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From Mobility Data to Urban Quality of Life

How Digital Twins Support Better City Decisions | Luana Mihulet | 4 November 2026

Street space affects access, safety and reliability

What changes when a city reallocates street space?

- Bus priority can improve reliability and journey times
- Changes can affect local access, deliveries and traffic on nearby streets

WHO USES THE EVIDENCE?

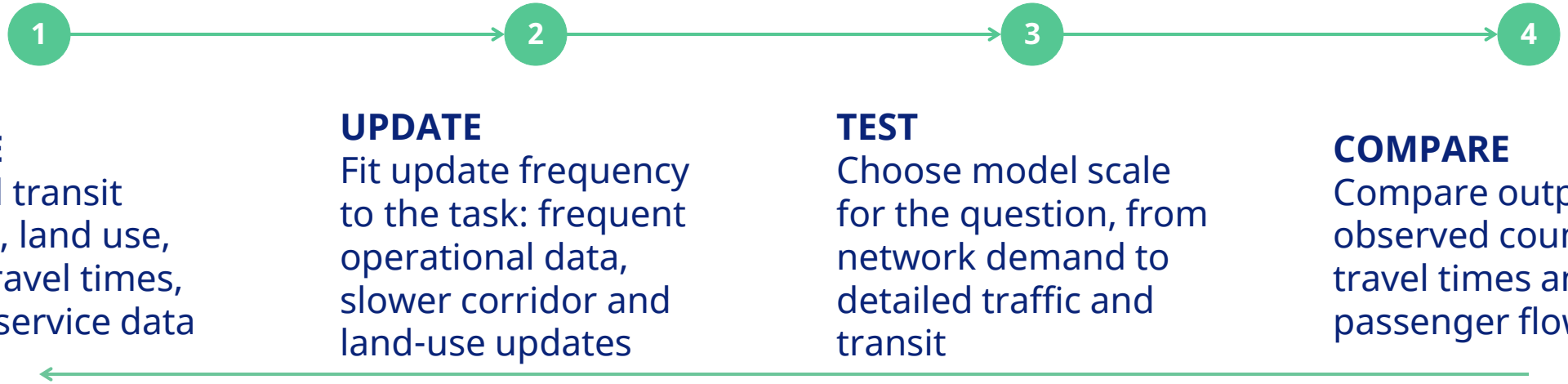
Public authorities set the goals. Consultants use this evidence to test options and explain trade-offs.



Mobility data shows travel patterns and delays. Local knowledge adds context: who is affected and what the data may miss. Together, they frame the question: what should change, for whom, and how can we test it?

Digital twins link models to real transport systems

A model can test a scenario. A digital twin connects it to observed conditions in a real place, then updates and checks it over time.



Calibrate the baseline with observed data. Where possible, validate with additional observations. Street observations feed the next update.

Compare alternatives on the same baseline

Keep the current layout

What already works? Where are delay and access problems concentrated?

Prioritise public transport

What changes for bus reliability, junctions and nearby streets?

Reallocate road space

How do walking, cycling and local access change alongside traffic?

Calibrate and validate the baseline before comparing scenarios.

Use observed counts, journey times and transit operations to check the baseline.
Compare realistic packages with common indicators, test key assumptions and monitor nearby streets.
Visum supports network planning; Vissim detailed traffic operations.

Stockholm Line 4: 49.1% modelled travel-time reduction

Modelled result

49.1%

Package tested

Dedicated median lanes, signal priority, off-board fare collection and level boarding.

Scenario

Bus rapid transit (BRT), with buses every three minutes, compared with current Line 4 service.

Interpretation

The model was calibrated with operator data and observed GPS travel times. The result reflects the full package.

This was a simulated result before implementation, not a measured before-and-after outcome.

Digital twins support better city decisions

Compare options before implementation, then check results against what happens on the street.

CITY BENEFITS

01 Compare realistic options with a shared baseline and indicators.
02 Test how combined measures could affect the wider network.
03 Explain trade-offs between different scenarios.
04 Monitor outcomes and refine future decisions.

LIMITATIONS TO MANAGE

01 Represent selected aspects of reality, not every detail.
02 Results depend on data, assumptions and scenario design.
03 Local observations can reveal gaps or effects that shift elsewhere.
04 Use relevant data with privacy safeguards.

“A digital twin is not a perfect copy of reality. It is a tool for asking better questions about reality.”

Thank you

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Questions or want to continue the discussion? Come and talk with us at the PTV booth.

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