

# CoMoSeF

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### Project Website

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## Co-operative Mobility Services of the Future

CoMoSeF will develop and deploy co-operative mobility solutions that support the objectives of the European Commission's Intelligent Transport Systems (ITS) Action Plan and national ITS strategies. Services will be piloted in Finland, France, Luxembourg, Romania, Spain, Turkey and Republic of Korea. There has also been an external pilot in Russia during the Sochi Winter Olympics in 2014.

### Main focus

CoMoSeF will focus on the development and deployment of advanced and cost-effective vehicle and roadside collection solutions to gather valuable traffic information and to provide weather and incident data for road users to assist in their decision making. The project will study efficient networking and develop data dissemination and communication techniques based on the intelligent transport system (ITS) standards.

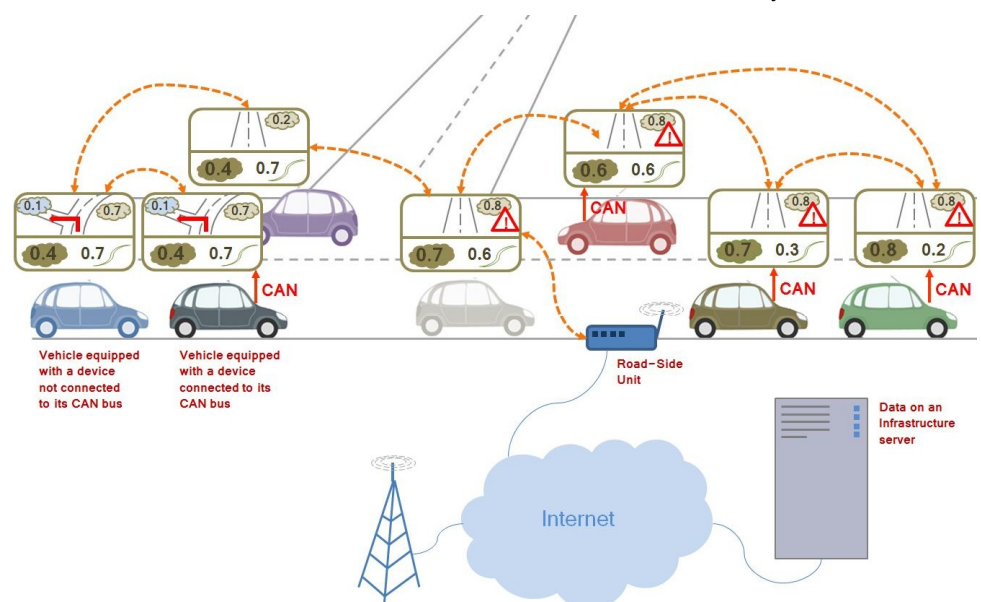
In particular CoMoSeF will concentrate on the provision of services to vehicles that do not have existing embedded systems that receive data from a vehicle bus, but that use nomadic devices. CoMoSeF aims

also to provide commercially viable services that will be easy to deploy in all kinds of vehicles. There will be more than ten different pilots with various services. The objective is to use the common CoMoSeF architecture as a starting point in all pilots.

The following figure illustrates the main idea of the CoMoSeF project in which different vehicles and road side units with different set-ups and communication means are connected to the same CoMoSeF system that will be open for all users.

### Approach

Based on the work carried out in the previous Celtic projects (Carlink - Wireless Traffic Service Platform for Linking Cars, WiSafeCar - Wireless Safety Network between Cars) the CoMoSeF project aims to define advanced co-operative mobility use cases, based on user requirements and to produce targeted services for each pilot application to increase traffic safety, traffic fluency and to decrease the amount of accidents and incidents. The applications to be used both by commercial vehi-



The CoMoSeF Premise

cles (taxi, trucks, buses) and private cars will be developed, implemented, tested and ultimately deployed in the various participating countries. The common CoMoSeF architecture and applications, which are based on the latest cooperative mobility standards, will be defined and specified so that they may be used as a starting point, when developing the pilots. These CoMoSeF pilots with vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) communication based applications, new networking solutions and services will be implemented at the CoMoSeF sites.

The pilot sites will evaluate and validate the pilots and report how they operate, how the technologies work and how the pilot users react to the alarms, warnings and suggestions provided by the system. Based on the experiences and evaluation results they will plan how their solutions should be further developed towards deployable commercial solutions. In this way new services and products to increase traffic safety and fluency will be available for the end-users at the end of the project. The innovative technologies that will be used in the pilots include among others, WLAN IEEE802.11p protocols, mobile WiMax, ZigBee, GPRS and LTE networks, vehicle-bus (CAN, OBD-II, etc.), GPS positioning, local maps and low range radios.

Additionally a simulation platform (and environment) will be developed and deployed based on the results of the analysis of the different simulation tools and the defined CoMoSeF services. The simulation environment will be built together with a simulation development team, in conjunction and cooperation with the application and pilot system development.

## Main results

The entire mobile communication system is the most visible result and product of the project together with the special services that have been tailored for the system. Some main results that will be available at the end of the project might be accurate and reliable road weather information, warnings and forecasts applications and services, systems for analysing and forecasting the condition of the road surface, visibility, weather, air quality, friction monitoring and friction forecasting systems etc. These all will be developed to use IEEE 802.11p/5,9 GHz and the latest cellular networks in their communication. The results will be developed so that they take into account, and contribute to, other important related European projects such as FOTsis, Drive C2X etc. and also national strategic initiatives in participating countries.

## Impact

CoMoSeF will help to increase traffic safety and decrease congestion by providing traffic information, weather forecasts, warnings, etc. and helping to reach the objectives set by the European Commission.

V2V and V2I communication with real-time weather, incident, disturbance, accident and other important data delivery mechanisms will enable the development of applications with remarkable impacts on the problems on European roads. Sensors and other data sources will create a huge potential for increased safety, efficiency, comfort and flexibility of traffic.

The CoMoSeF results will serve society and can be used by car industry, car users, authorities, road maintenance, information providers, ad-hoc networks, etc. CoMoSeF will offer sensor data collection services, mobile services, numerical results from the tests of different communication networks, advanced weather models, traffic data management, etc.

The average annual road accident costs amount to 20 billion euros in Europe, and each year 127 000 people are killed and 2.4 million people injured in road traffic. It is estimated to be able to decrease about 10% of the traffic injuries with the guidance of applications like those developed in CoMoSeF.

Congestion affects 10% of the European network with an impact between 0.9 to 1,5% of the GDP. Transportation systems account for 60% of oil consumption in the EU being responsible for 72% of CO<sub>2</sub> emissions. The leverage of advanced applications to assist drivers in making better decisions and take proactive actions towards accident and congestion prevention has been identified by the EC as the pillar for the future ITS solutions. The impact of information systems in congestion cost reduction is estimated to be 10%. CoMoSeF could help in achieving such cost reductions and in providing an alternative approach to traditional traffic management solutions that are estimated to raise the cost of congestion by 50% in 2050, leading to unsustainable mobility scenarios.

Additionally the estimated annual savings in European road transport based on current weather services are over 3 billion euros.

## About Celtic-Plus

Celtic-Plus is an industry-driven European research initiative to define, perform and finance through public and private funding common research projects in the area of telecommunications, new media, future Internet, and applications & services focusing on a new „Smart Connected World“ paradigm. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental EUREKA network. Celtic-Plus is open to any type of company covering the Celtic-Plus research areas, large industry as well as small companies

or universities and research organisations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

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