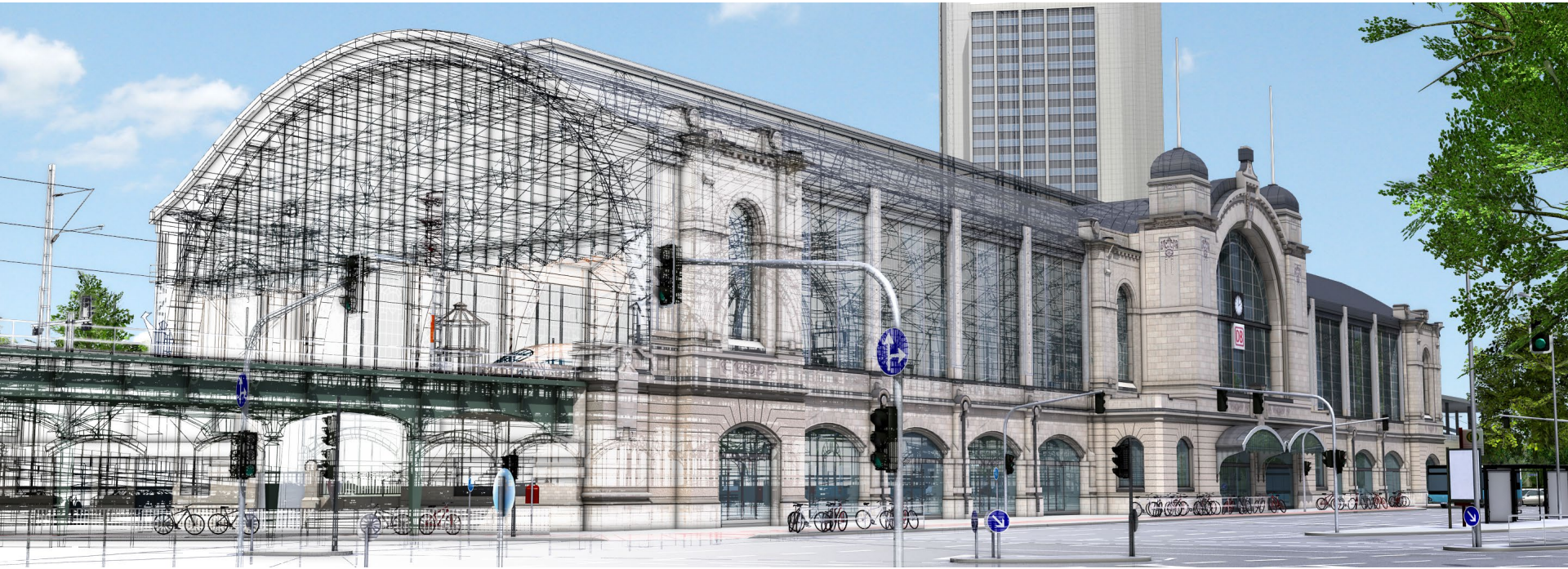
2ND ANNUAL
DIGITAL CONSTRUCTION
SUMMIT
STEIGENBERGER HOTEL AM KANZLERAMT
BERLIN, GERMANY
28 - 29 MARCH, 2019

LocLab CONSULTING



Games technology in asset construction and management

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Berlin, 28 March 2019

Introduction

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Games technology in construction?

1. Low-cost methods for modelling existing assets
2. Digital twins and the V-process
3. The value of semantic models for data integration

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Digital Twins

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

Example: Verbund GmbH, Austria

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!

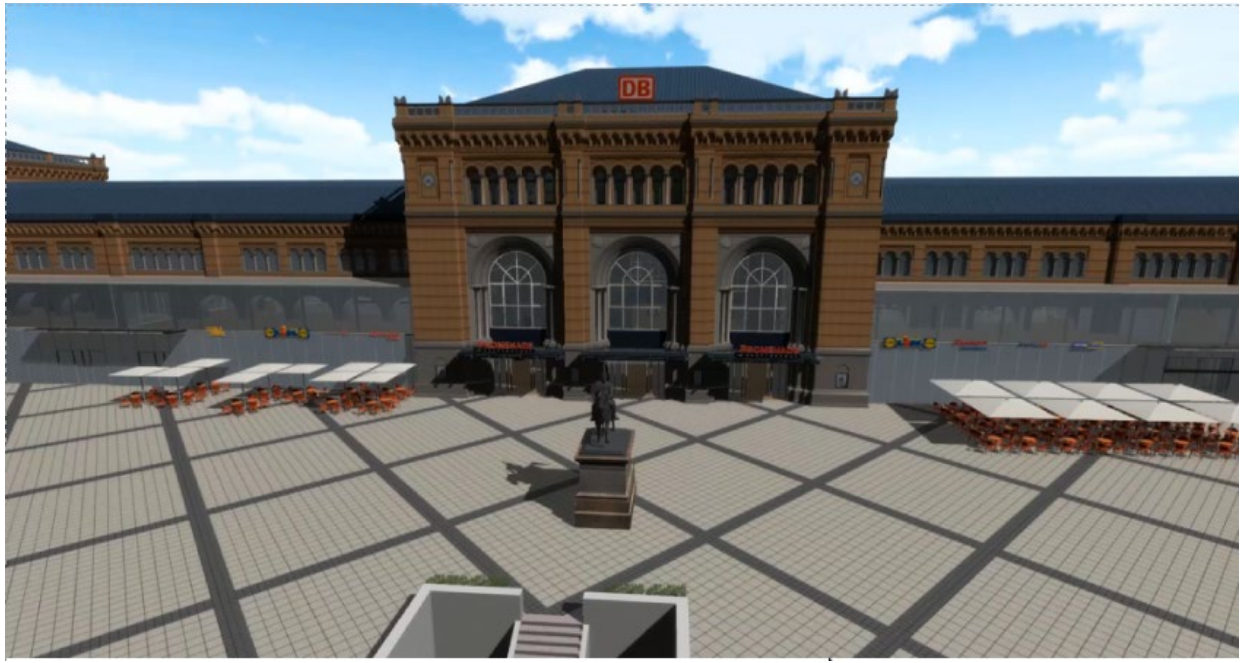
Example: WorldInsight, DB Systel GmbH, S11

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



Example: WorldInsight, DB Systel GmbH, Hannover Hbf.
Video: https://www.dropbox.com/s/cxha4rnw0qltm1g/WOI_Hbf%20Hannover.mp4?dl=0

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

Automation using games technology

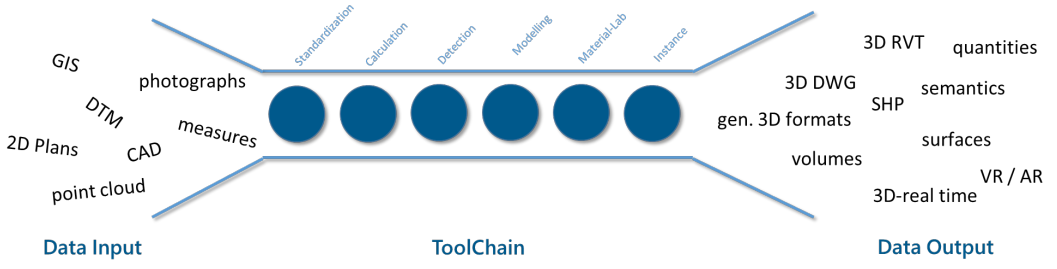
We use normal photographs as our main input data.

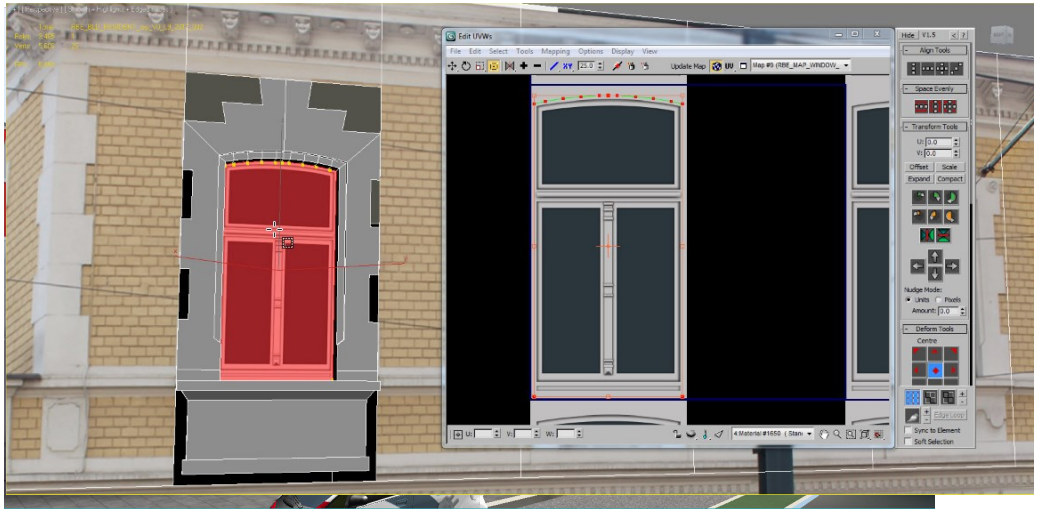
3D modeling is a semi-automated process based on our ToolChain, an “assembly line” of algorithms for processing the input data.

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 semantic models





Automation using games technology

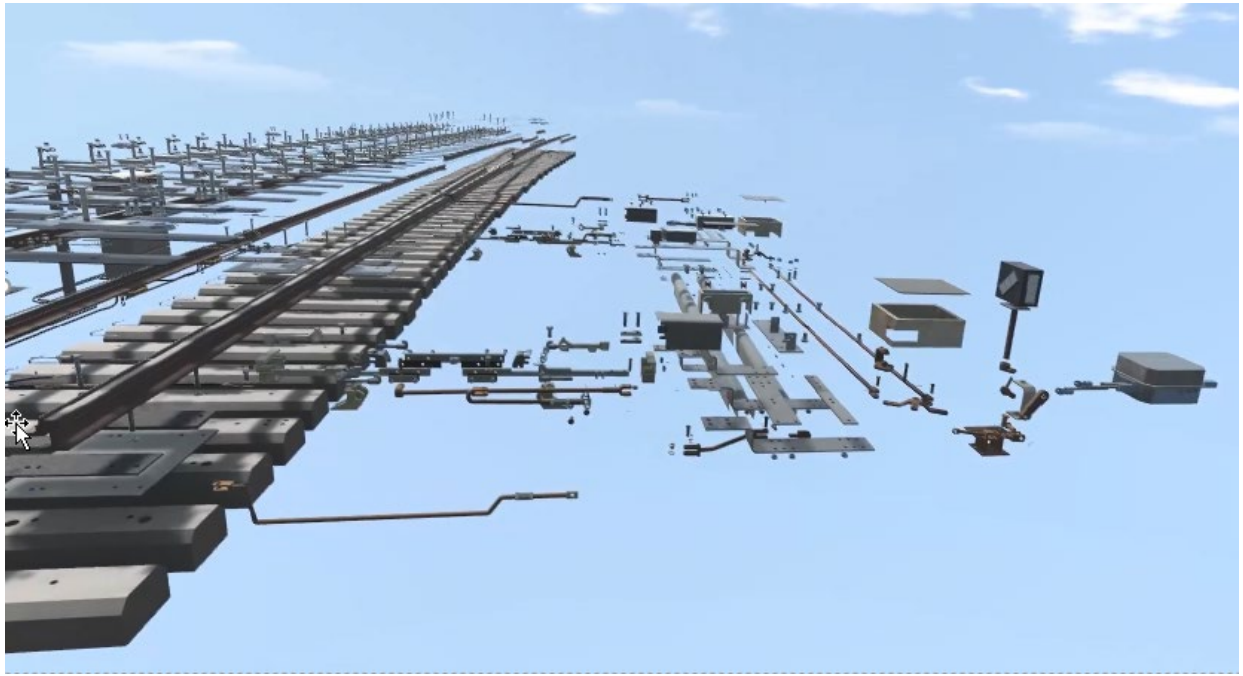
What do you think was the processing time to produce this model of Milan Central Station?

~ 1 week

Example: Milan Central Station
Video: https://www.youtube.com/watch?v=FNp7XZ9ItoM
Player: https://www.dropbox.com/s/pzu9je8vrbm6hin/Itally_MilanStation_Player.zip?dl=0

Object-based by default

A vast object library is at the heart of our technology, containing digital representations of real world objects. Started 15 years ago, it now contains a vast amount of street furniture, building components, rail equipment, technical objects, materials and textures from all over the world. The library enables the semantics in our digital twins.



Example: WorldInsight, DB Systel GmbH, Exploding Switch
Video: https://www.dropbox.com/s/kaklxe2xmi335yc/TLL_Exploding%20switch%20%28White%29.mp4?dl=0

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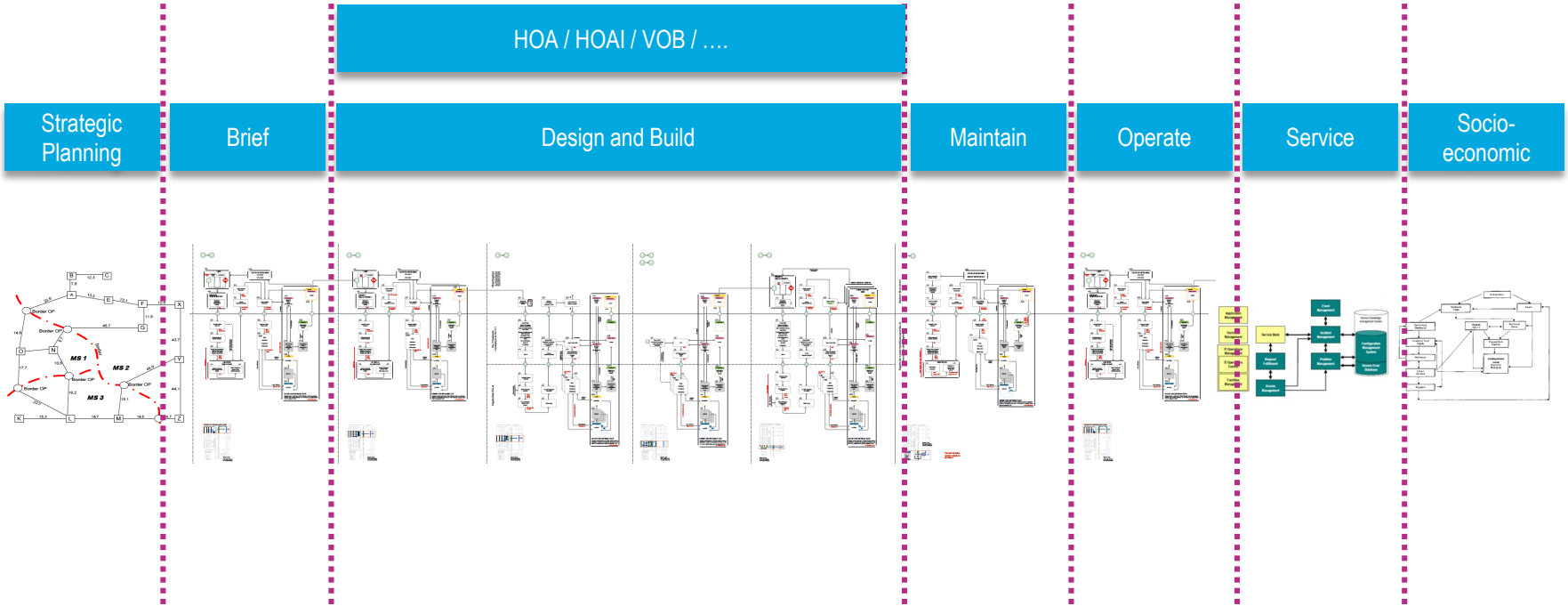
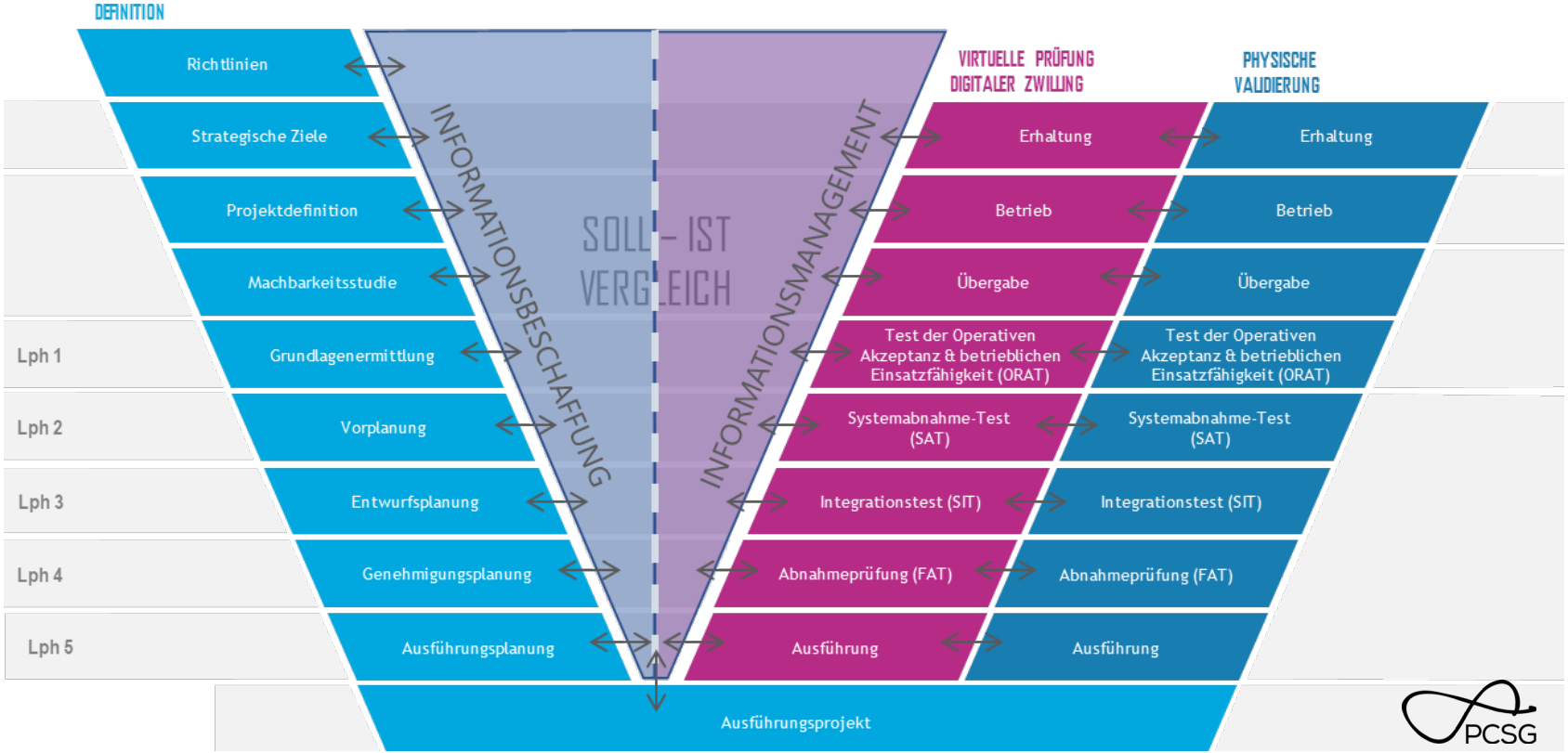
Linear construction process



The Systems Engineering “V-Process”



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UAT

An example for a user acceptance test on a train configurator

Example: WorldInsight, DB Systel GmbH, Advanced Train Lab

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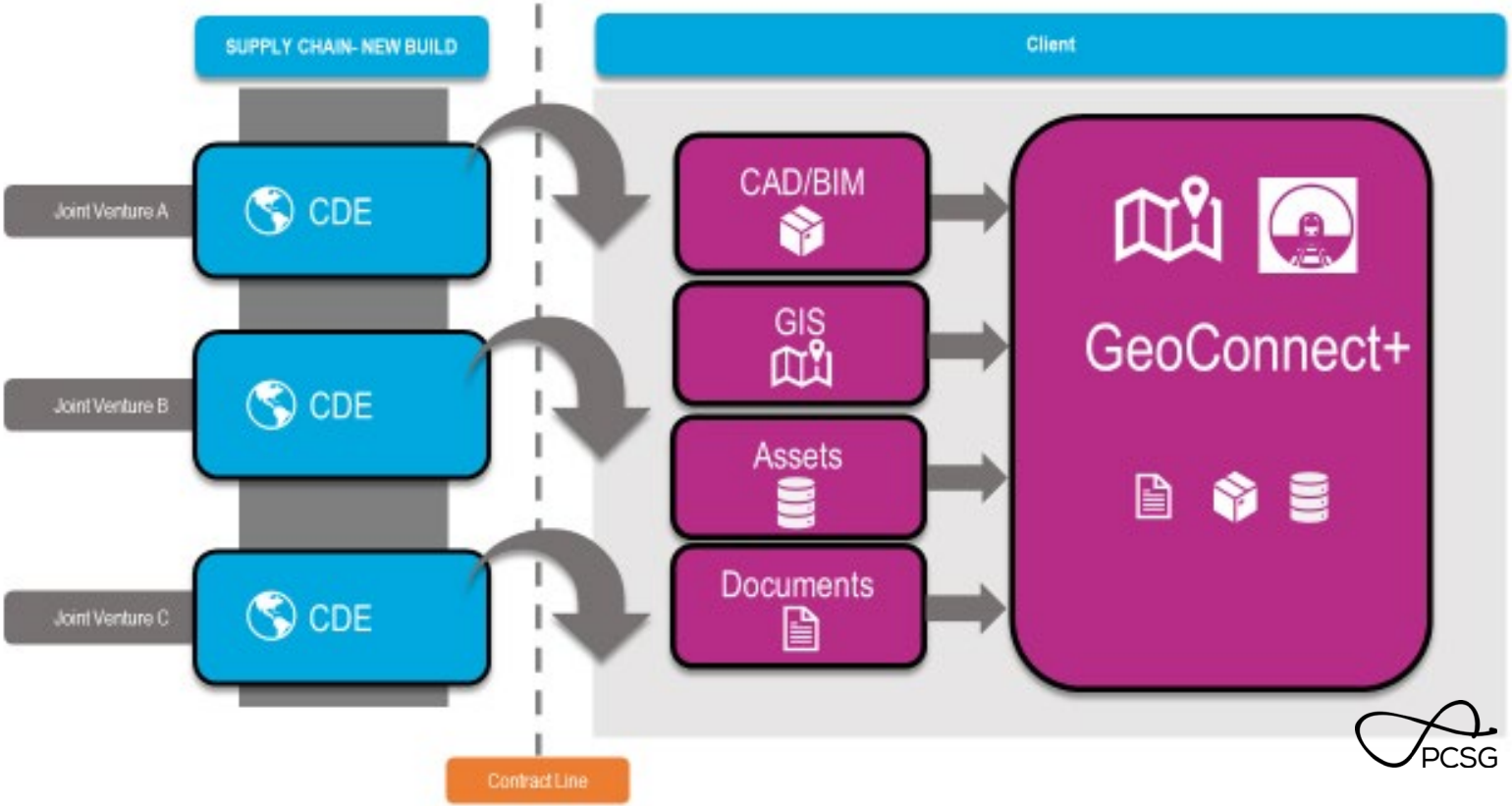
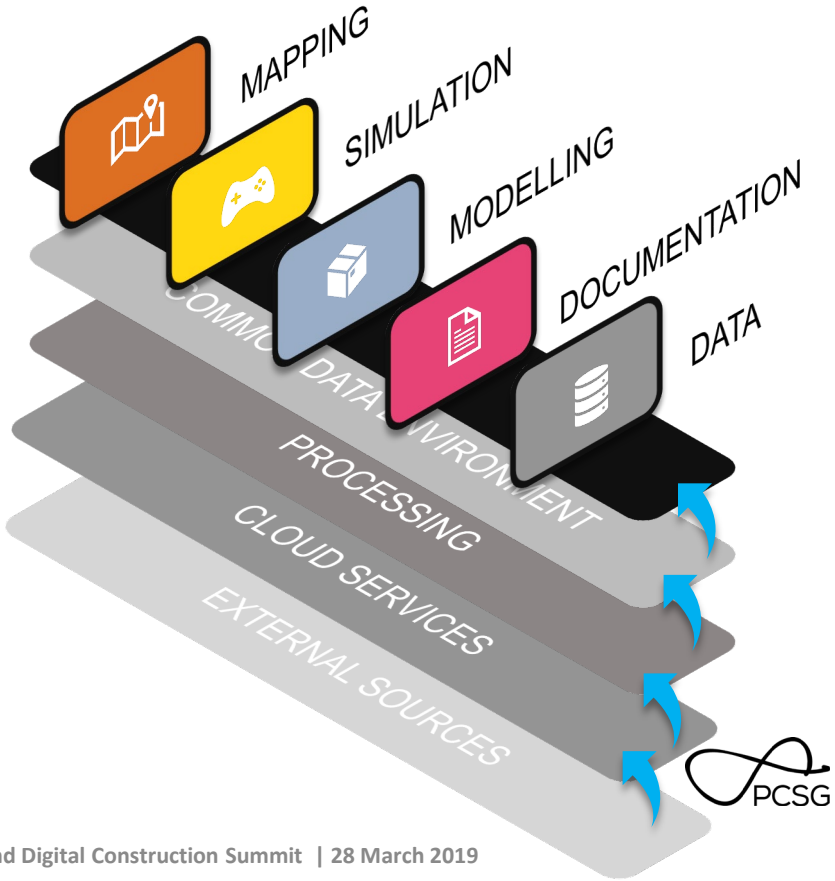
The Challenge

- Ability to find key information
- Models, maps, drawings and data all in different places
- No common open standards
- Information is often poor or of unknown quality
- Unknown security measures
- Need to use complex unfamiliar systems to access information
- Lack of integration limits good understanding
- Information doesn’t often get to those who need it

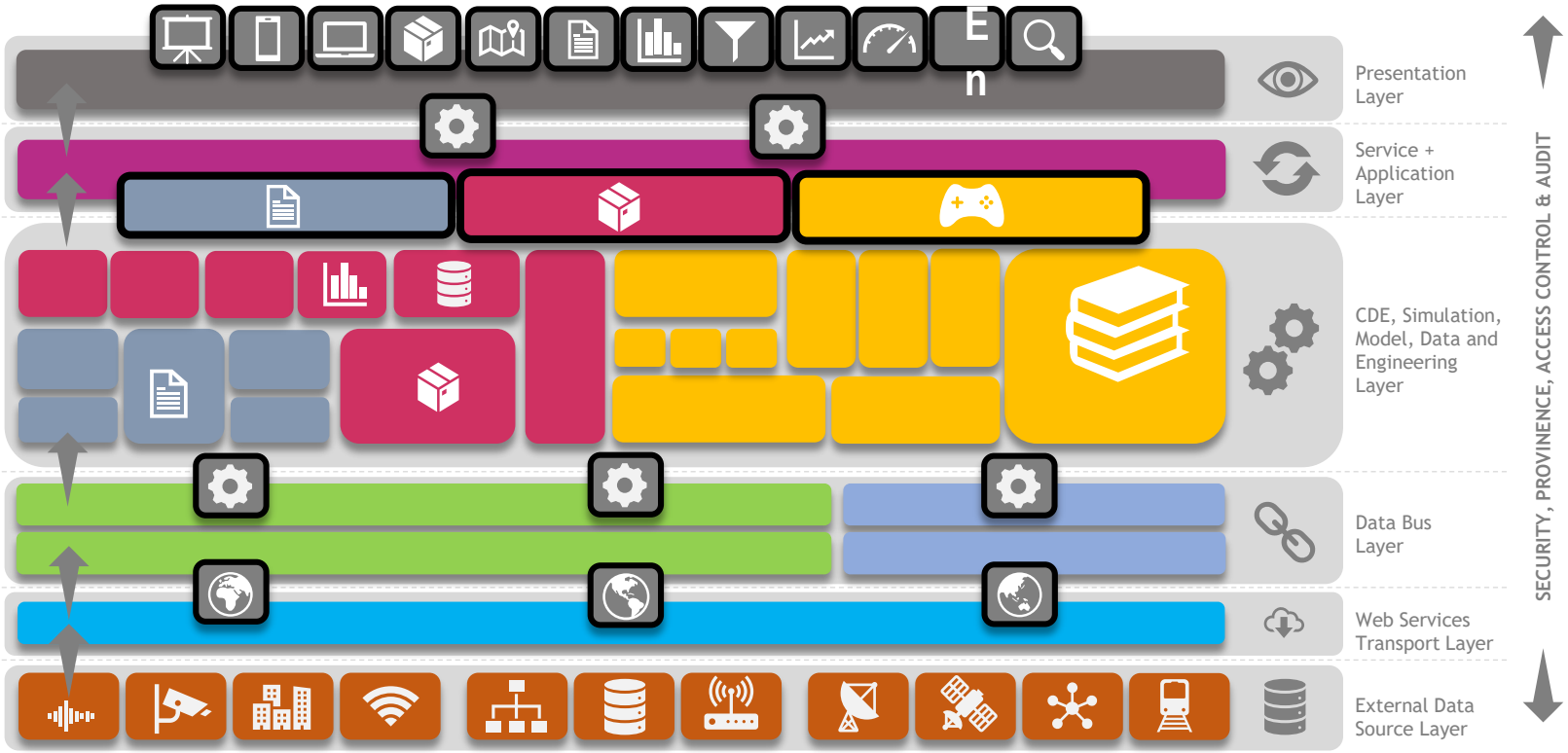
GeoConnect+


SUPPLY CHAIN- NEW BUILD
Client
Joint Venture A
CDE
Joint Venture B
CDE
Joint Venture C
CDE
CAD/BIM
GIS
Assets
Documents
GeoConnect+
Contract Line
PCSG

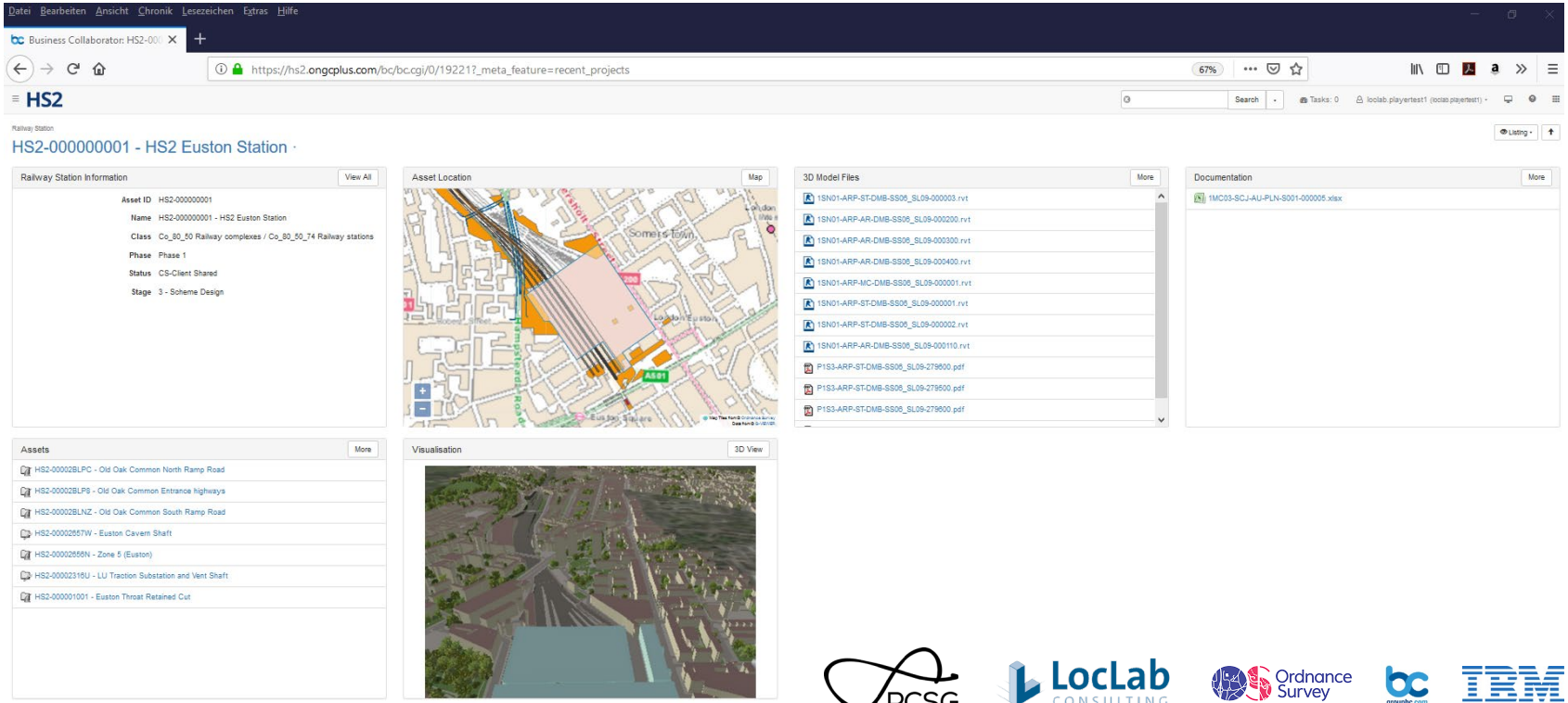
Data Integration



GeoConnect+ SYSTEM ARCHITECTURE

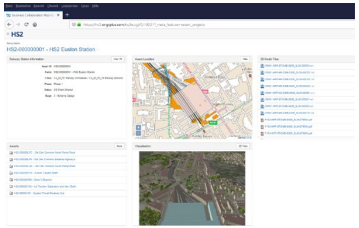


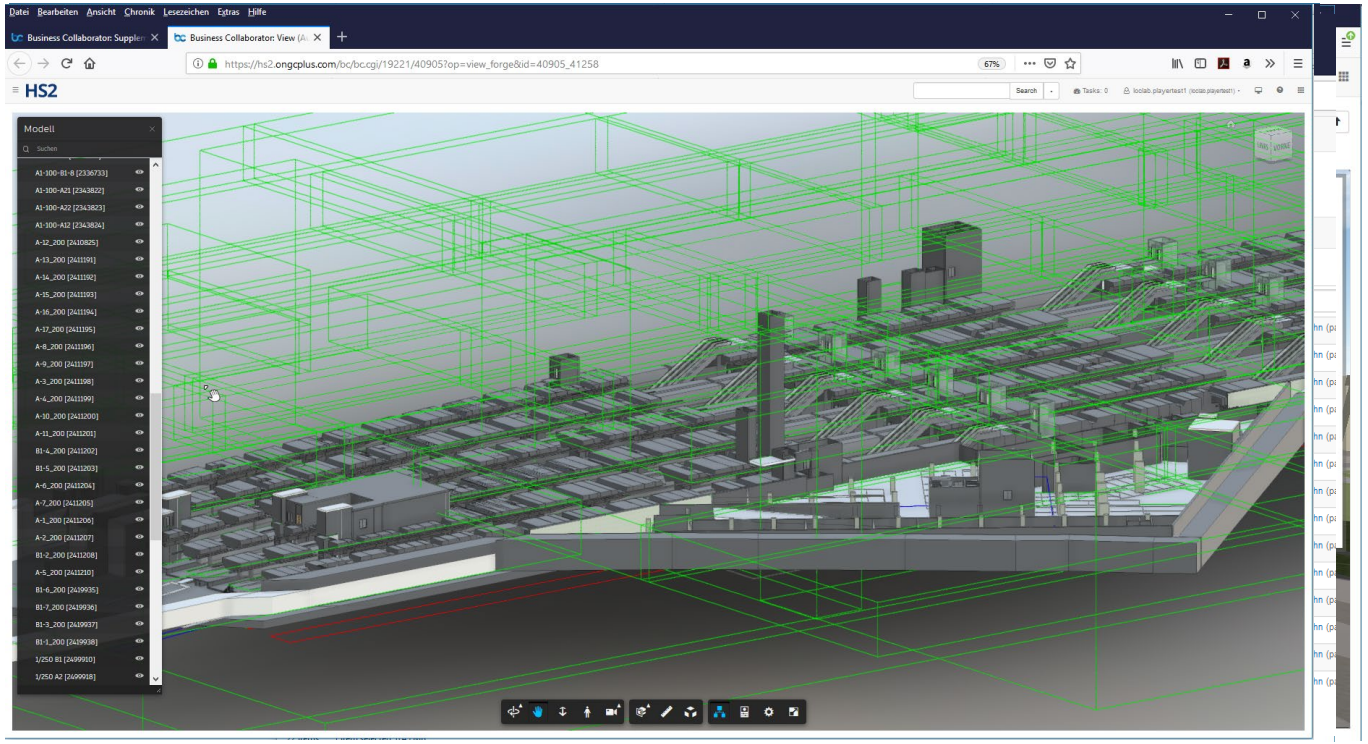
Implementation Example – HS2



Example: HS2 BIM Visualisation Hub, GeoConnect+

Implementation Example – HS2





PCSG LocLab CONSULTING Ordnance Survey bc groupbc.com IBM

Example: HS2 BIM Visualisation Hub, GeoConnect+

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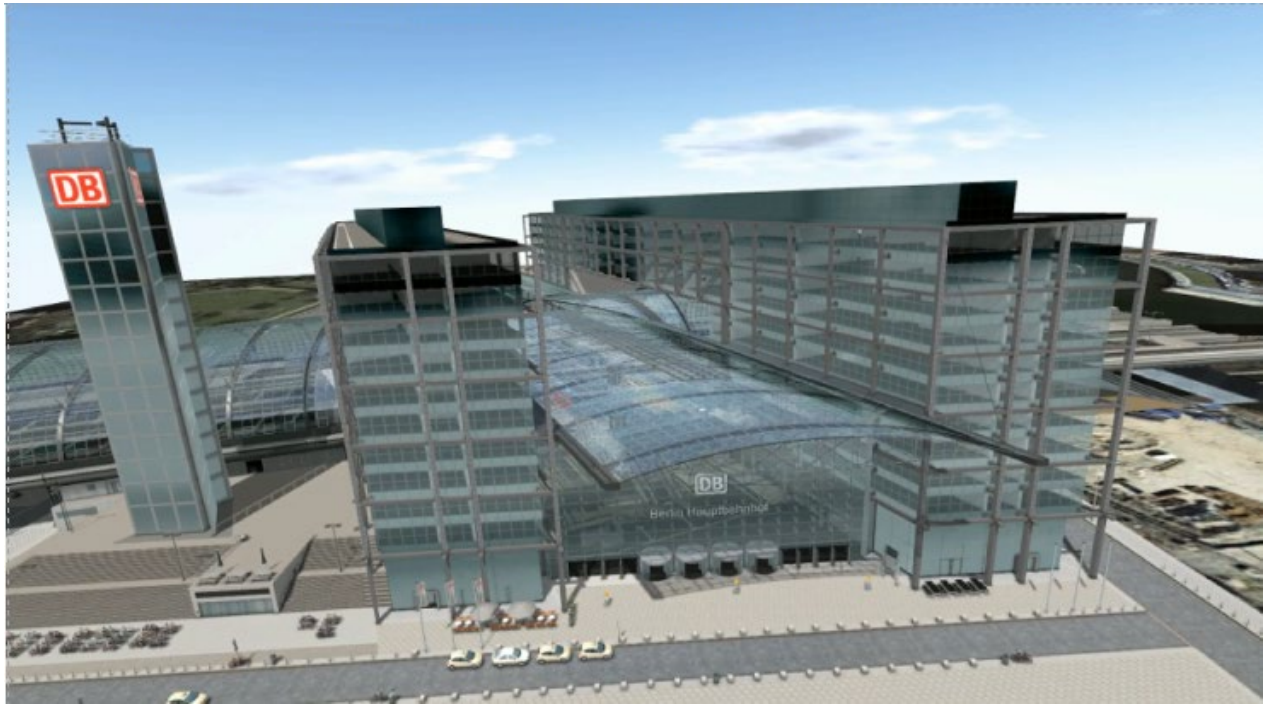

Example: WorldInsight, DB Systel GmbH, Berlin Central Station

Vielen Dank für Ihre Aufmerksamkeit.

Bei Rückfragen stehen wir Ihnen gerne zur Verfügung:

info@loclab-consulting.de