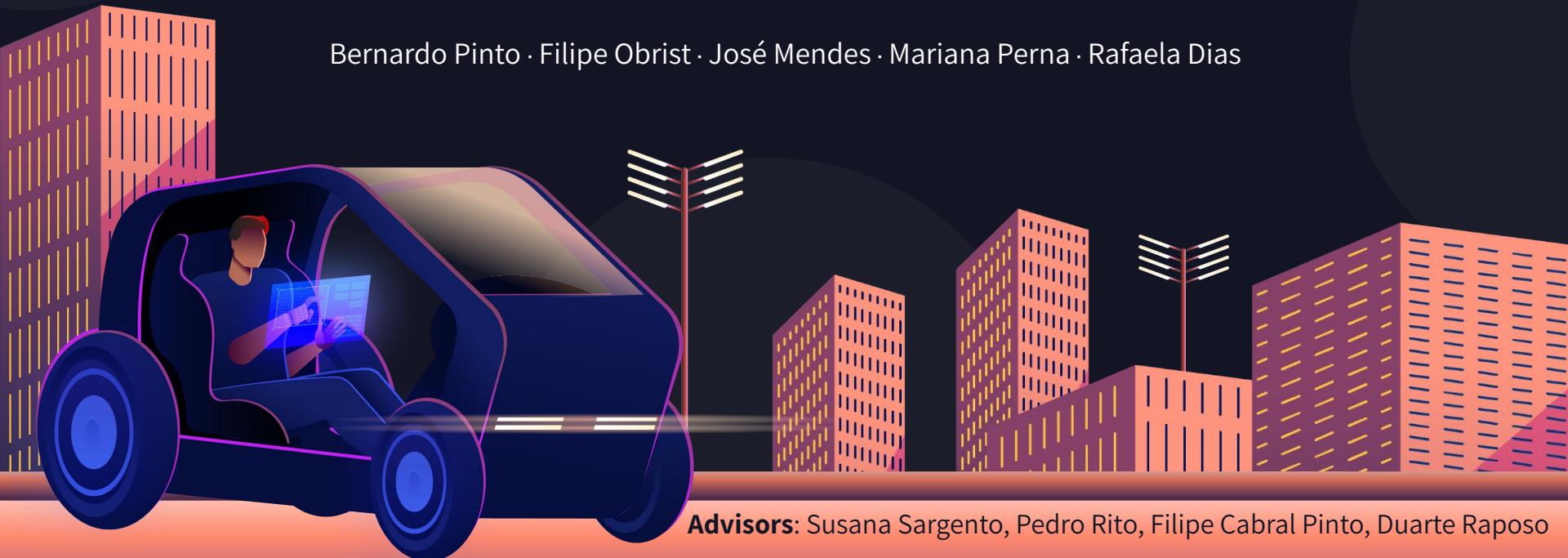


AVEIRO TECH CITY LIVING LAB

DIGITAL TWIN

Bernardo Pinto · Filipe Obrist · José Mendes · Mariana Perna · Rafaela Dias



Advisors: Susana Sargento, Pedro Rito, Filipe Cabral Pinto, Duarte Raposo

OUR TEAM



Bernardo Pinto



Filipe Obrist



José Mendes



Mariana Perna



Rafaela Dias

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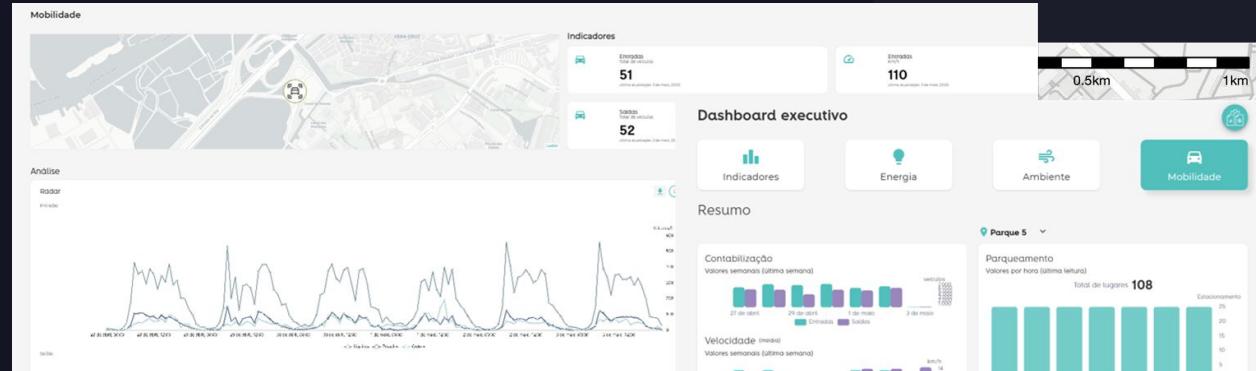
01

CONTEXT



CONTEXT

- ★ SmartCities
- ★ Digital Twin
- ★ Aveiro Tech City Living Lab (ATCLL)
<https://aveiro-living-lab.it.pt/citymanager>
- ★ Live!Urban



02

STATE OF ART



STATE OF ART

Building a Motorway Digital Twin in SUMO

Real-Time Simulation of
Continuous Data Stream from
Traffic Counters

<https://ieeexplore.ieee.org/document/9899796>

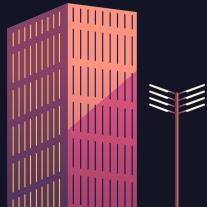
Smart Mobility Digital Twin for Automated Driving

Design and Proof-of-Concept

<https://ieeexplore.ieee.org/document/10200728>

Efficient Procedure of Building University Campus Models for Digital Twin Simulation

<https://ieeexplore.ieee.org/document/9913679>

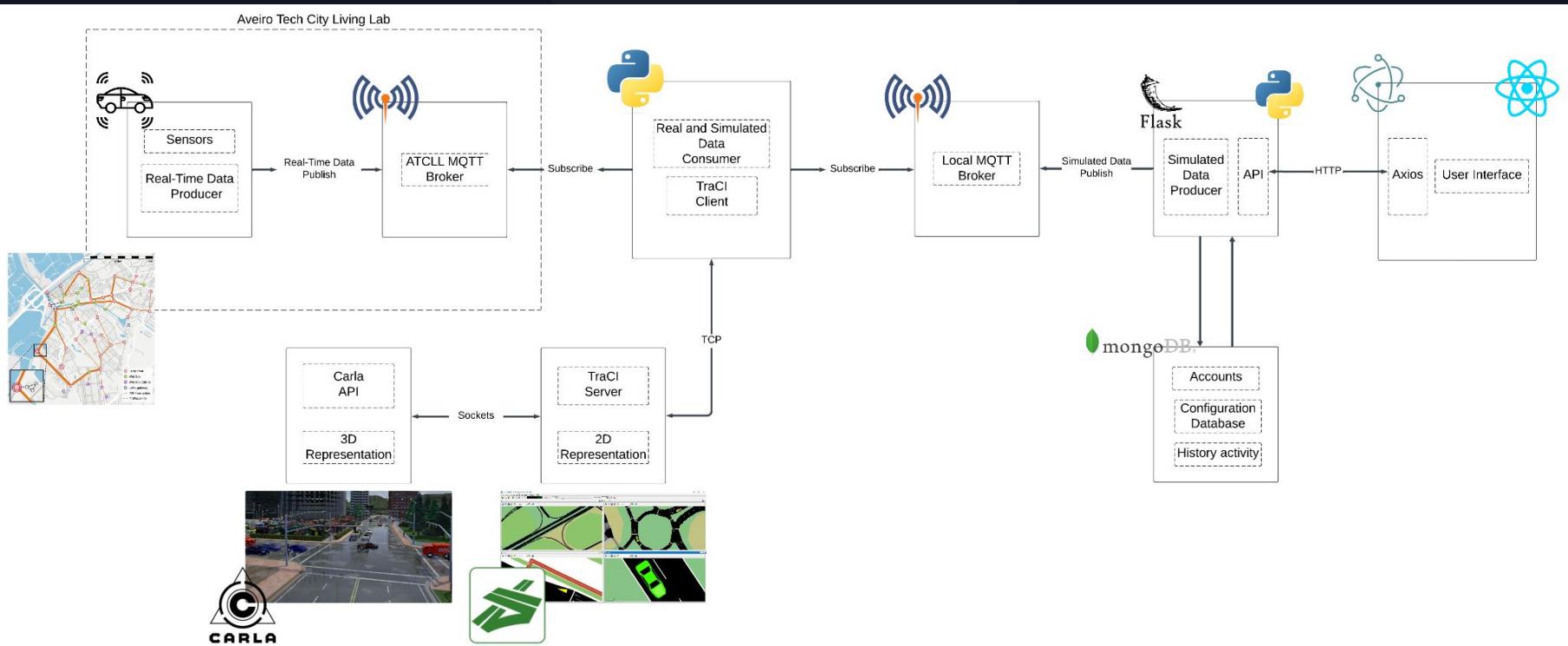


03

ARCHITECTURE

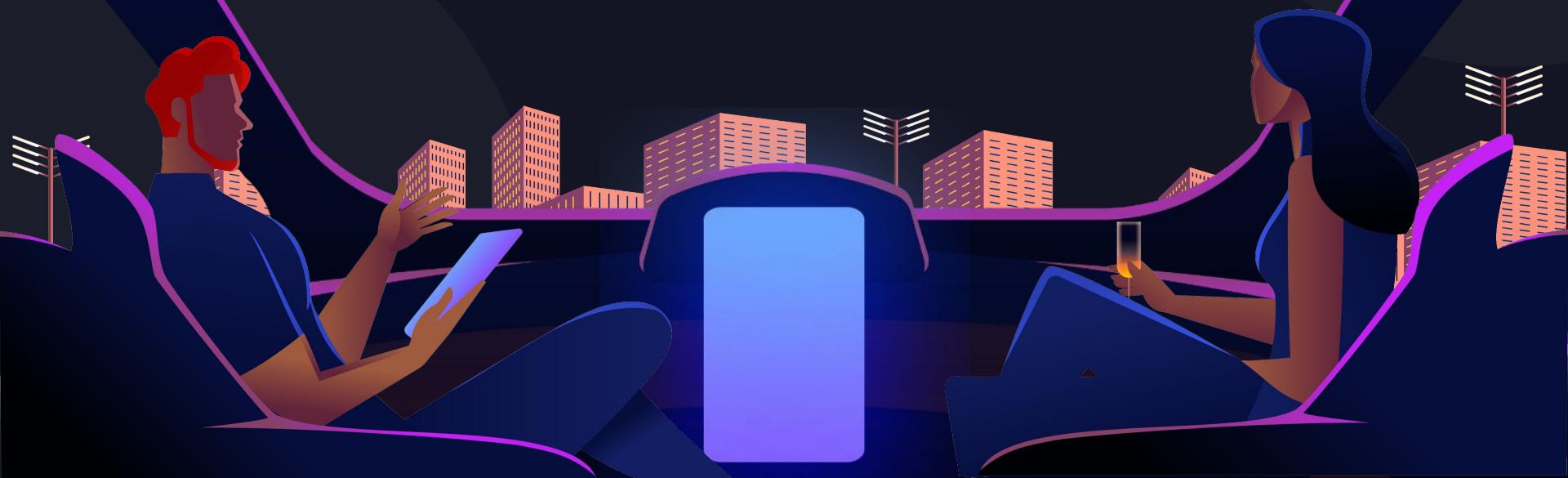


ARCHITECTURE



04

WORK DONE



MAP GENERATION

1. .osm export (<https://www.openstreetmap.org>)
2. Map cleaning with JOSM
3. Creation of the header with georeferencing for the .xodr *
4. Creation of the .xodr from .osm *
5. From .xodr create the .net.xml file

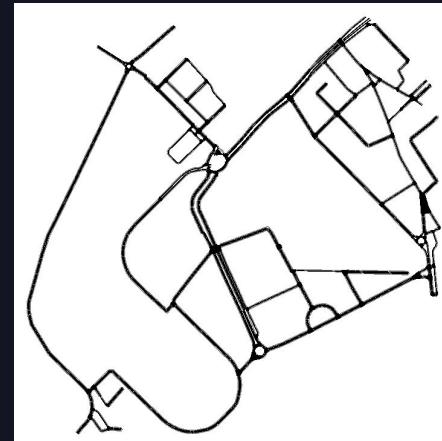
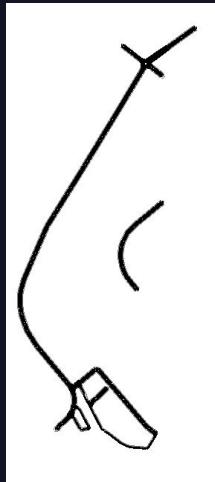


.net.xml

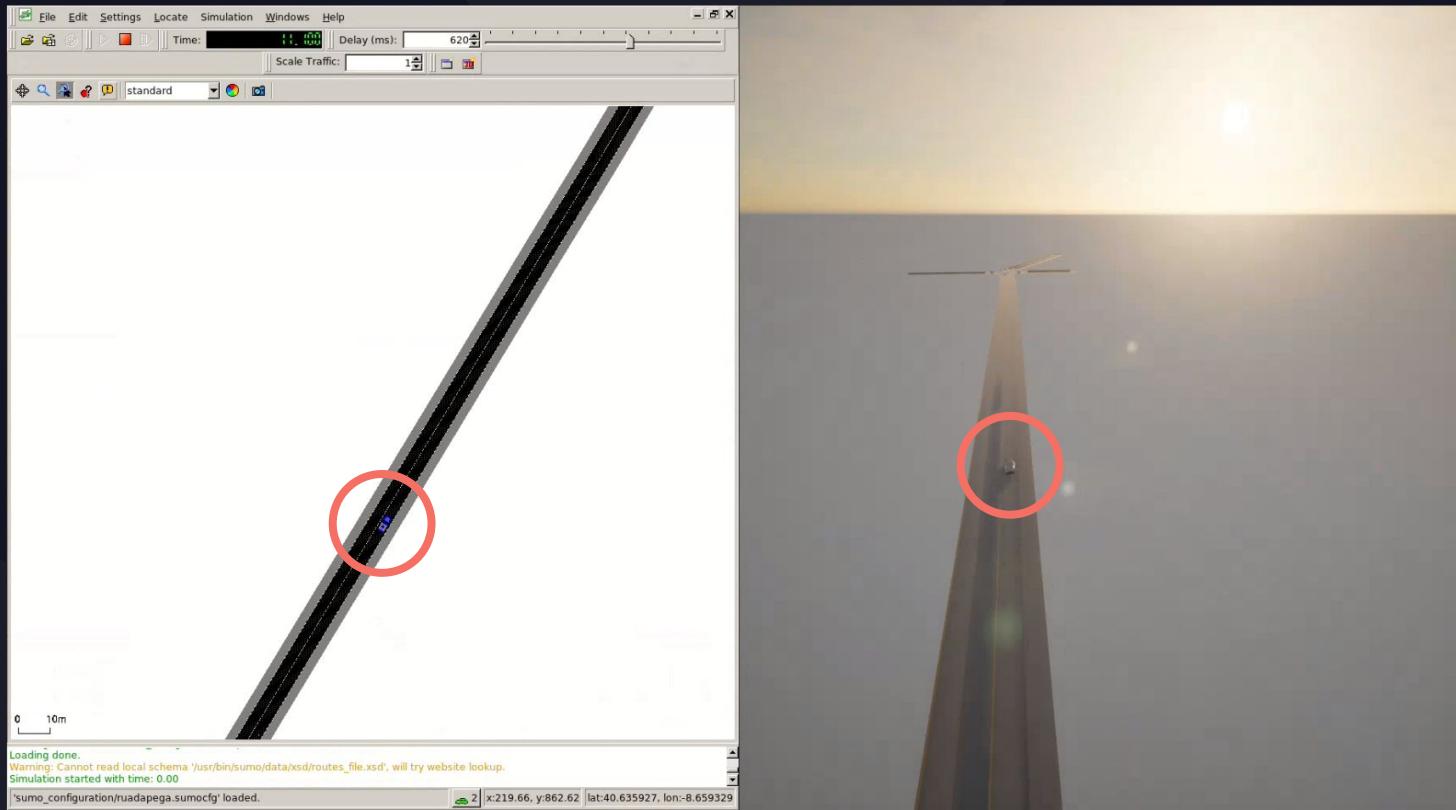


.xodr

EVOLUTION OF THE COVERAGE AREA



SUMO / CARLA INTEGRATION



INTEGRATION WITH THE INTERFACE



User management



Simulation of a car
with a specific route



Addition of massively
simulated data



USER MANAGEMENT



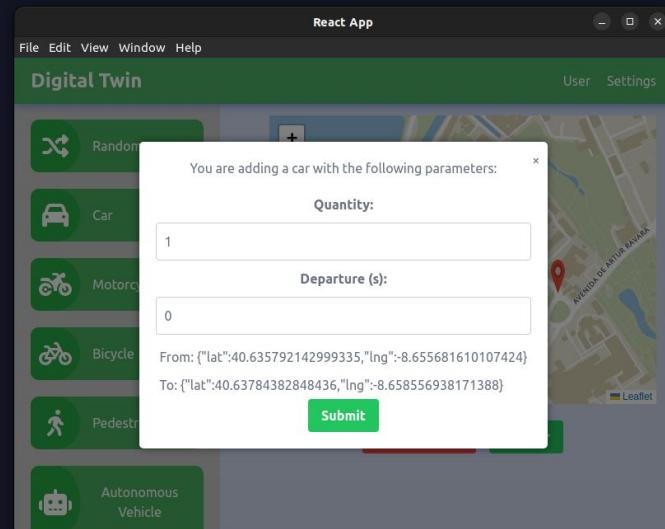
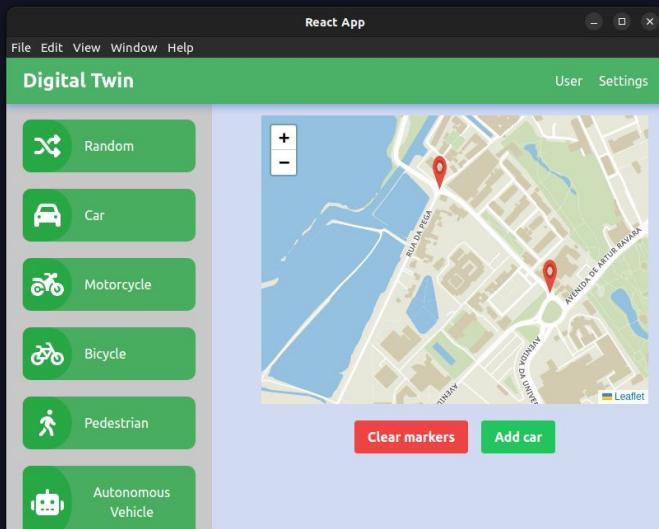
Allow the User to create an account in order to make simulations



Users can Login anytime they wish to make a new simulation



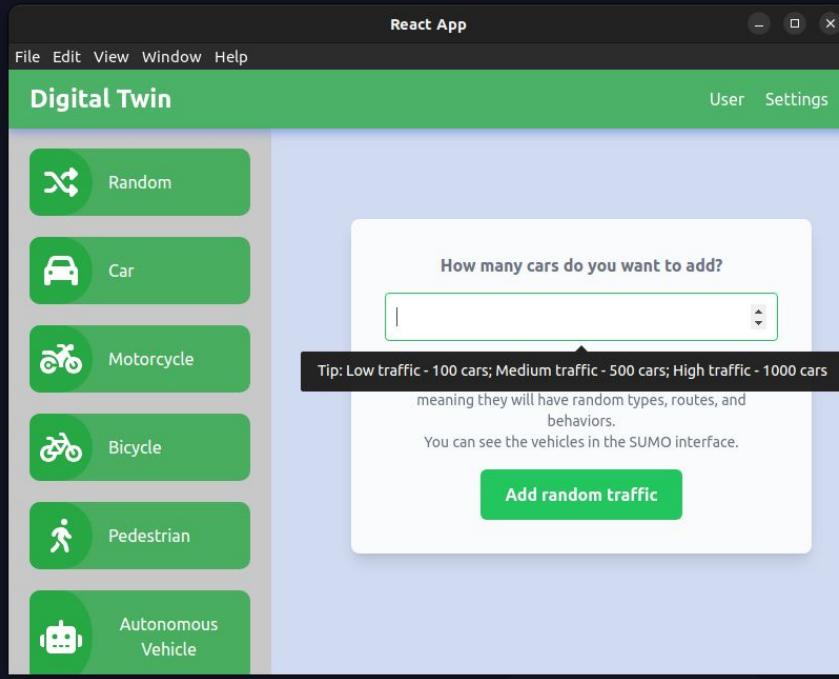
SIMULATED DATA PRODUCTION



Interface under development



ADDITION OF MASSIVELY SIMULATED DATA

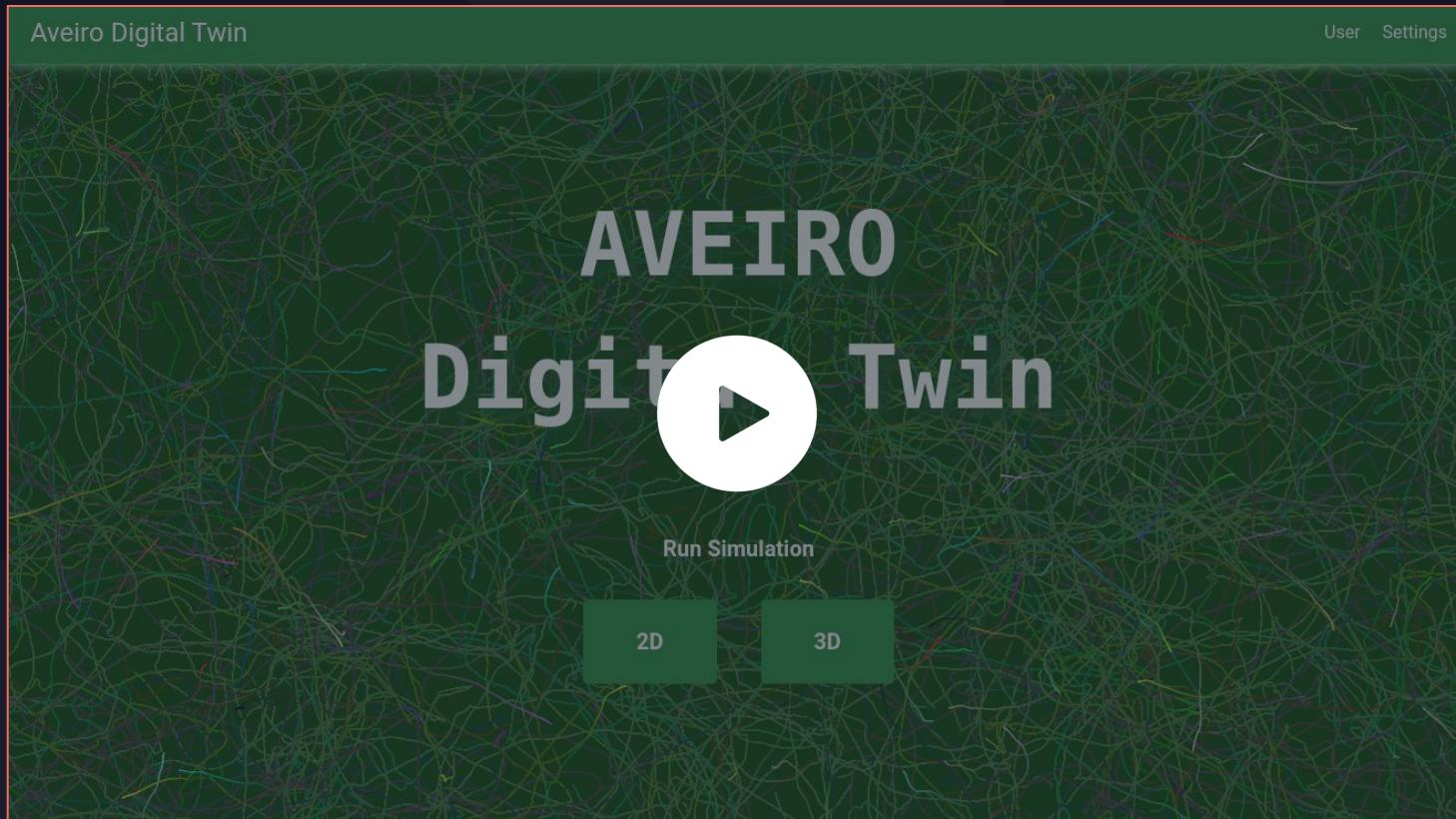


05

PROTOTYPE / DEMO



PROTOTYPE / DEMO



06

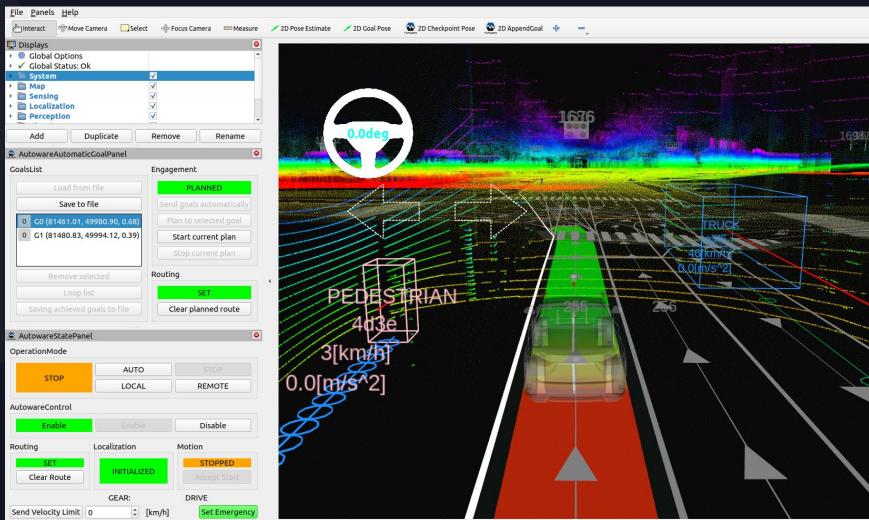
FUTURE WORK



INTEGRATION WITH THE INTERFACE

1

Integration AUTOWARE
(Autonomous Vehicles)



2

Integrating real data
simulation with
simulated ones

3

Service containers

4

Collisions



Thanks!

Do you have any questions?

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