The *Application Store* for Cars: Secure Download of Your Favorite Apps into Your Car

Research project for an open vehicular software platform receives 2.8 million Euro funding from the European Union

Just two or three clicks and the latest version of the navigation system has been downloaded from the Internet software portal directly into your vehicle. Simultaneously you got a reservation for your preferred parking deck, while the newest chart songs are also downloaded from your favorite music store.

Figure 1: *Application Store* **inside the vehicle (Idea)**

"The next generation of intelligent vehicles will be able to execute many new and innovative applications in parallel - even if they weren't developed exclusively from the corresponding OEM." says project coordinator Dr. Thomas Wollinger from escrypt GmbH – Embedded Security. "The downloaded applications will be executed in strongly isolated virtual machines, in order to protect the other applications that are executed in parallel from potential application failures or any misbehavior." However, all applications will be able to share the vehicular IT periphery such as the vehicle's display, its communication interfaces

(e.g. Internet link or GPS signals) and information produced by the in-vehicle electronics (e.g. the current speed). "Of course, it has to be ensured that the latest download from the Internet will not crash your digital logbook application or possibly even endanger the safety of your vehicle," emphasizes Wollinger.

The possibility to execute applications from the car manufacturer but also from any other vehicular software developer in a secure and very flexible manner in parallel, while sharing in-vehicle resources will be the central challenge of the European research project OVERSEE (Open VEhiculaR SEcurE platform).

Therefore, the OVERSEE project develops an open, standardized in-vehicle software platform, which will empower (almost) everyone to develop vehicular applications and offering these applications – very similar to Apple's app store – to all vehicles that are equipped. The OVERSEE platform will in particular ensure that such applications cannot affect each other or any other vehicle-internal IT system. This protection mechanism applies regardless whether the interference is caused by an application, a user failure or a malicious manipulation caused by a hacker or computer virus.

Another task of the OVERSEE platform is providing internal and external vehicular communication interfaces to automotive applications. "The availability of standardized communication interfaces will accelerate the development of innovative applications, especially in the field of vehicle-to-vehicle communication which improve vehicle safety or intelligent traffic management." Wollinger predicts.

The project starts in 2010 and has an overall budget of 3.9 million Euro while being funded with more than 2.8 million Euro from the European Union Research Directorate. The project targets a demonstration car that shows the practical feasibility of such an open and secure software and communication in-vehicle platform. The prototype will be evaluated by leading vehicle manufactures, including Audi AG, Daimler AG and Dr. Ing. h.c. F. Porsche. Besides escrypt GmbH the following partners are involved in this international project: Fraunhofer FOKUS (Fraunhofer Institute for Open Communication Systems, Germany), TRIALOG (France), OpenTech IT Research GmbH (Austria), TU Berlin (Berlin Institute of Technology, Germany), Universidad Politécnica de Valencia (Spain), University of Siegen (Germany) and the Volkswagen AG Group Research (Germany).