

## **Distinguished Lecture Tour**

**Organized by**

**The IEEE Benelux Chapter on Communications and Vehicular  
Technology,**

**23-25 Nov. 2011 in Gent, Eindhoven and Delft**

In order to promote the activities of IEEE Communications and Vehicular Technology in the Benelux and in the frame of the IEEE distinguished lecturer tours, the IEEE Benelux Chapter on Communications and Vehicular Technology has organized a Distinguished Lecture Tour in Belgium and the Netherlands from 23 to 25 November 2011. In this period Prof. Falko Dressler (from University of Innsbruck, Austria) will provide a series of talks in Belgium and the Netherlands.

*Attendance to the lectures (described below) is free.*

### **Tutorial in Gent on 23 Nov. 2011**

#### **Protocols and Techniques for Data Dissemination in ITS**

Speaker: Falko Dressler-University of Innsbruck, Austria

Time: Thursday 23 November at 9:00 hrs

Zuiderpoort Office Park, Gaston Crommenlaan 8 (box 102)  
B-9050 Ghent, Belgium

Directions: <http://www.ieeescvtbenelux.org/content/location>

Much progress can be observed in the domain of Inter-Vehicular Communication (IVC), looking back at the last decade. The objectives of this lecture are twofold: In the first part, an introduction to recent developments in the field of IVC protocols and the used methods is provided. In particular, we discuss possible approaches to IVC based on flooding, peer-to-peer techniques, and periodic beaconing. From previous work, we see that centralized solutions and flooding based approaches each show benefits and drawbacks depending on traffic density, penetration, network utilization, and other parameters. This observation is in line with findings about intelligent transportation systems that have been developed for specific settings. In order to overcome this limitation, beaconing has been investigated as a key communication paradigm that is also used in the upcoming DSRC/WAVE standards based on IEEE 802.11p. In the second part, we look at selected examples including the most recently presented Adaptive Traffic Beacon (ATB) protocol, which is adaptive in two dimensions: First, the beacon interval is adapted dynamically and, secondly, the protocol can dynamically make use of available infrastructure elements. ATB supports the exchange of delay-

sensitive traffic information in a wide range of scenarios by flexibly adapting to the availability of infrastructure elements as well as to the network load.

### **Tutorial at TUEindhoven on 24 Nov. 2011**

#### **Simulation techniques to assess the performance of V2V protocols**

Speaker: Falko Dressler University of Innsbruck, Austria

Time: Thursday 24 November 2011 at 16:00 hrs

Location: TU/Eindhoven Auditorium, zaal 01

Directions: <http://www.tue.nl/en/university/column-3/accessibility-tue-campus/>

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### **Tutorial at TUDelft on 25 Nov. 2011**

#### **Biologically-inspired and Nano-scale Communication and Networking**

Speaker: Falko Dressler-University of Innsbruck, Austria

Time: Friday 25 November at 15:45 hrs

Location: Delft, Dept. EEMCS, TUDelft, Lecture room A

Directions: <http://ewi.tudelft.nl/en/the-faculty/contact/>

The developments in communication technologies have yielded many existing and envisioned information network architectures such as cognitive radio networks, sensor and actor networks, quantum communication networks, terrestrial next generation Internet, and InterPlaNetary Internet. However, there exist many common significant challenges to be addressed for the practical

realization of these current and envisioned networking paradigms such as the increased complexity with large scale networks, their dynamic nature, resource constraints, heterogeneous architectures, absence or impracticality of centralized control and infrastructure, need for survivability, and unattended resolution of potential failures. These challenges have been successfully dealt with by Nature, which, as a result of millions of years of evolution, have yielded many biological systems and processes with intrinsic appealing characteristics such as adaptivity to varying environmental conditions, inherent resiliency to failures and damages, successful and collaborative operation on the basis of a limited set of rules and with global intelligence which is larger than superposition of individuals, self-organization, survivability, and evolvability. Inspired by these characteristics, many researchers are currently engaged in developing innovative design paradigms to address the networking challenges of existing and envisioned information systems. In this lecture, the current state-of-the-art in bio-inspired networking is captured. The existing bio-inspired networking and communication protocols and algorithms devised by looking at biology as a source of inspiration, and by mimicking the laws and dynamics governing these systems is presented along with open research issues for the bio-inspired networking. Furthermore, the domain of bio-inspired networking is linked to the forthcoming research domain of nanonetworks, which bring a set of unique challenges. The objective of this tutorial is to provide better understanding of the potentials for bio-inspired and nano-scale networking, and to motivate research community to further explore this timely and exciting field.

### **Biography of Lecturer**

Falko Dressler is a Full Professor of Computer Science heading the Computer and Communication Systems Group at the Institute of Computer Science, University of Innsbruck. He teaches on self-organizing sensor and actor networks, network security, and communication systems. Dr. Dressler received his M.Sc. and Ph.D. degree from the Dept. of Computer Science, University of Erlangen in 1998 and 2003, respectively. In 2003, he joined the Computer Networks and Internet group at the Wilhelm-Schickard-Institute for Computer Science, University of Tuebingen. Between 2004 and 2011, he has been an Assistant Professor with the Computer Networks and Communication Systems chair at the Department of Computer Science, University of Erlangen, coordinating the Autonomic Networking group. Dr. Dressler is an Editor for journals such as Elsevier Ad Hoc Networks, ACM/Springer Wireless Networks (WINET), and Elsevier Nano Communication Networks. He was guest editor of special issues on self-organization, autonomic networking, and bio-inspired computing and communication for IEEE Journal on Selected Areas in Communications (JSAC), Elsevier Ad Hoc Networks, and others. Dr. Dressler was general chair of IEEE/ACM BIONETICS 2007 and IEEE/IFIP WONS 2011. Besides chairing a number of workshops associated to high-level conferences, he regularly acts in the TPC of leading networking conferences such as IEEE INFOCOM, IEEE ICC, IEEE Globecom, IEEE WCNC, and IEEE MASS. Among other, Dr. Dressler wrote the textbooks Self-Organization in Sensor and Actor Networks, published by Wiley in 2007. Dr. Dressler is an IEEE Distinguished Lecturer in the fields of inter-vehicular communication, self-organization, and bio-inspired networking. Dr. Dressler is a Senior Member of the IEEE (COMSOC, CS, VTS) as well as a Senior Member of ACM (SIGMOBILE), and member of GI (KuVS). He is actively participating in the IETF standardization. His research activities are focused on adaptive wireless networking and self-organization methods addressing issues in wireless ad hoc and sensor networks, inter-vehicular communication systems, bio-inspired networking, and adaptive network security techniques.