



# Cutting Edge Conference



**Advances in Tunneling Technology**  
**November 15–17, 2021 | Dallas, TX**



# Digitalization in the Full Project Cycle

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# Outline

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- What is the Data
- How data should be communicated, stored and analyzed (Challenges & Solutions)
- ITA WG22 Initiatives

# Why Digitalization?





# What is the data



# What is the data



# What is the data





# What is the data



# What is the data



# What is the data





# Native Formats of Data and Information



# Digitization vs Digitalization vs Digital Transformation



DIGITIZATION

Process of making data and information available in a digital format



DIGITALIZATION

The act of making processes more automated using digital technologies



DIGITAL  
TRANSFORMATION

The adoption of digital technologies to improve efficiency, value and innovation

# Challenges

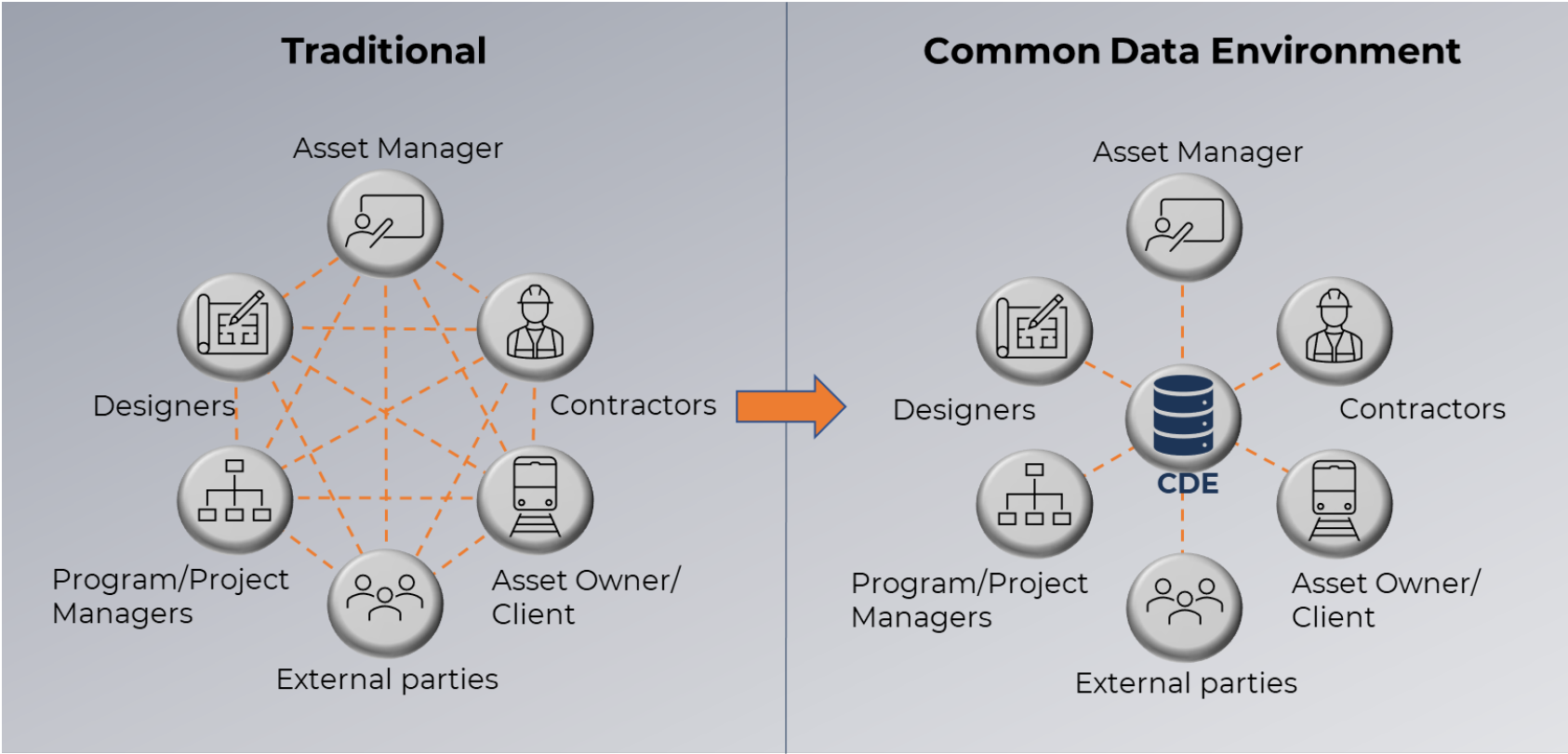
From an Engineer's Perspective

- 1 Data security and control
- 2 Connecting data for Analysis
- 3 Communication
- 4 Ease of access



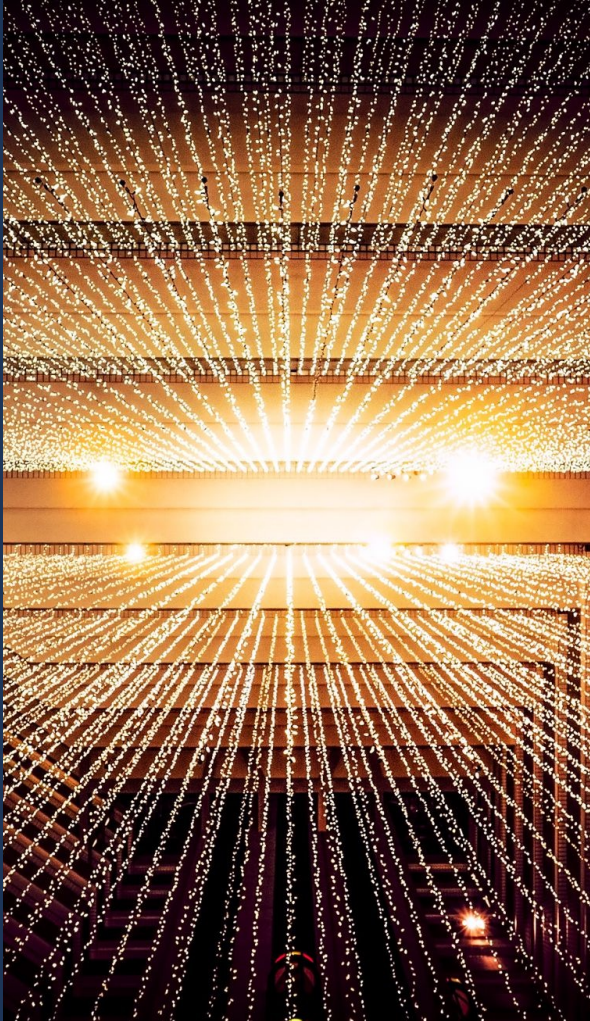


| Challenge                    | Solution                       |
|------------------------------|--------------------------------|
| Data security and control    | <b>Common Data Environment</b> |
| Connecting data for analysis |                                |
| Communication                |                                |
| Ease of access               |                                |



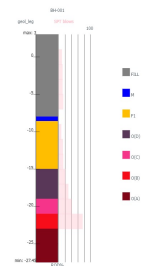
# Solutions

# CDE Requirements

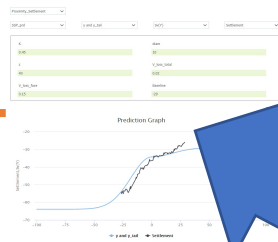


- <sup>1</sup> Appoint an information manager
- <sup>2</sup> Establish conventions
- <sup>3</sup> Define workflows and set up approval/sign-off processes
- <sup>4</sup> Create distinct environments for different teams
- <sup>5</sup> Keep accesses secure
- <sup>6</sup> Connect with and manage software

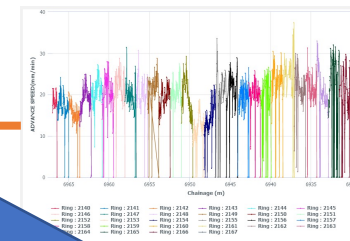
## Geology/Geotech



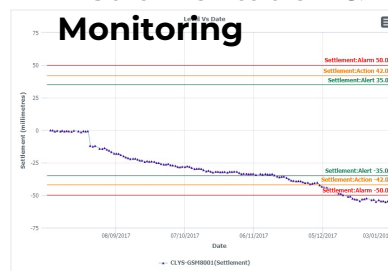
## Predictions



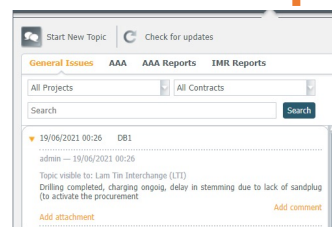
## TBM Parameters



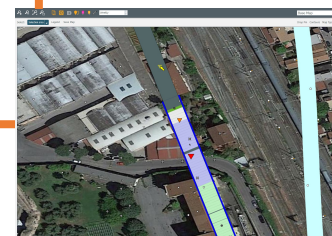
## Instrumentation & Monitoring



## Events



## TBM Position



## Knowledge



## Challenge

## Solution

Data security and control

Common Data Environment

Connecting data for analysis

**Relational Database**

Communication

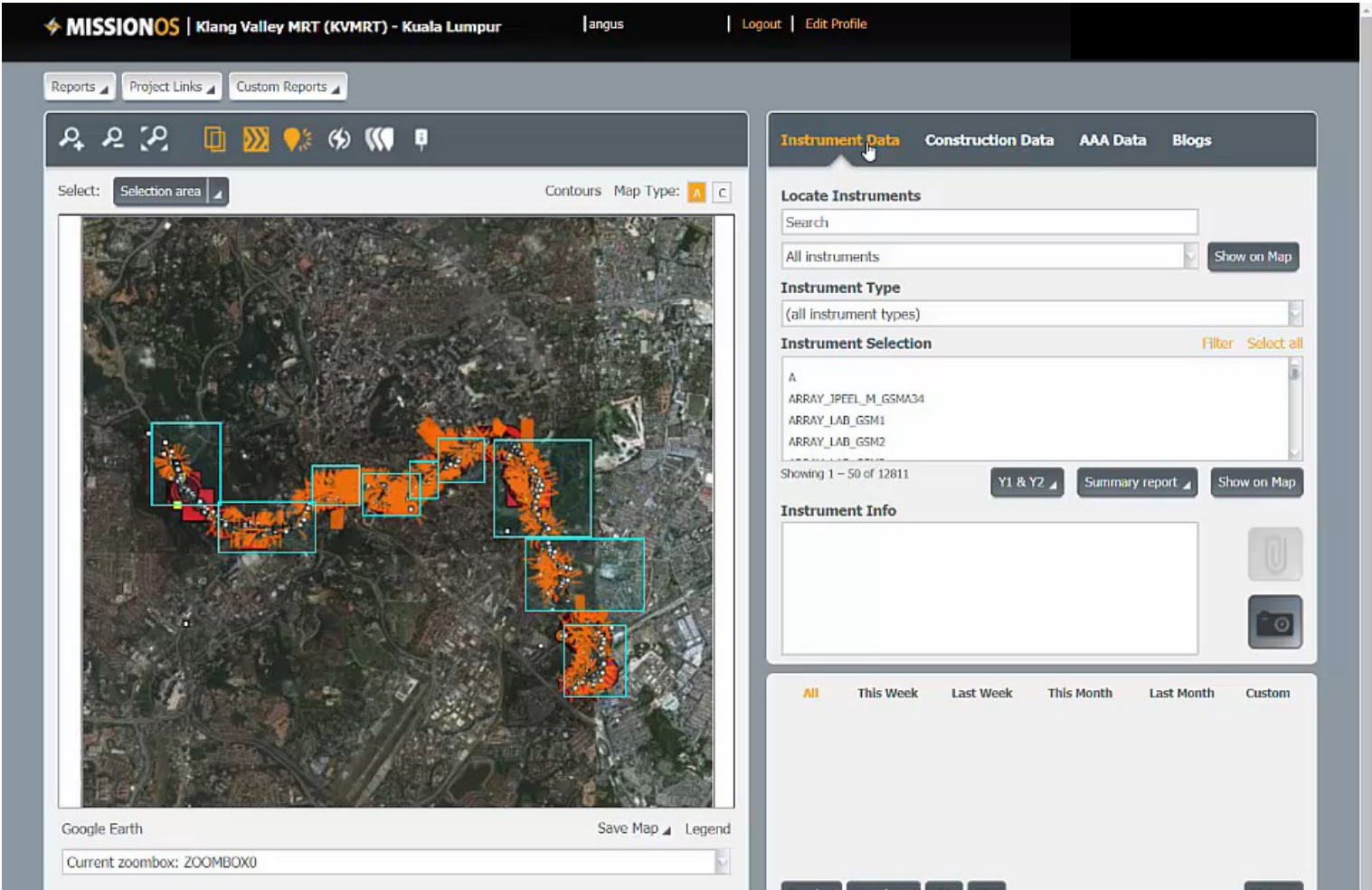
Ease of access

# Solutions



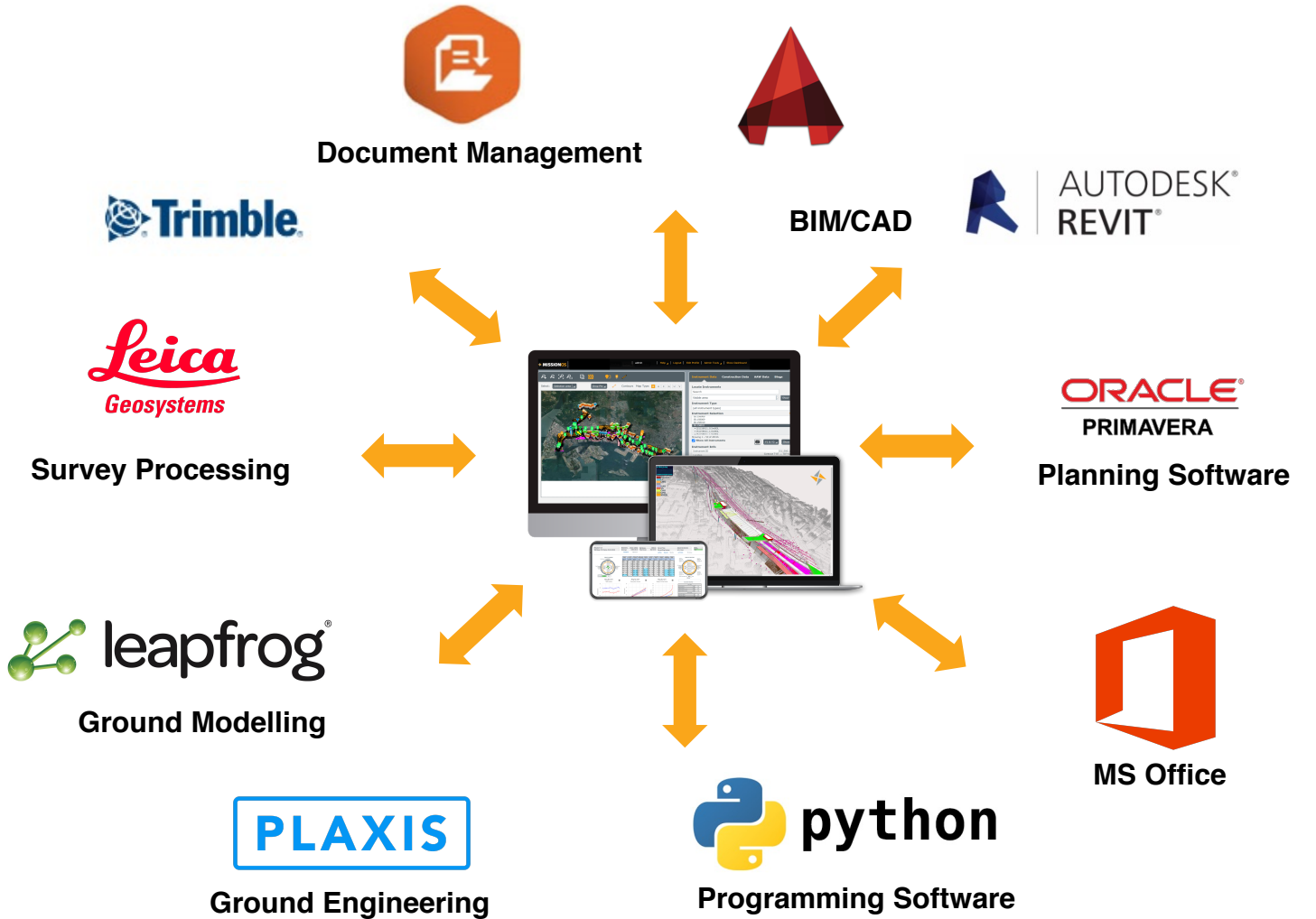


| Challenge                    | Solution                |
|------------------------------|-------------------------|
| Data security and control    | Common Data Environment |
| Connecting data for analysis | Relational Database     |
| Communication                | <b>Blogging</b>         |
| Ease of access               |                         |



Solutions

| Challenge                    | Solution                  |
|------------------------------|---------------------------|
| Data security and control    | Common Data Environment   |
| Connecting data for analysis | Relational Database       |
| Communication                | Blogging                  |
| Ease of access               | <b>Integrator Systems</b> |



# Solutions

# Integration on HS2

**MISSIONOS** | Skanska Costain Strabag JV  
HS2 - S1 Tunnels

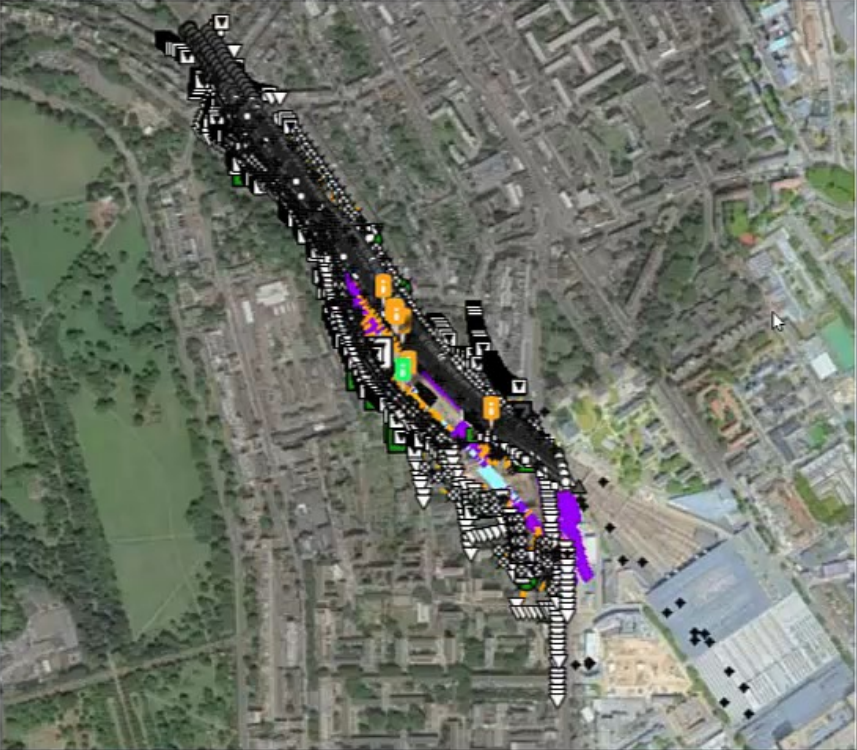
admin | Help | Logout | Edit Profile | Admin Tools | Show Dashboard

SKANSKA | COSTAIN | STRABAG | Working in partnership with | **HS2**

Report Archive | Report Creation | Zoomboxes - Euston and Approaches | CrossSection

Time Zone: Europe/London  
English

Select: Selection area | Drop Pin | Contours | Map Type: B | A | C



Select Job Type: For Construction

Save Map | Legend

**Instrument Data** | Construction Data | AAA Data | Blogs

**Locate Instruments**

Search

Visible area | Show

**Instrument Type**

(all instrument types)

**Instrument Selection** | Select all

- 1EW02-C02EL03
- 1EW02-C02ELX03
- 1EW02-CA1180
- 1EW02-CA1183
- 1EW02-CA1186
- 1EW02-CA1189

Showing 1 - 50 of 4863

☒ Show All Instruments | Y1 & Y2 | Show on Map

**Instrument Info**

1 Year | This Week | Last Week | This Month | Last Month | Custom

# Working Group 22 Initiatives

ITA WG 22:

- ***ITA-BIM in Tunnelling – Guideline for Bored Tunnels***
- ***ITA-AITES Recommendations for the Application of ISO 19650 Series during the Delivery of Underground Projects and Assets***

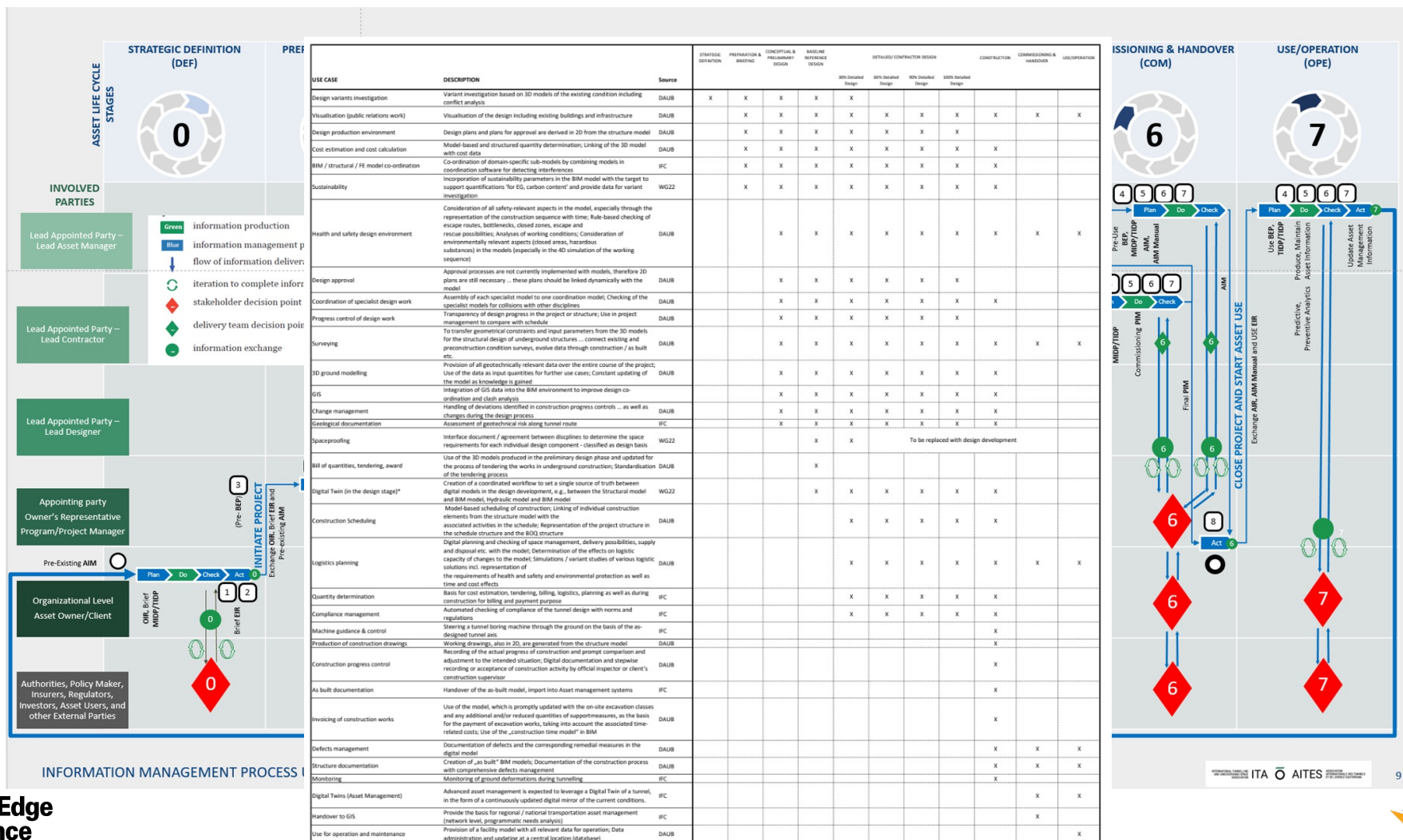
UCA of SME WG 22:

- BIM Survey





# Digitalization Players



# Digital Transformation



# Thank You

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