MAXIMO & 3D BUILDING INFORMATION MODELLING

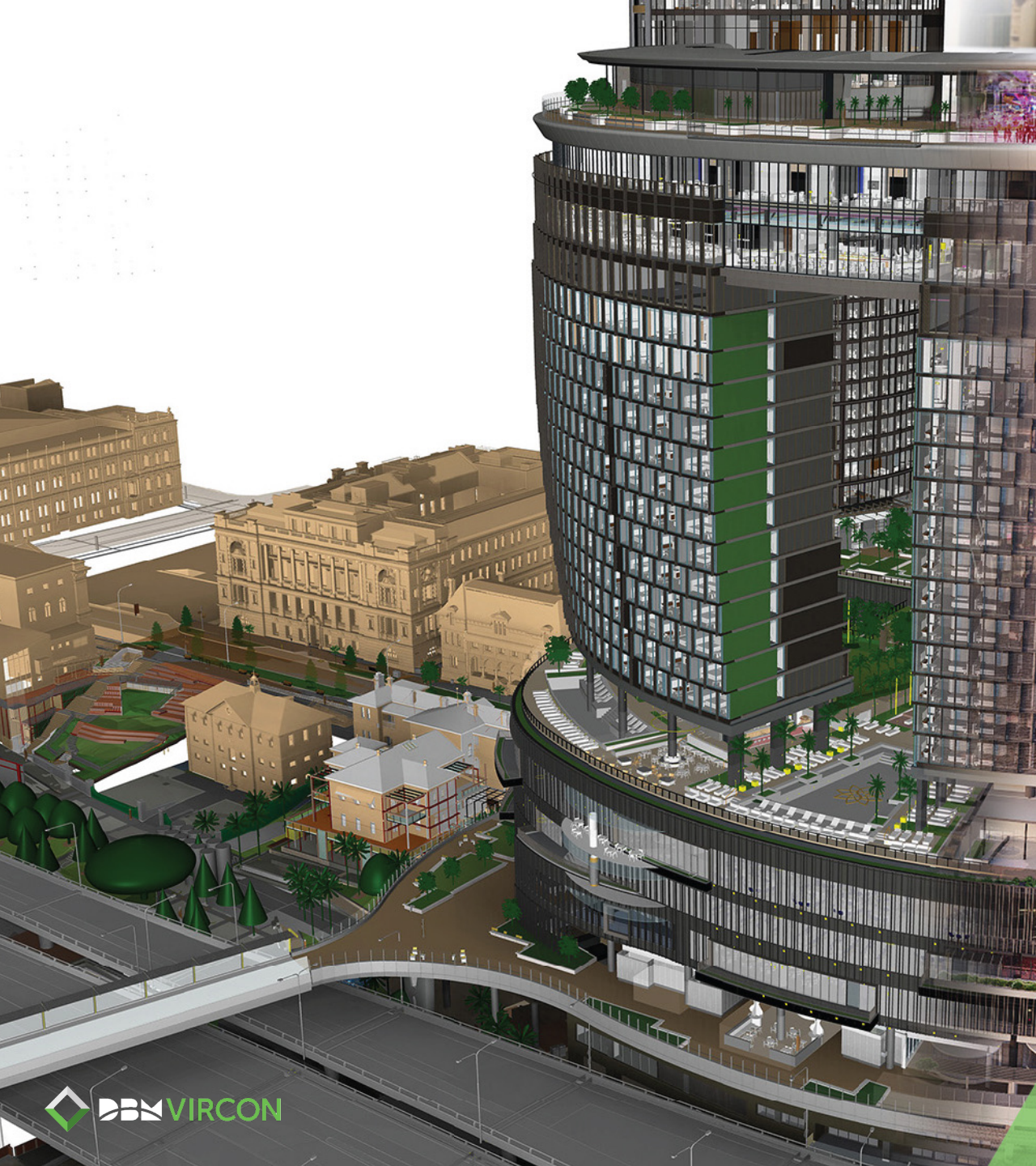PRESENTED BY:

David Lestani
Principal Solution Architect

In this session:

Today we will discuss:

- Why is BIM successful in Design and Construction?

- What opportunities are available to support Operations and Maintenance?

- How can your organization make a start to implement BIM in operations?

Who is COSOL?

We are a global provider of end-to-end asset management solutions that enable asset-intensive organizations to get the best from their people, process, systems and data.

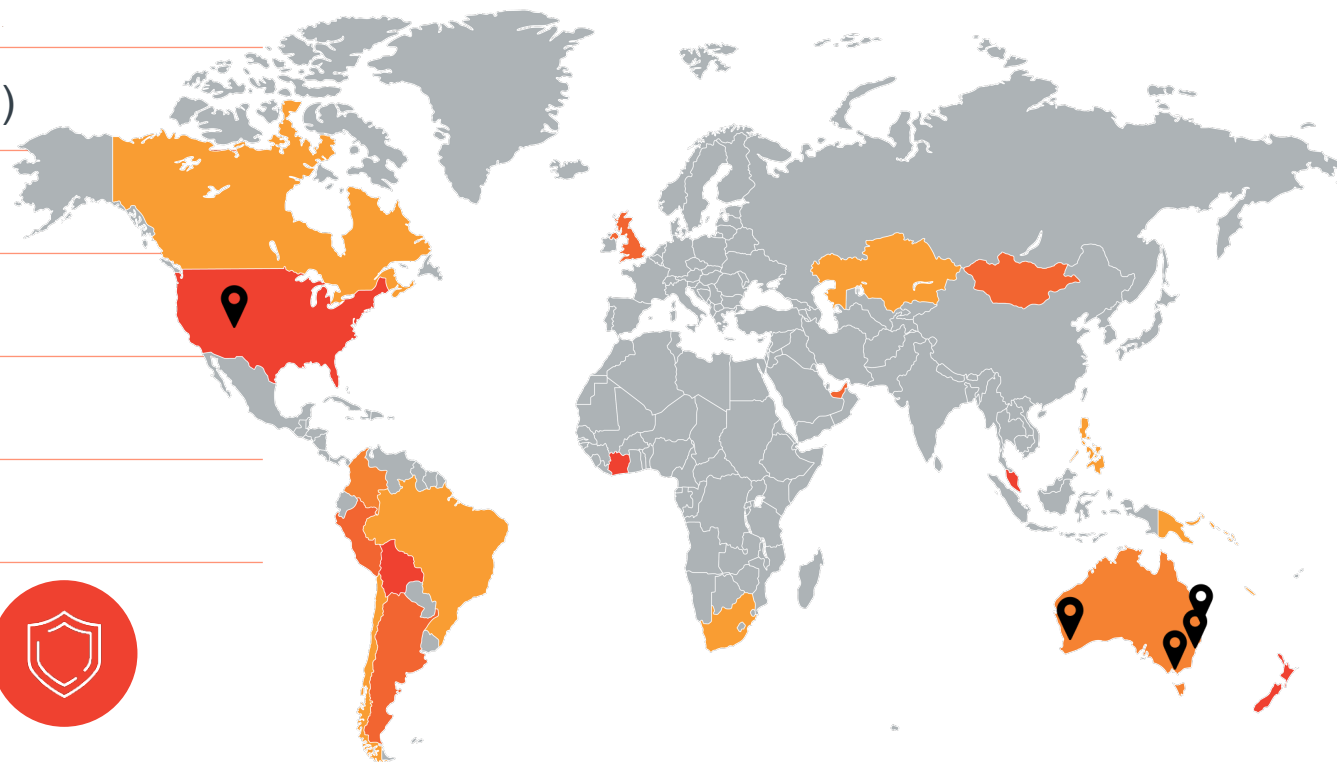|	
Structure:	COSOL Ltd (Publicly Listed - ASX:COS)
In Business:	22+ years
Offices:	USA and Australia
People:	400+ professionals globally
Certified:	IBM Gold Partner
Industries:	NATURAL RESOURCES · ENERGY & WATER · PUBLIC INFRASTRUCTURE · GOVERNMENT & DEFENSE

A bit about me

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DAVID LESTANI

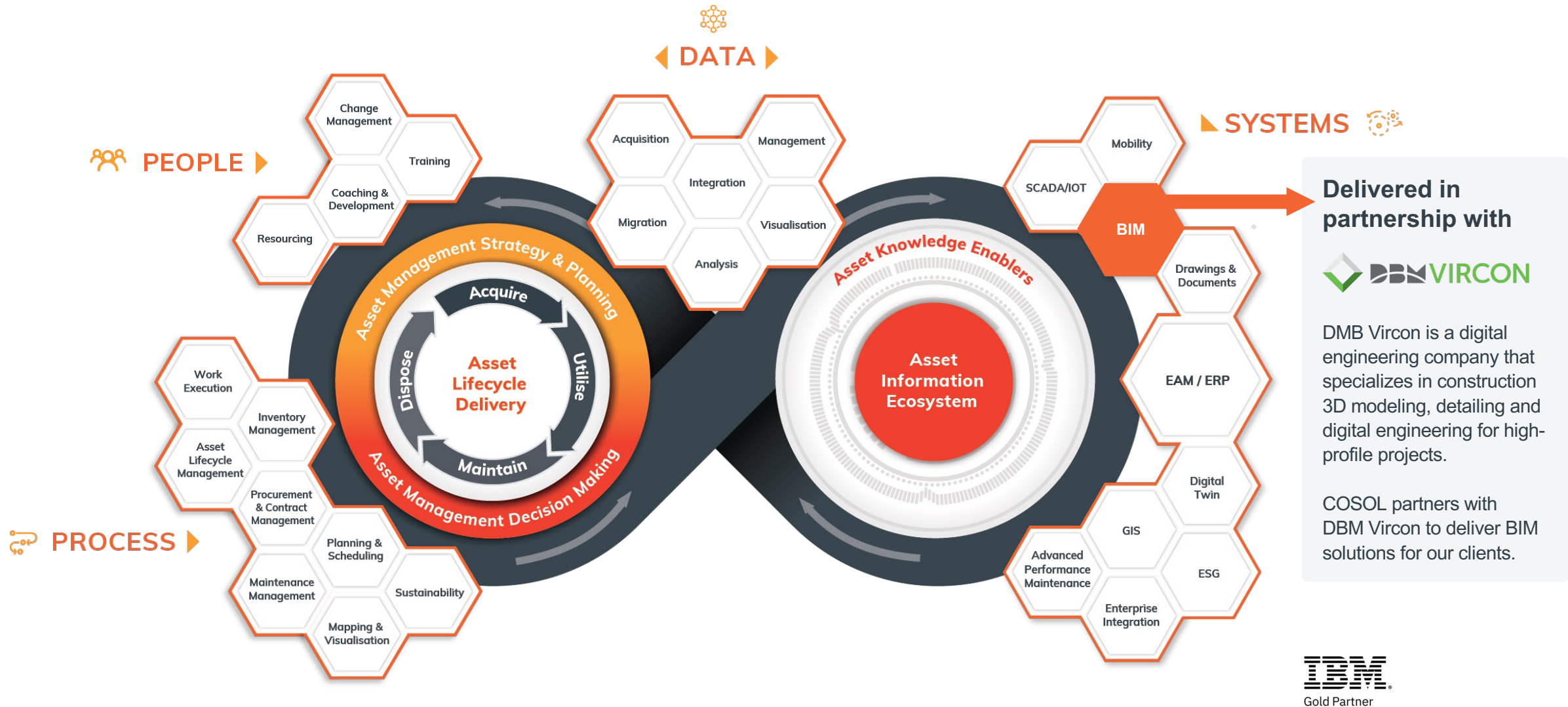**Principal Solution Architect** - COSOL

- From Australia and currently residing in Denver Colorado
- 20+ years experience within asset management bringing location technologies together with asset management
- Qualifications in Information Management, Surveying and GIS
- Working with IBM Maximo since version 4
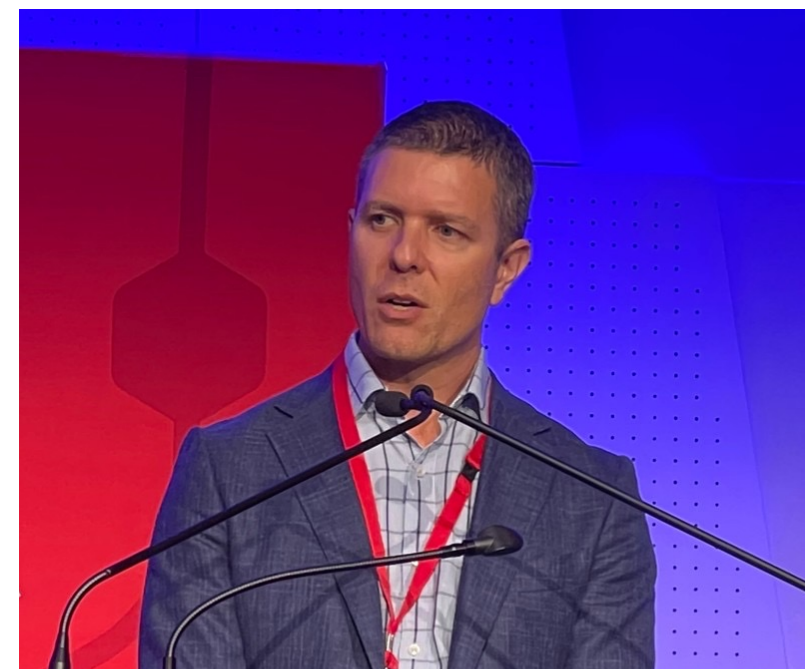
What we do

We help clients achieve asset and operational efficiency across the asset management framework:

Delivered in partnership with

DBM Vircon is a digital engineering company that specializes in construction 3D modeling, detailing and digital engineering for high-profile projects.

COSOL partners with DBM Vircon to deliver BIM solutions for our clients.

BIM'S SUCCESS

IN DESIGN & CONSTRUCTION

What is Building Information Modelling (BIM)

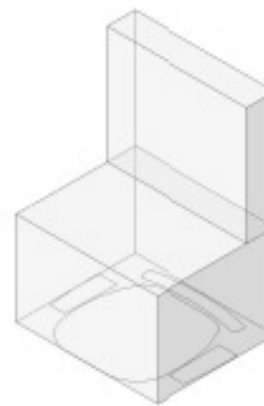'A digital representation of physical and functional characteristics of a facility.'

A shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle.

Defined as existing from earliest conception to demolition.

LEVEL OF DEVELOPMENT:
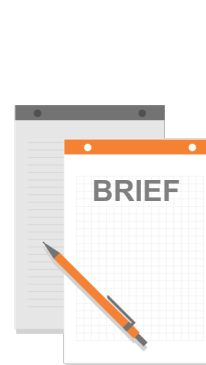
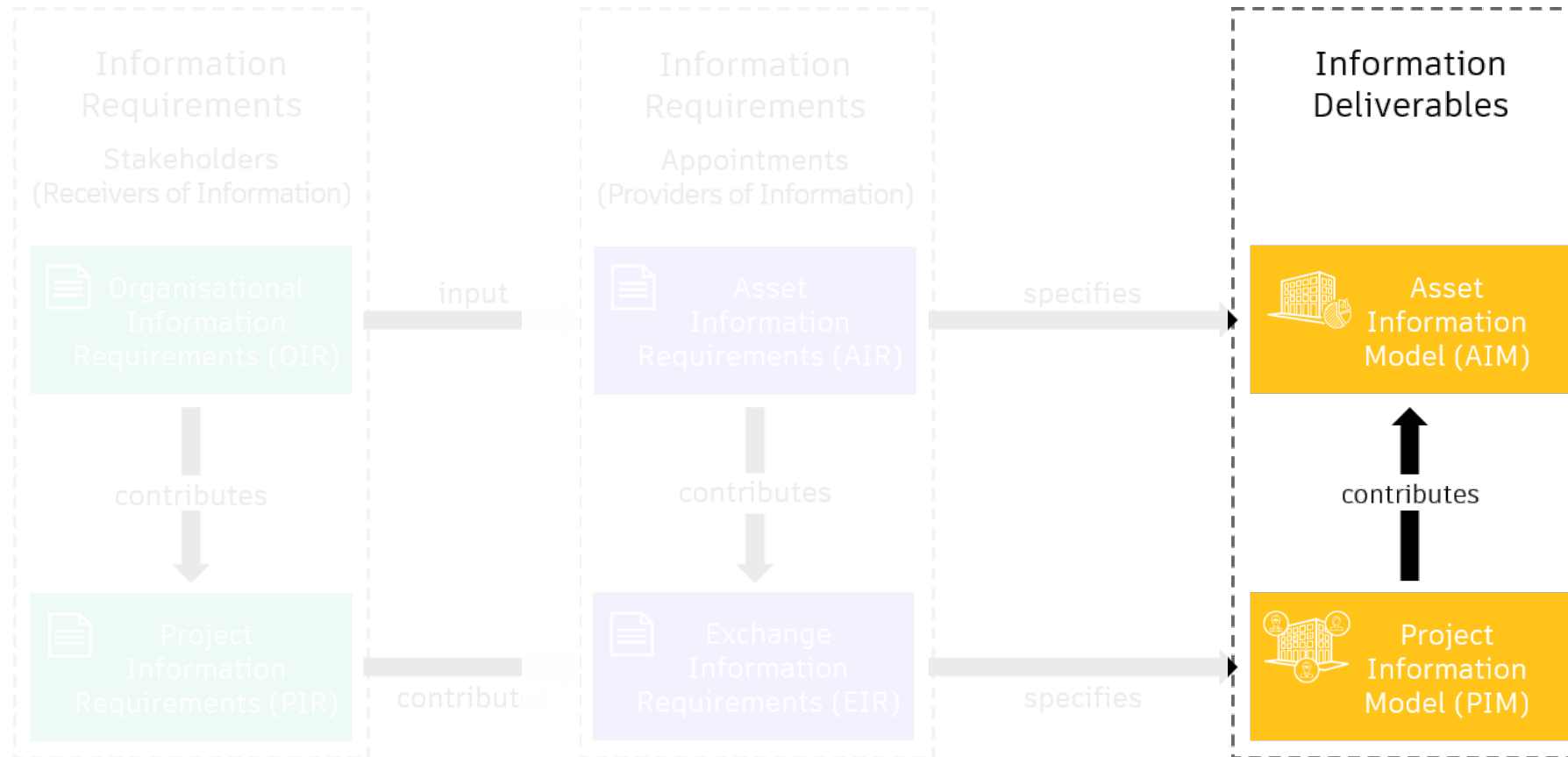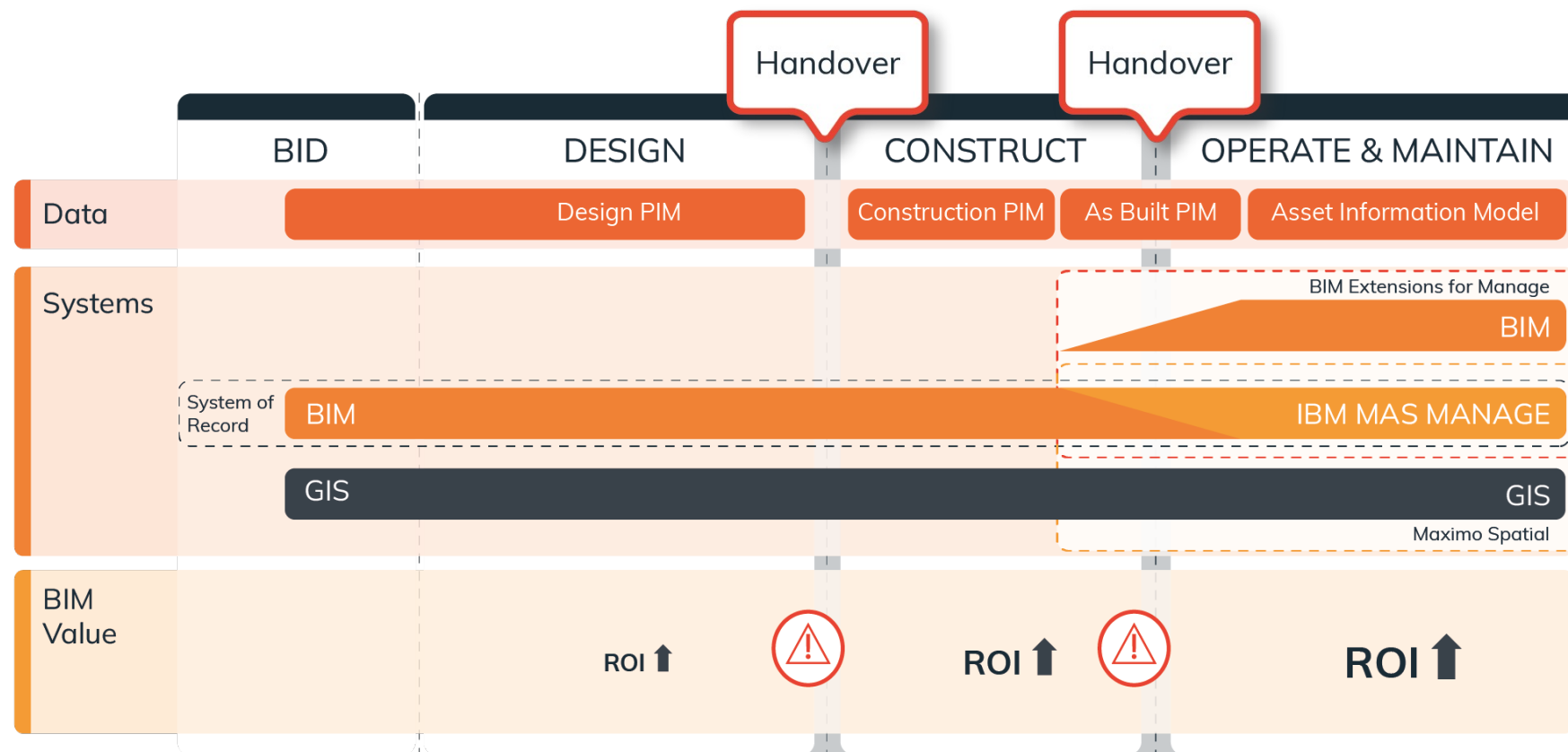| LOD100	LOD200	LOD300	LOD400	LOD500
Concept (Presentation)	Design Development	Documentation	Construction	Facilities Management

The importance of BIM

BIM is now mandated in many countries for large projects

The international standard for information flow according to ISO 19650:

BIM over the Asset Lifecycle

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	BID	DESIGN	Handover CONSTRUCT	Handover OPERATE & MAINTAIN
Data		Design PIM	Construction PIM	As Built PIM	Asset Information Model
Systems				BIM Extensions for Manage BIM
	System of Record	BIM		IBM MAS MANAGE
	GIS			GIS Maximo Spatial
BIM Value		ROI ⬆ ⚠	ROI ⬆ ⚠	**ROI** ⬆

Benefits of BIM

Architecture and Design phase

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Key Benefits:

Collaboration:
Between design teams
and external parties

Constructability
Determining if it can be built

Cost estimation
Establishing the build cost

Benefits of BIM

Construction phase

Key Benefits:

Collaboration:
Work sequencing and trade coordination
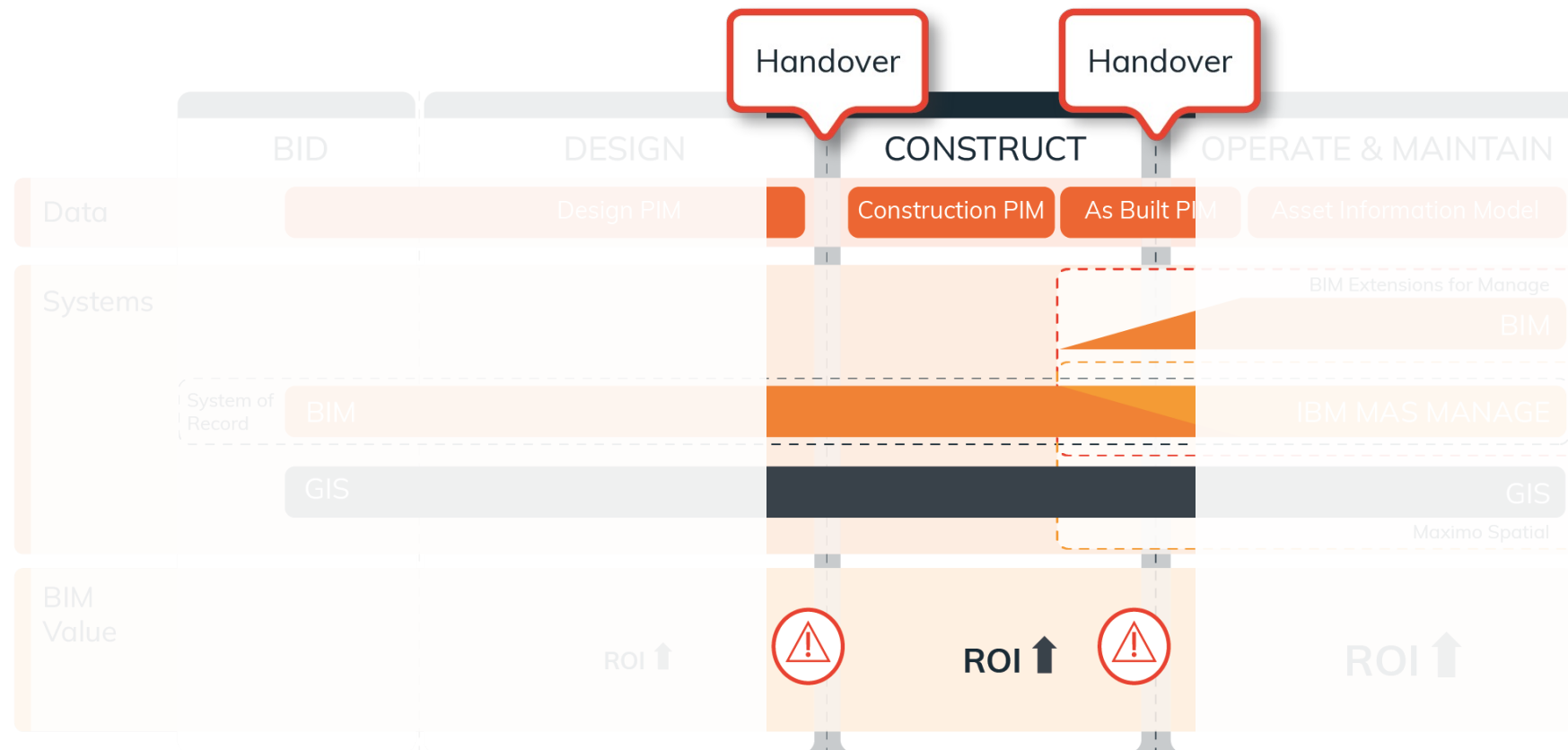
Project Management
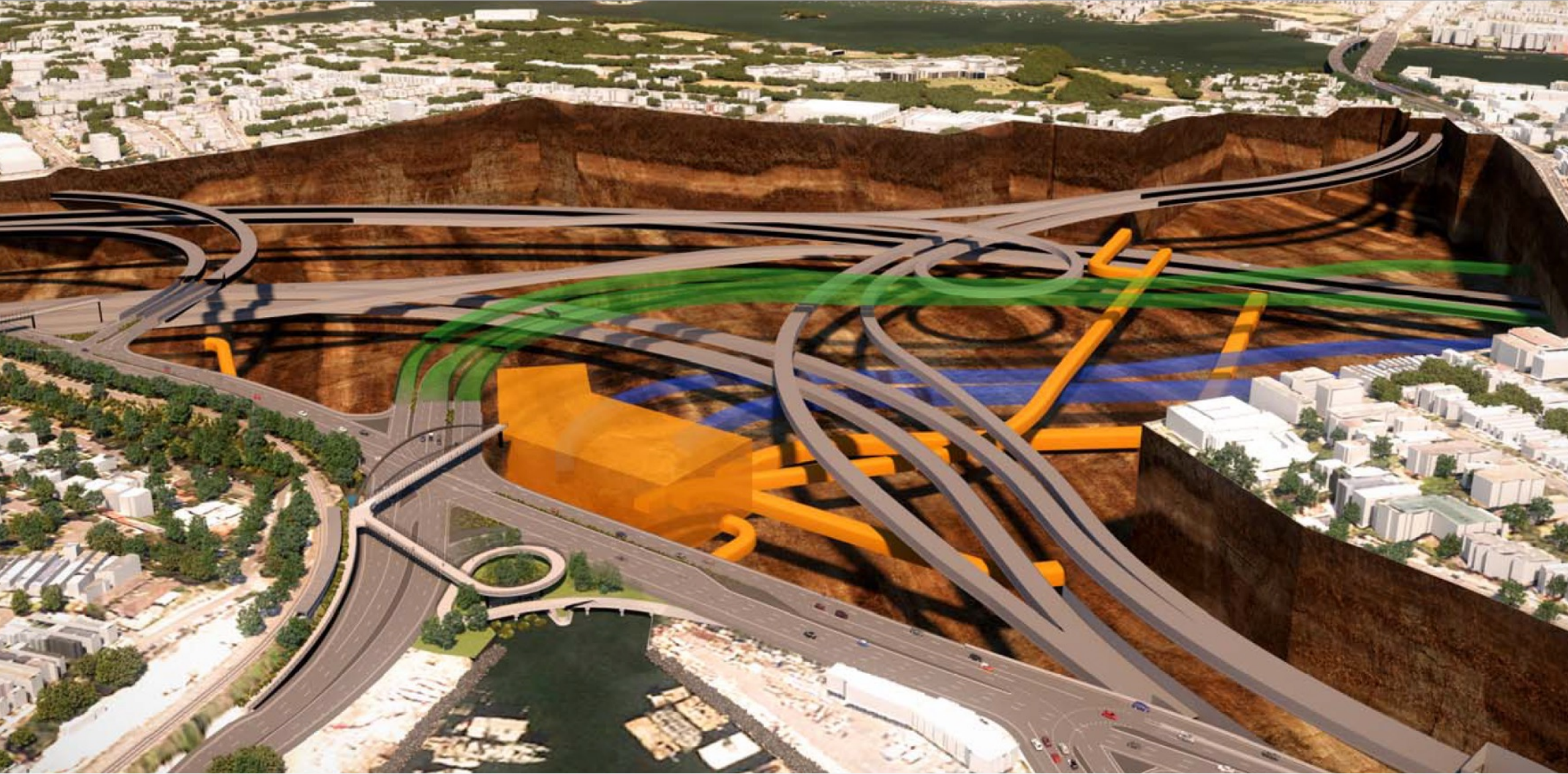Cost control, reporting and billing

Quality Control
Minimize defects

Commissioning
As-built data capture

WestConnex Tunnel - part of Australia's largest road project

Image courtesy of: DBM VIRCON

BIM BLOCKERS

FOR OPERATIONS & MAINTENANCE

BIM in Operations & Maintenance
What we are seeing

Large projects involving BIM digital assets are usually burdened by the following:

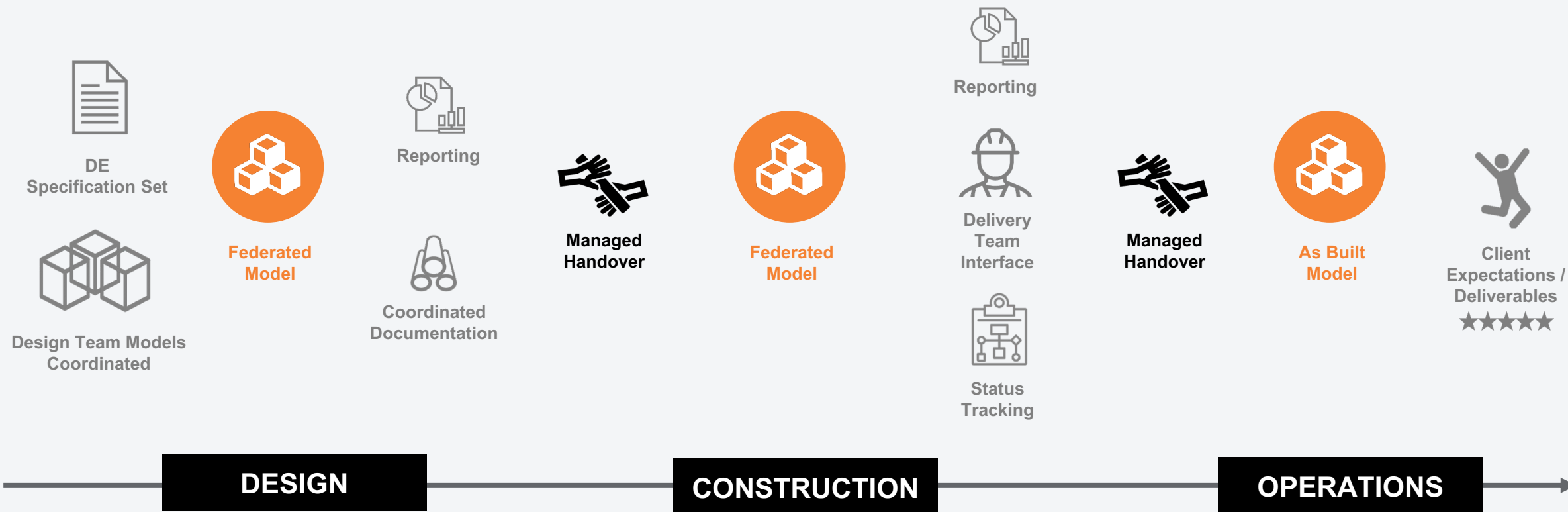**Contract scope**

Understanding of O&M use cases

Quality of the models

Available expertise

BIM in the perfect world

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DE Specification Set

Design Team Models Coordinated

Federated Model

Reporting

Coordinated Documentation

Managed Handover

Federated Model

Reporting

Delivery Team Interface

Status Tracking

Managed Handover

As Built Model

Client Expectations / Deliverables
★★★★★

DESIGN

CONSTRUCTION

OPERATIONS

Diagram courtesy of: DBM VIRCON

OPPORTUNITIES

FOR OPERATIONS & MAINTENANCE

Reasons to use BIM in O&M

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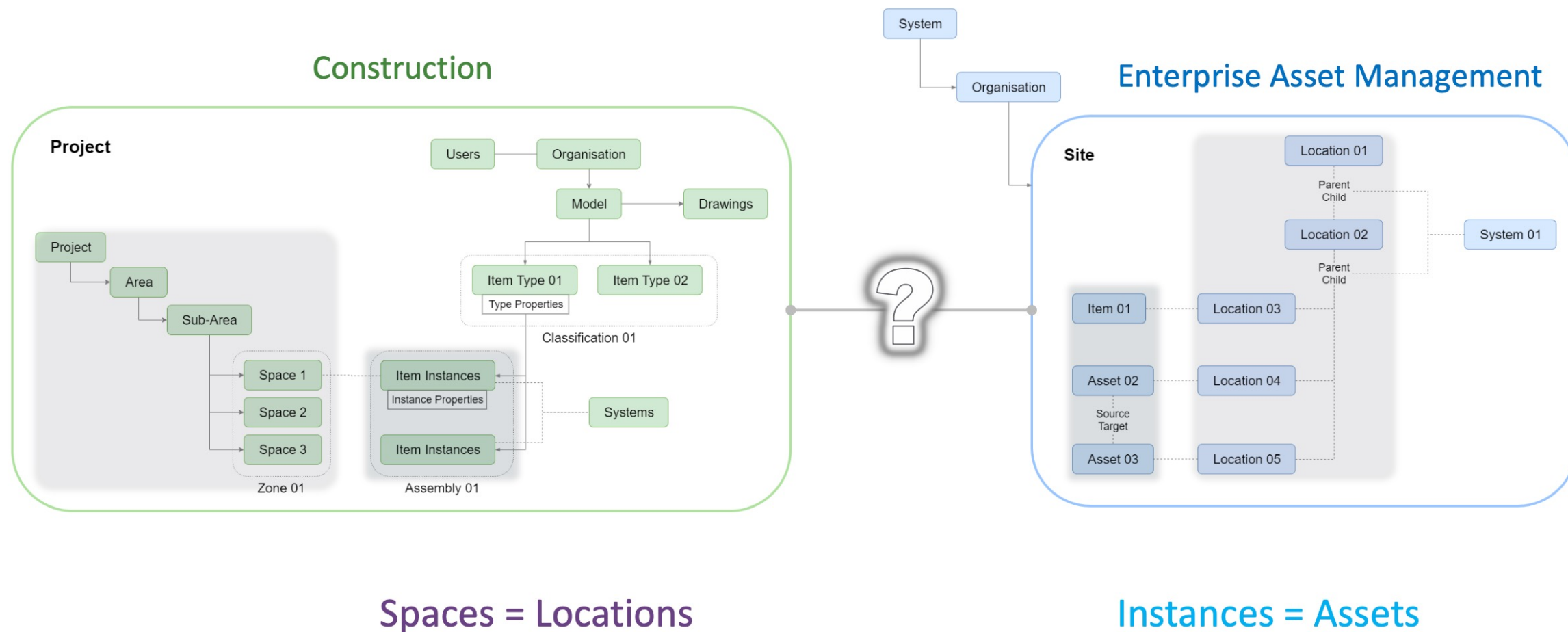## 1 | Automate the creation of the Asset Register

- Create Location Hierarchies, Location Systems and Assets

- Integration Approaches:
  - Asset and Location custodianship in BIM
  - Location custodianship in BIM with Asset custodianship in Maximo

- Use of modern integration tools and the Maximo Integration Framework

- Improves Commissioning and Defect Management

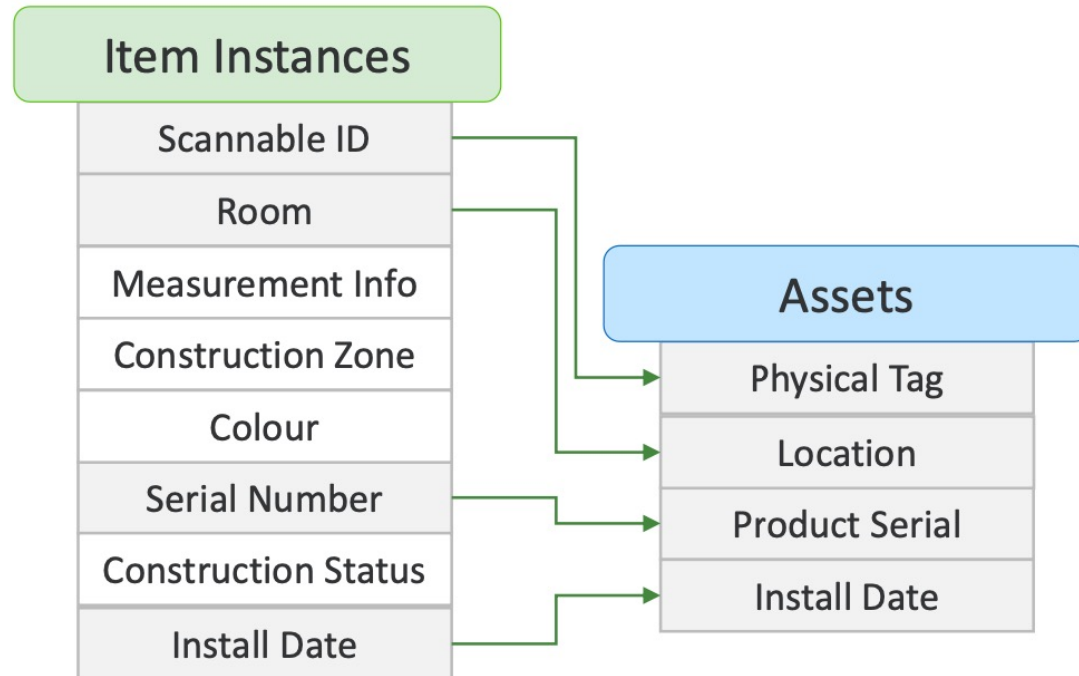*< Actual example of an asset register supplied to us in a spreadsheet*

Terminology
Mapping PIM to AIM – move from Construction to Operations

Construction

Enterprise Asset Management

Spaces = Locations

Instances = Assets

Approach
Model Conditioning – Mapping to EAM

Item Instances
- Scannable ID
- Room
- Measurement Info
- Construction Zone
- Colour
- Serial Number
- Construction Status
- Install Date

Assets
- Physical Tag
- Location
- Product Serial
- Install Date

Considerations:

- PIM is not AIM
- Post processing of models
- Model viewer alignment to asset classifications
- O&M to have input on data structures and models i.e. model break-up and naming conventions
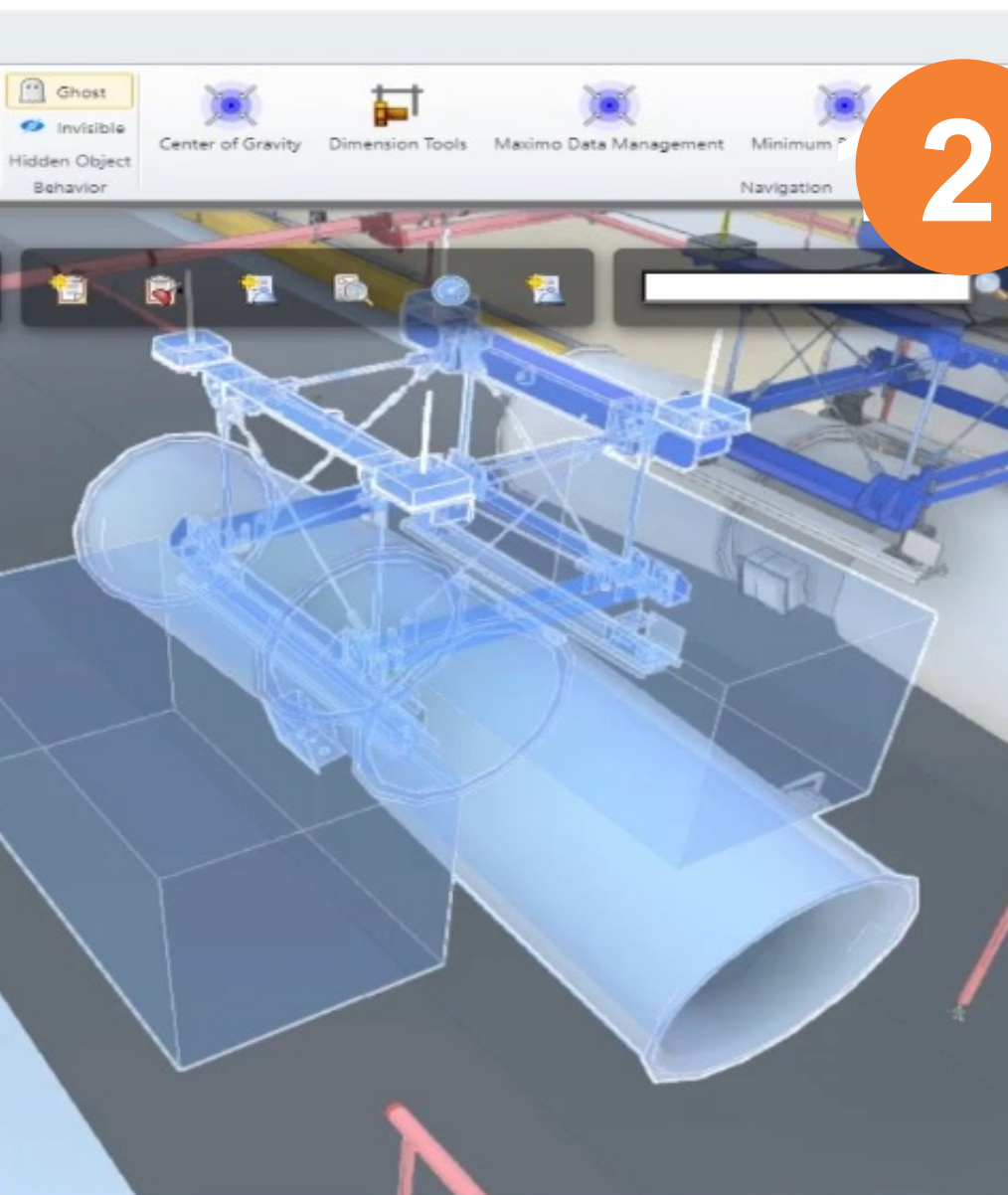- Ongoing digital operations plan – AIM as a digital asset

Reasons to use BIM in O&M

2 **Improve Maintenance Planning**

- Creation of work packages

- View historic work trends
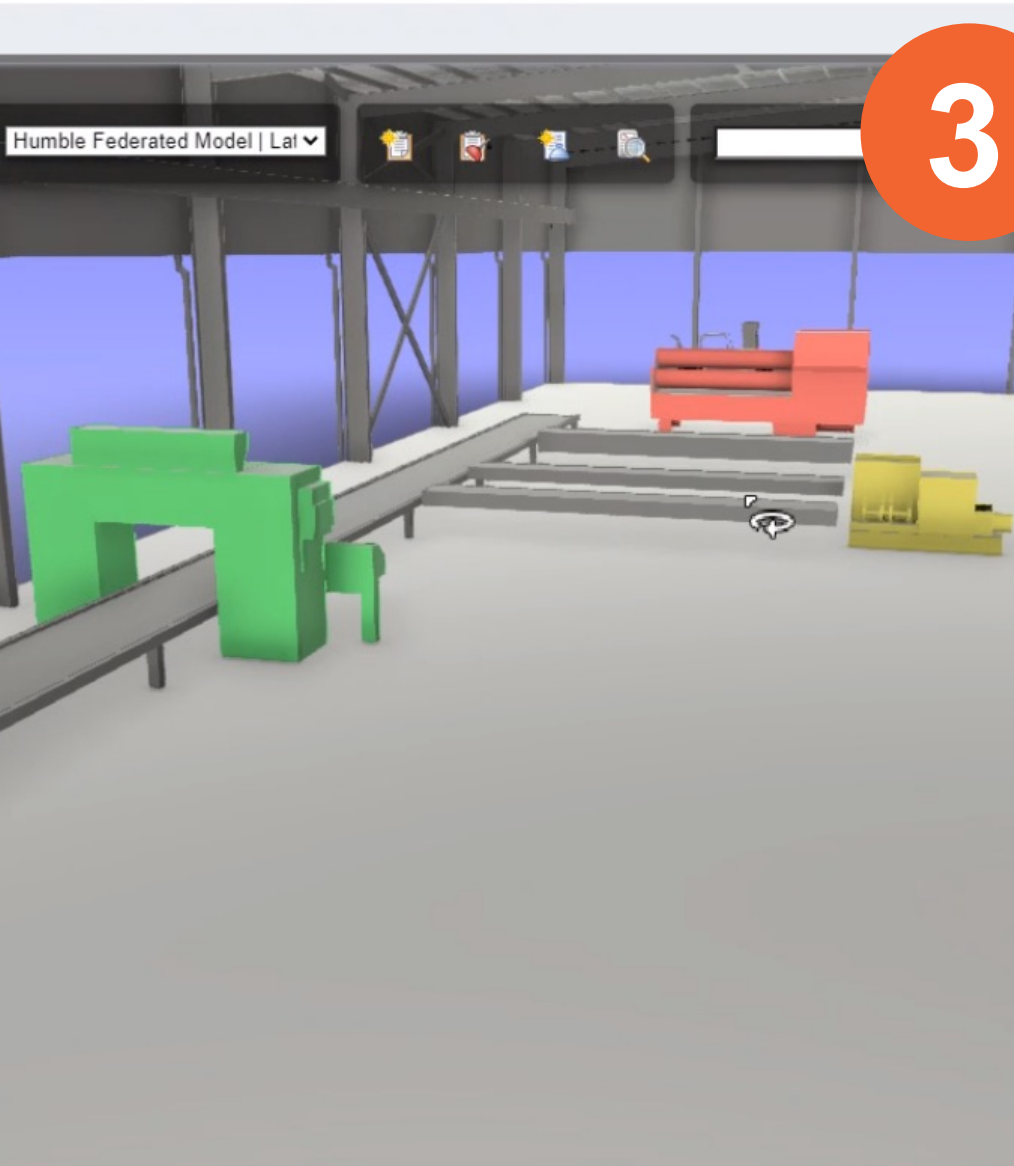
- Site access and tools

- Test procedures

# Reasons to use BIM in O&M

3 Inform Repair or Replace decisions

- Thematic display of work orders
- Thematic display of condition data or health scores
- Traffic-light color coding
- Redline markup defects

Reasons to use BIM in O&M

4 **Visualize Asset Performance**

- BIM combined with the IBM Maximo Application Suite:
  - Maximo Manage
  - Maximo Monitor
  - Maximo Health
  - Maximo Predict
- The road to "Digital Twin"
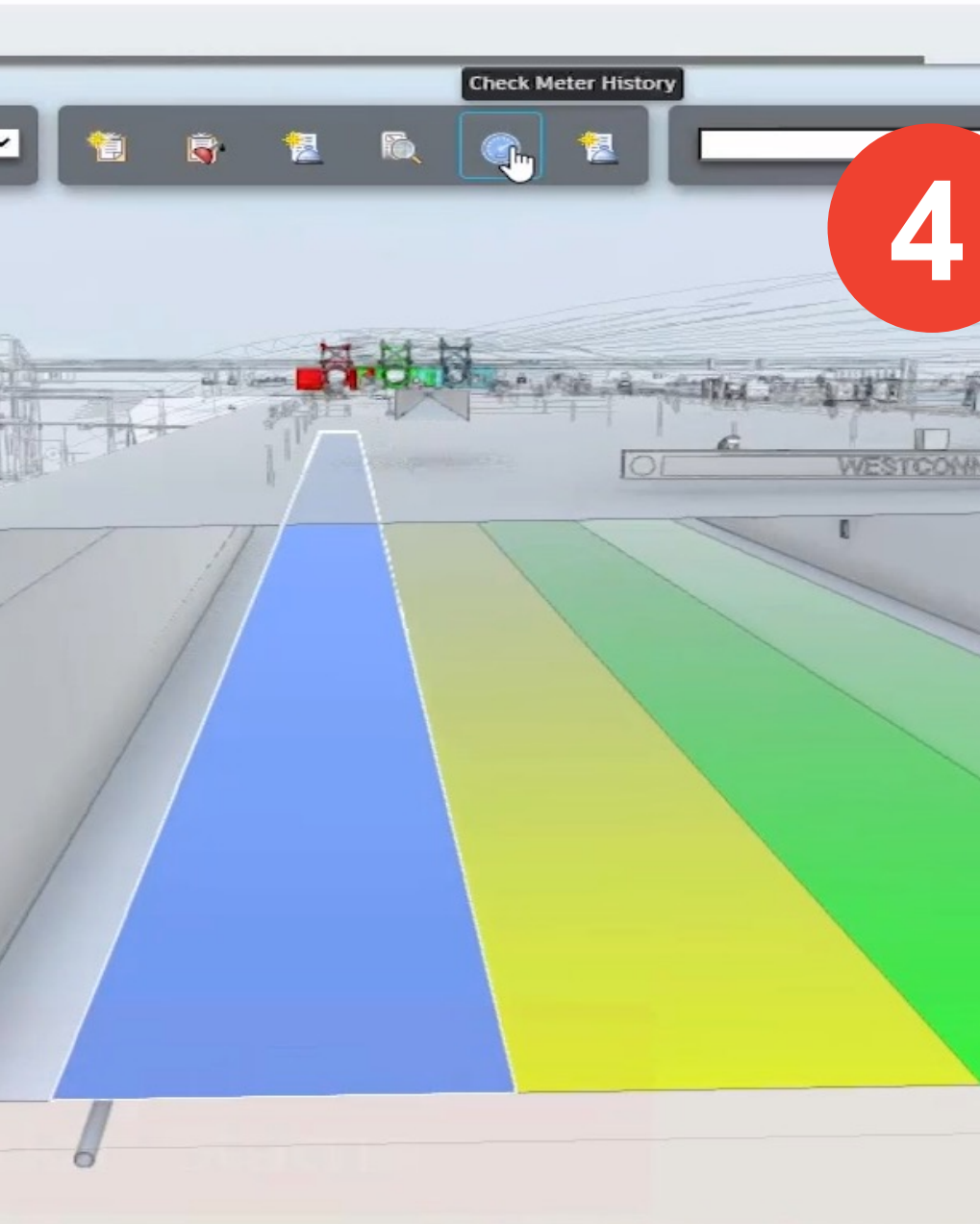
BIM from a user's perspective
Maintenance Planner

"I can now **see and interrogate work orders by location** so that similarities can be easily identified and grouped into efficient work packages.

I can also **visually interrogate work sites** to make sure worker health and safety measures are accommodated."

BIM from a user's perspective
Reliability Engineer

COSOL

"

I can now **see patterns** in high frequency, as well as high priority work orders.

This helps us **identify the root causes** and allow us to adjust our preventive maintenance plans."

"

BIM from a user's perspective
Maintenance Engineer

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" I can **test alternative work methods before going onsite** which minimizes downtime and improves my First-Time Fix Rate performance. "

IMPLEMENTING BIM

AND THE ROAD TO DIGITAL TWIN

The foundations needed for BIM

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Adopt practice Digital Engineering organization-wide

....

or

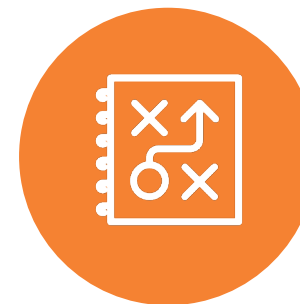Partner with a specialist provider to provide ongoing model management and curation

Use ISO 19650

Apply this standard for working with BIM artefacts

Standardize BIM requirements in contracts

Prepare standard contract specifications for the delivery of BIM and include in all new projects

Management Plan

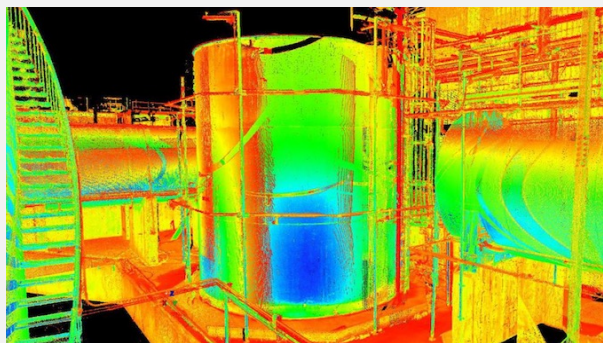Establish a BIM Management Plan

Define Data Ownership

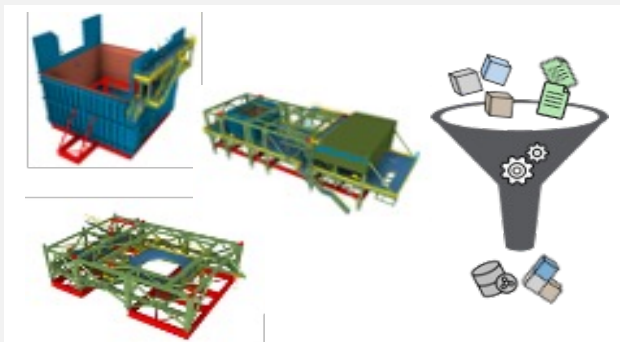Define data ownership through a Common Data Environment

Steps to adopt

Choose your path based on what digital assets you have, or don't have

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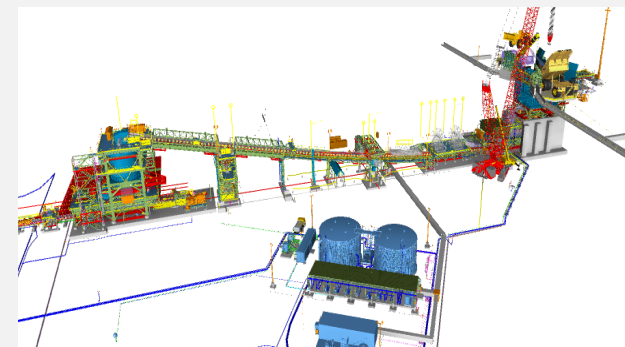**Existing assets
with no BIM**

- Undertake laser scan and back modelling to develop BIM artefacts.

- Back model from existing 2D plans if considered current.

**Existing assets
with non-integrated BIM**

- Review Asset Information Model for consistency with IBM Maximo.

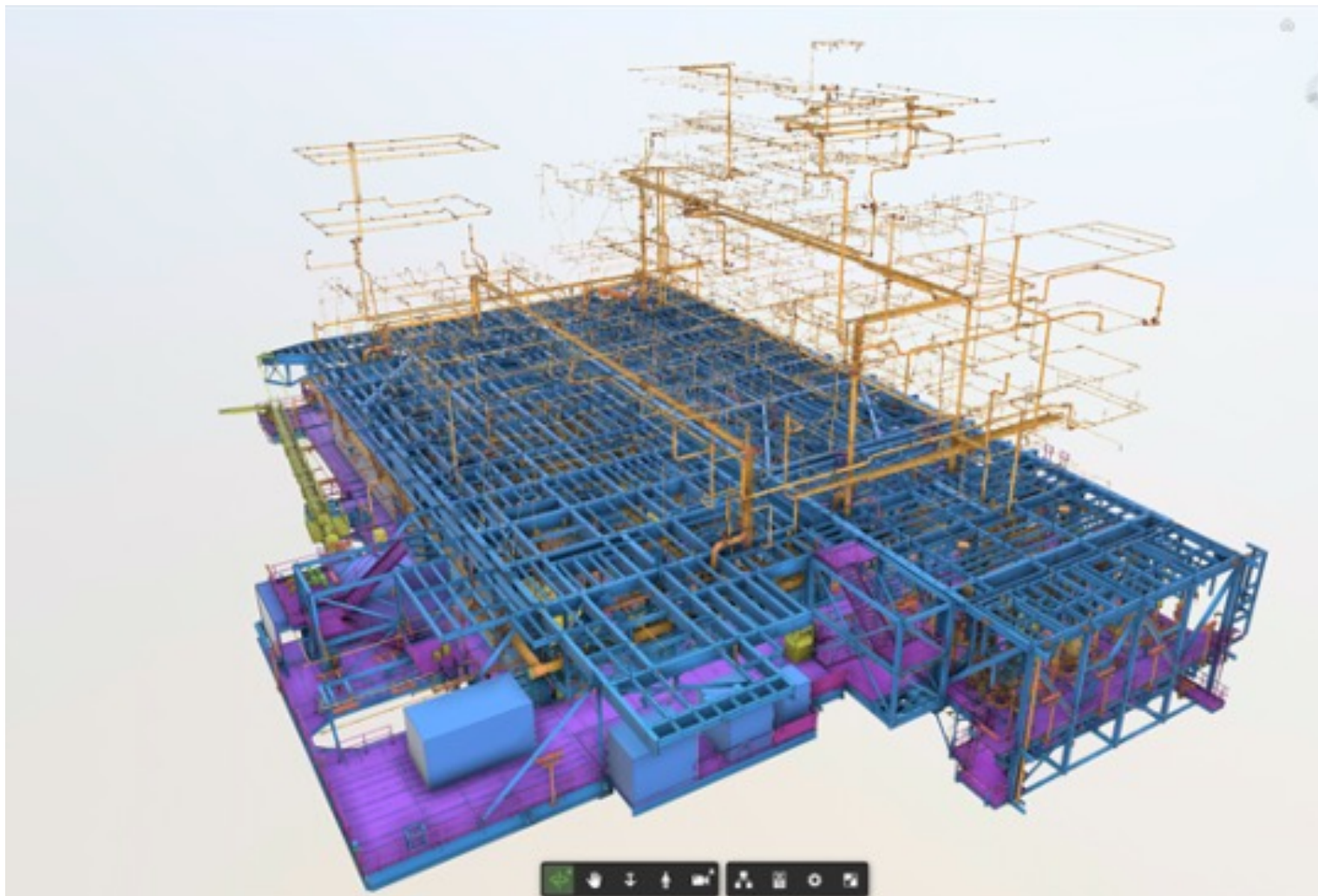- Condition model for O&M use cases.

**New Construction
with BIM & Digital Engineering
practices established**

- BIM standards are part of the contract specifications

- O&M use cases are enabled

Thank you

"We have seen evidence of savings in the realm of $500m over a four-year period for one of our Oil and Gas sector clients as a result of improved operational and asset management processes after integrating a foundational model into their Enterprise Asset Management (EAM) system."

Q & A

CONNECT WITH ME

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