

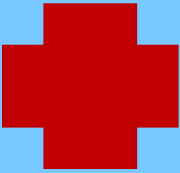
Geospatial + BIM + Digital Twins: Enabling Connected Infrastructure Systems



Abhishek Sinha

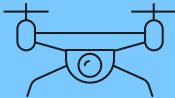
Solution Architect

Digital Twin

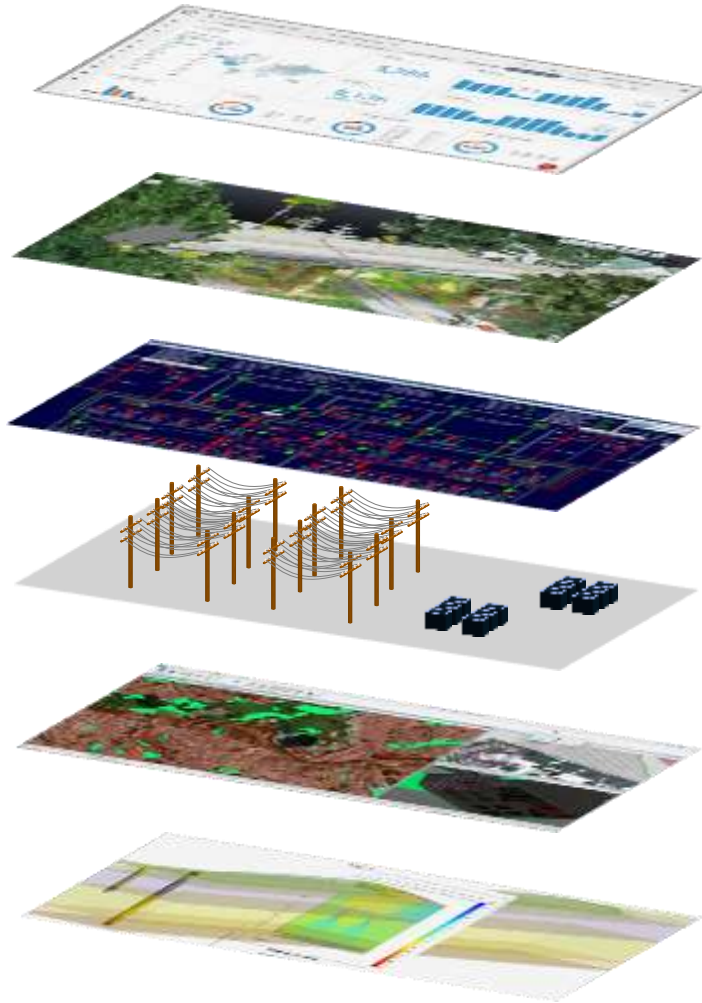


Sensor data

Enterprise data



Digital Twin



Enterprise Data

Reality Data

IoT Data

Design & Engineering Data

Geospatial Data

Subsurface data

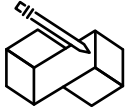
Connect disparate data and systems

Streamline processes and workflows

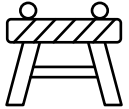
Improve collaboration and transparency

Reduce costs and project risks

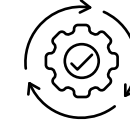
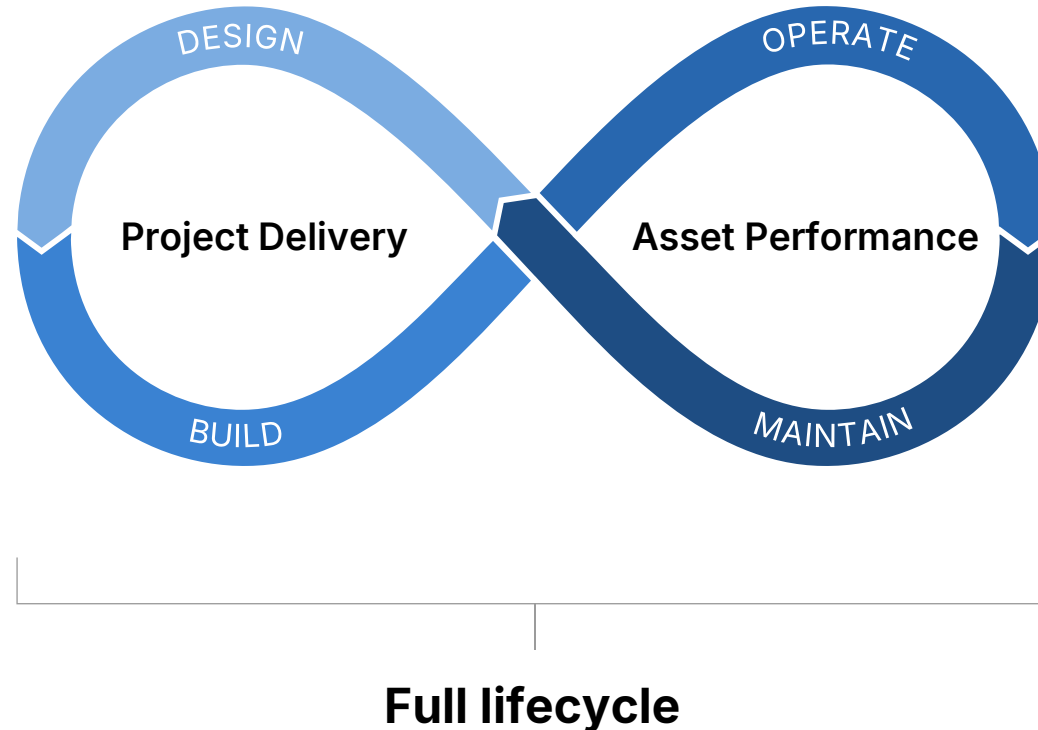
When do we use Digital Twin?



- Assess and understand existing conditions (above- and below-ground)
- Simulate design options
- Optimize collaboration and coordination with stakeholders and citizens



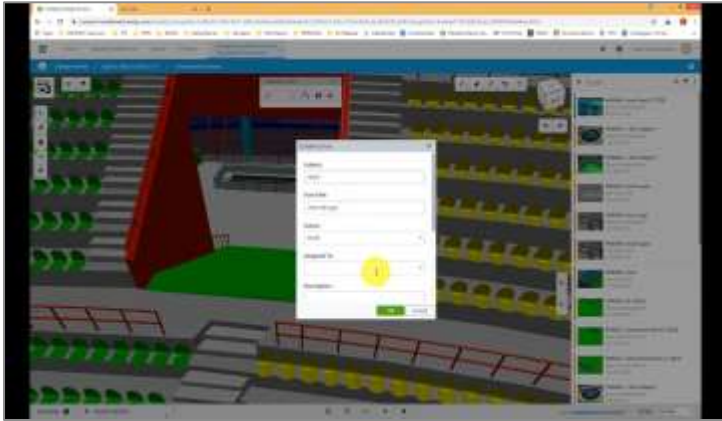
- Improve safety and enable right first-time construction
- Monitor and track progress
- Increase construction efficiency
- Reduce on-site visits



- Develop more repeatable assessment processes
- Improved monitoring of asset performance
- Lower asset operational costs
- Reduce on-site visits and asset downtime
- Virtually assess and document assets

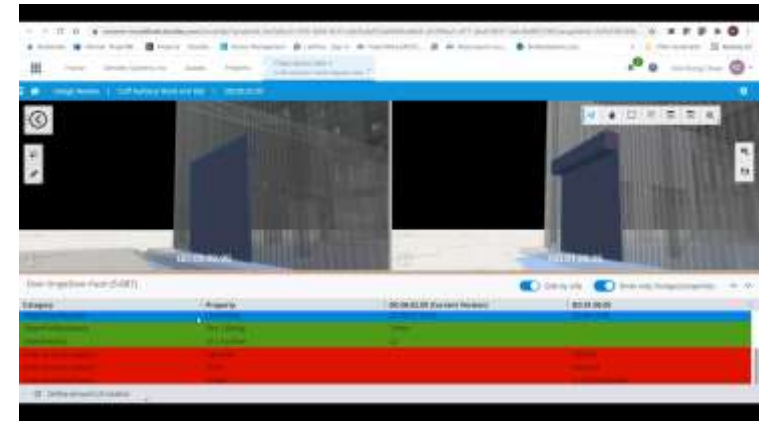
By viewing the lifecycle as a continuous loop, we can achieve **sustainable and resilient systems** that meet the evolving needs of society.

Digital Twin Use Cases – Planning and Design

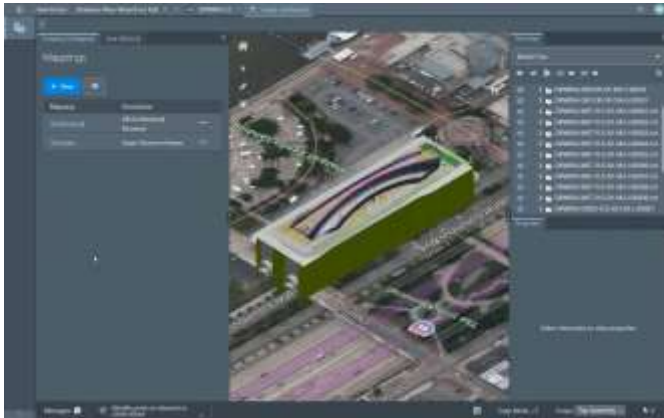


Model federation and review using web browser

Maintain audit trail of 3D model changes and compare versions



Embodied carbon calculation



Stream your project to 3D Geospatial environment

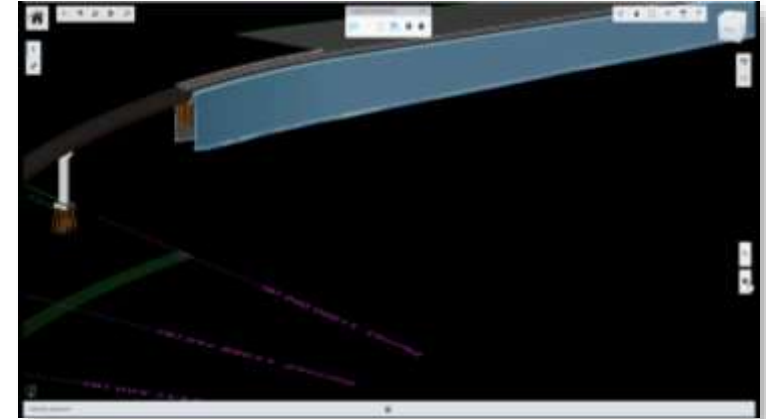


Digital Twin Use Cases - Construction



Visual Construction Sequencing

Break design model to construction model



Compare construction progress using drones

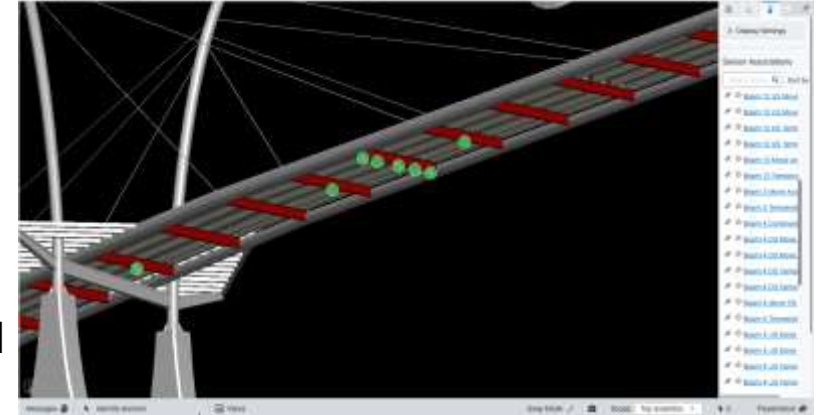
Laser scan based automated progress updates



Digital Twin Use Cases – Operation and Maintenance



AI assisted inspections



IOT sensor-based monitoring



Asset Information Management

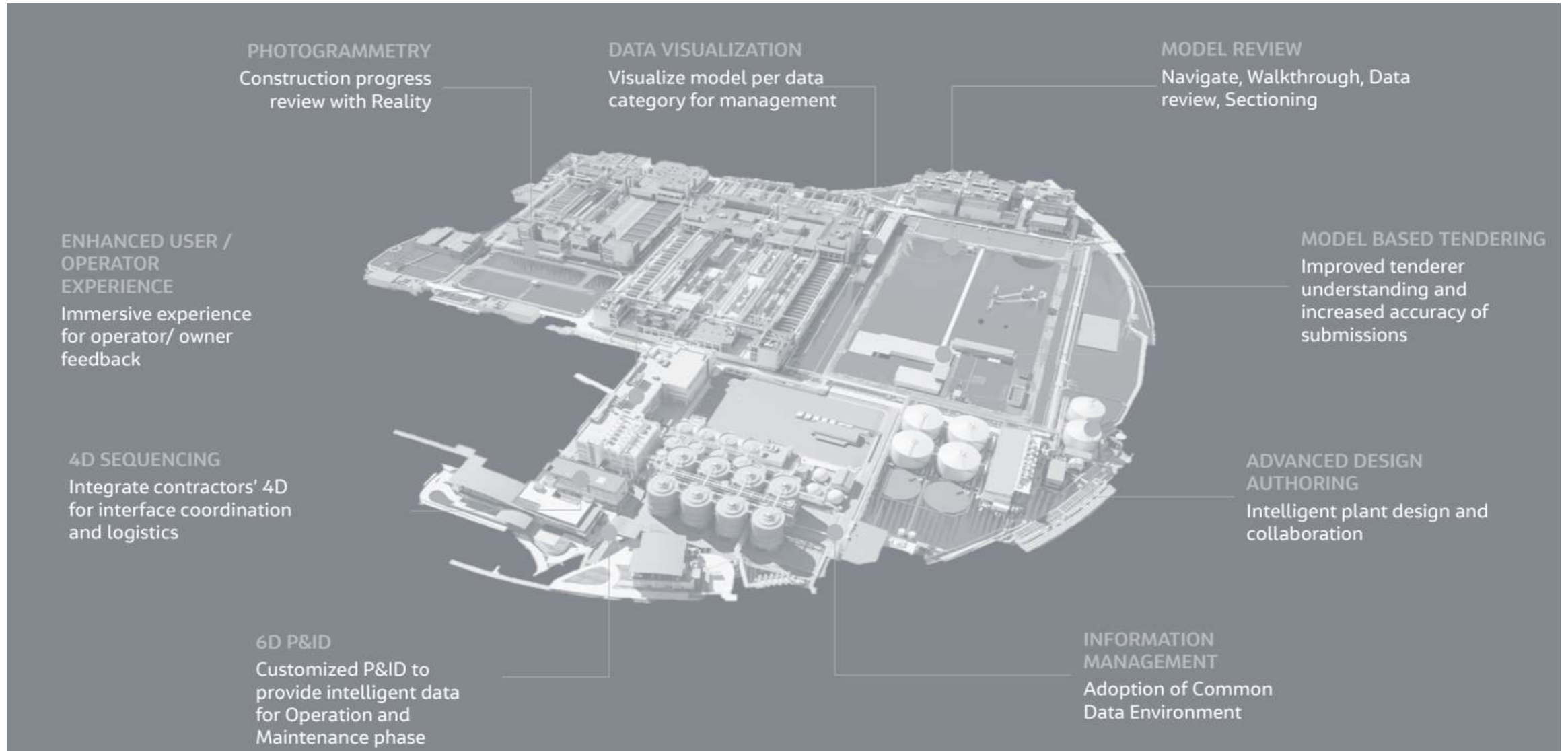


Water network performance monitoring

Tuas Water Reclamation Project - Singapore



Tuas Water Reclamation Project - Singapore



Sydney Airport - Australia



Bentley®