



Vehicular Wireless Communications: Technical Analysis, Challenges, Trends, and Standardization Activities

Scheduled:

Monday 15 September 2008, afternoon

Presenter:

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Abstract:

There are several emerging applications that are specific to vehicular wireless networks. For instance, safety applications would make driving safer; driver information services could intelligently inform drivers about congestion, and businesses and services in the vicinity of the vehicle. To be supported efficiently, new communications protocols have to be developed and standardized. These protocols concern all layers from physical to application layer and they are expected to provide both vehicle-to-vehicle and vehicle-to-infrastructure communications. The goal of this tutorial is to give a deeper and up-to-date technical analysis of wireless vehicular communications. After giving the motivations and applications of vehicular communications, this tutorial will emphasize on technical challenges and trends as well as recent development on standardisation activities and existing prototypes and research projects.

Outline:

The planned content is as follows:

- Motivations and applications of vehicular communications (20')
- Standardization activities and research projects (15')
- Physical and MAC Layers for VC: DSRC, WAVE, and 802.11p (25')
- WAVE propagation channel modelling (10')
- Mobility models and tools for vehicular communications (20')
- (Geo)Routing and data dissemination (25')
- (Geo)Broadcasting techniques (25')
- Reliable transport in VANETs (15')

- Vehicular delay-tolerant networks (15')
- Open research issues (10')

Biographical Sketch:

Fethi Filali received his Computer Science Engineering and DEA degrees from the National College of Informatics (ENSI) in 1998 and 1999, respectively. At the end of 1999, he joined the Planète research team at INRIA (National research institute in informatics and control) in Sophia-Antipolis to prepare a Ph.D. in Computer Science which he has defended on November 2002. During 2003, he was an ATER (Attaché Temporaire d'Enseignement et de Recherche) at the Université of Nice Sophia-Antipolis (UNSA) and he joined on September 2003 the Mobile Communications department of Institut Eurecom in Sophia-Antipolis as an Assistant Professor. He is/was involved in several French-funded (Dipcast, Constellation, Rhodos, Cosinus, Airnet, WiNEM) and IST FP6/7 (Widens, Newcom, Daidalos, E2R, Multinet, Unite, Chorist, iTetris, Newcom++) projects. In the context of some of these projects, he designed and developed an open, flexible and efficient architecture for the support of heterogeneous radio technologies. This architecture was integrated in Eurecom's wireless software-radio platform. His current research interests include WIMAX (802.16)-related communication mechanisms, QoS support in IEEE 802.11-based networks, sensor and actuator networks (SANETs), vehicle adhoc networks (VANETs), routing and TCP performance in wireless networks. He served as a technical reviewer of several international conferences and journals. Additionally, he is a member of IEEE and IEEE Communications Society. Fethi Filali will present his HDR (Habilitation à Diriger des Recherches) on April 2008.

For more information, please visit Fethi Filali's web page at <http://www.eurecom.fr/~filali> for teaching experience and publications. A detailed CV is available at http://www.eurecom.fr/~filali/cv/cv_fethi_filali.pdf.