

Aveiro Tech City Living Lab Digital Twin

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<https://pi-digitaltwin.netlify.app>

Objectives

- Develop a **Digital Twin platform** for Aveiro.
- Visualize **real-time data** from city-wide sensors.
- Create a **virtual representation** of Aveiro's urban environment.
- Enable simulation of scenarios blending with real events.
- Optimize urban planning and traffic management.
- Utilize tools like **SUMO** and **CARLA** for enhanced infrastructure management.
- Support sustainable urban development initiatives.

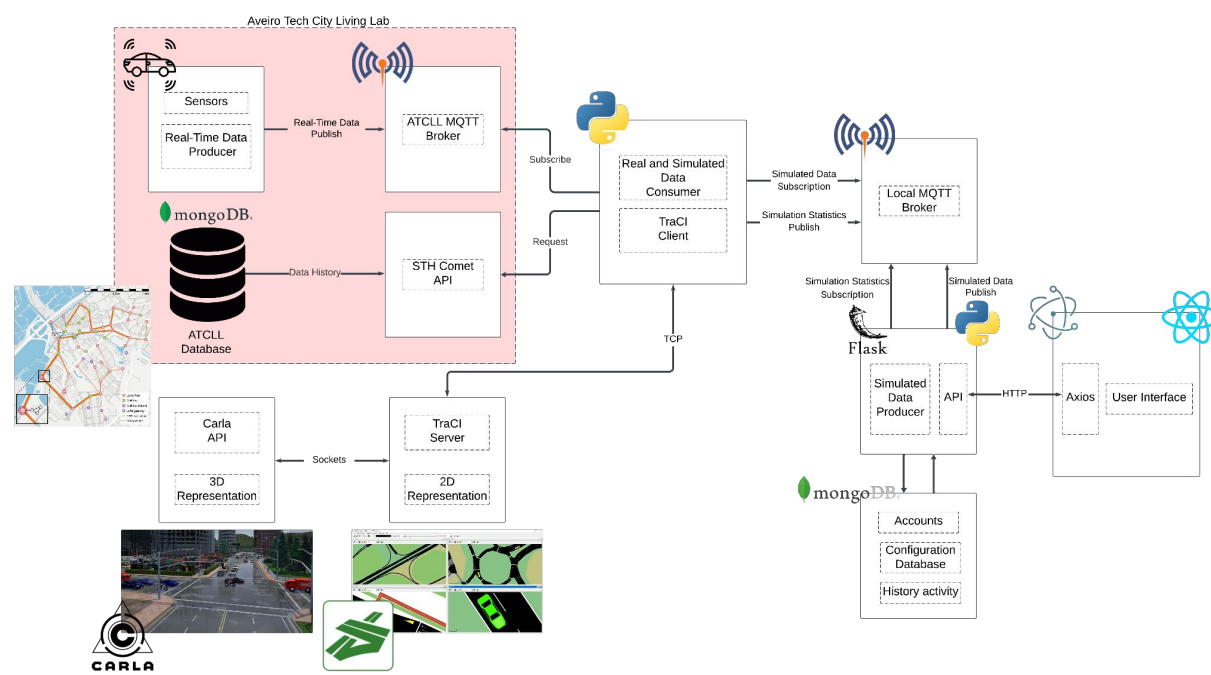


Fig 1- System Architecture

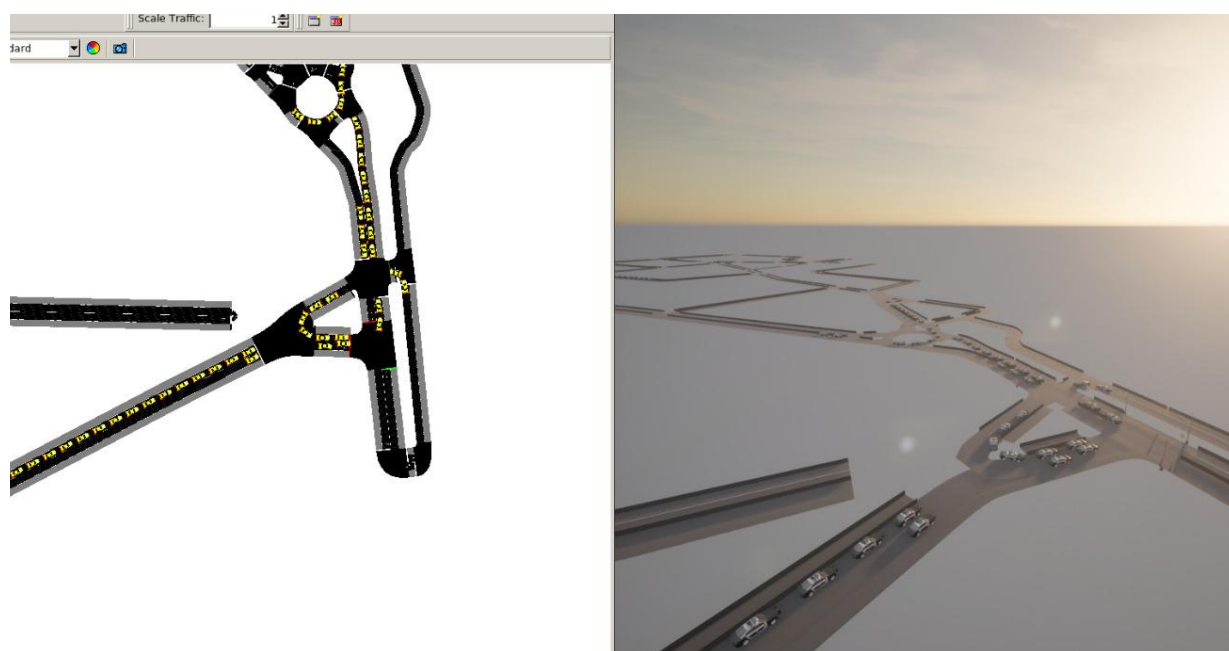


Fig 2- Co-Simulation SUMO/CARLA

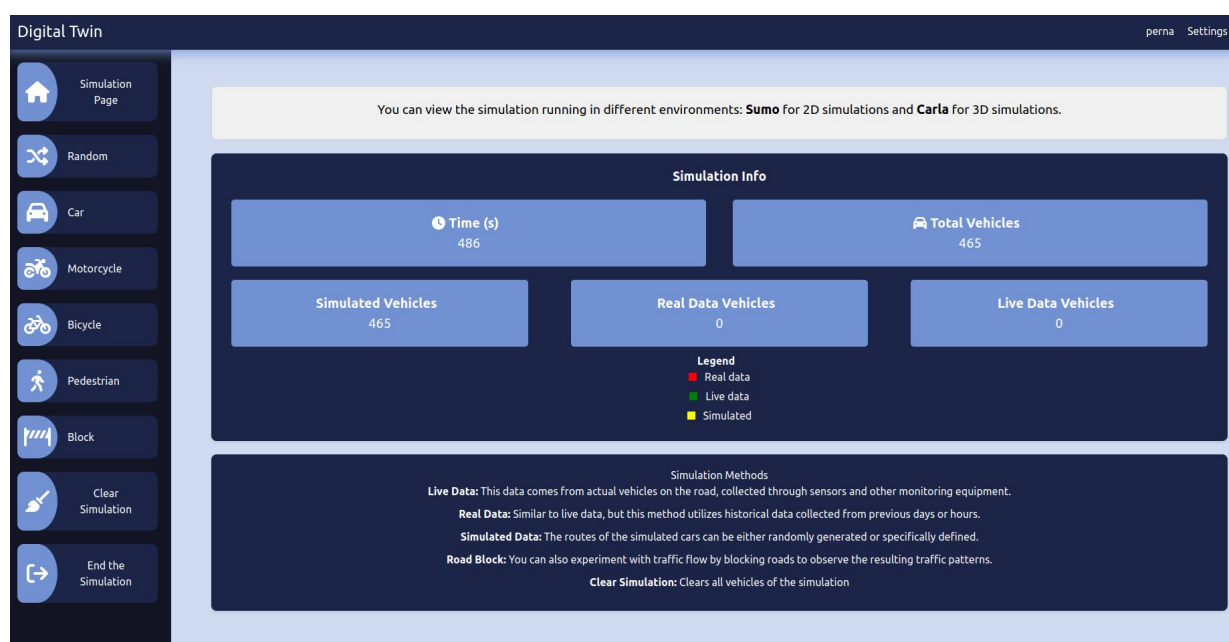


Fig 3- Aveiro Digital Twin Simulation Info Page

Functionalities

Live Data Simulation:

- Include real-time data in simulations.
- Observe real and simulated vehicle interactions.
- Manage traffic flow by blocking roads and roundabouts.

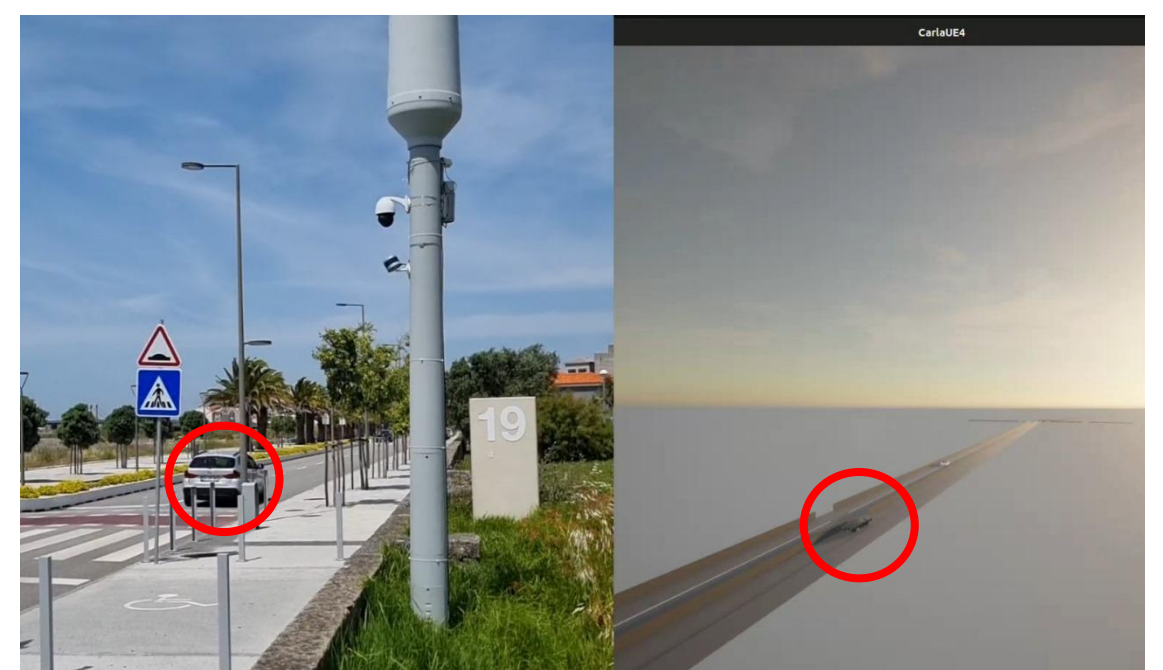


Fig 3- Simulation in Carla with live data from Rua da Pega

Real Data Simulation:

- Insert real traffic data from specific dates and times.
- Analyze historical traffic impact and patterns.
- Add vehicles with predefined routes, block streets, and manage pedestrian flow.

Simulated Data:

- Design traffic scenarios using only simulated vehicles.
- Reproduce traffic ideas on a real map of Aveiro.
- Modify urban layout virtually to test traffic management strategies.

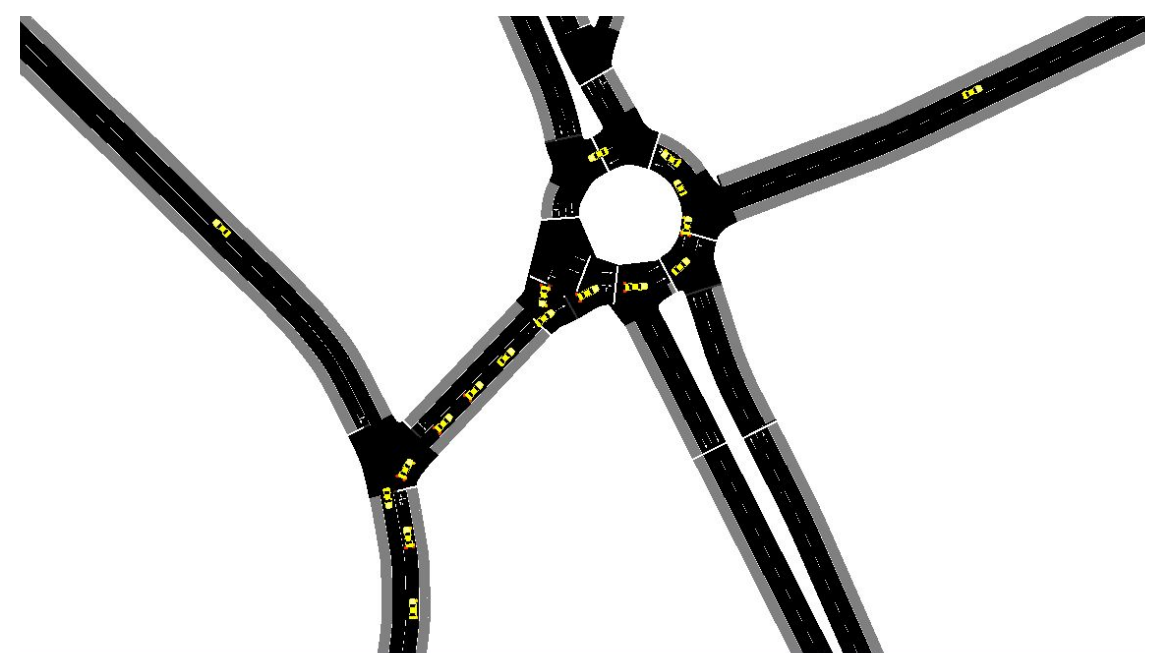


Fig 4- Isca Roundabout on SUMO