

HI CAR

HI CAR IS A TELEMATICS SOLUTION THAT ENABLES USERS TO CONNECT ONE OF THE MOST COMMON OBJECTS IN OUR CITIES, THE CAR, TO THE NETWORK. HI CAR IS BASED AROUND THE DEVICES AND MIDDLEWARE OF THE HI REPLY INTERNET OF THINGS PLATFORM AND INSERTS THE VEHICLE ECOSYSTEM INTO THE DIGITAL LAYER. THE CAR CAN THUS INTERACT WITH THE OTHER SMART OBJECTS IN THE NETWORK.

HI CAR IS AN 'INTELLIGENT NODE' THAT LINKS THE VEHICLE TO THE NETWORK BY WAY OF THE OBD-II CONNECTOR, A STANDARD FEATURE PRESENT IN ALL CARS. THE NODE IS CAPABLE OF READING VARIOUS KINDS OF INFORMATION: OPERATING DATA ABOUT THE VEHICLE'S WORKING ORDER AND BREAKDOWN CODES. HI CAR MAKES THIS DATA AVAILABLE IN STANDARD MODE VIA WEB SERVICES TO SPECIFIC APPLICATIONS ON OTHER NODES AND DEVICES IN THE NETWORK, OR TO ICT SYSTEMS IN BACK-END.

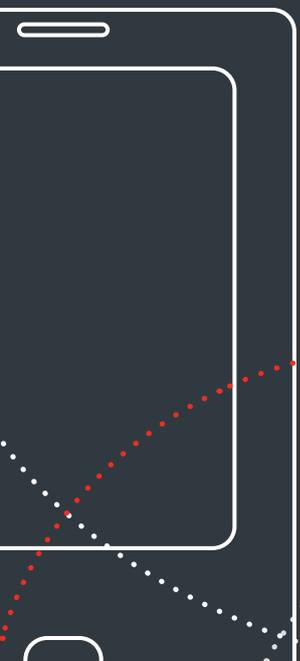
SCENARIOS FOR APPLICATION ARE AUTOMATIC AND CONTEXT SENSITIVE MAINTENANCE OPERATIONS (PERIODIC SERVICE REMINDERS, SEASONAL TYRE CHANGES, ETC.), INTEGRATION WITH SERVICES ALREADY PRESENT IN THE VEHICLE, OR THE CREATION OF NEW SERVICES THAT BENEFIT FROM THE CONNECTION TO THE WHOLE DIGITAL LAYER (ADDITIONAL SENSORS, GPS, ACCELEROMETERS, SERVICES SUPPLIED BY THE LOCAL AUTHORITIES, DATA RELATIVE TO SAFETY, TRAFFIC, WEATHER, ETC.).



INTRODUCTION

The Internet of Things is the next stage in the evolution of the communication paradigm currently provided by the Internet. Up until now, the devices connected had to be homogeneous, but with the Internet of Things it is now possible to link up heterogeneous devices. Indeed, the Internet of the future is making it possible to connect machines and devices that differ significantly from each other, and to reprocess and translate heterogeneous data into services used to exchange information on the network via Web Services.

The Reply Research and Development centre dedicated to the Internet of Things (**IoT**) – and to the Internet of Services (**IoS**) – has created **HI Reply**, an innovative platform featuring services, devices and middleware, which bypasses the limits imposed on users by other solutions currently available on the market. The main characteristics of HI Reply are pervasivity, transparency, inter-operability, flexibility, sensitivity to the context in which it is applied, and a capacity to self-adapt and self-configure. HI Reply offers a basis on which to develop new specific applications for vertical scenarios, for example the **Telematics** sector.





HI CAR

SOLUTION/ ARCHITECTURE

HI Car is based on the interaction of two elements of the HI Reply platform. The first of these is a device that connects to the standard OBD-II port present on all models of vehicle sold since 1996. This serves as a virtualisation node and is capable of sharing the data from the OBD bus with the other nodes in the network in a standard way (via Web Services). The second device is an intelligent node (smartphone/tablet) running an application that allows the parameters present on the bus to be displayed in real-time (speed, engine revs, fuel level, etc.). The intelligent node also allows parameters to be saved related to the vehicle's on-road performance, the display of diagnostic data and the vehicle's interaction with back-end systems (instantaneous journey data analysis, social networking etc.).



FUNCTIONALITY AND STRONG POINTS

The HI Car user accesses a Wi-Fi network using a smartphone/tablet, and uses the solution to communicate 'horizontally' with the other nodes on the platform. The smartphone/tablet is programmed to detect the HI Car node by means of a software application that uses its long-range communication capacity to access the network via an http protocol. In this way data can be exchanged 'vertically', that is, with the back-end system.

HI CAR ALLOWS THE USER TO:

- ▶ Monitor instant data regarding the vehicle's on-road performance (speed, engine revs, fuel level, instant fuel consumption, acceleration etc.).
- ▶ Monitor the vehicle's diagnostic data (Data Trouble Codes).
- ▶ Suggest maintenance operations, using the HI Reply Context Awareness module to analyse data from the vehicle, the smartphone and the Web.
- ▶ Add calendar reminders on the smartphone.
- ▶ Interact with remote servers to exchange and perform instant analysis on data provided by the car.
- ▶ Visualise the route taken by the vehicle on a geographic map, and note the cost-efficiency index of the vehicle as driven in the various sections of the route.
- ▶ Interact with social networks to automatically post messages about the trip, to be configured by the user.

HI Car is capable of self-configuration and does not need to be paired with the smartphone on which the application runs. Furthermore, it does not just supply the raw data present on the OBD-II port, but combines this with other data from various sources, both from the vehicle and the web, processing the information using the HI Reply Context Awareness module and entering it into the new Digital Layer.

FURTHER APPLICATION SCENARIOS

The virtualisation node of the HI Car solution and the other modules of the HI Reply platform provide users with the opportunity to create numerous vertical applications that could significantly benefit the Smart City ecosystem. Important application scenarios include **Fleet Management** (maintenance efficiency, savings on fuel consumption, etc.), **Insurance** (monitoring of driving styles), **traffic management** in urban areas (average speed monitoring and therefore check on traffic flow in city urban areas), **pollution reduction**, with the possibility of **remote diagnosis**.