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Presented a lecture entitled

Chrono-urbanisme augmenté par simulation pilotée par l'IA : anticiper les impacts spatiaux et temporels de l'aménagement urbain dans les villes du quart d'heure

Colloque international

Repenser la ville et les territoires à l'aune de l'ia

Rethinking the city and territories with artificial intelligence

إعادة التفكير في التخطيط العمراني وإنشاء المدن في عصر الذكاء الاصطناعي

تونس في 24 و 25 octobre 2025

Simulating Tomorrow's City: An AI Toolkit for the 15-Minute City

A specialized suite of AI simulation tools integrated into a step-by-step framework to effectively plan, test, and optimize 15-Minute Cities

THE AI SIMULATION TOOLBOX



Real-Time Agent Simulation (URBAN-SIM)

Tests street-level interactions of autonomous robots and micromobility with pedestrians.



AI-Powered Scenario Generation (Aino.ai)

Uses natural language queries to rapidly analyze data and generate planning scenarios.



Long-Term Land Use Forecasting (UrbanSim)

Models decades long changes in population, jobs, and real estate markets.



System-Wide Optimization (CityLearn & MATSim)

Optimizes energy grids and analyzes city wide mobility patterns for millions of agents.

A 5-STEP INTEGRATED PLANNING WORKFLOW

1. Diagnose & Baseline



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Use GeoAI to audit the city and identify amenity deserts or infrastructure gaps.

2. Generate Strategic Scenarios



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Use an AI assistant like Aino.ai to rapidly create and compare high-level plans.

3. Forecast Long-Term Impacts



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Run scenarios through UrbanSim to predict 20-year effects on housing and jobs.

4. Simulate Real-Time Behavior



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Test specific street designs in URBAN-SIM for safety and efficiency.

5. Optimize Key Subsystems



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Use tools like CityLearn and MATSim to ensure sustainability and efficiency.

KEY CHALLENGES & CONSIDERATIONS



Avoiding Algorithmic Bias

Models trained on historical data may reinforce existing social inequalities.



Ensuring Data Privacy

Simulating human behavior raises critical questions about surveillance and data consent.



Bridging the "Sim-to-Real" Gap

Ensuring policies tested in simulation perform safely and reliably in the real world.