منتدى دبي العالمي لإدارة المشاريع

DUBAI INTERNATIONAL PROJECT MANAGEMENT FORUM

6th EDITION الدورة السادسة

7 – 10 ديسمبر 2019 • مدينة جميرا • دبي

7 – 10 December 2019 • MADINAT JUMEIRAH • DUBAI

PARALLEL SESSION STREAM

Assets Project Management

RTA BIM Implementation Journey

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Director Asset Management
Roads & Transportation Authority (RTA)

www.dipmf.ae

CULTURAL DIVERSITY

Agenda

- ❑ Introduction
- ❑ Asset Lifecycle Information Management & BIM
- ❑ BIM Implementation – 3P's Drivers
- ❑ BIM Center & Training Program
- ❑ BIM Strategic Road Map
- ❑ Current BIM Implementation
- ❑ BIM in Route 2020 Project
- ❑ International Recognition

RTA in Numbers

Value
107
Billion AED

Asset quantity
203,211

23,000
KM Lane
Roads

1,629
Buses

5,666
Taxi's

89
Metro & Tram

56
Marine

382
School Buses

263
Buildings

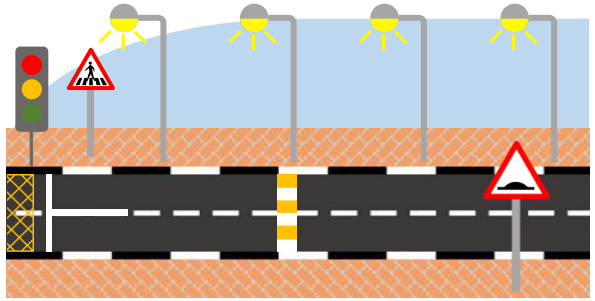
RTA Assets

Public Transport Agency

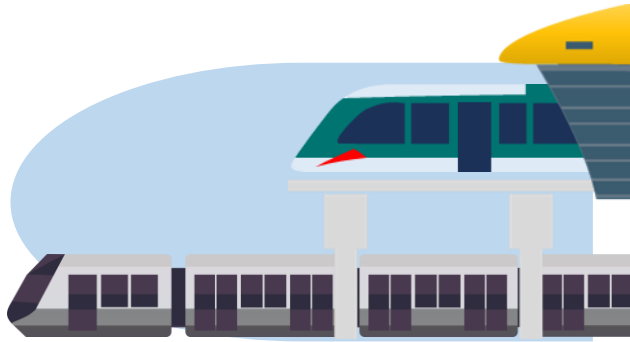
Intangible Assets

Support Sectors
Admin., Tech., Strategy

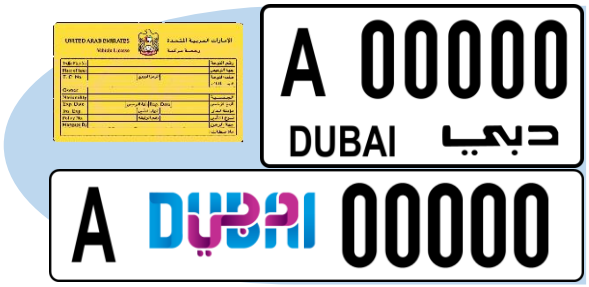
Traffic & Road Agency



Rail Agency



Licensing Agency



Dubai Taxi Agency

Vision & Mission

Vision: Safe and smooth transport for all…

Mission:

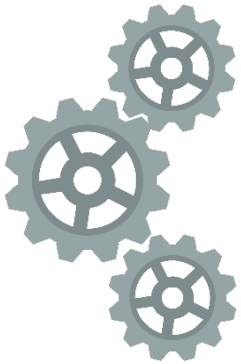
Develop and manage integrated and sustainable world-class Roads and Transportation Systems, provide pioneering services to all stakeholders, and support Dubai's vision through shaping the future, preparing policies and legislations, adopting technologies and innovations, and implementing world-class practices and standards.

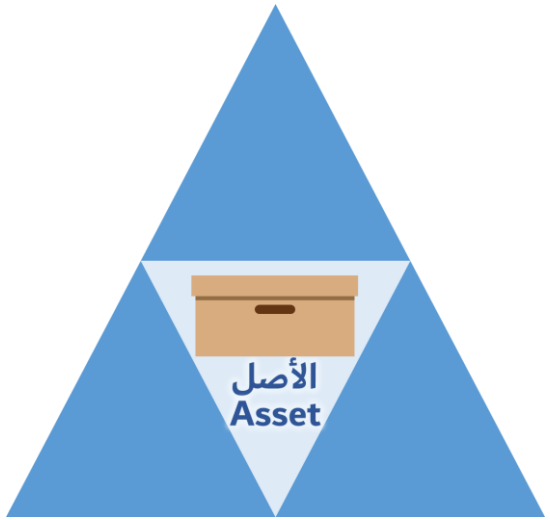
Asset Lifecycle

Planning

Designing

Acquisition





Challenges

- Availability of accurate information for asset's Registration upon project's handing over
- Tracking the changes of project's design & execution
- Readiness of asset's information for operation & maintenance activities
- Tracking the history of building/ generating Assets
- Availability of Warranty & certification information
- The need for integration between different asset's life-cycle stages

Approach

- RTA decided to become a fully data driven asset owner, as a pioneer world wide in digitizing its assets.
- RTA has established a clear and comprehensive road map to implement such big change.
- RTA recognized that the implementation of BIM should cover the entire life cycle and with strong partnership with its stakeholders and supply chain.

8 UAE Federal Mandates

9 Dubai Government Mandates

Focusing on delivering six strategic digital pillars….

1	People Happiness	Provide a connected digital experience to deliver people happiness
2	Operational Efficiency	Increase operational efficiency through integrated agile digital capabilities
3	Asset Sustainability	Support asset sustainability by leveraging asset intelligence and enhanced decision support
4	Service Delivery	Provide safe and smooth service delivery through robust, resilient and secure digital capabilities
5	Information Centricity	Become an Information driven organization
6	Innovation Pioneering	Accelerate digital innovation

Asset Management & BIM

- **ISO 55000 definition for Asset Management:**

"**A coordinated activity** of an organization to realize value from assets". In turn, Asset is an item, thing or entity that has potential or actual value to an organization"

- **BIM Building Information Modelling (BIM)**

"**Coordinated set of processes**, supported by technology, that adds value by creating, managing, and sharing the properties of an asset during its lifecycle

Not just about Buildings

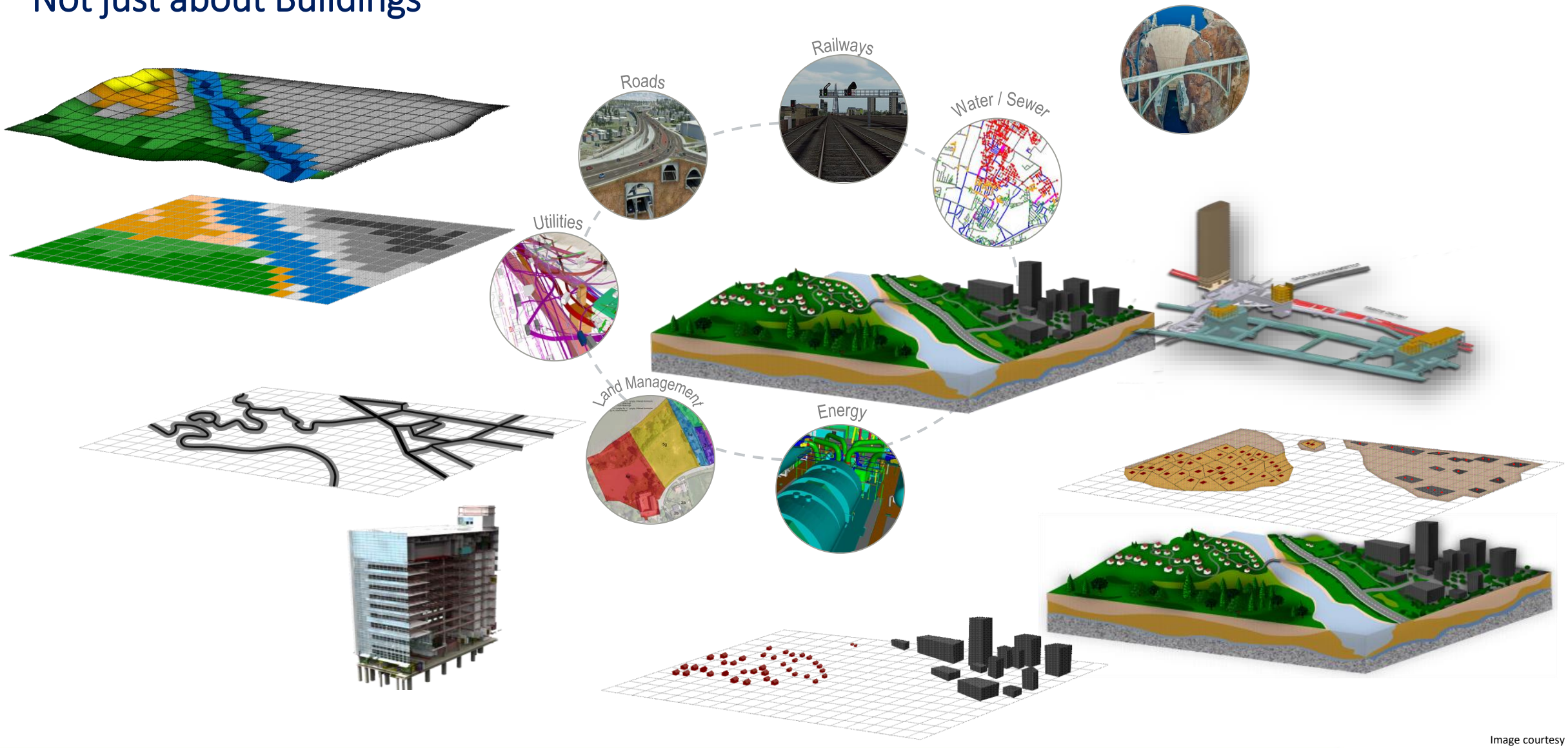
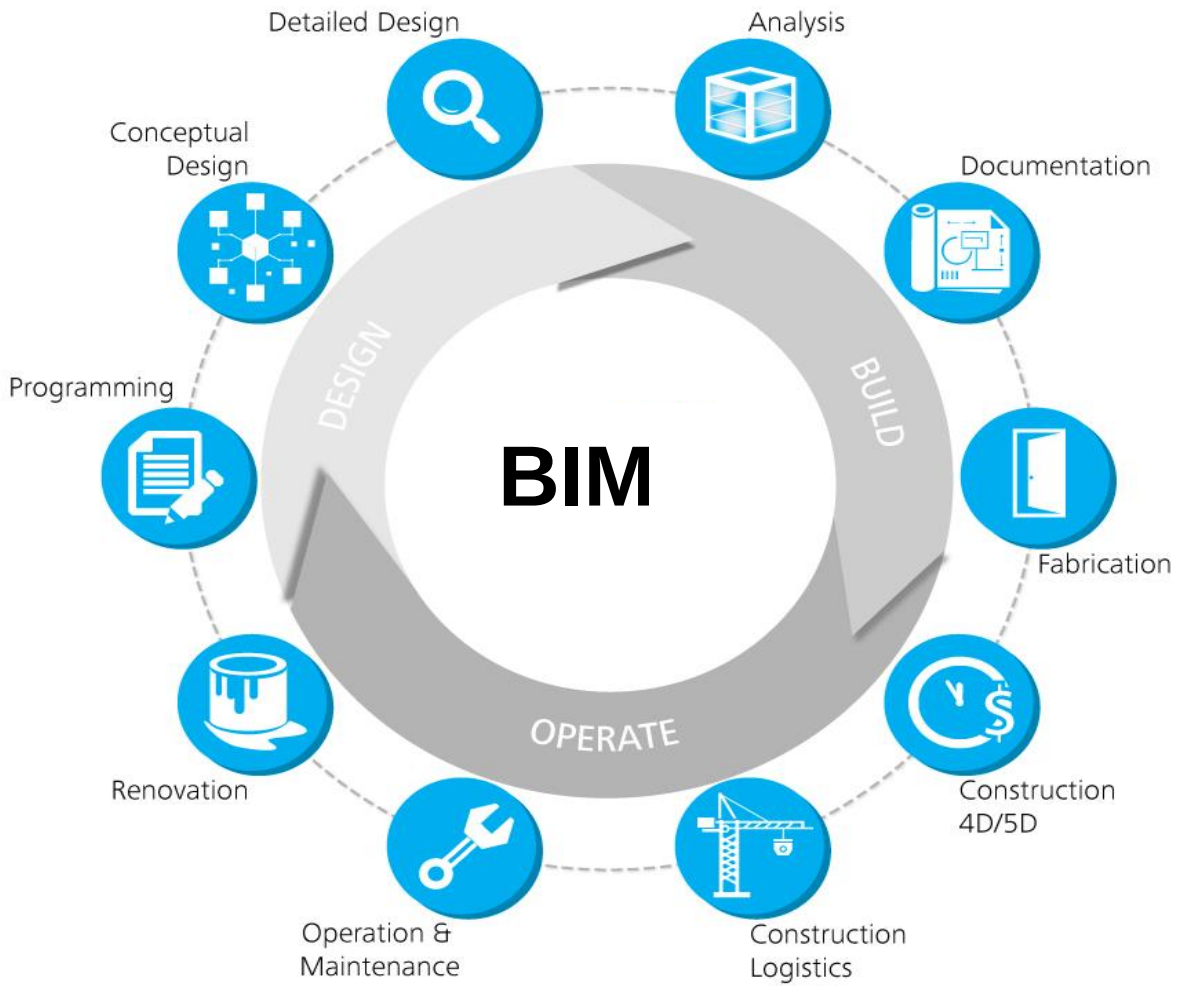
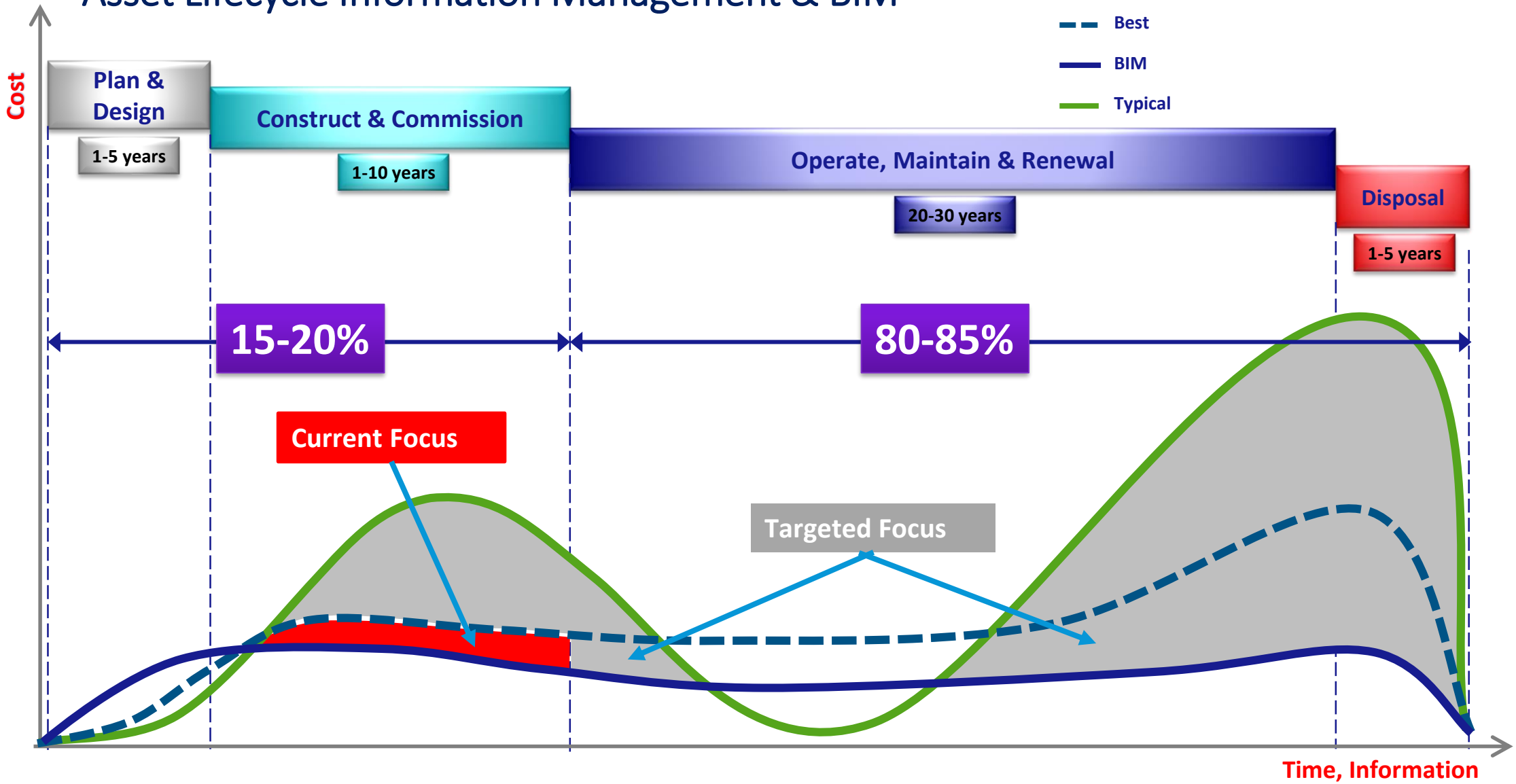


Image courtesy of Crossrail

Building information modeling

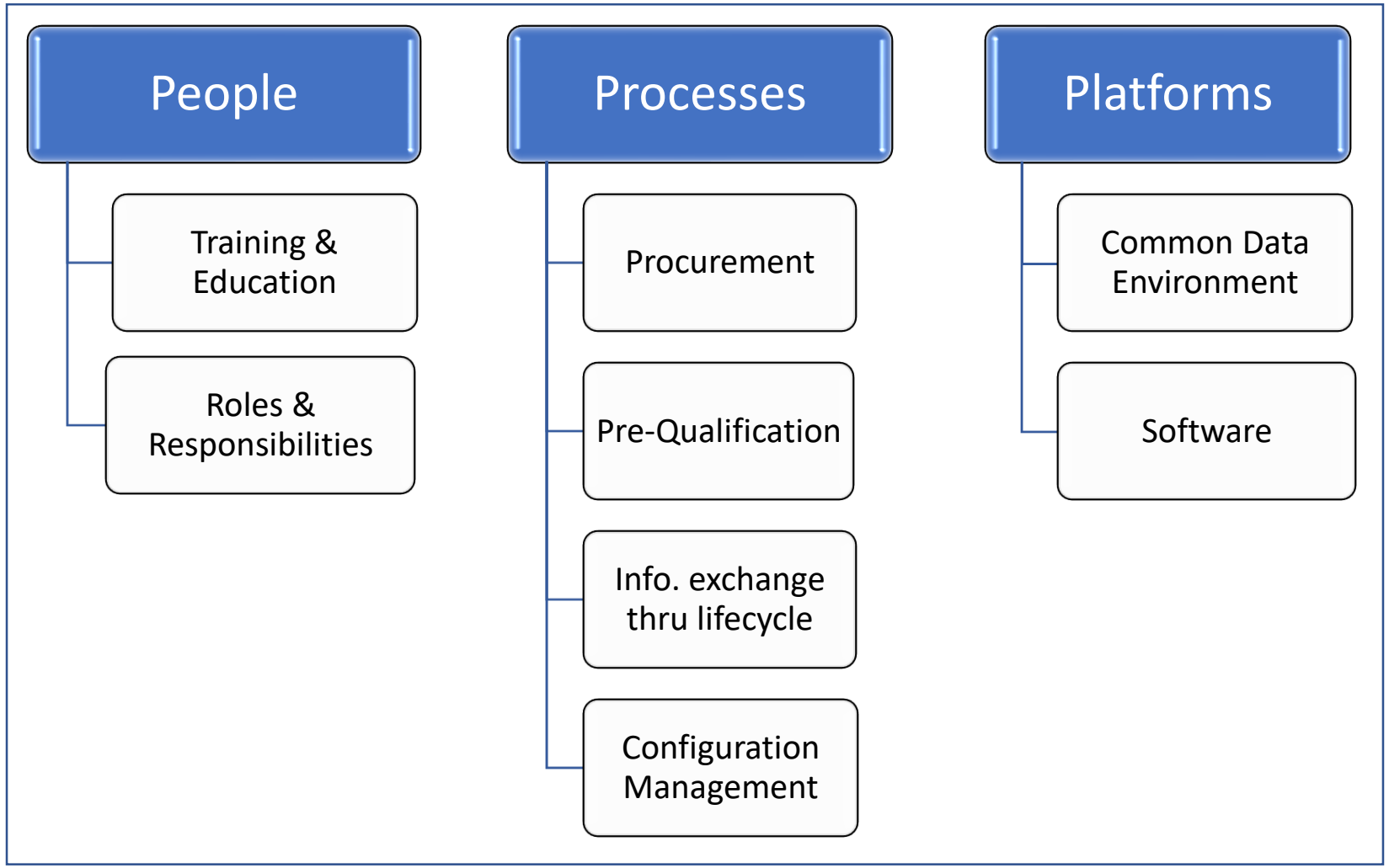


Asset Lifecycle Information Management & BIM



From: Slideshare.com

BIM Implementation - 3 P's Drivers



Launching & Managing the BIM Center

- An interactive environment that allows 30 people to work on the same model at the same time, equipped with all necessary advanced technologies and controls.
- Provides a collaborative coordinated environment for optimum decision making throughout the life-cycle of the assets.
- State of Art training center for BIM advancement knowledge.

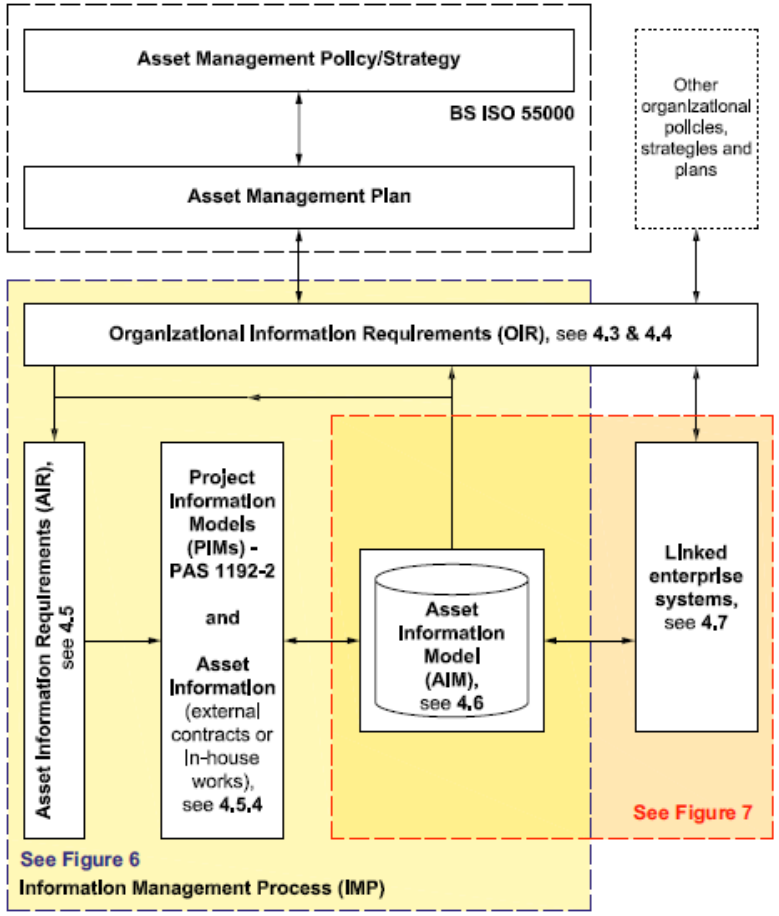
BIM Training Program

The program covers 4 levels of an enterprise training regime:

- Quarterly Awareness sessions
- Yearly Preface training courses
- Advanced training courses for BIM software’s & Platforms
- Supply Chain customized training programs

Asset Management and BIM

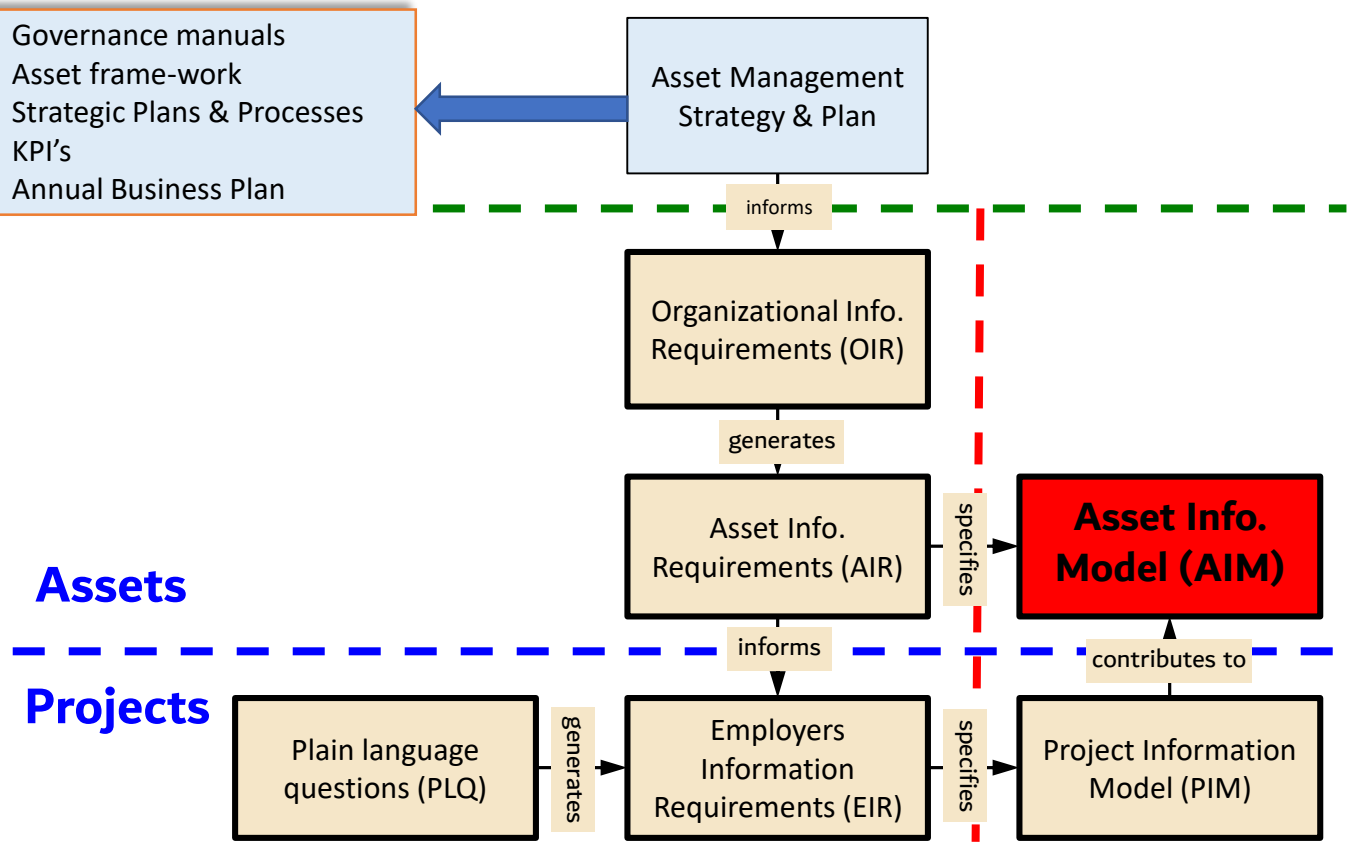
Information Management Process



PAS 1192-3 Figure 3.2: Information Management Process

Translating in to a Process

- Governance manuals
- Asset frame-work
- Strategic Plans & Processes
- KPI's
- Annual Business Plan



PAS 1192-3 Figure 4

The Concept of CDE for Asset Lifecycle

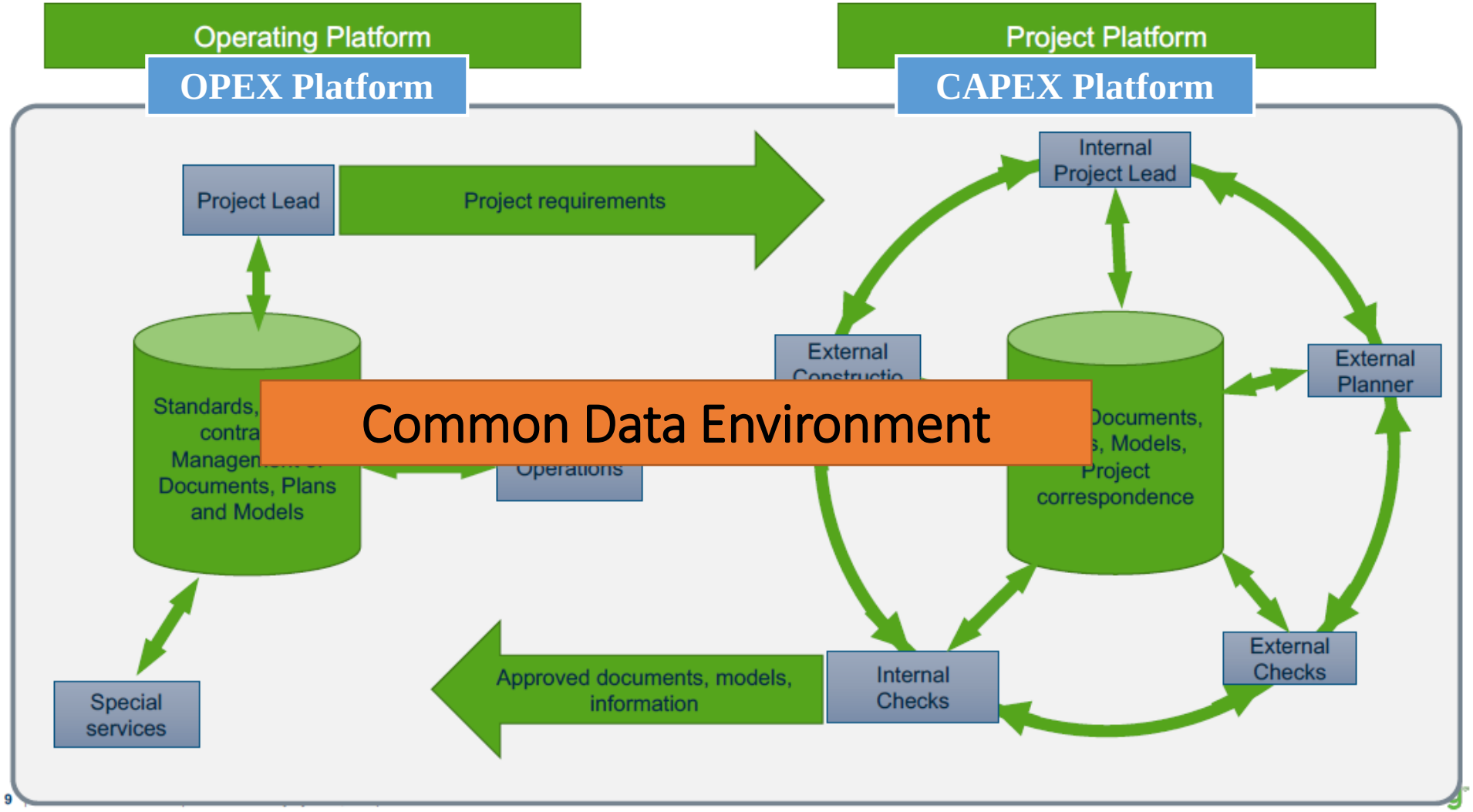
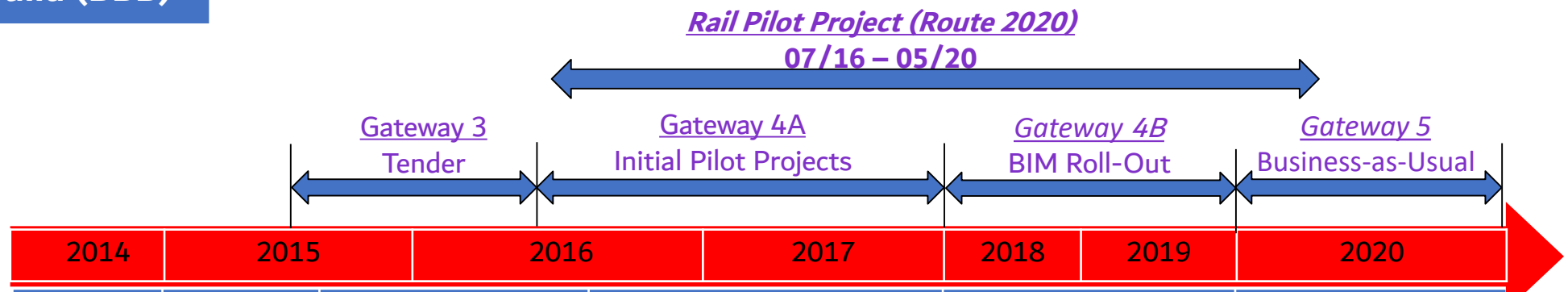


Image courtesy of Bentley

BIM Strategic Road Map

Virtual Build Before Physical Build (BBB)



G1	G2	G3	G4A	G4B	G5
Set Strategy	Establish Baseline	Strategy Integration & Proof of concept	Initial Development & Early Pilot projects	Multiple Pilot Projects & Lessons Learned	BIM Roll-out/Mandate

Current BIM Implementation

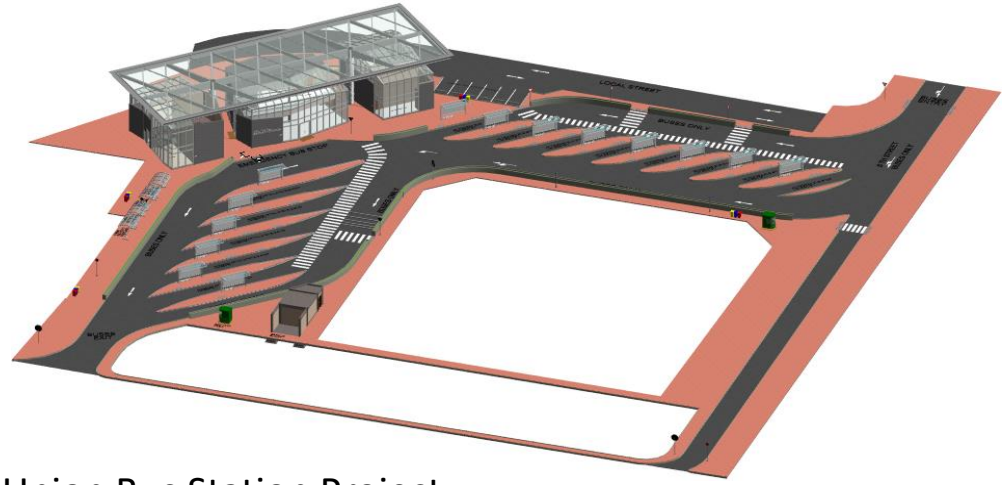
Metro Red Line Extension- **Route 2020 Project**

Enhancement of Metro Stations Project

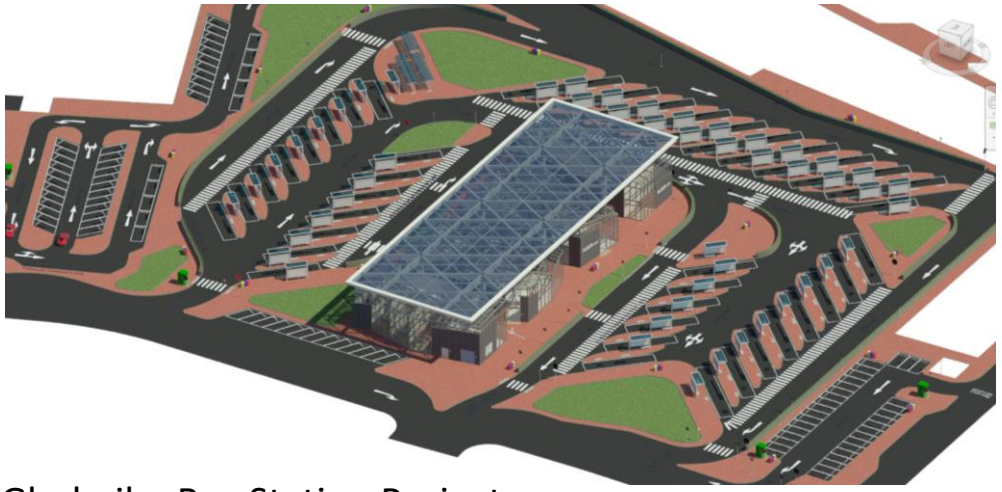
Satwa Public Bus Station Project

Oud Metha Public Bus Station Project

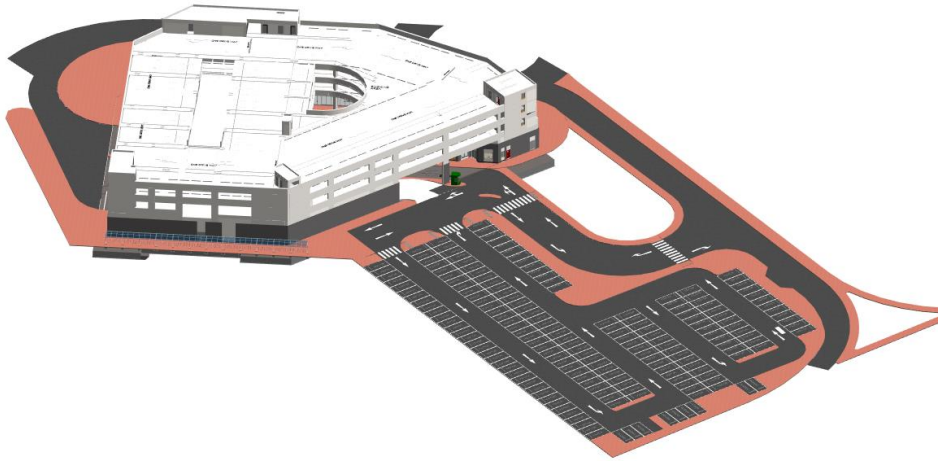
Current BIM Implementation



Union Bus Station Project



Al Ghubaiba Bus Station Project



Kifaf Bus Station Project

Dubai Tram phase 2 Project

Redline Metro Extension - Route 2020 Project

Length

15 Km Total
11.8 Km (Elevated)
3.2 Km (Tunnel)

Station

7 Total

3 Elevated

2 Underground

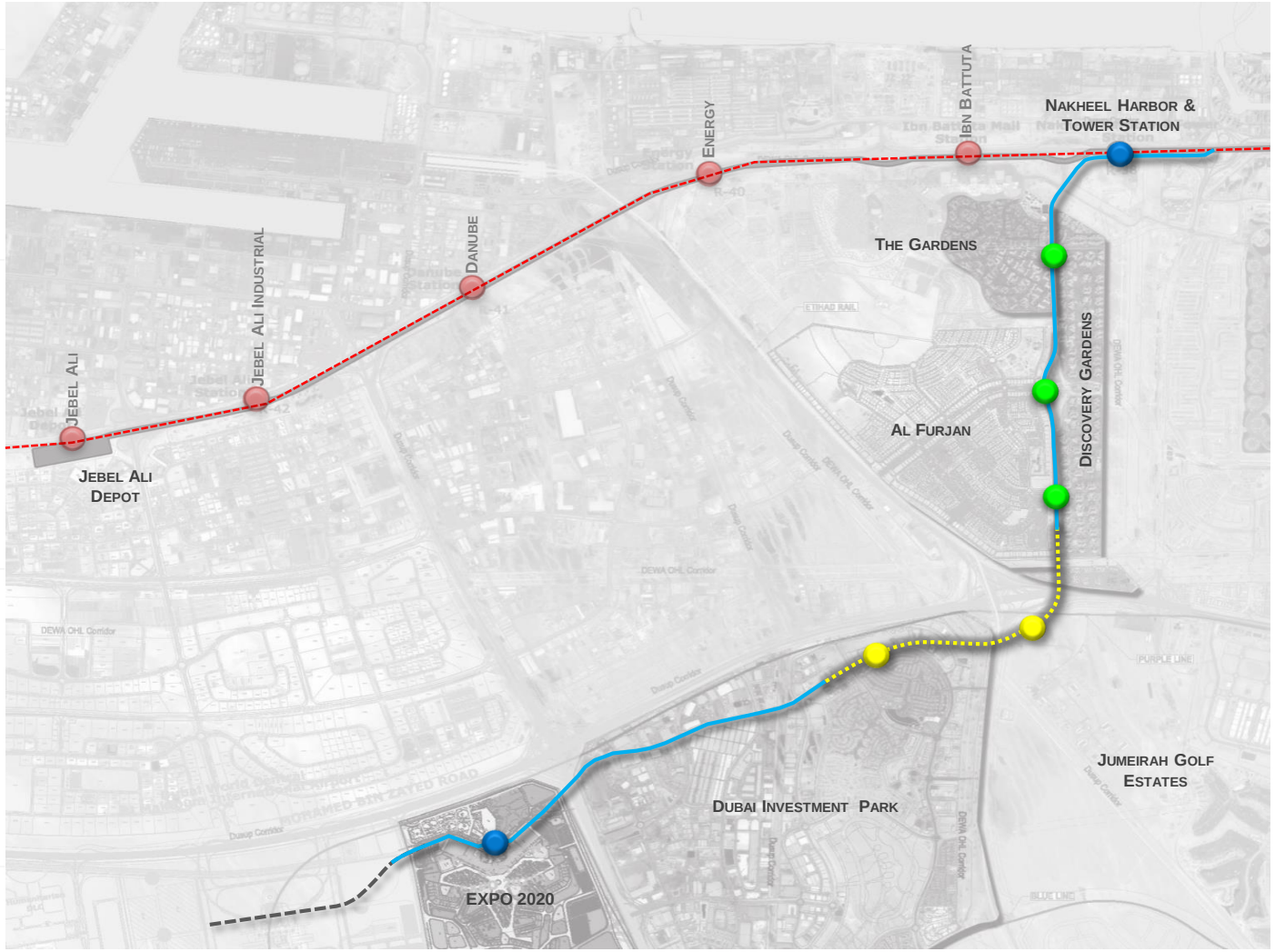
1 Interchange & 1EXPO

Developments

The Gardens
Discovery Gardens
Al Furjan
Dubai Investment Park
Jumeirah Golf Estate
EXPO 2020
Airport (future)

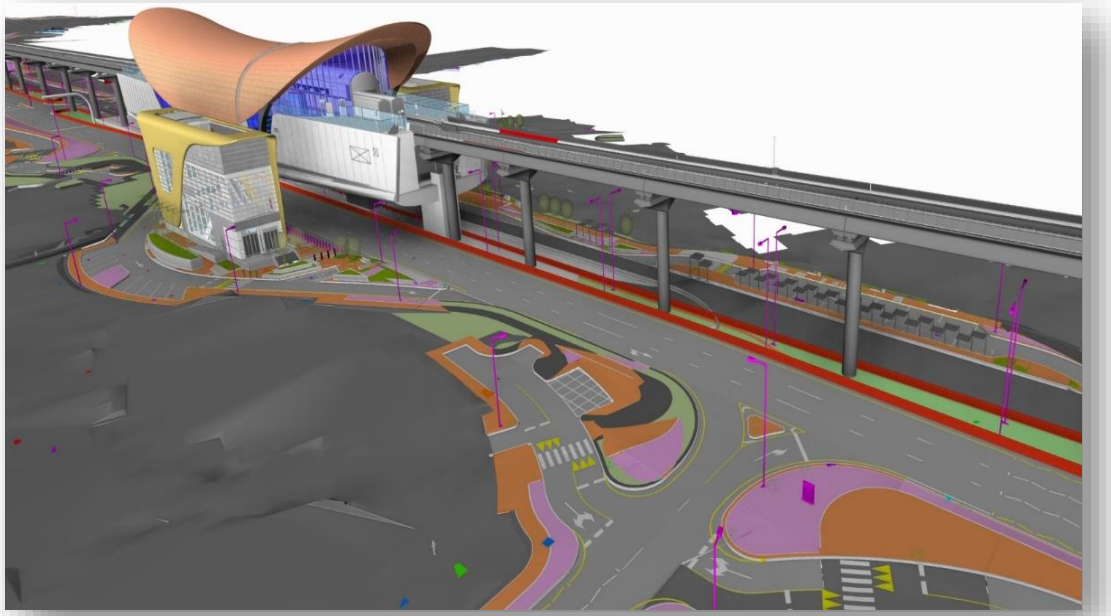
Travel Time

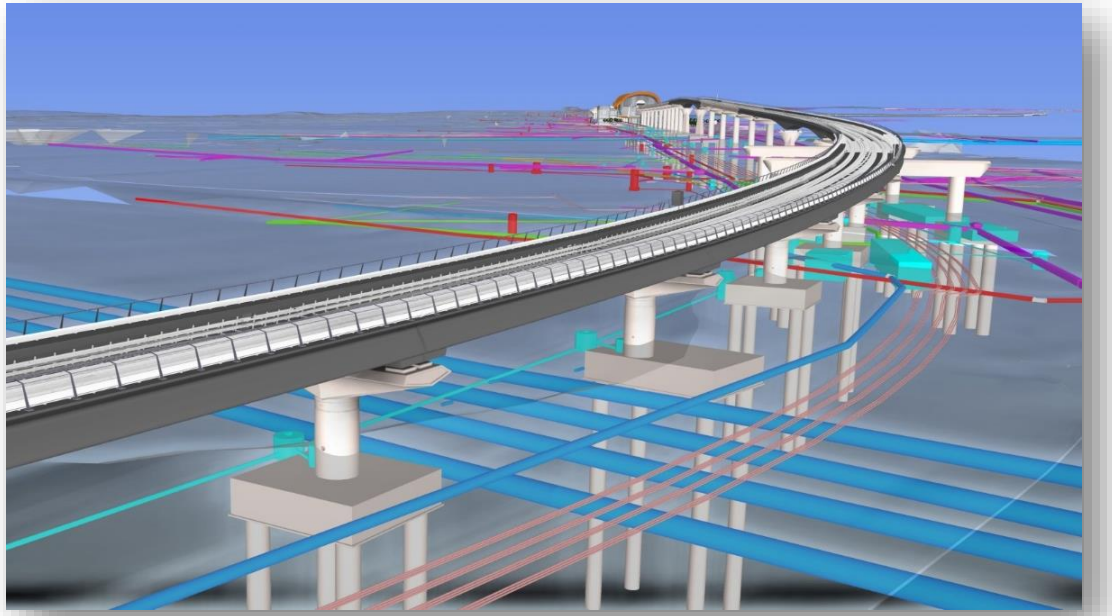
16 minutes from Marina

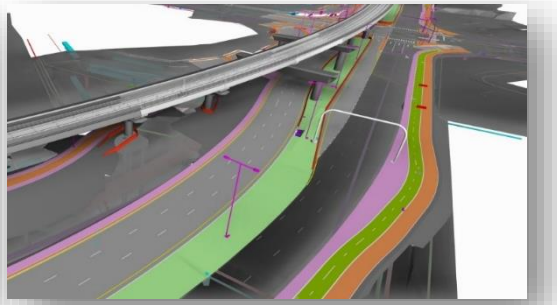


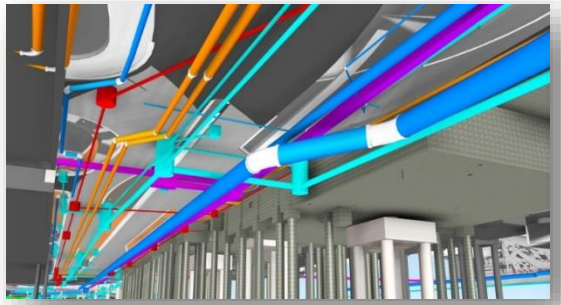
Route 2020 Model Development (Design Stage)

Roads & Utilities



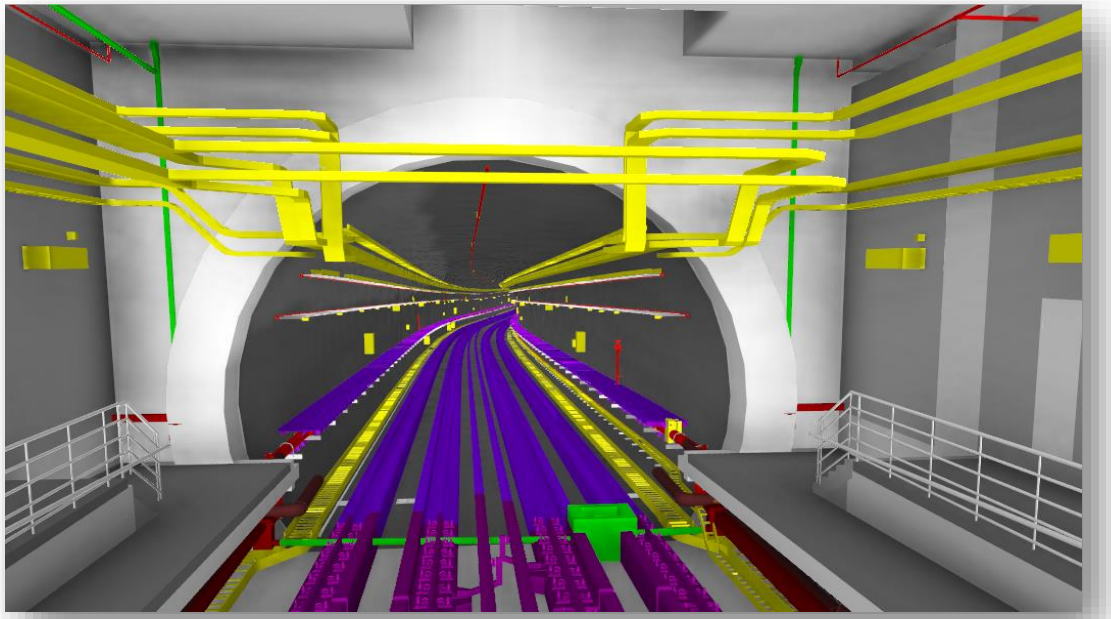


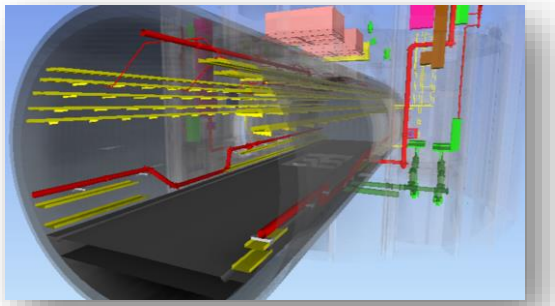


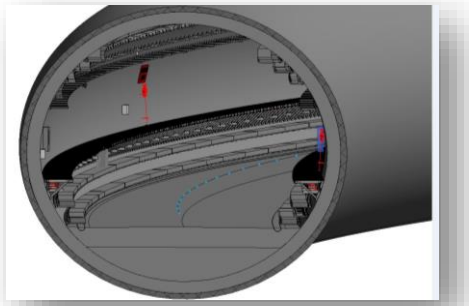


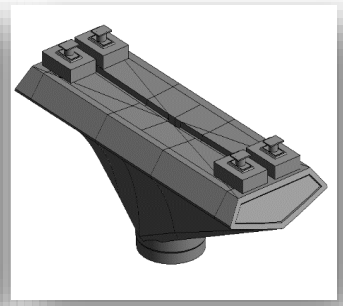
Route 2020 Model Development (Design Stage)

Tunnel & Viaduct



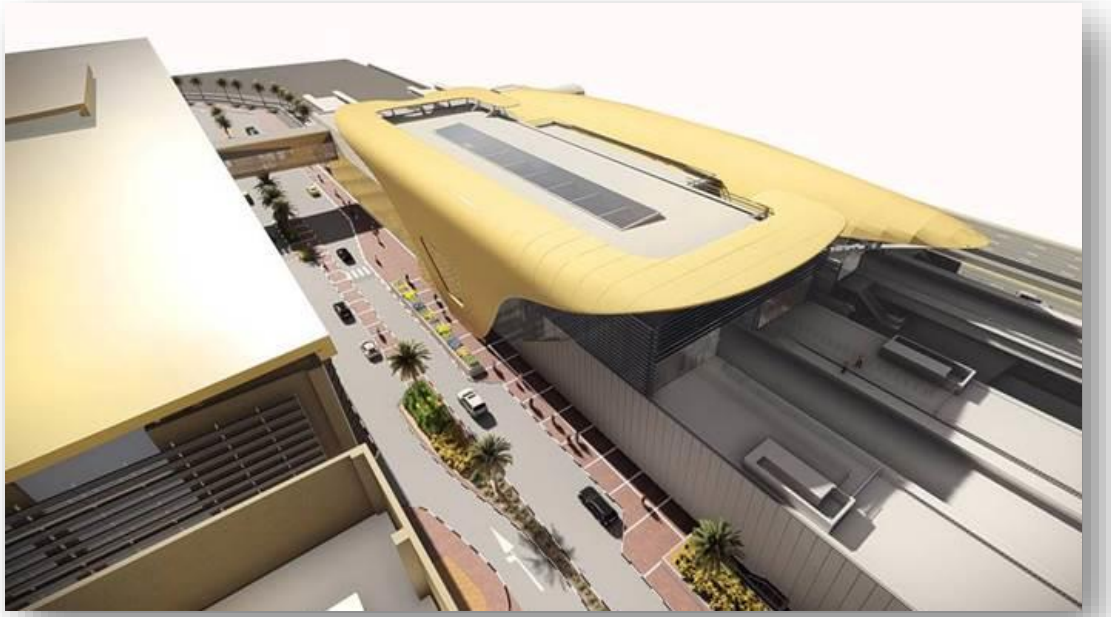


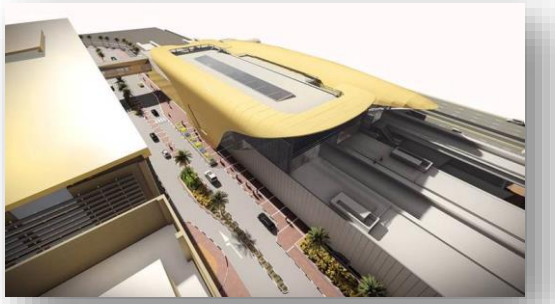


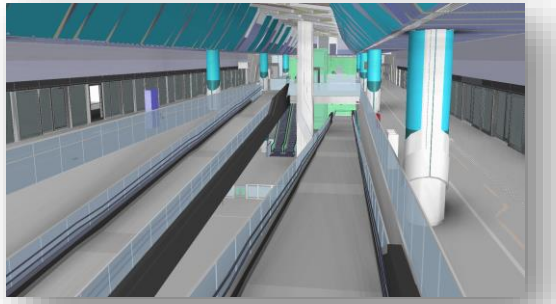


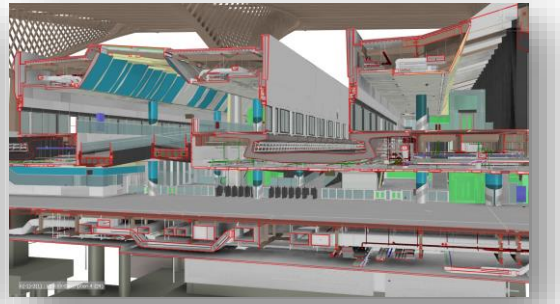
Route 2020 Model Development (Design Stage)

Stations – NHT & EXPO Stations



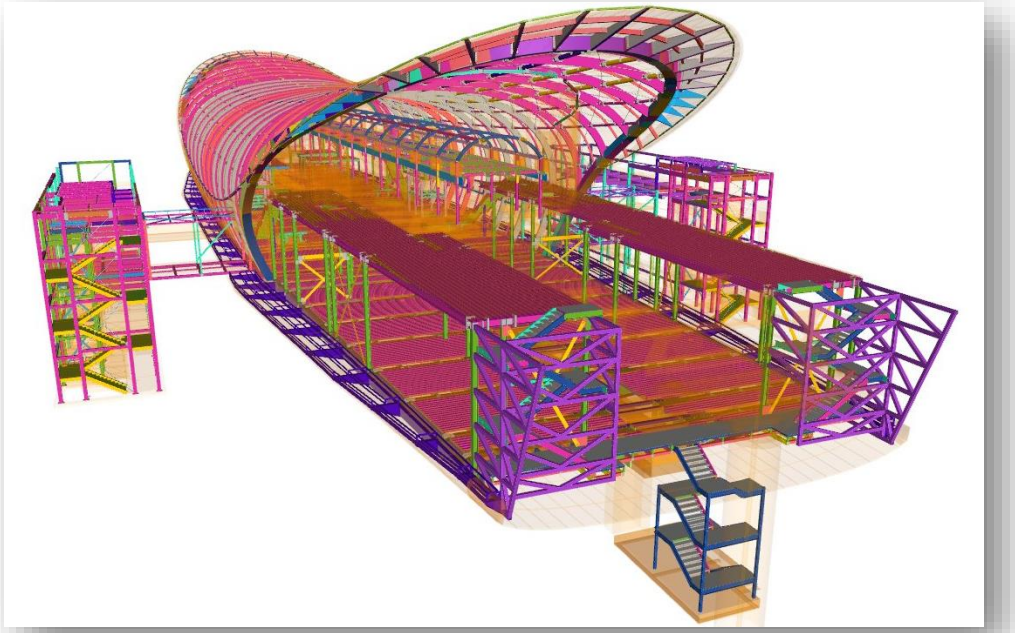


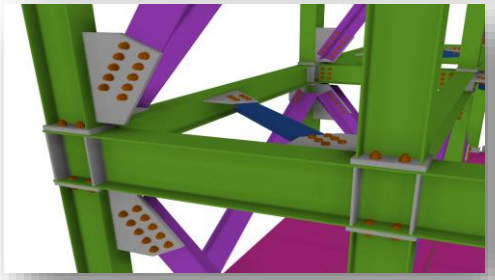




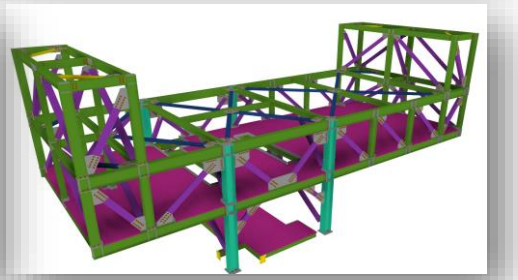
Route 2020 Model Development (Construction Stage)

EXPO Station Steel structure



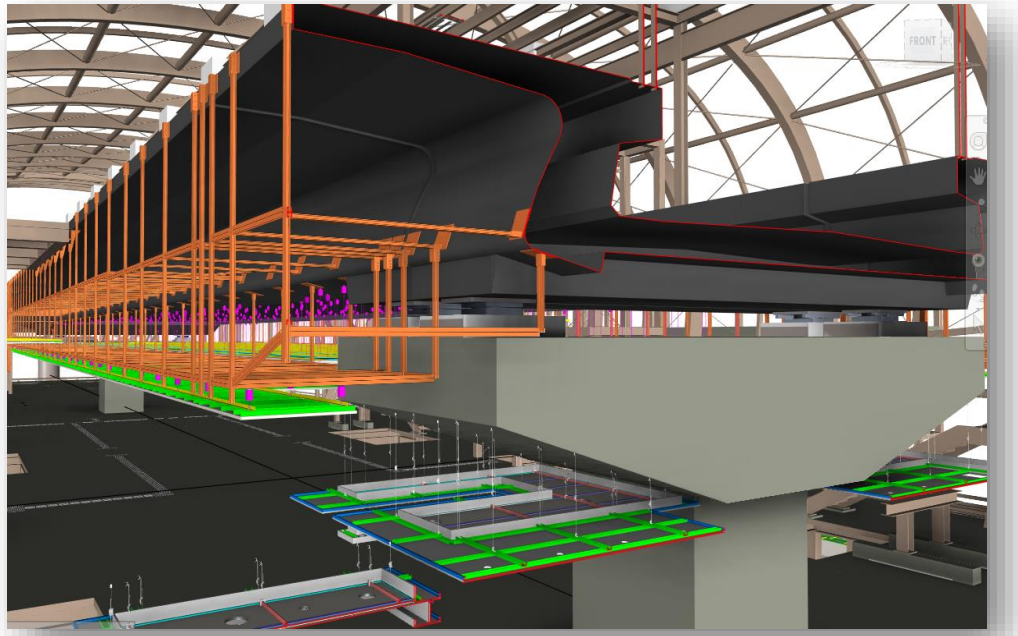


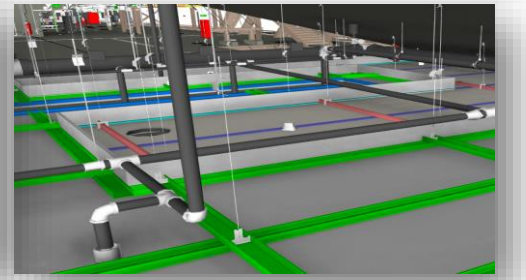
Connection Details



DC-Tie Riser

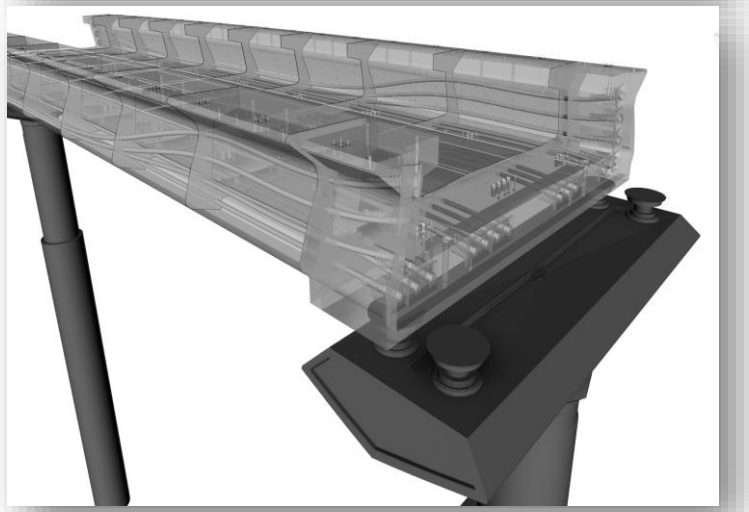
R72 Station Suspended Ceiling



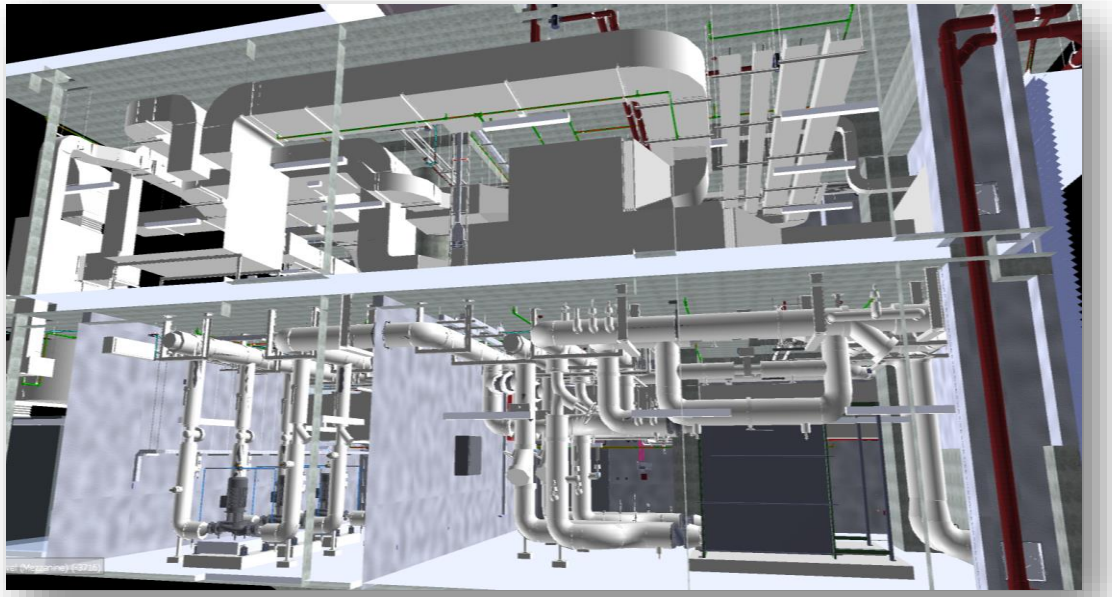


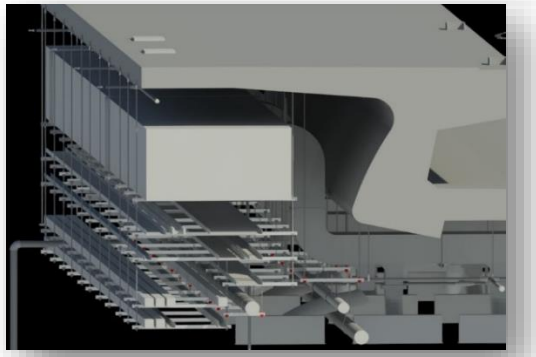
Route 2020 Model Development (Construction Stage)

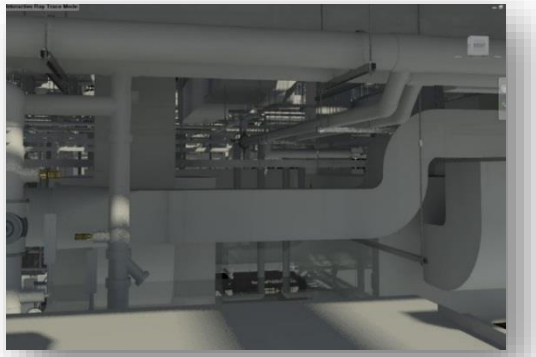
Viaduct



EXPO Station - Mechanical & Electrical & Systems

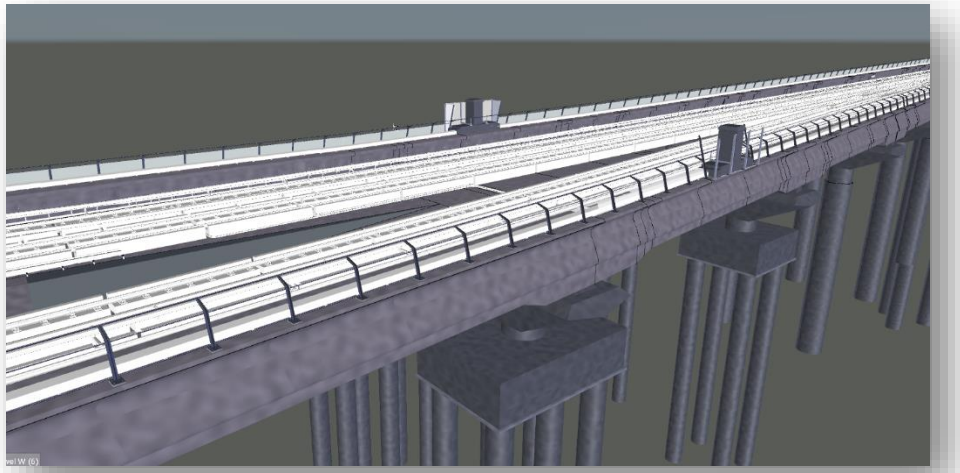


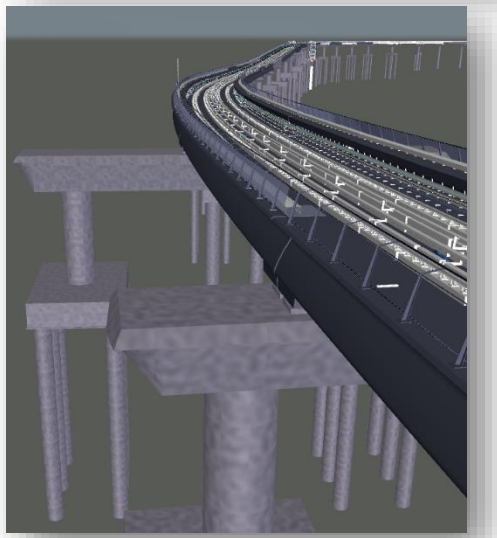




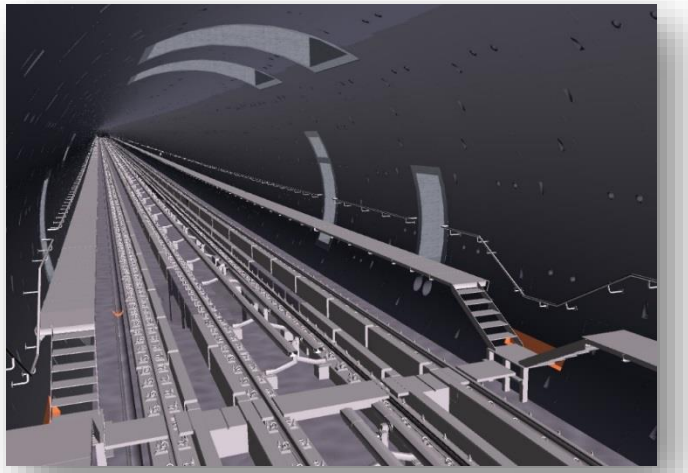
Route 2020 Model Development (As-Built Stage)

Viaduct

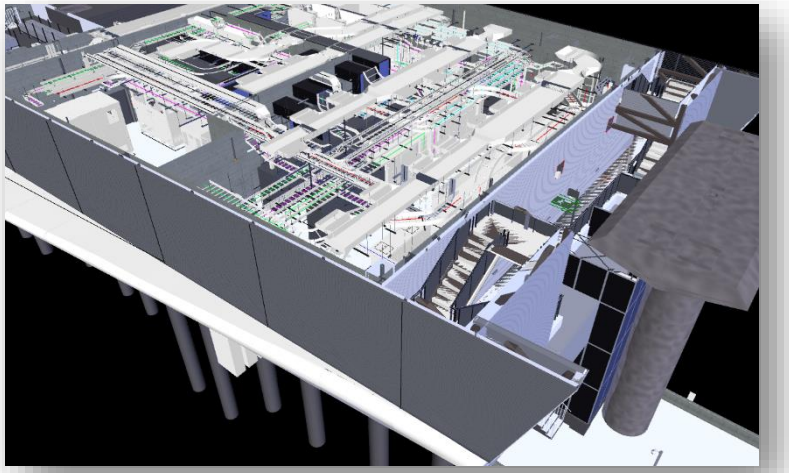


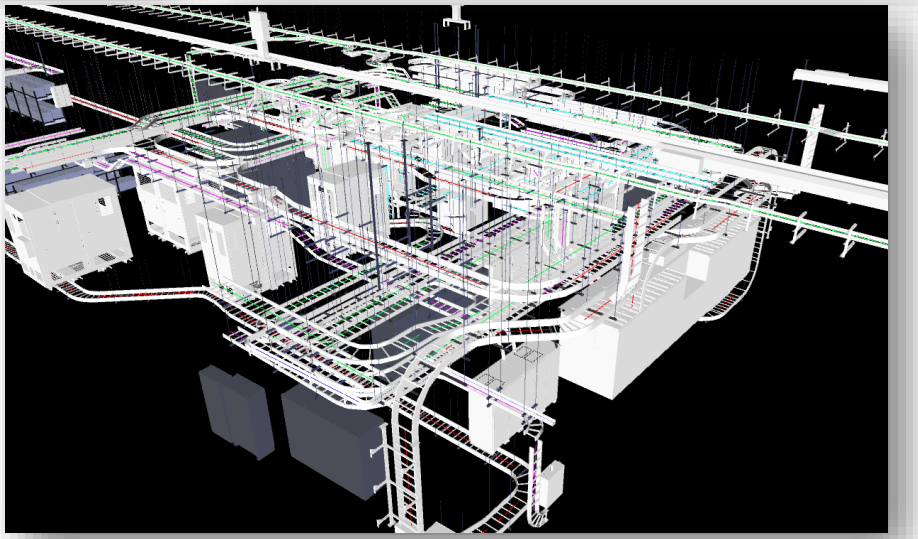


Tunnel



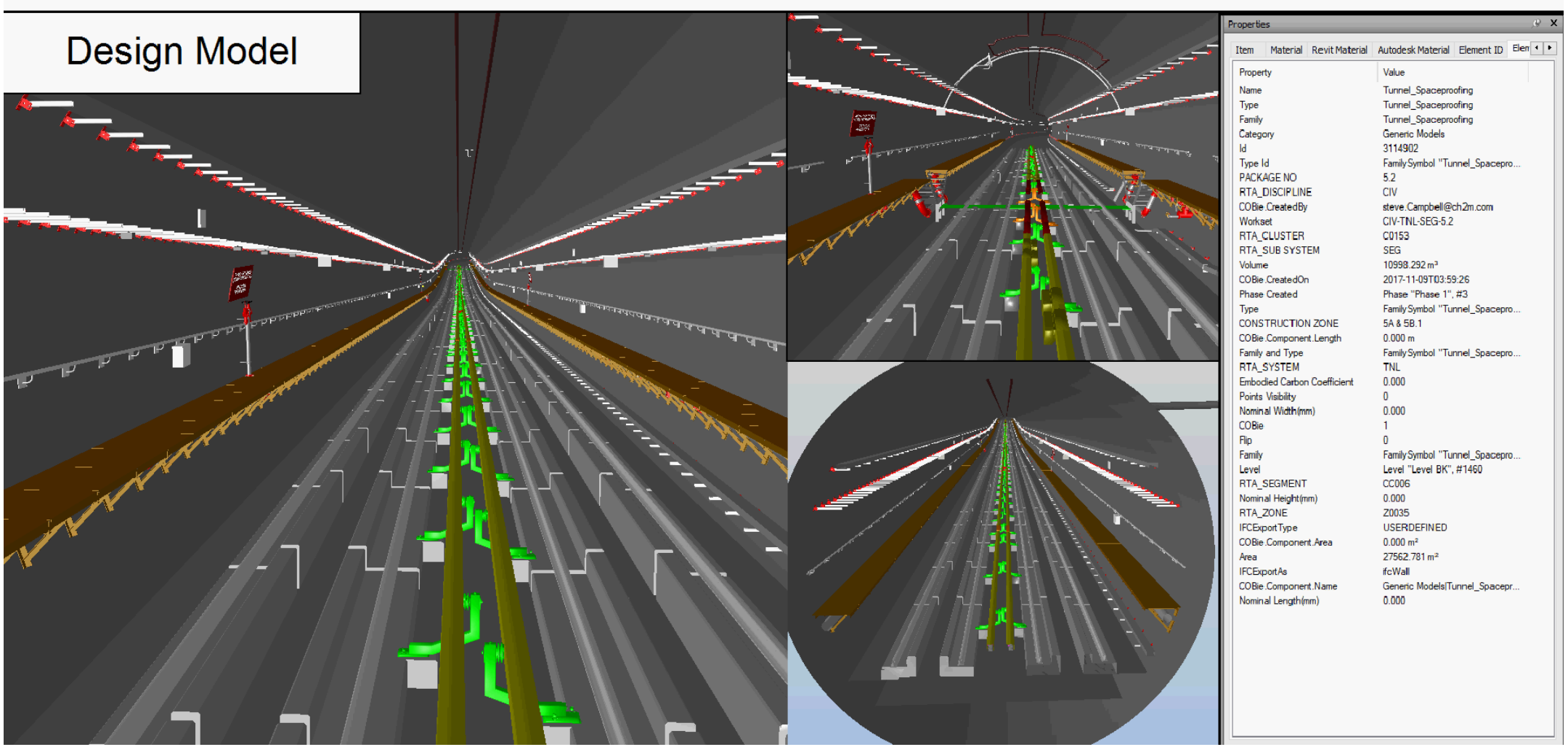
PDS - Rail Systems





Route 2020 - LOD/ LOI Development

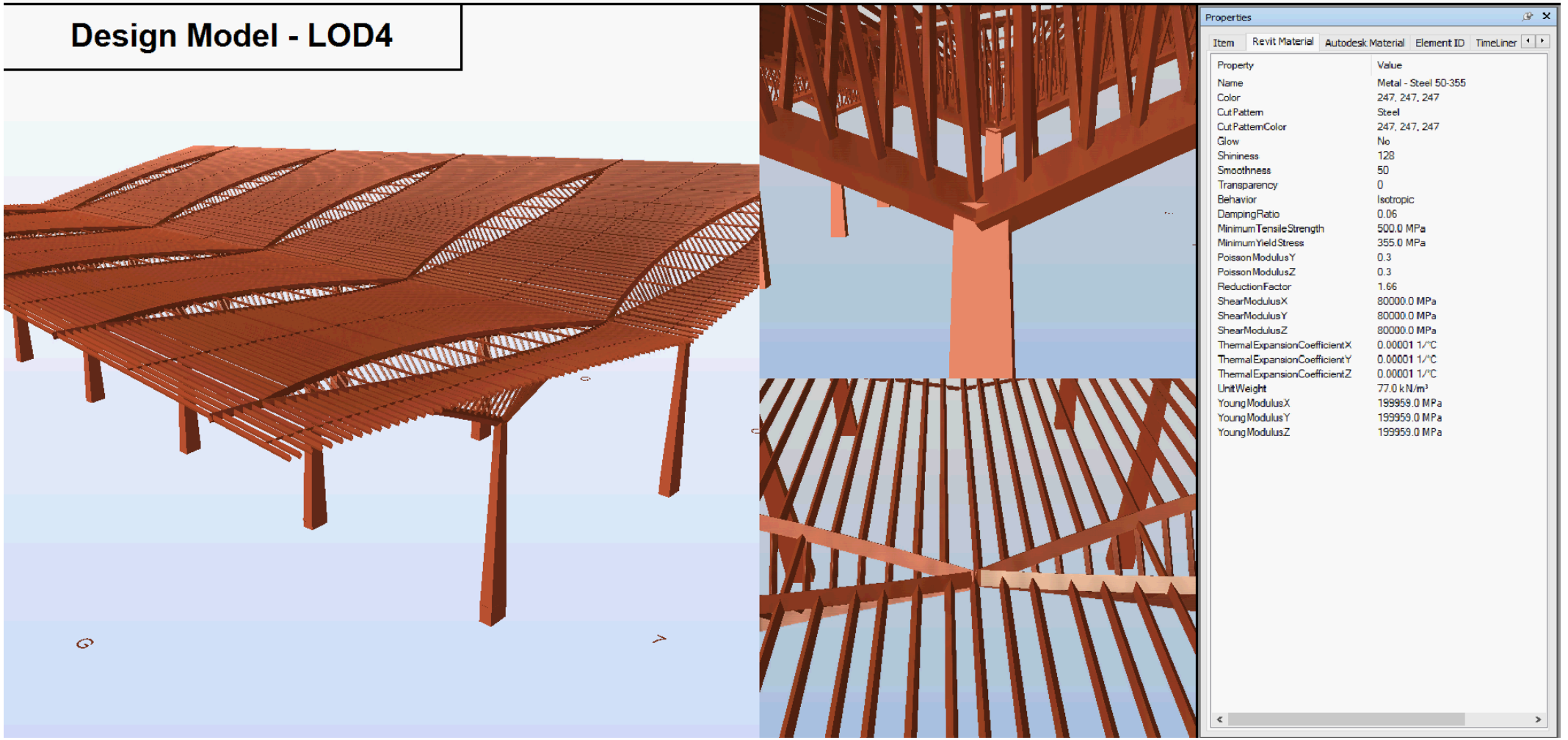
Tunnels



Route 2020 - LOD/ LOI Development

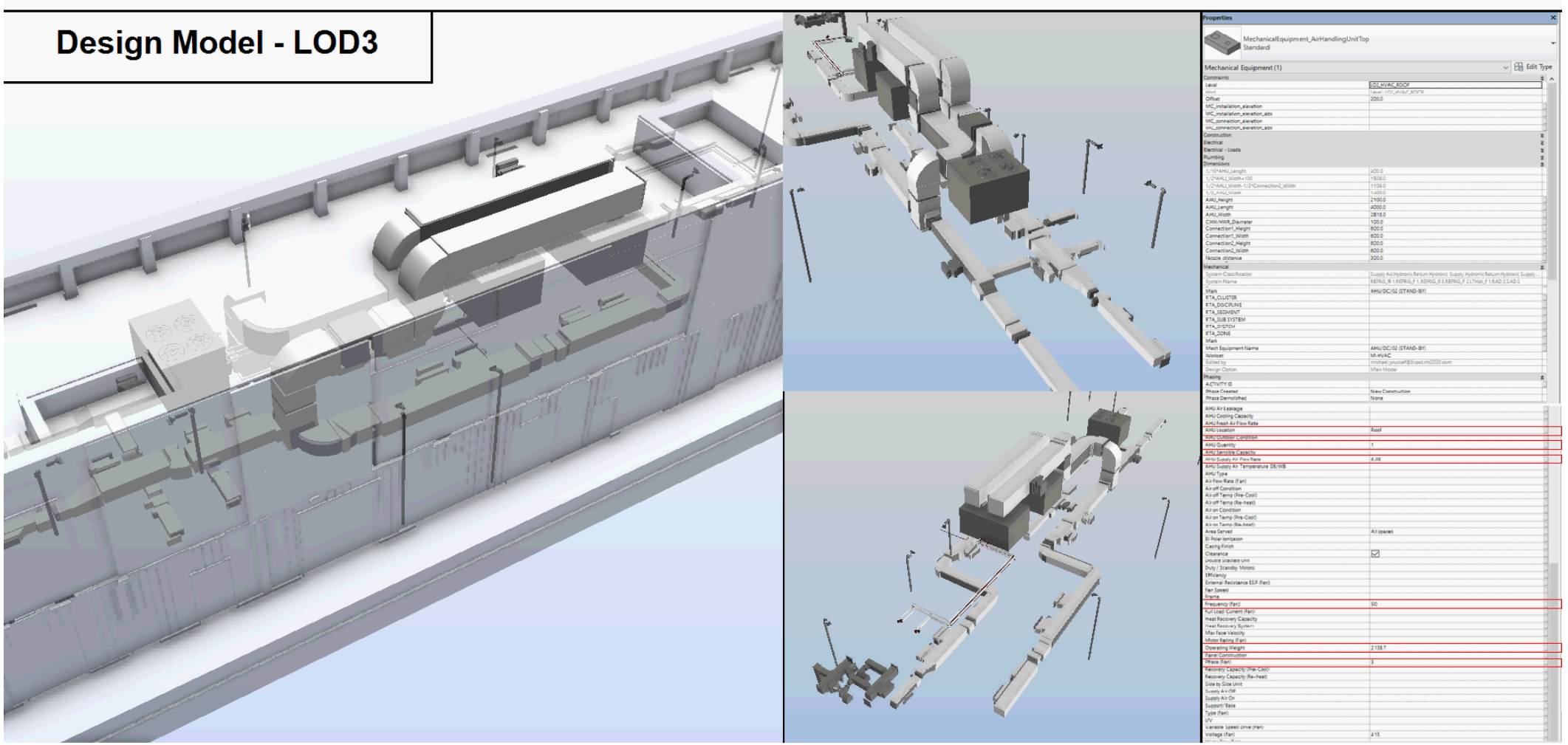
EXPO Station – Steel Structure Canopy

Design Model - LOD4



Route 2020 - LOD/ LOI Development

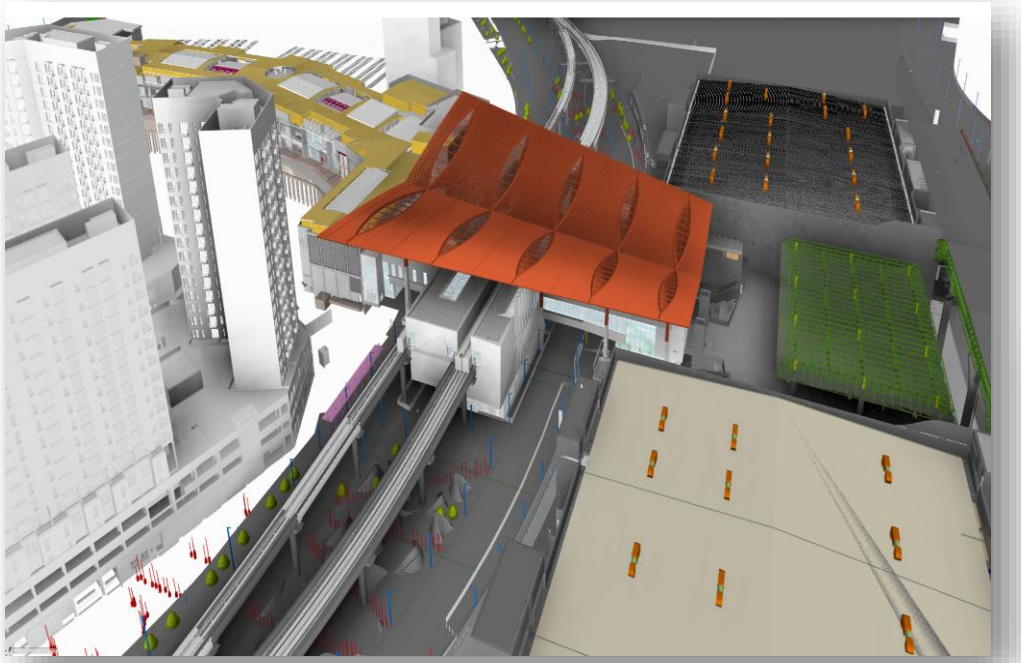
DC Tie-in - HVAC system

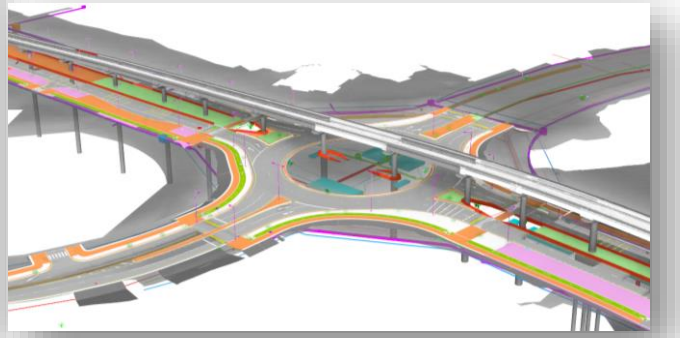


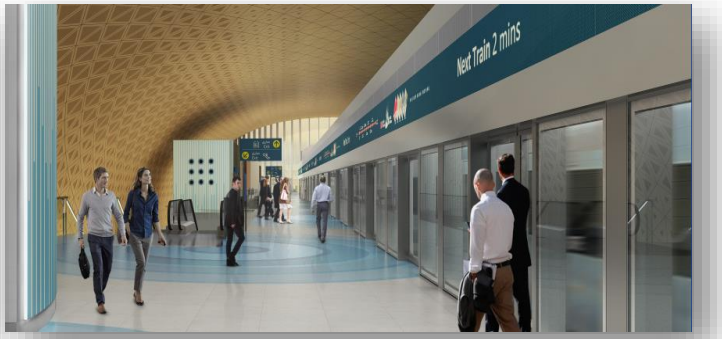
Route 2020 – BIM Supports better Communication & Decision Making

Internal & External Visualization:

- Enhance Understanding & Support Decision Making
- Internal & External Stakeholder Engagement
- Increase Certainty & Improve Communication
- Assist with Planning Applications



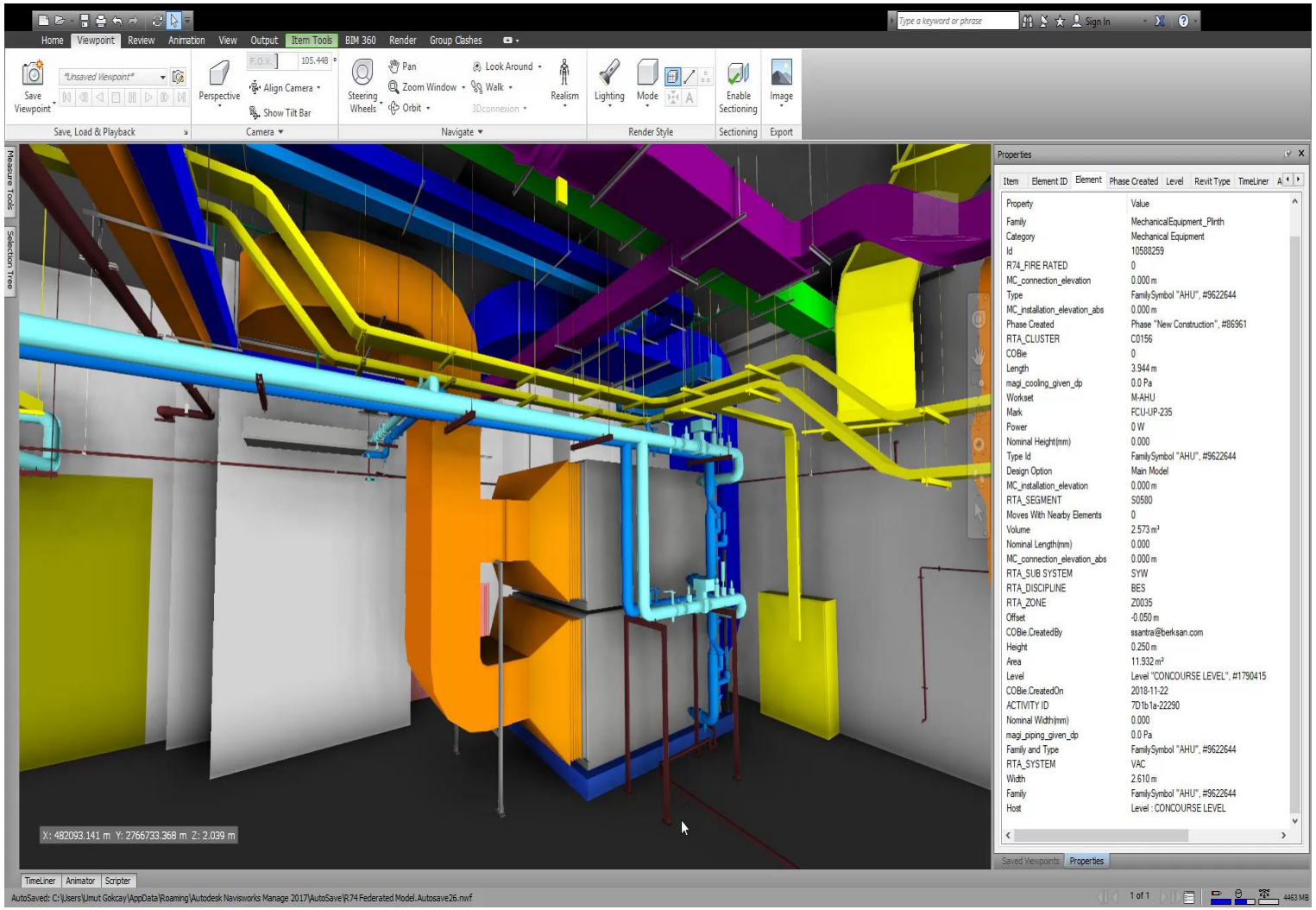




Route 2020 – BIM provides 3D Graphical Models with Rich Data

Single Source provides the following data types:

- Detailed Technical Information
- Maintenance Management Attributes (MMS)
- COBiE Data & Uni-class Classification Information
- GIS Database
- Sustainability detailed Information
- Planning Data (Activity ID)



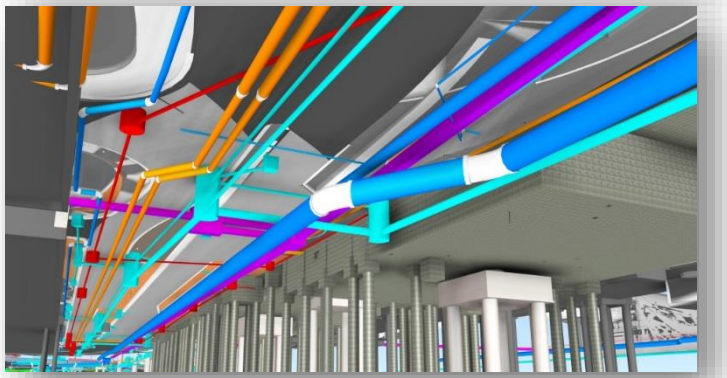
Route 2020 – BIM supports Sustainability Analysis

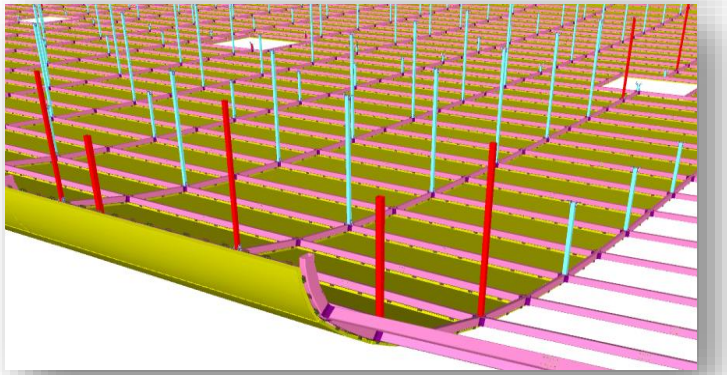
BIM data generated during design & build enables:

***Faster**, **Safer**, **Less wasteful** construction, **More Cost-Effective**, **Sustainable operation**, better maintenance & eventual decommissioning*

BIM Enables…

- ❑ Measure & compare embodied & **operational carbon** associated with different options
- ❑ **Offsite fabrication** of common components eliminates **over-ordering**, **reduces waste** & **allows offcut materials** to be **reused or recycled**
- ❑ Using coordinated model for **fabrication** means **effective fit** on site

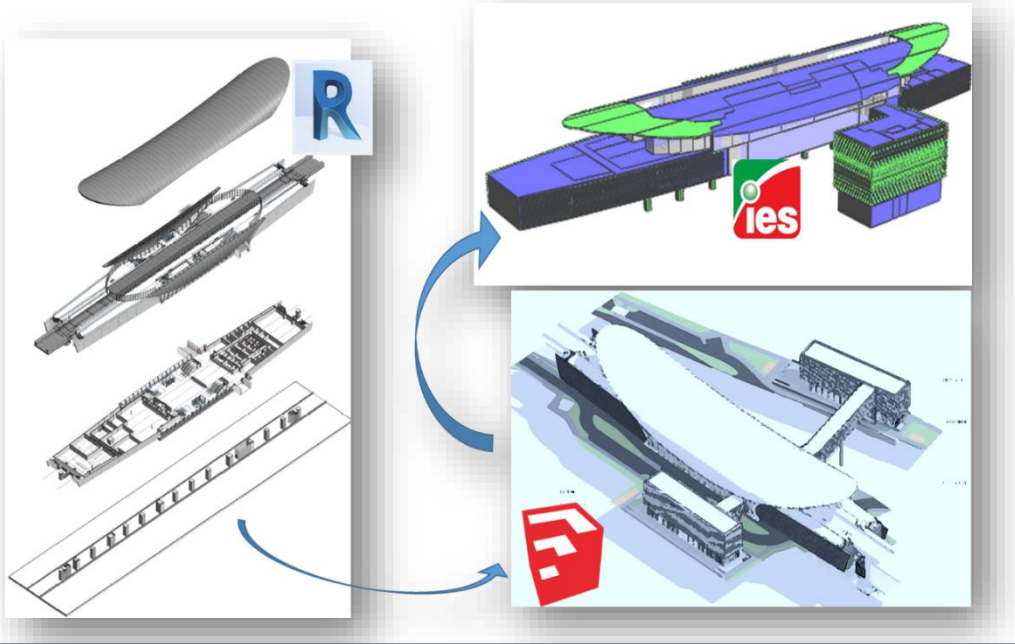


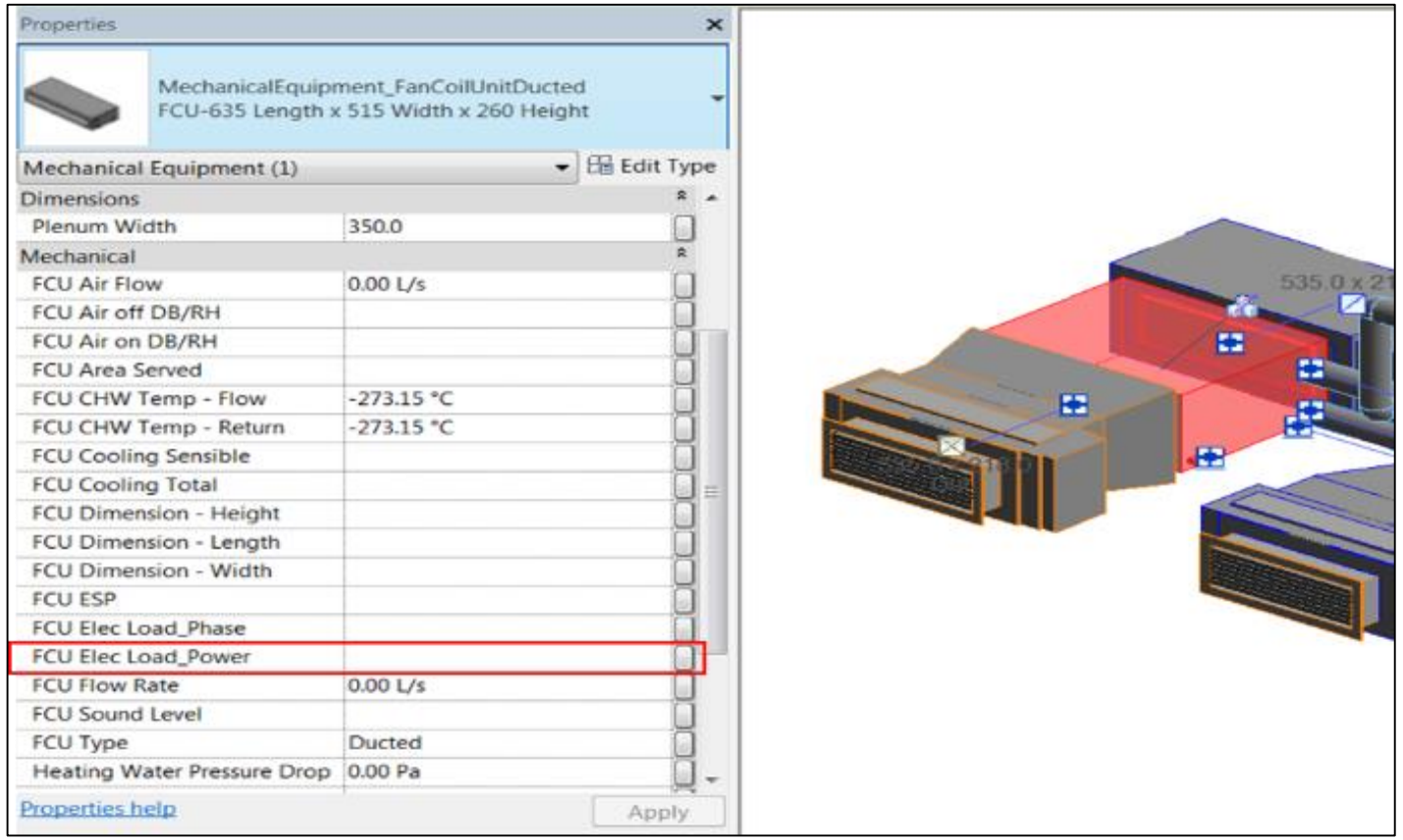


Route 2020 – BIM supports Sustainability Analysis

Energy Analysis:

- Improve Design Outcome
- Reduce Running Cost
- Improve Building Performance
- Sustainability results information inside the BIM models





International Recognition

- The world's First BIM Level 2 Certified organization
- 1st Organization participated in launching PAS 1192-3 & PAS 1192-5 Kitemarks
- The World's First asset owner achieved BIM Asset Lifecycle ISO 19650 Framework

bsi.

By Royal Charter

Kitemark™ Certificate

This is to certify that:

Roads and Transport Auth
Umm Ramool
Marrakesh Road
PO Box 118899
Dubai
United Arab Emirates

Holds Certificate Number: KM 699152

In respect of:

BIM Level 2 Asset Lifecycle
Information specification and management for the capital/delivery and operational phase of assets using building information modelling in accordance with BS 1192:2007, PAS 1192-2:2013, PAS 1192-3:2014, BS 1192-4:2014 and the implementation of a security-minded approach specified through PAS 1192-5:2015.

The world's First ISO 19650 and BIM Level 2 Certified organization

bsi.

By Royal Charter

Kitemark™ Certificate

Roads and Transport Authority
HQ
Umm Ramool
Marrakech Street
PO Box 118899
Dubai
United Arab Emirates

Holds Certificate Number: KM 699152

In respect of:

BIM Asset Lifecycle ISO 19650 Framework
Achieved BIM for the full asset lifecycle including design, construction, commissioning and operation in accordance with ISO 19650-1:2018, ISO 19650-2:2018, PAS 1192-3:2014 and the implementation of a security-minded approach specified through PAS 1192-5:2015

International Recognition

April. 2017

March. 2018

Thank You