

An OSGi based HMI for networked vehicles

Type: technical presentation

Time: long talk preferred, a short talk would be also accepted

Vertical market: vehicle industry

Who

Telefónica I+D's Networked Vehicles Group

Is a recently created group (2007) from in house experience in vehicular networking, with strong focus on vehicular services and communications.

Speaker: Miguel García Longarón, Research and Development Engineer

What

One of the key points on current vehicular services is the driver-vehicle communication interface. Strong requirements on safety and usability make it really complex to provide a suitable Human-Machine (HMI) system. This system must not distract the driver of his/her main task - drive the vehicle - and at the same time it shall provide information that increases situational awareness in order to avoid accidents risk. Besides, the system must provide a natural way for the use of applications, preferably through the voice in most situations, but also being capable of providing richer channels like Graphical User Interfaces (GUI) when the situation allows it. Finally, the system must be user- and context-aware, adapting the behaviour to preferences and situations. Nomadic devices like phones, PDAs or the soon-to-come Mobile Internet Devices (MID) will have to be integrated with on-board resources, such as the HMI system.

OSGi provides an excellent base to design such an HMI system, thanks to its modularity capabilities. To this end, various modules providing different functions must be clearly established and decoupled: text to speech, speech recognition (in general, adaptation of information from different sources), dialog management, management of priority, analysis of contextual information, applications APIs, etc. Moreover, the vehicle is a highly dynamic environment in which the context changes continuously: new traffic circumstances, breakdown alarms, appearance or disappearance of network resources, devices attached to intra-vehicular networks, etc. OSGi also provides the middleware to deal with this dynamic environment and eases the mapping of the real world to the system.

A suitable HMI system for the vehicular environment is a piece of a basic software platform, which provides horizontal functionalities to application developers. This software platform, together with the underlying hardware platform, the vehicular communications and final user services, are the pieces of Telefónica I+D's Demonstrator for Intelligent Vehicular Environments (DRIVE). How much OSGi helps to deal with remote management, deployment and maintenance of services have been very strong arguments to select it as the technology for deploying and managing DRIVE's services.