

# MODENA AUTOMOTIVE SMART AREA

The World is a Small City



UNIMORE  
UNIVERSITÀ DEGLI STUDI DI  
MODENA E REGGIO EMILIA

## PROGRAM OVERVIEW

In the framework of digital transformation of urban ecosystem and improvement of services provided to citizens, Modena has been identified as the **national model area** to develop a standardized sustainable business model which integrates “**Connected cars**” & “**Infrastructure IoT**” in order to design also the new digital service portfolio for Maserati and Alfa Romeo towards 2020.

Such a transformation requires the participation of a number of industrial players from different fields, the state institutions, service provider companies, the creation of an **international networking** and it has to be harmonized with the work already done by other smart cities around the world in order to establish **unified protocols** for the deployment of **services** and **technologies**.

The launch of this program comes from the collaboration of **three main actors** the council of Modena city, the University of Modena and Maserati R&D department which have established a close collaboration and strive to achieve continuous coherence between **technologies** and **services** in order to standardize protocols for the communication between vehicles and infrastructures.

Due to the deep synergy between the Modena municipality and industrial players the program has been called: “**Automotive Smart Area**”.

The program shall identify, design, develop, implement, test, validate the necessary technologies to realize the digital connection between vehicles and infrastructures and exploit the Cloud based services.

Service implementation shall be deployed within dedicated **use cases** which encompass future urban mobility, active safety, enhanced user experience, online payment, driver authentication, and driver health status monitoring which shall be tested in three **complete relevant environments**: urban, extra-urban, track.

International benchmarking of smart cities projects carried out by other municipalities in the world such as Gothenburg, Boston, Berlin and of the automotive megatrends as highlighted at the latest CES 2017 in Las Vegas shows that **Transportation** shall play a more and more important role in the frame of improving citizens’ quality of life. For this reason the “Automotive Smart Area” program is born with the idea to develop the Transportation pillar.

On the opposite with respect to the work done by other cities and automotive OEMs, the target of this framework moves from a standard project to an innovative program. It means that the technologies that will be developed for the Modena Smart City area will not be limited to the city itself but will be designed having a worldwide application in mind. The final outcome of the program is a set of **international standard communication protocols** developed and established in collaboration with other relevant automotive OEMs. For this reason the motto “The World is a Small City” translates successfully the final goal: to create a digital ecosystem that can be spread worldwide.

Strategic enabling technologies such **5G connectivity** shall be investigated deeply by adopting a step-wise approach. Firstly the **LTE** will be used to implement V2X communication, later the protocols shall be improved to integrate the superior performance of 5G.

The city of Modena and the academic research shall play a key role since a dedicated **automotive control room** shall be set up to process Cloud data and match vehicle to infrastructure. Moreover the **cross functional taskforce** led by economists, lawyers, engineers working at Modena University “UNIMORE” shall evaluate the technical and ethical aspects of the program.

### **PROGRAM PILLARS**

The key actors in the “Modena Automotive Smart Area”, namely the council of Modena city, the University of Modena and Maserati R&D department, have defined the key points of the program and the foreseeable benefits. It has been outlined that the **future consortium** shall target the definition of standard **communication protocols** which let technologies developed for the Modena area be applied to any other smart cities. The aim of the program is to create an **international networking** with industrial OEMs and institutions of certification that even if they are not part of the initial consortium may join this latter to establish unified communication protocols which would enable worldwide vehicle to infrastructure communication.

Main focus was given to the pillars of the program: services, cybersecurity, 5G modularity, the creation of a cross functional task force.

- **Services classification:** the deployment of new reactive, proactive, predictive services shall follow the alignment between the maturity level of connectivity and autonomous guide
- **5G modularity:** is the key **enabling technology** to increase the performance of services and to develop automotive grade use cases. The introduction of this technology shall follow a stepwise approach moving from LTE and targeting 5G modularity
- **Cybersecurity:** shall be developed by a specific department within UNIMORE with a dedicated automotive control room which shall also manage the cloud connection. Cybersecurity shall be addressed using a multilayer approach with increasing degree of security
- **Cross functional task force:** shall freeze the city KPI to achieve continuous improvement in pollution, energy saving
- **Technology transparency for business sustainability:** the technologies, methodologies, protocols developed for this area has to be agreed and shared with other automotive OEMs worldwide