

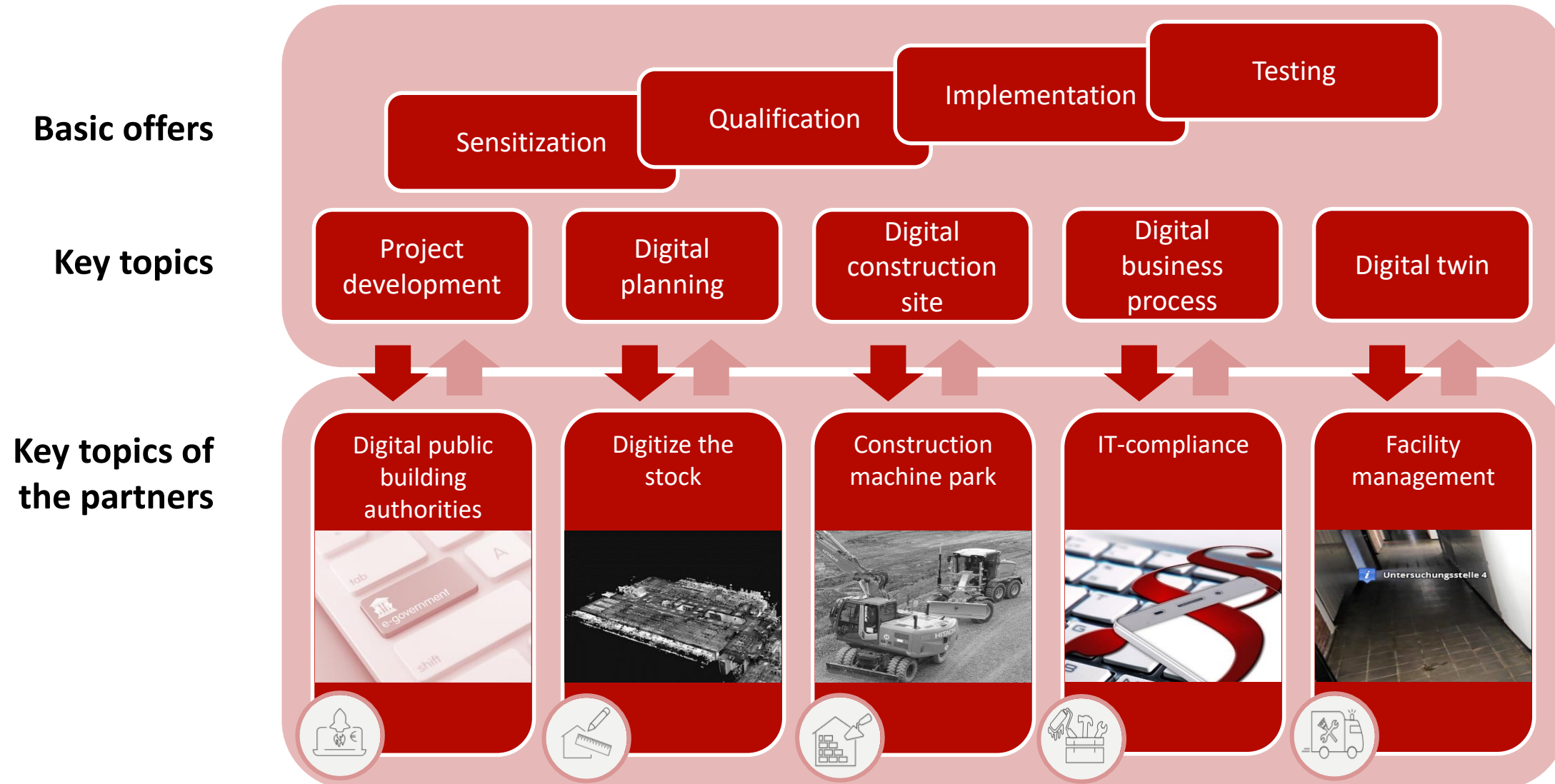
# Digital Transformation on the Construction Site – How to Get the Latest Plans to the Specific Actor

November 27<sup>th</sup>, 2019

Munich

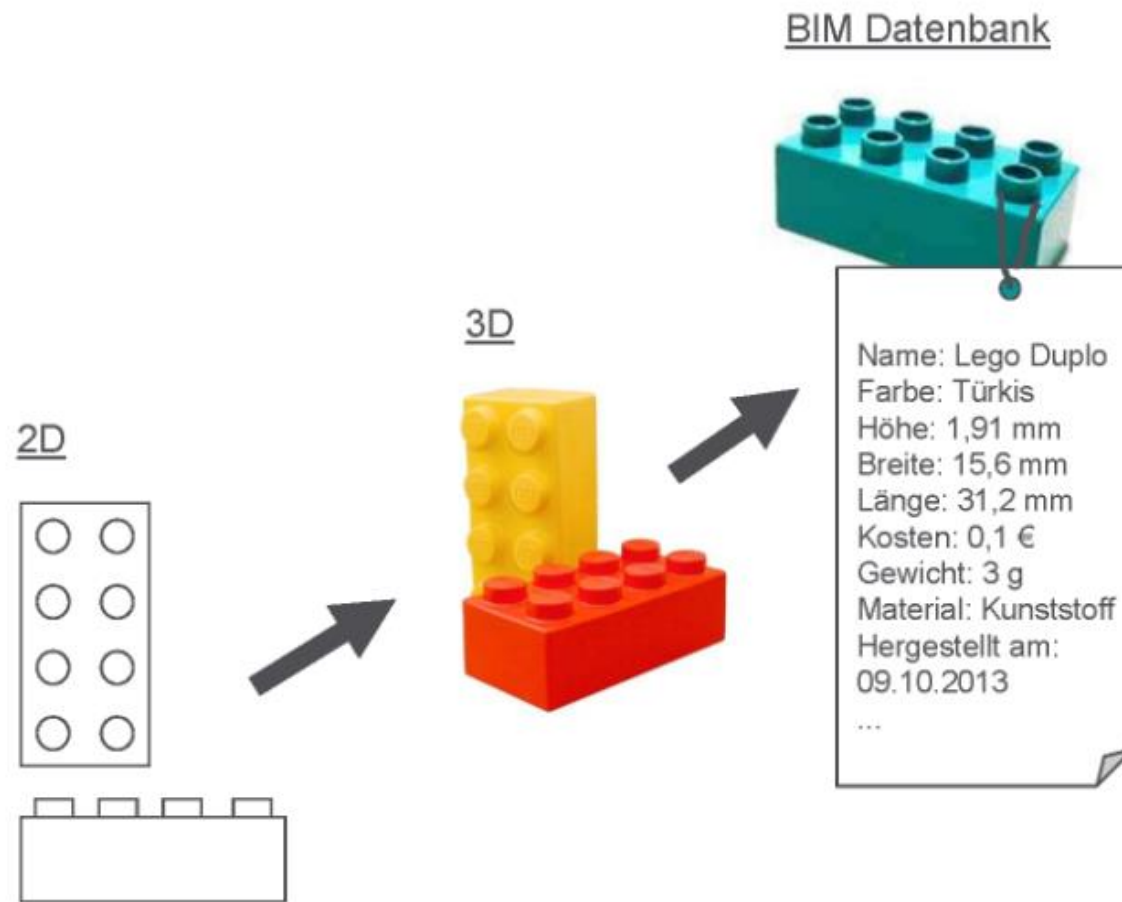
BIM Town

# Mittelstand 4.0-Kompetenzzentrum Planen und Bauen



# What is BIM?

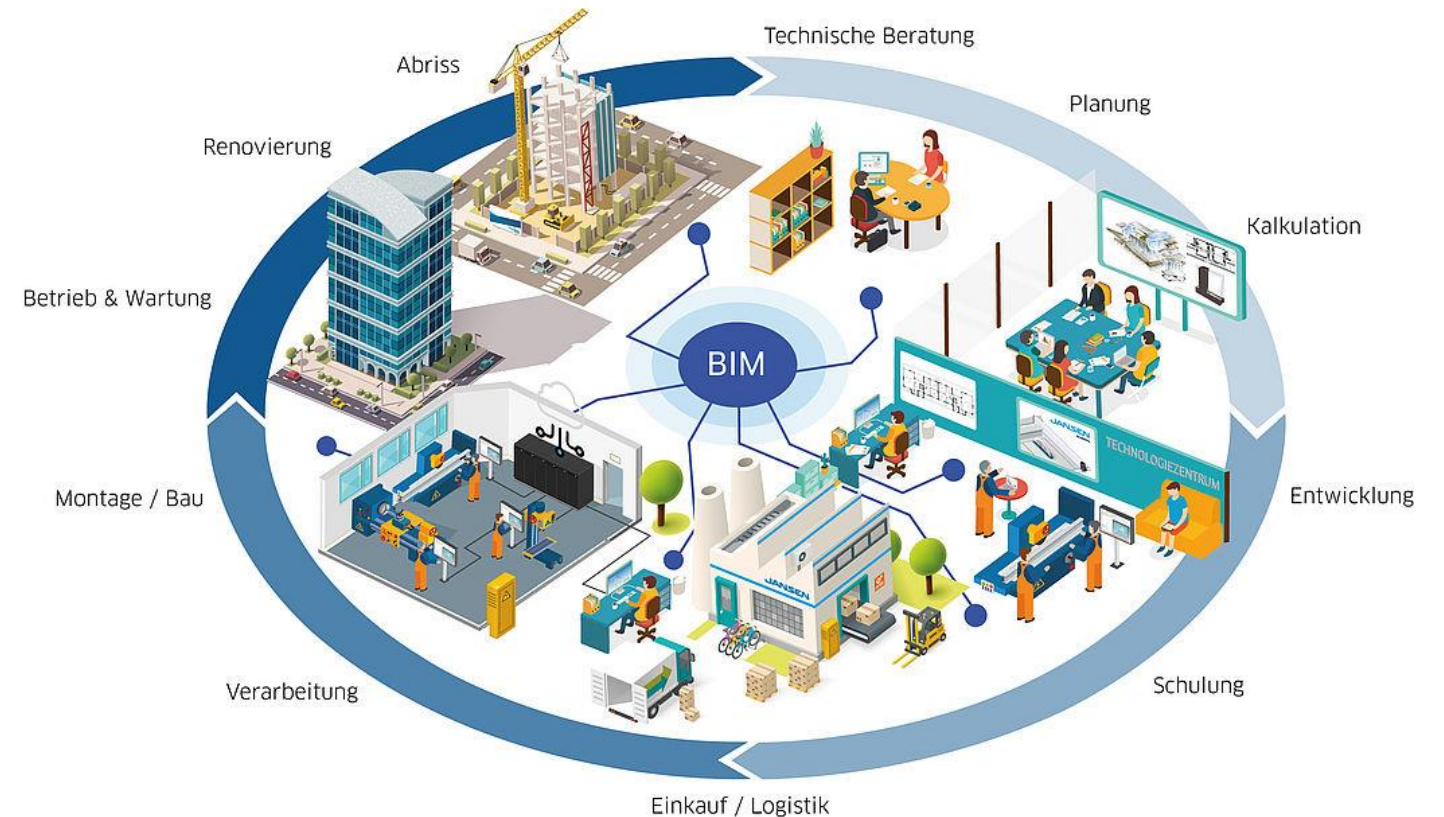
## The idea of collaborative work



# How can BIM be implemented?

## Technical possibilities

- Universal data exchange
- The challenges are to properly define exchange points between:
  - planning and construction
  - public authorities and planners
  - public authorities and construction





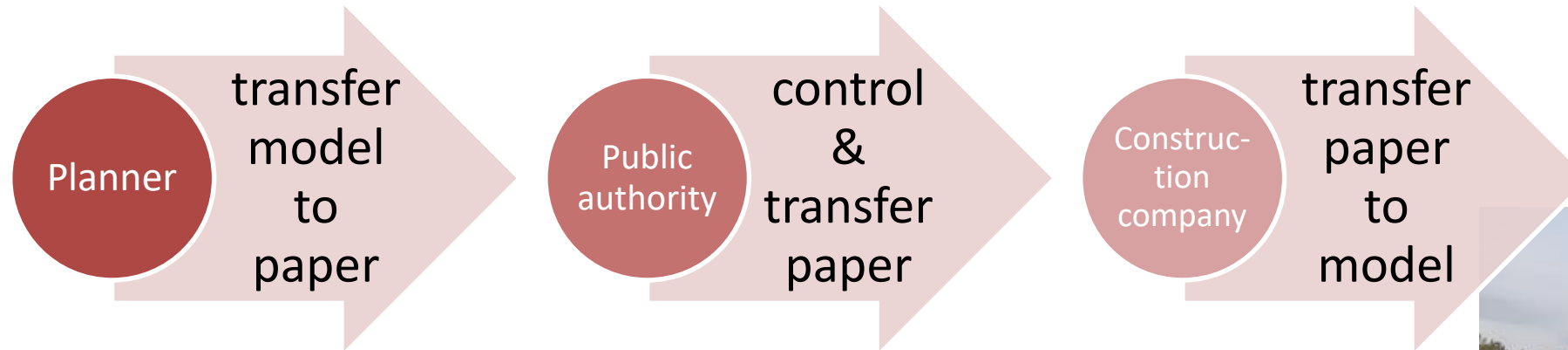
# Why BIM? – Examples from pilot projects in Germany

## Use cases for the construction site

	BIM4Infra (public infrastructure)	BIM-Leitfaden Mittelstand (private structural eng.)
Plan the construction	<ul style="list-style-type: none"> <li>• Scheduling</li> <li>• Planning of logistics processes</li> <li>• Creation of assembly plans and implementation plans</li> </ul>	<ul style="list-style-type: none"> <li>• BIM-based transfer of plans to the construction company</li> <li>• Link the general coordination model with the execution planning</li> <li>• Model based quantity take-off</li> </ul>
Construction	<ul style="list-style-type: none"> <li>• Control the construction progress</li> <li>• Change management for plans</li> <li>• Accounting of construction work</li> <li>• Construction defect management</li> </ul>	<ul style="list-style-type: none"> <li>• Partially digitally-based production of laminated wooden beams</li> <li>• Use of RFID transponders to control logistics processes</li> <li>• BIM-based approval</li> </ul>

# Road building motorway A14 (10 km)

## Data exchange with public authorities



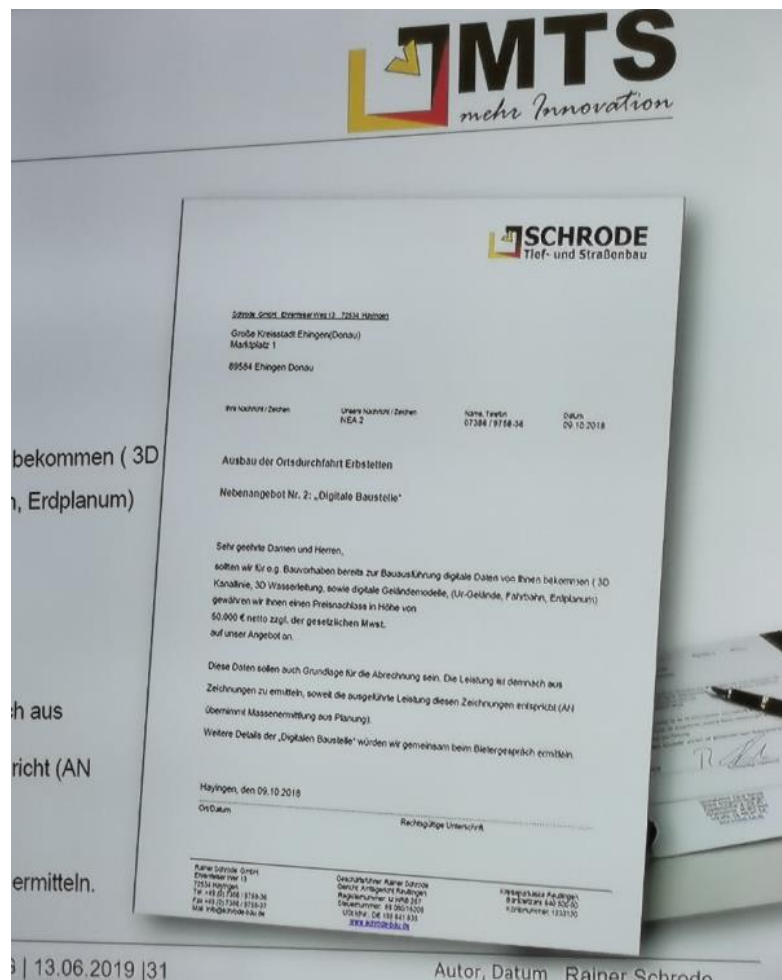
- Exchange information via paper (in this case more than 500 pieces of paper only for the cross sections)
- Missing competence in handling CAD models at public authorities

- Use model to (semi-)automatic control of machines
- Easier accounting



# BIM construction site by MTS

## Renovation of a cross-town link (Erbstetten)



- **Alternative offer by the construction company:**
  - If there will be 3D drain lines, 3D water pipes and terrain models (with lanes and topsoil)
  - Before the start of the construction
  - We reduce the price by **€50,000 net** on the offer
- **Requirements:**
  - Competent planners
  - Town and public authorities that are open-minded
  - Construction company that can handle 3D data
  - Company for the technical know-how (software/hardware)
  - A student (geometrical measurement) in internship semester

# BIM construction site by MTS

## Renovation of a cross-town link (Erbstetten)



### Advantages:

- High quality at the execution, because information on height and position are not punctually available only
- Increase in planning security due to collision checks
- Less measurement works – no accounting by cross sections
- Easier invoice verification
- No downtime for checking local conditions
- In case of disturbances, it is possible to continue the work on other parts of the construction site
- Construction project is in time, in costs
- Only a few supplements
- Engaged cooperation



# Structural engineering

## Implementing a plan management system for the construction site

### Goal:

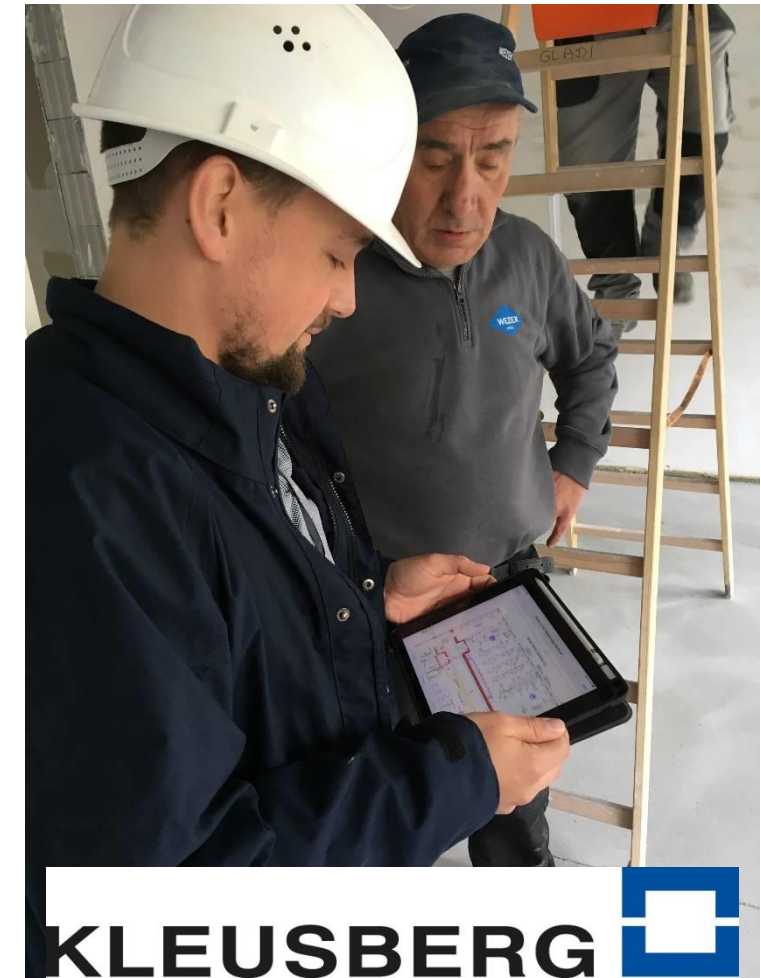
- Using the digital method
- Fast information flow and connection of different stakeholders

### Further wishes:

- Digital defect management
- Digital construction diary

### Procedure:

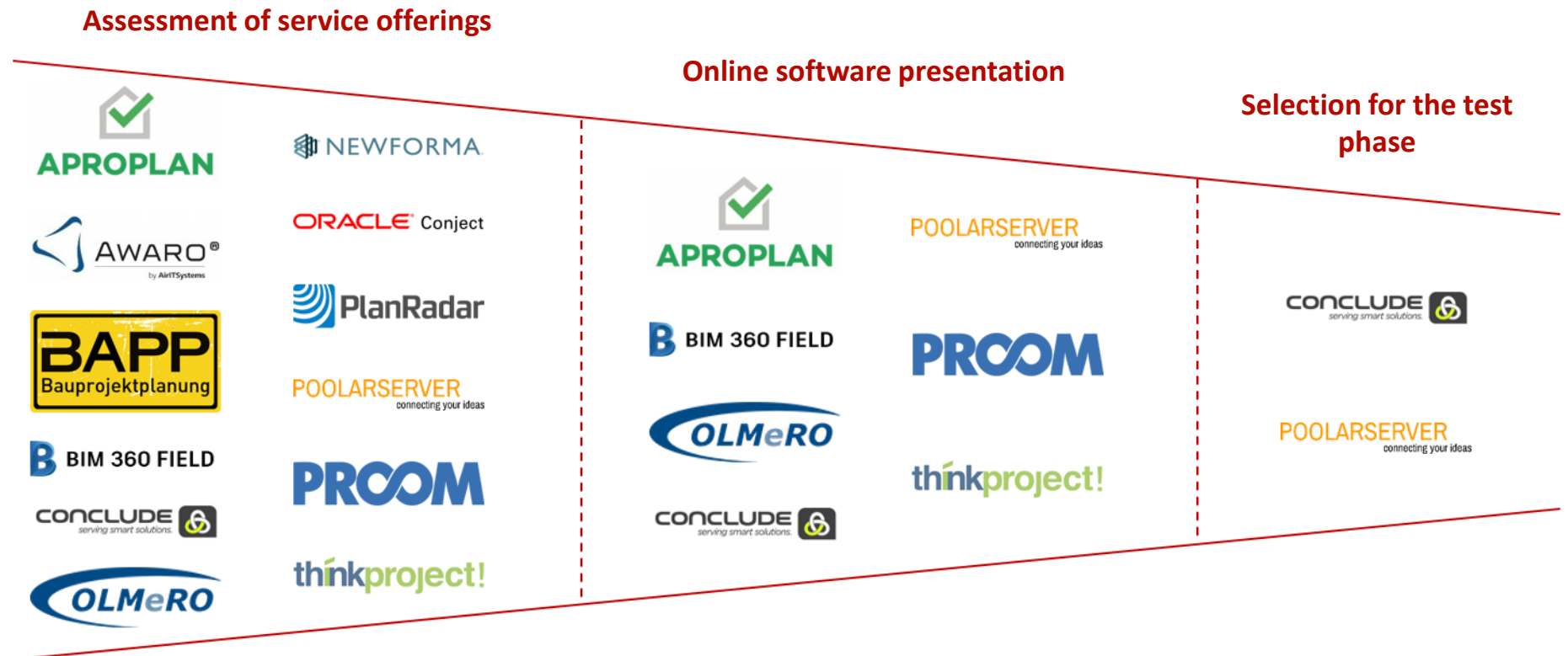
- Workshop to specify requirements
- Contact, compare and select plan management provider



# Structural engineering

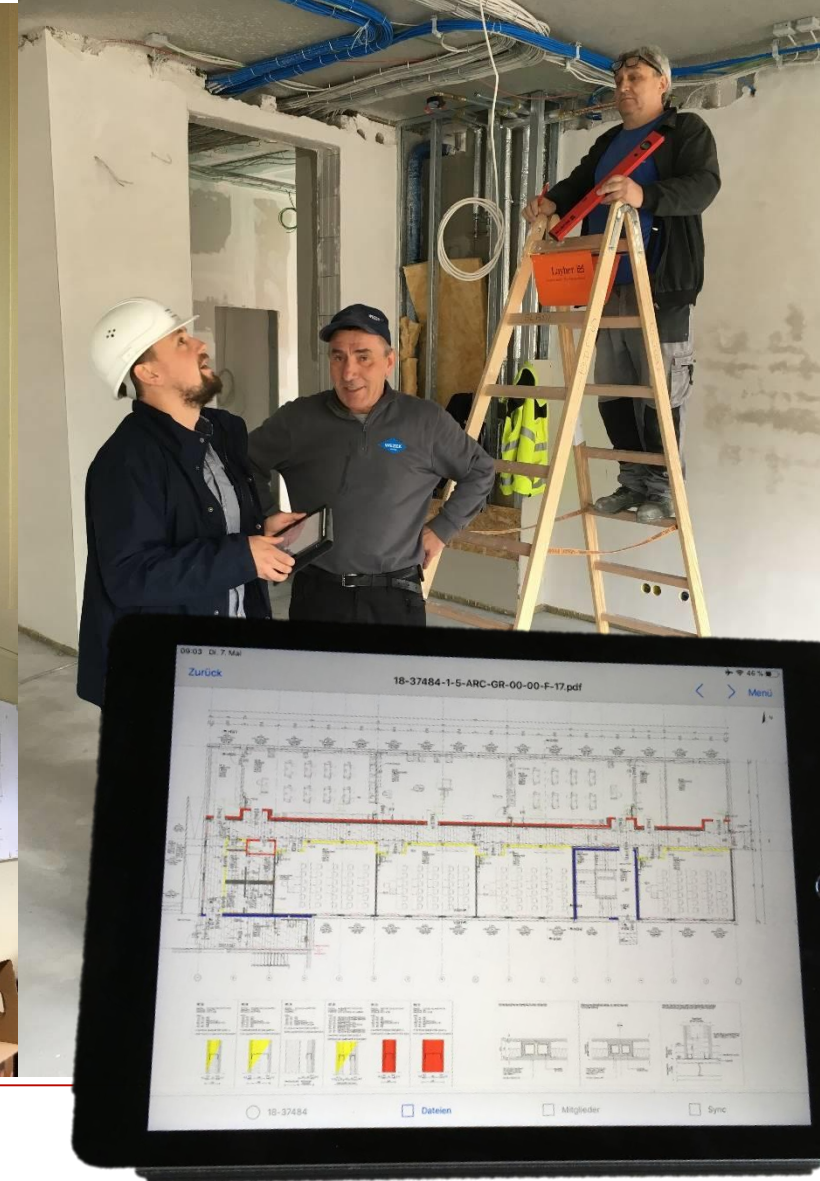
## Requirements and selection process

- Safety and security for data
- Access to plans (browser-based/application)
- Push notifications or Email messages
- BIM compatibility
- Company-wide
- Easy authorizing concept
- Automatic logging
- Create versioning



# Constructional engineering Results

- Will not be used for every project
- Subcontractors did not use digital plans – training courses necessary?
- Tablets are intensively used by site managers:
  - IT infrastructure was changed so it is easier to work with data online
  - Construction diary is the next step





# Digital plans on construction sites

## Conclusion

- When there is a benefit in having digital information on construction sites, they are used and were rebuild
  - Chance to increase productivity
- Acceptance of digital plans must grow
  - Will be expected by new employers
  - Acceptance grows where the benefit grows
    - Simplifying
    - Automation





Thank you for your attention!



## Contact details

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