

# Project Achievements



## Wireless traffic Safety network between Cars



WiSafeCar aimed to develop an effective service platform and advanced intelligent wireless traffic safety network between cars and infrastructure, utilising vehicle based sensor and observation data in order to generate secure and reliable intelligent real-time services and service platform for vehicles.

### Main focus

WiSafeCar focused on building a comprehensive, secure and reliable solution for V2I (vehicle to infra) and V2V (vehicle to vehicle) communication, using both WLAN and mobile networks. Main challenges were the generation of true V2I and V2V communication, efficient delivery of critical data regardless of the location or presence of other vehicles and generation of services to enhance traffic safety and efficiency. The ultimate goal was to create an intelligent communication platform for vehicles where they can deliver their own observations of traffic and weather conditions to the platform core. This information was refined, processed and delivered back to the vehicles as analyzed (and

forecasted) information about road weather conditions, immediate accident or incident warnings and other services. The WiSafeCar solution has proven to have clear potential for a comprehensive vehicular communication entity, with promise of increasing traffic safety and decreasing the amount of accidents and lives lost in traffic.

### Approach

WiSafeCar aimed to develop a service platform based on the car-to-car communication standards developed by the standardization bodies. This WiSafeCar platform consists of the physical infrastructure; communication and processing elements onboard vehicles, on the road side and on separate central servers and the interfaces for providing the services to customers in vehicles or via a mobile device outside a vehicle. The Action Plan for the Deployment of Intelligent Transport Systems (ITS) in Europe (COM(2008) 886) and Legislative Proposal for a Directive with a Framework for the Implementation of the Action Plan (COM(2008)

## WiSafeCar

Project ID: CP6-015

Start Date: 1 July 2009

Closure date: 30 March 2012

### Partners:

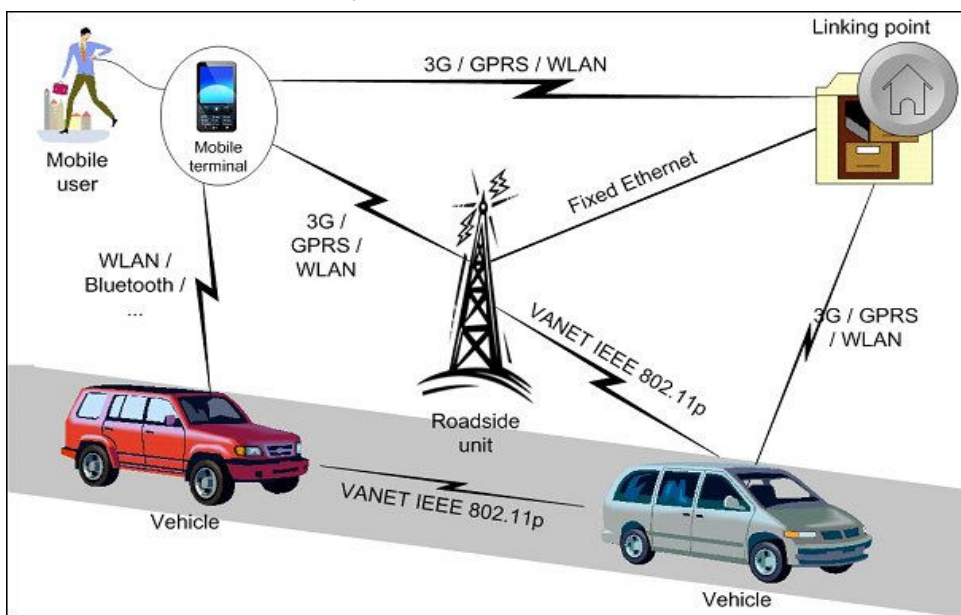
- Centre Henri Tudor, Luxembourg
- Finnish Meteorological Institute, Finland
- Infotripla, Finland
- Mobisoft, Finland
- Sunit Oy, Finland
- Taipale Telematics, Finland
- Ubridge Co Ltd, Korea
- Université du Luxembourg, Luxembourg
- VTT (Technical Research Center of Finland), Finland

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### Project Website

[www.celticplus.eu/projects/celtic-projects/call6/WISAFECAR/wisafecar-default.asp](http://www.celticplus.eu/projects/celtic-projects/call6/WISAFECAR/wisafecar-default.asp)



887) strongly support the creation of future markets for the results of WiSafeCar in Europe. WiSafeCar acknowledged that such a platform needs ways to protect and authenticate data in order to provide reliable services in open wireless vehicular communication environment. Additionally it was realized that data transmission may be optimized for such vehicular services by utilizing broadcast/multicast and adding intelligent data handling methods. Thus WiSafeCar focused particularly on Vehicular Sensor Network architecture, where the ad-hoc network is connected to a wireless network to combine data from different sources and to extract effective road situation feedbacks.

## Achieved results

WiSafeCar adopted service-oriented architecture in order to optimize the interactions between data providers. The idea in the architecture is to optimize the benefits of the 3G mobile network and the IEEE 802.11p devices with the 5.9 GHz communication channel, which is allocated for transportation. WiSafeCar connects the infrastructure components to the service provider's servers with using the 3G mobile phone network. The information is given back after processing to the roadside nodes and the communication capable vehicles. This enables vehicles to exchange data between themselves without always

establishing relatively slow 3G connections to the servers. Thus the vehicles may aggregate data from several vicinity vehicles utilize it or send to the servers for further processing. The selected architecture allows the special instrumented floating cars like buses to gather data, which is then offered for road operators, data providers (to enhance quality of

places. Most importantly, the architecture supports driver's own decisions to be in-line with the green driving habits. Based on the chosen architecture two pilots have been built in WiSafeCar; the Luxembourgish pilot to deal with dynamic carpooling, traffic information, route planning and parking place information and the Finnish pilot to deal with accurate road



*WiSafeCar pilot vehicle equipped with various sensors connected via the Sensor-unit to the Sunit on-board PC that is capable to communicate both by WLAN (IEEE 802.11p) and cellular (GPRS/3G)*

forecasts) and vehicle drivers. The objectives are to make drivers aware of potential safety critical event (e.g. slippery road or obstacle/animal on a road). Moreover, the selected architecture supports wider acceptance of more ecologically sustainable traffic by offering information about traffic jams, optimal routes and available parking

and route weather information, incident and accident warnings and emergency vehicle warnings.

## Impact

The expected impact of the overall WiSafeCar project is manifold. Not only the results are useful for the car industry, value added service providers, Internet/radio providers and ad-hoc networks, but in addition the project will offer new advances open to the European society in terms of optimized mobile services, open software for future research, numerical results from the test of the network and the weather model and many other similar outcomes of great impact. Based on the pilot findings WiSafeCar offers remarkable possibilities to increase traffic fluency, and traffic safety with various means. When it comes to standardization, the WiSafeCar objectives, plans and results have been also mirrored against the on-going standardization activities by the main standardization bodies (CEN, ISO & ETSI) and WiSafeCar has introduced the ideas and given suggestions to these bodies.

## About Celtic

Celtic is a European research and development programme, designed to strengthen Europe's competitiveness in telecommunications through short and medium term collaborative R&D projects. Celtic is currently the only European R&D programme fully dedicated to end-to-end telecommunication solutions.

**Timeframe:** 8 years, from 2004 to 2011

**Clusterbudget:** in the range of 1 billion euro, shared between governments and private participants

**Participants:** small, medium and large companies from telecommunications industry, universities, research institutes, and local authorities from all 35 Eureka countries.

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