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Digital Transformation: Redefining Infrastructure Sector



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Master Planner, Developer, and a Valuable Partner

A government agency under the Ministry of Trade and Industry, JTC was founded in 1968 to grow Singapore's manufacturing landscape and support the nation's economic goals.

We build industries and develop clean, green, and smart estates so that Singapore stays innovative, dynamic, and sensitive to global manufacturing trends.

We also foster vibrant ecosystems, bringing businesses and communities together in an environment that nurtures ideas shaping the future.

Find out more: itc.gov.sg

Watch our story: youtu.be/GW25gwXul-M













Digitalisation is Foundational Across All Stages of Infrastructure Sector Value Chain

GIS + BIM Planning and Design **Estate & Building Data Relivenation** Data Analytics Artificial Intelligence Machine Learning Construction **Enhanced User Smart Experience** Lifesty/e E-payment **Digital Built** Smart Retail **Environment** Smart Parking Value Chain FR Access Control District App Marketing and Rase Management Operations and Maintenance **Customer Portal** Marketing Leasing

Planning & Design

- GIS BIM Integration
- **Geospatial Analysis**
- Computational Design
- **Building Performance Analysis**

Construction & Resource Management

- **Project Progress**
- Manpower Management
- **Access Control**
- **Defects Management**
- **Reality Capture**
- Integration with site installations and devices such as blue tooth tracker, drones, etc.

Project Delivery Management

- Submission
- File Management
- Records Management
- Project Management
- Dashboard
- Payment
- Safety & security

• 3D Walkthrough

Centralized Smart Platform

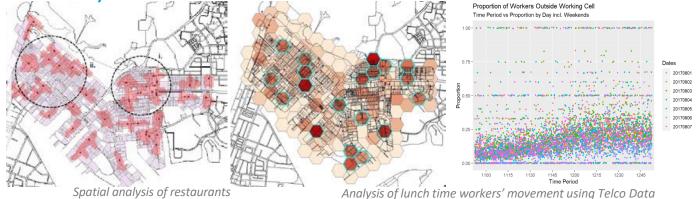
- Digital Twin
- Real Time C4 System of Systems
- Smart Facilities Management

Geospatial Analysis to Guide Planning Decisions

Evidence-Based Planning Supported by Data Analysis

Amenity provision study

Spatial-temporal study of workers' travel pattern during lunch times using near real-time telco data.



Chimney Assessment Tool

Assess the impact of chimney height controls on development potential of surrounding industrial plots.





Integrated Digital Delivery

From Site Potential to Detailed Building Design

Site Potential Simulation

Integration with GIS to establish simulation parameters



Computational Building Design

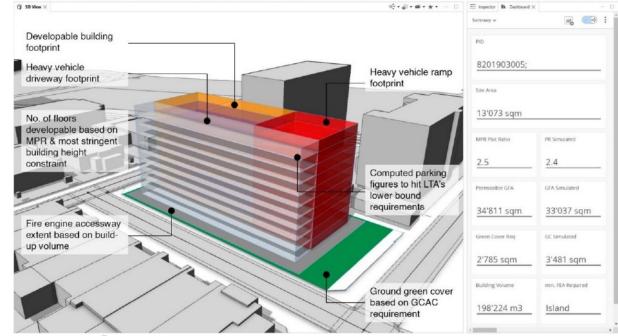


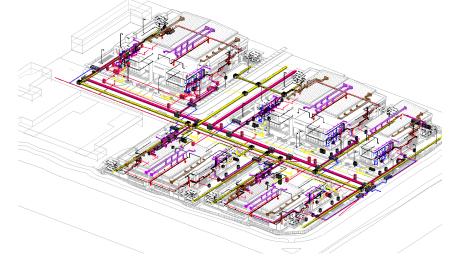
Coordinated Design Model

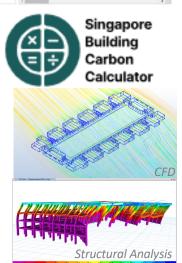


Design Analysis Software
/ Model Checker

Design Validation









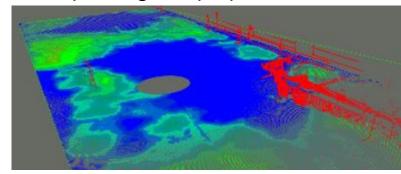
Digital Construction

Harnessing Technology for Increased Efficiency

Estate(GIS) planning and Design **Smart Digital** Built **Environment** Value Chain Operations and Maintenance

Quality Control >

Point cloud scan converted to heat maps, contours, grid points for **analysis of levelness and flatness** to counter water ponding & improper water flow



LiDAR Scan of Driveway

Virtual Inspections >

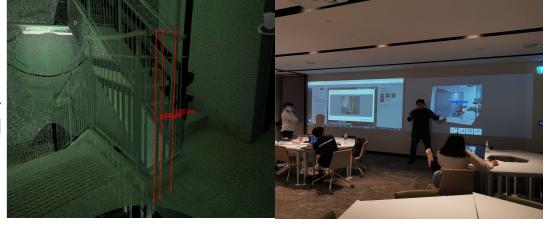
Integrating **GIS** with **point cloud** data and **360 photo** capture solutions so that detailed inspections can be conducted offsite

Digital Tracking >

Geotagging precast modules, drawings, delivery, installation, payment







Digital Construction

Beyond Common Data Environment to Connected Data Environment for Integrated Digital Delivery

JTC's Corporate Systems

GIS
Payment
Data Lake
Plan Processing
Facilities Management
Sustainability Tracking &
Analysis





Design/Construction Model in GIS/BIM









Safety/Quality | Project Delivery | Site | Contract

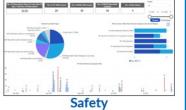








Submittals &Transmittals



Project Progress

Data, Dashboard, Decisions.

Project Specific Systems

AuthoritiesSubmissions

Construction

Scheduling Supply Chain Mgmt

Site Supervision

Drones CCTV, Al Cameras Wearables

Operations

Vertical Transport Delivery Robots HVAC Control

Digital Twin and Open Digital Platform (ODP)

Building on GIS & BIM





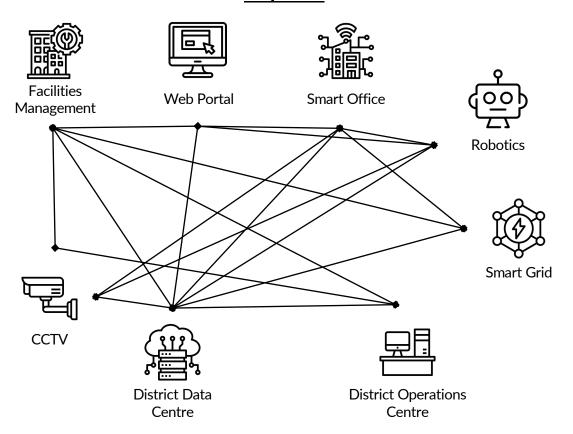


A New Way of Estate & Building Management

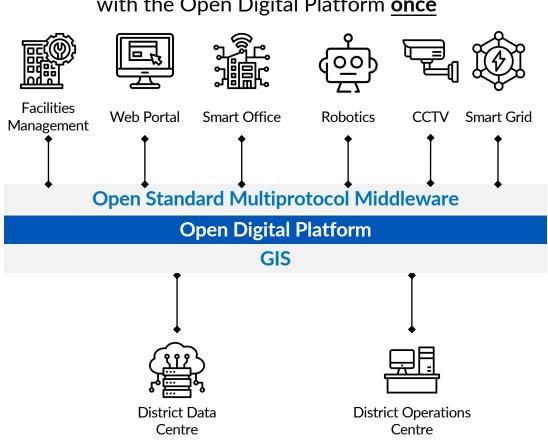
Open Standard Multi-Protocol Middleware

BEFORE

Each vertical must integrate with many systems one at a time, so <u>multiple integrations are</u> required



AFTER Each vertical only needs to integrate with the Open Digital Platform once



Concept of the Open Digital Platform

Real-time connectivity, interoperability and automation on 1 single platform







Thank You

