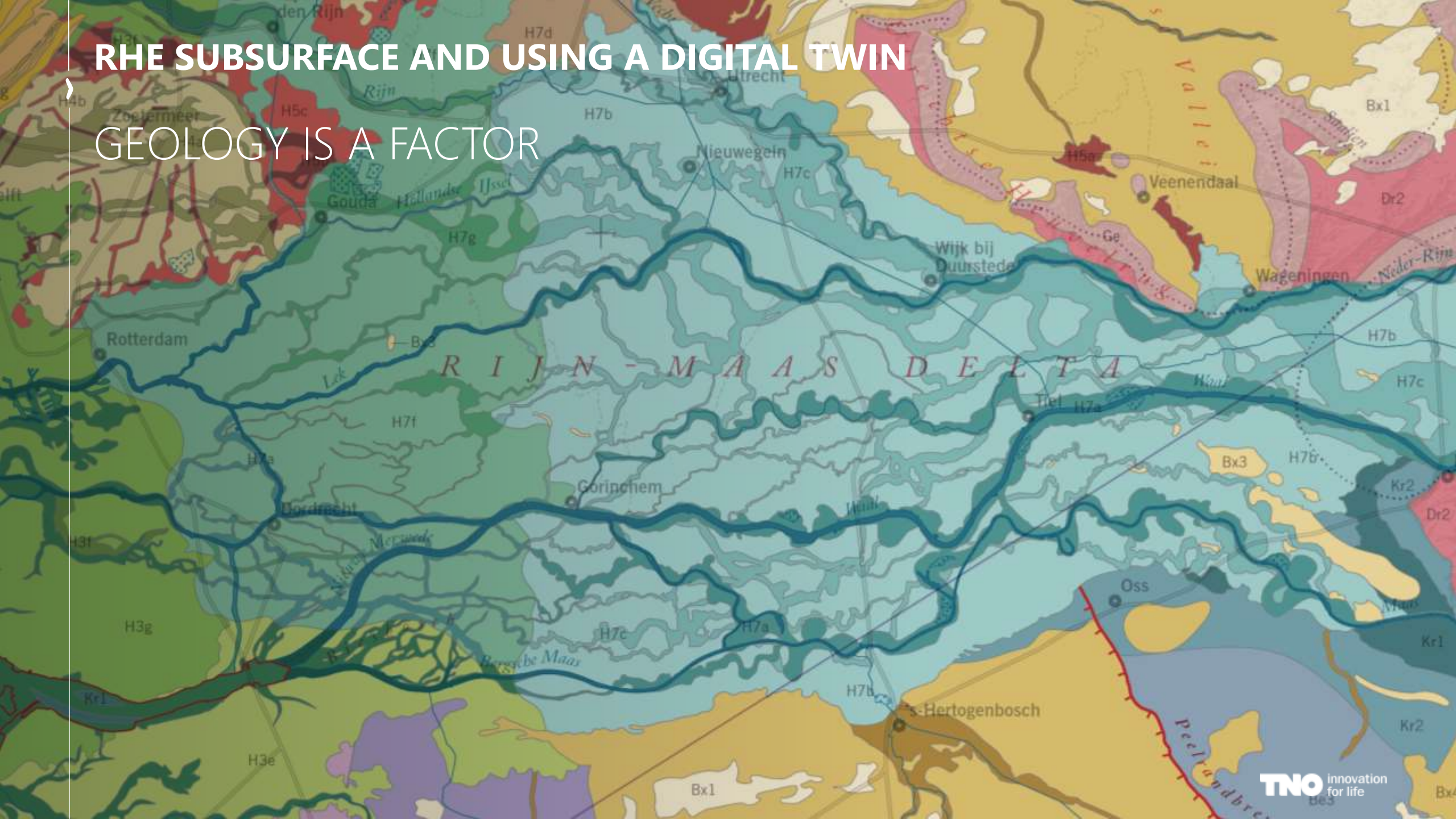
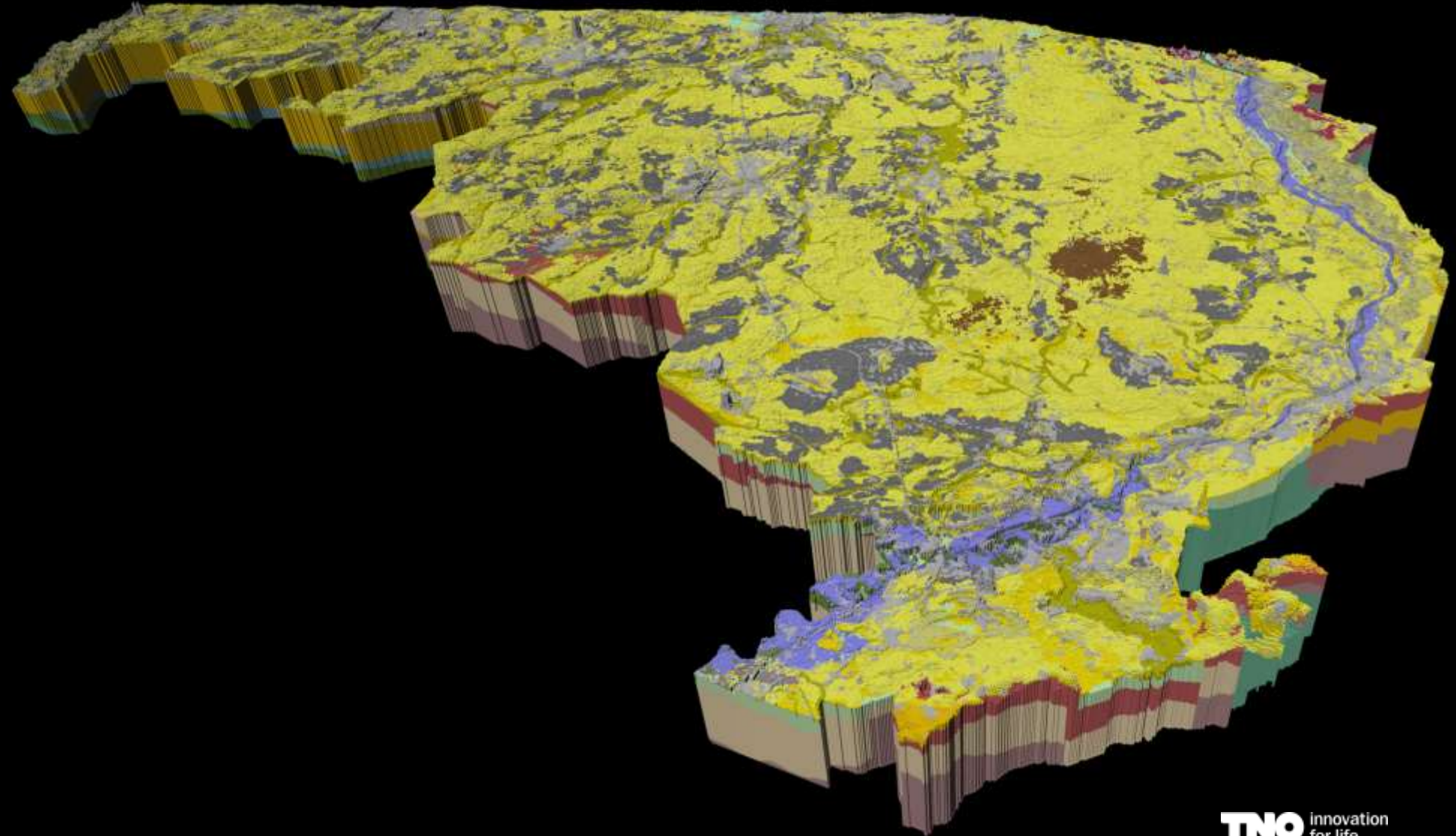


RHE SUBSURFACE AND USING A DIGITAL TWIN

GEOLOGY IS A FACTOR



› DUTCH GEOLOGICAL MAPPING SYSTEMATIC 3-D



› HUMAN ACTION NEW CONCEPTS AND APPROACHES



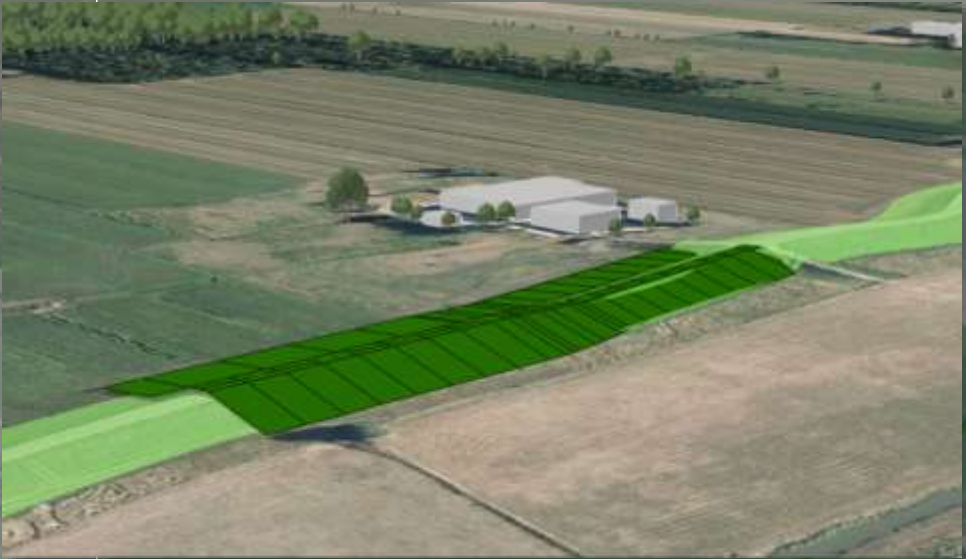
› INTEGRATION FOR NOW: A 3-D MEETING PLACE



Grifzand
Grind
ethers

Berendsen Alleboringen 3D -
Berendsen Alleboringen 3D

› **REAL-TIME?**
FAST UPDATES – NOT TRIVIAL



LET ALONE THE REAL DEAL



› DIGITAL TWINS

WHAT'S NEW?

- › More than a tech hype
- › Moving beyond the model paradigm
 - › model = aspect-oriented
 - › object = object-oriented
- › e.g. a volume of subsurface:
 - › geology -> material properties & behaviour
 - › installations
 - › surface-subsurface interactions
 - › human interactions



› DIGITAL TWINS

WHAT'S CHALLENGING?

- › Out of sight, out of mind
- › Out of sight = hard to visualize
- › (Pretty much) static
- › But generally undersampled



› OUR DIGITAL FUTURE? LESSONS LEARNT

- › challenge
- › 3-4-D
- › scale and resolution
- › properties
- › fast updates
- › modularity
 - › cooperation – standards
 - › common language / understanding
 - › community

