AVEIRO TECH CITY LIVING LAB

DIGITAL TWIN

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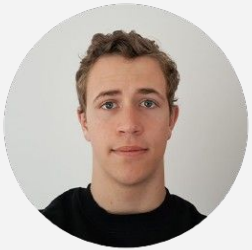
OUR TEAM

Bernardo Pinto



Filipe Obrist

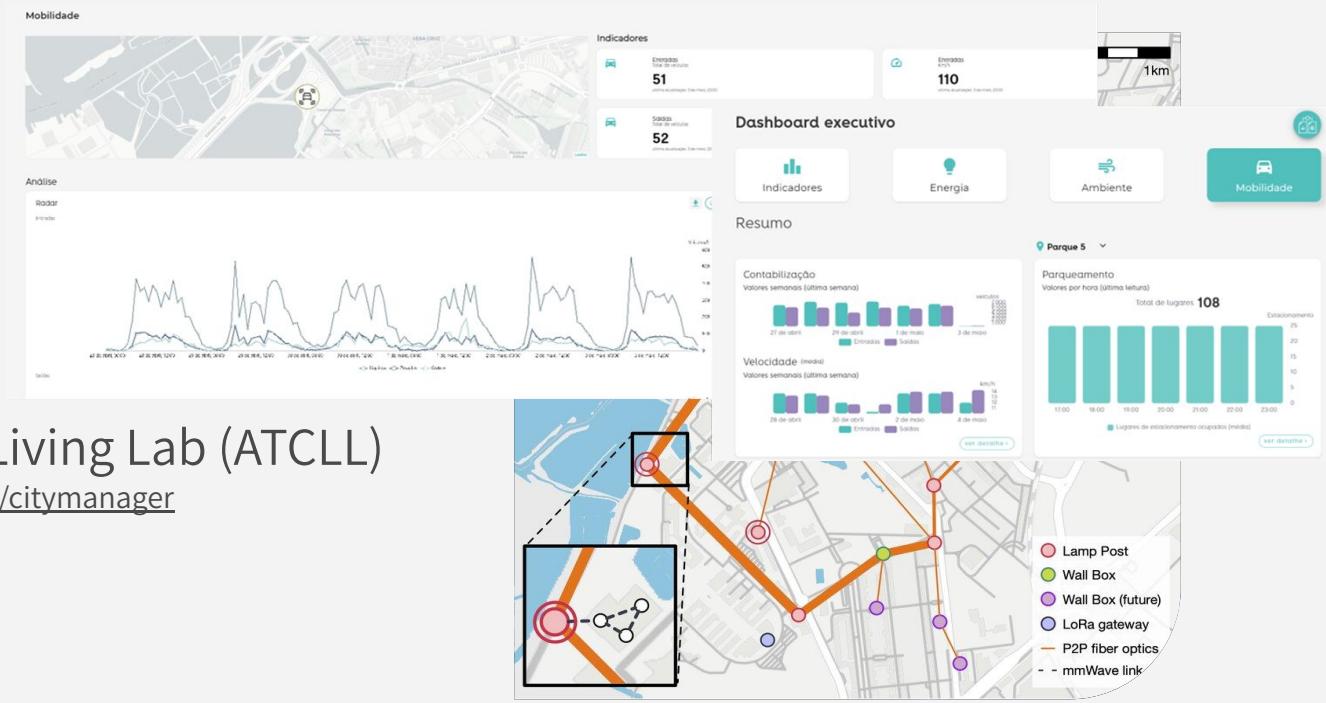
José Mendes

Mariana Perna

Rafaela Dias

CONTEXT

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



PROBLEM

REACTIVE RESPONSE TO ISSUES

LIMITED DATA VISIBILITY AND INSIGHTS

INEFFICIENT RESOURCE ALLOCATION

GOALS

DIGITAL TWIN

AUTONOMOUS VEHICLE SCENARIOS

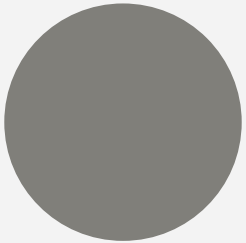
MULTI-MODAL TRANSPORTATION SCENARIOS

RESULTS VALIDATION

RELATED WORK

Building a Motorway Digital Twin in SUMO

Real-Time Simulation of Continuous Data Stream from Traffic Counters



Smart Mobility Digital Twin for Automated Driving

Design and Proof-of-Concept

Efficient Procedure of Building University Campus Models for Digital Twin Simulation

TASK LIST

01

Study and analysis of SUMO and CARLA software

02

Analysis of requirements

03

Architecture design for integration of simulators and real data

04

Development of connectors and frameworks

05

Integration of real data and several roads/areas in Aveiro

06

Development of the services

07

Tests in Digital Twin setup and stimulate changes in the environment

08

Analysis of results and documentation

PROJECT CALENDAR

WEEK	DATE	TASK	DELIVERY
1	20/02/2024		
2	27/02/2024	• **Study of the various types of sensors and the types of data generated** • **Study and analysis of SUMO and CARLA software** • **Analysis of requirements**	**M1**
3	05/03/2024	**Architecture design for integration of simulators and real data:** develop the architecture design that will allow the connection between the simulators (SUMO and CARLA), viewers and data from sensors, systems and connected vehicles. Conceptual phase where the global structure of the system will be outlined.	
4	12/03/2024	**Development of connectors and frameworks :** Implement connectors and frameworks utilizing technologies like REST, ROS2, and MQTT, enabling efficient communication between system components.	**M2**
5	19/03/2024	**Integration of real data and several roads/areas in Aveiro:** Ensure the simulation reflects the actual urban environment of Aveiro for accurate testing and analysis.	
6	26/03/2024		

WEEK	DATE	TASK	DELIVERY
7	02/04/2024	**Development of the services:** e.g. change of characteristics in roads, multi-modal services, autonomous vehicle services	
8	09/04/2024		
9	16/04/2024		**M3**
10	23/04/2024	**Tests in Digital Twin Setup and stimulate changes in the environment:** Conduct comprehensive tests within the Digital Twin setup, simulating dynamic scenarios to assess the platform's responsiveness to environmental changes.	**M3**
11	30/04/2024		
12	07/05/2024	**Analysis of results and documentation:** Evaluate the outcomes of tests, analyze data, and document findings, ensuring a systematic and comprehensive understanding of the project's progress.	
13	14/05/2024		
14	21/05/2024		
15	28/05/2024		**Demo + Poster**
16	04/06/2024		**M4**

EXPECTED RESULTS

DIGITAL TWIN OF THE CITY OF AVEIRO

INTEGRATION OF REAL AND VIRTUAL DATA

SIMULATION OF EVENTS IN THE CITY OF AVEIRO

MAKING BETTER DECISIONS AND TRAFFIC FORECASTS

THANKS

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