

# AI Cities : Digital Twin Playbook



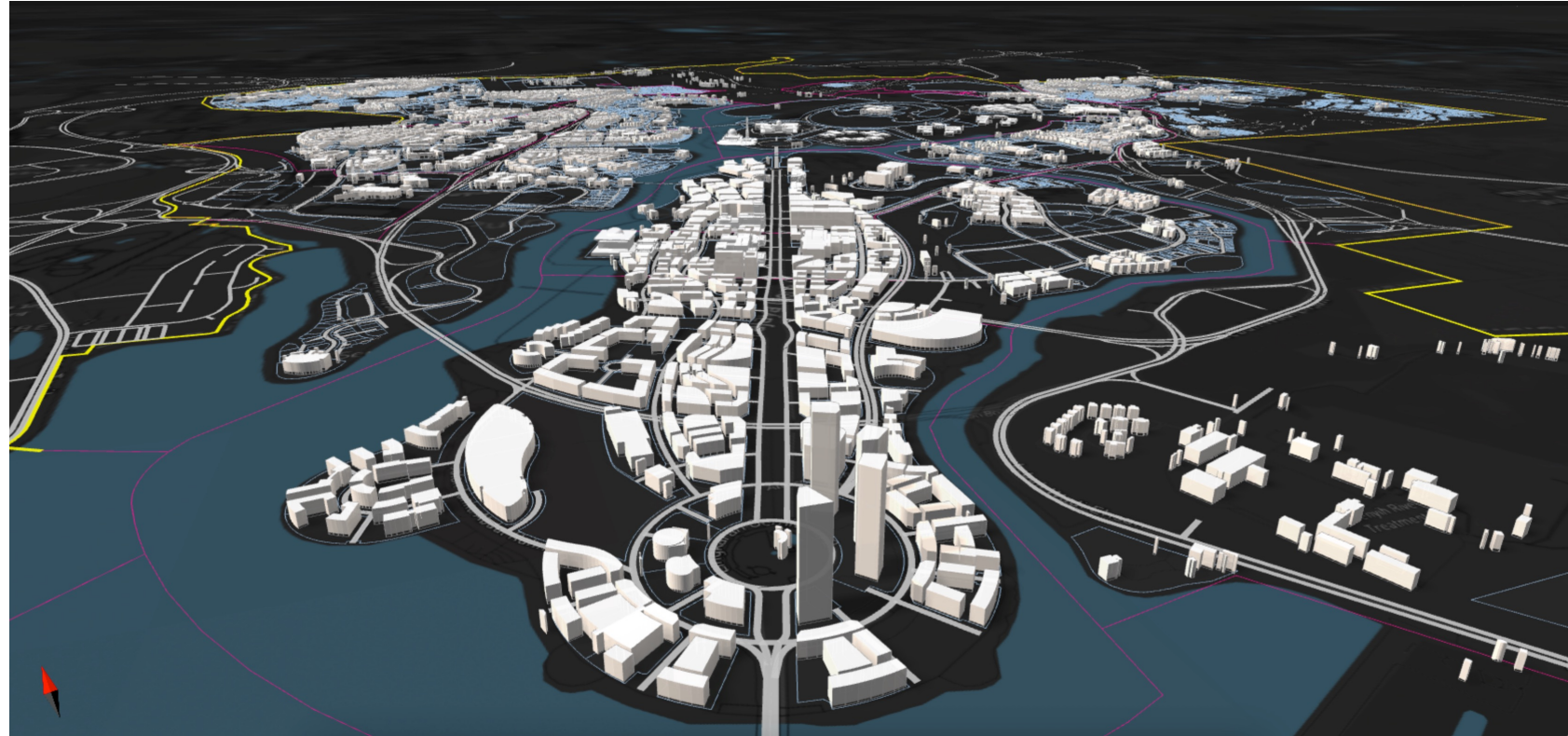
# City Digital Twins

Predictive intelligence for operational and service excellence

Creating a digital twin of a city means making a virtual replica of the city using data and computing resources.

This digital version helps city planners and decision-makers test scenarios, solve problems, and improve how the city works—without affecting the real city.

Parametrically modelled digital twins, by integrating IoT, big data, and AI – can simulate and predict resource demand in response to changes, improve resilience and help recover quickly from disasters.



# Digital Twinning Process

Building the digital twin in five distinct steps

01

Setting Objectives

02

Preparing the Data

03

Selecting the Technology Stack

04

Building the Twin Step by Step

05

Managing the Twin Sustainably

- Setting the Vision
- Planning implementation Roadmap
- Determining governance Framework

- Deciding Services
- Creating Dataset Requirements
- Acquiring Data
- Curating Data

- Planning Technical Architecture
- Make Strategic Decisions
  - ❑ Build, Buy, Leverage, Partner

- Building the Foundation
- Implementing Services
- Scaling Services

- Receiving Feedback
- Analyzing and Improving Services
- Managing Data Governance
- Managing Data Security
- Managing Growth



# 01

Setting Objectives

**1. Starting** with a vision of the future along with finding the best means and measures to achieve it

**2. Making** a list of must haves and areas of improvements – e.g., traffic, public safety, poor state of infrastructure

**3. Avoiding** the temptation of starting with immediate pain points or whatever is available





**1. Deciding** on stakeholders, services, use cases and performance measures

**2. Deciding** on dataset requirements, methods of acquiring data, validation and curation

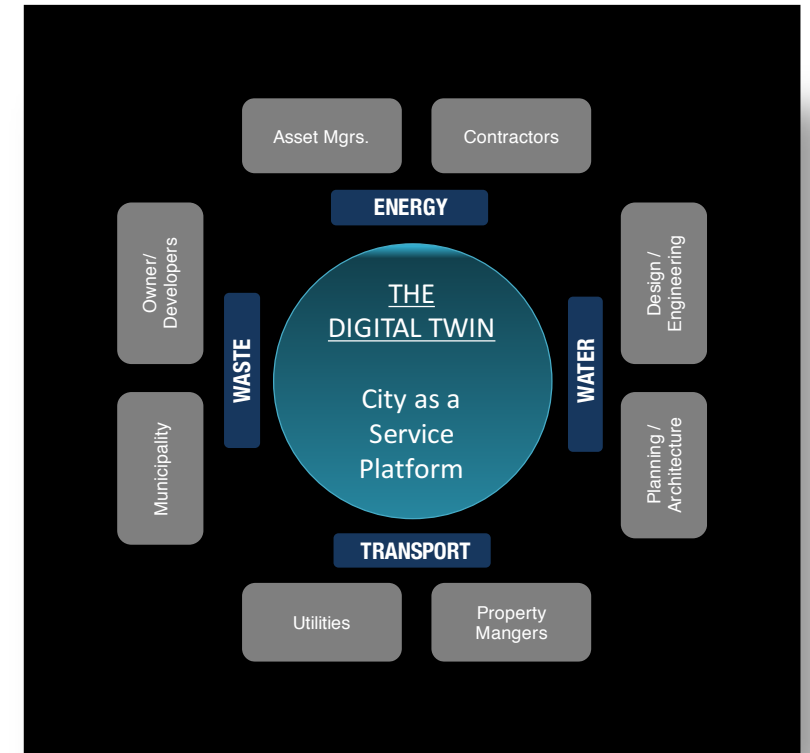
**3. Choosing** data sources and access methods

- City Databases
- Edge Devices
- Open Data Portals
- OSM
- Mapping Firms
- Private Data Providers
- APIs
- Web Services
- Access Networks
- Sensor Networks
- Mobile Networks

**4. Using AI tools** to clean and complete the datasets

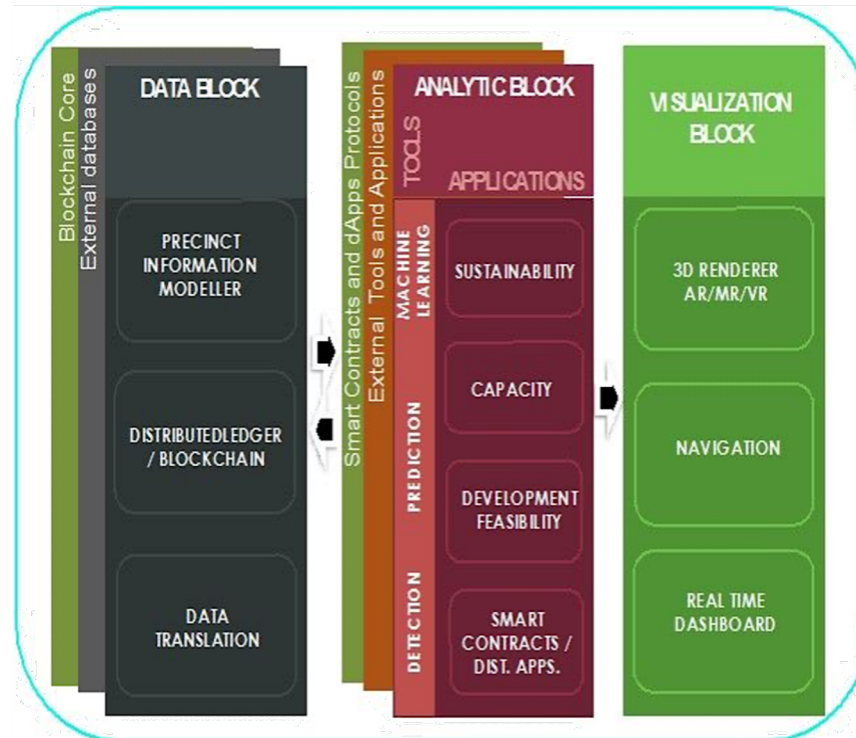
**5. Adopting standardization**

- ISO 37120 suite of standards



## The three pillars of digital twinning technology architecture

### The Reference Model



### Actions

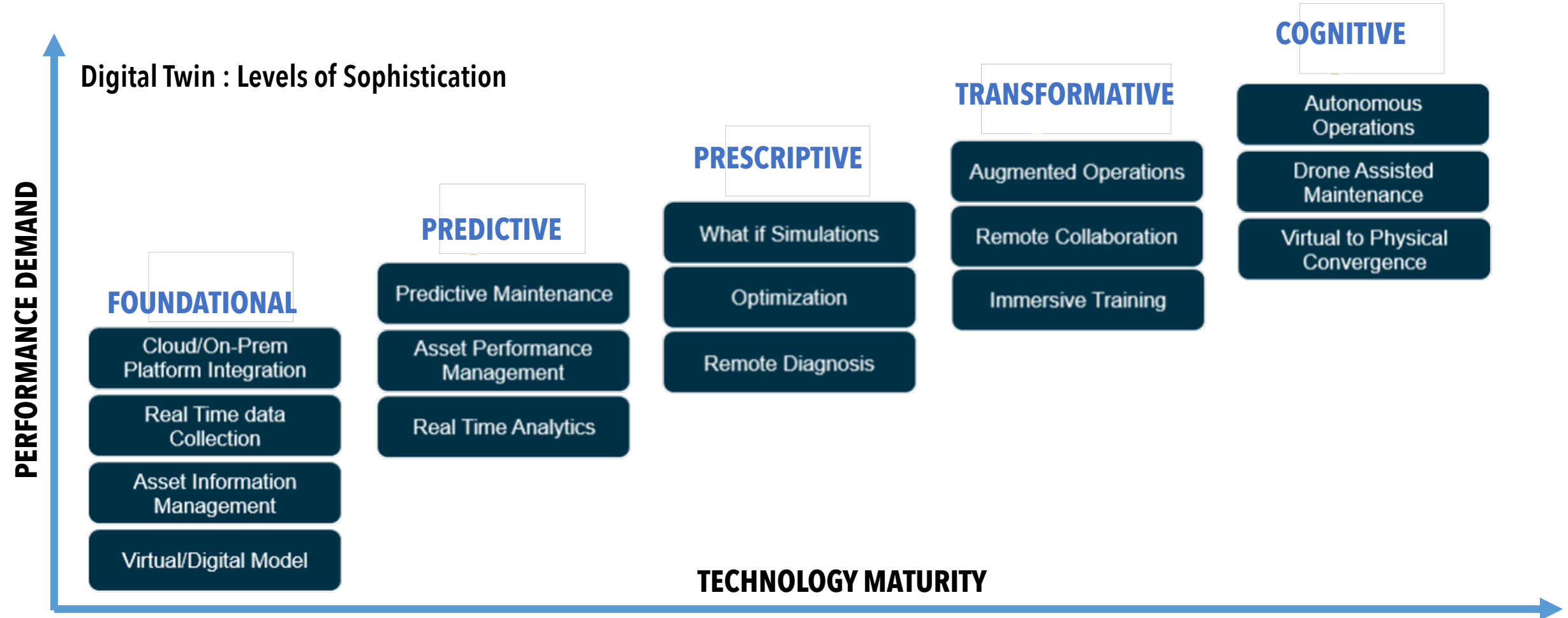
1. Architecting the solution with the three pillars
2. Making **strategic decisions** on technology stack
  - ❑ Build, Buy, Leverage, Partner

- Data
- Analytics
- 3D Visualization



# 04

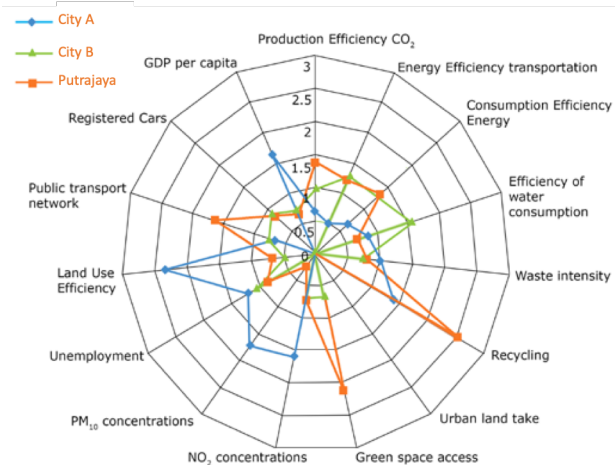
Building the Twin  
Step by Step



# Adopting a Culture of **Continuous Improvement** – enabled by the digital twin platform



## 1. Performance Benchmarking with other cities – facilitated by the platform



## 2. Citizen Centricity through feedback, feasibility analysis and reporting

### Citizen Survey

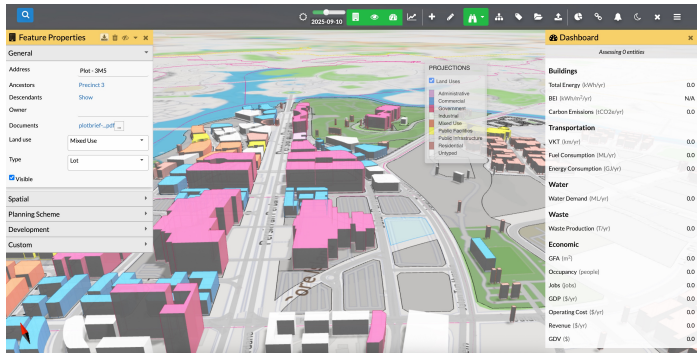
130	High safety and security for citizens
129	High quality health and education
116	Efficient public transportation
117	Quick connectivity within the city
103	Smart Mobility
60	Public Hospitals
106	Connected Community
107	Connected Government
59	Waste Management
126	Easy access to high efficient public and consumer services
55	Water Quality: Lakes and Rivers
110	Recycling and reduction of waste
105	Smart Living ( Digital Services )
109	Introduction of renewable and clean energy
125	Attractive to international businesses
113	Air quality monitoring
121	Higher number of private sector jobs
43	Telecommunications Infrastructure (ICT, Wi-Fi, Fiber optics)
66	University Level Education
136	Efficient local governance
54	General Cleanliness of Streets
131	A diverse vibrant community and society
111	Green transportation
58	Use of Clean and Renewable Energy Technologies



### Mapping City Excellence to Priorities



### Project Feasibility Simulation and Reporting

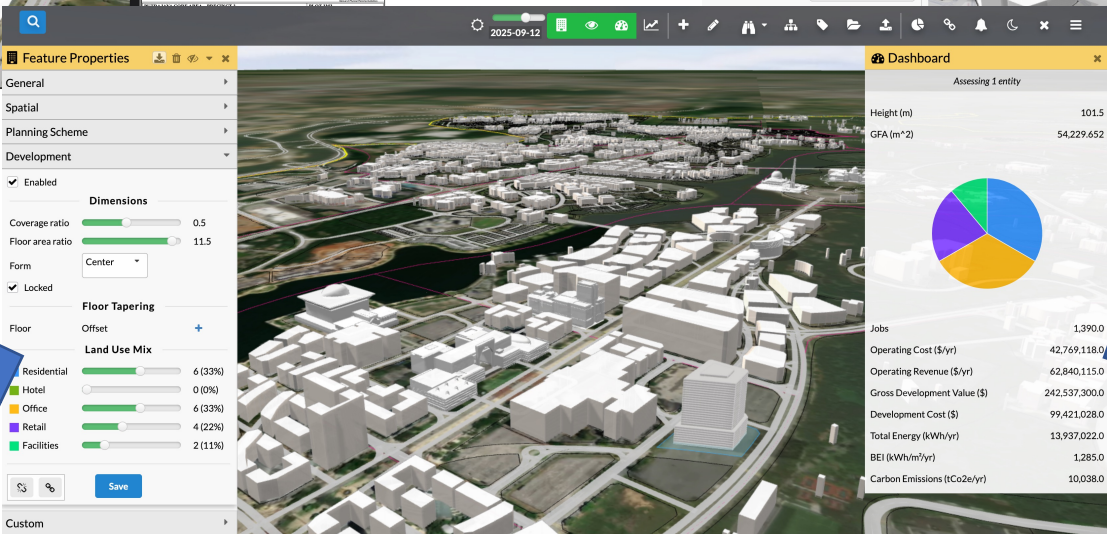
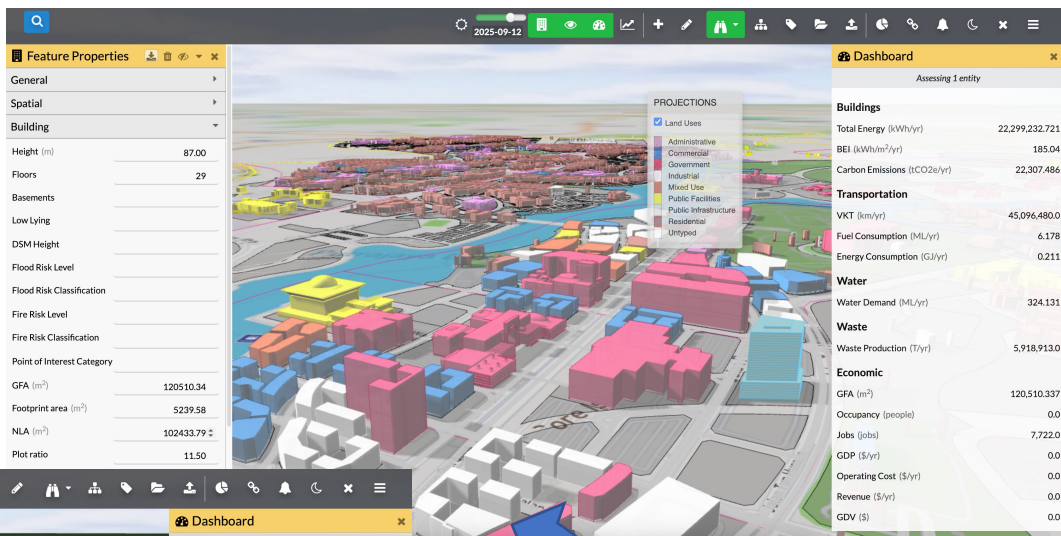
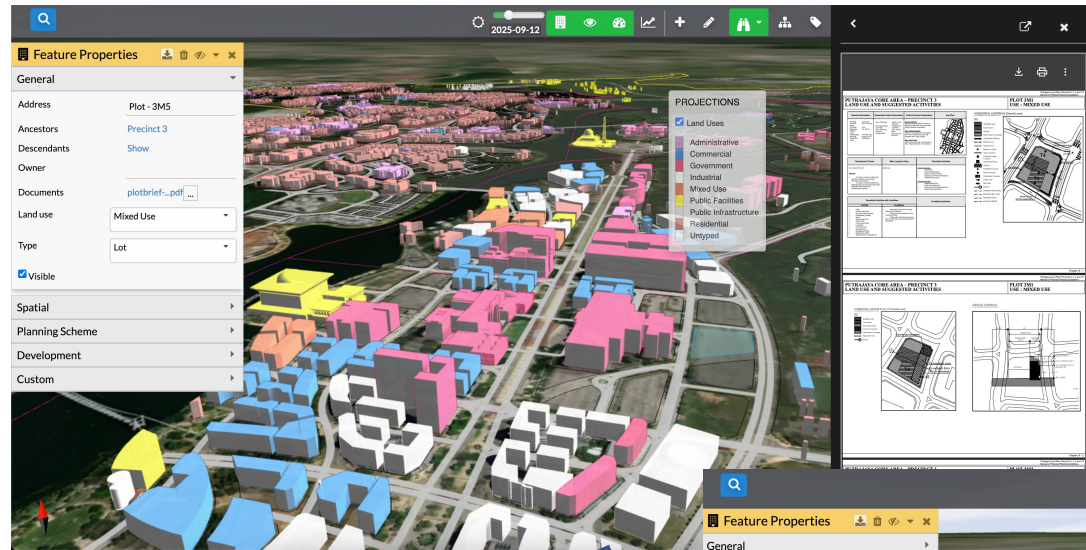
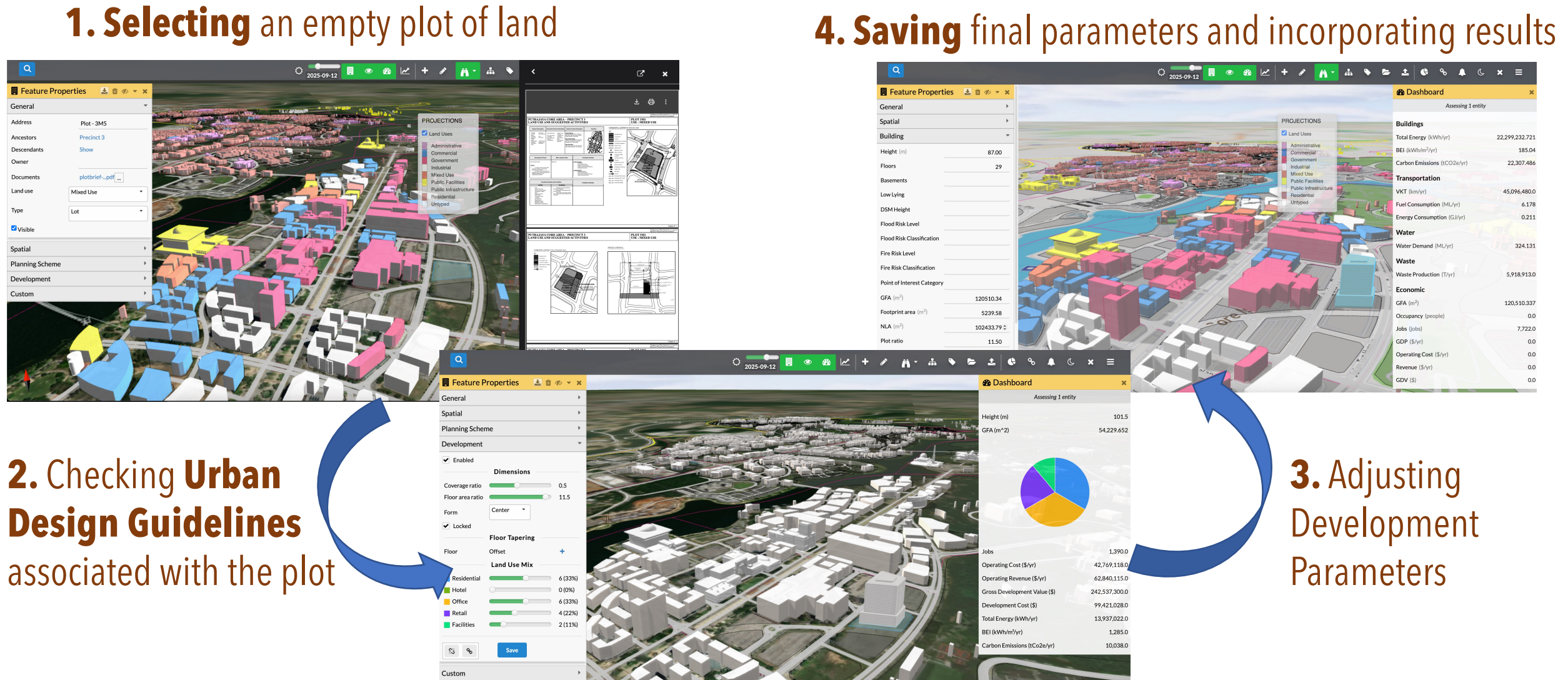




# AI Cities Use Case - Putrajaya



Developments feasibility simulation and analysis – using parametric modelling



# About AI Cities Initiative



**An acceleration initiative for cities to adopt and harness AI technologies in optimizing city efficiency and improve Rakyat's quality of life.**

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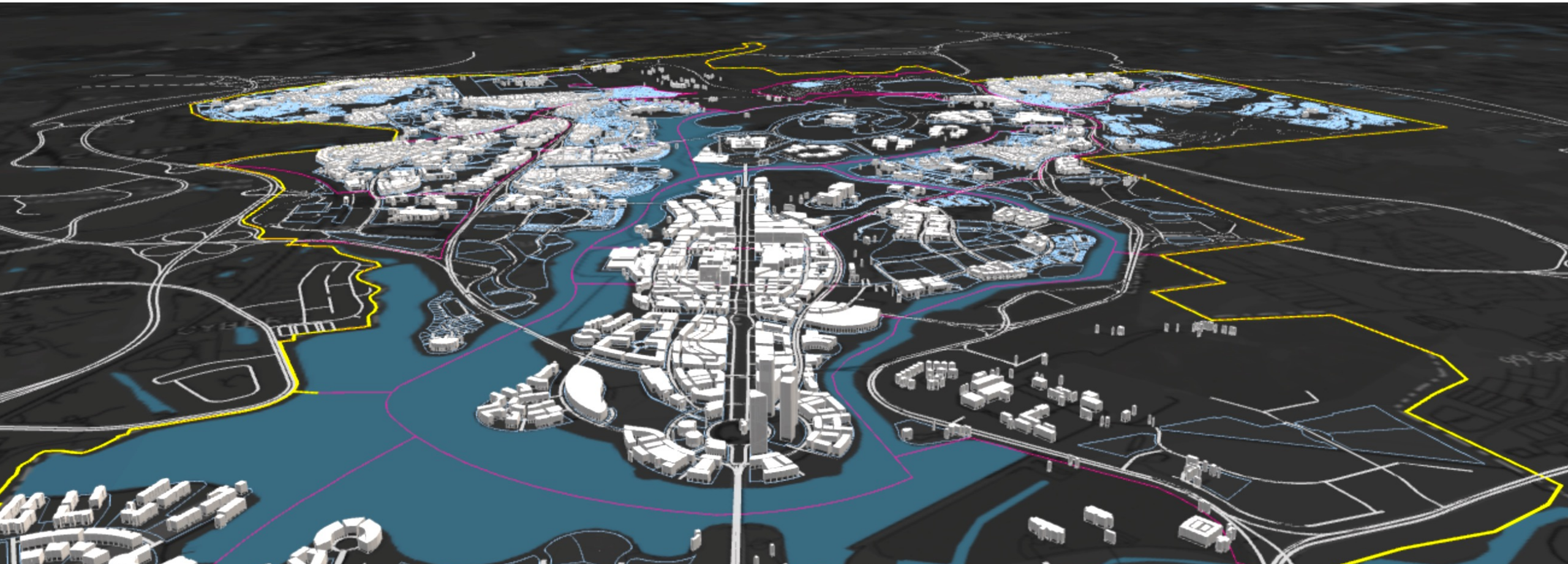
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