# **EcoTraffic: smart urban mobility for a greener future**

* 1. **The problem**

Two urgent global concerns are environmental sustainability and climate change; because of air pollution and greenhouse gas emissions, transportation—especially urban commuting— contributes to worsening those issues.

* 1. **The Goal**

We want to dynamically modify the duration of traffic lights on the main roads in the city depending on the directions from where we observe the main traffic movements. For instance, if, at a certain point in time, we observe that the traffic flow on a certain road A is significantly higher than in the crossing roads, then we may decide to extend, for instance, for one hour, the duration of green lights on A (and, consequently, extend the duration of red lights in the crossing roads).   
We want to analyze the daily traffic patterns and identify possible optimizations in terms of one-way roads, traffic lights configuration, and public transport schedule.   
We want to collect information about the planning of events attracting large crowds (e.g., important sport events, concerts, fairs) and define event-specific configurations for traffic lights, roads and public transport schedules.

* 1. **Stakeholders**

Drivers: for reduced waiting times stuck in the traffic

Citizen: for air pollution, public transport

Urban Traffic manager: for optimization of city viability

Events planner: for a better management of events attracting large crowds

**2 Requirement Analysis**

**2.1.1 Human Actors**

Drivers: benefit from the SustainCity system

Citizen: benefit from the SustainCity system

Urban Area manager: monitors type2 and type3 actions

**2.1.2 Non-Human Actors**

Traffic Lights: get its state set from the ET system for a determined time period

Sensor Infrastructure: send sensor information to the ET system via data bus

Public Transport Microservice: sends public transport schedules to the ET system via function calls

News Channel: transmits city events information to the ET system

**2.2 Use Cases**

* 1. **Domain assumption**

1. The sensor infrastructure works correctly and with low latency 24/7
2. The traffic lights are not faulty and get their state set correctly in time from the ET system
3. Drivers behave accordingly to the traffic light state
4. No car can obstruct the passage in the crossing no matter the reason
5. Events planners always report to the news channel up to date events in the city
6. The public Transport Microservice always returns the right timetable given a line or the name of a street

**2.4 Requirements**