

Project Achievements



Wireless Traffic Service Platform for Linking Cars



The aim of CARLINK was to develop an intelligent wireless traffic service platform between cars supported with WLAN transceivers beside the road. The primary developed applications are real-time local weather data, the urban transport traffic management, and the urban information broadcasting.

Main focus

CARLINK developed an intelligent wireless traffic service platform which improves traffic safety, helps to reduce traffic accidents and provides new types of vehicular services. In the CARLINK platform, both proactive and reactive real-time data sharing services between cars or car and infrastructure were created by combining different wireless access technologies (Mobile WiMAX, WiFi, 2G/3G). CARLINK realized a platform, which should have a way to authenticate integrity and trustworthiness of data in order to provide reliable services in an open wireless vehicular communication environment. CARLINK

provided solutions to assure that data transmission is optimized for these vehicular services by using broadcast/multicast and by adding an intelligent data handling method.

Approach

In the CARLINK project different kinds of wireless local area network technologies and ad-hoc networking were integrated as an evolutionary extension of WLANs, WiMAX, cellular networks as well as transmission network technologies. Integration of the various networking technologies was necessary to guarantee required coverage and data transportation ability everywhere in the application area, i.e., on highways and roads as well as urban street areas. The system also has low-rate wireless connection via GPRS between end-users and central-unit, to provide urgent information in real-time. The coverage is planned to be tested in various severe weather conditions with different topologies.

Carlink

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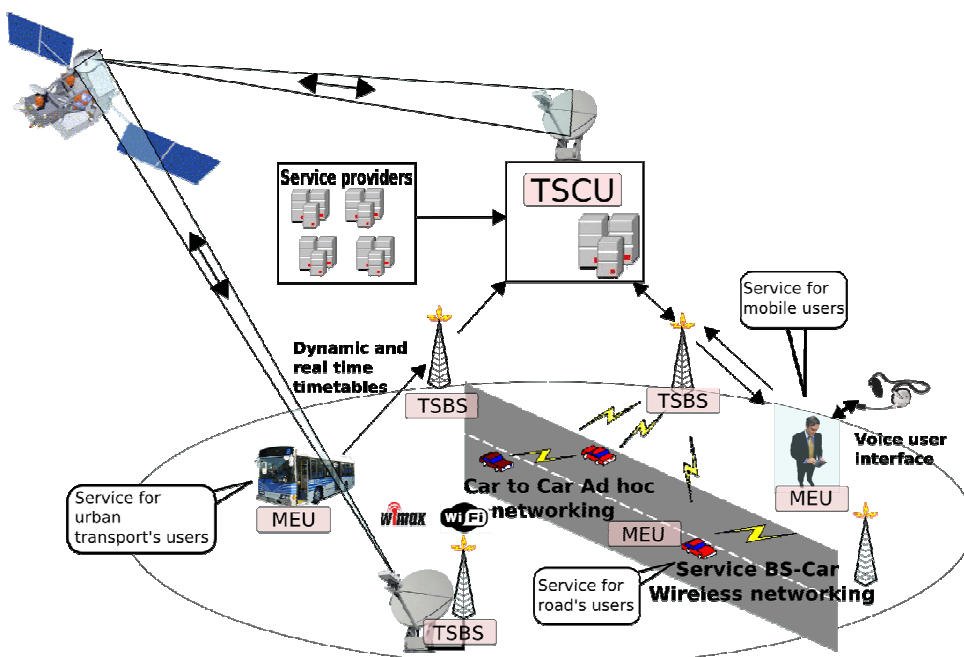
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CARLINK equipment installed in test vehicles transmits position and data from sensors in real time, so it is easy to track vehicles and observe both measured and forecasted weather and traffic conditions. The platform operability, usability and necessity will be approved through few key services. These services are Local Traffic Weather Service and Traffic Management Service.

Achieved results

The main project results are as follows:

- **An intelligent wireless traffic service platform.** Extensive communication system for cars, including car end-systems, base stations and service central core unit. The CARLINK platform consists of different types of networking entities, named as wireless communication based on WLAN/WiMAX and fixed networking based on traditional methods, brought together through intelligent base-stations acting as routers between different entities. Lower capacity direct connection between core unit and end-users for urgent communication matters is based on GPRS communication.

- **A real-time local weather data application that is specialized for traffic.** Existing weather forecasting methods are updated with localized weather data, concentrating on exceptional weather conditions interesting for the traffic

management. Car end-users act both as service consumers and data collectors for the system.

- **An urban transport traffic management application.** Base station network and car end-users collect data to the system, and service core builds up the collective traffic information to be feed forwarded back to the cars. Car end-users act both as service consumers and data collectors for the system.

- **An urban information broadcasting/sharing application.** Optional service, open application platform for enterprisers to provide commercial information/services for the car end-users.

- **Fast connectivity and routing schemes for ad hoc networking.** Existing ad hoc networking methods are studied, aiming to develop enhancements to support communication between fast-moving transceivers and fast-moving transceiver passing by the base station.

Impact

The results of this project will be beneficial for:

- The car industry, telecommunication operators, drivers, public transportation, truck traffic and other road users. New cars can have new safety features to be used in marketing new models. New kind of telecommunication service will bring new kind of busi-

ness opportunities to telecommunication operators. Private car drivers, public transportation, truck traffic and other road users benefit with new safety features.

- Equipment manufacturers (fixed or mobile), municipalities, commercial companies (advertising companies, car parking companies). Platform equipment development will bring new kind of products for electronic component industry. Advertising and value-adding services through the platform can generate new kind of private business.

- Businesses that support the traveler information system.

- All people through improved road safety.

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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