in the bottom right corner.

QUESTIONS?