

Single source of truth

EPLASS CDE
DESITE BIM

thinkproject



Integration in action

EPLASS CDE **and** DESITE BIM

Integration in action for the planning, construction
and operation of the availability model A 10/A 24

Client



Contractor



Havellandautobahn GmbH & Co. KG
is a consortium of BAM PPP with PGGM
and the HABAU Group.

Wayss & Freytag Ingenieurbau AG

Founded in 1875
Group company of the Dutch Royal BAM Group since 2002
Consolidated revenue: € 497 million (2019)
Number of employees: approx. 1100 from 27 nations
Locations: 9
Training hours for employees: 12,000
First company certified in Germany according to ISO 19650

HABAU GROUP

Founding of HABAU: 1913
International full-service provider for almost all performance areas of the construction industry
18 Group companies in Central Europe
Headquarters in Perg (Austria)
Turnover: €1.6 billion (WJ 2019)
Number of employees: > 5000 (2020)
Successfully grown family business

Piloting planning, execution and maintenance with BIM using a single source

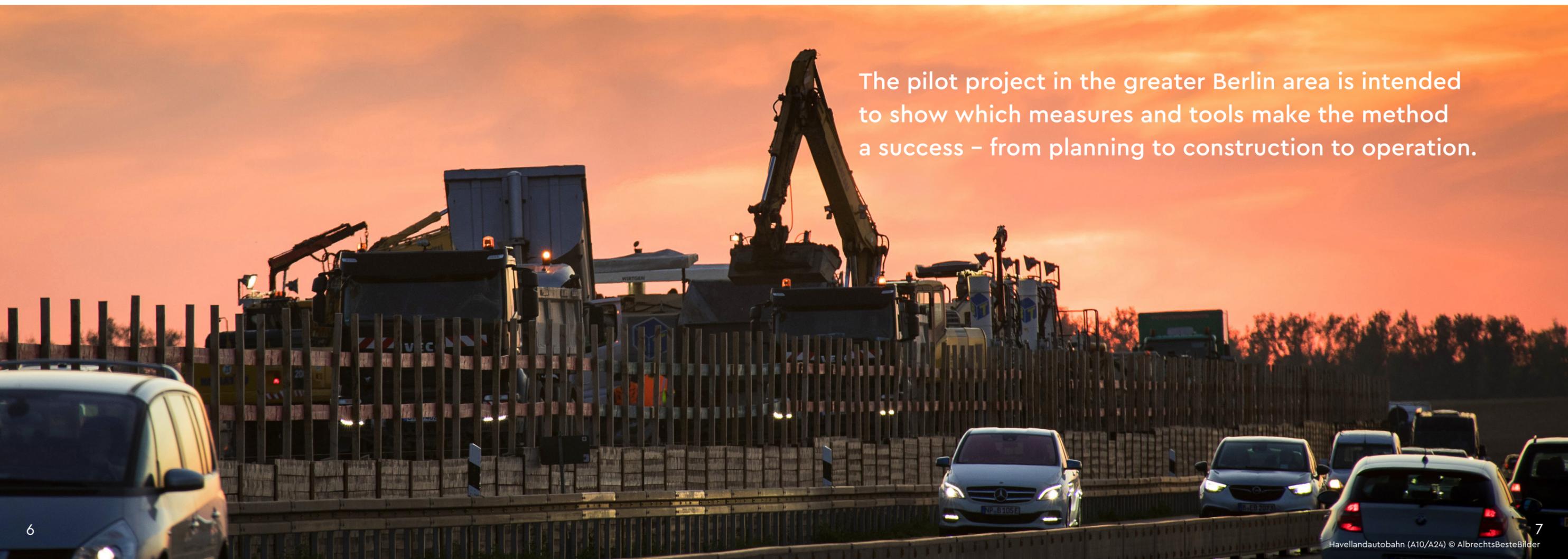
AT THE REQUEST OF THE CLIENT, DEGES, FIVE-AND-A-HALF OF THE 65 KM RENEWAL AND EXTENSION OF THE MOTORWAY LINE BETWEEN THE NEURUPPIN JUNCTION AND THE PANKOW MOTORWAY TRIANGLE WILL BE PLANNED ENTIRELY WITH BIM.

The responsibility for BIM management lies with the contractor, Havellandautobahn GmbH & Co. KG and ARGE A 10/A 24 Havellandautobahn. To simplify the communication between the numerous project participants and to ensure the quality of the digital models, the BIM management team have selected two software products from thinkproject: EPLASS CDE and DESITE BIM. This report shows why the selected solutions have a crucial role to play in this project and how it is possible to improve model quality even before coordination.

complexity of the projects and the complex approval procedures. There are various teams and stakeholders on board who must exchange information and make decisions. This is particularly true for PPP projects where public and private companies work together. The multitude of participants, the multi-layered processes as well as the handling of complex data models over large areas in the geodetic spatial reference are other factors that must be taken into consideration, currently BIM is less common in infrastructure than it is in building construction as the preparatory work for successful introduction of BIM can be complex.

Building Information Modeling (BIM) is an ideal feature for infrastructure construction due to the

The pilot project in the greater Berlin area is intended to show which measures and tools make the method a success – from planning to construction to operation.



5.5 km of BIM

5.5km of the approximately 65 km long contract line is planned as a BIM project. Along the North and South routes, the project includes several important components;

Refuelling

Rest areas

To service the new North and South rest and refuelling areas, an increase in spaces of:

45 truck parking

To display information on the fuel and rest facilities the installation of:

2 traffic screens

Renewed

Motorway bridge

Erection of a

265m noise barrier



Havellandautobahn (A10/A24) © AlbrechtsBesteBilder

This section of the motorway, which is to be upgraded to six lanes on a 30-kilometre-long route and fundamentally renewed on an almost equally long route, is one of the busiest routes around Berlin.

The construction time for the entire project is four and a half years, with the BIM contract line expected to take approximately two years.

The client DEGES contractually stipulates that the BIM contract line is at least five kilometres long, containing at least one structure that will be newly built. As a contractor, Havellandautobahn GmbH & Co. KG (Havellandautobahn) had decided to process the construction phase 4 with BIM.

Havellandautobahn is a consortium of BAM PPP with PGGM and the HABAU Group. Within the consortium, the ARGE A 10/A 24 Havelland motorway is responsible for planning and construction. Havellandautobahn Services GmbH & Co. KG takes over the operation and maintenance.



A central location for many digital models

Such a project requires a lot of preparatory work and a clear structure, with the specialist planners providing a wealth of information that needs to be coordinated.

There will be a total of five specialist models: track, tank, site, building site, rest facility as well as civil engineering structures

The technical models are divided into up to six sub models. The project planners use different authoring software to create these models. The ARGE A 10/A 24 will merge the models and carry out model tests in the first step.

"This allows us to reduce the number of sources of information and have a single 'source of truth'. This reduces complications and turnaround times and increases productivity."

BIM Manager Thomas Tschickardt is thrilled to be able to use Building Information Modeling (BIM) in this challenging project.

Perfect for infrastructure projects

The digital platform on which this data is exchanged and these checks take place, is called the Common Data Environment (CDE).

A CDE can be accessed by all project participants with the appropriate rights and permissions. For checking and evaluating models the CDE controls the processes, distributes information and integrates various applications.

For this, the ARGE A10/A 24 has chosen EPLASS CDE, which is tailored for use in infrastructure projects. EPLASS CDE is not only data hub for the 5.5km long BIM route, but also manages the plans and documents that are created for the entire contract. This simplifies communication even where digital models are not used.

Mock-up phase

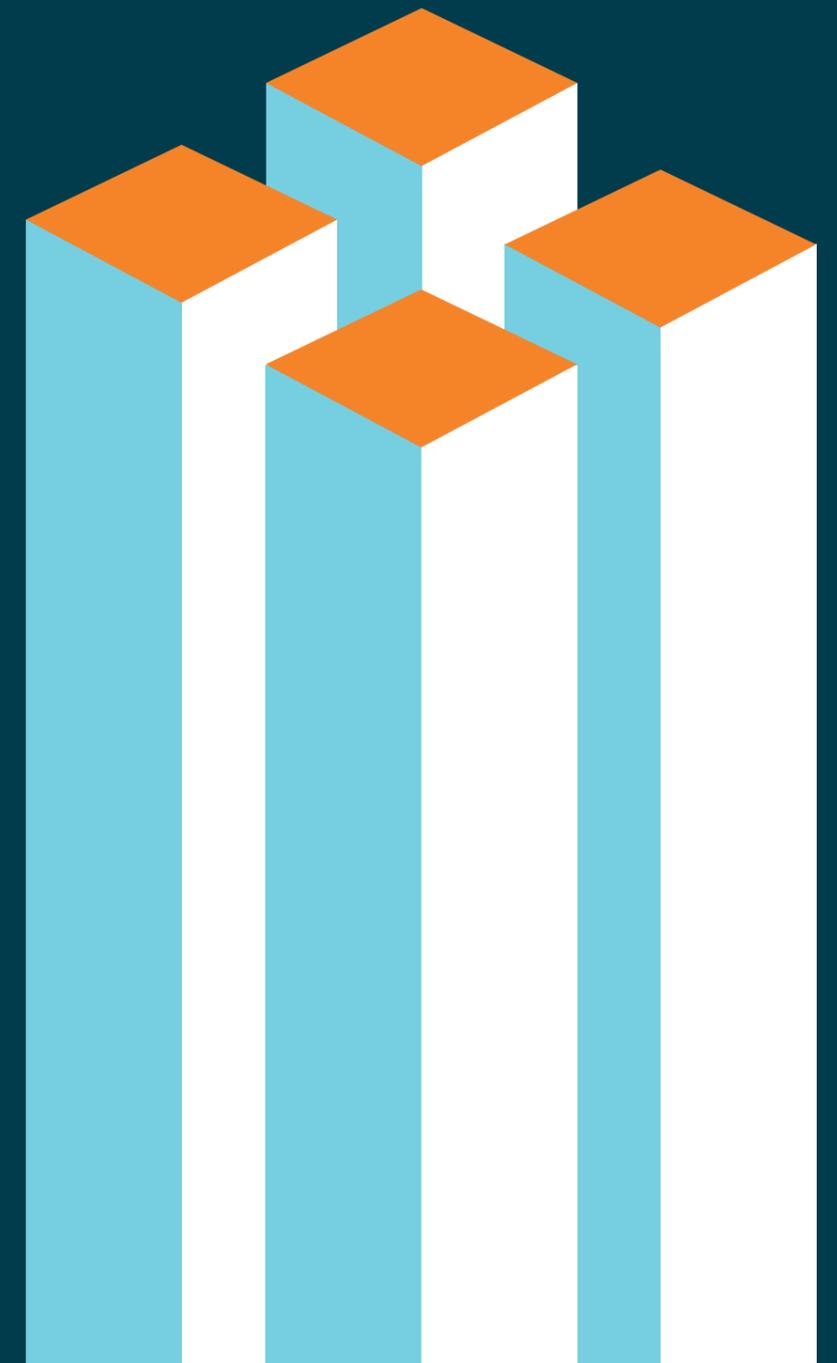
EPLASS CDE and thinkproject's BIM specialist software DESITE BIM had to prove themselves as testing and coordination software.

It proved beneficial that DESITE BIM can be started directly from EPLASS CDE. For example, coordination takes place directly on the exchange platform; this saves time.

In the course of the mock-up phase, weaknesses and discrepancies in all areas: specialist planners, software ARGE etc. could be identified and resolved during the process.

Open BIM

The mock-up phase also showed that ARGE A10/A 24 had chosen the right data exchange strategy. Open BIM takes into account that the specialist planners involved in the project use six different software solutions for modelling. In addition to IFC and BCF, CPIMXL and LandXML were also used as open exchange formats.





Award-winning

DESITE BIM demonstrated both in the test and in later use, that it is able to read, test and process the models of all specialist planners. The rule-based formal and technical verification of the models, collision check of the geometries, component-specific characteristics check and the transfer of the models all worked smoothly.

Thomas Tschickardt is pleased with the results:

"For our project, we have received the building SMART International Award 2020 Special Mention, not least thanks to DESITE BIM."

Model testing by specialist planners

In the meantime, several specialist planners are using DESITE BIM to test their models before handing them over. The BIM managers and coordinators have had to do a lot of preparation for this, but now there is a great deal of acceptance in the planning offices.

"Overall, the processes run much smoother when (pre-) tested models are handed over" Thomas Tschickardt

"Otherwise, consequential errors in coordination show up, the model must be uploaded to the planner for correction and in a new version. We are now saving this additional 'round'." Lukas Hochreiter

Share models instead of plans

Due to the different versions, the number of models is growing rapidly. Of these, 80 models are active.

After the examination at ARGE A 10/A 24, the models are stored in the CDE in an area that the client can access and check data. The test is carried out on the basis of a standardised process: ISO 19650 regulates the processes of BIM projects. In cooperation with the client, a leap in development has been achieved with BIM, although until further notice, the 2D plans are still subject to review and approval. However, these plans are now derived directly from the coordinated 3D technical models.



AS PART OF THIS PILOT PROJECT, THE CLIENT CAN NOW ALSO USE THE 3D SPECIALISTS FOR TESTS AND APPROVALS AND CHECK AUTOMATED INSPECTION ROUTINES OR ANY CUTS, VIEWS AND GEOMETRIES.

A significant advance for the efficient processing of complex large-scale projects

Model-based scheduling with DESITE BIM

At the beginning of a project EPLASS CDE makes it possible to understand all processes in a structured way

3D models, which were created on the basis of scans of the existing structures are available, as well as the various planning documents that go to the construction site.

DESITE BIM is not only responsible for model verification; ARGE also uses the software to schedule appointments using the digital model. Bottlenecks or voting errors are thus more evident earlier, saving money and time.

By utilising the internal construction day reports, the construction process can be controlled. The personnel on the construction site, record the actual dates and quantities in DESITE BIM on a daily basis, which are later evaluated by Controlling. In addition, the software is used to determine quantities from the model that are necessary for tenders and material orders.



BIM for maintenance

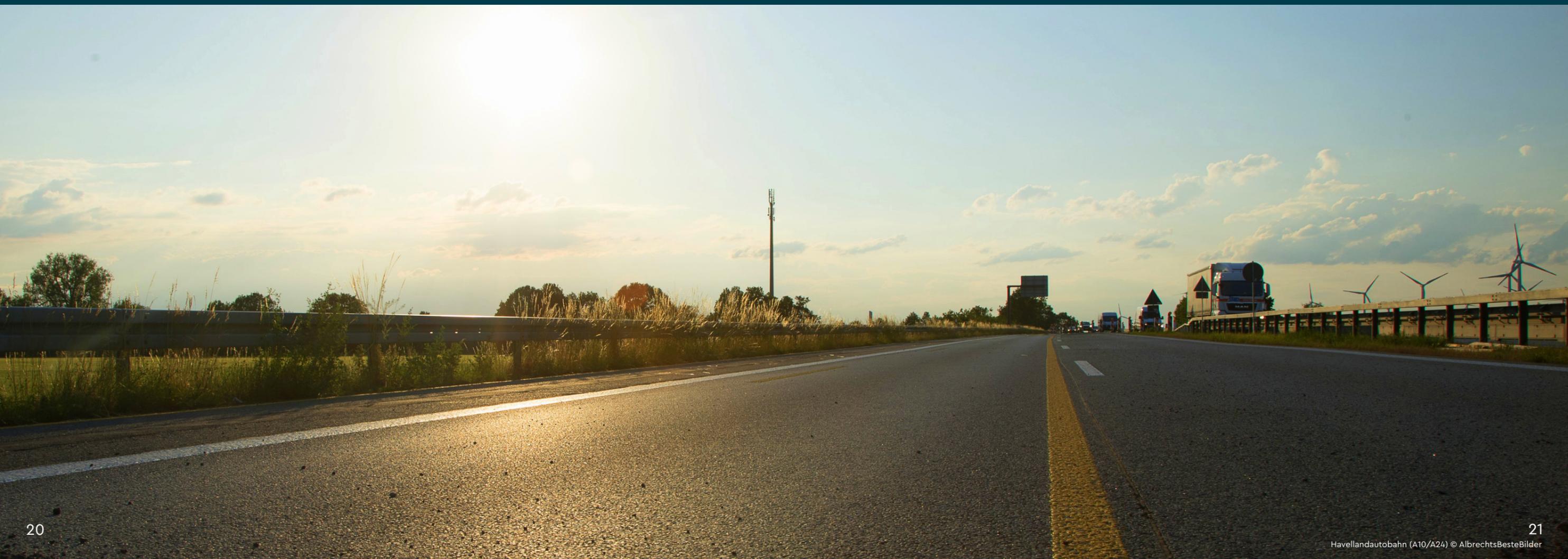
The visualisation of the construction process with DESITE BIM makes it easy for everyone to see what is happening on the construction site and when.

For the future maintenance of the motorway, the available data provides important information. Where today only one route indicates that there are potentially cables, the operators will be able to clearly identify which installation is located where, including:

- technical documentation
- maintenance intervals
- many other details

"The advantages of BIM will be demonstrated in this project, not only in planning and construction, but also in the conservation period."

"Because then you will notice how much structured information is available about the 'BIM route' which is missing for the remaining 60 kilometers."



Key findings

The pilot project 'Availability Model A 10/A 24' is primarily intended to **identify the possibilities and limitations of the BIM method in complex infrastructure projects**

Due to the mock-up phase and the explicit evaluation of the processes involved in implementing the method, it was identified that the investment was worth it.

It's clear a BIM project is successful only if clients, specialist planners, performers, operators and software providers work collaboratively.

Thomas Tschickardt and his team regard this collaboration particularly positively. Ideas and wishes that resulted from the use were quickly implemented, even if some changes were very complex.

BIM buy-in

THE EFFORTS TO ESTABLISH BIM AMONG ALL PROJECT PARTICIPANTS IS HIGH. A DEEP UNDERSTANDING OF THE METHOD, ROLES AND PROCESSES, MUST BE CREATED WITHOUT GENERATING A PARALLEL WORLD TO THE EXISTING DAY-TO-DAY WORK.

This requires not only technical and methodological understanding, but also considerable skills in effective communication.

For Thomas Tschickardt, it is clear:

"The industry will only use BIM if the customers rely on the method and demand it. If BIM prevails, communication will be better in planning and construction, saving time and money.

In addition, BIM lays the foundations for smooth operation over the entire contract period and beyond.

It is important for the industry that there are further pilot projects in which standards and processes can be developed together with the clients. Then BIM can play to all its strengths."

thinkproject

About Thinkproject

Europe-based Thinkproject is a leading construction and engineering SaaS provider. Turning intelligence from data and industry experts into an advantage for customers, it is at the forefront of the digitalisation and transformation of the AECO industry.

With 450 employees worldwide, Thinkproject provides digital solutions enabling the management of asset lifecycles to:

2,750

CUSTOMERS AND MORE THAN

250,000

USERS, IN OVER

60

COUNTRIES

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