Project Profile

CarCoDe
## Software platform for traffic-service ICT ecosystems and business opportunities

Modern vehicles are like four-wheeled computers whose maintenance mechanic requires more computer skills than dexterity with hammers, screwdrivers and spanners. These vehicles are aware of not only their operational state but also their surroundings through sensors, radars and GPS capabilities. The newest trend is to make the most of the information exchanged between vehicles and between vehicles and transport infrastructure. So the need for software-intensive, in-vehicle applications and services is self-evident as are the new opportunities this provides to develop an unlimited range of applications that may advance traffic safety, traffic efficiency, reduce fuel consumption and also facilitate driving, improve infotainment, business and deployment.

However, the reality is that the infrastructure capacity for ITS (Intelligent Transport Systems) in Europe is not as high as in Japan. While this infrastructure is being rolled out, a platform is needed to leverage the implementation of ITS concepts such as electromobility. The ITEA 2 project CarCoDe (Platform for Smart Car to Car Content Delivery) will endorse innovation in this field, by aiding the development of services to nomadic on-board devices, enabling small

and new market players to take part in ITS development and create new business models. Amid European government and vehicle manufacturer support and interest in ITS, there is huge opportunity for aftermarket suppliers in both the professional and consumer segments.

CROSS-PLATFORM SOFTWARE ENABLERS
CarCoDe intends to develop a software platform that enables traffic-service ICT ecosystems and business opportunities to be created and thereby offer a merging layer between the automotive industry, traffic service operators and third-party developers. The main aim is to build cross-platform software enablers to support development of co-operative in-vehicle services. ICT R&D is needed to facilitate the wide variety of software applications with different characteristics and requirements that shape the future of the European automotive domain. The challenges of scalability, communication cost, information overload and service dependability and security will be solved with communication medium agnostic content centric networking, improved data redundancy between applications and distributed design with virtualisation. The results of the project will be demonstrated in several categories in the automotive domain that reflect the diverse characteristics of the services that

WPs distribution for the CarCoDe project
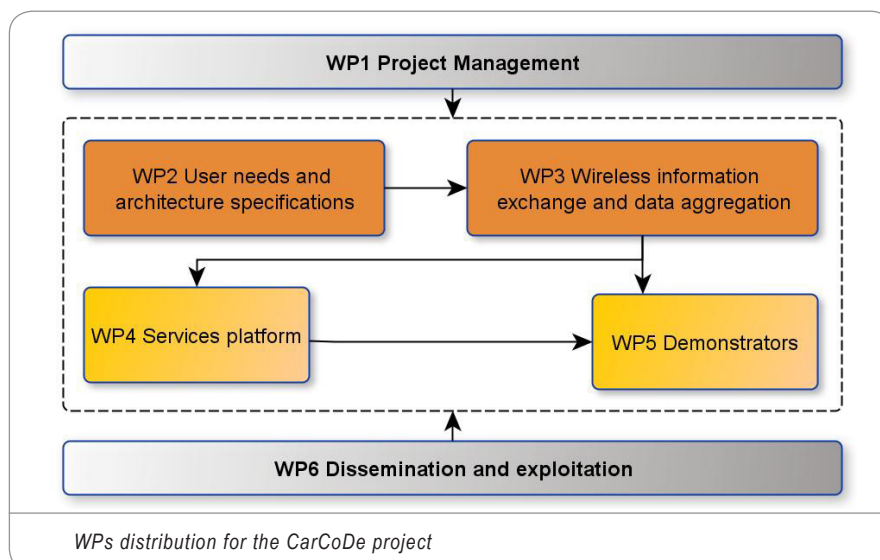
CarCoDe
(ITEA 2 ~ 11037)

■ **Partners**
Cassidian
DUNASYS
Easy Innova S.L.
Evoleo Technologies
GM
Instituto de Telecomunicações
Instituto Politecnico de Castelo Branco
Instituto Tecnologico de Aragon (ITA)
ISEP /Cister
Mecalbi
CBT
NITAX S.A.
NXP SemiConductors
PT Inovação
Telenity
Thales Communications and Security
TOFAS
Turkcell Teknoloji
Universitat de Girona
University of Burgundy
University Paris-Est Marne-la-Vallée

■ **Countries involved**
France
Portugal
Spain
Turkey

■ **Project start**
December 2012

■ **Project end**
December 2015

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the developed platform enables: public safety like the emergency management, urban traffic such as real time taxi sharing or city parking, and individual drivers as in a carpooling service, remote car diagnosis and targeted mobile marketing

ACCELERATING THE DEVELOPMENT CYCLE

The goal of the CarCoDe project is to support the development of an on-board system that can seamlessly use alternative wireless communication technologies, provide the essential information quickly and automatically and use that for advancing traffic safety, providing an easier and a more comfortable driving experience, better physical environment and response to emergencies and offer more entertainment for travellers. The key to this is platform independency to enable critical mass for large data usage and collection. The on-board system should also share its own information with other vehicles and offer data storing and computing resources for cloud computing as well as safeguard security and privacy of information sharing. Developing better facilities for application providers may enable the rapid adoption of the new communication and the platform being developed by CarCoDe may crucially shorten the development cycle of these applications in an environment that offers almost unlimited opportunities to build new services to ease the everyday life of all citizens as well as boost productivity in many sectors of business.

The project will also focus on several technological issues related to data collection, data management and the implementation of service-oriented methodologies. While some of the basic technologies may develop more quickly than others, the new approach to content centric networking architecture and the security technologies are likely to be widely applied and once the CarCoDe platform becomes properly deployed, it will accelerate the development of application software for on-board vehicular systems. The platform

essentially simplifies the design process, speeds up programming and generates fewer errors and a shorter testing phase for the application developers. Furthermore, an improvement in the quality of vehicular systems will be a boost to safety-enhancing systems. The potential market of Public Safety (including transport and industry activities) has 30 million users worldwide. Governments and industry are both keen on complete solutions that improve the security of citizens and infrastructure and make rescue easier.

The CarCoDe project can both utilise the results of standardisation activities and support them by providing novel solutions that may emerge as standards at some phase of the project. The project plans to work on maintenance standardisation at many levels and from several perspectives, for instance, towards interoperability and plug & play standards related to the capabilities of maintenance actors, processes and technologies both outside and inside the vehicles. Dissemination activities will include the establishment of a project web portal and technology solutions will be demonstrated at public events and symposia with the scientific results being published in academic papers in international scientific workshops, conferences and journals.

POSITIVE RESPONSE TO MARKET DEMAND

As for exploitation, several industrial and SME partners are likely to set up post-project collaborations and the provision of both dedicated hardware platforms and software for emergency services would create a complete and new market range, thereby responding positively to European and even worldwide market demand. Furthermore, the project outcomes will also provide urban planners and managers an evidence-based foundation to help and refine surface transport planning and optimisation, as well as a better understanding of vehicle flows, both geographically and temporally, so that citizen-oriented services and facilities can be planned.
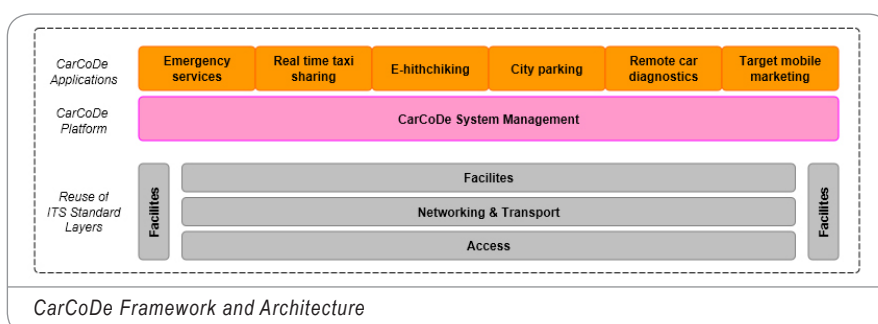
CarCoDe Framework and Architecture