

Enterprise GIS Platform for the KVMRT SSP Line 2 Kuala Lumpur, Malaysia

Thomson Lai

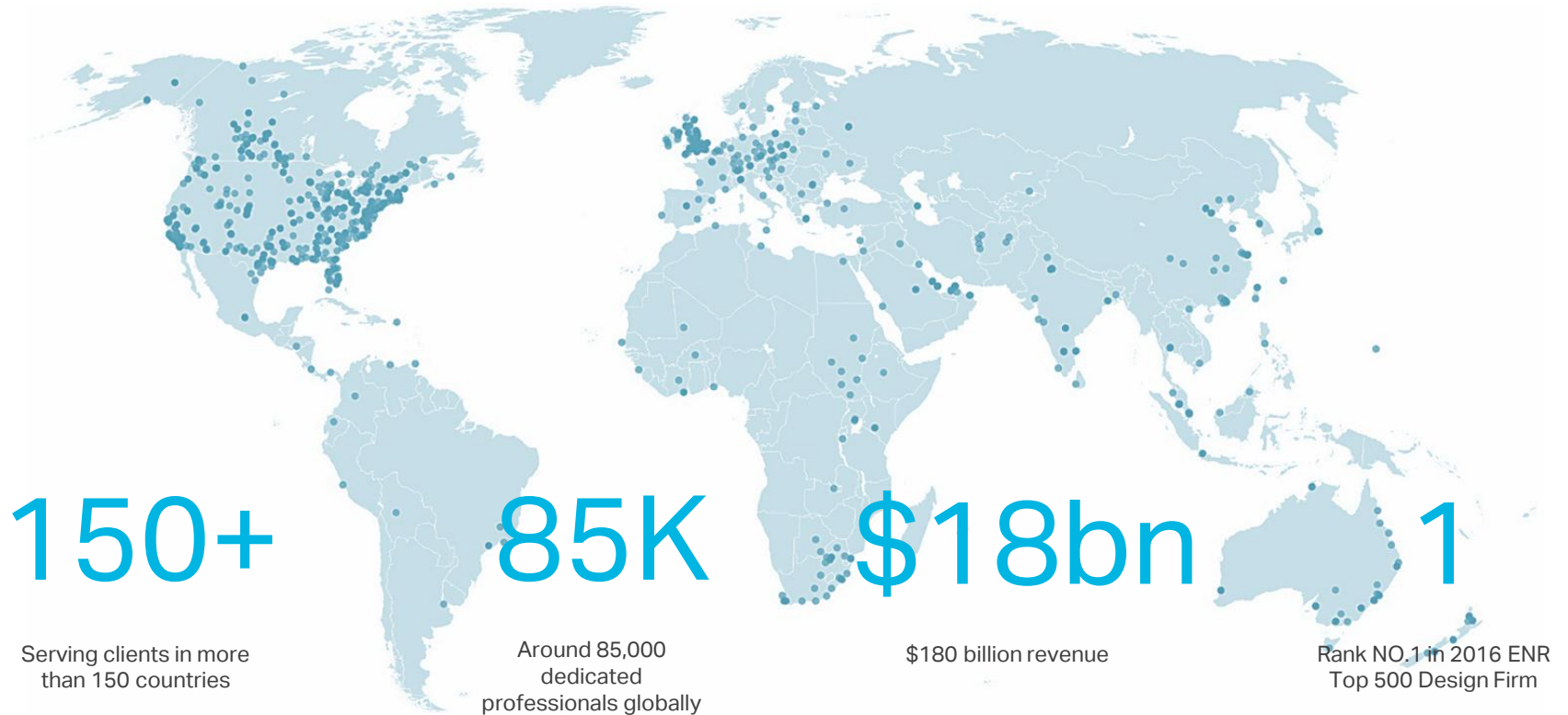
MRICS, MCInstCES, MHKIBIM, PMP
Honorary Treasurer of HKIBIM
Director, Innovative Solutions
AECOM Asia Company Ltd.

Agenda

- AECOM
- Project Background and Challenges
- GIS Initiatives and Workflow for KVMRT SSP Line
- System Architecture
- Project Benefits and the Way Forward

Global Overview

With an integrated team operating in more than 150 countries, AECOM works to positively impact lives, transform communities and make the world a better place.



Our Capabilities

Positioned to serve an array of clients across the entire asset life cycle

Our Market



Our Services



Goal of Innovative Solutions Department



Project Background – KVMRT SSP Line 2

 **Length**
52.2km

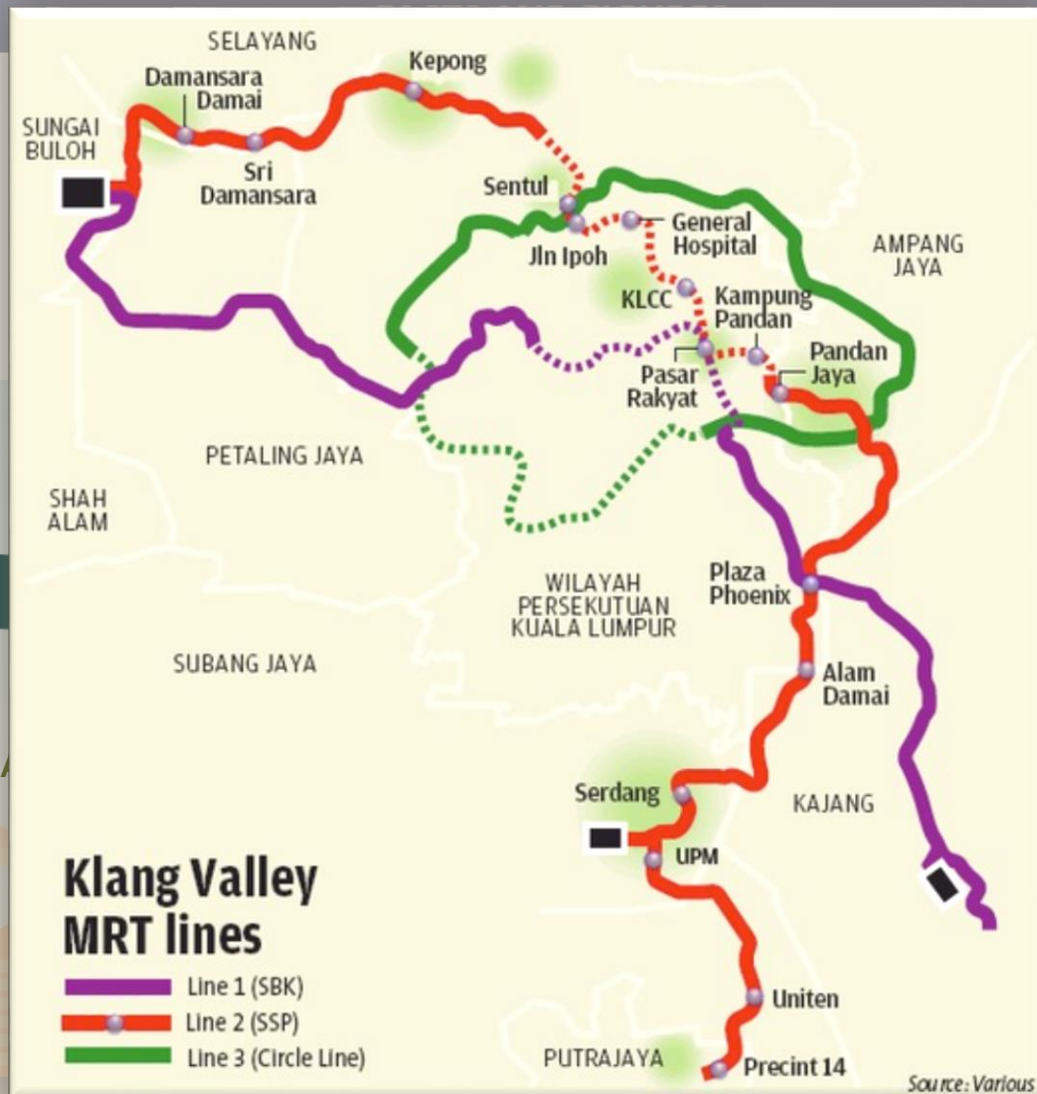
 **Underground stations**
11

BENEFITS



CONVENIENT

SA



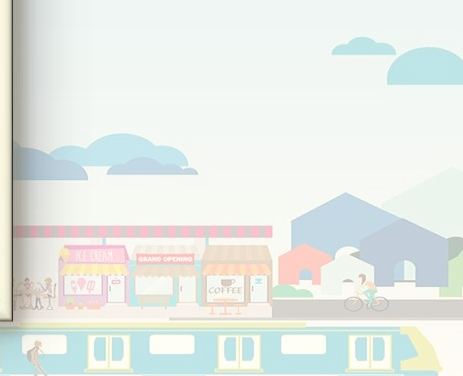
 **Number of stations**
37

 **Estimated daily ridership**
533,000



SES CONGESTION

GREEN



MRTC's BIM Objective

"to adopt an integrated approach to achieve level 2 BIM maturity for the SSP line 2 project.

Through design, construction and information handover"

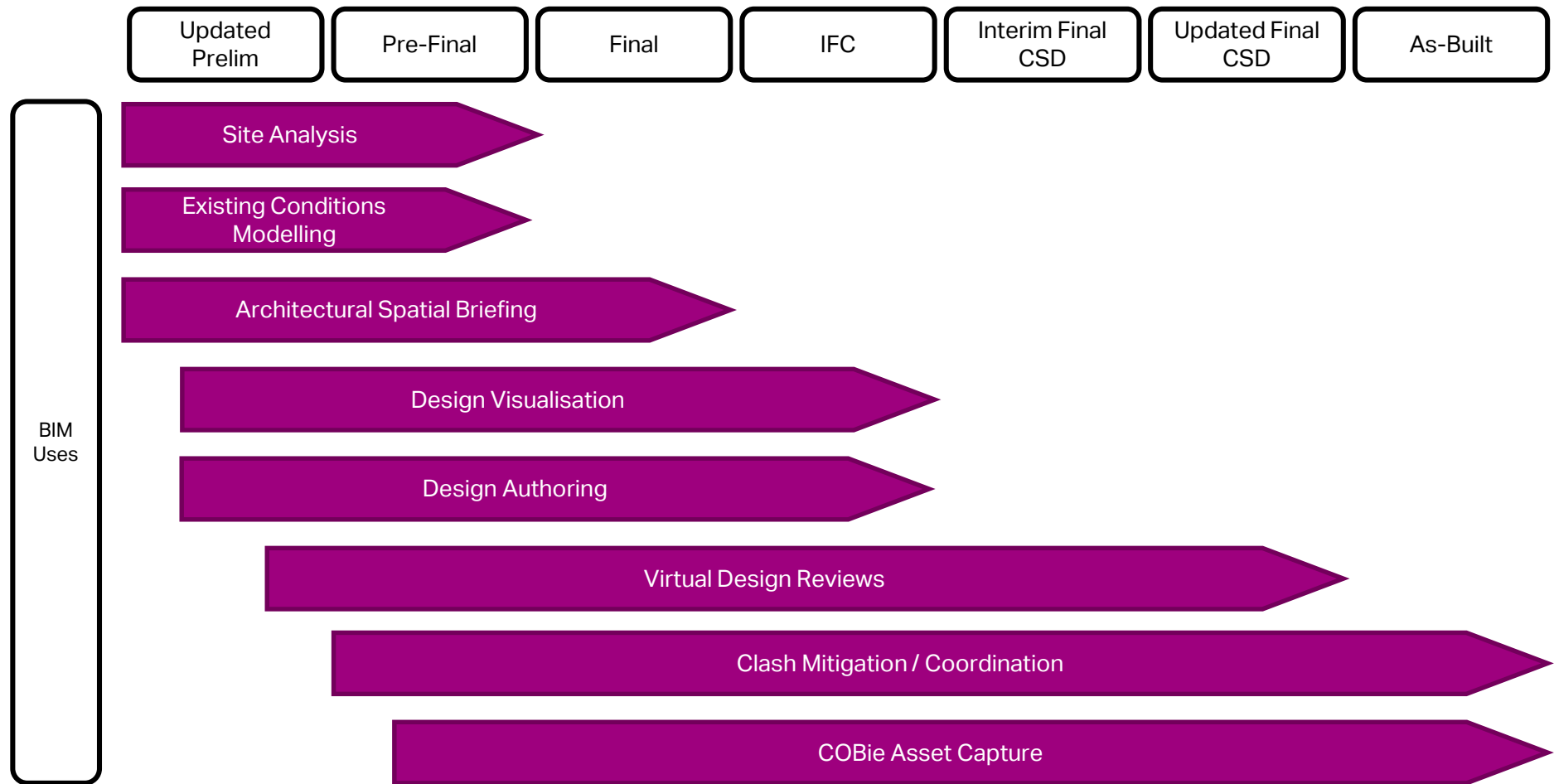


BIM Goal and Objectives

- Model Based design and coordination
- Collaborative design information exchange
- A Model First draw Second approach
- Reduce the reliance on traditional CSD process
- Adequate capture of Asset information for use in CMMS



Main BIM Uses



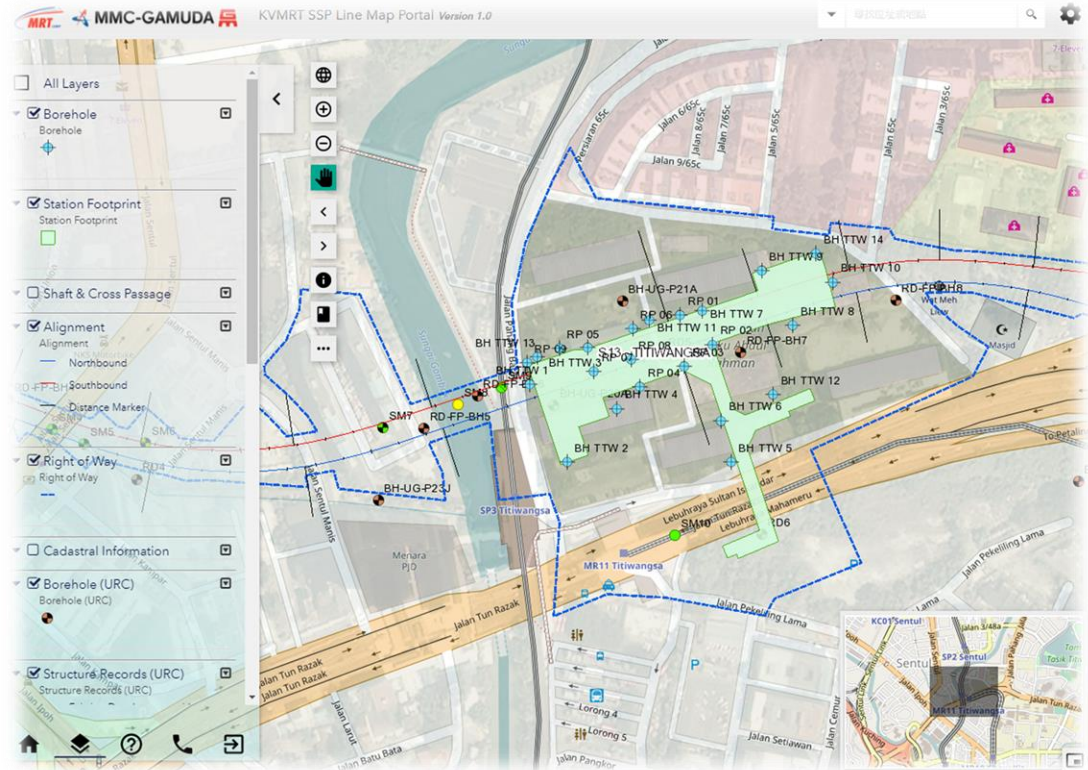
Project Challenges

- Involve **various disciplines**
e.g. Civil, Architectural, Structural and Building Services, etc.
- **Vast amount of data/ information** in KVMRT projects
e.g. tunnel alignment, stations, geotechnical information, temp works and topography data etc
- **Frequent update** of design and data of different disciplines
- **Difficult to retrieve data** effectively as they are not spatially integrated
- **Time consuming** to obtain latest design from various disciplines



GIS Initiatives

- Set up an **enterprise GIS** platform
- **Geospatially** enables the engineering data including CAD, GIS and BIM
- Act as the **centralized hub** to share geospatial data
- **Integrate the Common Data Environment (CDE)** to retrieve information
- **Assist engineers and designers to make decision**
- Support all phases of the SSP line 2 design and construction works in the **coming 5 years**



Integration of Data

- Data from various disciplines of various formats

Alignment

Civil

Geology

Utilities

Satellite Images

Topo. Survey

BIM

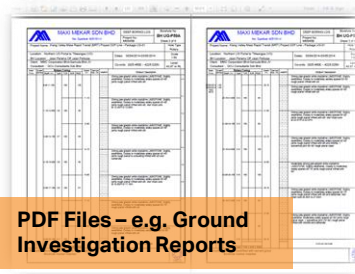
Structural

Temp. Work

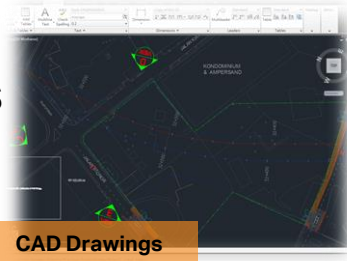
Cadastral



BIM Models



PDF Files – e.g. Ground Investigation Reports



CAD Drawings

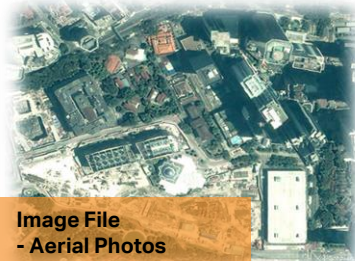
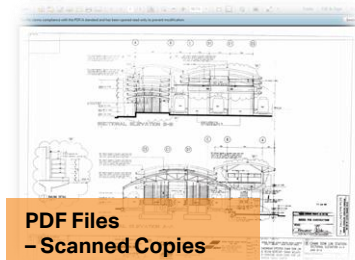


Image File - Aerial Photos



Image File - Site Photos



PDF Files - Scanned Copies



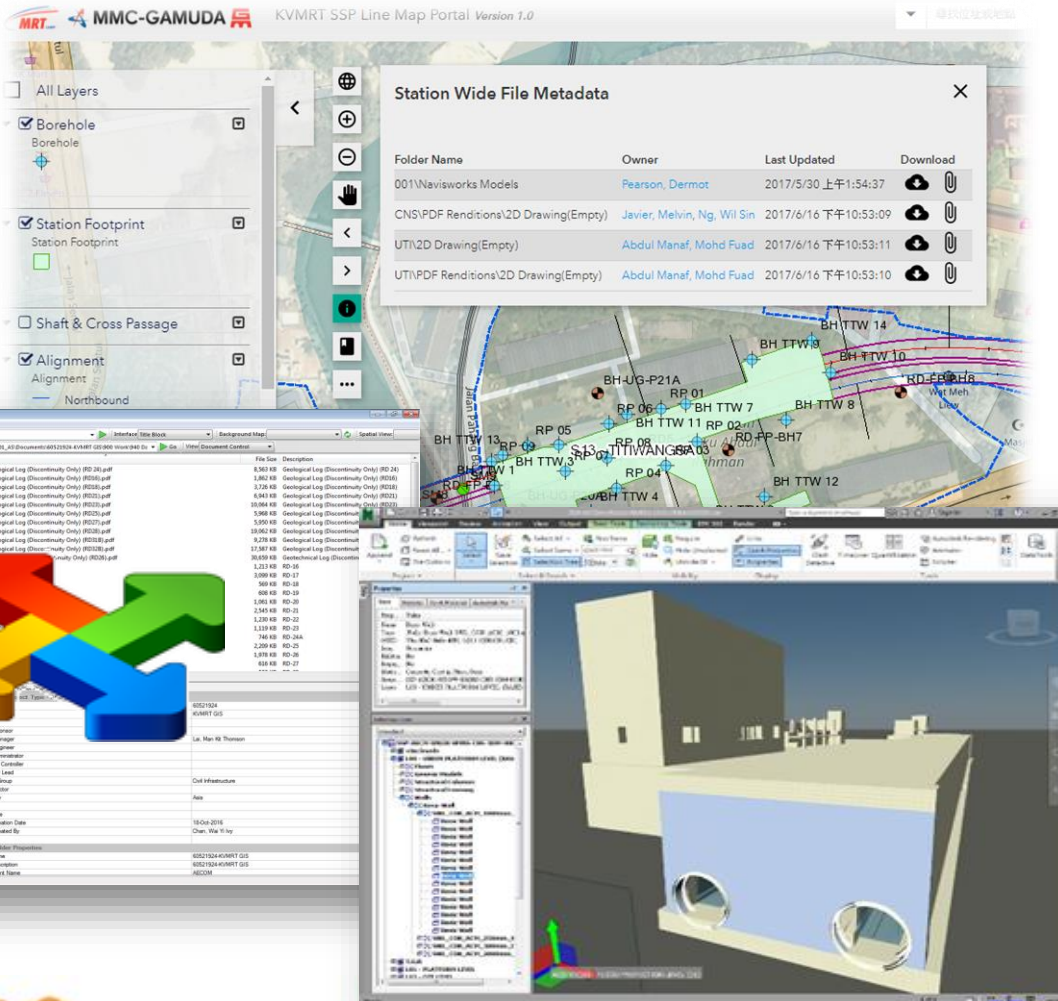
Enterprise GIS

- Facilitate data sharing & collaboration



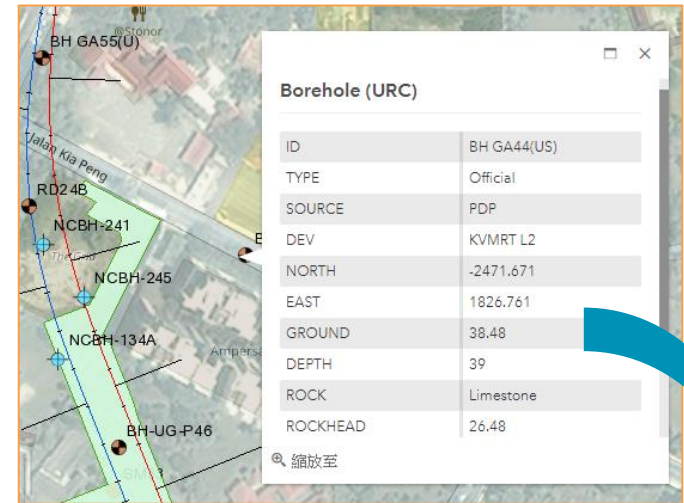
Integration of BIM Data & Common Data Environment (CDE)

- Station footprint from BIM
- Link to data in CDE
- Single Repository
- Confidence and Integrity
- Secure Environment
- Collaborative data sharing in a common platform for all project participants
- Improve project and operational efficiency



AGS

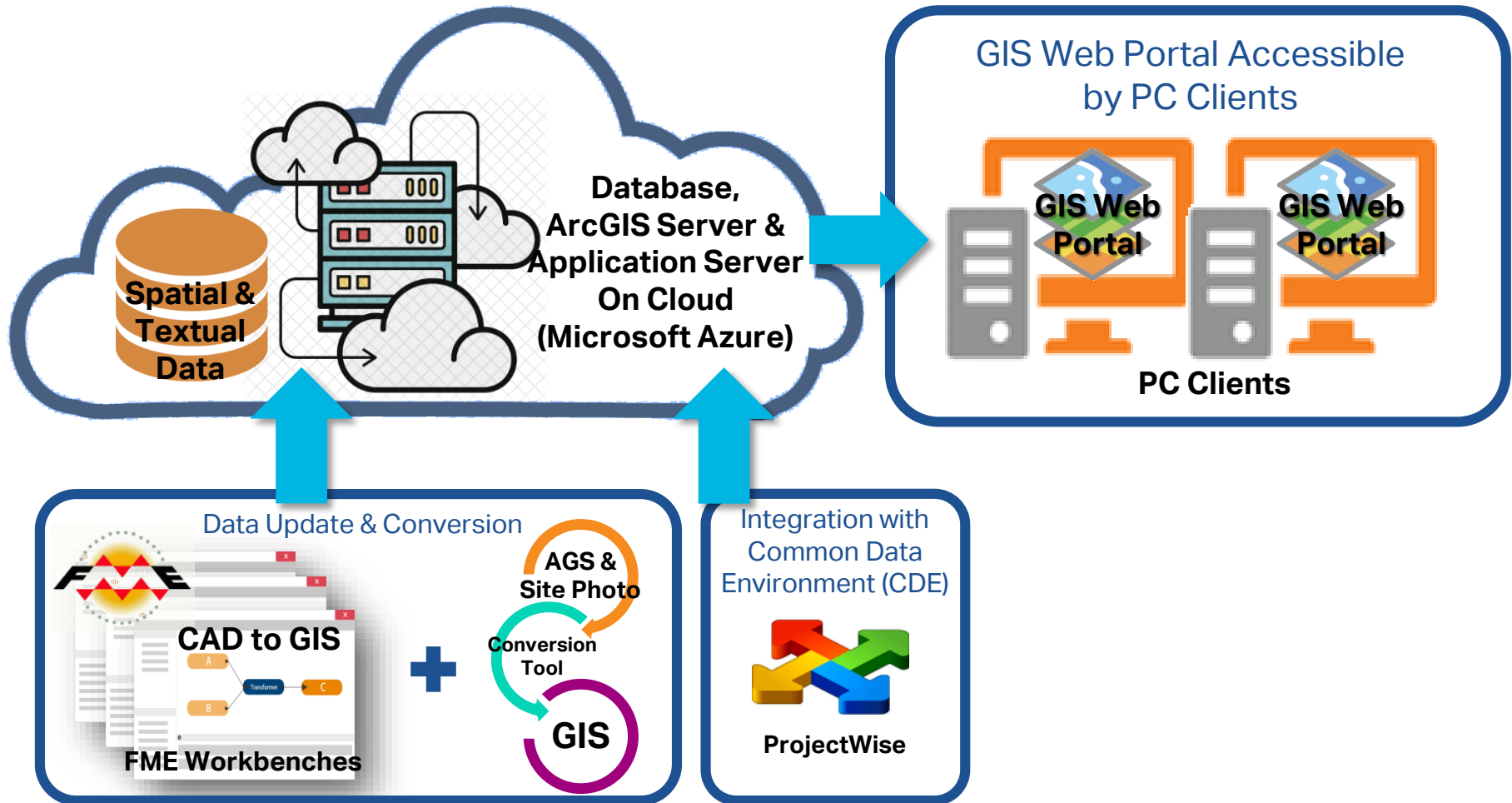
GIS



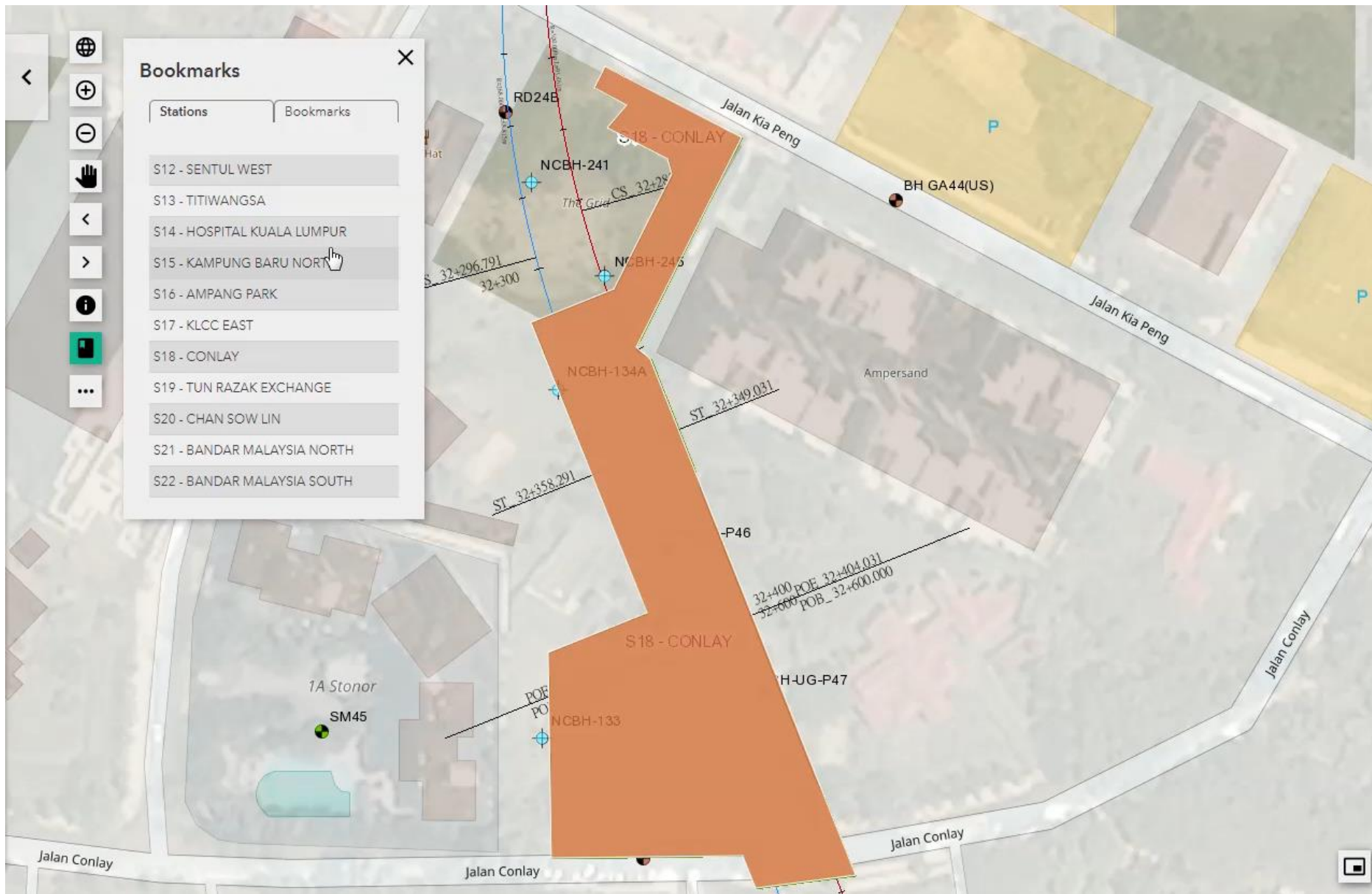
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- The screenshot displays two identical PDF documents side-by-side in the Adobe Reader application. The documents are titled 'MAXI MEKAR SON BHD' and 'No. Surfact: 42101-V'. They contain technical data tables for a project named 'Klang Valley Mass Rapid Transit (MRT) Project SGP Line - Package U0-01'. The tables include columns for 'Date', 'Time', 'Rate', 'Cable', 'Type', 'Length', and 'Weight'. The data is organized into multiple rows, each representing a different cable type and its associated specifications. A large blue arrow points from the top right corner of the image towards the right-hand PDF document. At the bottom of the image, there is a large orange box with the text 'PDF Files – e.g. Ground Investigation Reports'.
- PDF Files – e.g. Ground Investigation Reports

PDF Files – e.g. Ground Investigation Reports

Integrated System Architecture



GIS Platform for BIM & CDE



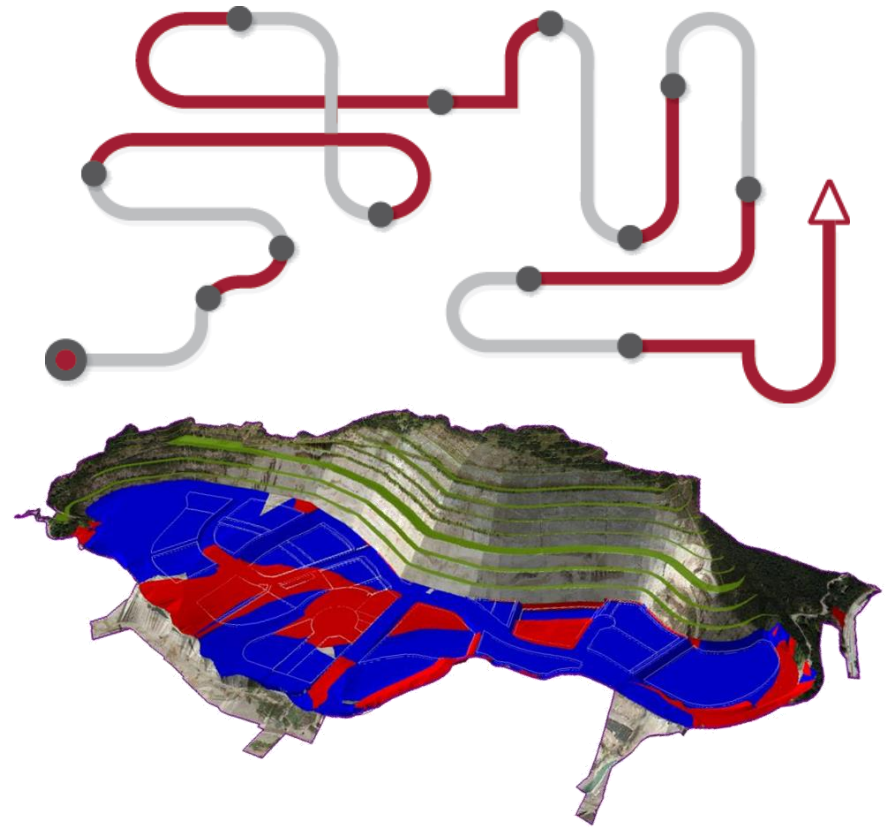
Project Benefits

- ▶ Facilitate data sharing & collaboration
- ▶ Integrated Platform to allow visualization of cross project data
- ▶ Central Data Repository of spatial and textual data to facilitate efficient access through the Web GIS service
- ▶ Increased control
- ▶ Reference generation for future projects



The Way Forward

- ▶ Engineering Analysis
- ▶ Routing
- ▶ Tailor-Made Report Exporting
- ▶ Environmental Analysis
- ▶ Operation and Maintenance
- ▶ Expand to support all phases of the SSP line design and construction works



The Way Forward – Drone Data Integration

Photos Taken by Drone



**3D Model Generated
from Drone Photos**



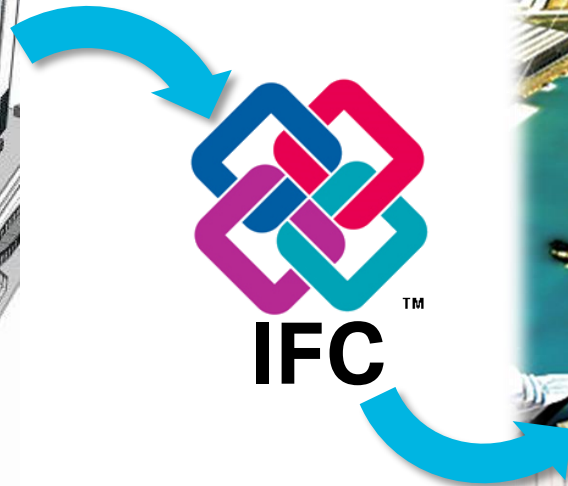
3D GIS Platform



The Way Forward – BIM Data Integration



BIM Model

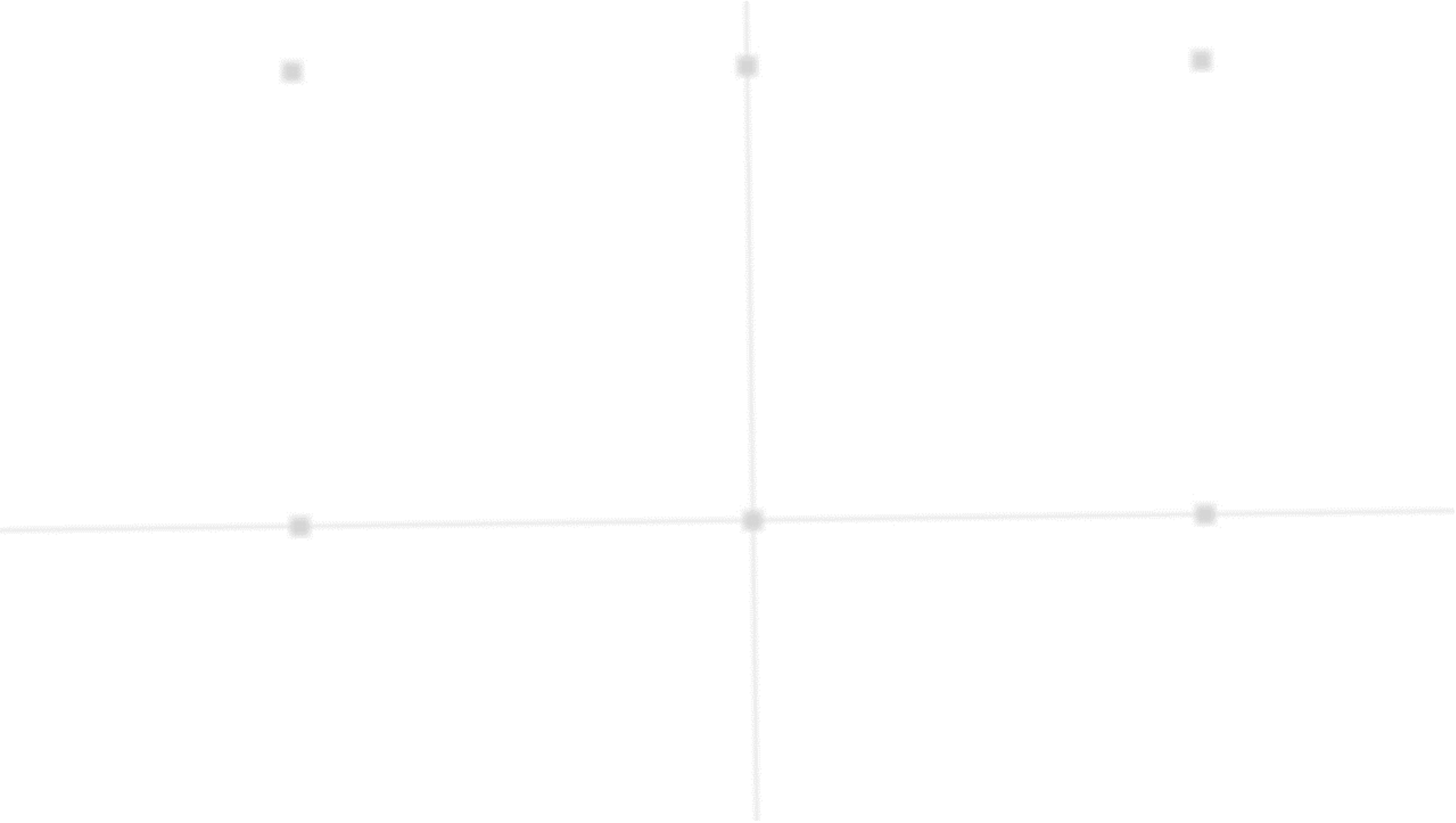


3D GIS Platform



Enterprise GIS Platform for KVMRT SSP Line 2

Awarded Asia Geospatial Award 2017



An aerial photograph of a city skyline at sunset. The sun is low on the horizon, creating a warm orange and yellow glow across the sky and city. Several skyscrapers are visible, including one with 'WELLS FARGO' and another with 'AECOM' on its roof. The AECOM logo is prominently displayed in the center-left of the image.

AECOM

Imagine it.
Delivered.

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