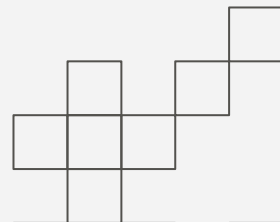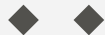# AVEIRO TECH CITY LIVING LAB
DIGITAL TWIN

Bernardo Costa · Filipe Obrist · José Mendes · Mariana Perna · Rafaela Dias
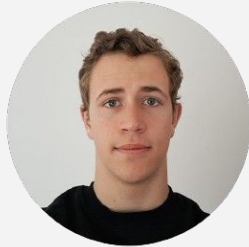
Advisors: Pedro Rito, Susana Sargento, Filipe Cabral Pinto, Duarte Raposo

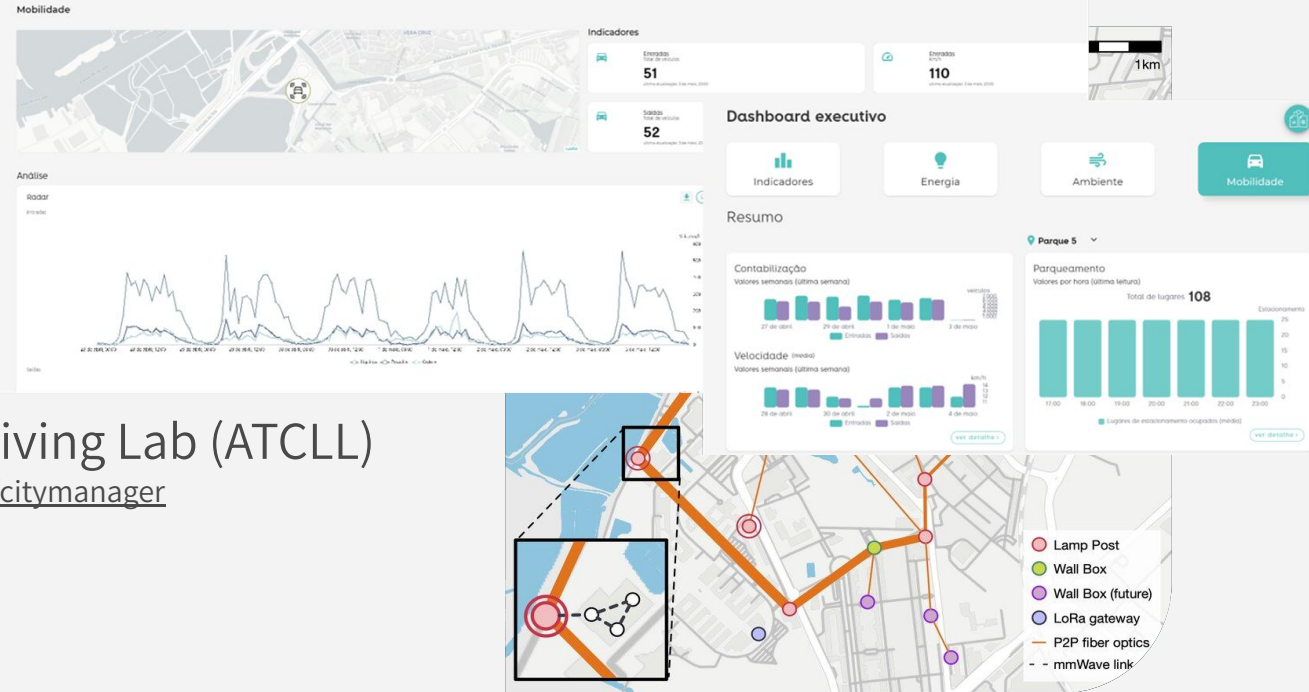# OUR TEAM

Bernardo Pinto

Filipe Obrist

José Mendes

Mariana Perna

Rafaela Dias

CONTEXT

◆ SmartCities
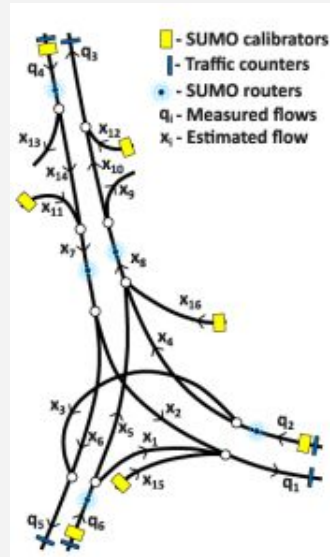
◆ Digital Twin

◆ Aveiro Tech City Living Lab (ATCLL)
https://aveiro-living-lab.it.pt/citymanager

◆ Live!Urban

STATE OF THE ART

Building a Motorway Digital Twin in SUMO

Real-Time Simulation of Continuous Data Stream from Traffic Counters

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

- SUMO calibrators
- Traffic counters
- SUMO routers
- q_i - Measured flows
- x_i - Estimated flow

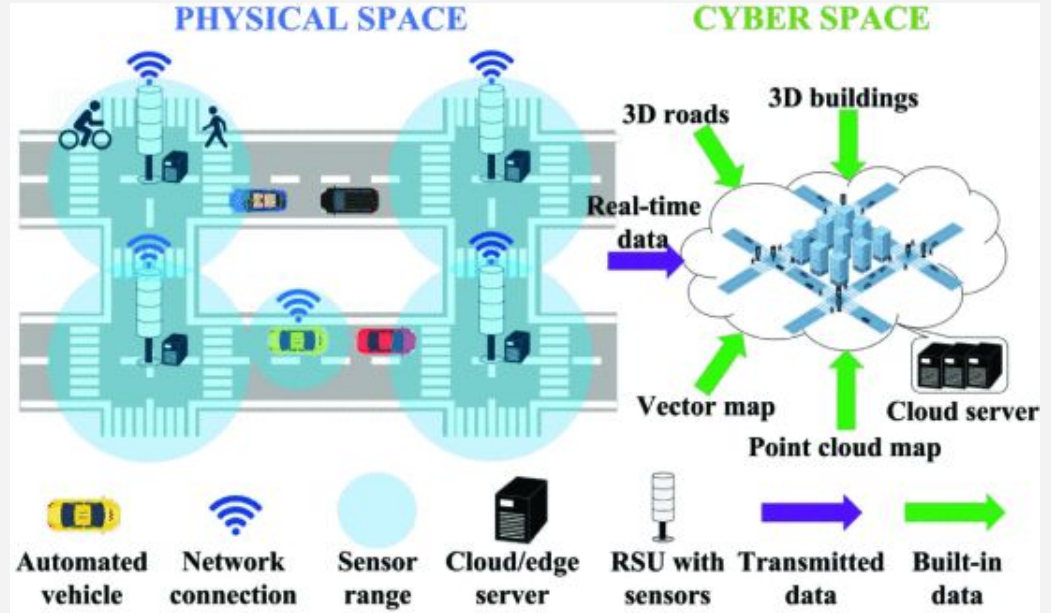(a) Traffic counters: East (E), North (N), South (S)

(b) Physical motorway with traffic counters

STATE OF THE ART

Smart Mobility Digital Twin for Automated Driving
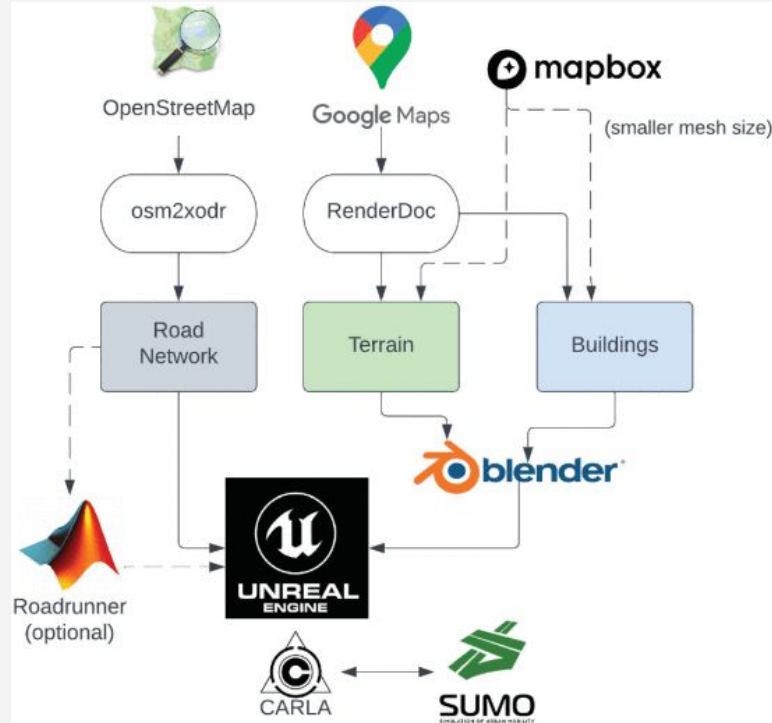
Design and Proof-of-Concept
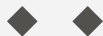
https://ieeexplore.ieee.org/document/10200728

STATE OF THE ART

Efficient Procedure of Building University Campus Models for Digital Twin Simulation

https://ieeexplore.ieee.org/document/9913679
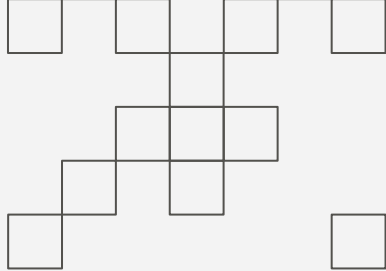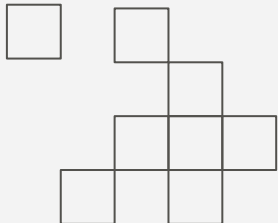
REQUIREMENTS

REQUIREMENTS GATHERING

01
Discussion with our advisors

02
Team brainstorming sessions

03
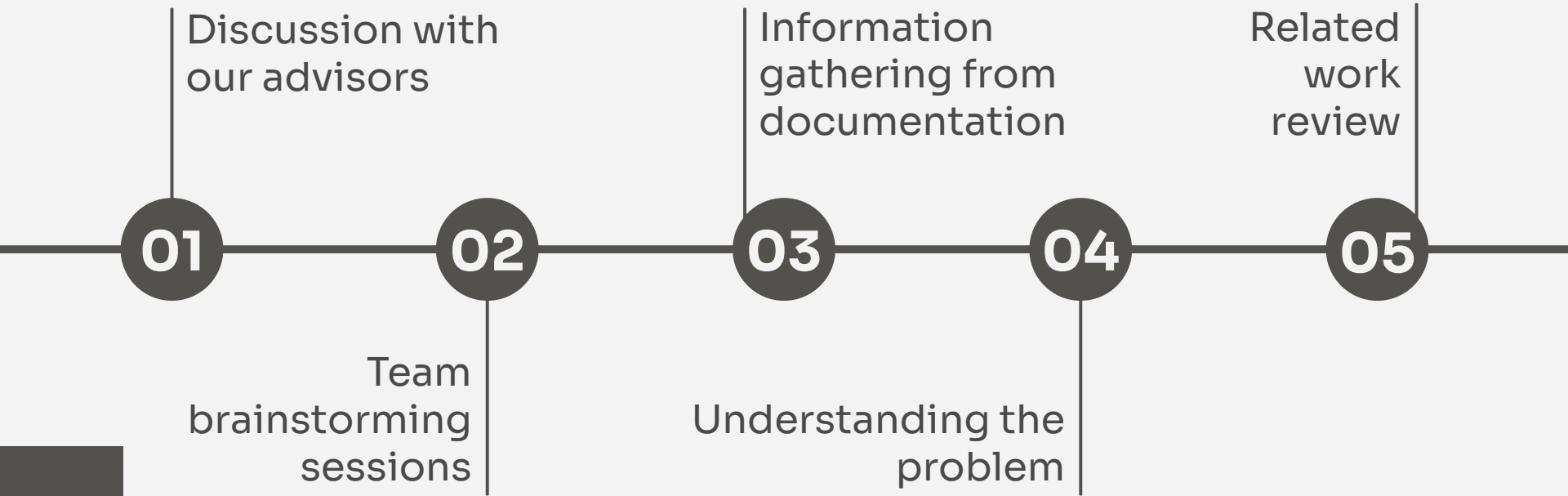Information gathering from documentation

04
Understanding the problem

05
Related work review

FUNCTIONAL REQUIREMENTS

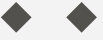Real–time traffic monitoring

Traffic simulation

Integration of real and simulated environment

Visualisation of integration in 3D

NON-FUNCTIONAL REQUIREMENTS

Scalability

Low latency

Fiability

Maintainability

Usability

ACTORS

COMPANIES

Utilize the data to develop applications that improve urban mobility
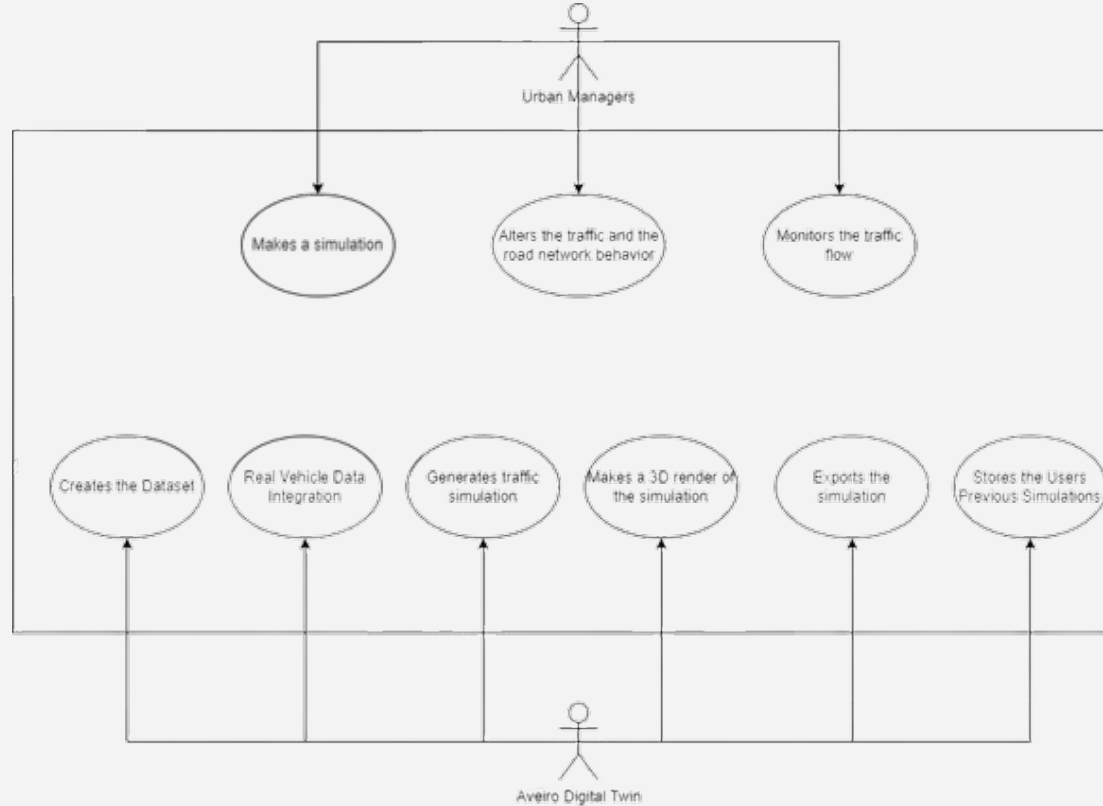
RESEARCHERS

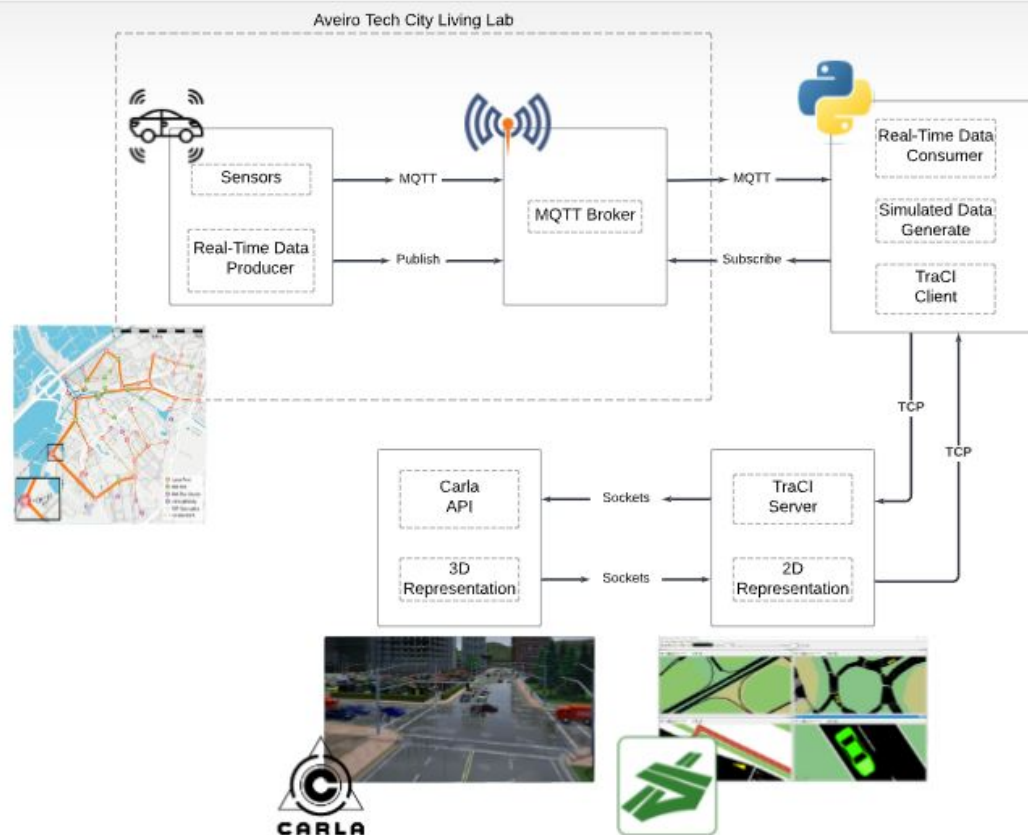Learn and contribute to the field of urban mobility and autonomous vehicles

DEVELOPERS

Build solutions that are commercially viable
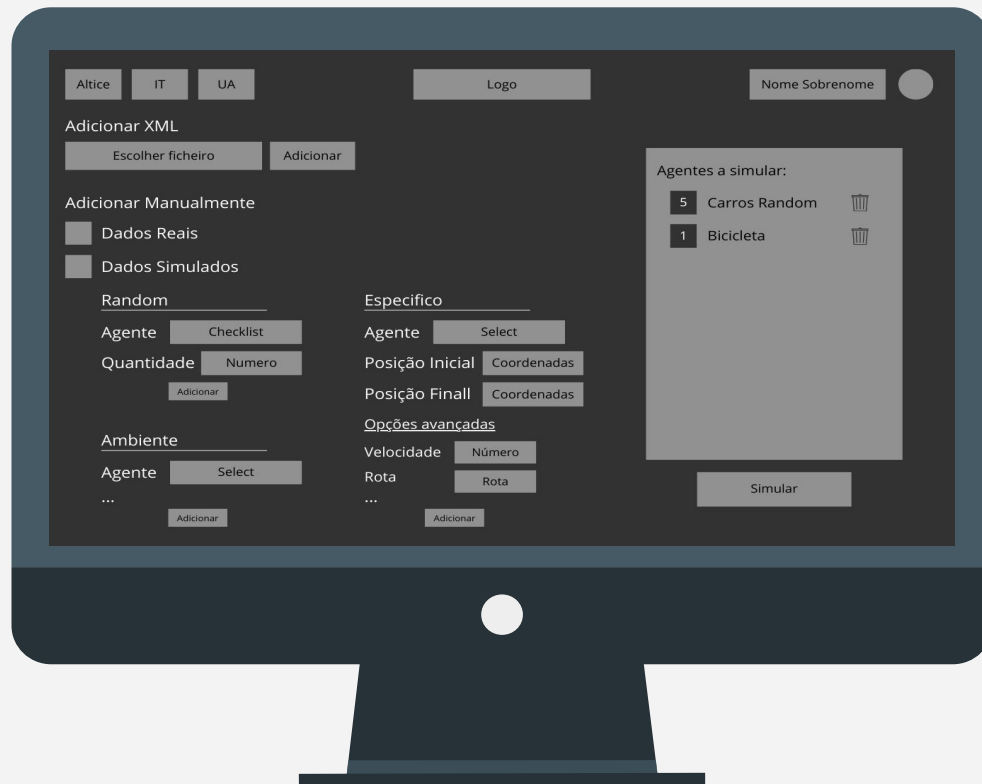
USE CASES

SYSTEM ARCHITECTURE

MOCK-UP

Altice   IT   UA   Logo   Nome Sobrenome ⬤

Adicionar XML

Escolher ficheiro   Adicionar

Adicionar Manualmente

☐ Dados Reais

☐ Dados Simulados

Random   Especifico

Agente   Checklist   Agente   Select

Quantidade Numero   Posição Inicial Coordenadas

Adicionar   Posição Finall   Coordenadas

                               Opções avançadas

Ambiente   Velocidade   Número

Agente   Select   Rota   Rota

...   ...

Adicionar   Adicionar

Agentes a simular:

5 Carros Random 🗑

1 Bicicleta   🗑

Simular

MOCK-UP

THANKS

To get more info, check out our website
https://pi-digitaltwin.netlify.app/