

CI226444 – Get Organized Civil Infrastructure Projects

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The Story

THE PROJECT

- THE CHALLENGES
- THE GOAL

DOCUMENT MANAGEMENT

LESSONS LEARNED

Q&A





The Project

OpenIJ - The largest sea lock in the world after completion
The main entrance to the Port of Amsterdam





About the speaker

Cees Kruit



About BAM



Key figures

	Revenue 2017:	€ 6.6 billion
	Adjusted result before tax	€ 63.3 million
	Orderbook at year-end 2017	€ 11.6 billion
	Employees (average; in FTE)	19,720
	Operating companies	10
	Countries	40 worldwide; 5 European home markets
	Shares	275 million

BIM Level 2 Pass 1192 Certified



*Little lock (1872)
Southern lock (1876)*

Middle lock (1896)

Northern lock (1929)

Existing



*Little lock (1872)
Southern lock (1876)*

Middle lock (1896)

Northern lock (1929)

New

Deze afbeelding is slechts een impressie van de toekomstige sluis. In de Planstudie zal bekeken worden wat de definitieve lokatie wordt.



Today's Class

- Learn about managing engineering and construction data
- Learn how to pick the right solution for your projects needs
- Learn what brings the cloud to civil infrastructure projects
- Learn how to maintain the BIM execution plan

Facts and Numbers Sea Lock OpenIJ

545

METER LONG

Maximum ship length
of 500 meter
(1788 ft)

70

METER WIDE

Between Lock Walls
(229 ft)

18

METER DEEP

Limited by the depth
of the North Sea Canal
(59 ft)

3

DOORS

Two operational doors and
one spare door.
Weight of 2.800 tons each,
and high as a 10-floor building



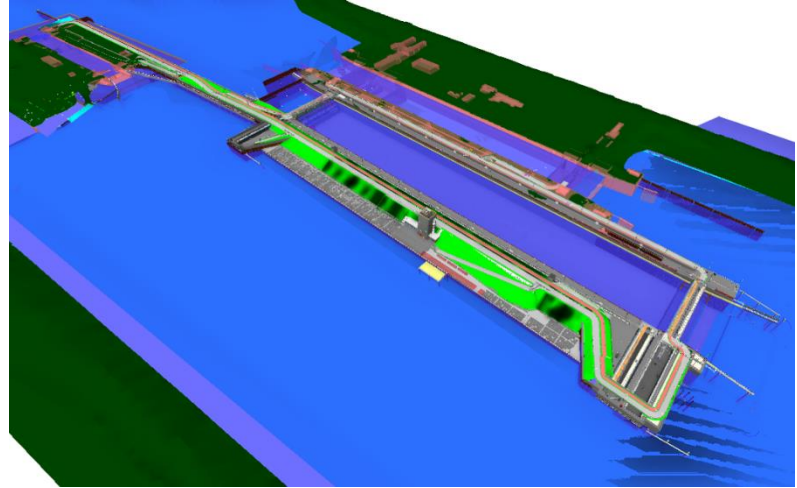
Panama canal lock



427x55x18,3
(1400x180x60 ft)

Was the Largest Lock in the World

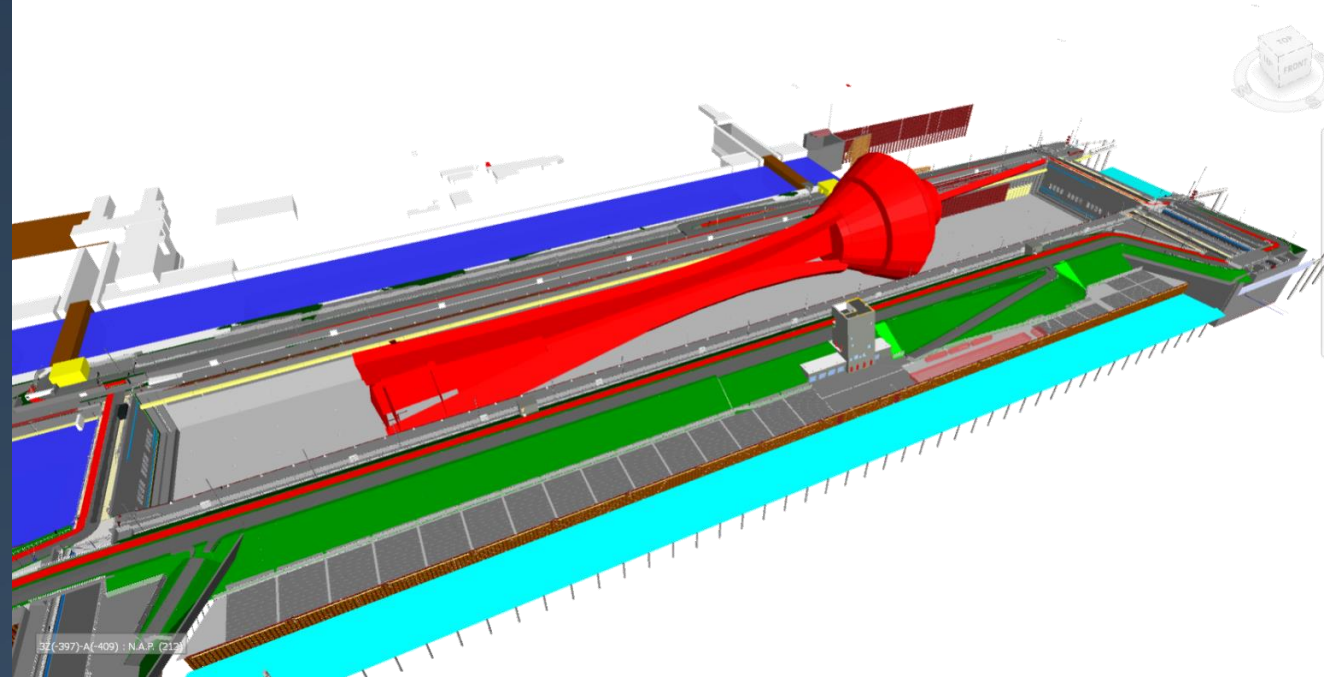
Sea Lock Openij



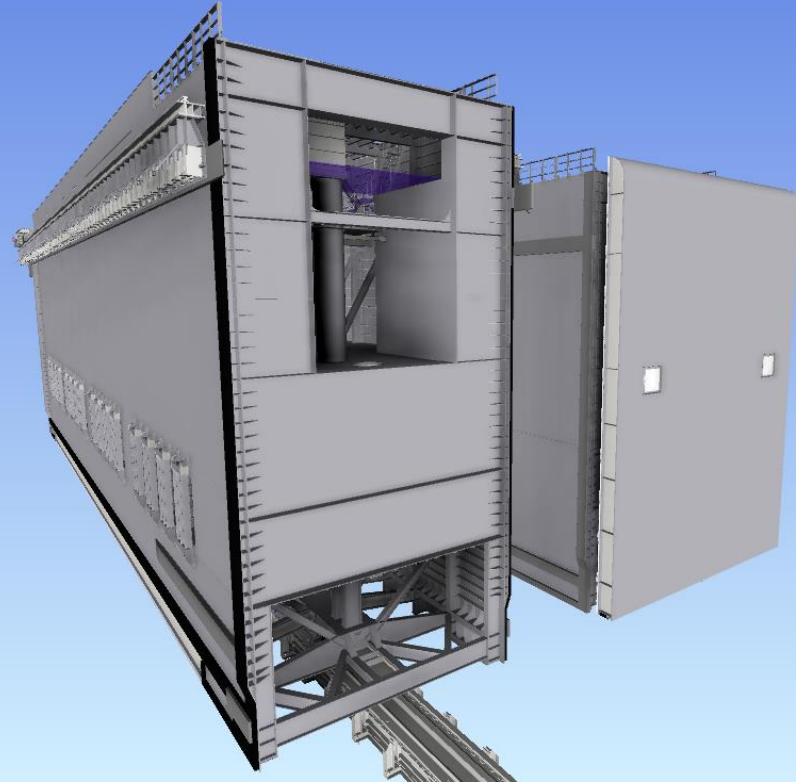
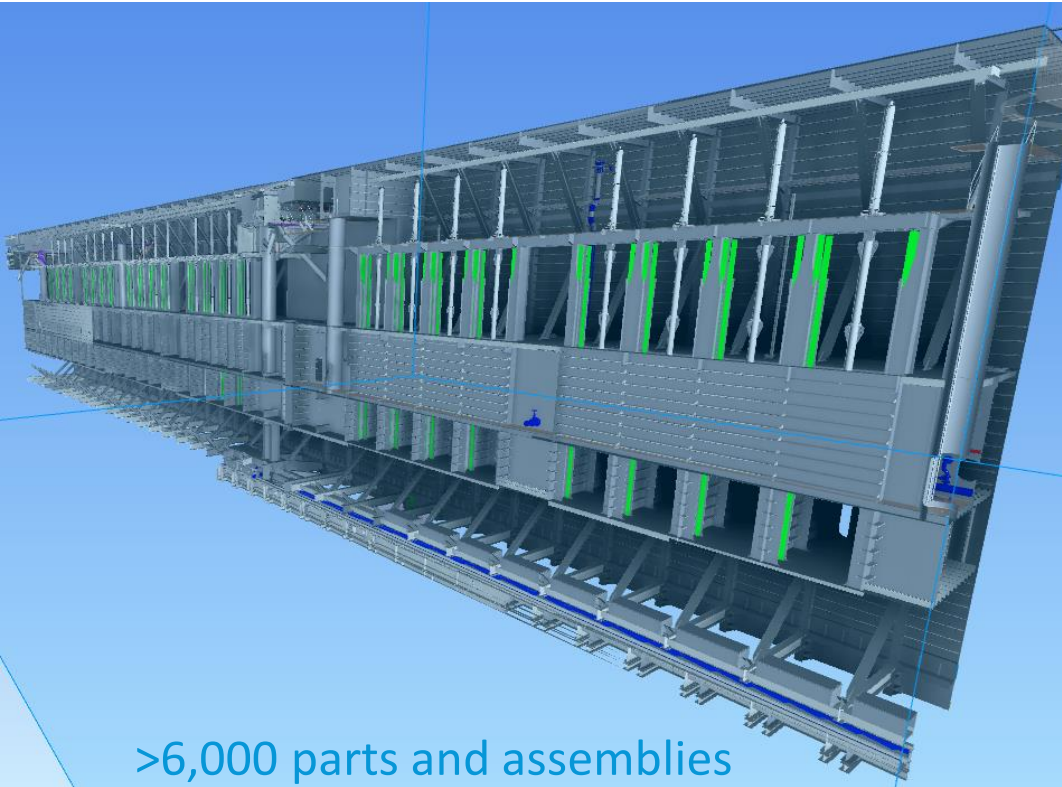
545x70x18
(1788x229x59 ft)

The Largest Sea Lock in the World

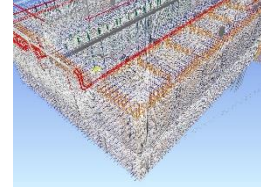
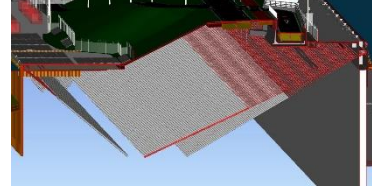
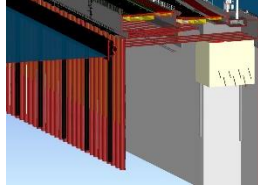
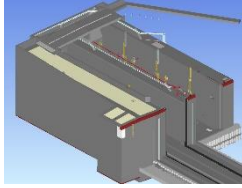
Reference



Lock Doors



Facts and Numbers Sea Lock OpenIJ



290,000

M³ CONCRETE

7,500

TONS TUBULAR PILES

2,000

ANCHORS

25,000

TONS REINFORCEMENT

29,000 Trucks with Concrete

New York City to

Washington DC

(8475520ft³)

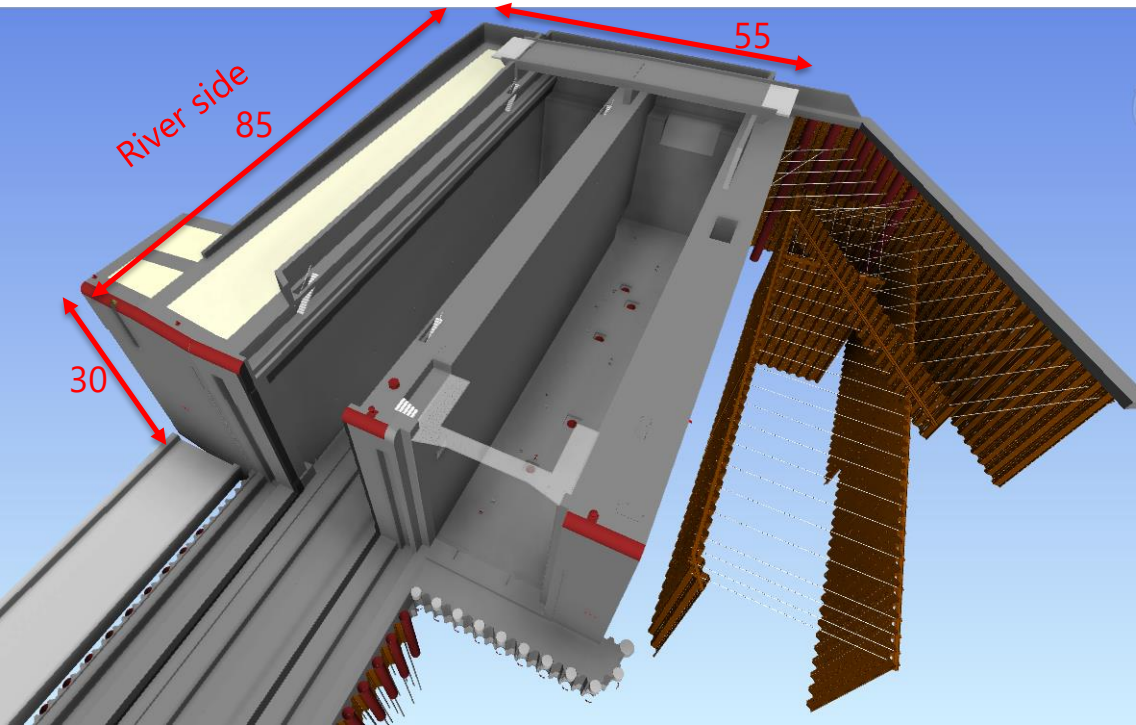
(1.6535e+7lbs)

25,000 Cars

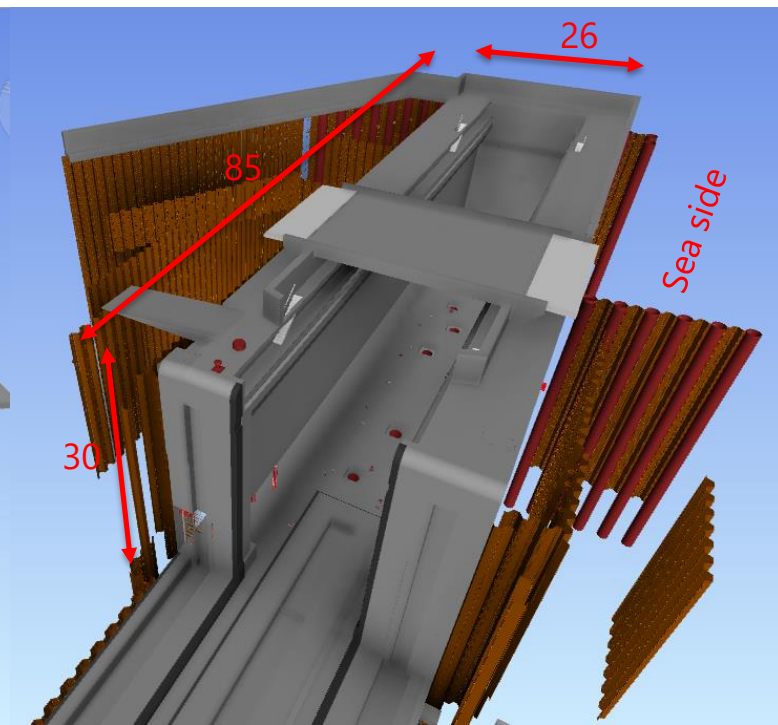
(5.5116e+7lbs)



Facts and Numbers Sea Lock OpenIJ



Inner Lockhead



Outer Lockhead

Facts and Numbers Sea Lock OpenII

290,000

M³ CONCRETE

7,500

TONS TUBULAR PILES

2,000

ANCHORS

25,000

TONS REINFORCEMENT

29,000 Concrete Trucks

New York City to
Washington DC

25,000 Cars

4,500,000 m³ Soil!
(1.589160e+8ft³)



4,500,000 m³ of excavated soil

6,000 swimming pools or 2 times the Johan Cruijff Arena



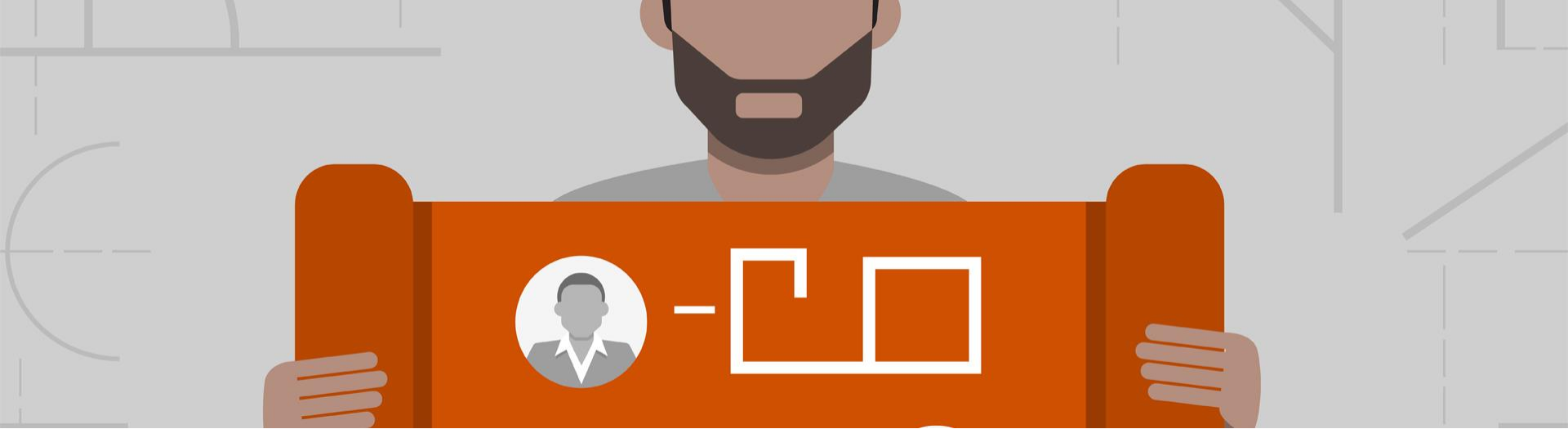
The Problem

- Different participants, Bring your own device
- 30 different CAD users, different setups
- Different Template, Different Workflows
- ICT on different locations, Network



The Problem

- **Large variety of file formats**
- No control on file versions and Revisions
- Reference files
- Duplicates



BIM Execution Plan

- Describe all items
- Update regular on experiences
- Work all in same way, if possible!



Used software to control

- Revit
- Inventor
- Civil 3D
- AutoCAD

Integration

- Navisworks
- Dynamo
- 3ds Max
- ePLAN

Check-in/out

- Solidworks
- Allplan
- VOSS

Mappenstructuur



H:\EPC\TMO\CAD\

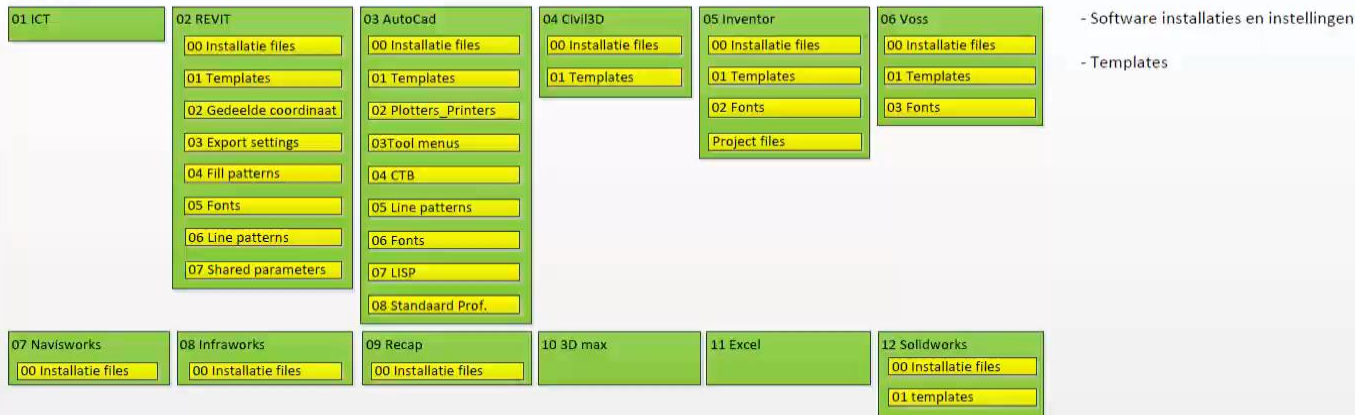
01

- 01 Instellingen
- 01 Bibliotheek
- 01 Hoofdmap
- 01 Publicaties / archivering / upload TP

- 01 Uitwisseling
- 01 Werkbestanden Revit/civil 3D, etc
- 01 Snelkoppeling
- 01 Link naar werkinstructie

01 WIP

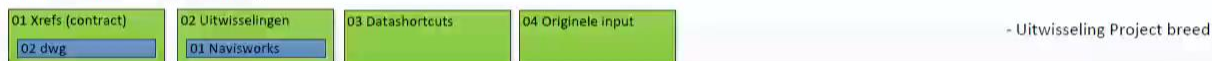
01 Support



02 Bibliotheek



03 Referenties en Uitwisseling

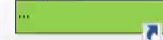


03 GIS

01 Werk



02 Input



03 Logboek

04 Ingekomen stukken

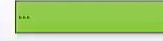


04 Richtlijnen

01 NLCS



02 Werkinstructies



03 CIB



05 Presentaties



The Goal

- Get well organized CAD platform with all different problems
 - Import 10,000 CAD files into the DMS of choice.
- Every CAD user to be happy working the new way
- Bring in an Engineering Document Management System. One that support the common used engineering software on the project.
- Available from inside and outside the OPENIJ office locations





Data @ the center

 AUTODESK®
VAULT PROFESSIONAL

 AUTODESK®
VAULT FILE SERVER



ampersand software



The Proposed solution

- Autodesk Vault Professional
 - Ampersand Software **AutoProperties Pro**
 - Ampersand Software **Publisher**
- Autodesk Vault File Server



Onboarding the project

Let's get started

START

Phases

PHASE 1

PROJECT APPROACH

Setup to define the scope

Define IT infrastructure

PHASE 2

PROOF OF CONCEPT

Setup IT Infrastructure

Scanning for data integrity
and missing references.

Pilot upload

Training Key users

PHASE 3

FINAL IMPLEMENTATION

Scanning data references

Import Civil Project

AutoLoad Inventor an

AutoCAD data

Filling meta data

PHASE 4

USER TRAINING AND

SUPPORT

Trained users based on

discipline en application
usage.

Period of maintenance and
support.



PHASE 1

A close-up photograph of a surveying level, likely a bubble level, with a blue tint. The level is positioned in the foreground, and its surface is covered in water droplets. In the background, a cityscape is visible, including a prominent church spire. The text "Scope the project" is overlaid in white, centered on the image.

Scope the project



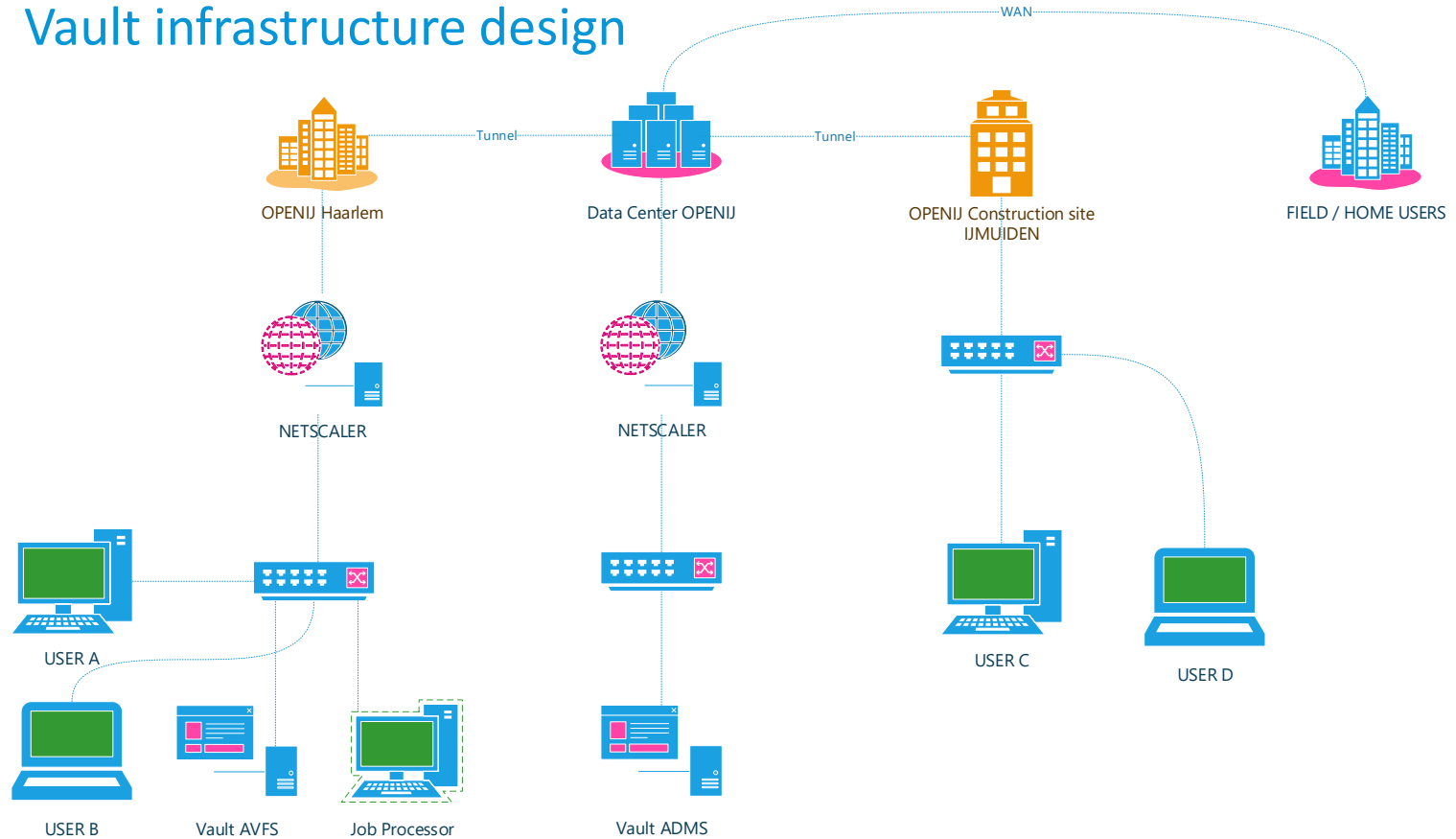
OLD

NEW

The Change

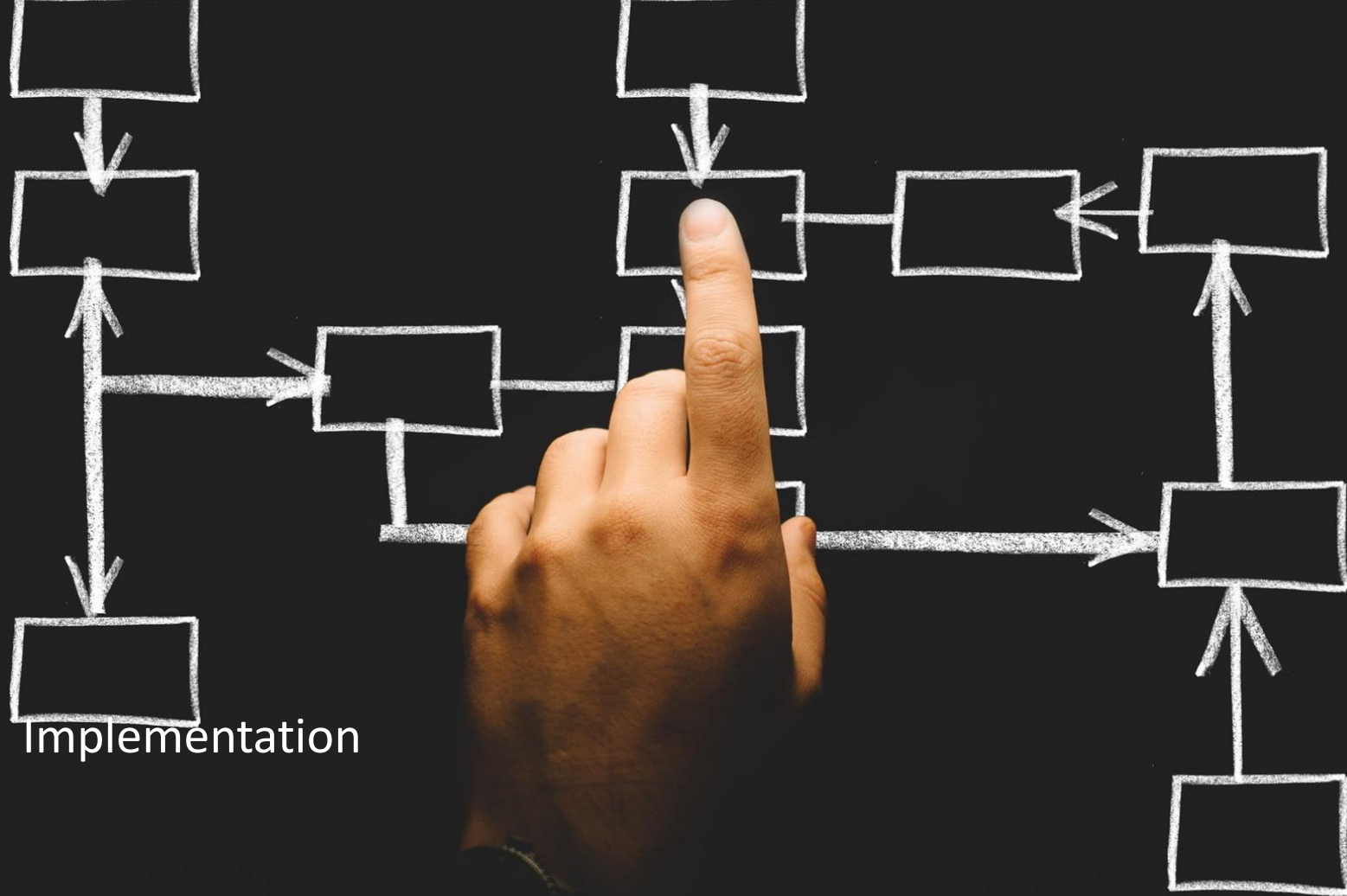
- Revit users
- Inventor Users
- AutoCAD users
- Civil 3D users

Vault infrastructure design





PHASE 2



File Name	Source Folder / Last Known	Status
<input checked="" type="checkbox"/> noordersluis2B CONSTRUCTIE.tif	D:\Hvg IJmuiden Noordersluis-Middensluis\Noordersluis TXQ	File can't be found(missing)
<input checked="" type="checkbox"/> Book1b.jpg	N:\Deltabox\Reprobox\INBOX\1208983	File can't be found(missing)
<input checked="" type="checkbox"/> Kadastrale_kaart_coord.dwg	L:\Sites\NL-Rotterdam\Project\9Q0029\Technical_Data\BB1189-104-115 P...	File can't be found(missing)
<input checked="" type="checkbox"/> Ondergrond_IJmuiden.dwg	L:\Sites\NL-Rotterdam\Project\9Q0029\Technical_Data\BB1189-104-115 P...	File can't be found(missing)
<input checked="" type="checkbox"/> zoekgebied zeesluis.dwg	L:\Sites\NL-Rotterdam\Project\9Q0029\Technical_Data\BB1189-104-115 P...	File can't be found(missing)
<input checked="" type="checkbox"/> DHV-variant 70 m opgeschoond.dwg	C:\tmp	File can't be found(missing)
<input checked="" type="checkbox"/> 011-0-ON-opgeschoond.DWG	C:\tmp	File can't be found(missing)
<input checked="" type="checkbox"/> Noordersluis Constructie met Meetpunten.tif	D:\Hvg IJmuiden Noordersluis-Middensluis\Noordersluis TXQ	File can't be found(missing)
<input checked="" type="checkbox"/> RWS-10672-v1-Verbeelding_PIP.dwg	H:\01 WIP\03 Referentie en Uitwisseling\01 Xrefs (contract)\02 dwg	Issue(s) in children
<input checked="" type="checkbox"/> Middensluis met Constructietekening 04-11-2...	H:\01 WIP\03 Referentie en Uitwisseling\01 Xrefs (contract)\02 dwg\RWS-1...	Issue(s) in children
<input checked="" type="checkbox"/> Noordersluis Constructietekening 05-11-2014....	H:\01 WIP\03 Referentie en Uitwisseling\01 Xrefs (contract)\02 dwg\RWS-1...	Issue(s) in children
<input type="checkbox"/> d24fn.dwg	H:\01 WIP\03 Referentie en Uitwisseling\01 Xrefs (contract)\02 dwg	Successfully opened
<input type="checkbox"/> d25an.dwg	H:\01 WIP\03 Referentie en Uitwisseling\01 Xrefs (contract)\02 dwg	Successfully opened
<input type="checkbox"/> plot.log	H:\01 WIP\03 Referentie en Uitwisseling\01 Xrefs (contract)\02 dwg	Successfully opened
<input type="checkbox"/> Tekening vaarwegprofiel Sluis en MS (fase ein...	H:\01 WIP\03 Referentie en Uitwisseling\01 Xrefs (contract)\02 dwg	Successfully opened

Scanning file relations

- Files old drive mapping
- Files in personal folders
- Files in temp folders



Key users

- Onboarding key users
- Reflect configuration
- Change configuration on feedback
- Catalyst the acceptance of new solution



An abstract visualization of data upload. The image features a black background with a dense field of thin, glowing lines. On the left, a large number of red lines fan out horizontally. On the right, a large number of blue lines converge towards a single, bright, glowing point in the upper right corner. The lines are thin and have a slight wavy, organic quality. The overall effect is one of data being transmitted or stored.

Uploading data

Check it again

Project Explorer

- Project Explorer (5)
- ._Configuratie
- ._Content Center Files
- ._Design Data
- ._Revit Template
- As Built
- Content Center Files
- Deliverables
- Designs
- Libraries
- Persoonlijke mappen
- Project
 - 01 Revit
 - 02 AutoCAD
 - 03 CAD-data
 - 04 Civil 3D
 - !Xref
 - 00. Kadertekeningen
 - 01. Surfaces
 - 02. Alignments
 - 03. Corridors
 - 04. Input
 - 05. Output
 - 06. Data Shortcuts
 - 07. Section views
 - 08. Alternatieven
 - 09. Rijcurve
 - Civil 3D Data
 - Alignments
 - Centerline Alignments
 - Curb Return Alignments
 - Miscellaneous Alignments
 - Offset Alignments
 - Rail Alignments
 - Pipe Networks
 - Points
 - Pressure Networks
 - Profiles
 - Surfaces

My Shortcuts

Add new group

Home

Project Explorer

04 Civil 3D

Search 04 Civil 3D

Entity Type /

	Name	File Size	Vers...	State	Revision	
Folder						
	!Xref					
	00. Kadertekeningen					
	01. Surfaces					
	02. Alignments					
	03. Corridors					
	04. Input					
	05. Output					
	06. Data Shortcuts					
	07. Section views					
	08. Alternatieven					
	09. Rijcurve					
	Civil 3D Data					
	DTM					
File						
	Aansluitingen op bestaand.dwg	35.52 MB	2	Work in Progress	0	
	Draaiboek.dwg	4.62 MB	2	Work in Progress	0	
	Draaiboek-Blad01.dwg	3.99 MB	4	Work in Progress	0	
	Draaiboek-Blad02.dwg	3.99 MB	3	Work in Progress	0	
	Draaiboek-Blad03.dwg	4.02 MB	3	Work in Progress	0	
	Draaiboek-Blad04.dwg	4.08 MB	3	Work in Progress	0	
	Draaiboek-Blad05.dwg	4.09 MB	3	Work in Progress	0	
	Draaiboek-Blad06.dwg	4.10 MB	0	Work in Progress	0	

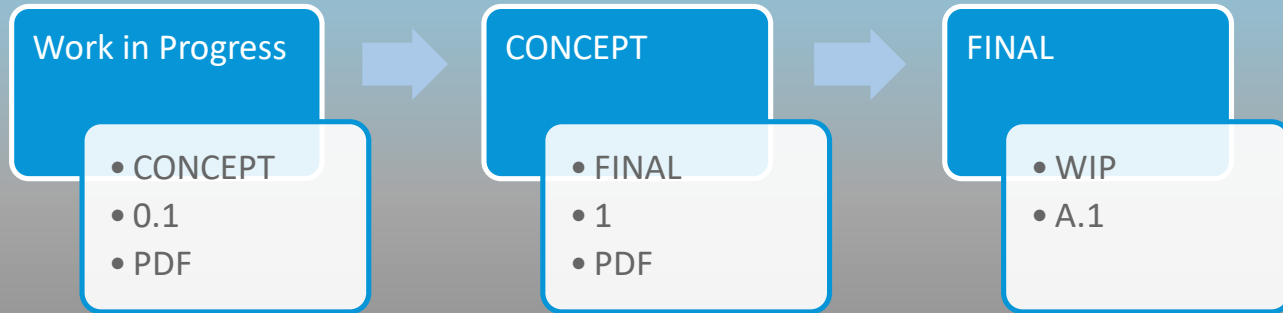
Properties

04 Civil 3D

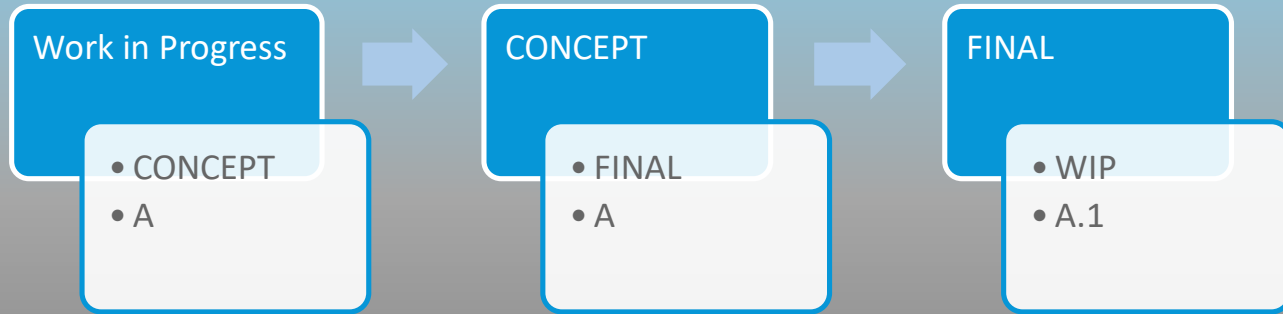
System

User Defined

Format	2
Programma	Civil 3D 2016
Programmacode	C3D
Type Tag	AeccFolderProject
Visibility	True



Drawing Process



External Reference Release Process





EDUCATION

INTERNSHIP

Let technology work for you

CHECK

Opdrachtgever: **Rijkswaterstaat**

Project: **Zeetoeegang IJmond**

Omschrijving: **Civiel**
Wegontwerp DO, Situatieblad
Bovenbouw

OPENIJ

Schaal: **1:500**

Opgesteld: **V.H. Nguyen**

Gecontroleerd: **L. de Barbanson**

TP-code:

Formaat: **A0L8**

Tekeningnummer: **OPENIJ-CIV-TW-DO-0010**

Status: **WORK IN PROGRESS**

Revisie: **0.5**

Revisie Datum: **12.04.2017**

Deze tekening is gebaseerd op: **c:\temp\project04\civil\3d\00_kadertekeningen\civ-tw-do-0010.dwg**

Opdrachtgever: **Rijkswaterstaat**

Project: **Zeetoeegang IJmond**

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TP-code:

Formaat: **A0L8**

Tekeningnummer: **OPENIJ-CIV-TW-DO-0010**

Status: **DEFINITIEF**

Versie: **1**

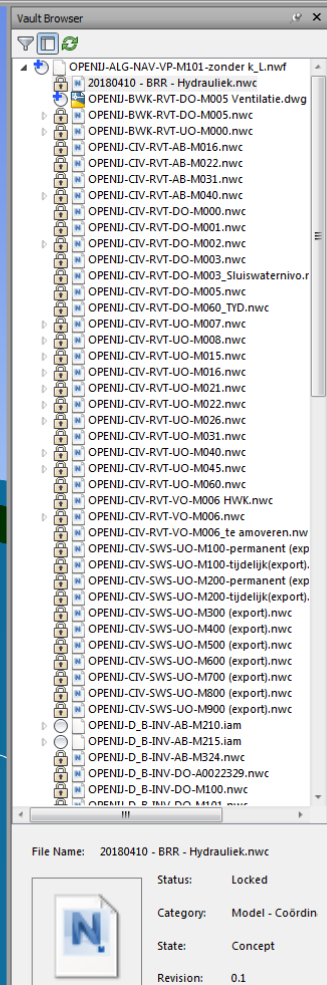
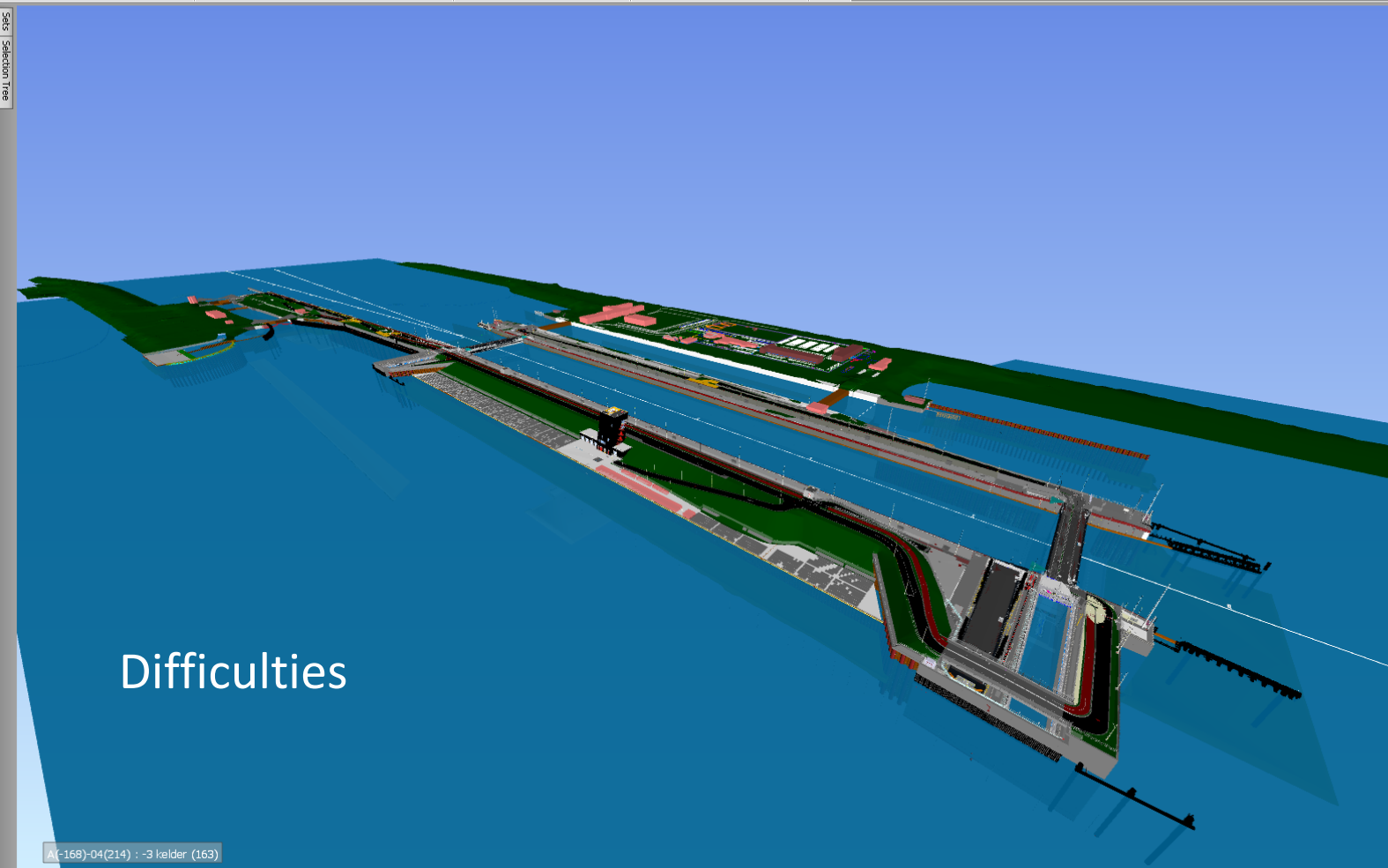
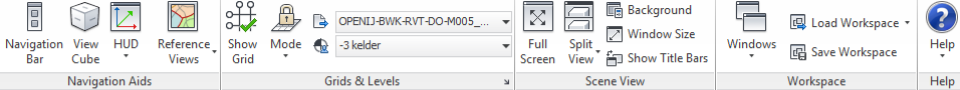
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State: Work in Progress

State: Final

Revision	0.5
Revision Scheme	
Revision Scheme (Historical)	OpenIJ
State	
State (Historical)	Work in Progress
Version	83
Visualization Attachment	None

Revision	1
Revision Scheme	OpenIJ
Revision Scheme (Historical)	OpenIJ
State	Definitief
State (Historical)	Definitief
Version	85
Visualization Attachment	None





DMS in practice

Usage

73

ENGINEERS

40,00

DOCUMENTS

247,000

VERSIONS

1

TERRABYTE

100 RVT's
2,000 DWG's
2,900 IAM's
2,200 PDF's
16,000 IPT's
16,800 unsorted

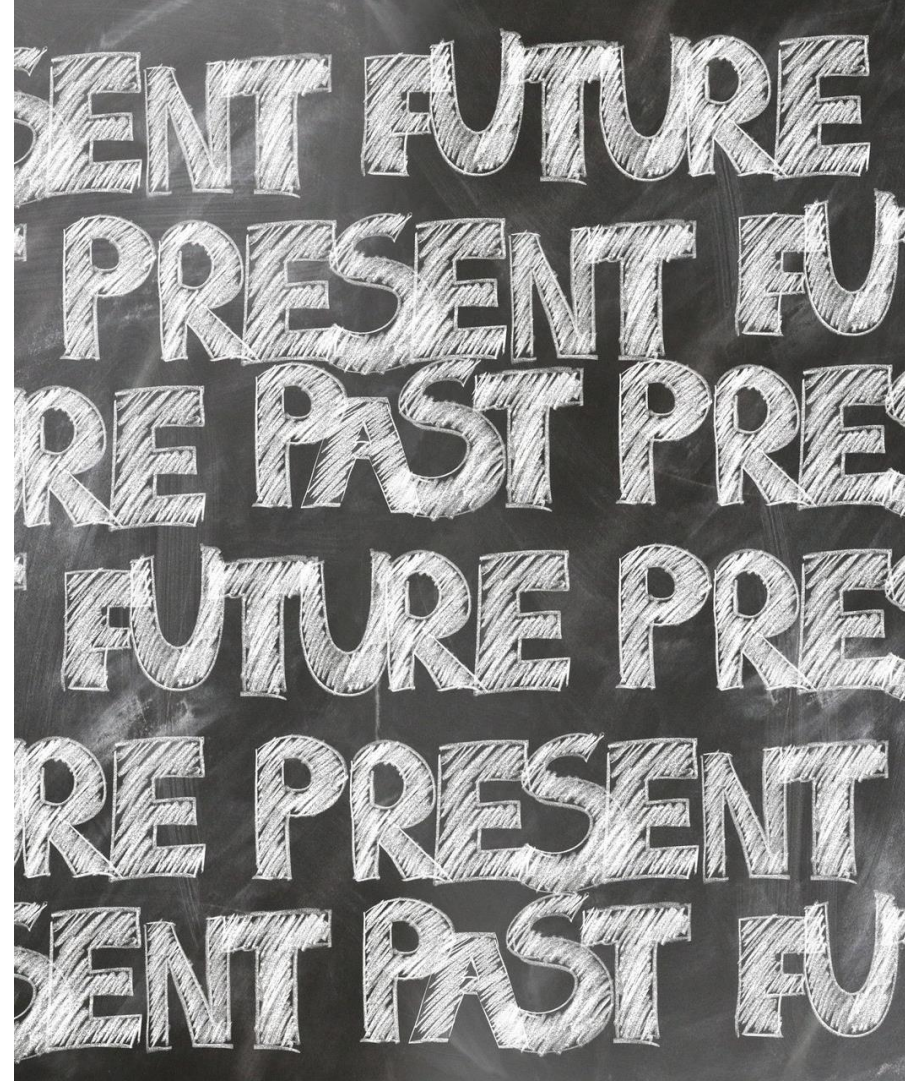
Largest version 8304

Average version 6.18

14 GB Revit models (actual)
10 GB Inventor models
(actual)
10 GB Civil 3D models (actual)

Lessons learned

- Start Vault at start Project
- Start BIM Scan at start Project
- Record all appointments in BIM Execution Plan
- All Workflows, processes, etc. in BIM Execution Plan
- Revit Central Files in BIM 360
- Put your Data Management system of choice in your BIM execution plan.
- Attention to users (Civil3D)
- Clearly explain why you use a Data Management system
- Inform all external engineering consultants how to use BIM



Q&A

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How did we do?

- Your class feedback is critical. Fill out a **class survey** now.
- Use the AU mobile app or fill out a class survey online.
- Give feedback after each session.
- AU speakers will get feedback in real-time.
- **Your feedback results in better classes and a better AU experience.**



Contact:

Cees.kruit@bam.com

Frank.pepping@cadcompany.nl

EXPERT HELP IS HERE

Get help for training, software development,
customization, and more.

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