



BIM
Harambee
Africa
2026

Digital Twin – A City of Cape Town Pilot

smarter and better connected

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Digital Twin – A City of Cape Town Pilot

Aims, Objectives & Lessons Learnt

24 July 2026



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Introduction

South African Cities are growing in their population size and becoming more complex. We faced with aging infrastructure, rapid urbanization, climate change and financial constraints. Our Infrastructure systems and technologies need to evolve to meet the needs in our context.

The Digital Twin provides not only a technological game-changer but a Strategic Capability to address the growing needs in a South African Context.



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2. Why Digital Twins Matter?



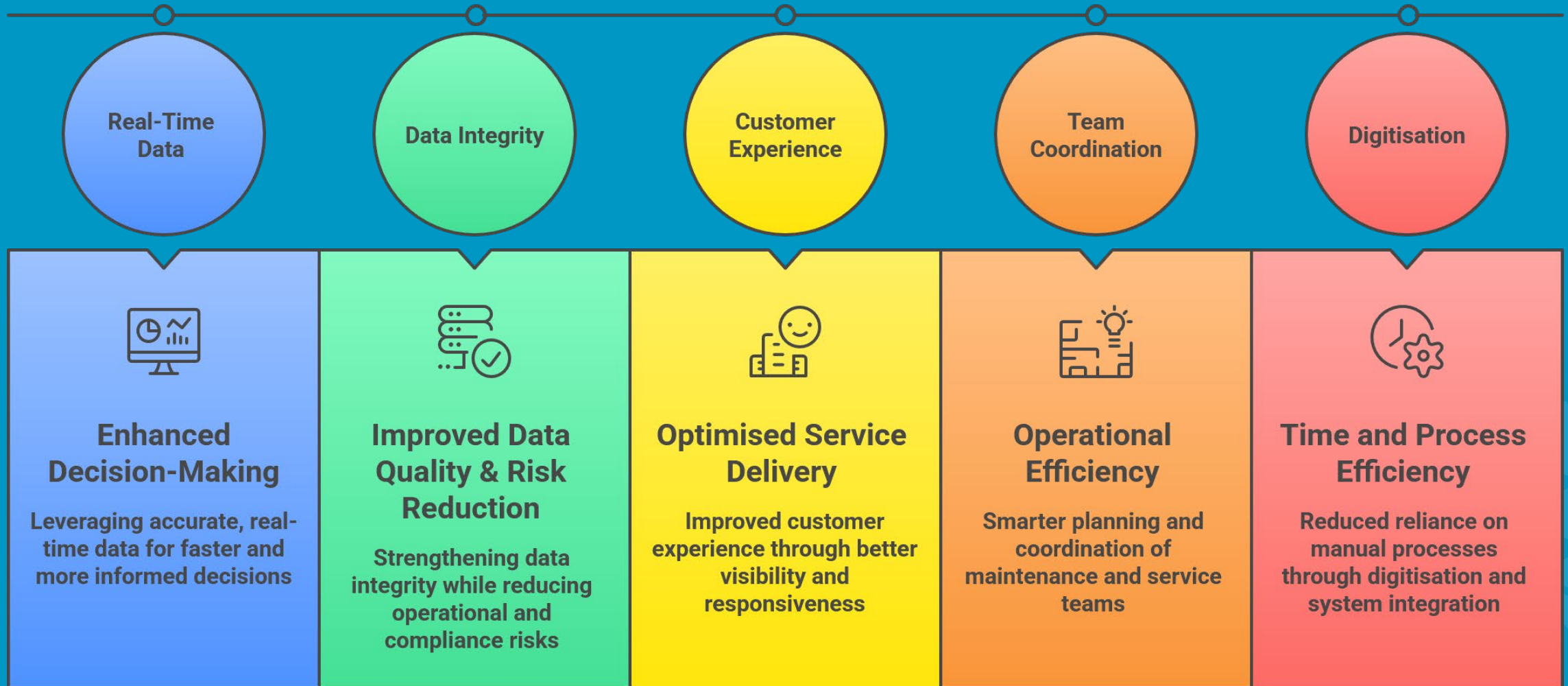
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Why Digital Twins Matter?

Envisaged Use of a Digital Twin in Facilities Management



Key Benefits of a Facilities Management Digital Twin



Digital Twin Pilot Project: Selection Criteria

Pilot Project Scope – A Deliberate, High-Value Use Case

Bellville Civic Centre Complex Selection



Representative Scale

Medium-sized facility, representative of the City's portfolio.



Refurbishment Requirement

Upcoming refurbishment enables data-driven planning.



Future Expansion

Utilisation insights inform future investment decisions.



Compliance Upgrade

Leveraging BIM models accelerates value realisation.



Diverse Building Types

Broad and practical assessment of applicability.



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Strategic imperative

Transform into Data-driven Function

Shifting towards a data-driven approach for decision-making

Enhance Integration

Improving the connection between different systems and processes

Address Data Fragmentation

Acknowledging the challenges posed by fragmented data systems

Leverage Digital Capability

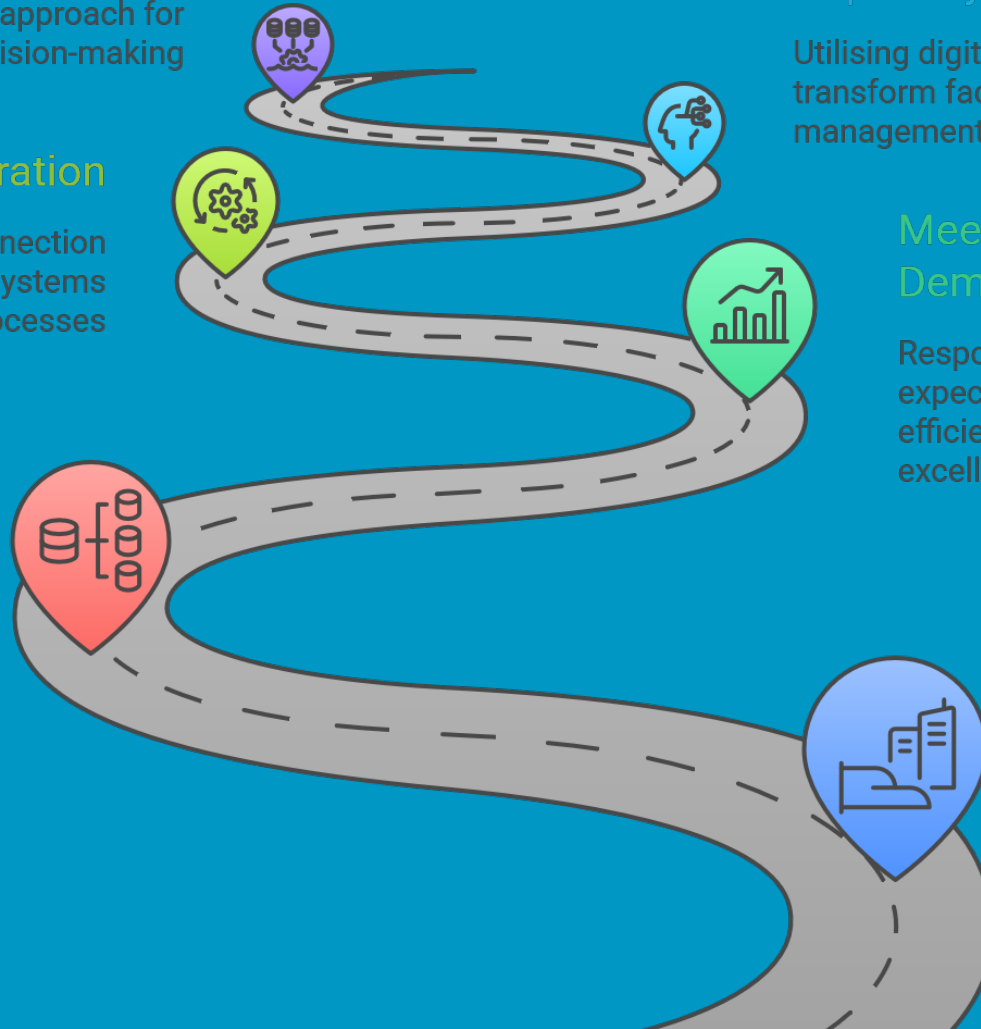
Utilising digital tools to transform facilities management

Meet Rising Demands

Responding to increasing expectations for cost efficiency and service excellence

Identify Strategic Asset Base

Recognizing the City's facilities portfolio as a valuable asset



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3. City of Cape Town's Digital Twin Journey



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July/November 2024

City of Cape Town benchmarking of Finish Digitisation and European Smart Cities.



January 2025

Development of a Concept Note for a Facilities Management Digital Twin Pilot Project.
Bellville Municipal Building identified as the Pilot Facility.



February 2025

Stakeholder Mapping and Engaging begins.



March 2025

Smart Infrastructure Symposium hosted by the Facilities Management Department with guests from Private and 3 Spheres of Government.



April 2025

City of Cape Town Departments collaborate to submit an application for the Finnish Digital and Green Transition Programme Grant.



July 2025

City of Cape Town announced as the successful recipient of the Finnish DGTP Grant.



August 2025

Technical Expert begins the project with the Facilities Management team.



December 2025

First draft of the FM:Digital Twin Strategy is completed. Scope of works document prepared by a multidisciplinary team.



January 2026

Professional Service Provider is appointed and briefed for the 3D documentation.



March 2026

FM: Digital Twin Framework Completed.



April 2026

Professional Service Providers complete the development of the Bellville Municipal Building 3D Model. A second digital twin is developed with linkages to the CIDMS requirements.



June 2026

The close out report and way forward is issued. The project is presented to the City's Executive Management Team.



Delivering Data-Driven, Sustainable Facilities for a Smarter Cape Town



Data-Driven Decisions



Smarter Infrastructure



Sustainable Future



Stronger Collaboration



Enhanced Service Delivery



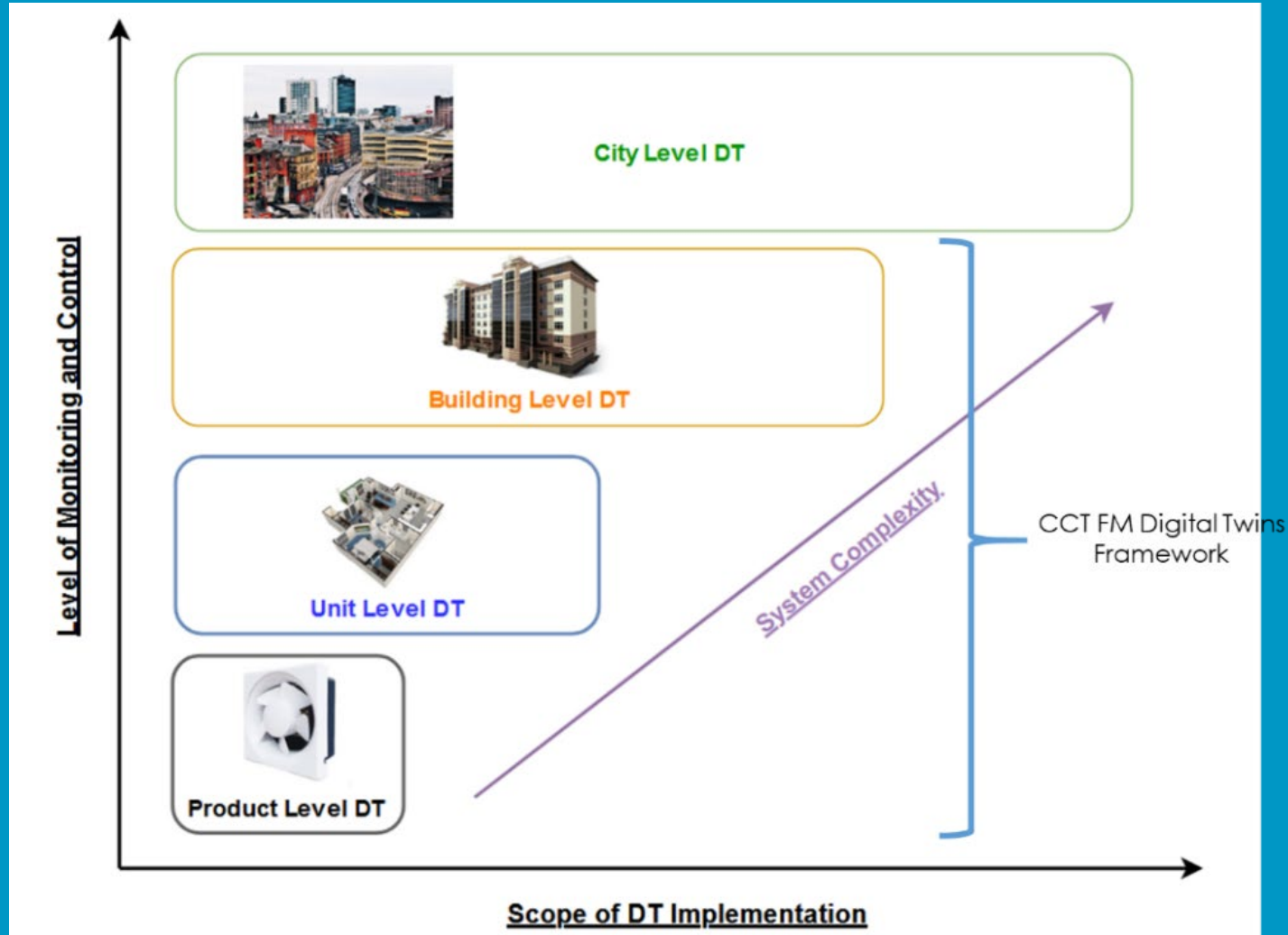
Building a Digital Twin-enabled future for Cape Town

3. City of Cape Town's Digital Twin Journey: The Pilot facility



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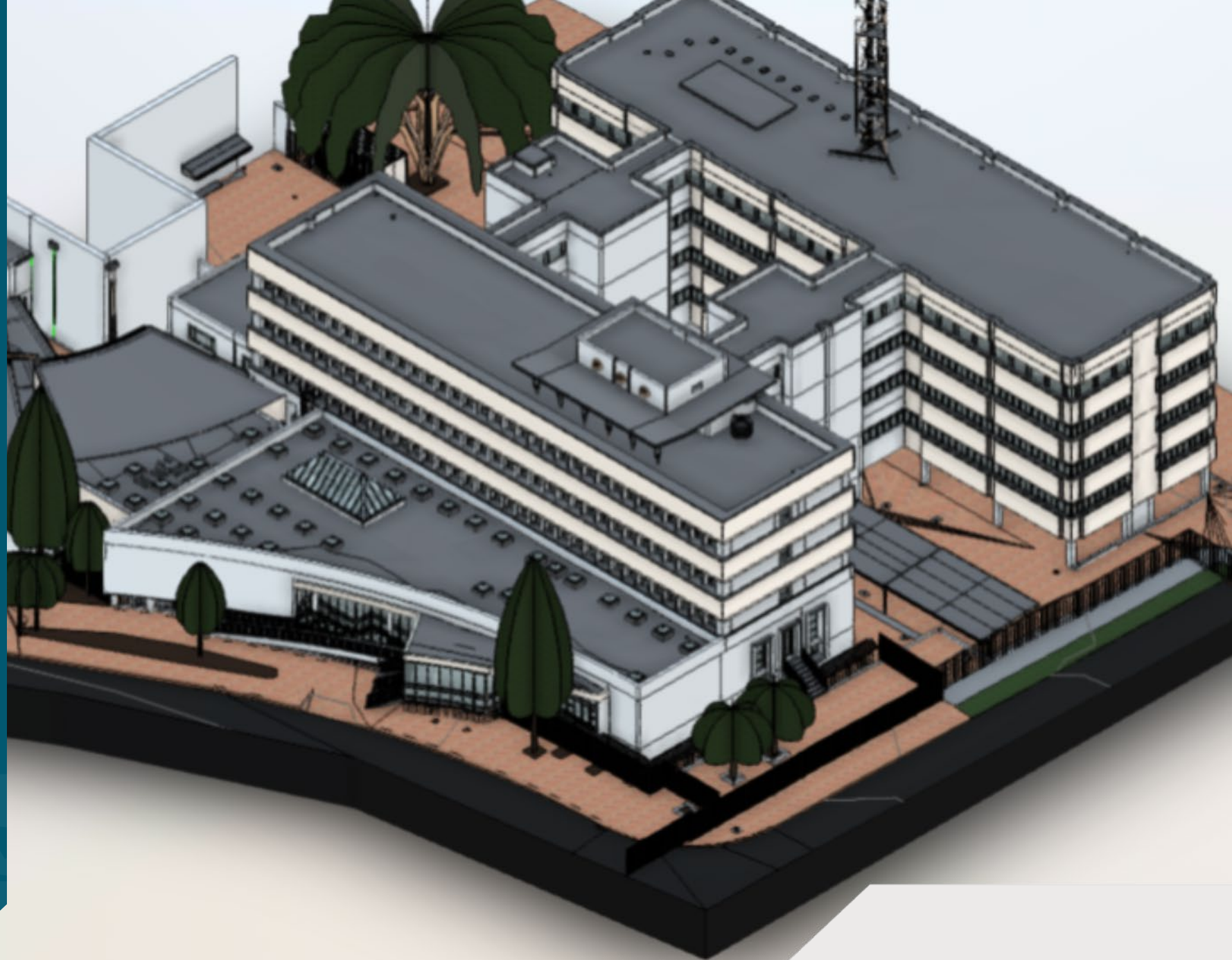
3. City of Cape Town's Digital Twin Journey: The Pilot facility

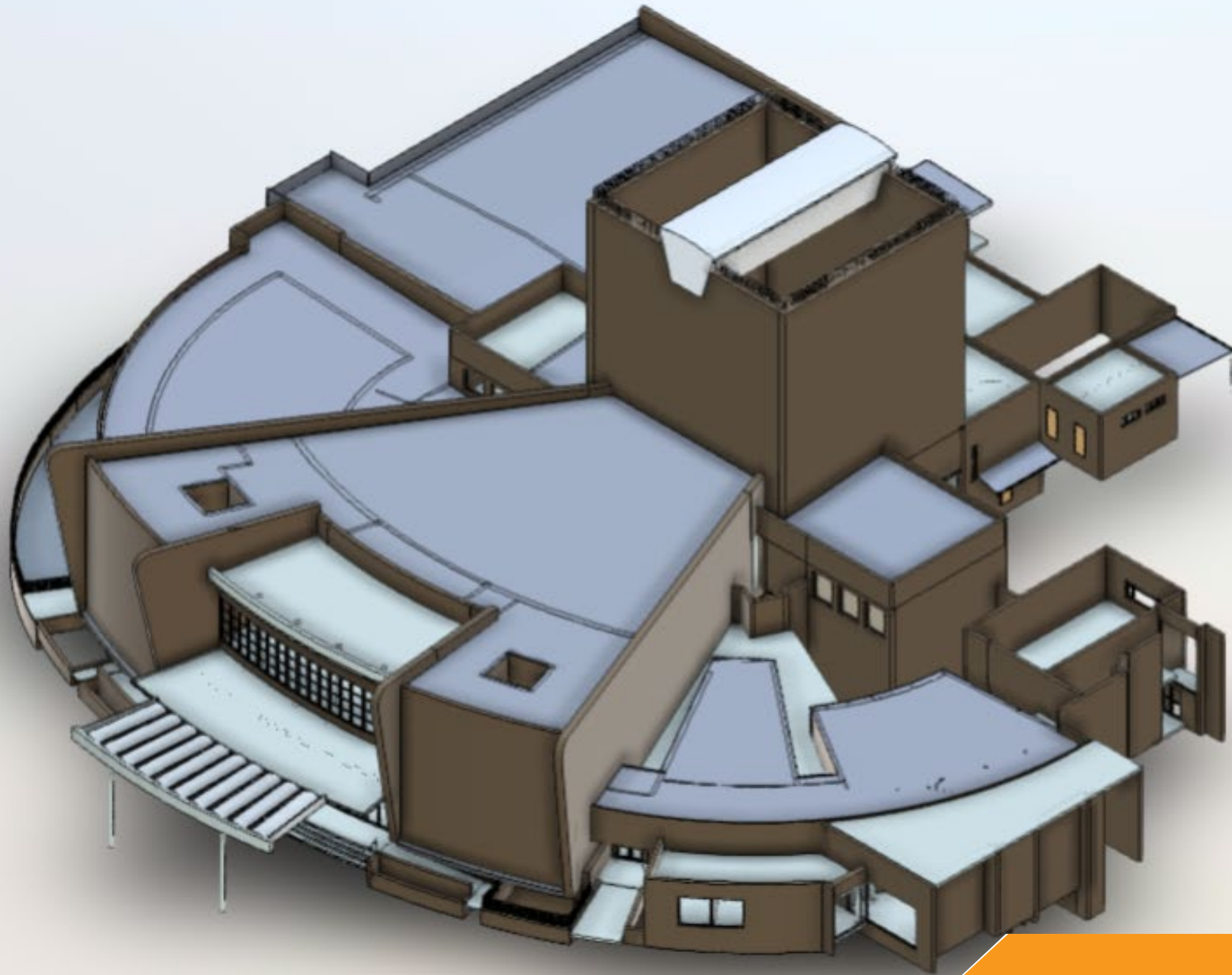


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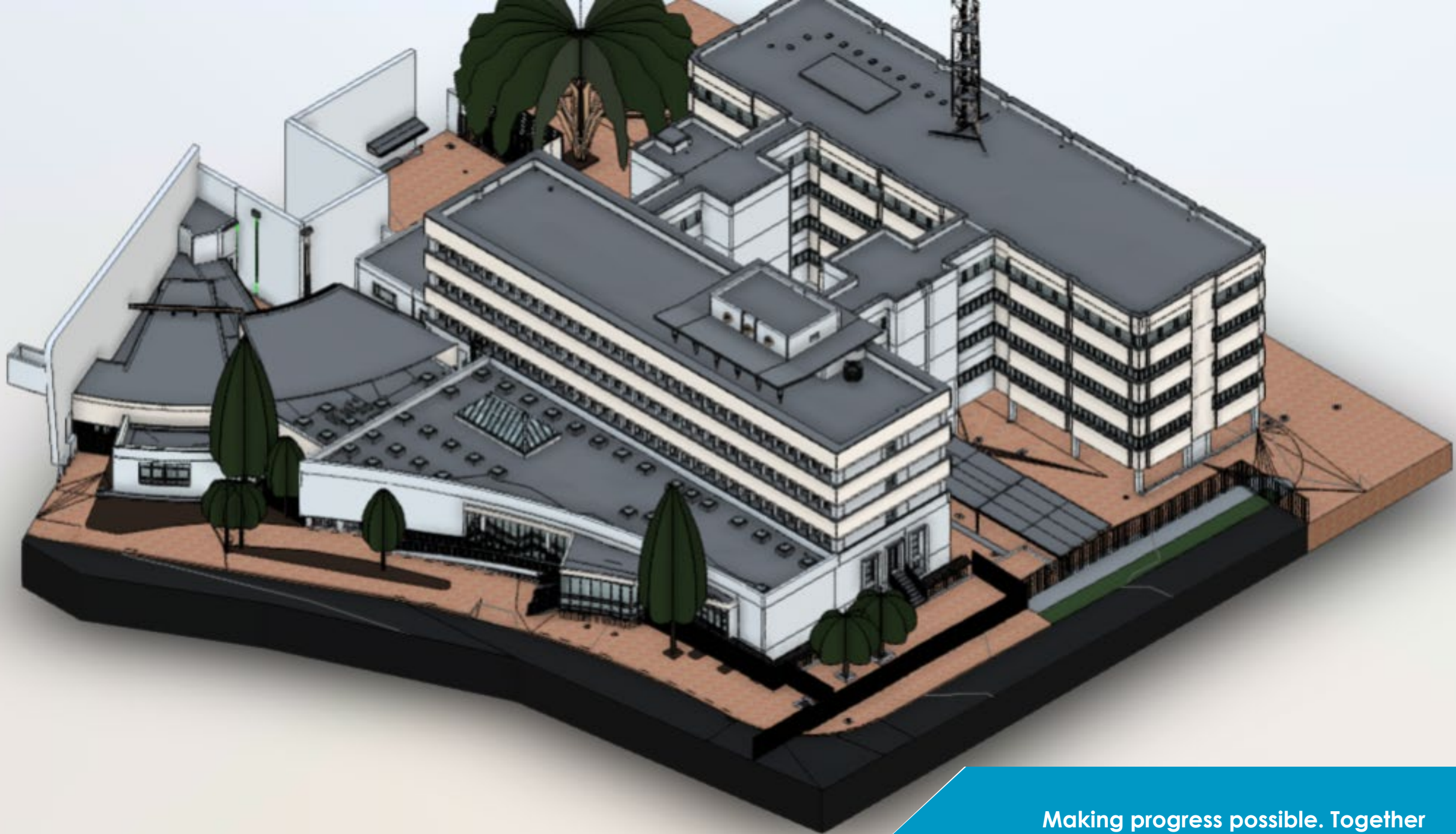
BIM | 3D Model of Bellville Civic Centre

Facilities Management
Digital Twin Pilot Deliverable

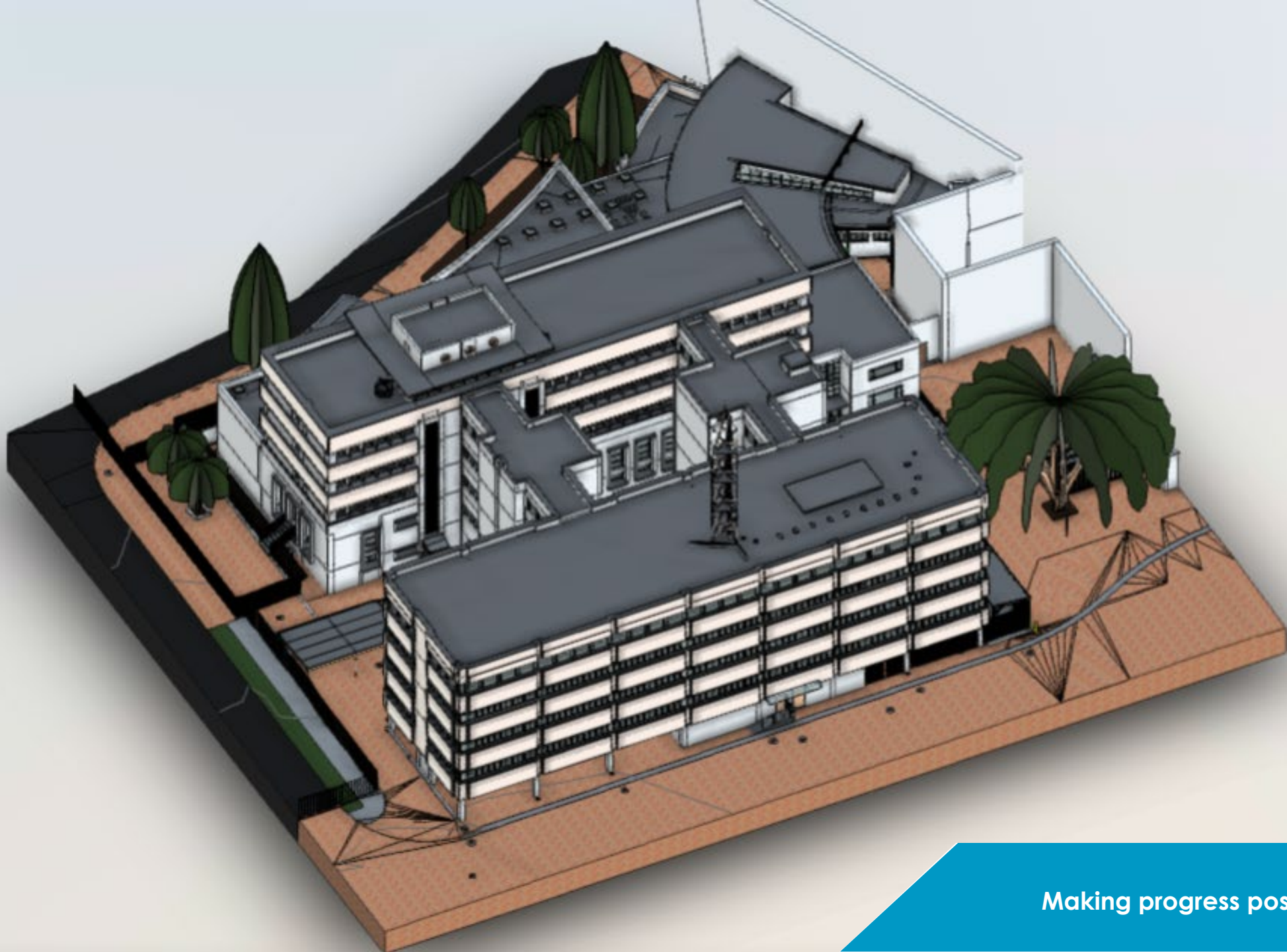




Making progress possible. Together

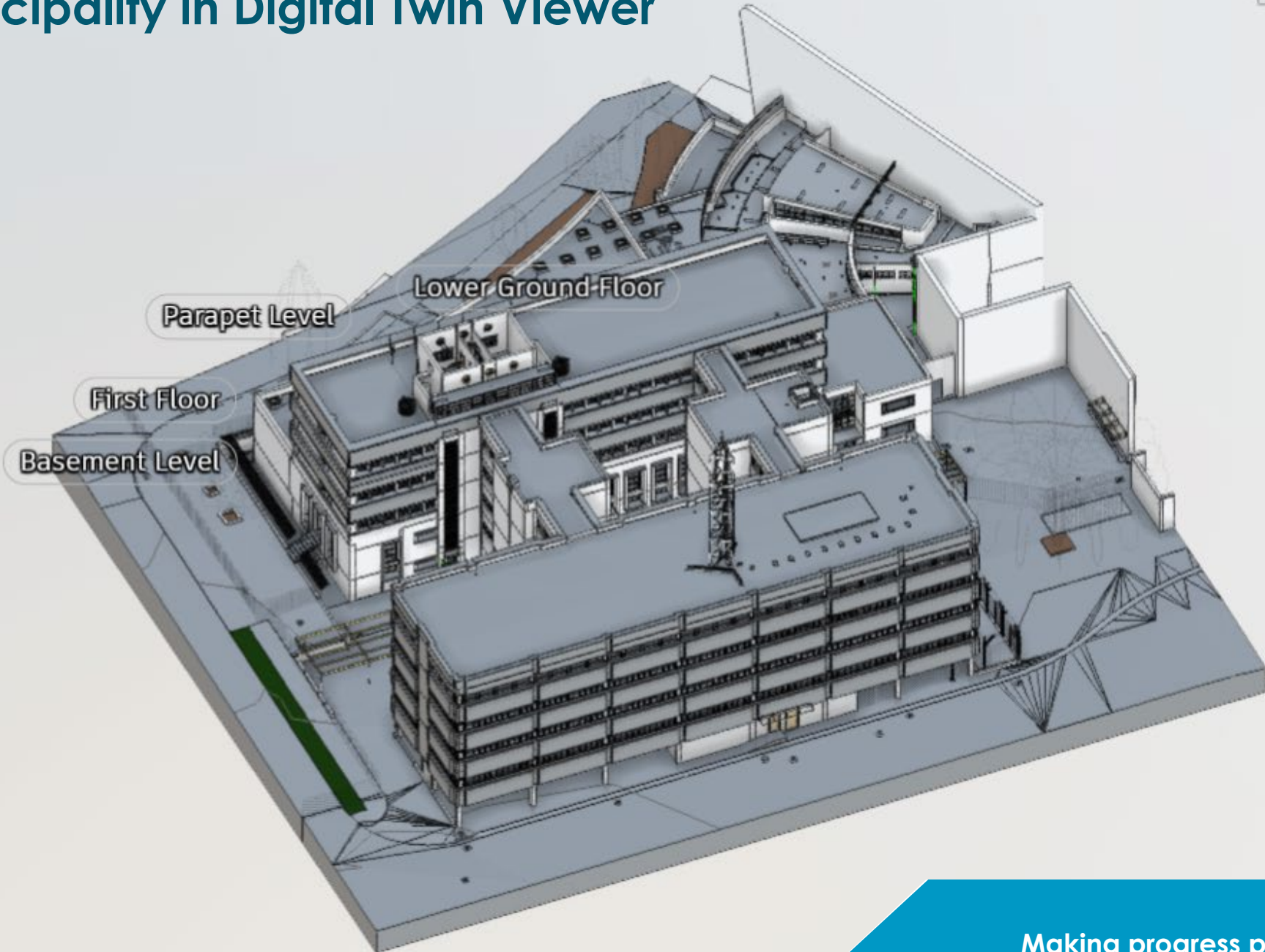


Making progress possible. Together



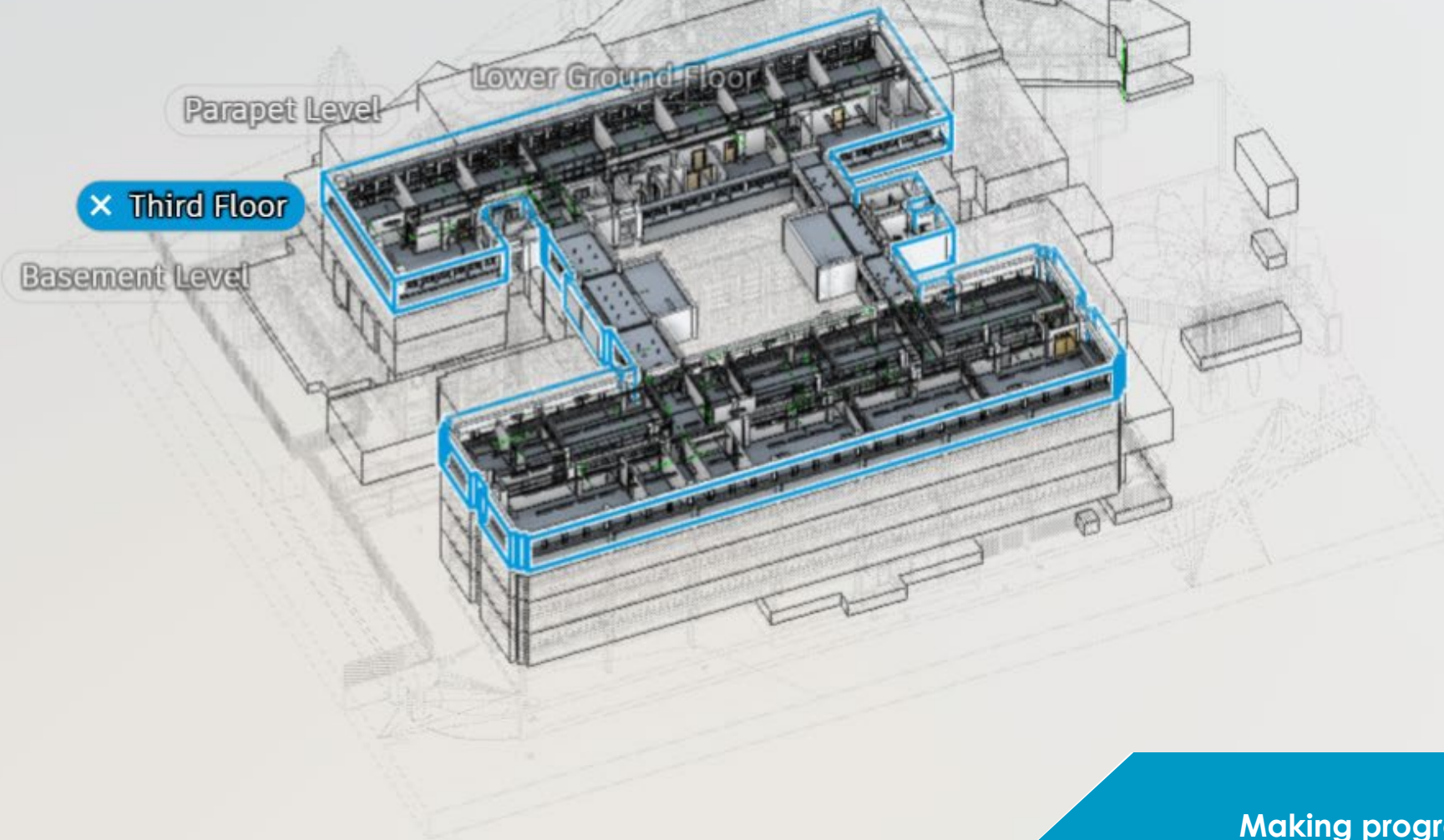
Making progress possible. Together

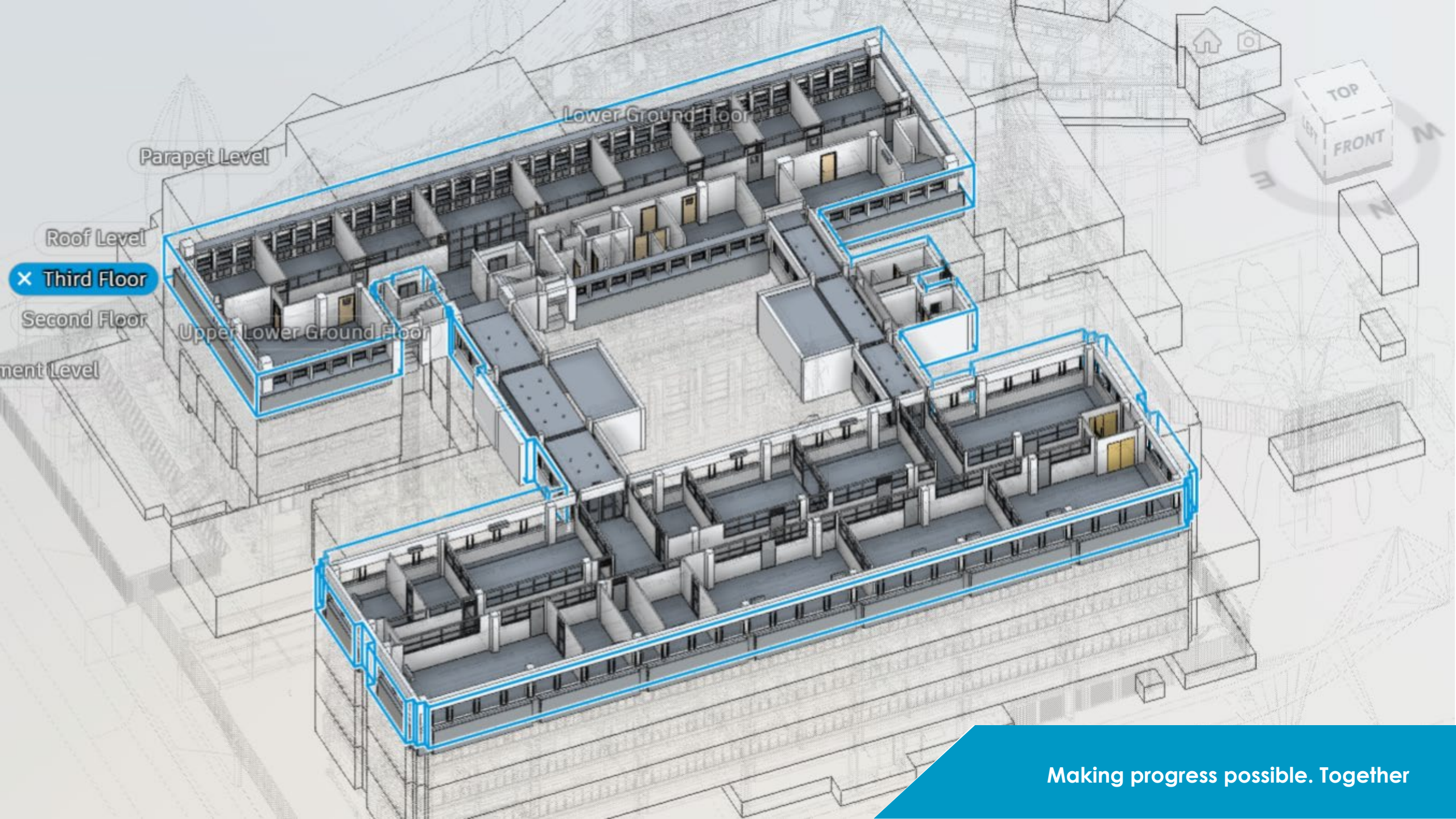
Bellville Municipality in Digital Twin Viewer



Making progress possible. Together

Bellville Municipality Third Floor Focus

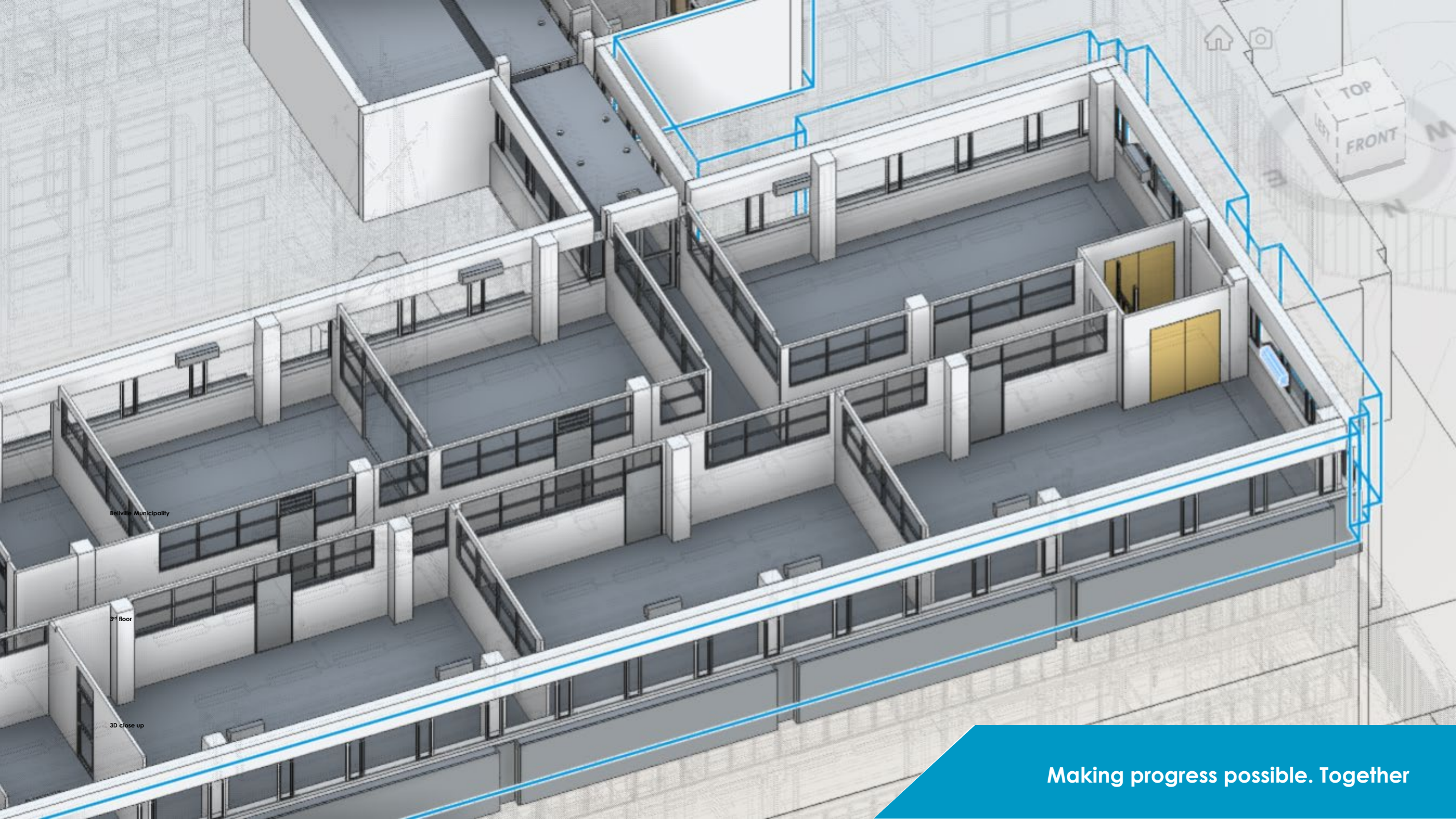




Making progress possible. Together

Bellville Municipality
Third Floor layout in 2D
can be integrated
with BIM models in 3D



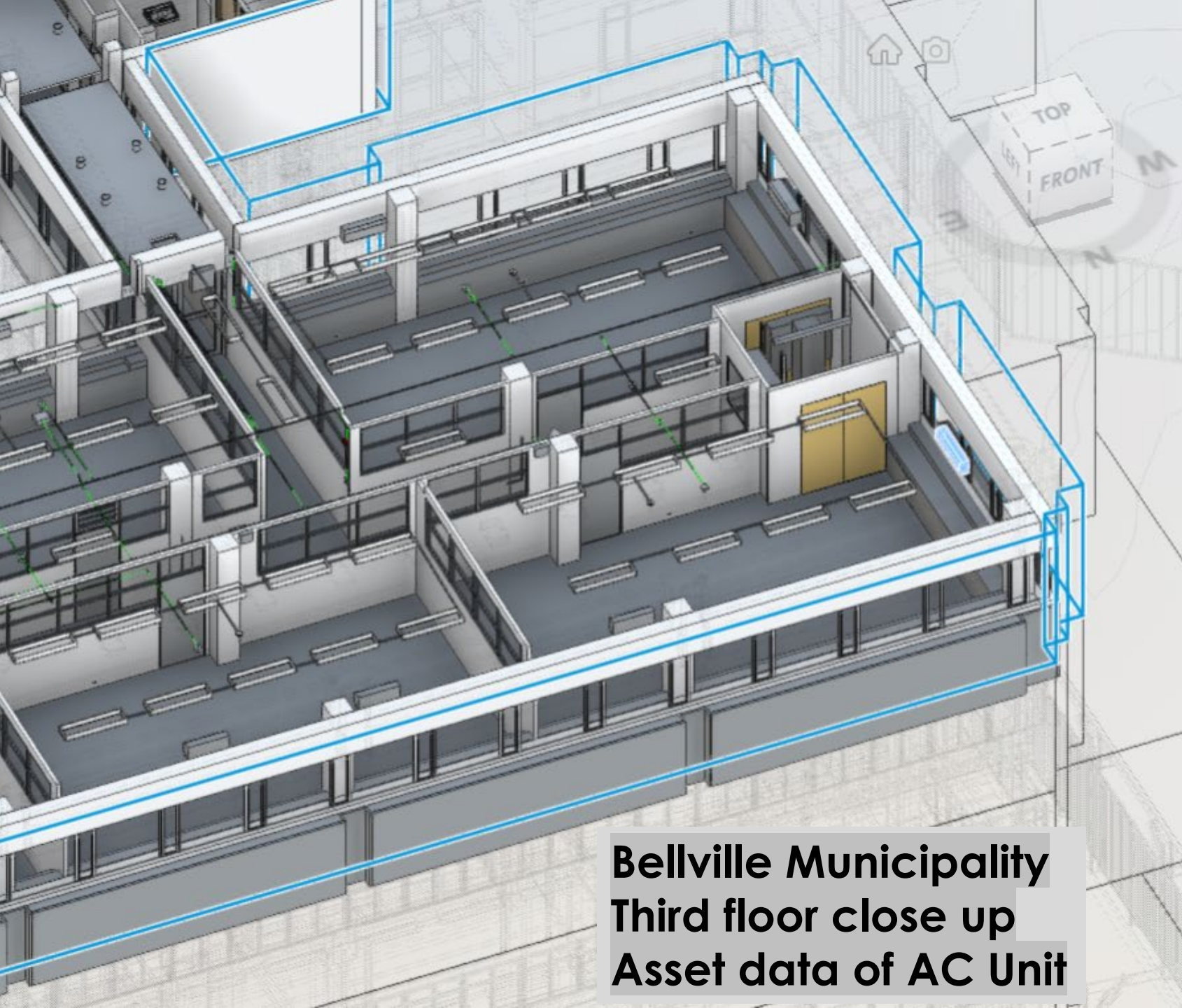


Belville Municipality

3rd floor

3D close up

Making progress possible. Together



Bellville Municipality
Third floor close up
Asset data of AC Unit

PROPERTIES



Mechanical Equipment : AC Unit 

ELEMENT TYPE

+ Add 

ASSET PROPERTIES

Common

Name	AC Unit
Level	Third Floor 
Tandem Category	Equipment 
System Class	Select System Class 

RELATIONSHIPS

Connections	No Assignable Connections
Rooms	Select Room(s) 
Systems	No Assigned Systems

TICKETS



Making progress possible. Together



Making progress possible. Together

Anything can be linked, accessed and visualized in a Digital Twin Platform

e.g. movable assets, documentation, real-time sensors, other databases



Query from User Group /FSCMA/IS: Initial Screen

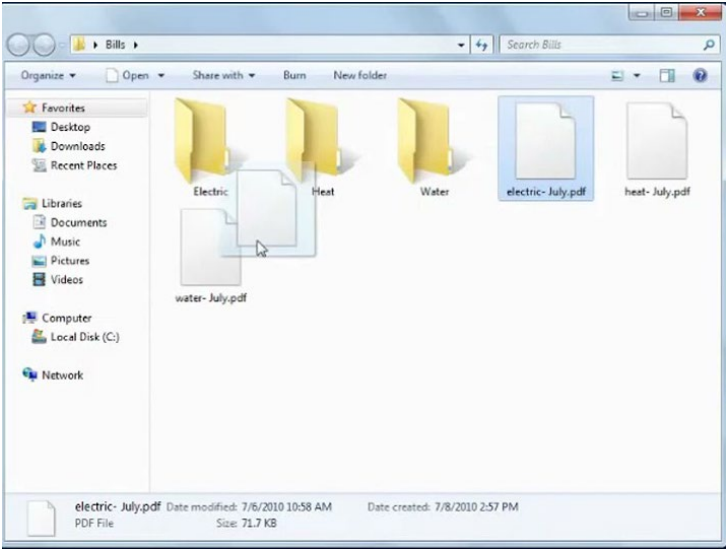
Query area: Global Area (Cross-client)

Query: Change Create

Quick Viewer InfoSet Query Display Description

Queries of user group /FSCMA/IS : FSCM Analytics

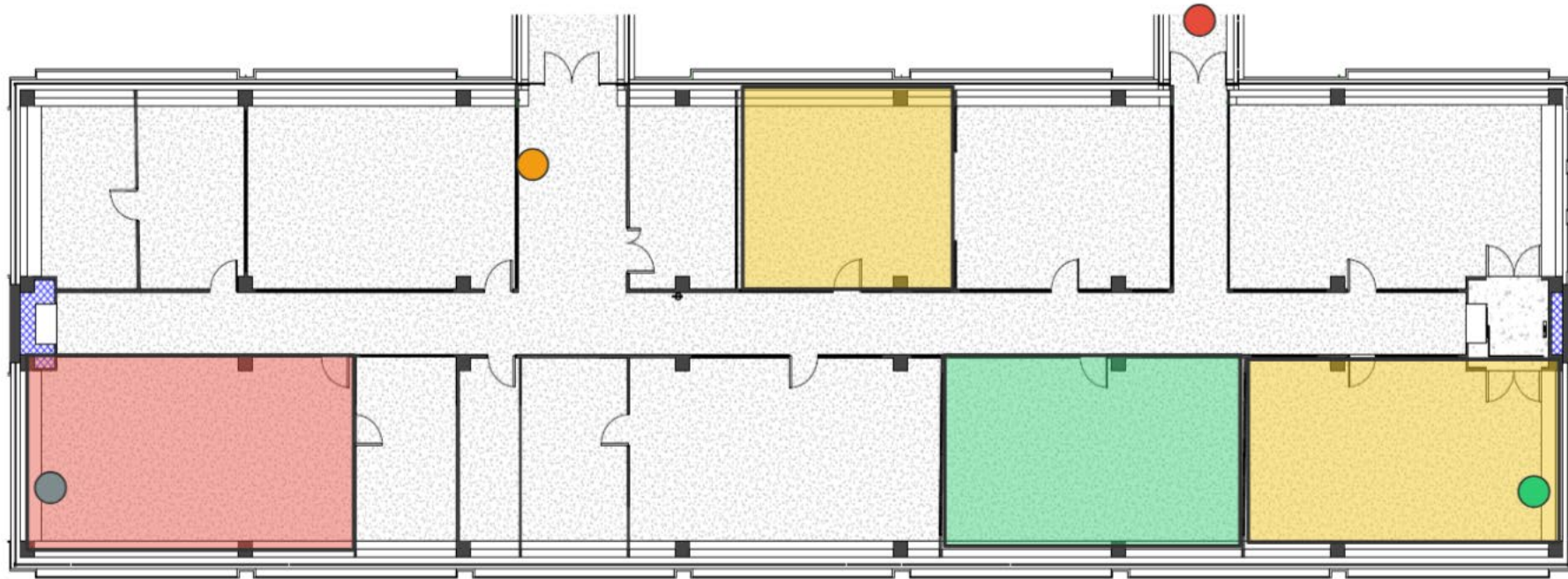
Name	Title	InfoSet	Logical Database	Table/View/Join	InfoSet Title
CDM_10_Q1	Risk Analysis	/FSCMA/CDM_10		/FSCMA/CDM_10	Credit Management: Risk Analysis
CLM_10_Q1	Worklist Item	/FSCMA/CLM_10		/FSCMA/CLM_10	Worklist Item
CLM_20_Q1	Customer Contact	/FSCMA/CLM_20		/FSCMA/CLM_20	Customer Contact
DPM_10_Q1	Dispute Cases	/FSCMA/DPM_10		/FSCMA/DPM_10	Dispute Cases



Demo platform of sensor data visualization

“IoT” (internet of things)

Bellville 3rd Floor Demo



Legend

Rooms: Temperature

■ $< 22^{\circ}\text{C}$

■ 22–25°C

■ 26–29°C

■ $\geq 30^{\circ}\text{C}$

Asset status

- Normal

- Warning

- Critical

- Offline

Time Simulation

Time: 08:00

Display

Colour by:

Temperature

Display mode: temperature

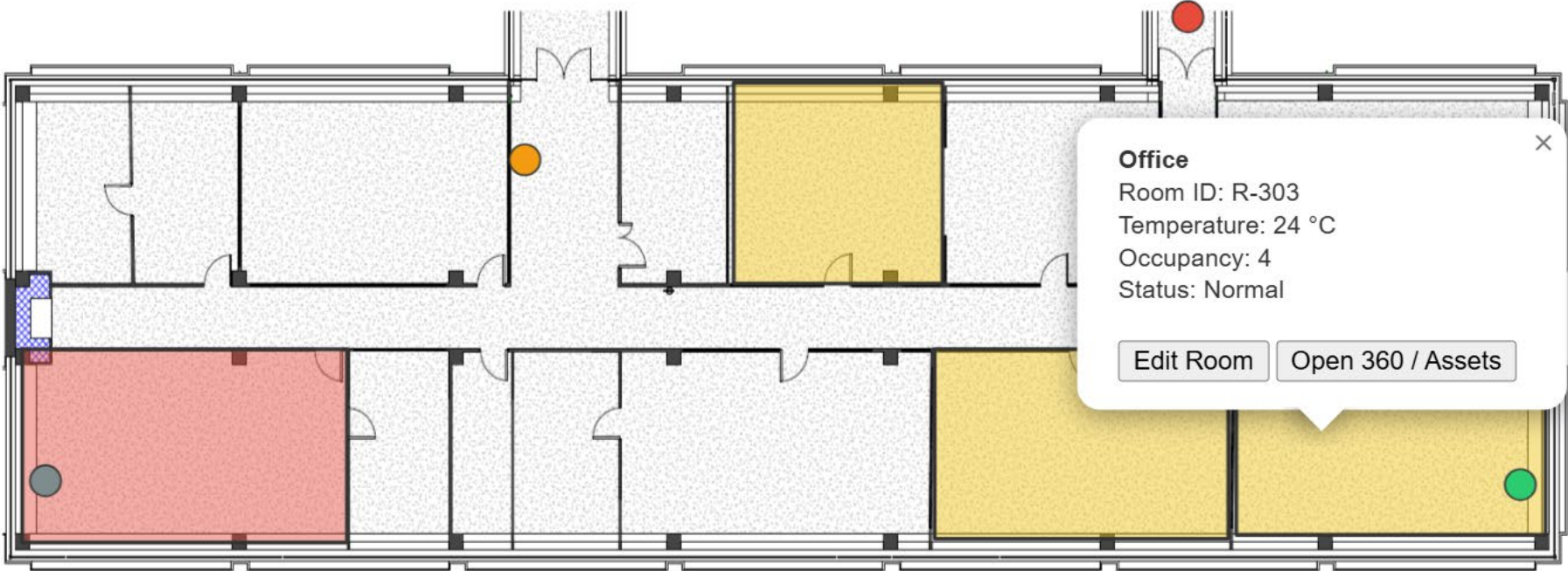
Export GeoJSON

Import GeoJSON

Bottom-right room time simulation: temperature and occupancy

Heating up as occupancy increases...

Bellville 3rd Floor Demo



Legend

Rooms: Temperature

- < 22°C
- 22-25°C
- 26-29°C
- ≥ 30°C

Asset status

- Normal
- Warning
- Critical
- Offline

Export GeoJSON

Import GeoJSON

Time Simulation

Time: 10:00



Display

Colour by:

Temperature

Display mode: temperature

4. Lessons Learnt



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Lessons Learnt

- **Partnerships** are essential for the robust and wholistic development of the Digital Twin Pilot.
- Develop a **robust Strategy** that is not only theoretical but can drive the process.
- Assess the **skills in the organisation** to ensure that the project can be successful.
- **Change management** must be built into the project.
- Make data easy to access and use to a range of team members – especially those who are not built environment professionals.
- Digital Twin Data is useful for **the full lifecycle** of a building.
- Select Project Leads who can combat Project Fatigue. Rather than 1 individual, select a team who have different **skills**.
- **Engaging the stakeholders** in a meaningful, information gathering manner ensuring that listening is a key skillset utilised.



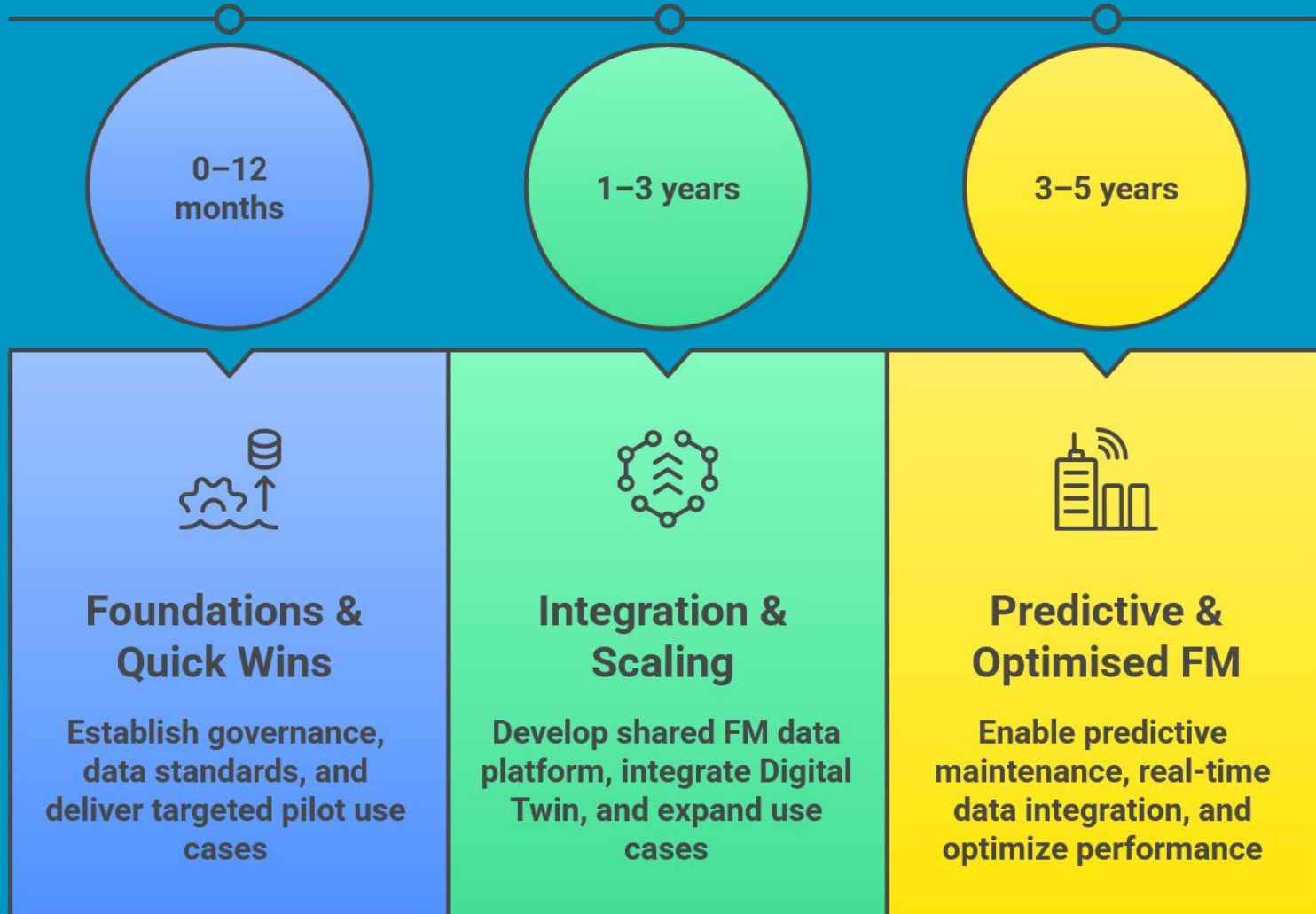
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5. Future Opportunities



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Future Opportunities



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6. What does this mean for the Built Environment



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What does this mean for Built Environment Agents

Harambee means *'coming together for a greater purpose'*

You have the ability to undertake the following as part of this 'greater purpose':

- Influence your clients to make **better decisions**;
- Recommend technology which revolutionises how **Infrastructure is planned and maintained**;
- Demonstrate value add and benefits;
- Be connectors for change;
- Showcase what is possible.



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What does this mean for Built Environment ~~Agents~~ **Change Makers**

Positioning

- You are not a Construction Company
- You are not a Software Service Provider
- You are not a Designer or Engineer
- You are not a Government Employee
- You are not a Lecturer....

You are a **Change Maker** for future generations in South Africa and across our African continent



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THANK YOU

