AI-Driven Urban Planning and City Digital Twins Leadership Training Course

11 – 22 January 2027
London - Premier Inn Victorya

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Programme Summary

AI-driven urban planning and city digital twins is the subject of this two-week training course for planning and city leaders at advanced level, culminating in an AI-enabled urban plan and digital twin roadmap for one city or district. Cities must decide where to grow, what to build and how to adapt to climate risk. The approach moves from urban data and planning principles, through land use, mobility, climate and demand modelling, to scenario testing, engagement and governance. Mars Training Centre UK delivers this programme in AI-driven urban planning.

The Business Case

Plans are often prepared from outdated surveys and tested against a handful of options, so infrastructure arrives late and growth spreads where services cannot follow. Geospatial analytics, machine learning and city digital twins let planners test many futures quickly and show residents the consequences of each choice. Authorities that govern these tools well decide faster and align investment with demand.

- Plan Preparation Cycle Time: Shortens as data pipelines and models replace manual surveys and one-off studies.
- Infrastructure Investment Alignment: Improves as housing, transport and utility demand forecasts guide capital programmes.
- Climate Risk Exposure: Falls as flood, heat and resilience scenarios shape land use and building controls.

Principles and Evidence Base

- UN-Habitat International Guidelines on Urban and Territorial Planning: Their integrated planning principles frame the planning logic in Sessions 1 and 2.
- UN-Habitat International Guidelines on People-Centred Smart Cities: Their inclusion and rights principles guide participatory planning in Session 8.
- ISO 37120: Its indicators for sustainable cities structure city performance baselines and targets in Sessions 2 and 7.
- ISO/IEC 42001: Its AI management system requirements shape the governance of planning models in Session 9.

Intended Participants

- Leaders accountable for city, regional or district development plans.
- Executives who direct development authorities and major urban projects.
- Heads of urban data, GIS and smart city units who supply evidence to planners.
- Senior infrastructure and transport planners who align capital programmes with growth.
- Municipal leaders responsible for climate adaptation and resilience strategy.

The programme serves municipal planning, development authorities, transport and infrastructure agencies, and real estate and utilities organisations.

Learning Outcomes

1. Participants will be able to evaluate the quality, coverage and bias of urban and geospatial data used in planning.
2. Participants will be able to construct land use, growth and demand scenarios using AI and spatial models.
3. Participants will be able to diagnose mobility, accessibility and climate risks across a city or district.
4. Participants will be able to design a city digital twin use case that supports specific planning decisions.
5. Participants will be able to prioritise planning interventions using indicators, engagement evidence and scenario results.
6. Participants will be able to justify governance controls for AI used in planning decisions to elected officials and residents.

Programme Structure

Day 1: AI-Driven Urban Planning Foundations

Where can AI improve planning decisions, and where must human judgement lead?

- Integrated Planning Principles From the UN-Habitat Guidelines
- Planning Decision Map From Strategy to Permit
- Machine Learning, Optimisation and Generative Methods in Planning
- Planning Authority AI Maturity Assessment
- Case Review of City AI Planning Programmes

Day 2: Urban Data Foundations and Geospatial Analytics

Is the city's data fit to support planning models?

- Spatial Data Infrastructure and GIS Layers
- Satellite Imagery and Remote Sensing for Land Cover
- ISO 37120 City Indicator Baselines
- Data Quality, Coverage and Bias Audit
- Data Sharing Agreements Between Agencies

Day 3: Land Use and Urban Growth Modelling

How will the city grow under different policies?

- Land Use Change Detection With Machine Learning
- Urban Growth and Sprawl Simulation Models
- Density, Zoning and Land Value Analysis
- Brownfield and Infill Site Identification
- Growth Boundary Options Testing

Day 4: Mobility and Accessibility Analysis

Can residents reach jobs and services within reasonable time and cost?

- Travel Demand Modelling With Mobility Data
- Accessibility and Fifteen-Minute Catchment Analysis
- Public Transport Network Coverage Gaps
- Land Use and Transport Integration Scenarios
- Road Safety Hotspot Detection

Day 5: Climate and Resilience Planning

Which areas face the greatest climate hazard, and how should land use respond?

- Flood Risk Mapping and Drainage Scenarios
- Urban Heat Island Analysis and Green Infrastructure
- Climate Hazard Exposure of Critical Infrastructure
- Nature-Based Solutions Siting
- Resilience Indicators for Planning Policy

Day 6: City Digital Twins for Planning

What should a city digital twin do for planners, and what does it need?

- City Digital Twin Architecture and Data Layers
- Three-Dimensional City Models and Building Data
- Sensor and Real-Time Data Integration
- Digital Twin Use Case Definition and Value Case
- Platform Options, Interoperability and Vendor Lock-In

Day 7: Housing and Infrastructure Demand Forecasting

How much housing, water, energy and social infrastructure will be needed, and where?

- Population and Household Projection Models
- Housing Need and Affordability Analysis
- Utility Demand Forecasting for Water and Energy
- Schools, Health and Social Facility Location Planning
- Linking Forecasts to Capital Investment Programmes

Day 8: Scenario Testing and Participatory Planning

How are options compared and shared with residents and stakeholders?

- Multi-Criteria Scenario Appraisal
- Trade-Off Visualisation for Decision-Makers
- People-Centred Engagement Using Digital Twin Visuals
- Analysing Public Consultation Responses With Text Analytics
- Equity Impact Assessment of Plan Options

Day 9: Ethical Governance of AI in Planning

How are planning models controlled, explained and held to account?

- ISO/IEC 42001 Controls for Planning Models
- Algorithmic Bias and Fairness Testing in Spatial Models
- Model Explainability for Planning Committees
- Privacy and Location Data Protection
- Roles, Approvals and Audit Trails for AI-Supported Decisions

Day 10: Applying AI-Driven Urban Planning to a City

Is the plan and roadmap ready for approval by city leadership?

- Applying Day 3 and Day 7 Models to a Chosen District
- Testing Day 5 Climate Scenarios Against the Preferred Option
- Setting Day 9 Governance Rules for the Digital Twin
- Capability, Funding and Partnership Plan
- Completing the AI-Enabled Urban Plan and Digital Twin Roadmap

Methodology

The programme is built around data workshops and case analysis. Participants use open geospatial data and sample city datasets to build growth, mobility and climate scenarios, then test them in a digital twin environment and present them to a simulated planning committee. Cases come from metropolitan cities and new towns.

- Suggested activity: Auditing a city dataset for coverage gaps and bias before modelling.
- Suggested activity: Comparing three growth scenarios on accessibility, cost and climate exposure.

- Suggested activity: Presenting a preferred plan option to a simulated planning committee.

Capstone Output

Each participant completes an AI-enabled urban plan and digital twin roadmap for one city or district. It contains a data readiness assessment, growth and demand scenarios, mobility and climate findings, a digital twin use case, an engagement plan and governance controls. It is used to brief city leadership and to scope the first digital twin investment.

Frequently Asked Questions

Is AI-driven urban planning training suitable for senior planning leaders without data science skills?

Yes. It is set at advanced level for leaders who direct plans and planning authorities, and assumes planning or city management experience rather than programming skills.

Which frameworks does the AI-driven urban planning programme rest on?

It rests on the UN-Habitat International Guidelines on Urban and Territorial Planning, the UN-Habitat International Guidelines on People-Centred Smart Cities, ISO 37120 and ISO/IEC 42001.

How is the roadmap from AI-driven urban planning and city digital twins training used at work?

You can use it to brief city leadership, scope a first digital twin investment, prioritise planning interventions and agree governance rules for planning models.

How does AI-driven urban planning differ from a smart city strategy programme?

It focuses on land use, growth, mobility, climate and demand decisions in plans, while smart city strategy programmes cover digital public services and technology adoption across government.