

Project Information



Wireless traffic Safety network between Cars



WiSafeCar aims to develop an effective service platform and advanced intelligent wireless traffic safety network between cars and infrastructure, with possibility to exploit 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 focuses on building a comprehensive, secure and reliable solution for V2I (vehicle to infra) and V2V (vehicle to vehicle) communication. The main challenges are to generate true V2I and V2V communication, efficient and fast delivery of critical data regardless of the location or presence of the other vehicles and generation of services which not only enhance traffic safety and efficiency but also exploit the vehicle data and the WiSafeCar platform capabilities. The ultimate goal is 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 is 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 clear potential for a comprehensive vehicular communication entity, with promise of decreasing the amount of accidents and lives lost in the traffic.

Approach

Carlink, the predecessor of WiSafeCar developed an intelligent wireless traffic service platform improving traffic safety, reducing accidents and providing new types of vehicular services. It was realized 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 focuses particularly on Vehicular Sensor Network architecture,

WiSafeCar

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Partners:

CRP Henri Tudor, Luxembourg

Finnish Meteorological Institute, Finland

Infotripla Oy, Finland

Mobisoft Oy, Finland

Sunit Oy, Finland

Taipale Telematics, Finland

VTT, Finland

Ubridge, Korea

Université du Luxembourg, Luxembourg

Co-ordinator:

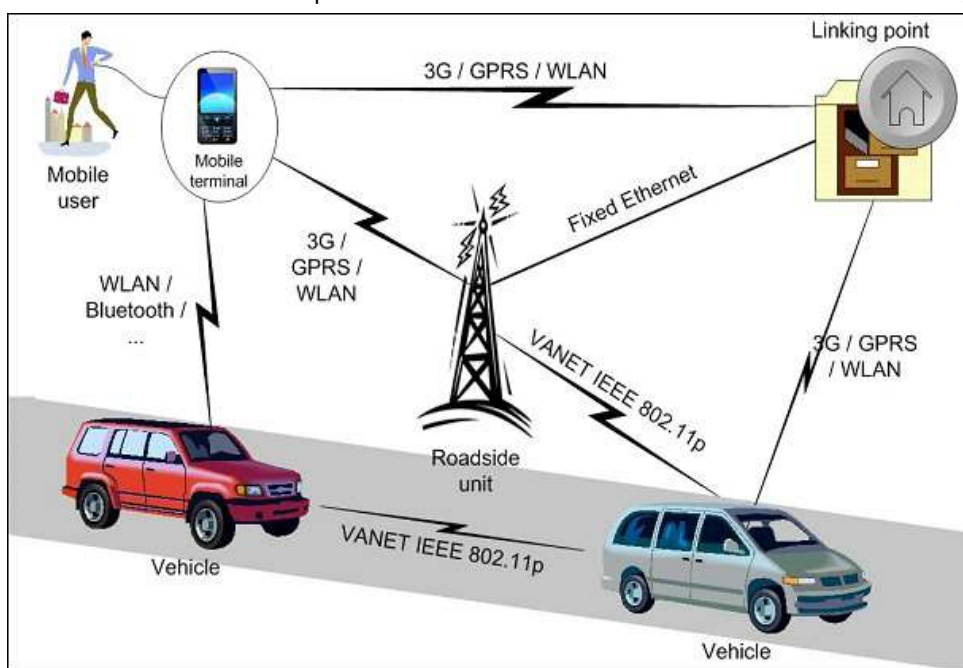
Pekka Eloranta

Mobisoft, Finland

E-mail: pekka.eloranta@mobisoft.fi

Project Website

www.celticplus.eu/projects/celtic-projects/Call6/WISAFECAR/wisafecar-default.asp



where the ad-hoc network is connected to a wireless network to combine non-valuable individual sensed data and to extract effective road situation feedbacks.

WiSafeCar will cover 1) a study of media-independent data management/forwarding to optimize data flow, handling data efficiently (based on its content where possible) and thus avoids multiple transmissions of the same content, 2) special VSN architecture to extract effective feedbacks from large amount of data, 3) a lightweight and real-time security countermeasure at architecture level possibly enabling content-centric networking (the possibilities of content centric networking will be studied and used, if possible) and assuring that the contents of incoming packets are reliable and what the node is willing to have. WiSafeCar will also analyze applicability of these solutions to a high-speed vehicular environment where network to topologies keep changing and nodes may have no prior knowledge of each other until they meet. WiSafeCar will propose a new way of vehicular networking and may serve as a reference platform to solve similar problems in existing vehicular networks.

Main results

The main results of the WiSafeCar project are: 1) advanced traffic and weather service platform/framework based on the developed scenarios, 2) secure and efficient wireless traffic service

platform implementation with security features, customized to the designed set of WiSafeCar services, 3) real-time local road weather, accident/incident warning and other services specialized for

ation of dissemination networking to wireless traffic service platform, 10) analysis of multi-radio networking using different wireless access protocols.



traffic, integrated to the platform, 4) urban transport and traffic data management application, 5) application for urban traffic real time bidirectional information broadcasting/sharing and exchange with the traffic control centre, 6) vehicular networking standard and protocol evaluation, analysis, simulations, testing and implementation, 7) proposal of efficient data authentication mechanism for vehicular communications, 8) proposal of efficient user identification (trust) mechanism, 9) applicability evalu-

Impact

The expected impact of the overall WiSafeCar project is manifold. Not only the intended results are useful for the car industry, 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. The platform for car-to-car network with a real-time weather and other important data delivery enables also variety of other applications and services currently implemented in handheld devices. This is due to the integrated networking technologies and unlimited power resources in cars compared with the handheld devices. The development and gathering of a temporal sensitive data from several sources with different levels of accuracy is of a great need to deploy a mobile sensor network.

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.

Celtic Office

c/o Eurescom, Wieblingen Weg 19/4,

69123 Heidelberg, Germany

Phone: +49 6221 989 405, e-mail: office@celtic-initiative.org

www.celtic-initiative.org

