

# BIM use & BIM requirements in the Netherlands - 2014



BIM Alliance Sweden  
20 oktober 2014  
Stockholm- Arlanda Airport

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# Presentation

1. State & use of BIM in the Netherlands
2. BIM requirements
3. Effect of BIM requirements
4. Examples of practical projects
5. Challenges

## deBIMspecialist

deBIMspecialist is an independent BIM consultant

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 @deBIMspecialist



Hans Hendriks

# deBIMspecialist



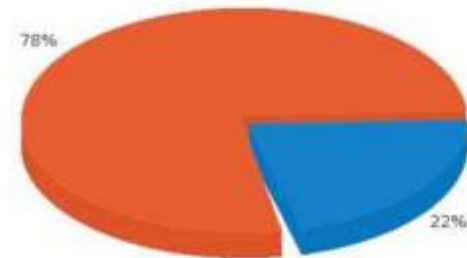
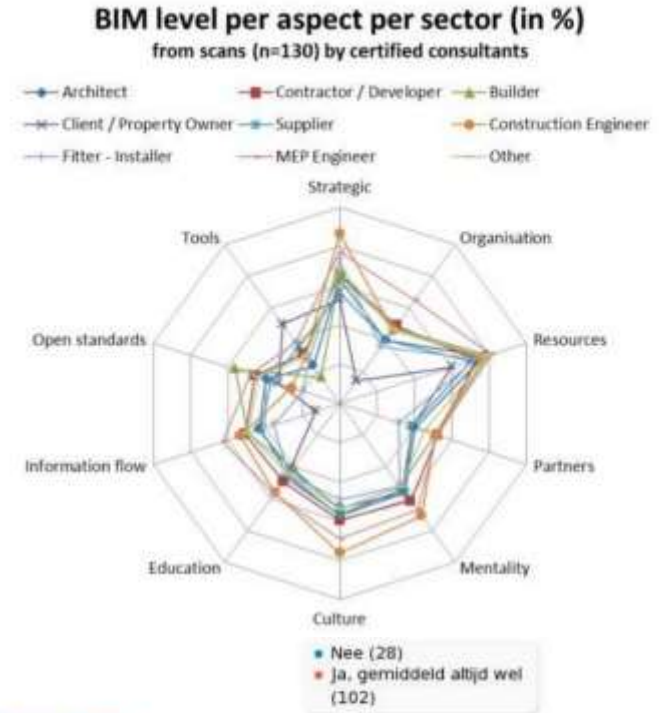
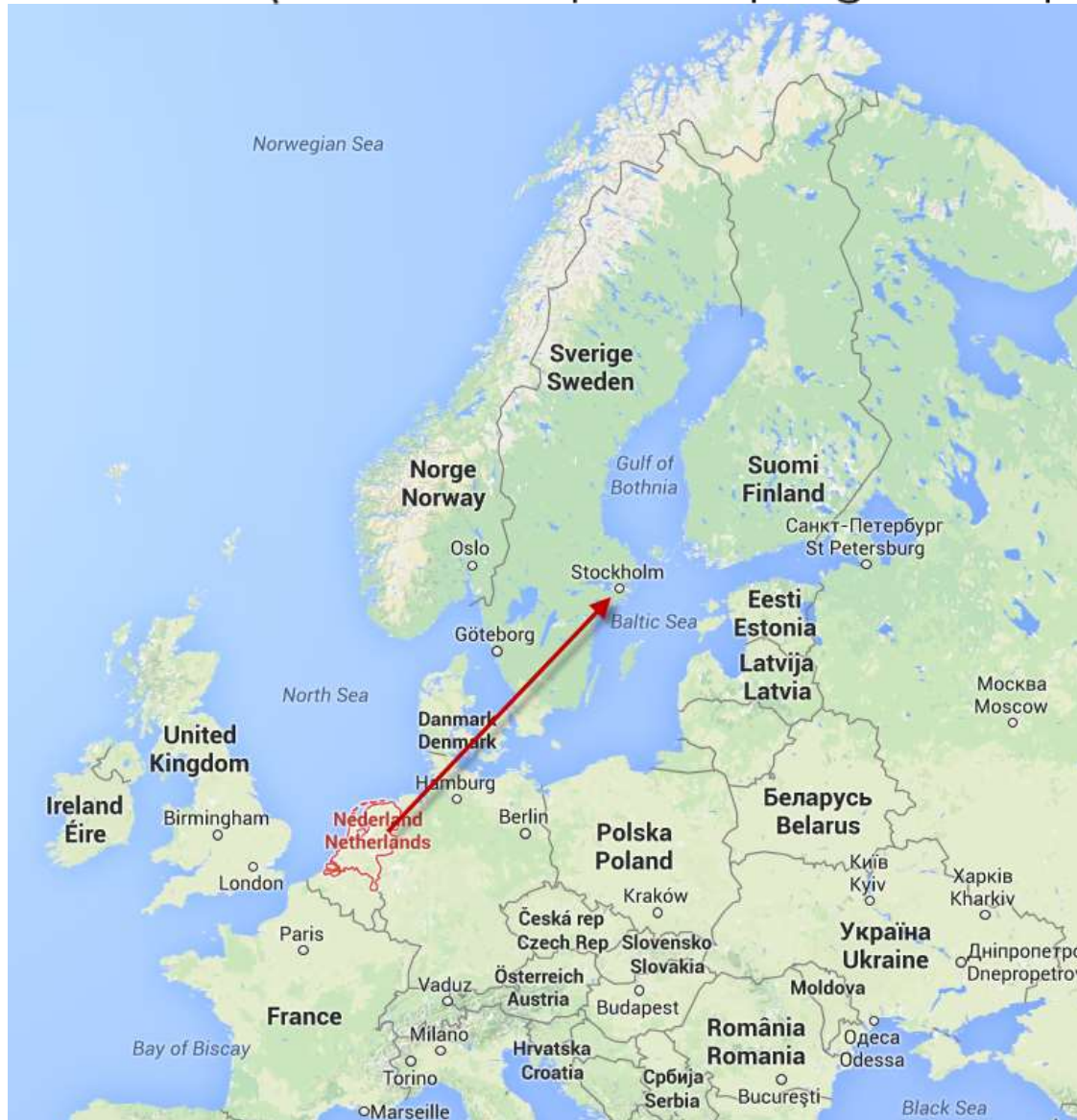
Clients include:



throughout the construction chain, Mainly building Industry

# The Netherlands; A small country,

(but a lot of proud, progressive people, who like to work with BIM)



Do employees like working with BIM?  
Do they enjoy it?





Willem-Alexander became King of the Netherlands on 30 April 2013.



The Port of Rotterdam is Europe's largest port.



Dutch star football players Arjen Robben and Robin van Persie in a match in 2011

<b>Sovereign state</b>	 Kingdom of the Netherlands
<b>Government</b>	Unitary parliamentary democracy under constitutional monarchy
- Monarch	Willem-Alexander
- Prime Minister	Mark Rutte
<b>Legislature</b>	States General
- Upper house	Senate
- Lower house	House of Representatives
<b>Formation</b>	
- Burgundian Netherlands (fiefs ruled in personal union)	1384
- Habsburg Netherlands (fiefs ruled in personal union)	1482
- Spanish Netherlands (fiefs ruled in personal union)	1556
- United Netherlands (independent republic)	26 July 1581 (Declared) 30 Jan. 1648 (Recognised)
- Batavian Republic (Sister republic to France)	19 January 1795
- Netherlands (monarchy)	16 March 1815
- Charter for the Kingdom (constituent country)	15 December 1954
- Founded the EEC (now EU)	1 January 1958
<b>Area</b>	
- Total	41,543 km <sup>2</sup> (134th) 16,039 sq mi
- Water (%)	18.41



Amsterdam

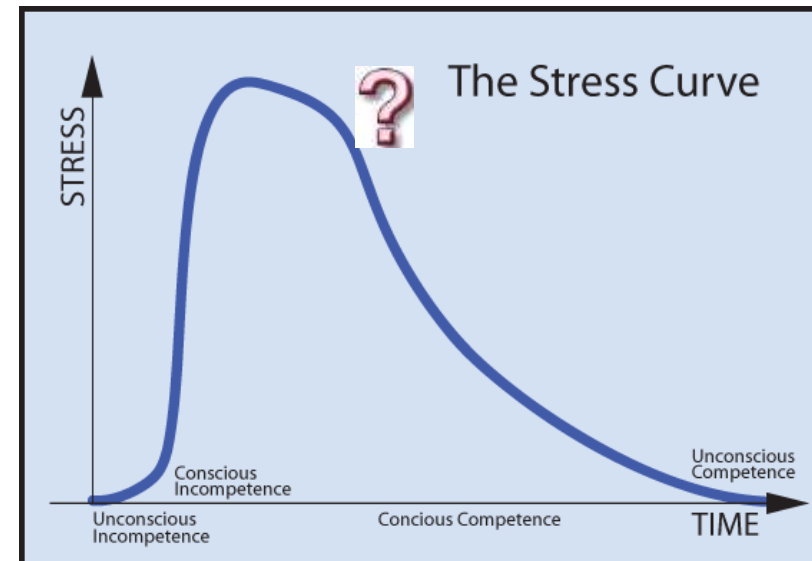
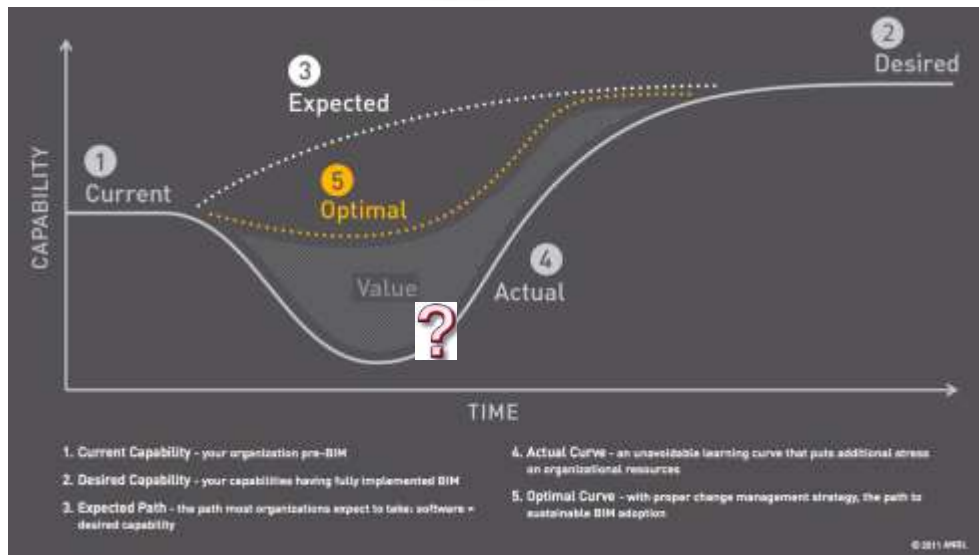
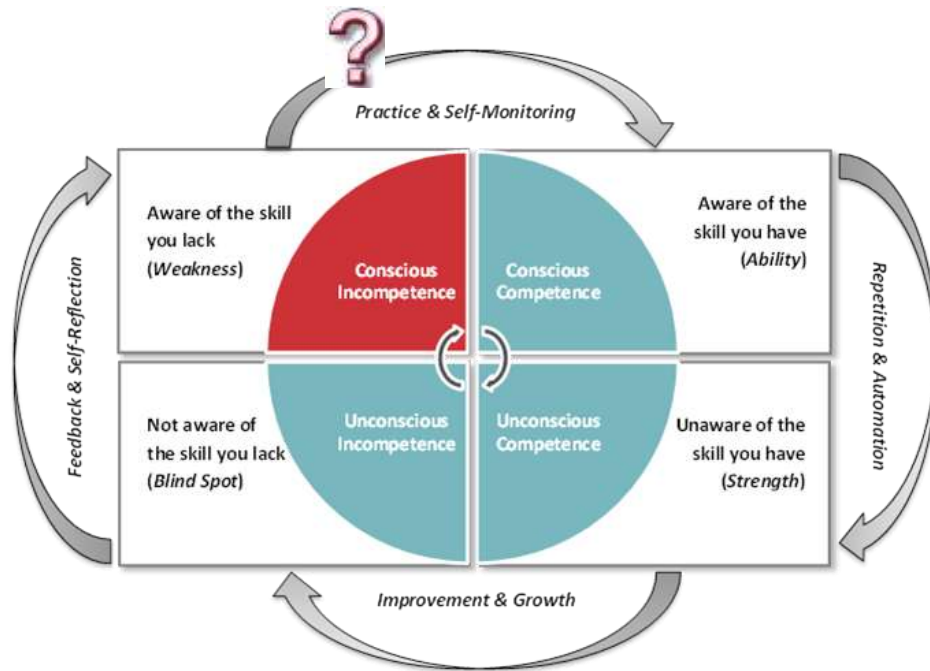


Rotterdam

- 1 Amsterdam
- 2 Rotterdam
- 3 The Hague
- 4 Utrecht
- 5 Eindhoven
- 6 Tilburg
- 7 Groningen
- 8 Almere
- 9 Breda
- 10 Nijmegen



# Where we are with BIM in the Netherlands



# Awareness BIM in the Netherlands, more than just a nice 3D model

## **What is BIM?**

*BIM is an acronym which represents three separate but linked functions:*

*Building Information **Modelling**: Is a BUSINESS PROCESS for generating and leveraging building data to design, construct and operate the building during its lifecycle. BIM allows all stakeholders to have access to the same information at the same time through interoperability between technology platforms.*

*Building Information **Model**: Is the DIGITAL REPRESENTATION of physical and functional characteristics of a facility. As such it serves as a shared knowledge resource for information about a facility, forming a reliable basis for decisions during its life-cycle from inception onwards.*

*Building Information **Management**: Is the ORGANIZATION & CONTROL of the business process by utilizing the information in the digital prototype to effect the sharing of information over the entire lifecycle of an asset. The benefits include centralised and visual communication, early exploration of options, sustainability, efficient design, integration of disciplines, site control, as built documentation, etc. – effectively developing an asset lifecycle process and model from conception to final retirement.*



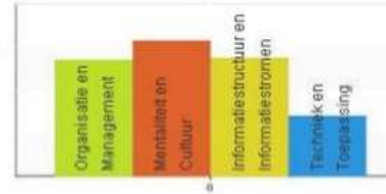
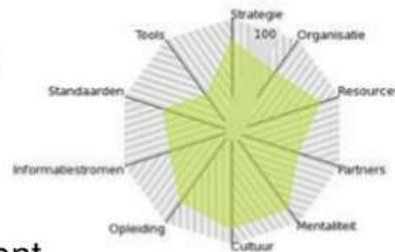
# BIM Quickscan – Maturity & Performance

Léon van Berlo M.Sc.  
State of the BIM in Holland

**TNO** innovation  
for life

## What we made: BIM QuickScan®

- › Online questionnaire
- › 45 multiple choice questions
- › 4 chapters:
  - › Organization and Management,
  - › Mentality and Culture,
  - › Data structures and Workflow,
  - › Tools and Technology.
- › 10 aspects (across chapters → resources, standards, education, etc..)
- › **Answers go into a TNO developed algorithm that calculates result shown in graphs**

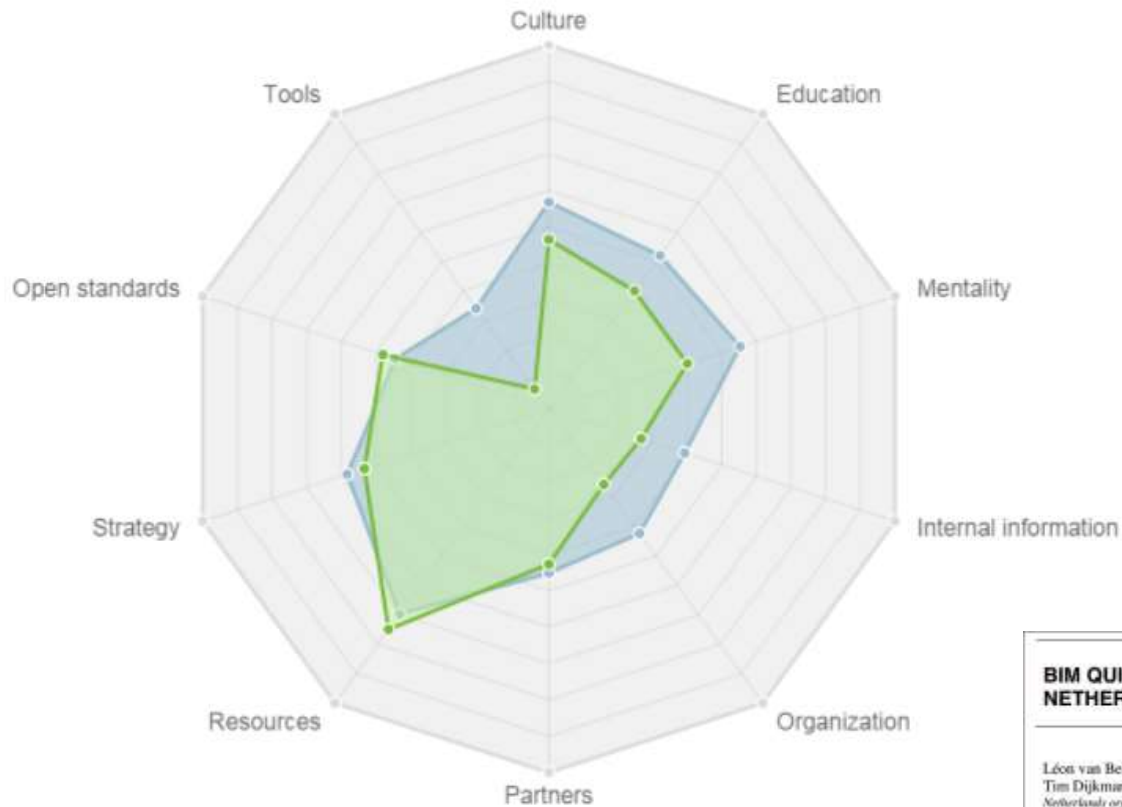




# Benchmark of BIM performance in the Netherlands



<http://bimquickscan.nl/>

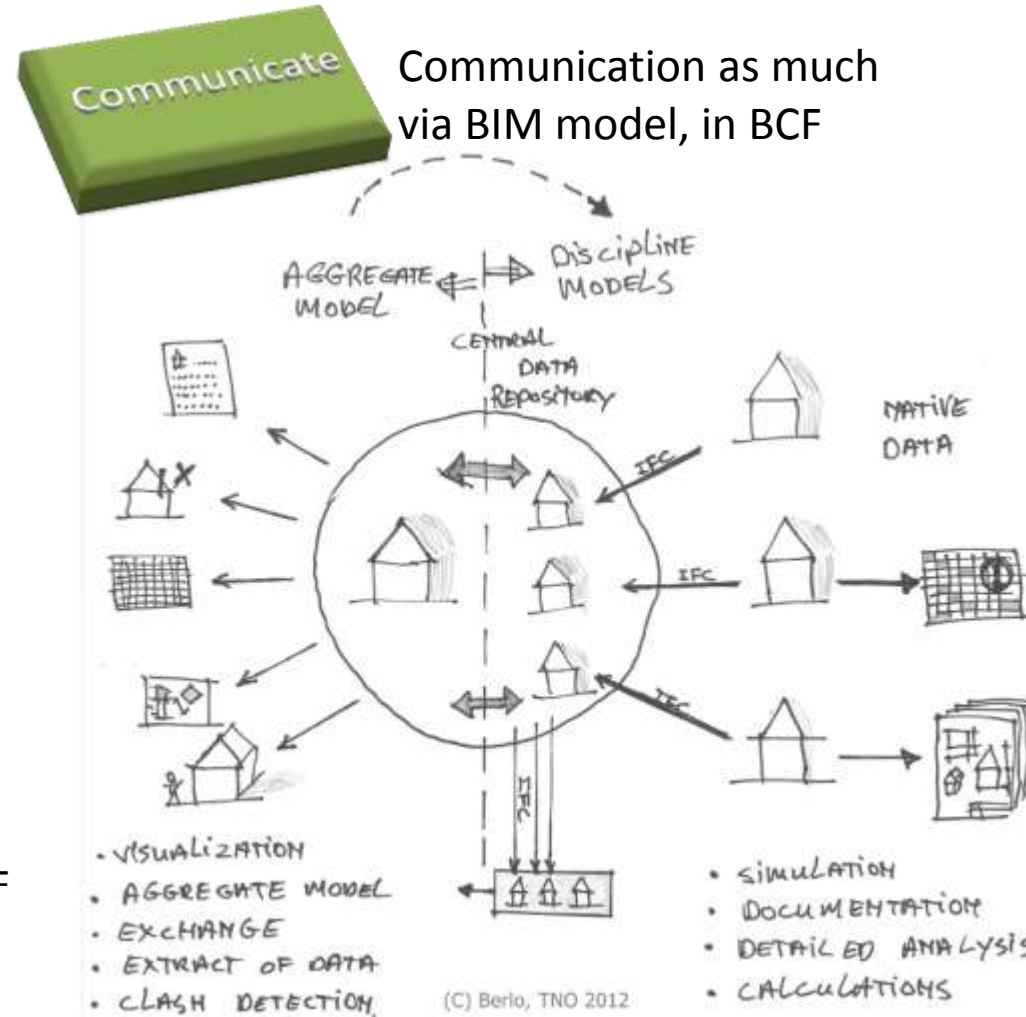


## BIM QUICKSCAN: BENCHMARK OF BIM PERFORMANCE IN THE NETHERLANDS

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Balance & Result, Deventer, The Netherlands

# Work methodology BIM becomes clearer

**OPEN BIM™**



**Coordination**

Coordination  
For example in  
Solibri, Tekla BIM sight,  
Navisworks  
Create communication in BCF

**Modelling**

Modelling in BIM, Working  
in native file format.  
Discipline models  
Export/Extract in IFC2x3

<http://www.slideshare.net/berlotti/there-is-no-central-bim-model>

<http://www.buildingsmart-tech.org/specifications/ifc-view-definition/ifc4-reference-view/ifc4-rv-objective>

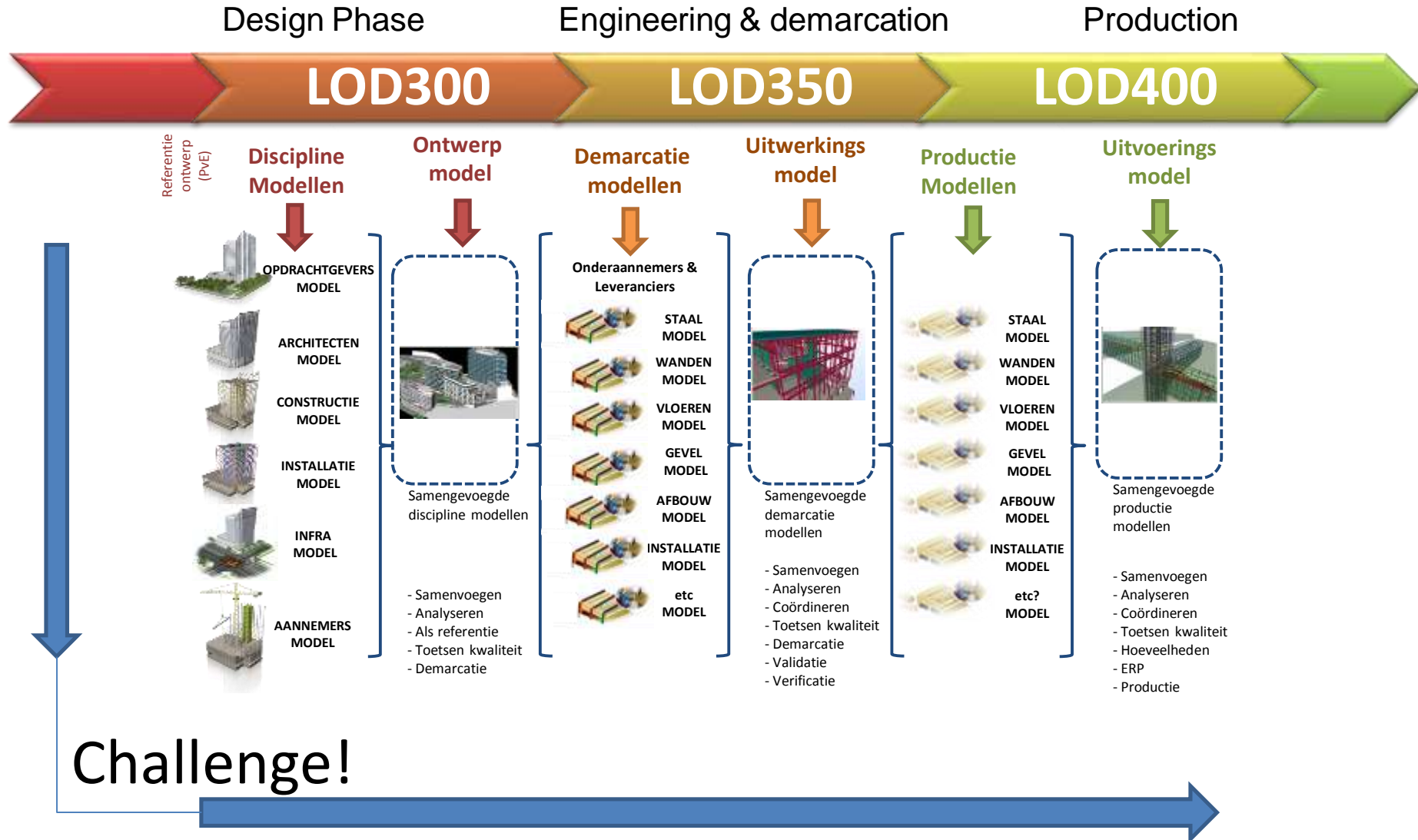
[http://bimserver.org/wp-content/uploads/sites/6/2010/11/ECPPM2012-Collaborative-engineering-with-IFC-new-insights-and-technology.doc\\_.pdf](http://bimserver.org/wp-content/uploads/sites/6/2010/11/ECPPM2012-Collaborative-engineering-with-IFC-new-insights-and-technology.doc_.pdf)

# Until we have our own "NLOD" .... LOD



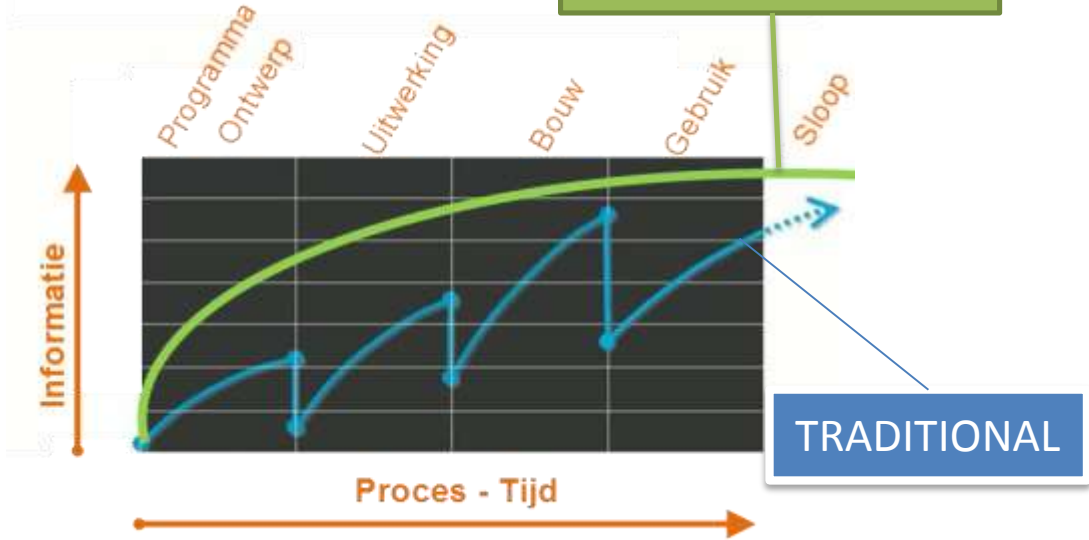


# Working with "Reference BIM models"



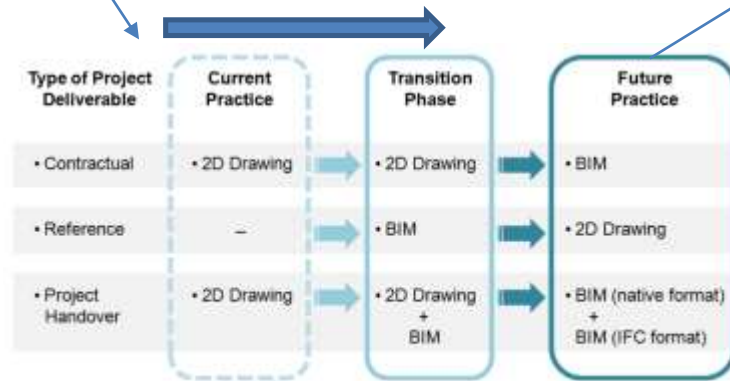
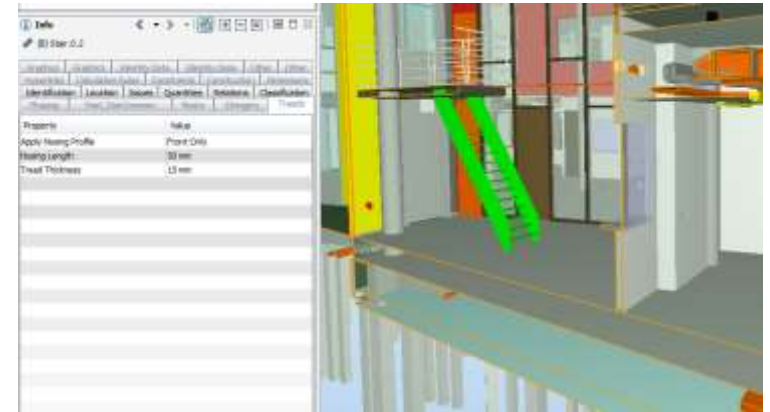
# Awareness, BIM “a new way of working”

BIM PHILOSOPHY



TRADITIONAL

- ✓ Document driven (2D)
- ✓ Several (new) partners
- ✓ Design – BID – Build as contract

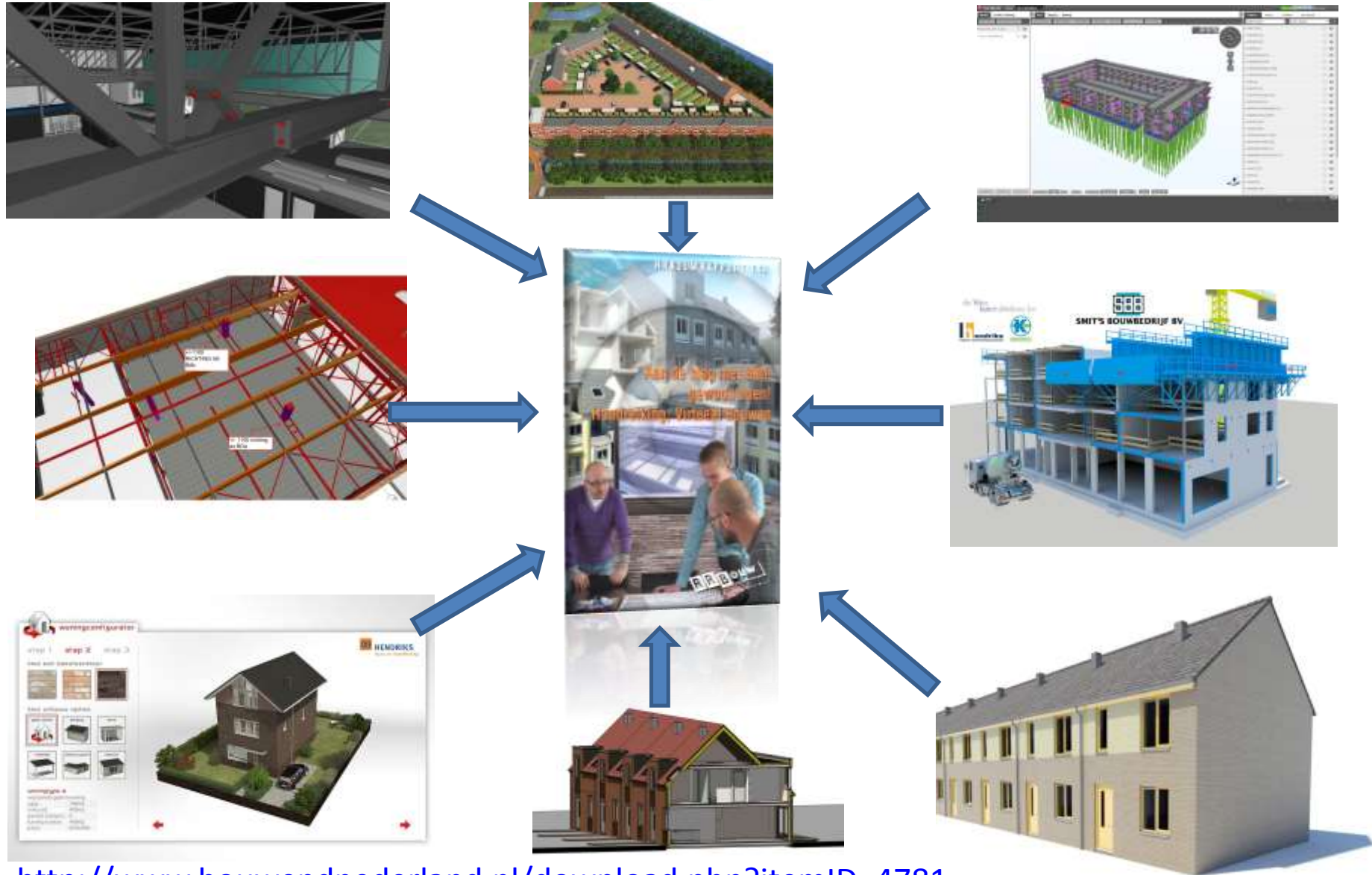


- ✓ Digitalization; 3D Geometry & Data
- ✓ concurrent engineering
- ✓ Lean process
- ✓ Chain integration with Co-makers
- ✓ Data re-use
- ✓ Added value client
- ✓ Integrated contracts

The changing status of 2D drawings and BIM from current to future practice

Source: Singapore BIM Guide

# Sharing BIM knowledge in the Netherlands



<http://www.bouwendnederland.nl/download.php?itemID=4781>

Also [www.bimcaseweek.nl](http://www.bimcaseweek.nl) and [www.bimguide.nl](http://www.bimguide.nl) , [nationaalbimhandboek.nl](http://nationaalbimhandboek.nl) and etc. etc.





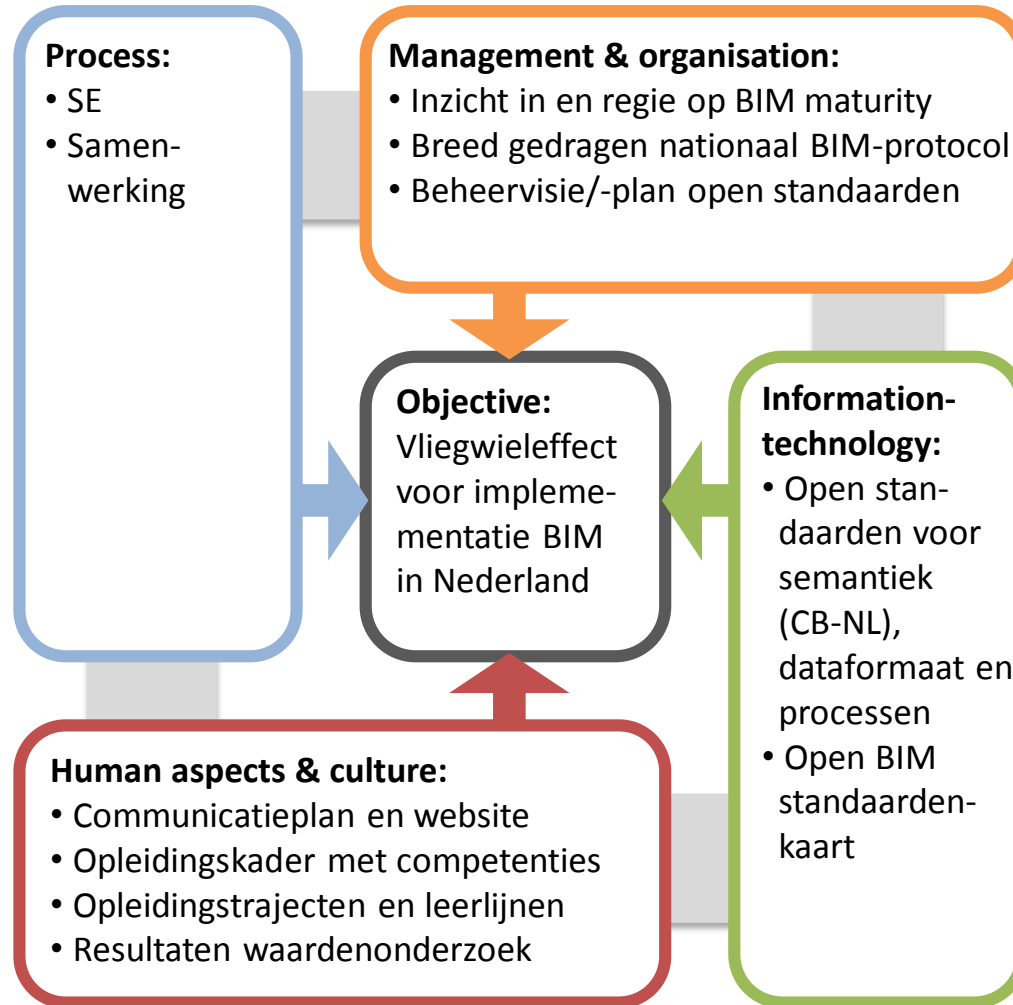
## The building Information Council (BIR)

- Representation:
  - Public clients (het Opdrachtgeversforum)
  - Contractors (Bouwend Nederland)
  - HVAC (UNETO-VNI)
  - Engineers (NLIingenieurs)
  - Architects (BNA)
  - Product manufacturers (FME)
- National policy on the implementation of BIM





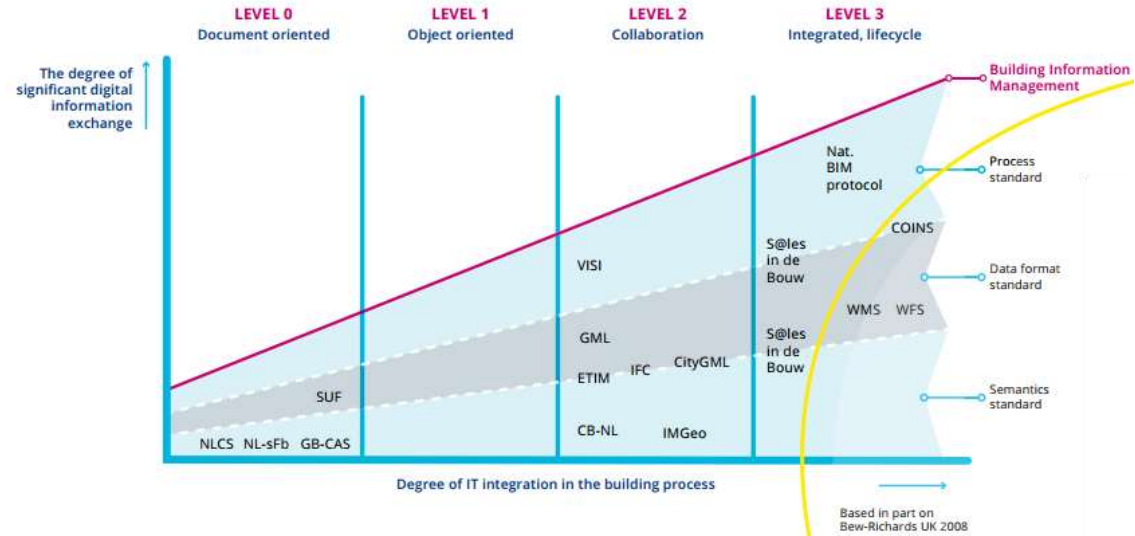
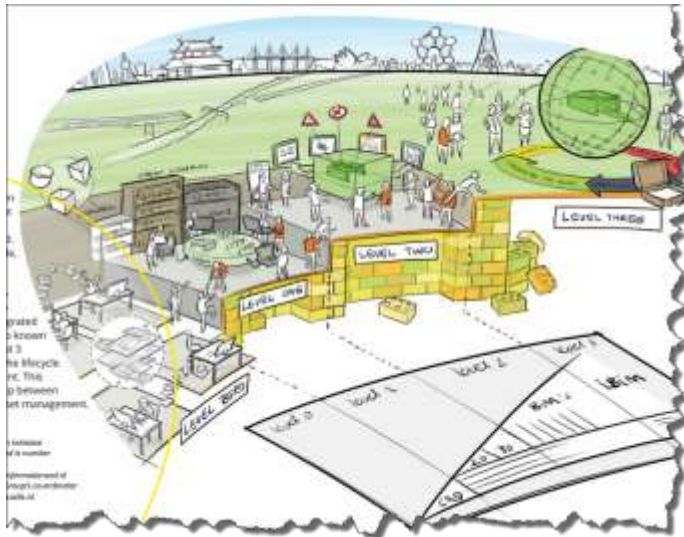
# Bouw Informatie Raad





### Dutch BIM Levels

Chain Integration by means of Open BIM Standards



[http://www.bouwinformatieraad.nl/wp-content/uploads/2014/03/bim\\_kaart01v2ENG.pdf](http://www.bouwinformatieraad.nl/wp-content/uploads/2014/03/bim_kaart01v2ENG.pdf)

[http://www.bouwinformatieraad.nl/wp-content/uploads/2014/03/bim\\_kaart02\\_v2ENG.pdf](http://www.bouwinformatieraad.nl/wp-content/uploads/2014/03/bim_kaart02_v2ENG.pdf)

[http://public.cbnl.org/upload/documents/2014/cb-nl\\_eng3%20DEFI%20140204.pdf](http://public.cbnl.org/upload/documents/2014/cb-nl_eng3%20DEFI%20140204.pdf)





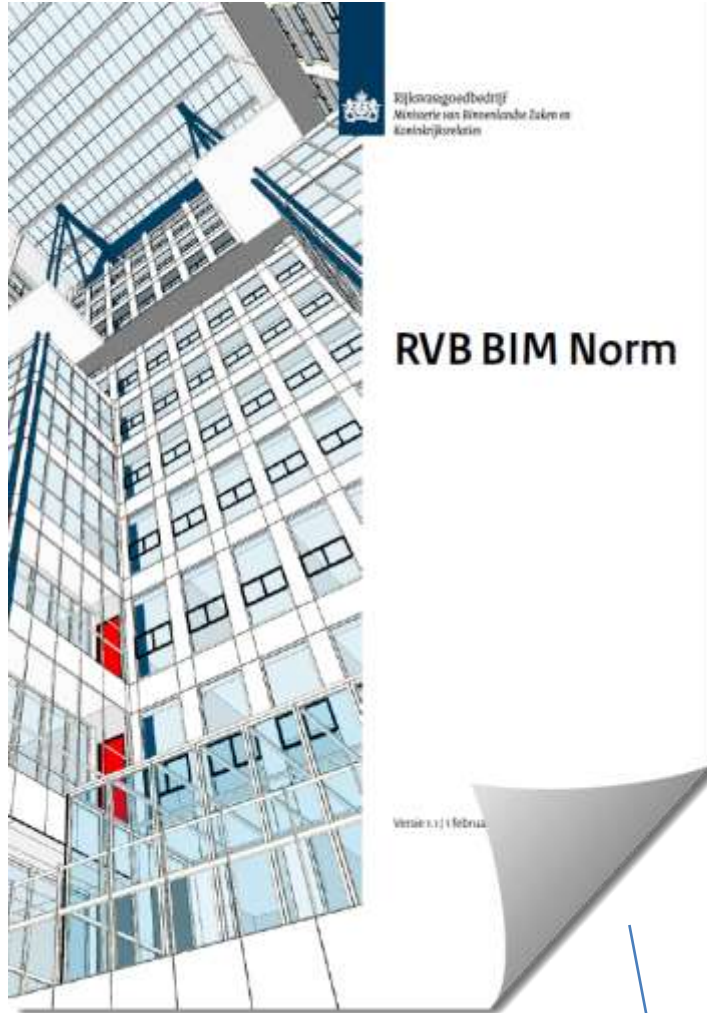
# BIM requirements



Rijksvastgoedbedrijf  
Ministerie van Binnenlandse Zaken en  
Koninkrijksrelaties

Government Buildings Agency  
mandates BIM

private sector catches on



<http://www.rijksvastgoedbedrijf.nl/english/expertise-and-services/b/building-information-modelling-bim>

# Motivation mandate RVB BIM standard:

- BIM fits RVB's decision to fully concentrate on its role as public real estate procurer
- RVB needs building information to be in control on individual buildings as well as the entire building stock (7,000,000 m<sup>2</sup>)
- Diminishing inefficiency – especially in maintenance and operation



Consistent  
&  
Uniform!!

# Which requirements in RVB BIM standard?

- All physical and spatial elements represented in the model – in principle in 3D
- Functional specifications attached to this representation
- All required building documentation and information extracted from the model

## Applications & File formats:

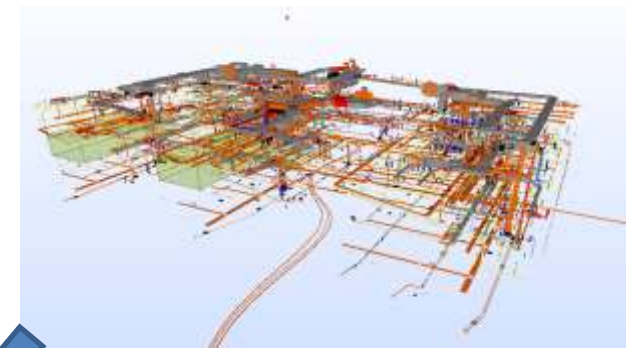
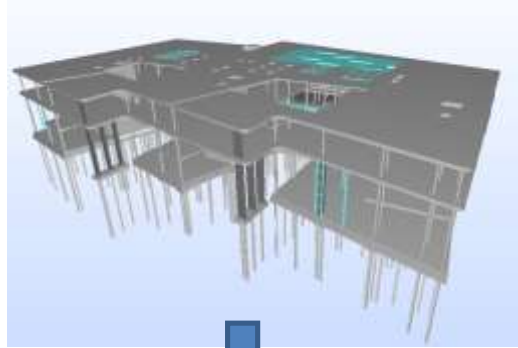
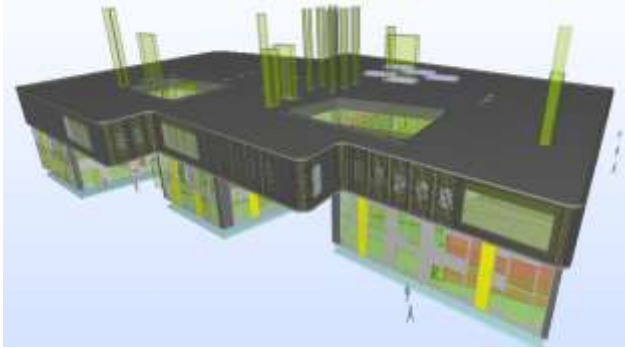
- Contractor may choose any BIM application or file format
- Extracted files in DWG (conventional plans, sections) and IFC2x3 (3D model)
- Native format BIM files must also be provided for development purposes



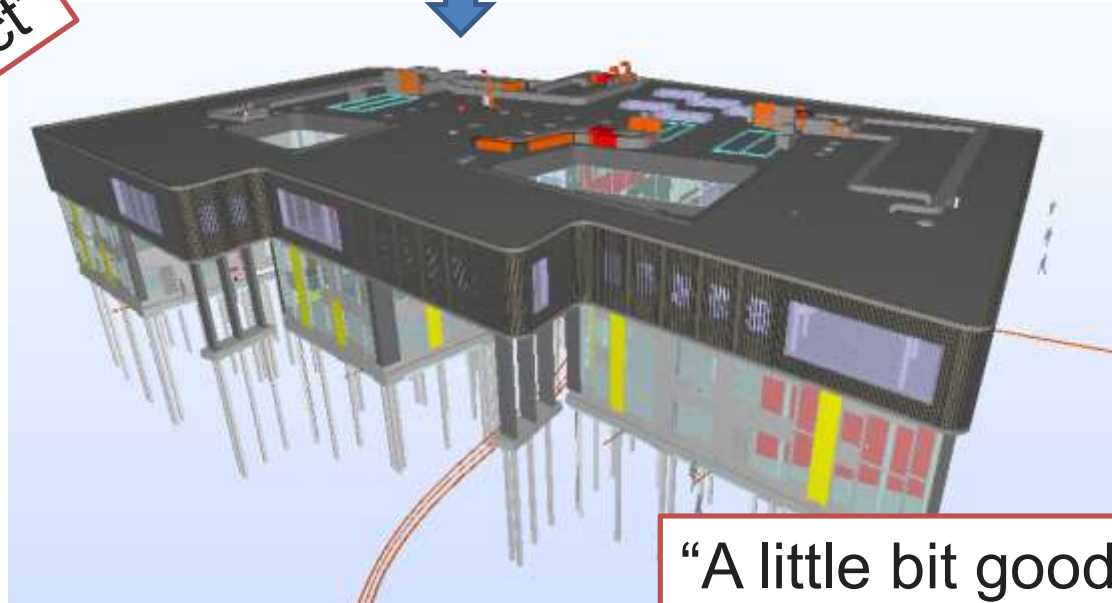
## Version 1.1. RVB BIM norm

- First priority: getting BIM exchange to actually work
- Experience leads to improved versions of standard
- Further development of standard communicated with organisations representing the construction sector
- Effect & possible monitoring the actual use BIM in the supply chain + ICT developments

# Example 1; BIM project - school



“Partially correct”



“A little bit good = wrong!”

# Use RVB BIM norm; First results & experiences

- It is realistic  
(several projects, from several parties, several applications)
- Valuable experience!
- Users admit; It brings uniformity!
- Quality is necessary if data is to be re-used
- Questions about creating efficiently BIM models
- Explicit standard; possible to review - model check
- Appears suitable for various clients!
- Provides directions – Clear target, also software vendors
- Processes started, improving from experiences!

*Compliments*

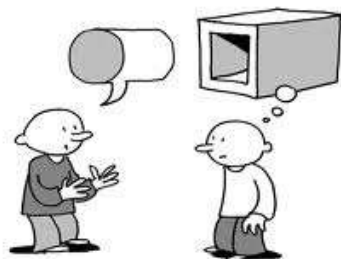


Rijksvastgoedbedrijf  
Ministerie van Binnenlandse Zaken en  
Koninkrijksrelaties





# Mandate BIM; 10 Practical observations



- |  |                       |
|--|-----------------------|
| 1. Resistance; <i>"our template is different"</i>  | laziness              |
| 2. <i>"Why this requirement?"</i>                  | why - why?            |
| 3. Our <i>"Software can't do it"</i>               | Lack of knowledge     |
| 4. <i>"We think IFC is not mature enough"</i>      | Excuses and " " "     |
| 5. Quality; <i>"Not our job!?"</i>                 | prejudice responsible |
| 6. <i>"We begin, we'll see later requirements"</i> | wrong start – mess    |
| 7. Working careless (thousands clashes)            | awkward               |
| 8. <i>"A good reason to ask more money"</i>        | why?                  |
| 9. <i>"collaboration with partners essential"</i>  | Correct!              |
| 10. <i>"Frightening; re-use of MY data"</i>        | Basically BIM!        |

# Example 3; BIM project – Housing

*modular building systems*



- High quality
- industrial platform
- Producing in fabric
- Assemble on site
- Residential-ready in 1 day!

**MorgenWonen<sup>®</sup>**

<http://www.volkerwessels.com/nl/projecten/detail/morgenwonen>

<http://www.morgenwonen.nl/>



# Netherlands BIM; Infrastructure / Civil

## “Rijkswaterstaat”

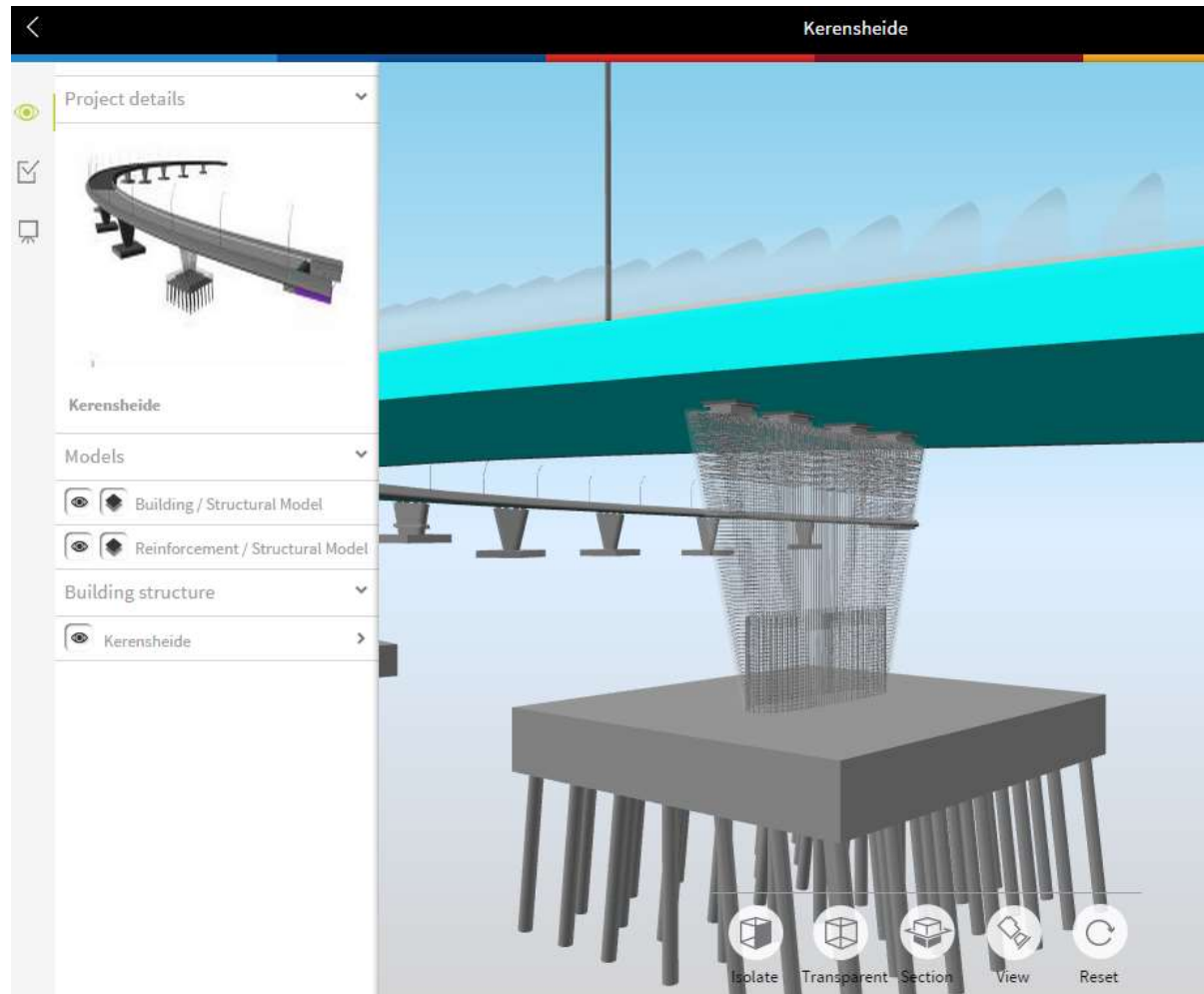
is part of the Dutch Ministry of Infrastructure and the Environment and responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands.

This includes:

- the main road network
- the main waterway network
- the main watersystems

The screenshot displays a web-based BIM-Database + tooling interface. At the top, there is a yellow header with the Dutch coat of arms and a navigation menu with options like Home, MAPS, Check In, Check Out, Monitor, Reports, Timeline, and Search. Below the header, the main content area is divided into several panels. On the left, an 'Entity browser' shows a tree structure of infrastructure assets, with a blue circle highlighting the 'Rijksweg 1 KD Amsterdam' folder. In the center, a 'Map Viewer' shows a 3D model of a road network. On the right, a 'Catalogue Part' dropdown menu is open, showing a list of categories: Clear Selection, Markering, Boorkern, Waterafvoer, Kabelleiding, Wegmeubilair, Groen, Geleideconstructie, Licht, Grene, Hectometerbord, and Kunstwerk. A blue arrow points from the highlighted folder in the Entity browser to the 3D model. A large, torn-edge graphic overlay at the bottom contains the following text: 'Het model zorgt voor gestructureerde en uniforme informatie-uitwisseling tussen opdrachtgevers en -nemers, zodat tijdige en juiste informatie in elke fase van de levenscyclus van bouwwerken beschikbaar is. RWS wil vanaf eind 2014 in 20% van de projecten BIM voorschrijven.'

# Example 4; BIM project – Fly over A2-A76



[http://www.wegenwiki.nl/Knooppunt\\_Kerensheide](http://www.wegenwiki.nl/Knooppunt_Kerensheide)

<https://www.bimplus.net>

<https://movares.nl/project/fly-over-kerensheide/>

# Some initiatives, The Netherlands

IAI Benelux Chapter.



<http://www.buildingsmart.nl/>

<http://nationaalbimhandboek.nl/>

<http://bimguide.nl/>

<http://bimie.nl/>

<http://www.debimnorm.nl/>



COINS - the Netherlands

Process integration in the building industry, on the basis of 3D-objects

Defining c-BIM (model) & CEM (Engineering method)

[www.coinsweb.nl](http://www.coinsweb.nl)

<https://visi.codeplex.com/>

<http://www.crow.nl/visi>



BiMserver [www.bimserver.org](http://www.bimserver.org)

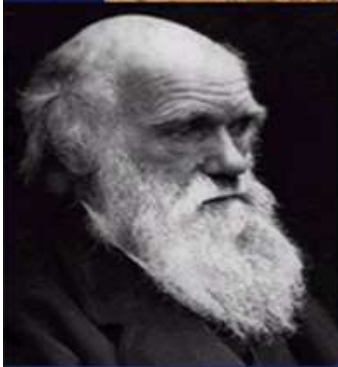


# BIM Challenges

- BIM use and re-use through whole lifecycle
- Companies & BIM initiatives must work together as one!
- Uniform method & requirements to accelerate standardization
- Improve productivity by using BIM (learning from projects)
- (Integrated) contracts aligned with BIM
- Next strategic “Push” from government, clients, industry
- Further developing open standards (IFC, IDM, IFD, etc)
- Benefits more visible and measurable – connected to user
- ICT – better, cheaper, simpler, faster
- Embedding & use scanning & digitizing of existing buildings
- Most importantly: Human behavior – Mentality and culture!



# Thanks for your attention



**“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”**

**Charles Darwin**

Hans Hendriks  
deBIMspecialist