

## Enhancing Society through Consistent BIM data Royal HaskoningDHV's Vision and Approach

BJ7104-RHD-XX-XX-PP-DT-0002

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# **Our Purpose**



# **Enhancing Society Together**



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# **Enhancing Society through consistent BIM data**

Learning goals of this presentation

- Get an understanding of how Royal HaskoningDHV uses BIM data to enhance society
- Gain insights on consistent BIM data in context of sustainability
- Understand the complexity of consistent BIM data
- Convey an approach to get people to use and produce this consistent BIM data



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# **5 key themes**

- Climate change
- Biodiversity & Natural systems
- Resources & Circularity
- Social value & Equality
- Safety & Well-being

Here we can have the *biggest positive impact* in delivering benefits for society and the environment. In the projects we deliver for our clients and in our own operations. Whilst contributing to related UN Sustainable Development Goals, the SDGs.



WE SUPPORT



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## Who we are



6,000 colleagues working from 65 offices around the world on projects in 100+ countries

We are **independent** international consulting engineers leading the way in sustainable development and innovation since 1881.

We take responsibility for having a **positive impact** on the world and we constantly challenge ourselves and our clients to develop sustainable solutions to local and global issues.

By **combining** engineering, design and consultancy with software and technology, we are delivering more added value to our clients. Enhancing Society Together!



in Engineering News-Record's Top 225 International Design Firms



# Where we lead





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# Integrating & Digitalising the built environment value chain



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#### Revetment with crown wall requires less core material



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# What is 1,500 tons of CO<sub>2</sub>?



1,500 tons emission is equal

to:



950+ economy class return flights from Amsterdam to Las Vegas



250 households of electricity use for one year



5 commercial flights into space



To compensate 1,500 tons we need:



125 ha of forest growing for 1 year



725 cars driving electric instead of gasoline for 1 year



11,000 solar panels instead of conventional power for 1 year

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## **Carbon footprint framework - Buildings**

Operational carbon



Source: leti.london

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## **Carbon footprint framework - Buildings**



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#### Embodied carbon study for data centre







#### Embodied carbon study for data centre



Chart Whole Building (tCO2e)

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#### Embodied carbon study for data centre



#### Sankey diagram global warming

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Challenge 1: How to create consistent BIM data?

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## What is consistent BIM data?



Source: information delivery cycle according to ISO-19650



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## What is consistent BIM data?

# <complex-block>

#### Project 2



#### Project 4





## Consistency

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## **Consistent BIM data**

#### **Connect information modelling and information management**



International Organization for Standardization



#### Set clear requirements with Client

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Challenge 2: How to get people to produce consistent **BIM** data?

## **Cultural dimensions**



Source: https://www.hofstede-insights.com

# **Our Approach**



A man in a hot air balloon realized he was lost. He reduced altitude and spotted a man below. He descended a bit more and shouted,

"Excuse me, can you help me? I promised a friend I would meet him an hour ago, but I don't know where I am."

The man below replied, "You are in a hot air balloon hovering approximately 30 feet above the ground. You are between 40 and 41 degrees north latitude and between 59 and 60 degrees west longitude."

"You must be an ENGINEER," said the balloonist.

"I am," replied the man, "How did you know?"

"Well," answered the balloonist, "everything you told me is technically correct, but I have no idea what to make of your information, and the fact is I am still lost. Frankly, you've not been much help so far."

The man below responded, "You must be a manager."

"I am," replied the balloonist, "but how did you know."

"Well," said the man, "you don't know where you are or where you are going. You have risen to where you are due to a large quantity of hot air. You made a promise that you have no idea how to keep, and you expect me to solve your problem. The fact is, you are in exactly the same position you were in before we met, but now, somehow, it's my fault."



# **Change management**

## An organizational change can only happen when individuals change

![](_page_22_Picture_2.jpeg)

![](_page_22_Figure_3.jpeg)

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# **Guiding principles**

![](_page_23_Picture_1.jpeg)

![](_page_23_Figure_2.jpeg)

Focus on commonalities, not on differences

![](_page_23_Figure_4.jpeg)

Aim for the highest possible international standard

![](_page_23_Figure_6.jpeg)

Structured knowledge network

![](_page_23_Picture_8.jpeg)

Ensure co-creation with content owners

![](_page_23_Picture_10.jpeg)

Information management

![](_page_23_Picture_12.jpeg)

Standardized workflows

![](_page_23_Picture_14.jpeg)

Create optimised multidisciplinary parametric models

![](_page_23_Picture_16.jpeg)

Data driven engineering process

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# **Collaboration with**

## **Enterprise Business Agreement**

![](_page_24_Picture_2.jpeg)

![](_page_24_Picture_3.jpeg)

 $\rightarrow 0$  Direct access to latest technology

Enterprise Priority Support

![](_page_24_Picture_6.jpeg)

Adoption Accelerators

![](_page_24_Picture_8.jpeg)

Managed Success Plan

![](_page_24_Picture_10.jpeg)

**Consultancy Services** 

## Way of working - continuous improvement

What if: we deal with Revit content like software developers deal with code

![](_page_25_Picture_2.jpeg)

![](_page_25_Figure_3.jpeg)

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![](_page_26_Figure_0.jpeg)

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## **BIM** standards

## **Model Authoring Standards**

![](_page_27_Figure_2.jpeg)

![](_page_27_Picture_3.jpeg)

Consistency

#### **Co-creation** per discipline (content owners)

![](_page_27_Picture_6.jpeg)

Accuracy

Avoid searching

Introduction Intention of use Overview of BIM/ DWoW Standards DWD Rese Intermedian Delivery Coordination (IDC)	4
Intention of use Overview of BIM/ DWoW Standards BM/ Bees Information Delivery Charities (IDC)	4
Overview of BIM/ DWoW Standards	
DIM Dass Information Delivery Constitution (IDC)	4
Dim base information betwery specification (iDS)	5
BIM Uses	5
Project Roles	6
Consistency and Reliability	2
Level of Model Definition	2
What do you need?	3
Installing the Content Synchronizer & Toolbar	3
Checking the Content Synchronizer & Toolbar	4
Starting a new project	5
Creating a new Revit project	5
Setting up Levels, Grids and Coordinates	5
How to use the Revit Template	7
General	7
View Templates	8
Sheet Composition	9
Information Management and CDE Platforms	11
General Modelling Principles	12
General	12
Use of model in-place families	13
Mirroring objects	14
Use of groups	14
3D Model Checking and Data Management	15
Data to be managed	15
Model Checking in Schedules	16
Model Checking in 3D Views	17
	Considency and Reliability Level of Model Definitions What do your need? Hotelling his Content Synchronizer & Toolber Checking the Content Synchronizer & Toolber Checking a new project Contents a new project Contents a new project Contents a new project Wew Tamplates Sheet Composition How to use the Revit Template General Morrour og Lowers Contents Contents I and Contents Contents Contents I and Contents

![](_page_27_Picture_10.jpeg)

# Implementation of standards

#### **Peoples Power**

![](_page_28_Picture_2.jpeg)

![](_page_28_Figure_3.jpeg)

![](_page_28_Picture_4.jpeg)

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## **Revit Content**

#### **Generate consistent Revit content**

![](_page_29_Picture_2.jpeg)

TECHNOLOGY

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# Monitoring

## **Monitoring of BIM Basics adoption**

![](_page_30_Figure_2.jpeg)

![](_page_30_Picture_3.jpeg)

Automated validation of BIM Basics compliance per BIM model

![](_page_30_Picture_5.jpeg)

![](_page_30_Picture_6.jpeg)

No manual work and occupied personal computers

![](_page_30_Figure_8.jpeg)

Improved BIM model performance

Realizing the benefits of working in a **Common Data Environment** 

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# Monitoring

R

RVT

## **Monitoring of BIM Basics adoption**

![](_page_31_Picture_2.jpeg)

![](_page_31_Figure_3.jpeg)

![](_page_31_Picture_4.jpeg)

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![](_page_32_Picture_0.jpeg)

## **Monitoring** Monitoring of BIM Basics adoption

![](_page_32_Figure_2.jpeg)

![](_page_32_Figure_3.jpeg)

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## Way of working - continuous improvement

![](_page_33_Picture_1.jpeg)

![](_page_33_Figure_2.jpeg)

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![](_page_34_Picture_0.jpeg)

# If you want to go fast, go alone If you want to go far, go together

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