BAU CHINA 2019
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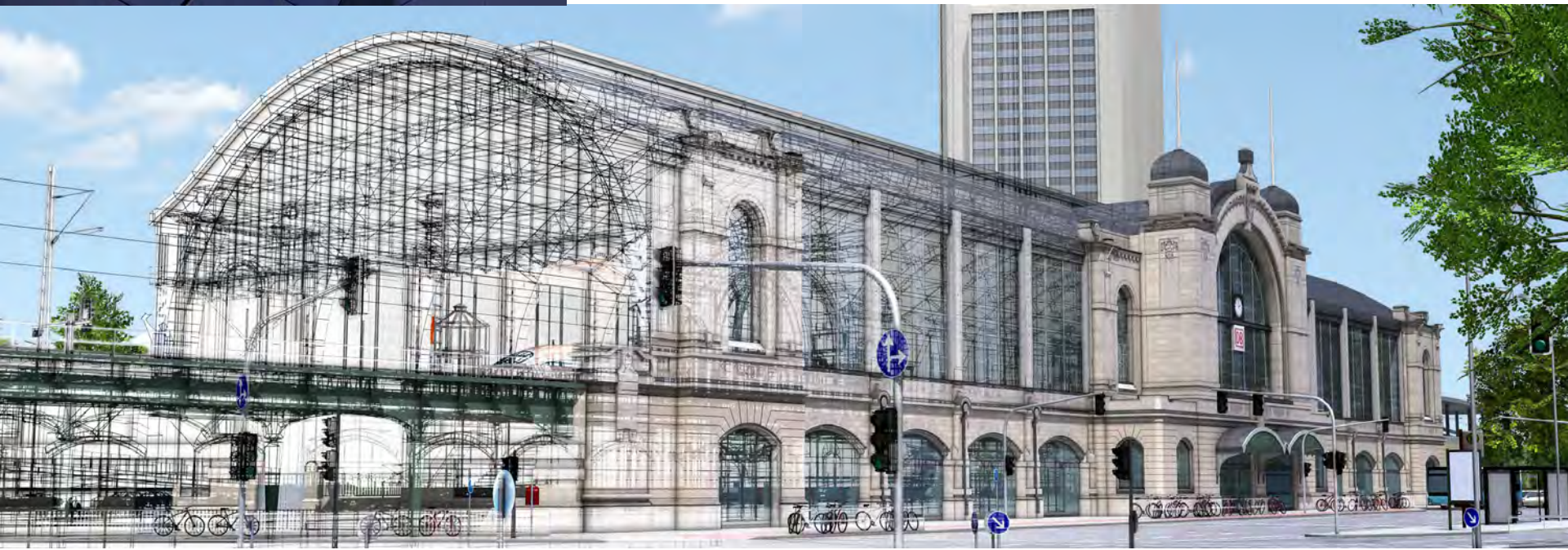
LocLab CONSULTING



Digital Twins - AI-Methods for Analysing and Optimising exisiting Buildings

Dr. Ilka May, CEO LocLab Consulting

Introduction

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Low-cost methods for modelling existing assets

We create "Digital Twins" - virtual copies of real world assets and spaces, three-dimensional, technically perfect and amazingly real.

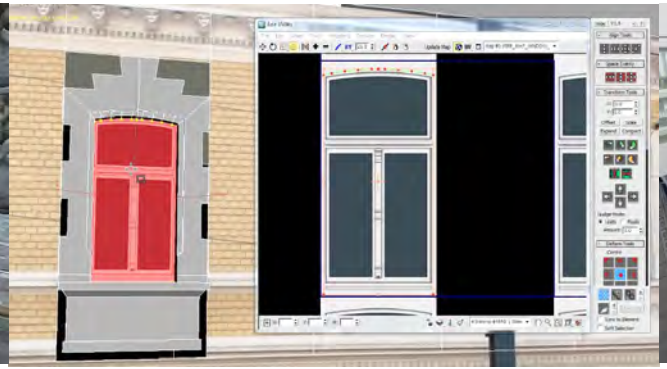
Digital Twins are increasingly used across many industries, mostly in transport, energy, nuclear, telecoms, maritime, aviation and security. The market is global and growing.

Our current client base spans from the European construction sector, a 1.2 trillion EUR market, over the mechanical, systems and plant engineering industry to training providers and asset managers.

Our technology

We have the technology for the needs of a digitalised industry:

- A vast object library, containing a vast amount of street furniture, building components, rail equipment, technical objects, materials and textures from all over the world.
- Our vendor-neutral ToolChain, enabling an outstanding degree of automation in the digital production process.



Digital Twins

Digital Twins are virtual copies of real world existing or planned assets or spaces.

Models of the built environment – „Bestandsmodelle“

How do you want them to be?

For example..

... cheap?

... fit for purpose?

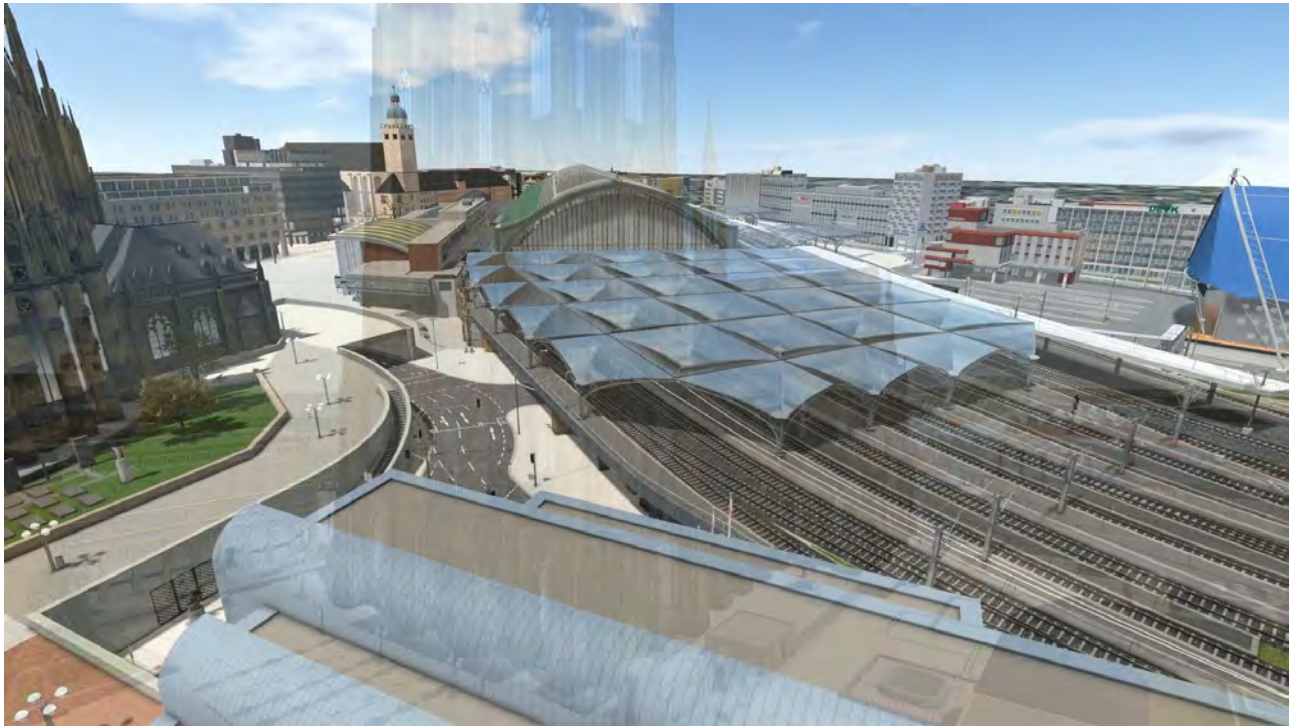
... available quickly?

... based on open standards?

... small file size?

... semantic?

Use games technology!

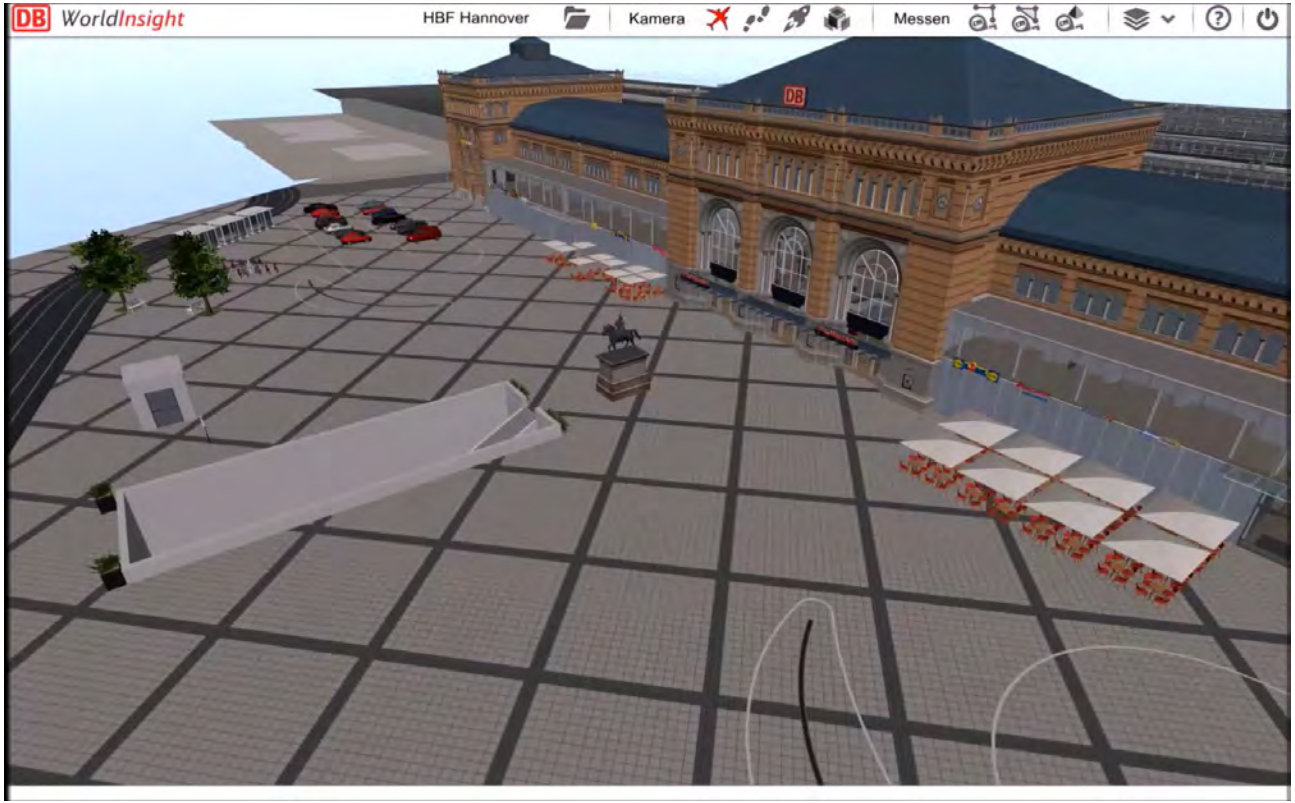


More efficiency in data capturing

Quiz time:
Data capturing of all public areas, including outdoor areas, station concourses, all platforms and pedestrian tunnels, at a city center station with around 60,000 passengers per day and 14 long-distance tracks.

How long do you think it took?

3 man-hours



Reduce data volume

Quiz time:

Which one is real?

What is the file size of one of these buildings in the model?

What is the file size of a 3D city model with more than 1200 buildings?

Answers:

~ 80 kb

~250 MB

Low-cost and automated 3D production

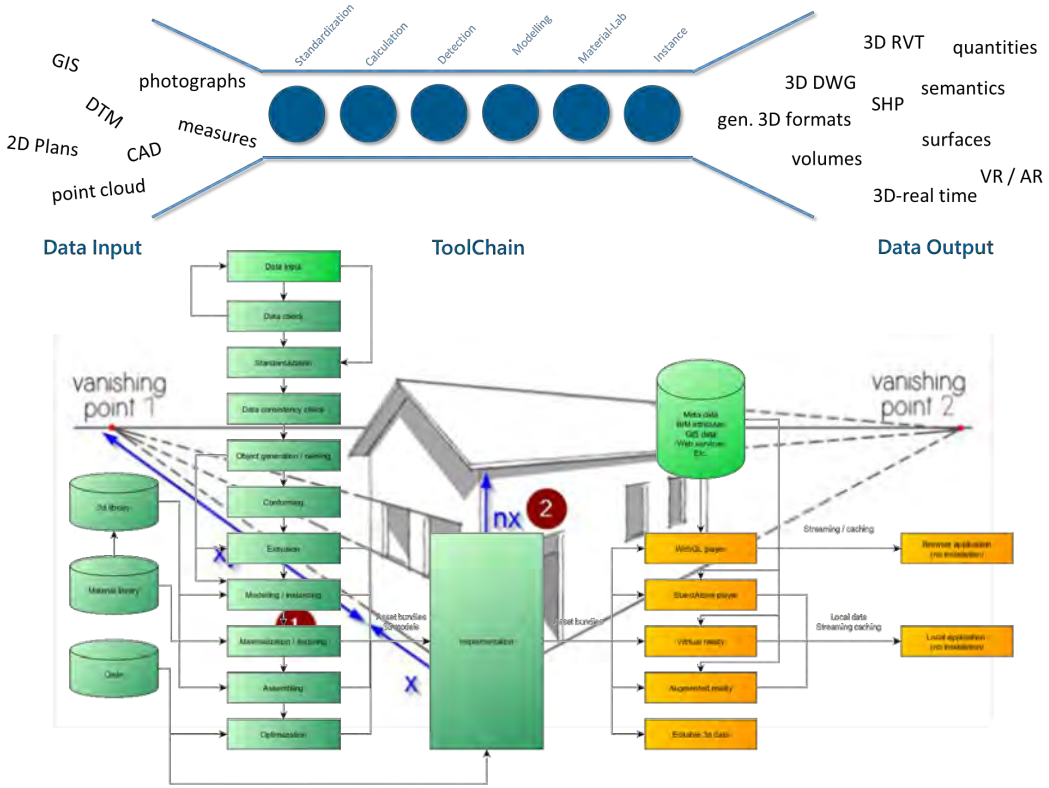
We use normal photographs as our main input data.

3D modeling is a semi-automated process based on our ToolChain, an “assembly line” of algorithms for processing the input data.

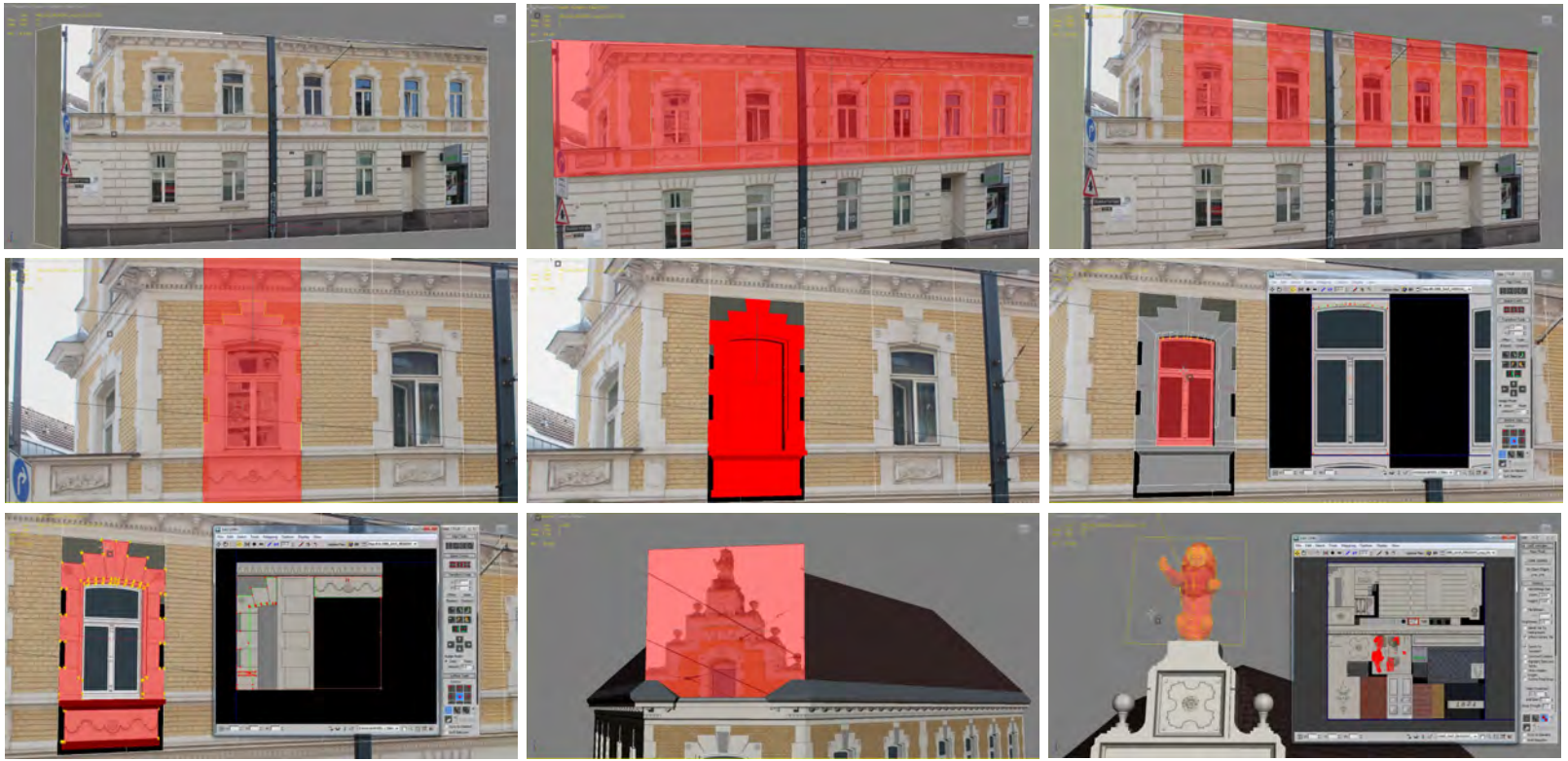
First of all we produce a master photography and use the principles of descriptive geometry to produce a 3D model.

Then our algorithms detect patterns, vectors and objects in the digital model

These objects are replaced by corresponding items from our vast object library. This is a key step, because a) it ensures that the dataset remains small and b) it generates object-based (BIM) models



Efficient 3D production using learning algorithms



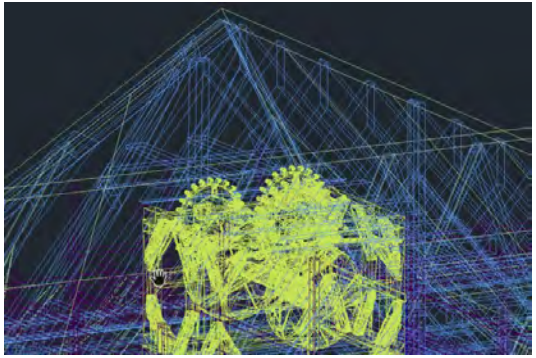
From Input to Output

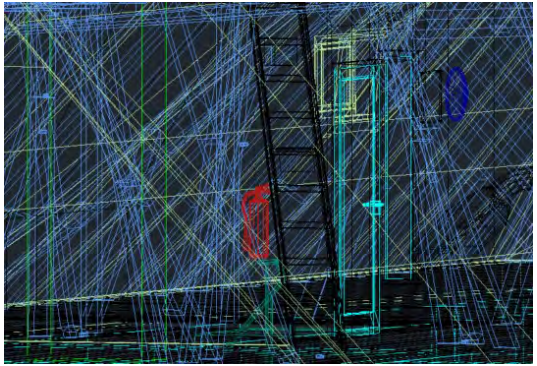
Video captured with GoPro Hero 5

Digital Model for Train Driver Training

From Input to Output





Automation using games technology

What do you think was the processing time to produce this model of Milan Central Station?

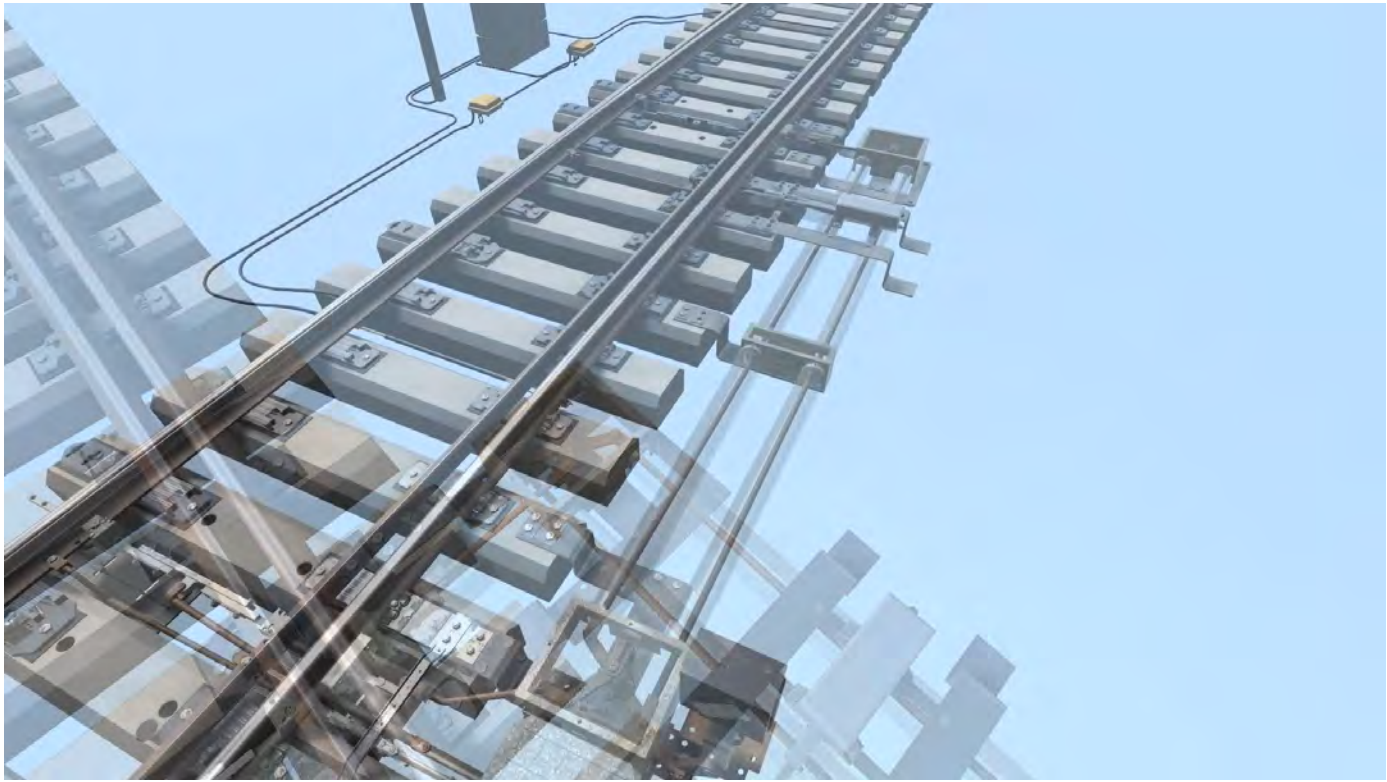
~ 1 week

Object-based by default

This switch consists of 7000 individual parts.

Every nut and bolt is linked to its technical place in SAP.

Orders for spare parts can be placed directly through the model.



3D Models as the backbone for data integration

The is no better place to store information than a 3D model..

Gamification – here comes the fun!

Gamification describes a way to simplify and optimize processes and procedures through playful and engaging applications.

The intuitive and real representations increase motivation and learning outcomes.

Vielen Dank für Ihre Aufmerksamkeit.

Bei Rückfragen stehen wir Ihnen gerne zur Verfügung:

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