

TBM Applications III

TRONDHEIM, NOV. 4-5

Benefits of electronic data collection in TBM tunnels

Tim Babendererde

What is data - Technology jump up



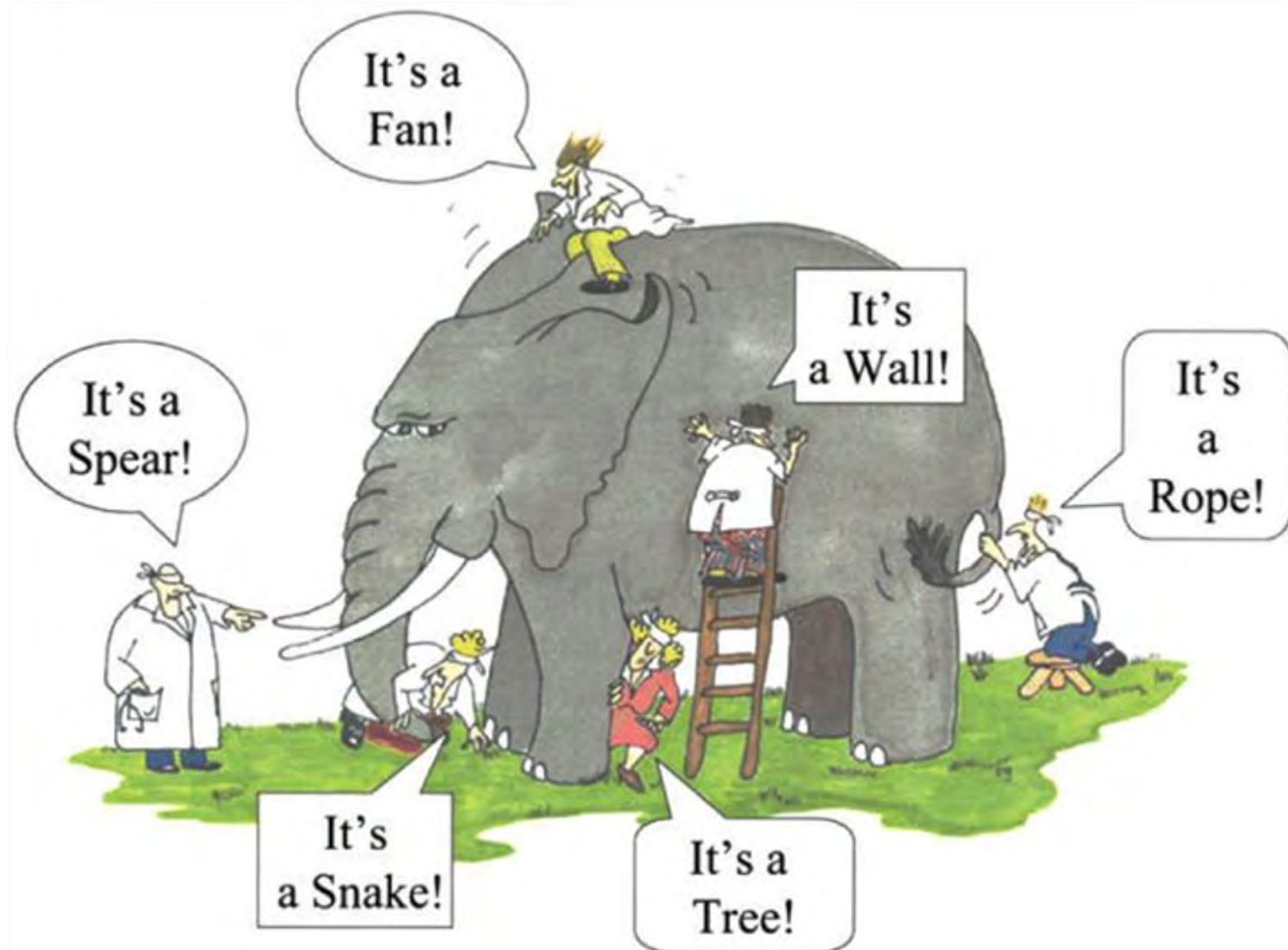
- So did the TBMs!

What is data - Technology jump up

- No data collection - documentation and quality control via written documents

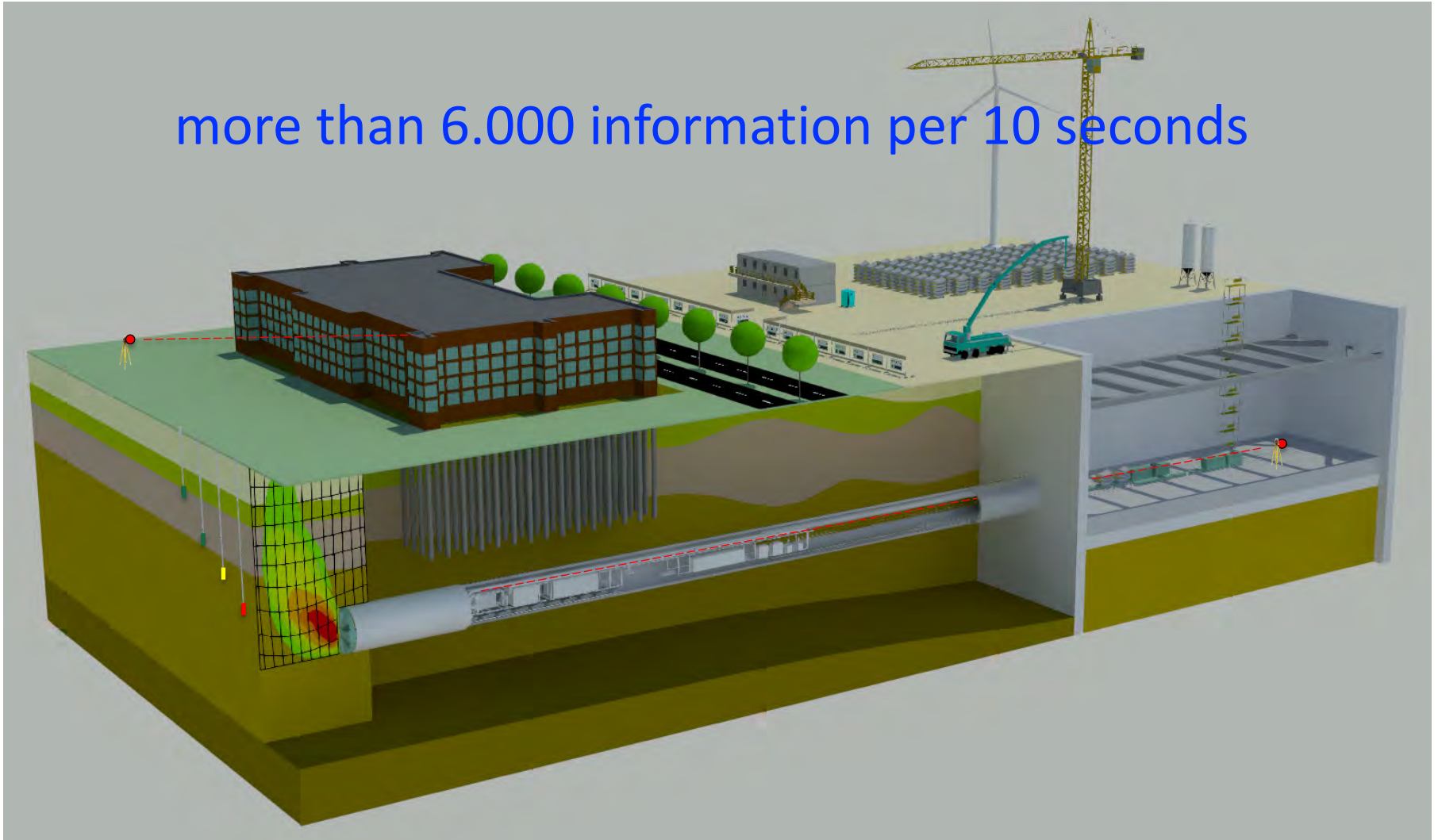


What is data?

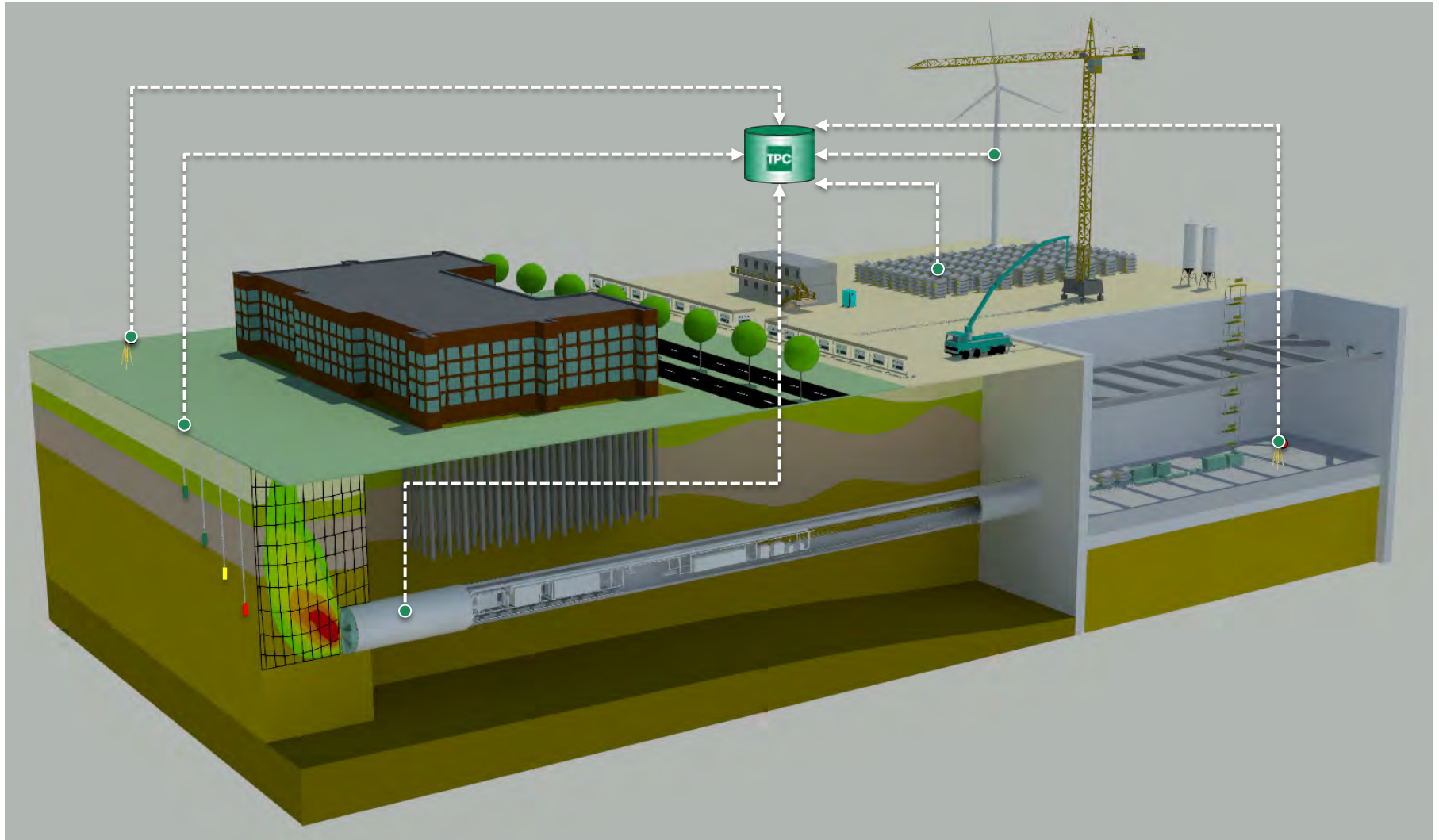


How much data?

more than 6.000 information per 10 seconds



Data management to control tunnelling process



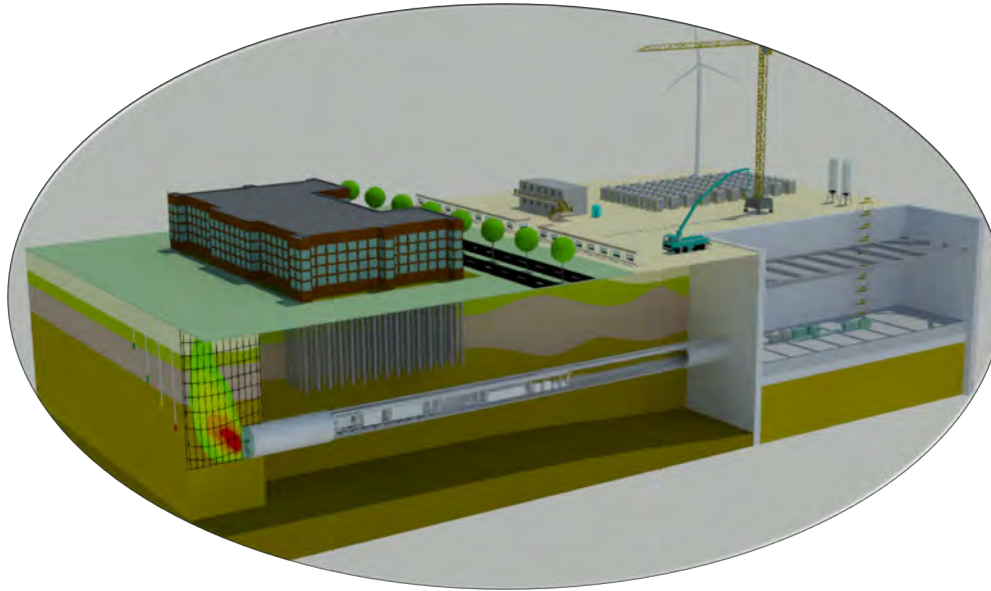
Who needs the data?



Client



Public Authorities



Contractor

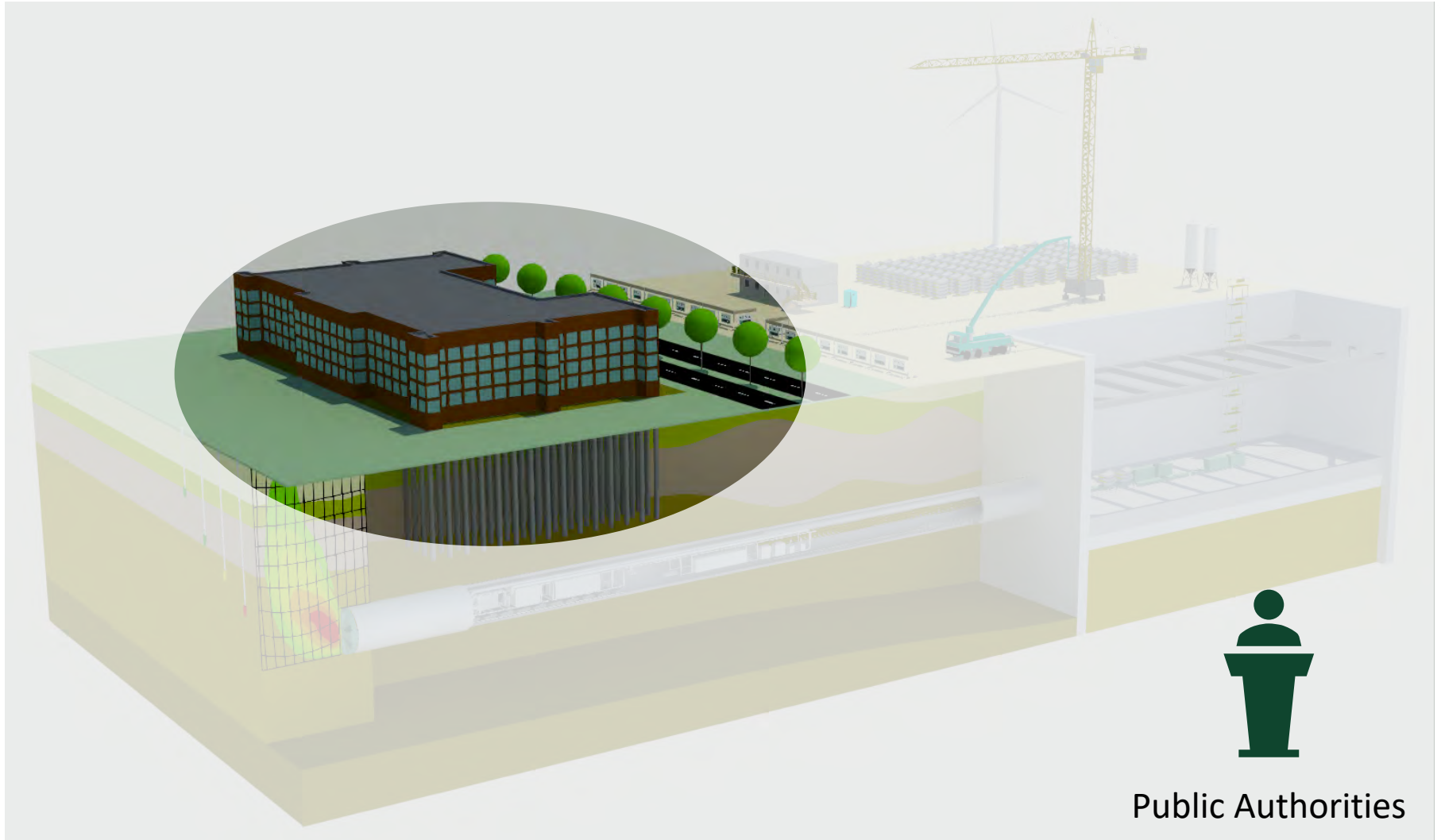


Project Designer /
Construction
Management

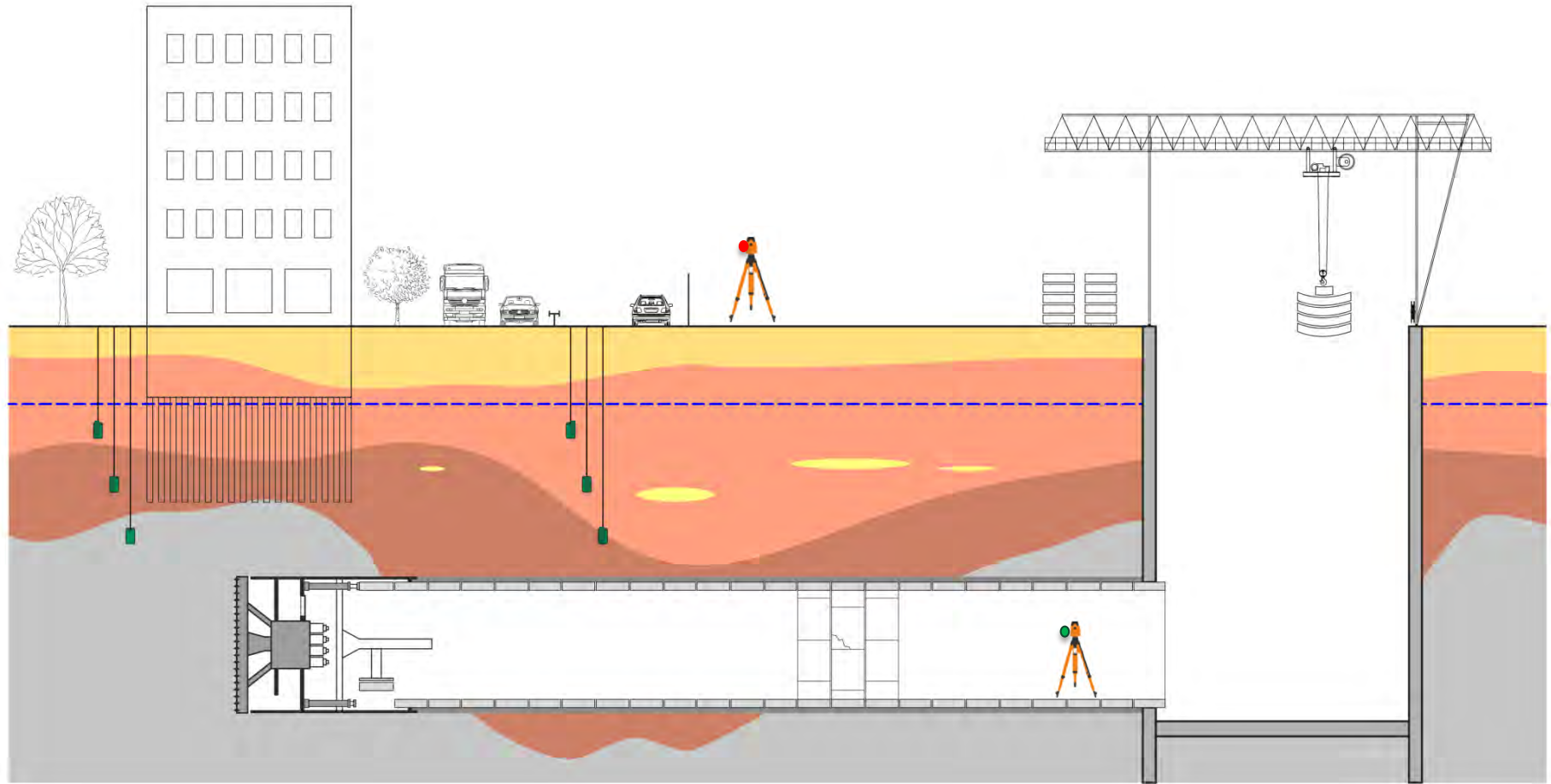


3rd Parties

Public Authorities



Survey & Geotechnical Monitoring

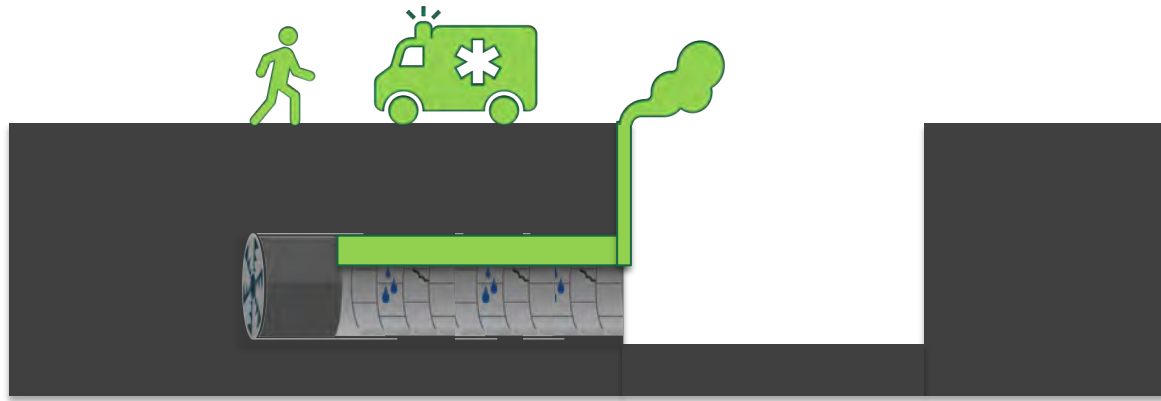


Safety of buildings and roads

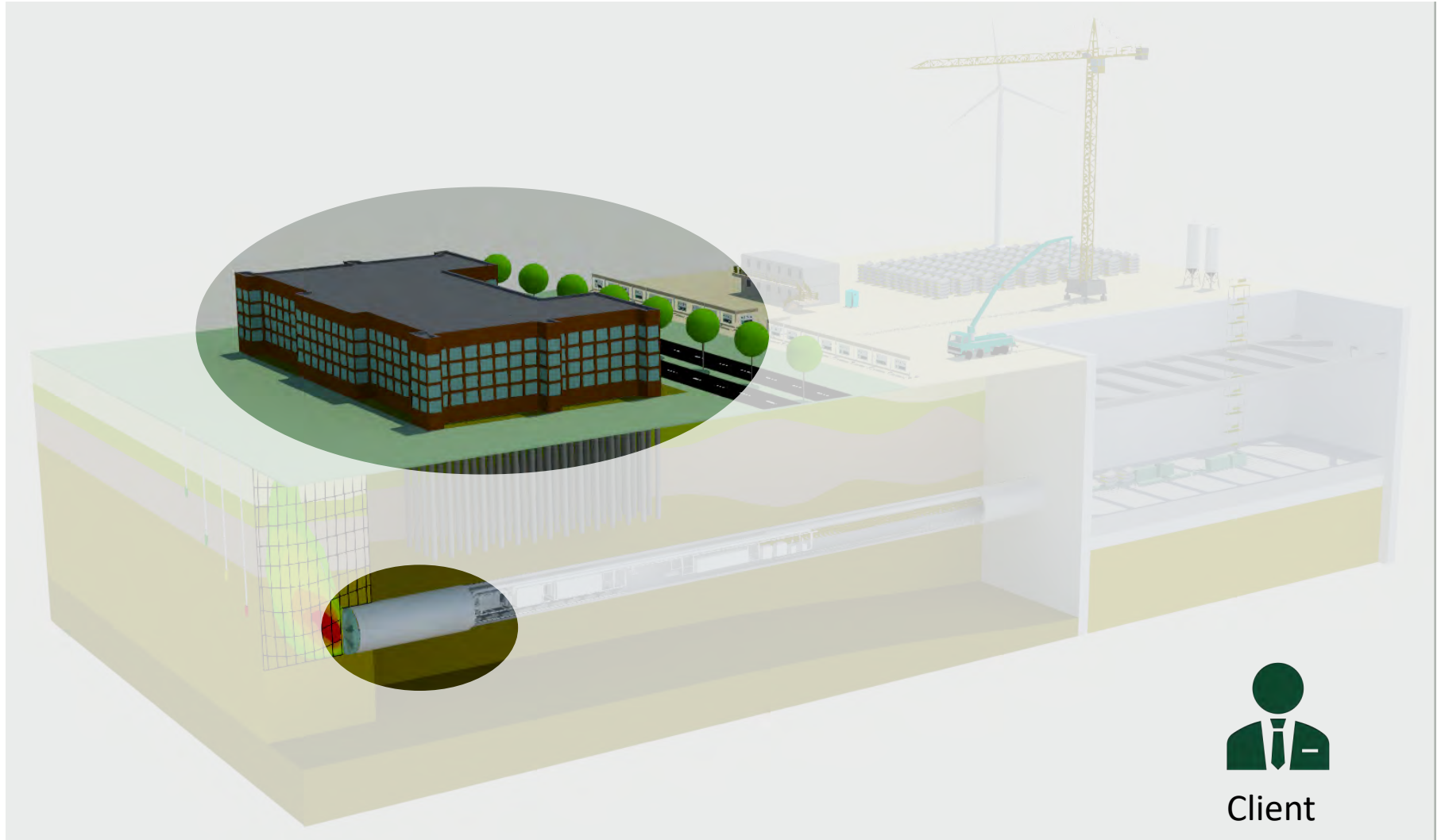


Public Authorities

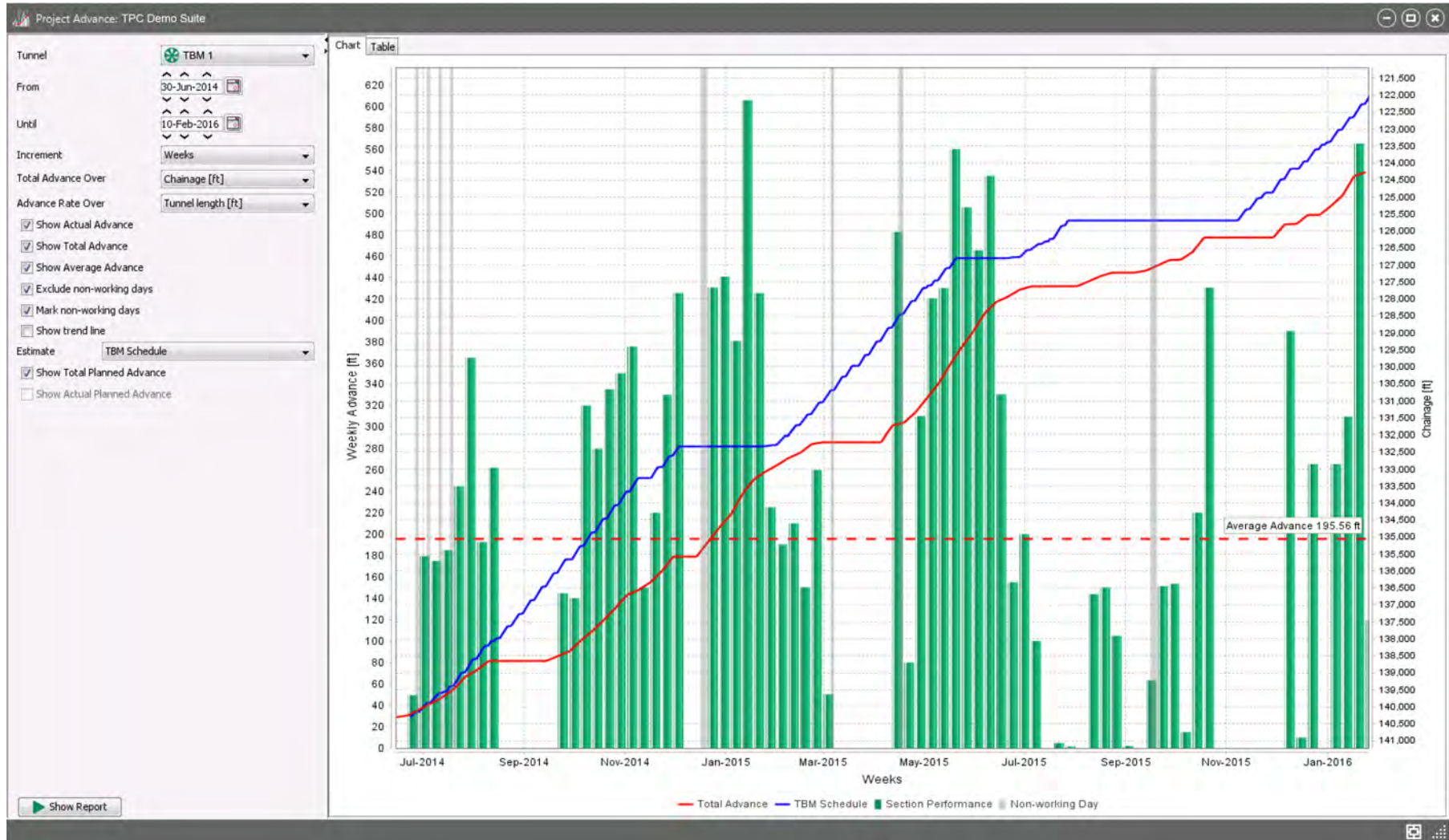
- Main concerns mainly depend on each role, some examples:
 - Personnel location
 - Tunnel ventilation
 - Rescue teams



Client



Overall Performance

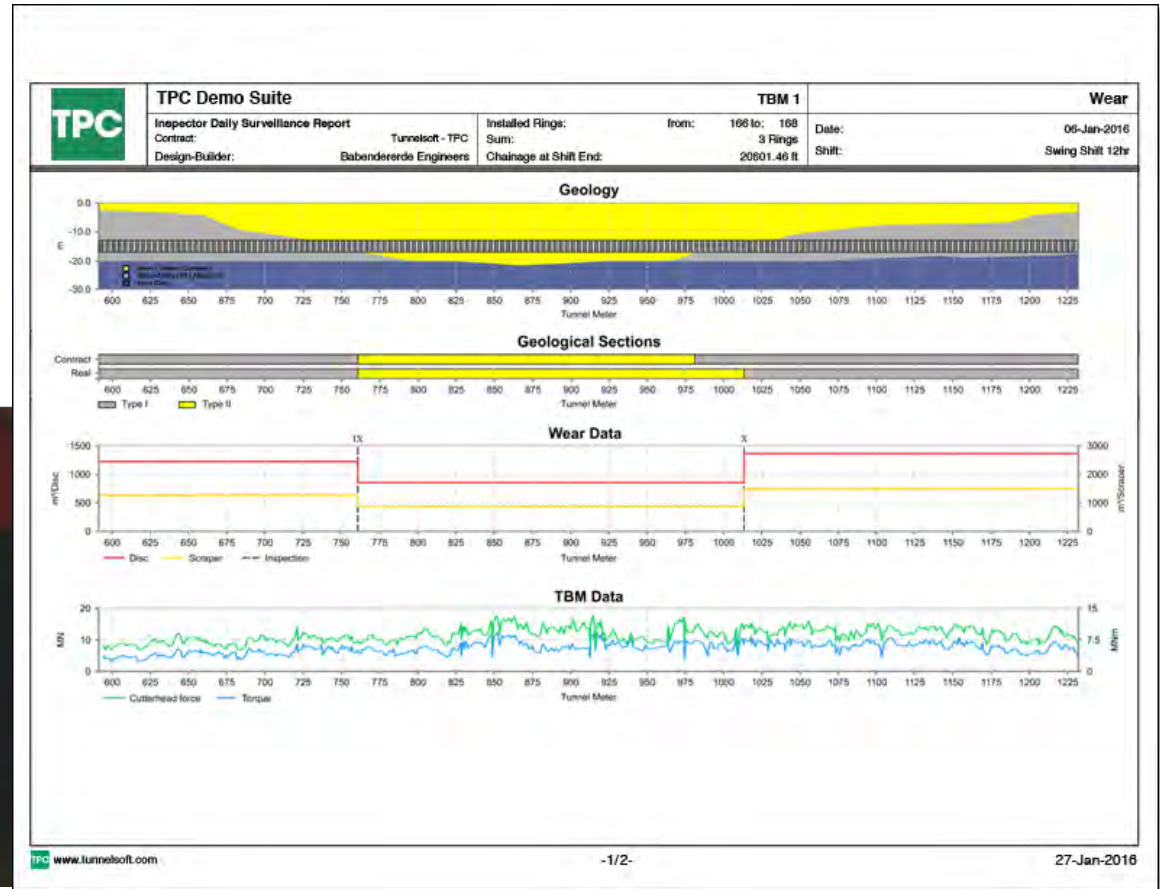


Geology



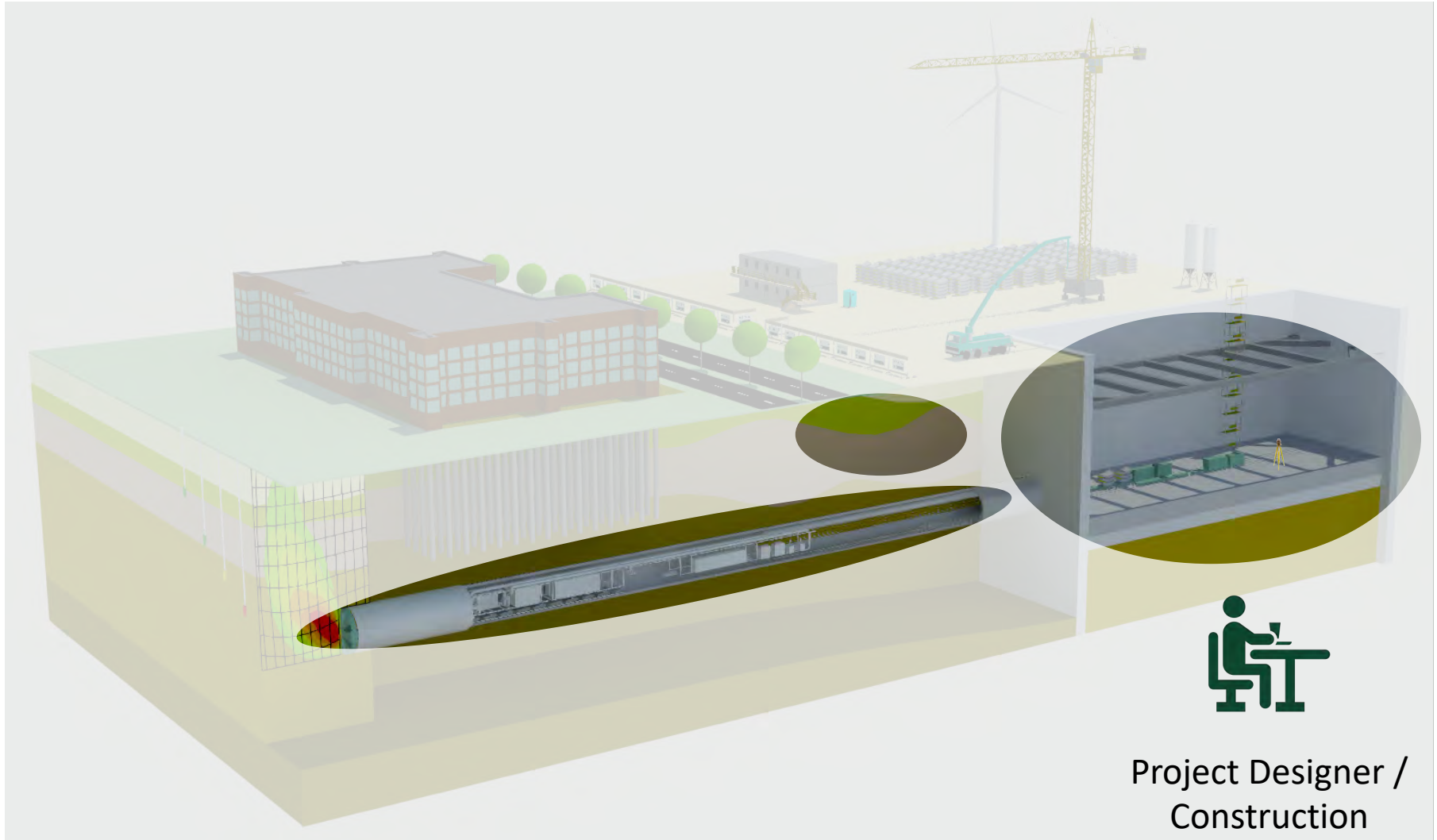
Geology Real vs. Estimate

- Comparison with tunnel data and excavated ground
- Database of wear x geology
- Allows comparison of lab results with tunnel data (e.g. LCPC)



Source: Dr. P. Drevland, NTNU

Project Designer / Construction Management

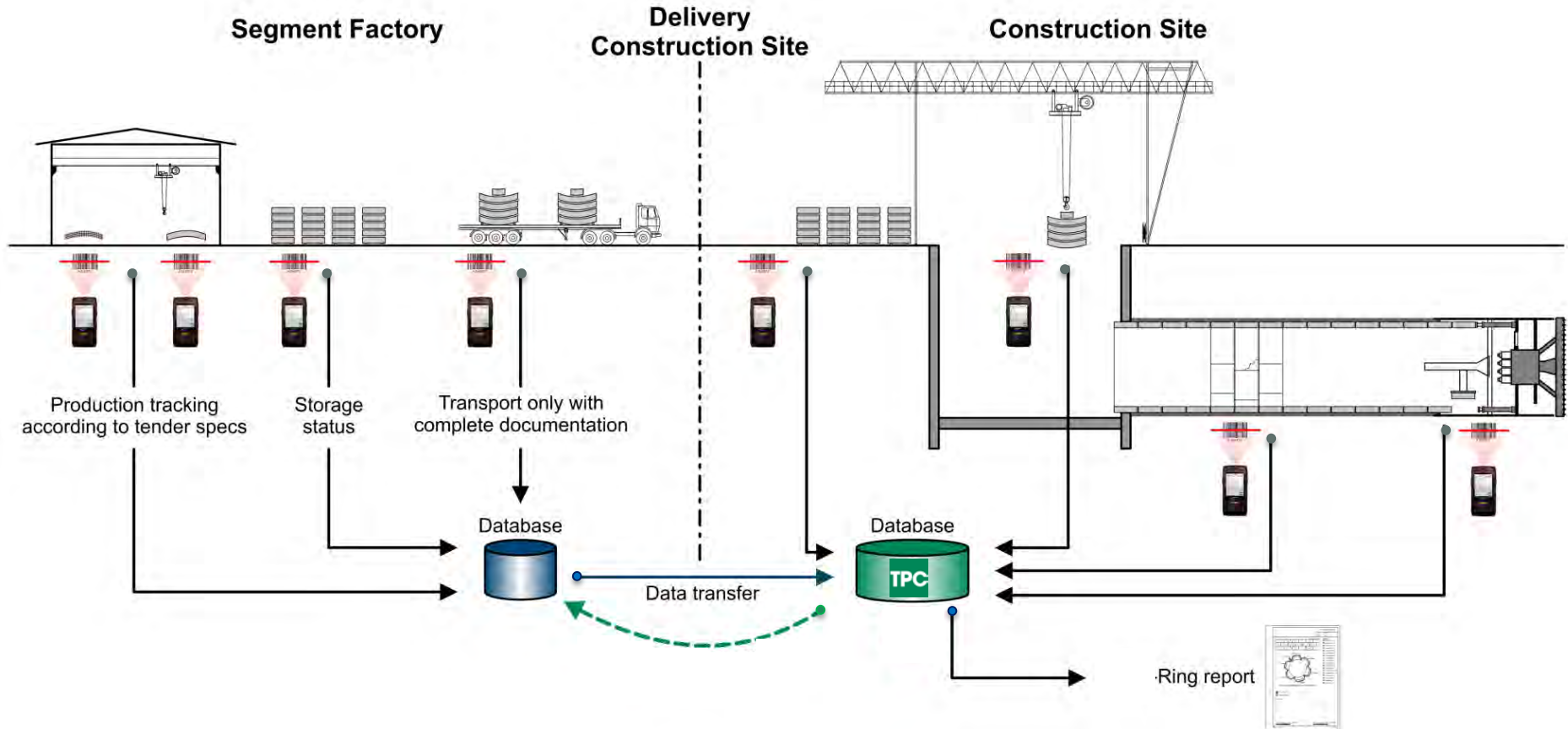


Project Designer /
Construction
Management

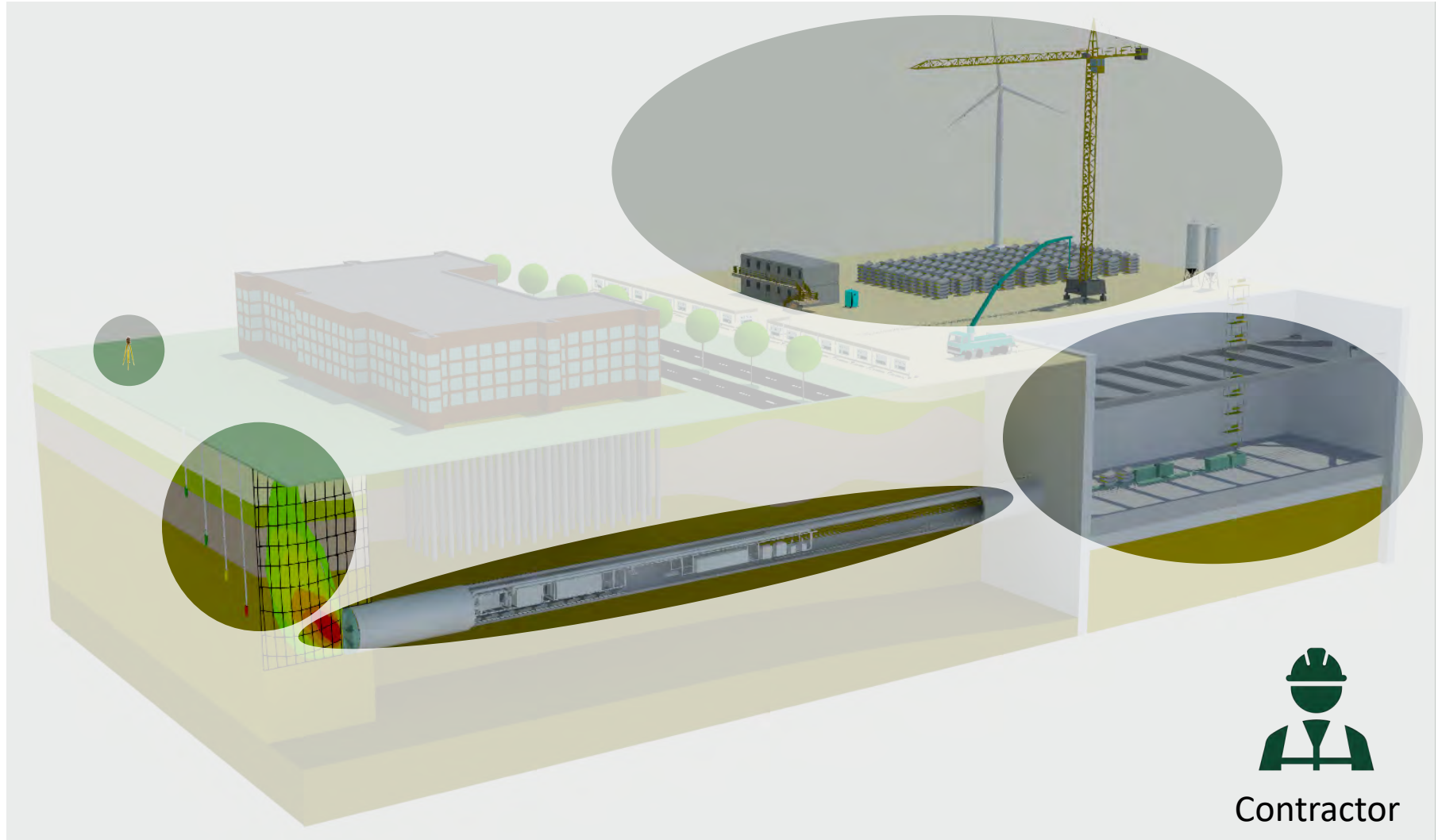
Costs



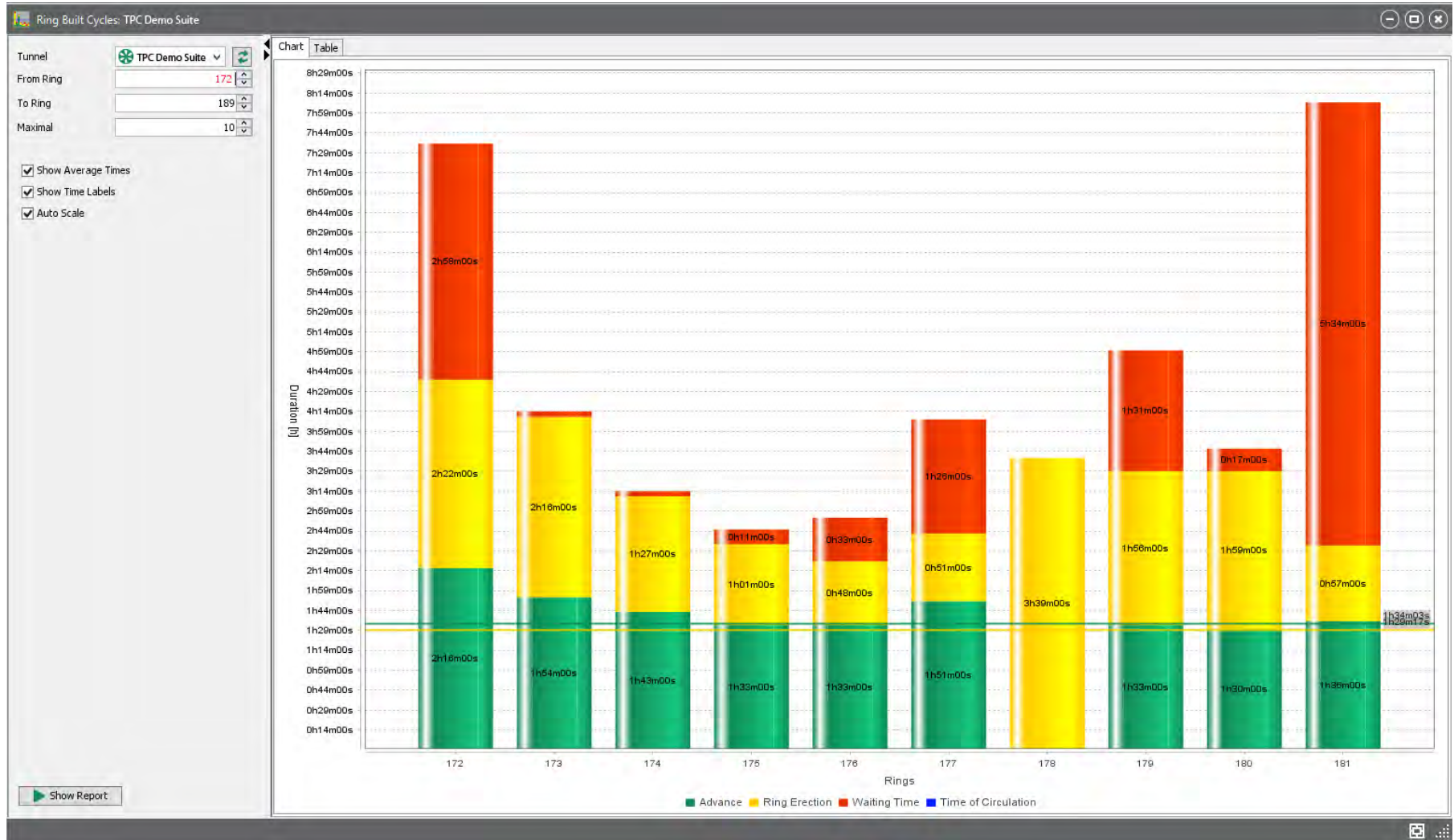
Hand over final product- Tunnel (Segments)



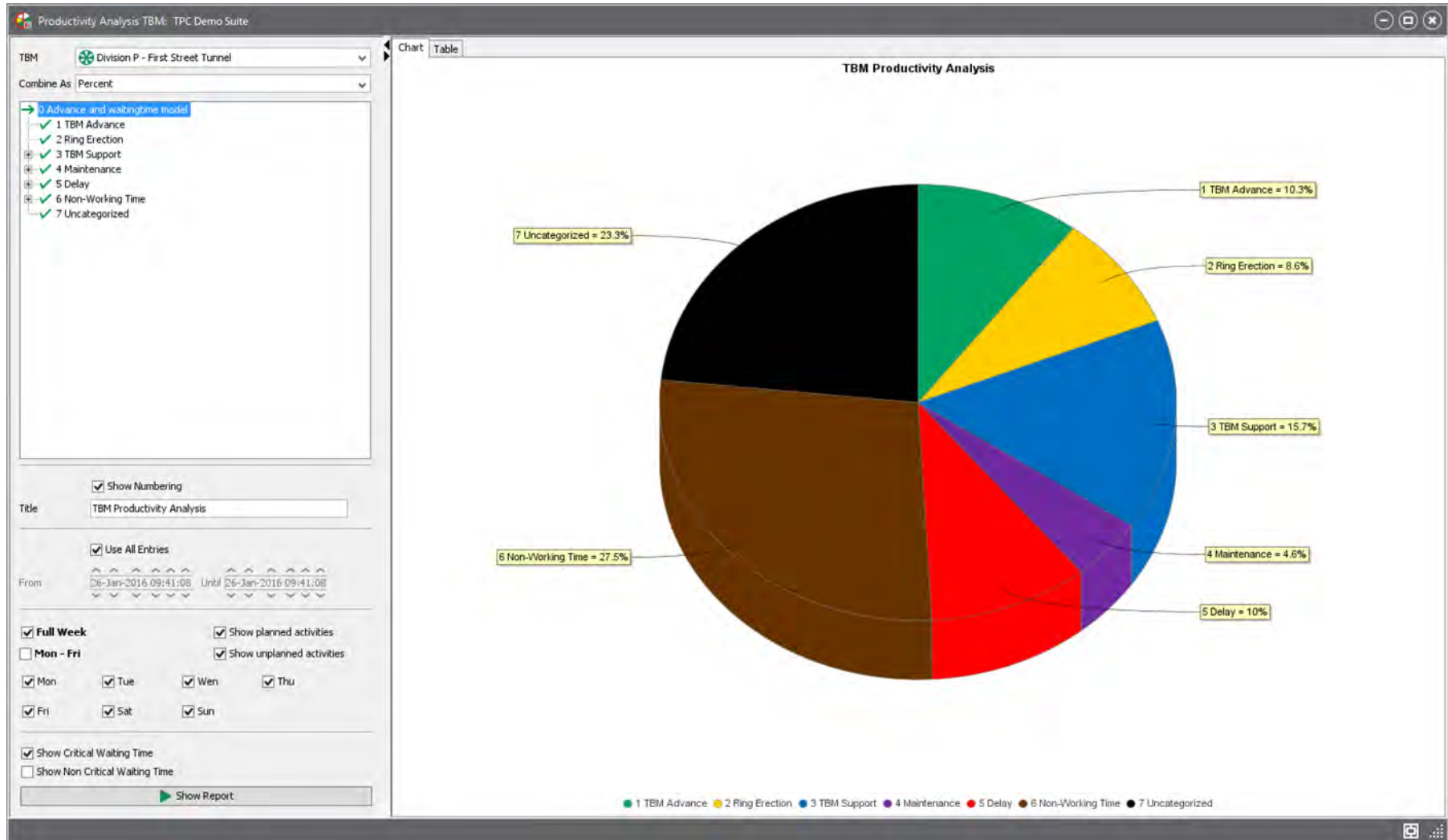
Contractor



Detailed Process – Cycle times



Rate of Availability or Productivity



Team Work



Tool Consumption and Adaption



Benefits of a good data management software

- Improved information and better response to technical problems
- Helps improving tunnelling operation
- Generates gapless data base about tunnelling and tunnel quality
- Fully operated by site staff
- Access anytime from anywhere (web access)
- One software with safe data storage for the complete tunnel process
- Keeps Management/Stakeholders informed (i.e. Smartphone App)

Thanks for
your kind
attention

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