universidade de aveiro

AUTONOMOUS SYSTEM FOR SCOOTER PARKING

Sebastian D. González (103690)

universidade de aveiro

Overview

Motivation

The system addresses the specific needs of scooter users, providing real-time parking availability, Future work aims to integrate weather data to enhance the service.

Functionality

Users receive up-to-date information on parking availability at their destination, with plans to include features for covered parking options .

Technology

Currently, the system operates using Vanetza and MQTT messaging for communication and data exchange, ensuring accurate and timely information on parking availability.

Uniqueness

Unlike existing systems that cater primarily to cars, this project focuses on scooter users, filling a gap in the market by offering tailored solutions for micro-mobility parking challenges.

Objectives

Parking Map

Must be able to provide precise location details, including specific address and exact availability.

RSU Tracking

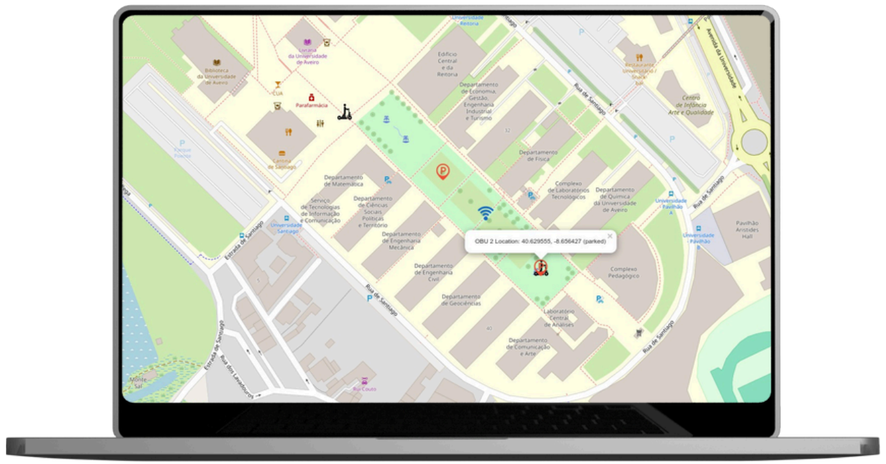
The OBU should be able to track the location in real time of all OBUs

OBUs and RSU communication

"The stations should be able to communicate in a standardized and efficient manner.

universidade de aveiro

Implementation Details



2
OBU's

1
RSU

1
Server

Initial State

- In Simulation 1, one scooter is already parked while the other will start a predefined route searching for parking.

Detection and Notification

- The RSU will detect the moving OBU and notify it when parking is available at a specific location.

Response

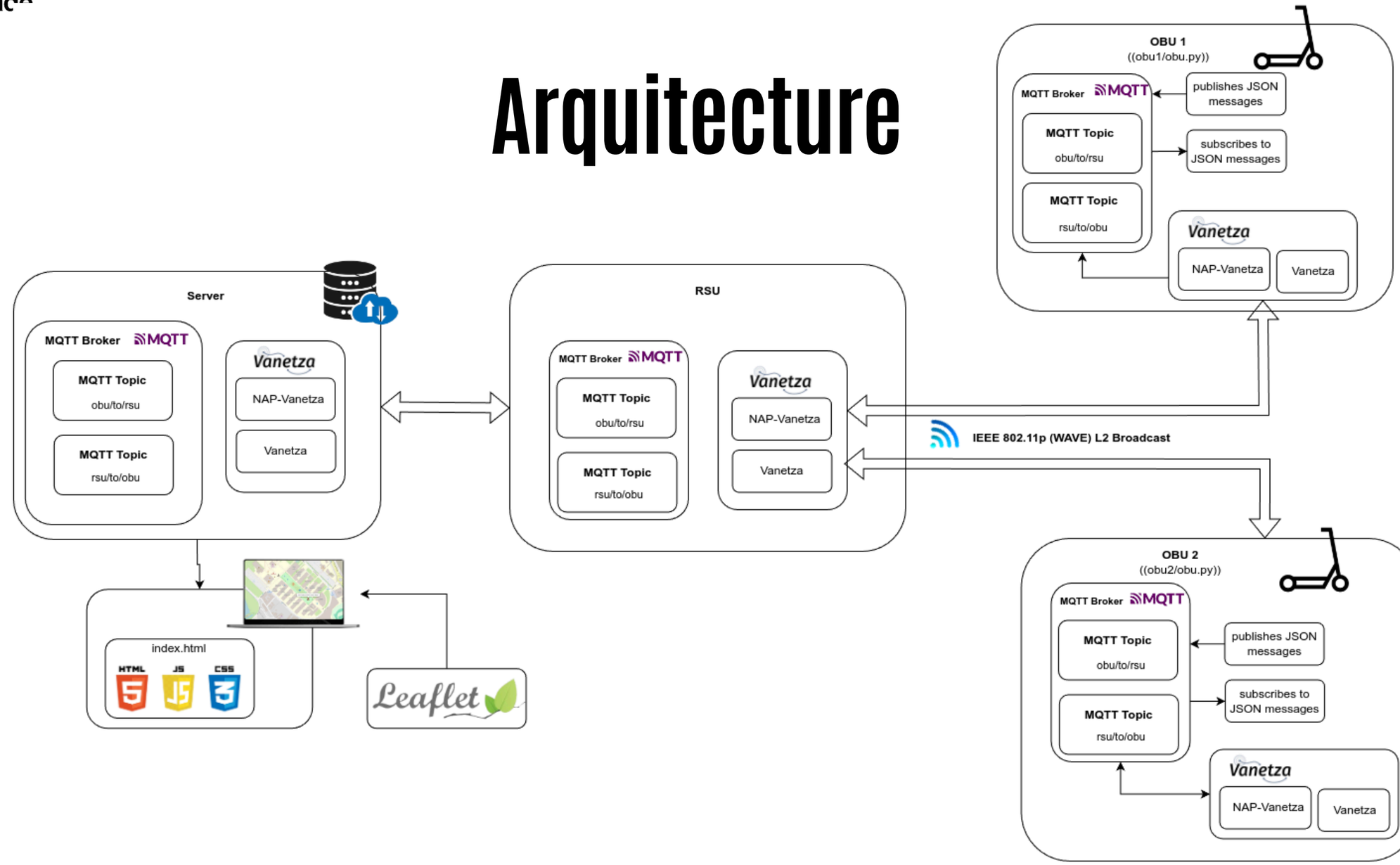
- Upon receiving this information, the OBU that was initially not parked will head to the available location and park.

Status Update

- The OBU will signal the RSU, which will then mark the coordinates as occupied.

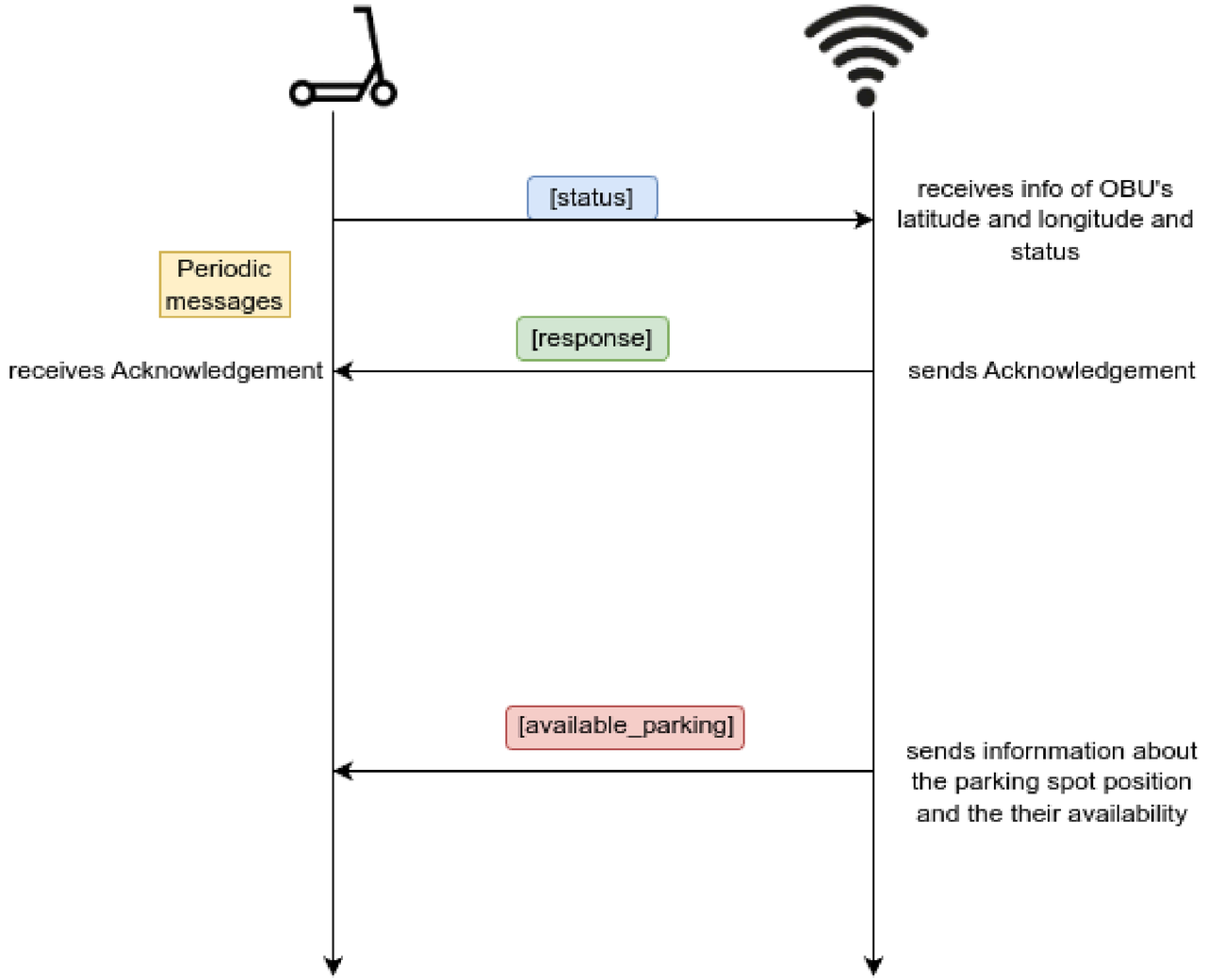
universidade de aveiro

Arquitecture



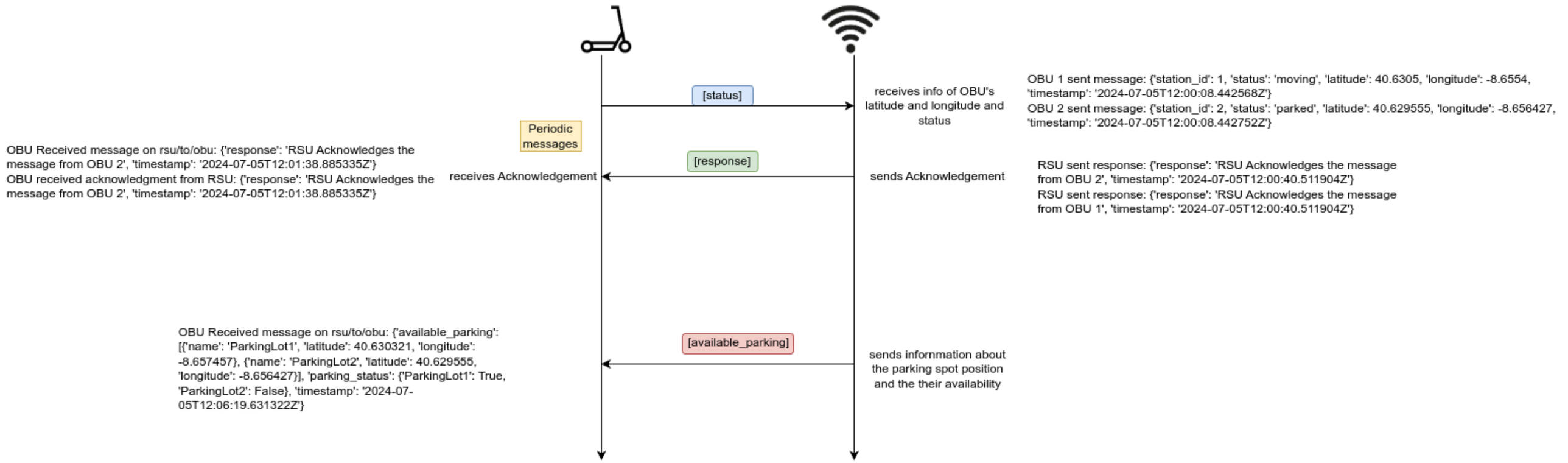
universidade de aveiro

Sequence of Events



universidade de aveiro

Detailed Sequence of Events

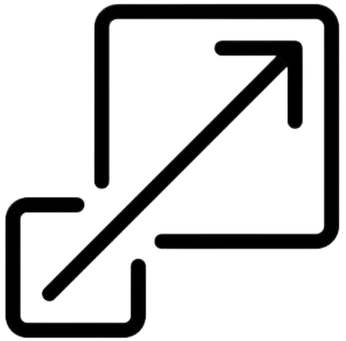


universidade de aveiro

Demonstration

universidade de aveiro

Future Work



Scalability

Add more OBUs to the simulation to test system performance with increased scooter traffic.

Weather Integration

Integrate real-time weather information to influence parking decisions.

Priority-Based Negotiations

Implement priority-based negotiations for parking allocation among OBUs.

Anomaly Detection

Develop a system to detect and manage anomalous events during the simulation.

Thank You

QUESTIONS?

Sebastian González

5th July 2024