



City of Modena



www.automotivesmartarea.it

Ing. Luca Chiantore
Head of Smart City Department

MASA

Modena Automotive Smart Area

A LIVING LAB FOR AUTOMATED DRIVING

MASA is the first 'open air' test bed for the experimentation and certification of autonomous driving and connected driving technologies (vehicles, components and services) that interact with other vehicles, with infrastructures and with other elements of the urban space.



VIRTUAL
SIMULATIONS



SMART DYNAMIC AREA
DRIVING IN THE SAFE ZONE



SMART MODEL AREA
DRIVING ON THE ROAD



RESEARCH AND DEVELOPMENT
INTO CUSTOMIZED SERVICES

Smart Model Area



TECHNOLOGIES

5G

IoT

AI
Deep
Learning

Cloud

Big-
Data

Block
chain

SKILLS



REAL TIME
SYSTEM
FOR
AUTONOMOUS
DRIVING



LAW AND
ETHICS
FOR
AUTONOMOUS
DRIVING



ECONOMICS
FOR
AUTONOMOUS
DRIVING



ARTIFICIAL
INTELLIGENCE
AND
COMPUTER
VISION



AUTOMOTIVE
CYBERSECURITY



HUMAN
MACHINE
INTERACTION

1° TESTING

Hw & Sw – Bench Testing



2° DEVELOPMENT

Hw & Sw – Demo Vehicle

Technology
Demonstration



Marzaglia Track



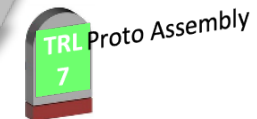
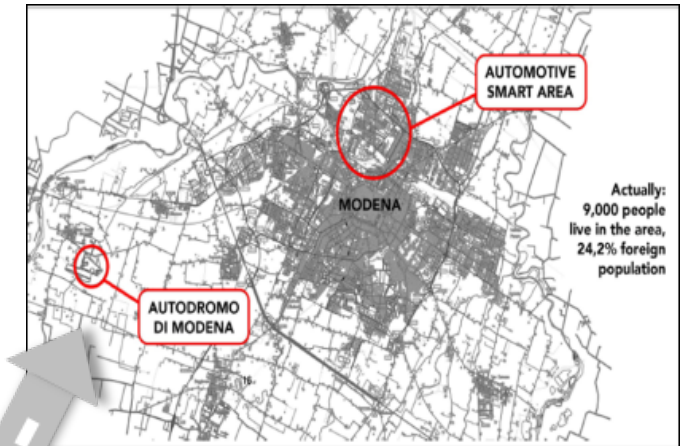
Technology
Development



3° VALIDATION

Hw & Sw - «Series» System Design

City – Smart Model Area



Series Cars

Partner suppliers:
Hw/Sw technology
development

Innovation Team:
Feature Design

UNIMORE:
Research&Developm
ent Lab

TASK FORCE

«Infrastructure & Automotive» Technology Maturity Level



Edge and Cloud Computation: A Highly Distributed Software for Big Data Analytics

The capabilities of the CLASS framework will be demonstrated on a real smart-city use case

STAY TUNED

CLASS
www.class-project.eu

1 Enabling a heavy sensor infrastructure to collect and process in real-time a vast amount of data across a wide urban area

2 Connected cars equipped with heterogeneous sensors and V2X connectivity to enhance the driving experience by giving further information about the urban environment

3 Deploying advanced urban mobility applications based on a combination of data on motion and data on rest analytics to efficiently coordinate traffic flow through city computing resources

@EU.CLASS

bit.ly/CLASS-project

www.class-project.eu

Coordinating Edge and Cloud for Big Data Analytics

@EU.CLASS

Vision

Computational challenges of smart cities can be effectively addressed by **coordinating** computing resources across the compute continuum

Integration of technologies from multiple computing domains (Big-data, HPC and real-time embedded) into a **single development framework**

Main characteristics of the CLASS Software Architecture

- 1 Coordinate edge and cloud computing resources
- 2 Distribute big-data workloads with real-time requirements along the compute continuum
- 3 Combine data-in-motion and data-at-rest analytics
- 4 Increase productivity in terms of programmability, portability/scalability and guaranteed performance

Applications Use Cases

Intelligent traffic management, acting on traffic lights and smart road signals

- "One-enroute" for emergency vehicles
- Traffic management based on intelligent cross road management

Advanced driving assistance systems (ADAS)

- Intelligent cross road management based on obstacle detection
- Identification of free parking spots based on city information



The TRAFIR project aims at **estimating the level of pollution on an urban scale** achieving four main results:

- 1) Definition of a standard set of metadata able to represent urban air quality maps;
- 2) Provision of real time estimation on air pollution in the city on a urban scale;
- 3) Development of a service for prediction of urban air quality based on weather forecast and traffic flows;
- 4) Publication of an open dataset describing the urban air quality maps and the prediction maps in 6 European cities of different size on which the service will run for the duration of the project:

Zaragoza (600,000 inhabitants), **Florence** (382,000), **Modena** (185,000), **Livorno** (160,000), **Santiago de Compostela** (95,000) and **Pisa** (90,000).

Project leader: Laura Po - laura.po@unimore.it - University of
Modena and Reggio Emilia - ITALY

Smart City Expo – Barcelona – 13-15 November 2018



Major Cities of Europe – Venice – 13-14 June 2019

