

The Fantastic Four at a Railway Project at Deutsche Bahn

Amir Safiri

Frederic Classon

DB Engineering & Consulting GmbH

Autodesk GmbH





Amir Safiri

BIM Contact Person Region West, DB E&C

I have been in the Traffic, engineering, and construction industry since the 2011's. After obtaining my master's degrees from the University of Wuppertal, Germany, I perpetuated my nerdy tendencies with Building Information Modeling. I started my career in Cologne with DB Engineering & Consulting (DB E&C). I have quickly become one of DB E&C most trusted and creative young civil designers in the BIM field. My experiences have been focused primarily on railways projects with an additional focus on BIM design and realistic visualization renderings of projects to provide interested parties and stakeholders a unique perspective and help bring clarity to the decision making process. My current responsibilities are preliminary and detailed rail design workflows, BIM-Implementations of linear structures, advanced Revit family creation, and Revit-Dynamo workflows and as a regular speaker at many conferences.



Frederic Classon

Technical Sales Specialist, Autodesk

Frederic joined Autodesk in 2017. He is working as Technical Sales Specialist for CE with special focus on Autodesk's infrastructure portfolio. Before that, Frederic worked for more than 10 years with an Autodesk Partner, consulting customers and driving their IT projects. Prior to that, he worked as project- and sales-engineer at a firm, specialized on 3D geological subsurface modeling and as a research fellow at the University of Cologne, developing geographic information systems. Frederic studied geography, geology and soil-science, gaining his diploma in 3D geological surveying and mapping and afterwards he specialized in geoinformatics at the University of Salzburg. Frederic lives in Cologne, where he enjoys spending every spare minute with his family, bringing the LEGO Star Wars universe to perfection, painting humongous glitter unicorns and burning everything on his barbecue.

The background of the slide is a photograph of a city skyline at sunset. In the foreground, there are train tracks receding into the distance. The city skyline is filled with various skyscrapers, some of which are illuminated. The sky is a mix of blue and orange from the setting sun. The overall scene conveys a sense of modern infrastructure and urban development.

DB Engineering & Consulting

Railways for the world of tomorrow.



Our group

Deutsche Bahn

On **33,300 kilometers** more than
25,000 bridges and **740 tunnels**
in the railway network of the DB

Around **7.3 million** passengers
a day on trains and buses in Germany

5,700 stations
in Germany

On weekdays over **1 million metric tons**
of goods by rail in Germany and Europe

Data as of March 2019

Who we are

What we offer

Advising, designing and implementing infrastructure projects, from the idea to operations.

**Economic and
environmental** aspects
always taken into account

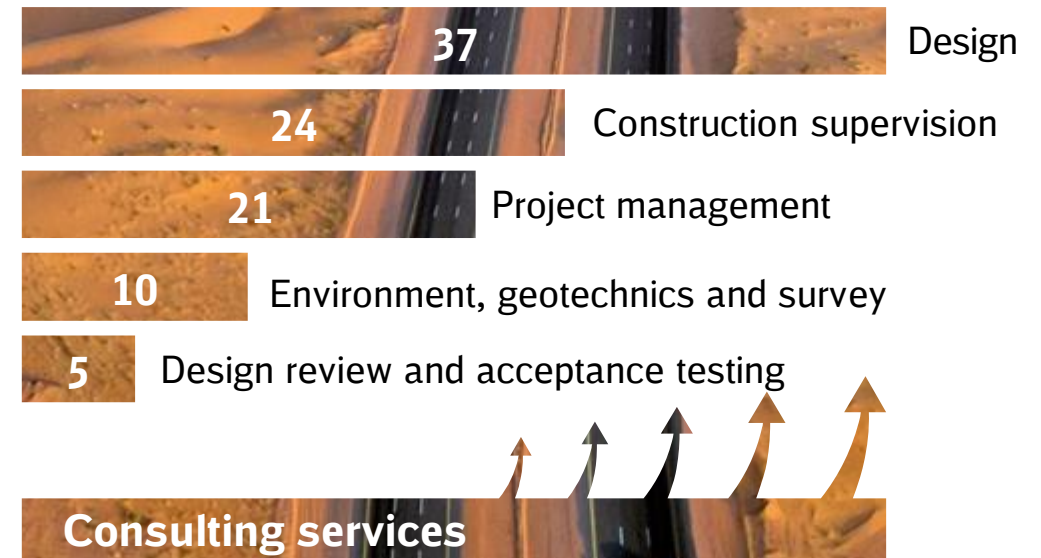
**180 years of
rail expertise**

**Cutting-edge
technologies and construction**

**Always the right solution –
for individual jobs and large-scale projects alike**

4,800 employees
from 77 countries
for all technical disciplines

Our specialists



Functional percentage of production staff, 3 % other (as of June 2019)

Who we are

In Germany



7 regions with more
than **80 locations**

Headquarters Berlin



Represented on every
continent

Projects in over
100 countries
since **1966**

Worldwide



750 trains daily
(long-distance/local
and S-Bahn)

250,000 visitors
and passengers daily

Built on
59 bridges

BIM

Our references

Hanover main station

Location: Germany

Customer: DB Station & Service AG



The replacement during operation of the station structure that has grown continually over 150 years includes all the transportation, engineering and building construction of the station.

Overall coordination, surveying services, basic evaluation, preliminary design; planning coordination for Building Information Modeling (BIM): 3-D survey, 3-D modeling, 3-D real-world modeling, visualization, 3-D collision testing, generation of 2-D plans from 3-D models, 3-D route and variant comparison, 4-D simulation.



30 Trains
per hour target capacity

36 km
route length

13 stations

Our references

Sydney Metro Northwest

Location: Australia

Customer: Transport for New South Wales (TfNSW)



Construction of the 1st stage for Australia's first fully automatic metro system in Sydney. Sydney Metro City & Southwest will follow in the second stage.

Project management services in Rail System and Rolling Stock, Acceptance test/commissioning and operations.

450 km of double-track line
with **5** stations

320 km/h
maximum speed

35 HSR multiple units

Our references

Haramain High-Speed Rail Project

Location: Saudi Arabia

Customer: Saudi Railways
Organization (SRO)



First high-speed line with a reliable and convenient connection between Jeddah and the pilgrim sites of Makkah and Medina.

Design review and construction supervision for track and rail systems, operations control center and depot; site management (on-site planning), monitoring the production of multiple units, preparation of commissioning, support in the first operational year.



Rail Baltica transport project

Location: Lithuania, Latvia, Estonia

Customer: RB Rail AS



New double-track, electrified high-speed line (track gauge: 1,435 mm) for direct connection of the Baltic States (Lithuania, Latvia and Estonia) to the European rail network.

- Development of a business plan with an economic framework as well as long-term business and financial planning perspectives for project and strategy implementation for Rail Baltica
- Study for a combined transport terminal with 1,435 and 1,520 mm track gauges at Muuga port in Tallinn
- Feasibility study for a combined rail/road bridge over the Daugava near Riga

240 km/h
operating speed

870 km route length

**Estimated travel time San Francisco-Los Angeles
less than 3 hours**

800 miles
of rail network length

24 stations

Up to 250 miles/h

Reference of DB E&C USA

Early Train Operator Services for California High-Speed Rail

Location: California, USA
Customer: California High
Speed Rail Authority



DB Engineering & Consulting USA Inc. is contracted as the Early Train Operator for the California High Speed Rail Authority to connect the mega-regions of the State. In the first phase, DB E&C USA Inc. experts work alongside the California High-Speed Authority and its advisors on the design, development and procurement to ensure attractiveness to passengers while minimizing operating and maintenance costs. In the second phase, the Early Train Operator will be responsible for preparing and operating the initial system pursuant to a Franchise Agreement.



Make anything.

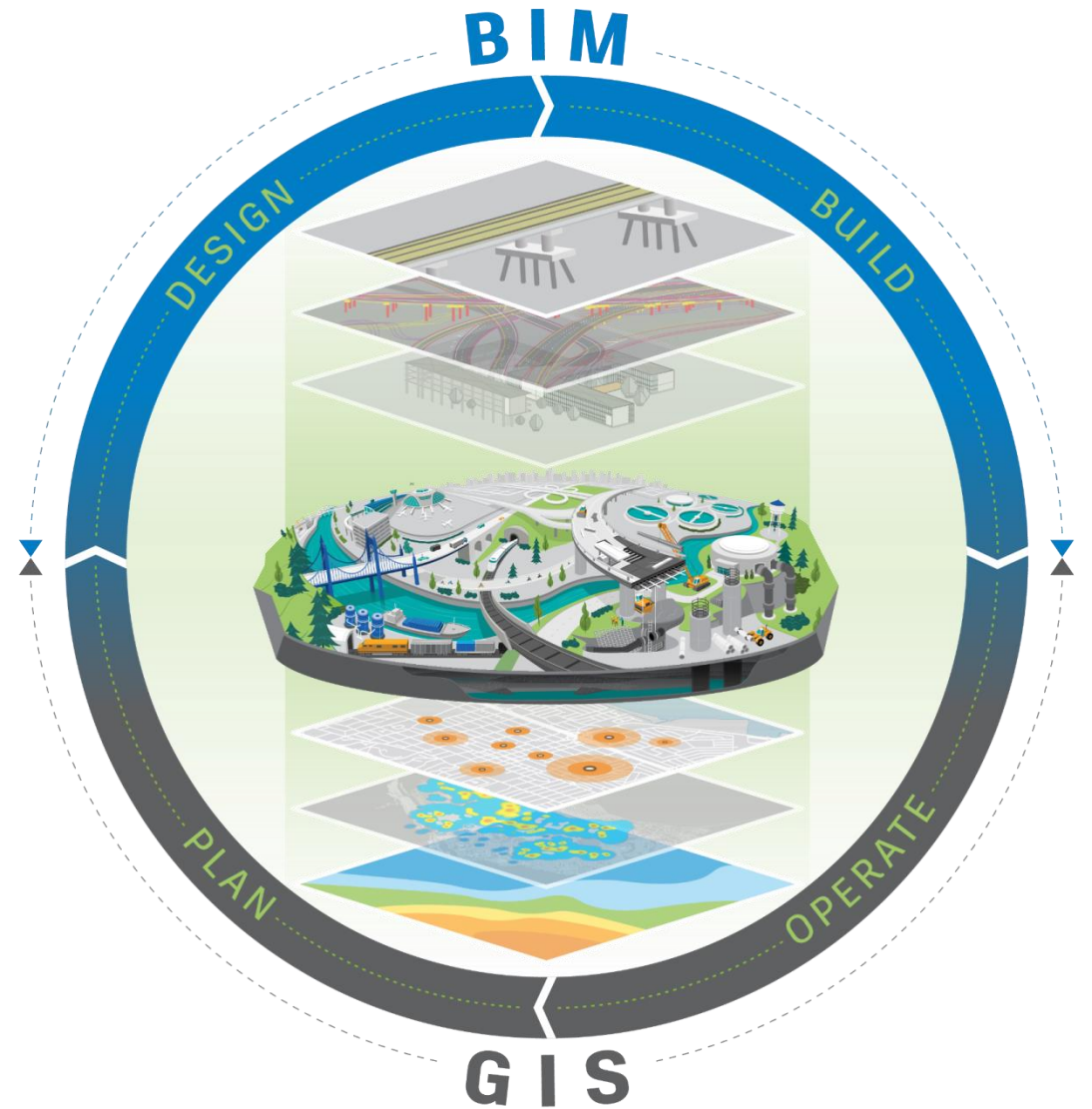


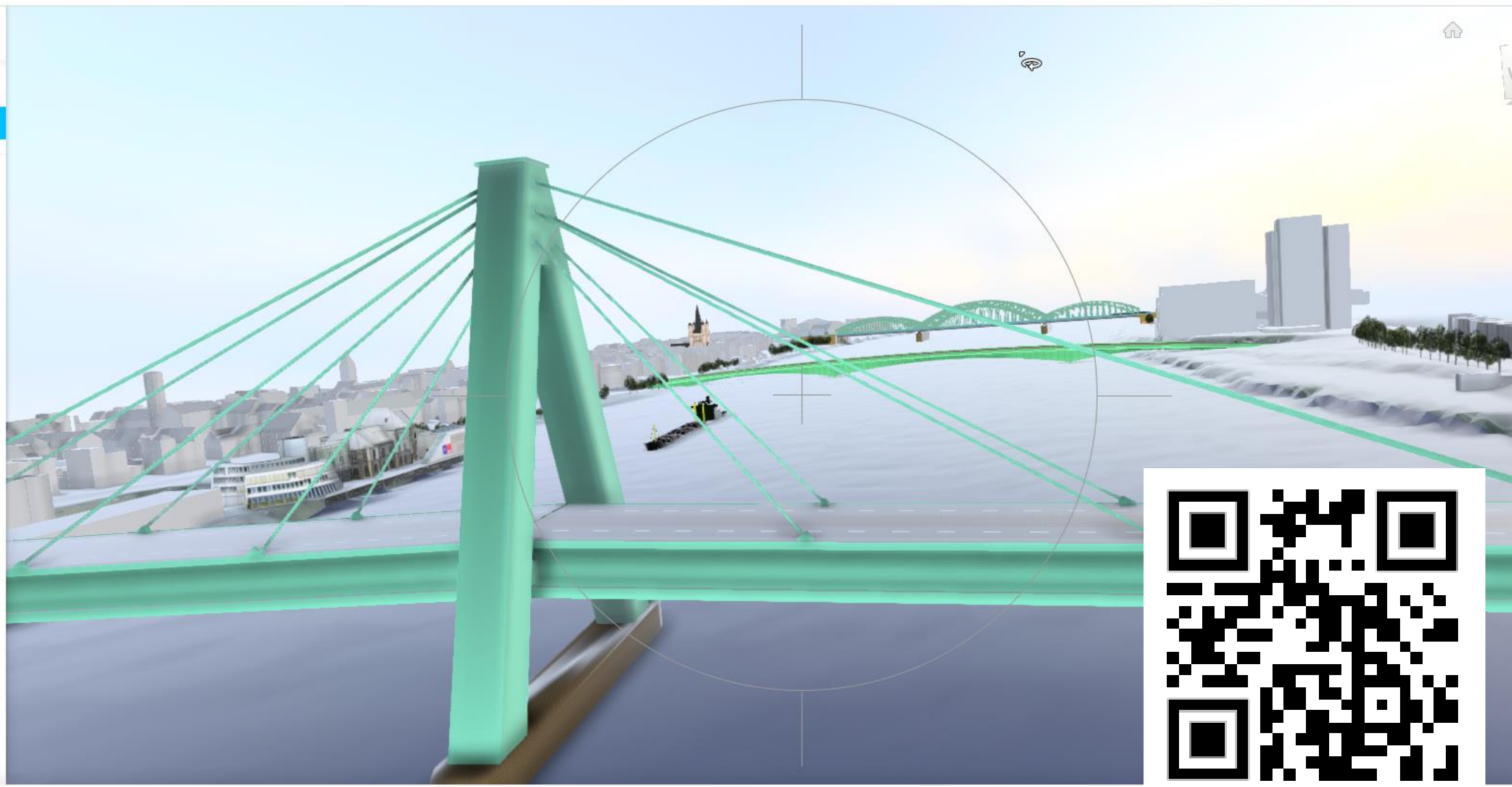
esri

THE
SCIENCE
OF
WHERE



Removing silos
between the GIS
and Design teams
by creating more
connected
workflows





GIS INFORMS BIM



GIS INFORMS BIM



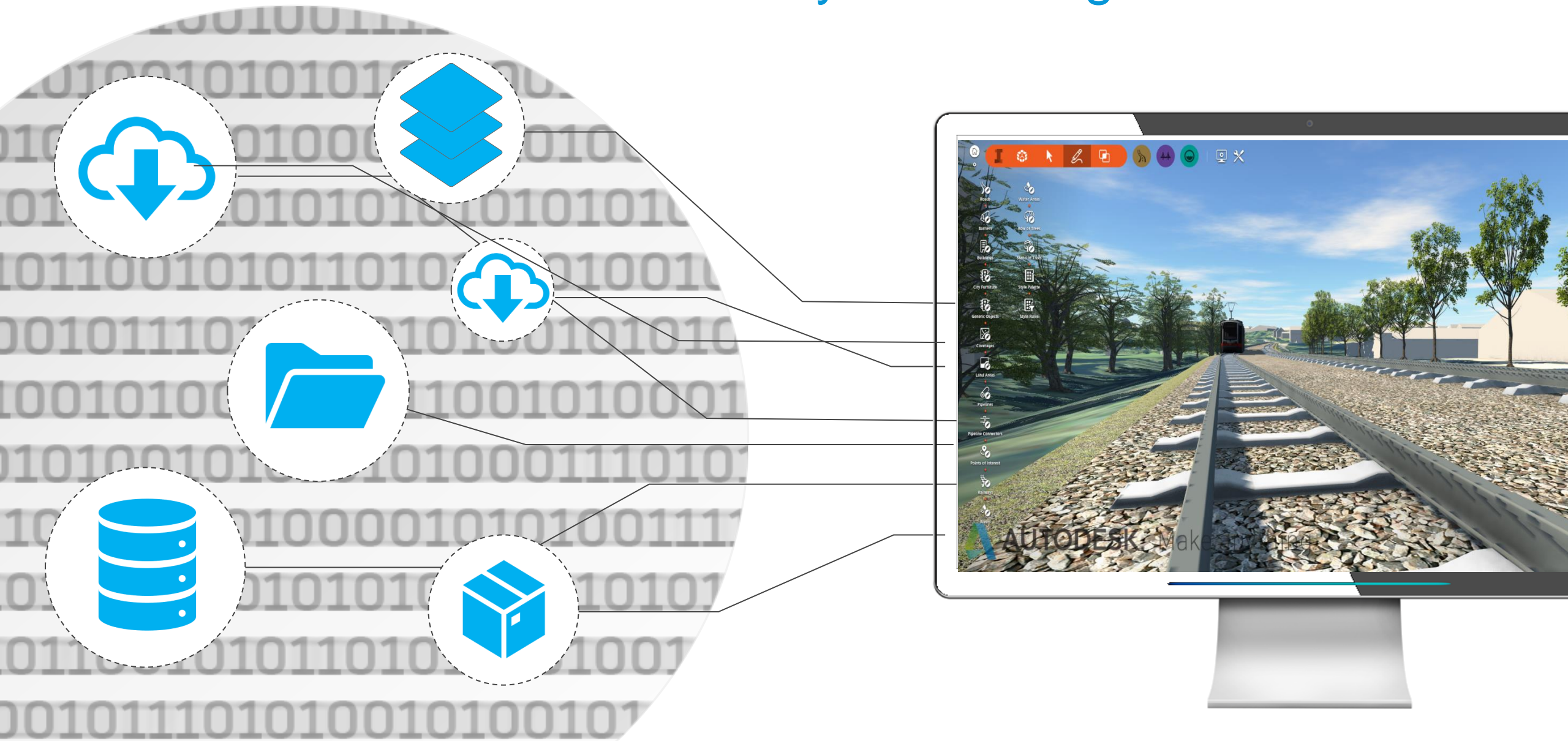
BIM FUELS GIS



BIM FUELS GIS



The Current Way of Working



[KARTEN UND DATEN ▾](#)[INFORMATIONEN ▾](#)[AKTUELLES ▾](#)[KOMPONENTEN ▾](#)[MEINE INHALTE ▾](#)[LOGIN](#)

GEOVIEWER

Geodaten recherchieren und anzeigen.



OPEN DATA DOWNLOAD

Offene Geodaten der GDI-NW herunterladen



THEMENKARTEN

Darstellung ausgewählter Karten im GEOviewer.



INSPIRE

Geodateninitiative der europäischen Kommission.



GDI-NW

Geodateninfrastruktur NRW



FACHPORTALE

Geodatenportale in NRW



METADATENPFLEGE

Geodaten registrieren und beschreiben.

Aktuelles




November 05, 2019

GDI-Forum NRW 2019

Das Programm zum GDI-Forum NRW 2019 ist veröffentlicht und die Anmeldung freigeschaltet.

Lizenzinformationen: Diese Daten stehen unter der Datenlizenz Deutschland Namensnennung 2.0, Bereitsteller: Land NRW (2019). Info
Quellenvermerk finden Sie hier.

- Informationen zu den Daten:  dgm1_meta.zip
- Metadaten im  [Geoportal.NRW](#)

Digitales Geländemodell Gitterweite 1m paketiert nach Gemeinden

Datei

 [dgm1_05334002_Aachen_EPSG4647_XYZ.zip](#)

 [dgm1_05554004_Ahaus_EPSG4647_XYZ.zip](#)

 [dgm1_05570004_Ahlen_EPSG4647_XYZ.zip](#)


 [dgm1_05358004_Aldenhoven_EPSG4647_XYZ.zip](#)

 [dgm1_05382004_Alfter_EPSG4647_XYZ.zip](#)



Esri DE Open Data: DB

Owner: [esri_DE_content](#)

Created: Dec 11, 2018 Last Updated: Dec 11, 2018 Viewable by:  Everyone (public)

In dieser Gruppe werden ausgewählte Open Data der Deutsche Bahn als ready-to-use Feature- und Tile-Services sowie darauf basierende Apps, WebMaps und StoryMaps bereitgestellt.



Esri DE Open Data: DESTATIS & GENESIS

Owner: [esri_DE_content](#)

Created: Dec 12, 2018 Last Updated: Dec 12, 2018 Viewable by:  Everyone (public)

Ausgewählte Geometrien und Statistiken des Statistischen Bundesamtes DESTATIS und des gemeinsamen Datenangebots der Statistischen Ämter des Bundes und der Länder stehen als Karten und Feature Services für Analysen zur Verfügung.



Esri DE Open Data: Nordrhein-Westfalen

Owner: [esri_DE_content](#)

Created: Dec 12, 2018 Last Updated: Dec 12, 2018 Viewable by:  Everyone (public)

In dieser Gruppe werden ausgewählte Open Data von Land Nordrhein-Westfalen als ready-to-use Feature- und Tile-Services sowie darauf basierende Apps, WebMaps und StoryMaps bereitgestellt.



Esri DE Open Data: Bayern

Owner: [esri_DE_content](#)

THE OLD DBEC TERRAIN WORKFLOW

DOWNLOAD

UNZIP

MANAGE

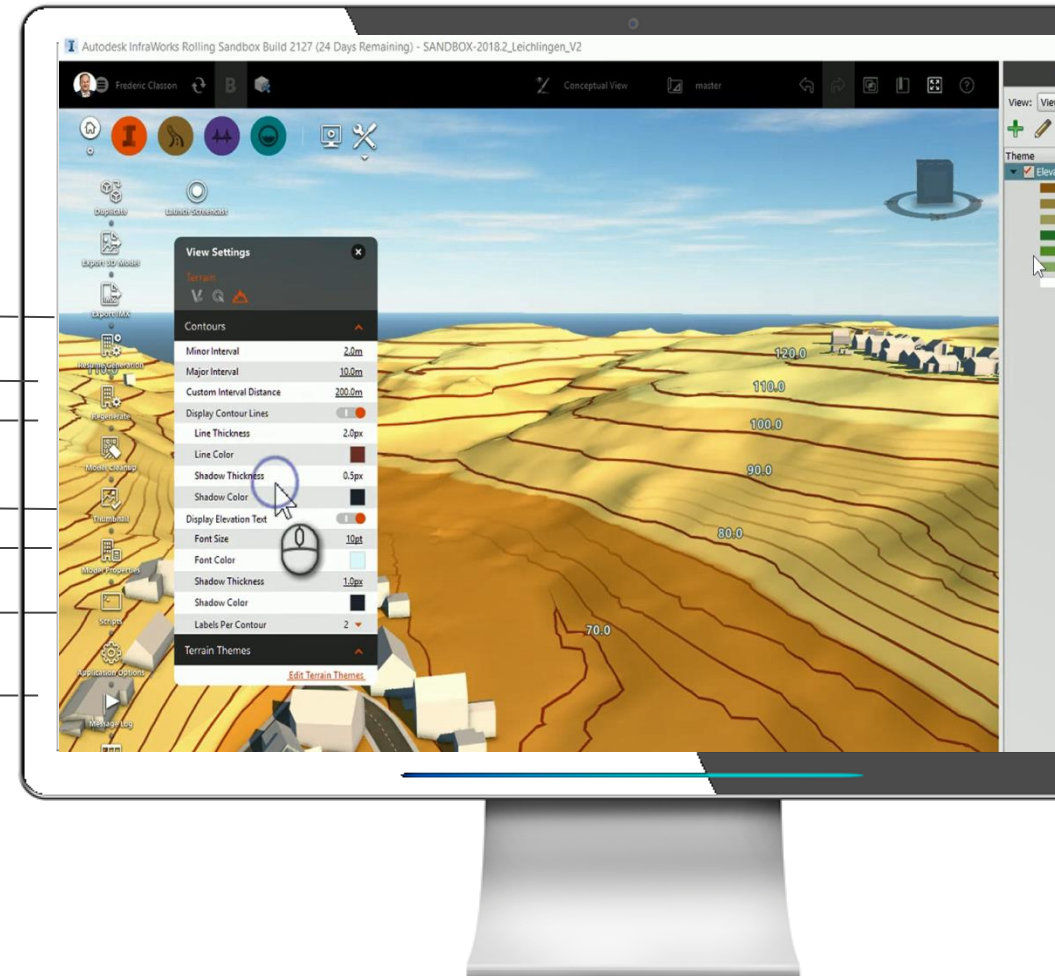
REDUCE

SHIFT

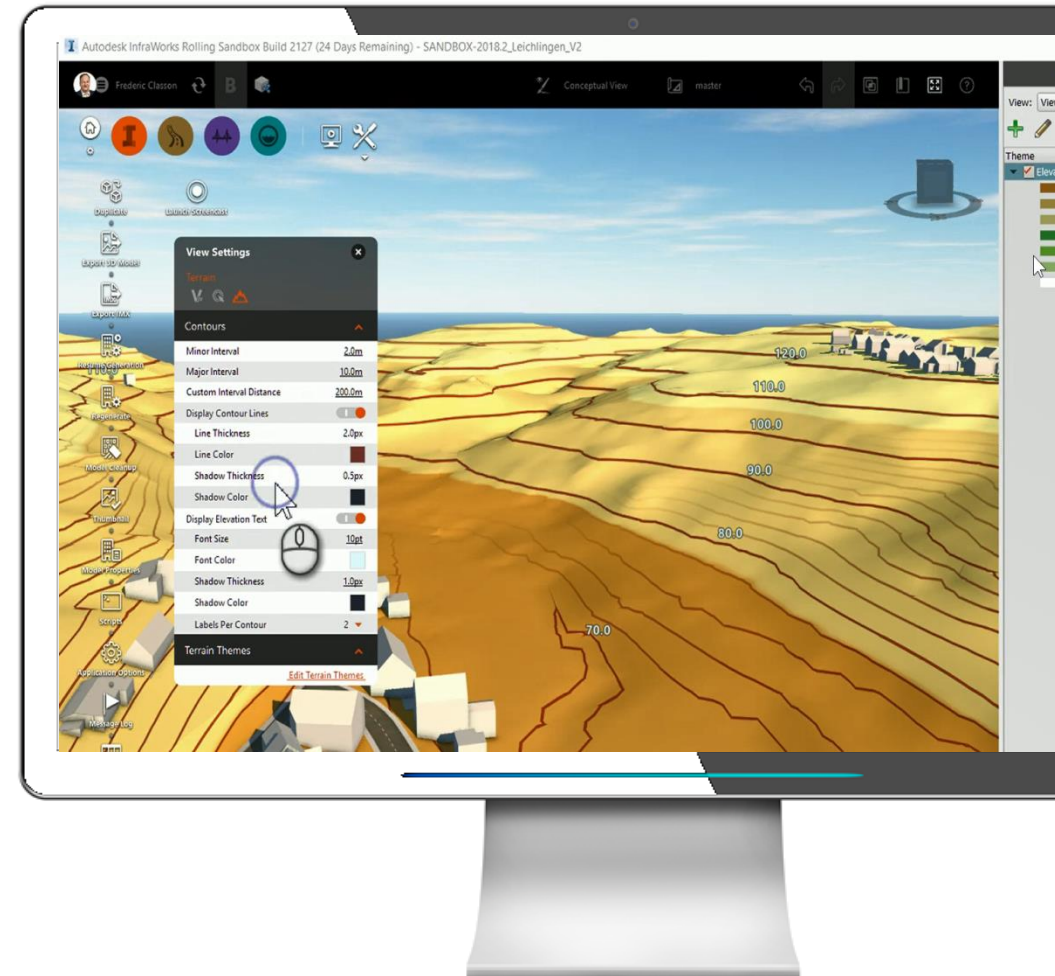
PROCESS TIFF

LOAD








USE

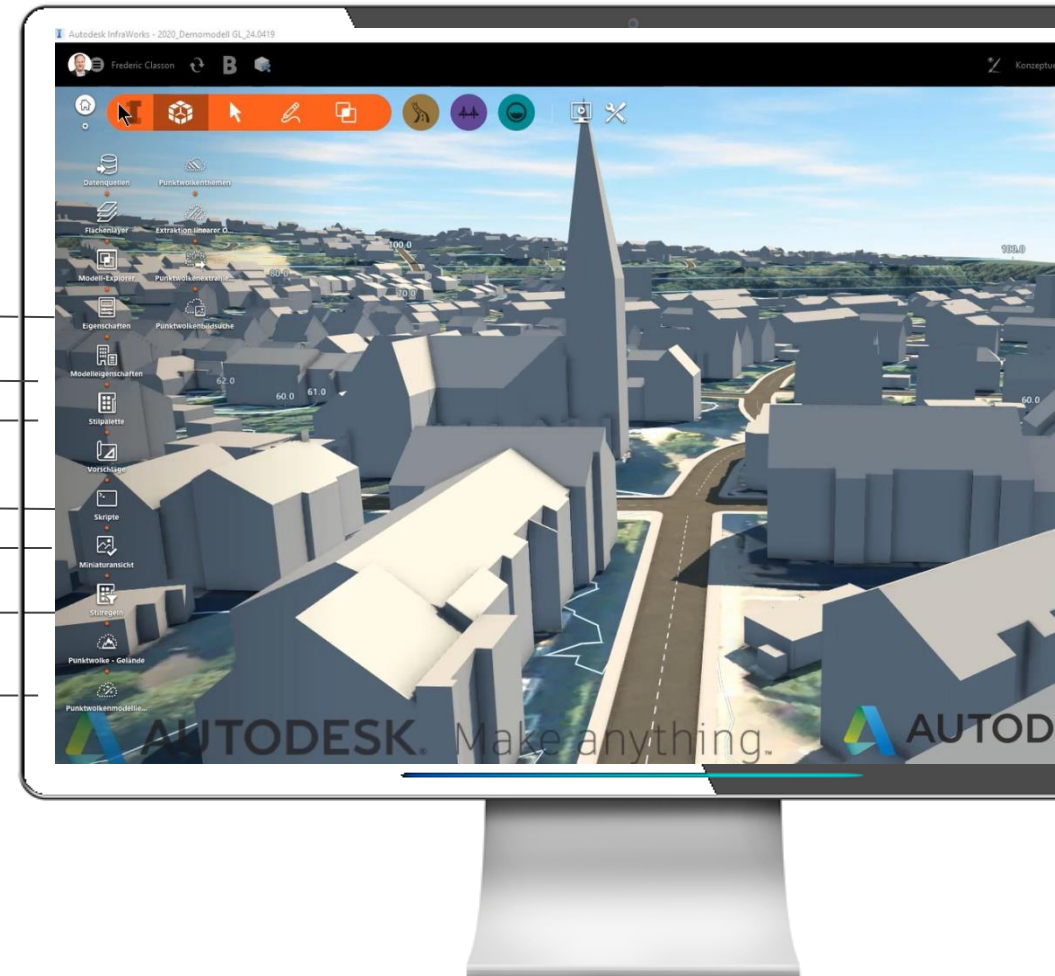


THE **NEW** DBEC TERRAIN WORKFLOW

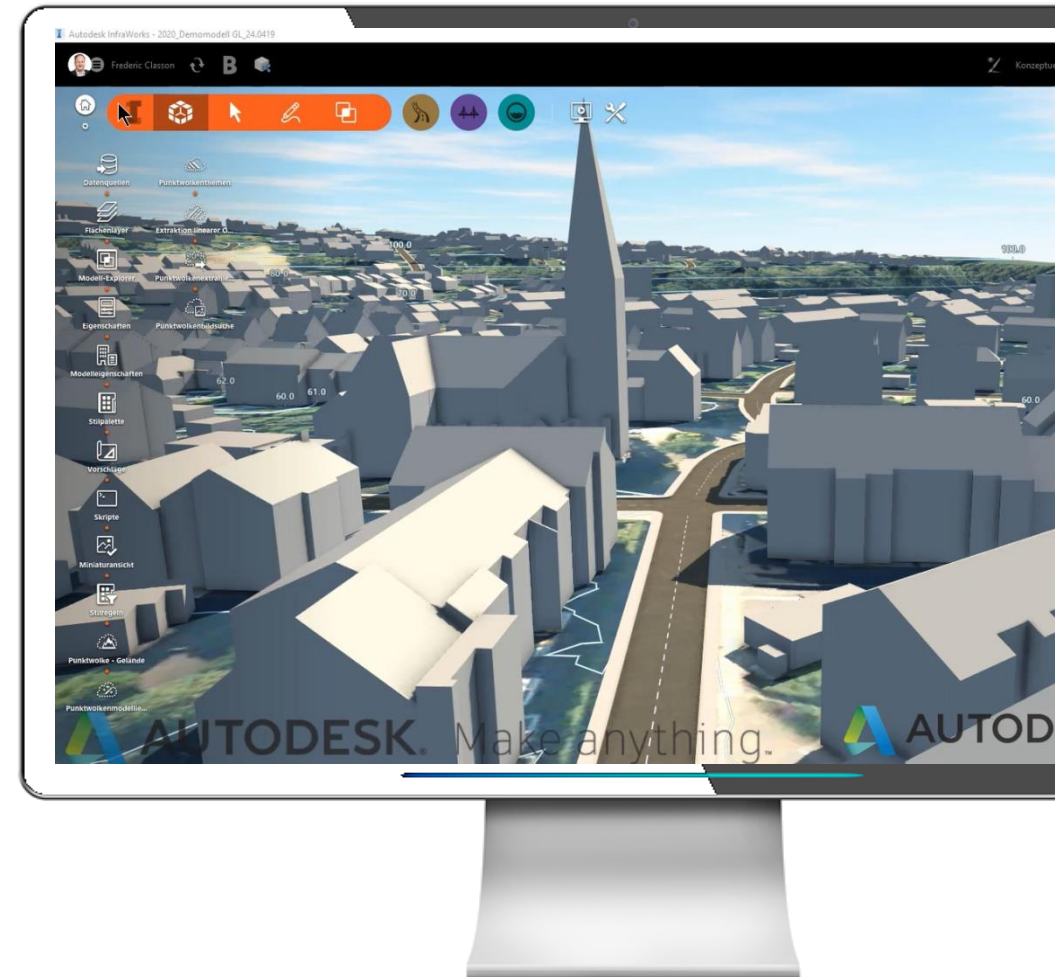
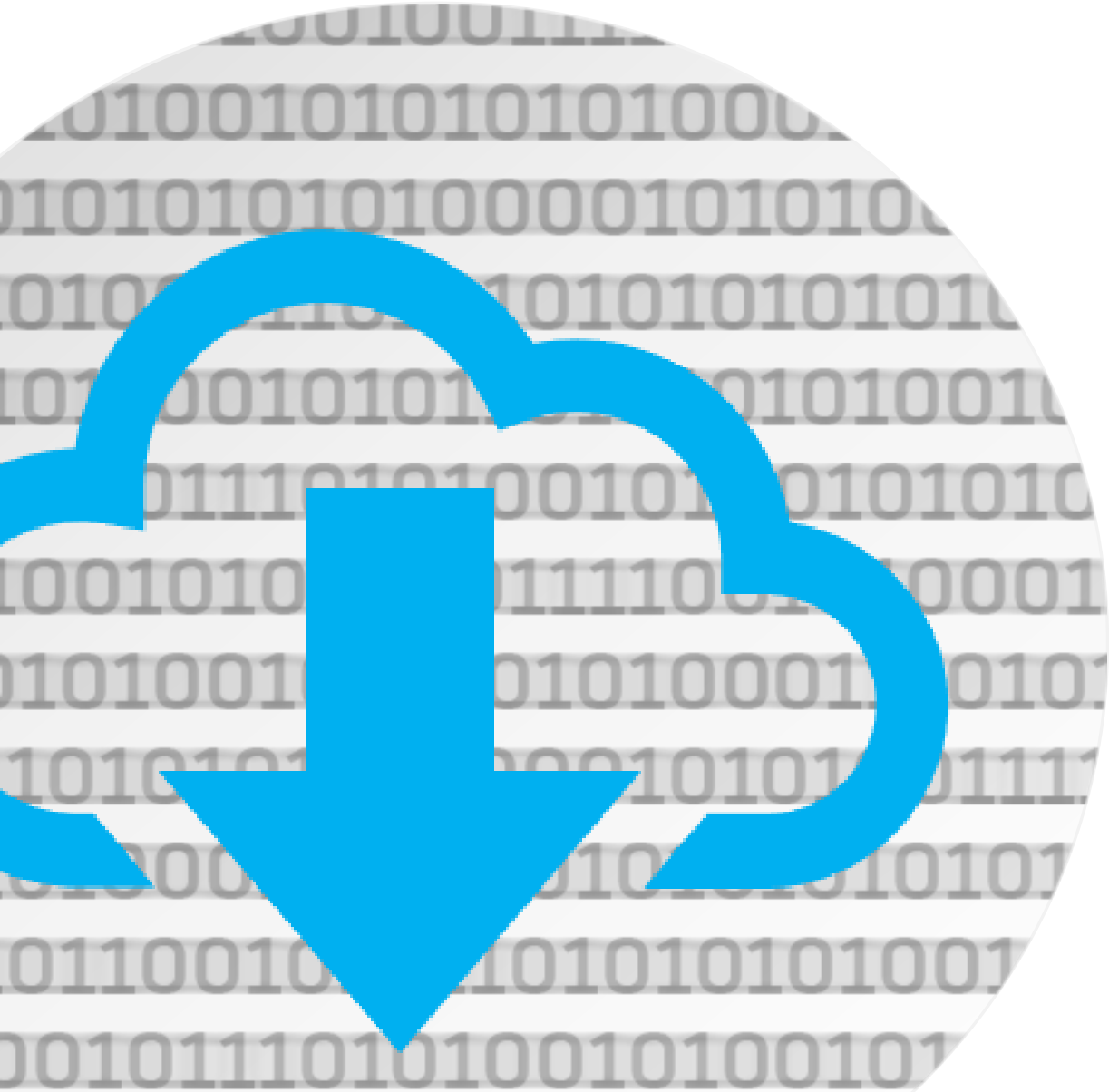


THE OLD DBEC BUILDING WORKFLOW

 **DOWNLOAD**
 **UNZIP**
 **MANAGE**
 **CONVERT**
 **MANAGE**
 **LOAD**
 **USE**



THE **NEW** DBEC BUILDING WORKFLOW

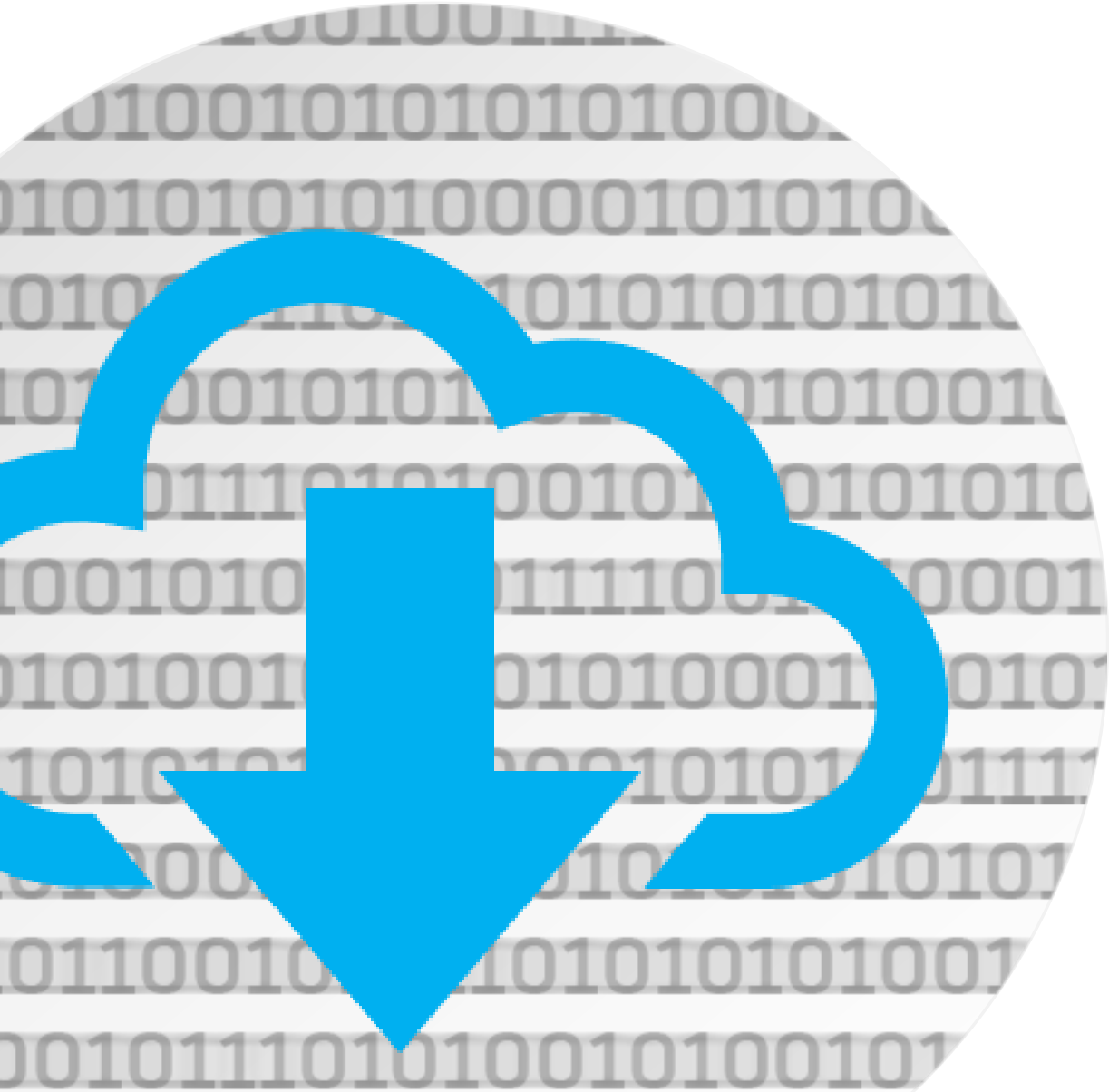


THE OLD DBEC ALIGNMENT WORKFLOW

 SENT REQUEST
RECEIVE
REVIEW
(START OVER)
TRANSFORM
LOAD
USE 



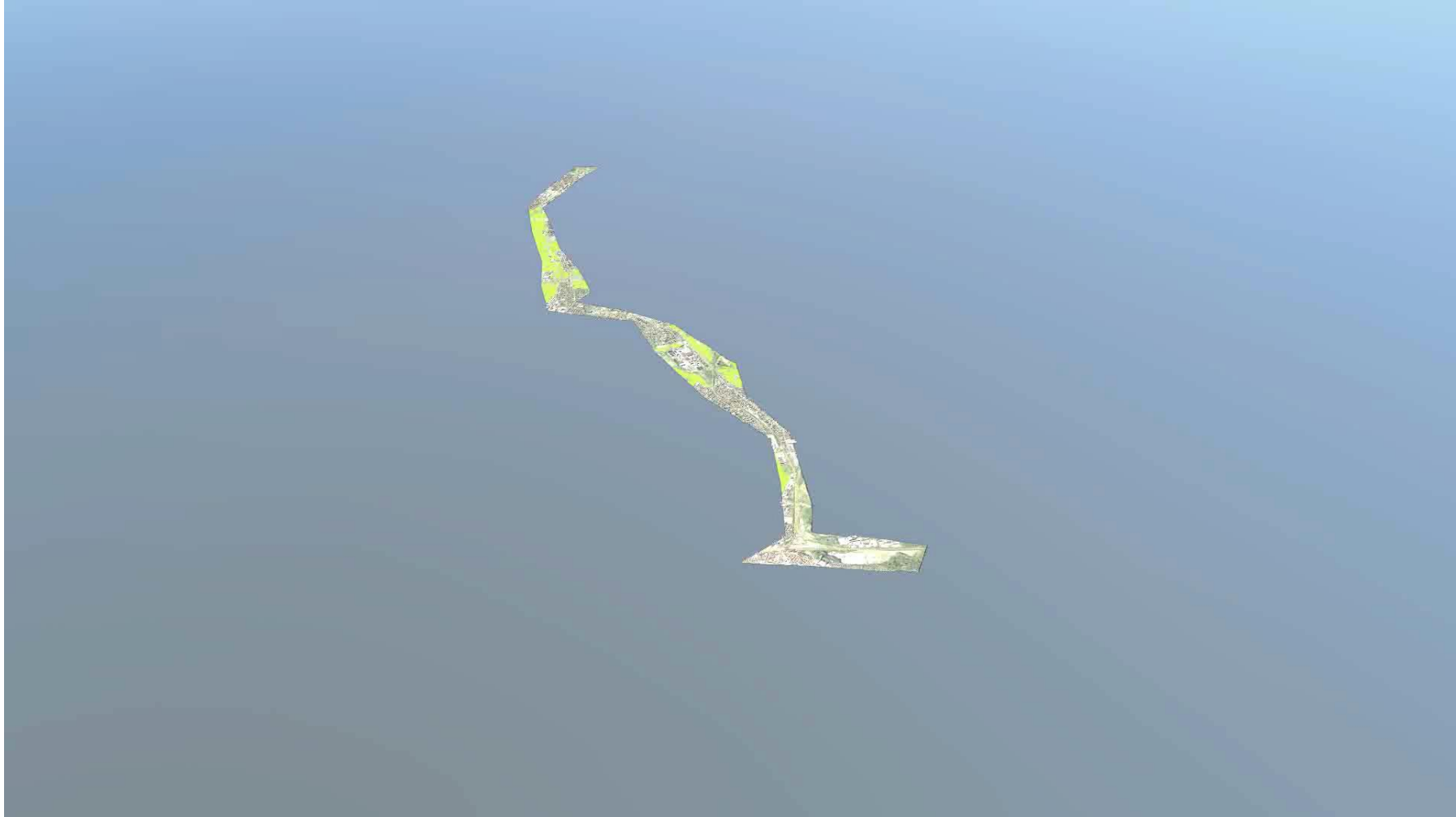
THE **NEW** DBEC ALIGNMENT WORKFLOW



Erftbahn: Bedburg – Horrem

Project Overview

- Location: Federal State of North Rhine-Westphalia
- Total line length: 15 km
- Station: 5
- Railroad crossing: 6



Our Starting Point-Base Infraworks Model

- Model Builder
- Augment Base Model with GIS Data...
 - Buildings (Polygons)
 - Buildings (Models)
 - Trees
 - Streets
 - Station



GIS

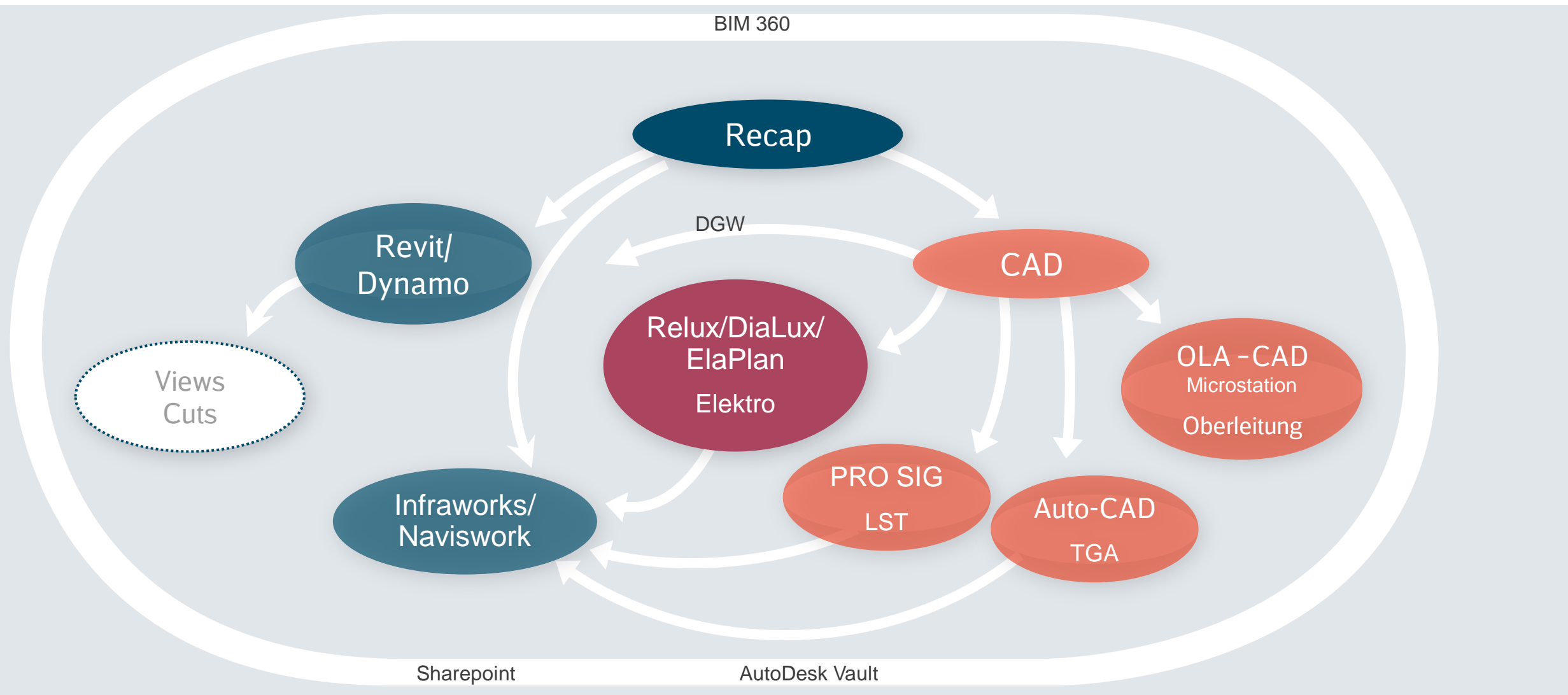


Stakeholder

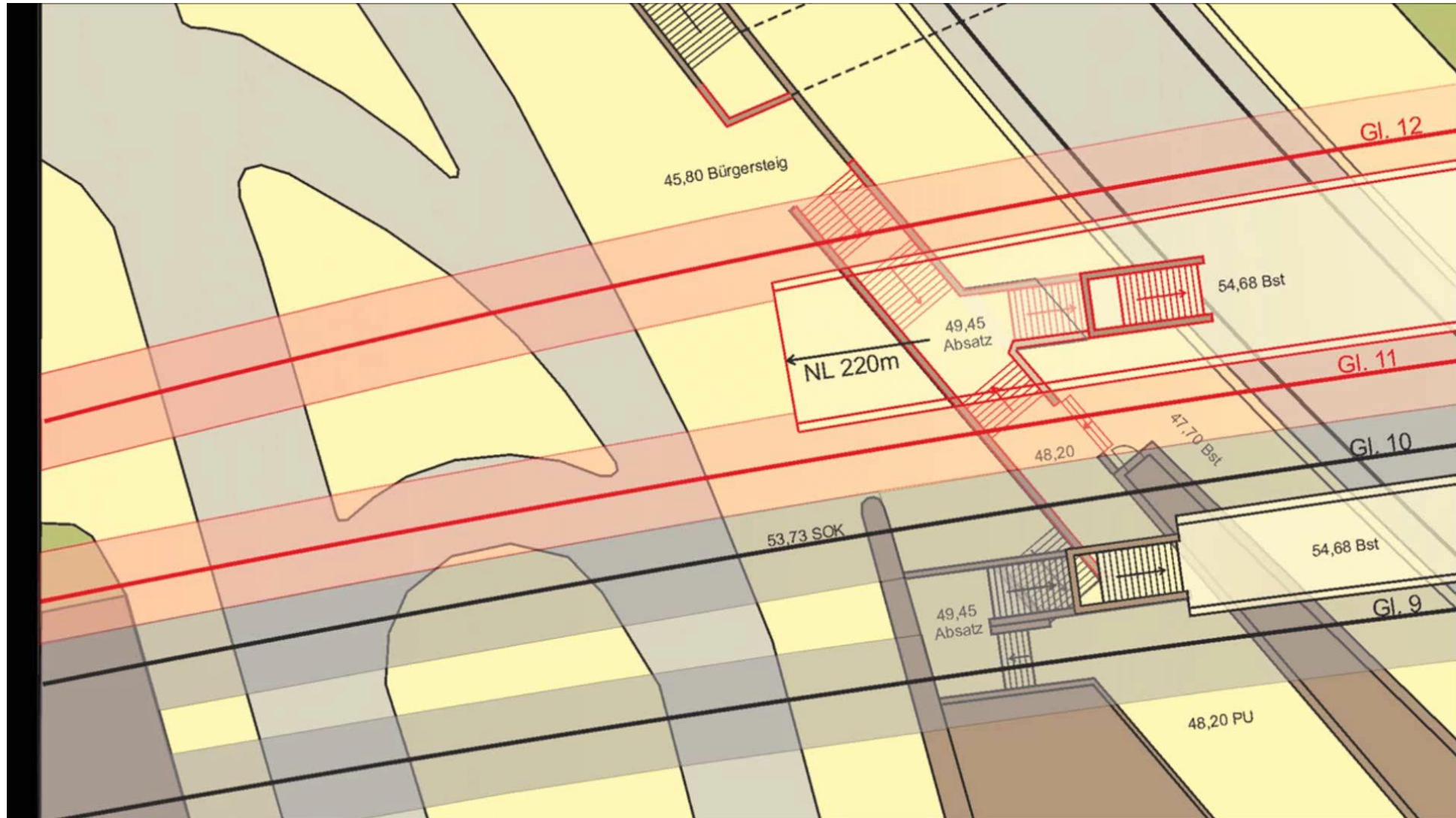


Planning

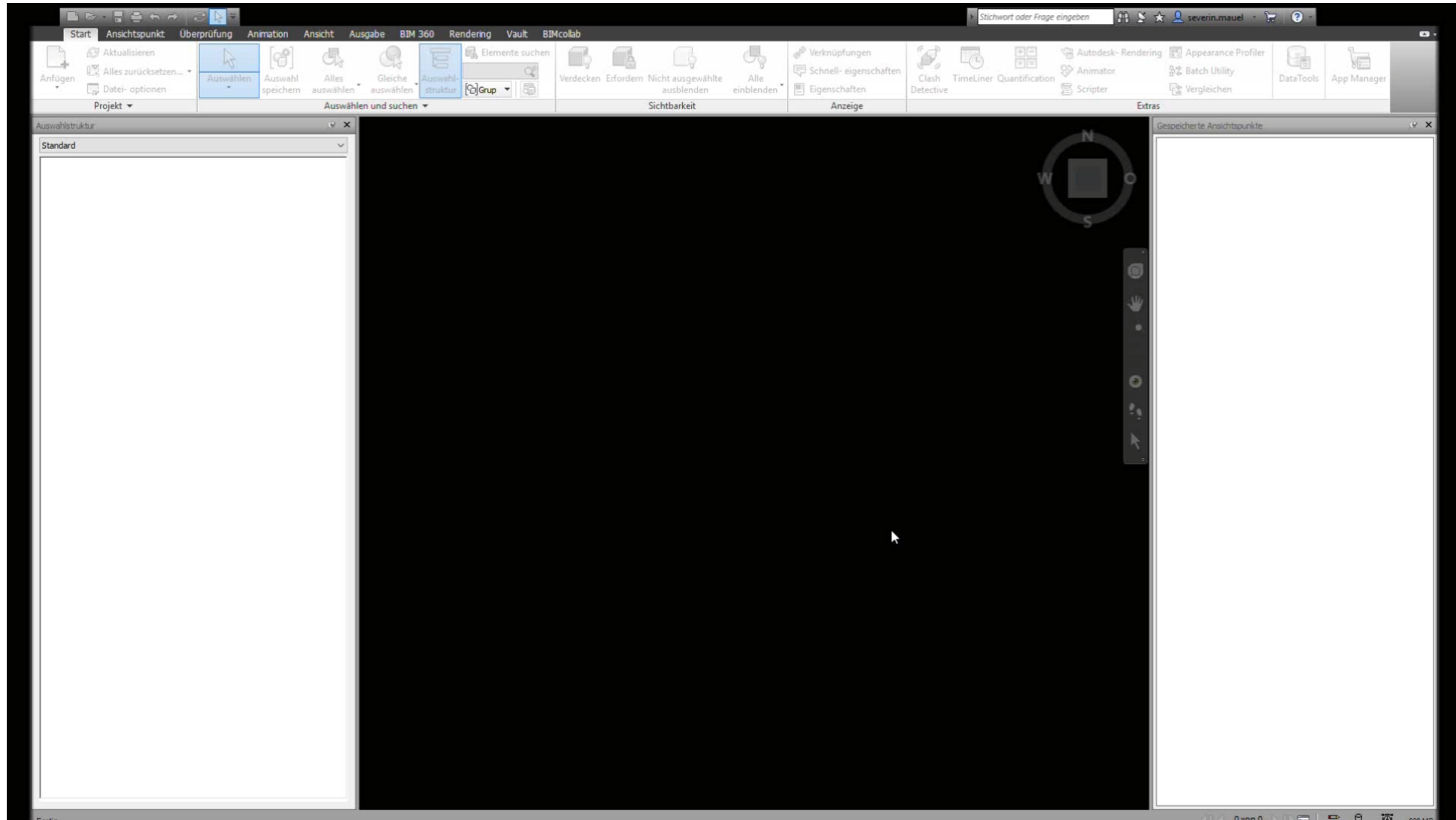
Software map



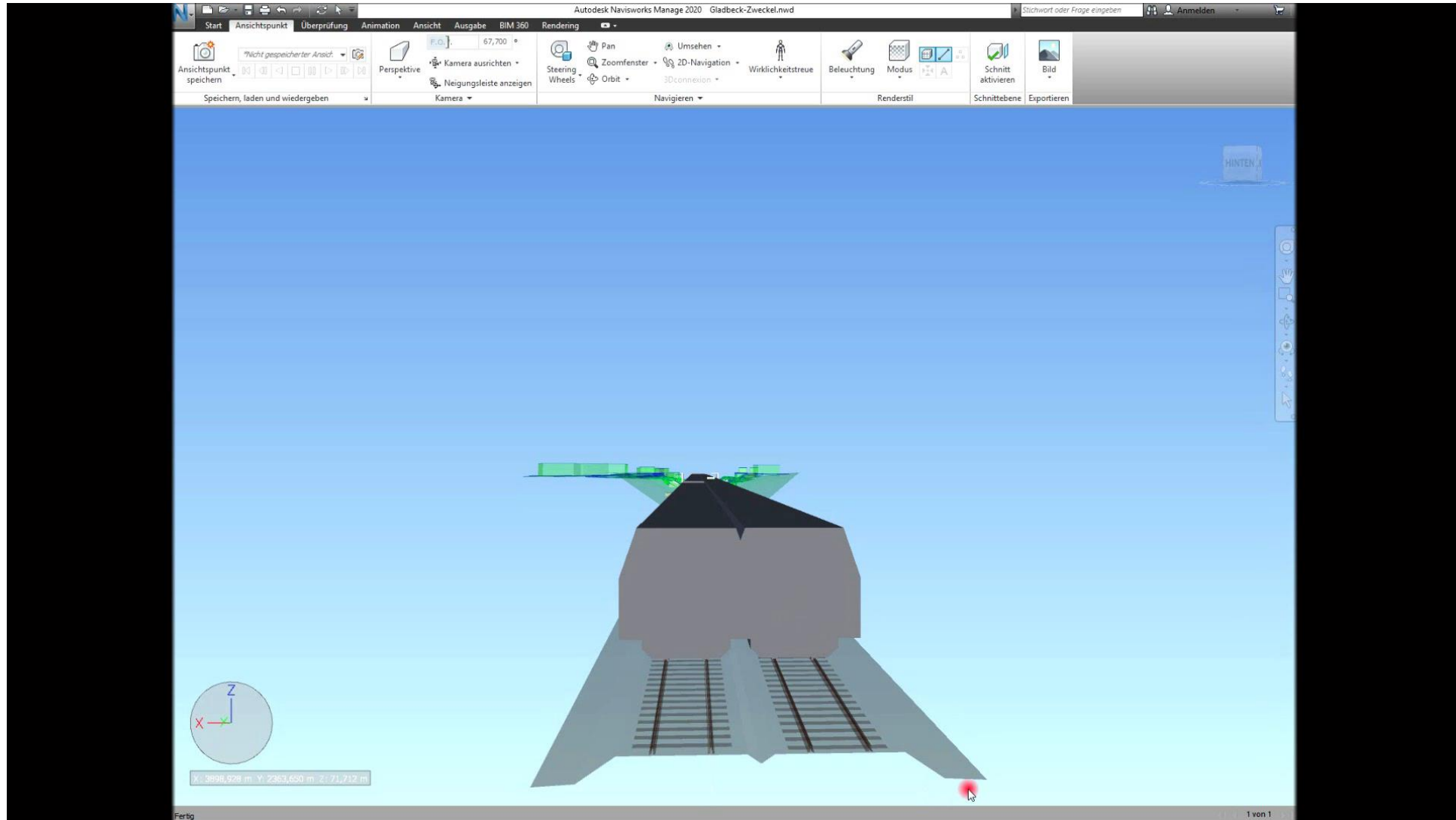
Planning



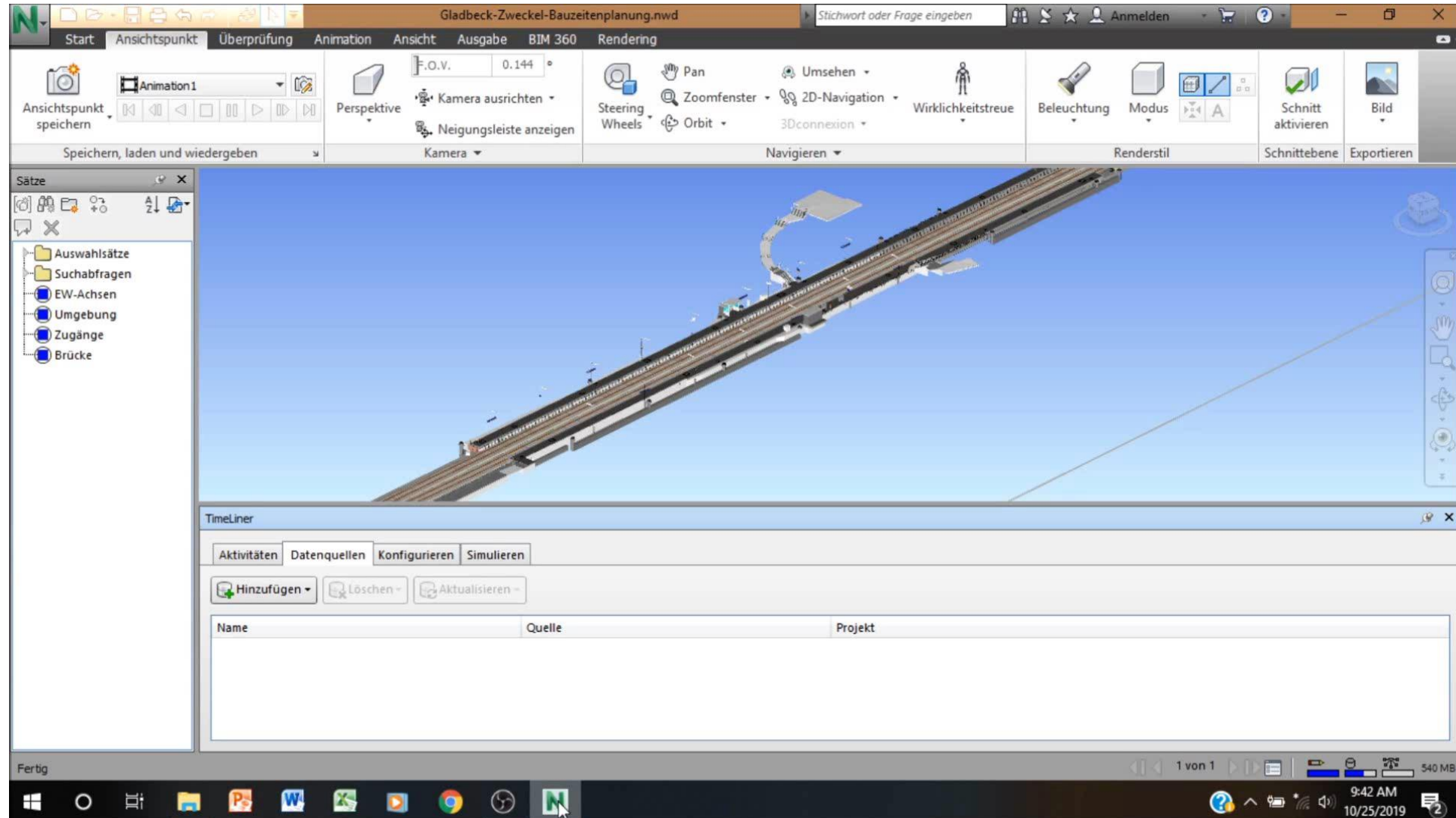
Modell Coordination



Clash Detection

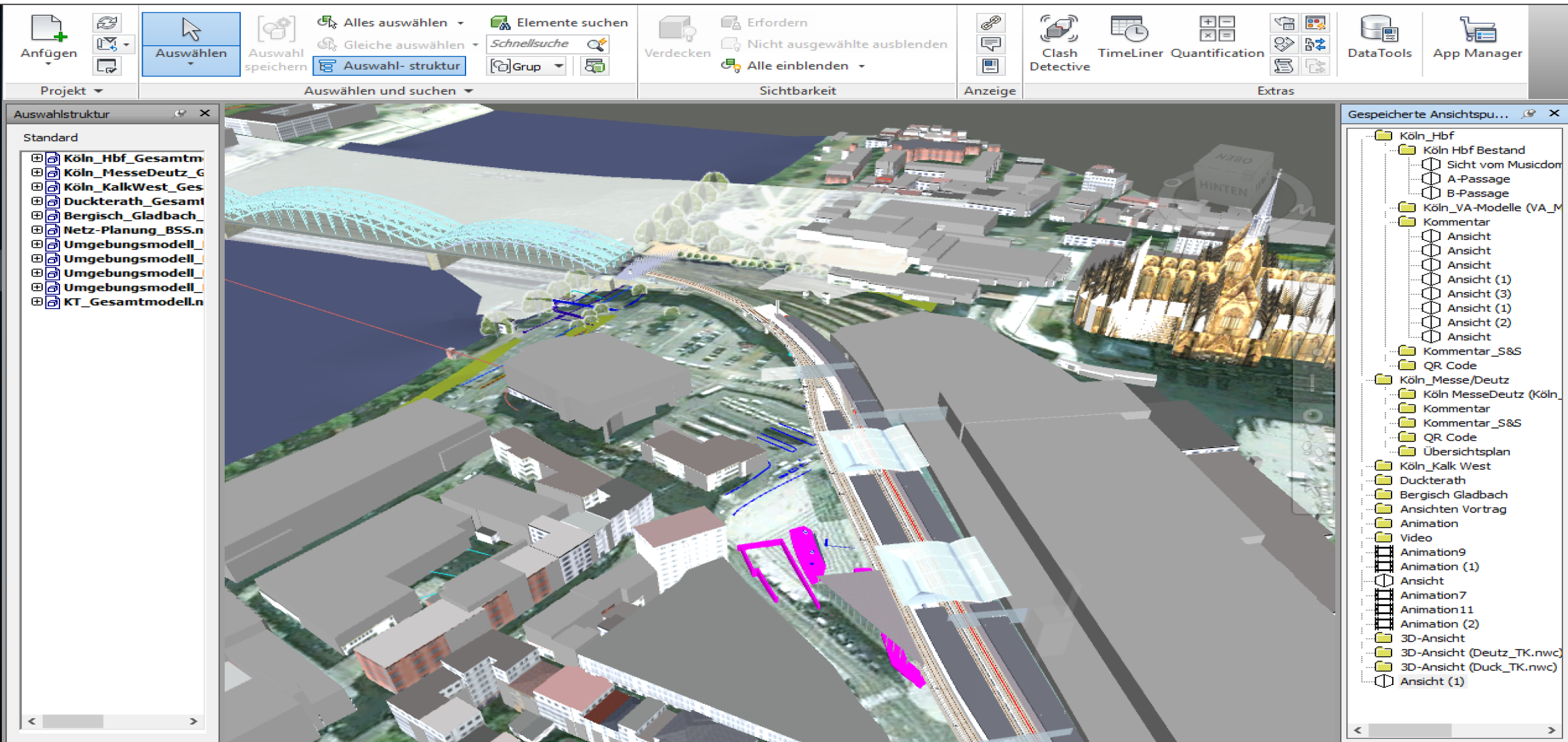


4D and Timeliner

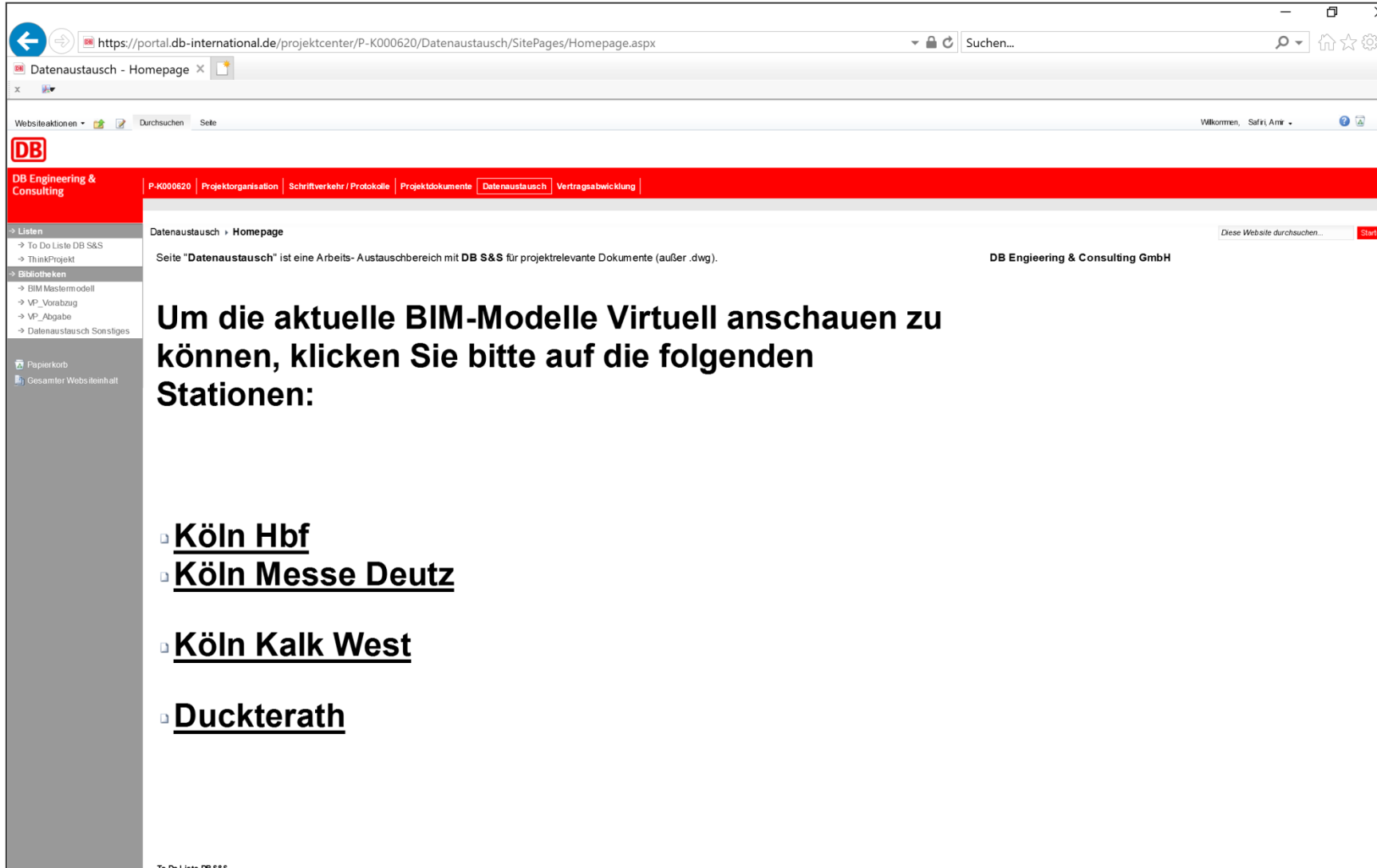




Communication



Communication



The screenshot shows a web browser window with the URL <https://portal.db-international.de/projektcenter/P-K000620/Datenaustausch/SitePages/Homepage.aspx>. The page is titled "Daten austausch - Homepage". The header bar is red and contains the DB Engineering & Consulting logo and navigation links: P-K000620, Projektorganisation, Schriftverkehr / Protokolle, Projektdokumente, **Datenaustausch**, and Vertragsabwicklung. The left sidebar contains a "Listen" section with links to "To Do Liste DB S&S" and "ThinkProjekt", and a "Bibliothek" section with links to "BIM Mastermodell", "VP_Vorabzug", "VP_Abgabe", and "Datenaustausch Sonstiges". The main content area has a welcome message: "Seite 'Daten austausch' ist eine Arbeits- Austauschbereich mit DB S&S für projektrelevante Dokumente (außer .dwg)." and the company name "DB Engineering & Consulting GmbH". Below this, a large heading reads: "Um die aktuelle BIM-Modelle Virtuell anschauen zu können, klicken Sie bitte auf die folgenden Stationen:". A list of stations follows, each preceded by a small square icon: Köln Hbf, Köln Messe Deutz, Köln Kalk West, and Duckterath. The footer contains a link "To Do Liste DB S&S".

Um die aktuelle BIM-Modelle Virtuell anschauen zu können, klicken Sie bitte auf die folgenden Stationen:

- ▣ Köln Hbf
- ▣ Köln Messe Deutz
- ▣ Köln Kalk West
- ▣ Duckterath

Communication

Communication



JUMP IN

Scannen Sie die QR-Codes, um ins Modell zu „springen“.

Station: Köln Hbf
Standort: Breslauer Platz



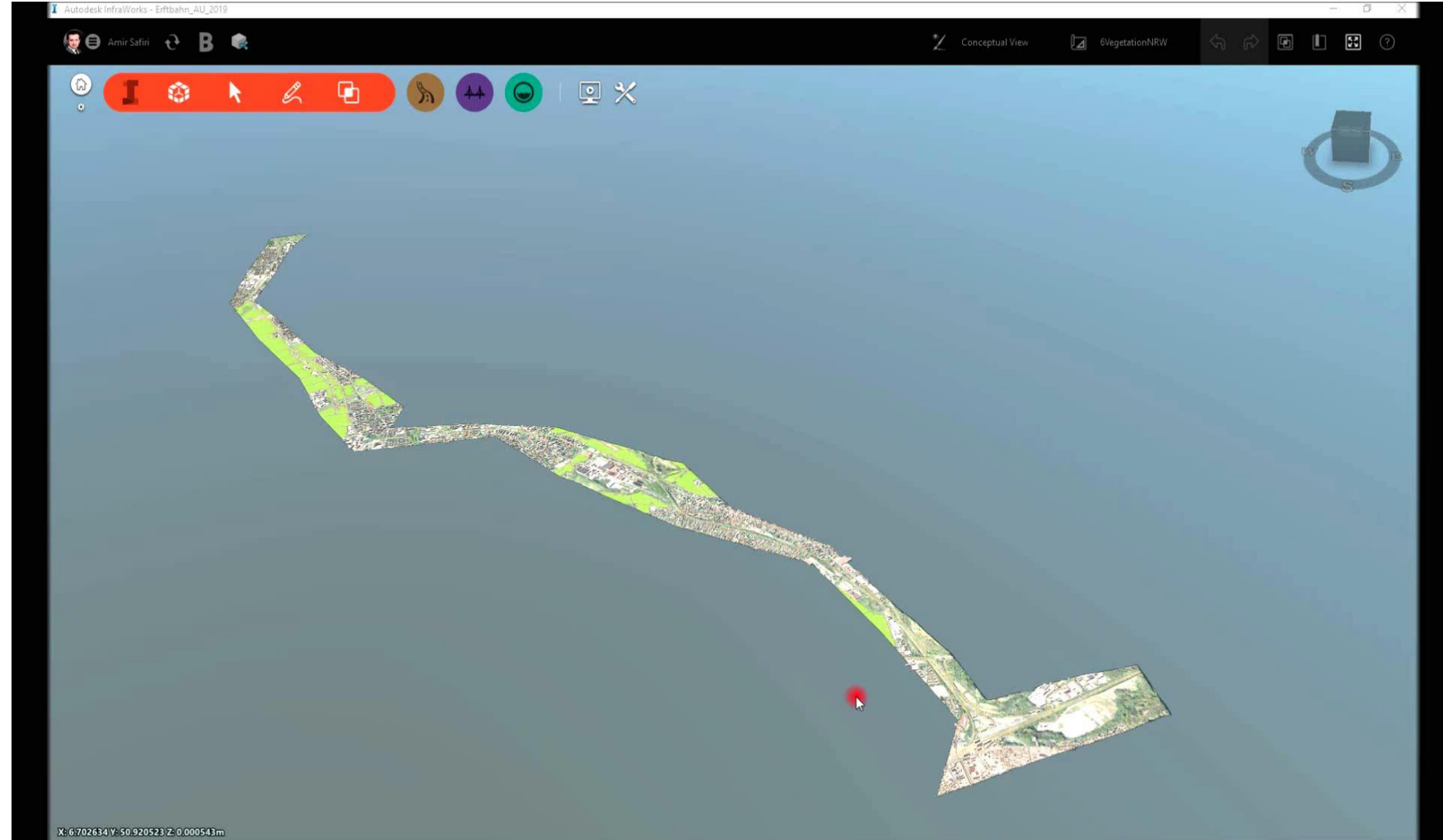
Station: Köln Hbf
Standort: Gleis 10 & 11



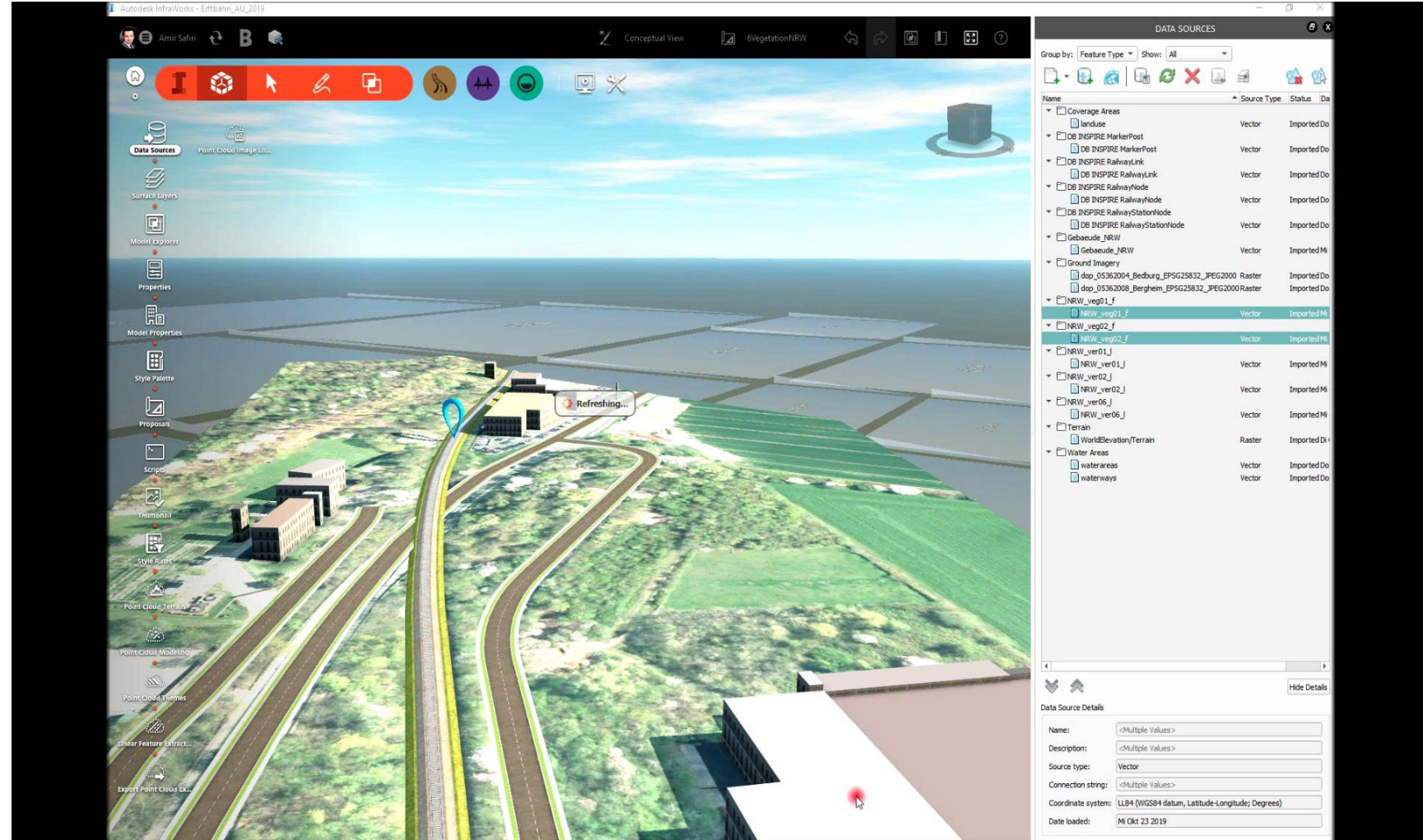
Station: Köln Messe/Deutz
Standort: Zugang Auenweg



Prepare model for Web Viewing for external stakeholder



Prepare model for Web Viewing for internal stakeholder

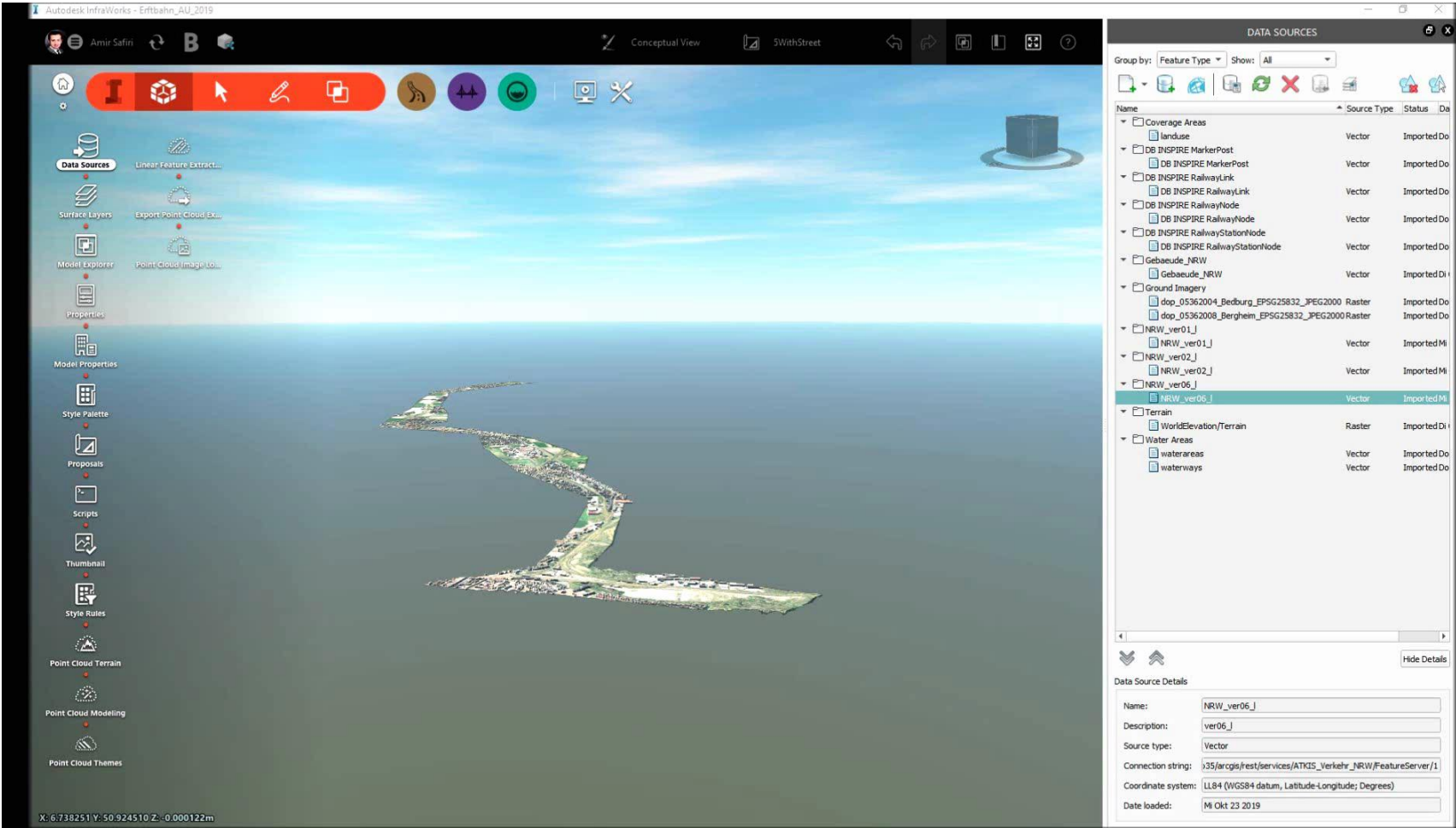




3D Building from North Rhine-Westphalia

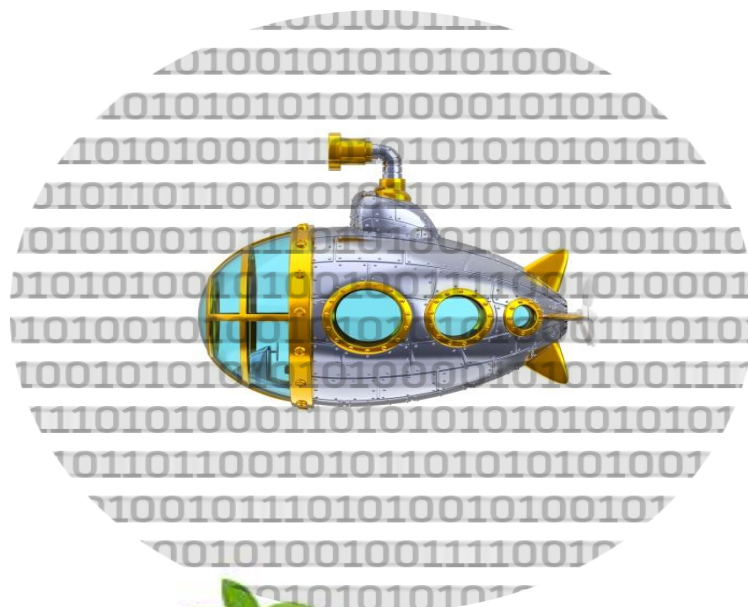


3D Building from Esri



The image displays four distinct isometric island designs arranged in a 2x2 grid. The top-left island is a red volcano with yellow lava flowing down its sides. The top-right island is a purple landscape with a winding purple river, pink flowers, and jagged purple rock formations. The bottom-left island is a small green tropical island with two palm trees, situated in a blue circular body of water with white wave patterns. The bottom-right island is a blue, jagged rock formation with a small yellow platform on top, featuring a silver submarine with yellow accents and a propeller.



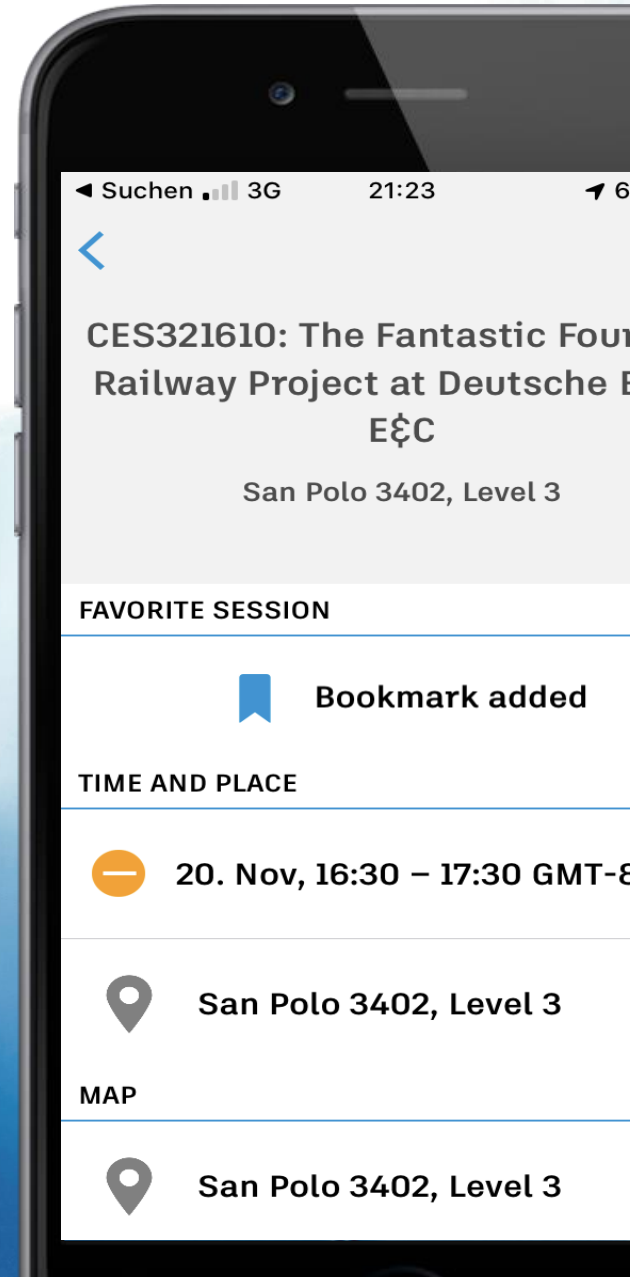


How did we do?

1. Open 'My Schedule'

2. Find the current session

3. Give your Rating



A long-exposure photograph of a city skyline at sunset, viewed from a train. The train tracks lead into the distance, flanked by green trees. The city skyline is visible in the background, with many skyscrapers and lights. The sky is a mix of blue and orange.

**Thank you for your
attention**



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