

## Keynote Speech

# Peer-to-peer Multimedia Content Provisioning for Vehicular Ad Hoc Networks

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### Abstract

In the past decade, Vehicular Ad Hoc Networks (VANET), that specialize Mobile Ad Hoc Networks (MANET), to vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) communications have received a great deal of attention in the research community. And with a good reason: vehicular communications promise to integrate driving into a ubiquitous and pervasive network that is already redefining the way we live and work.

The potential societal impact of VANET was confirmed by the proliferation of consortia and initiatives involving car manufacturers, government agencies and academia including, among others, the Car-2-Car Communication Consortium, the Vehicle Safety Consortium, the Networks-on-Wheels Project, the Vehicle Infrastructure Integration Program, and the Advanced Safety Vehicle Program. While the original impetus for VANET was traffic safety, more recent concerns involve privacy and security.

It was recently noticed that allocation of 75MHz spectrum in the 5.9GHz band for Dedicate Short Range Communications (DSRC) in North America opens VANET to *multimedia* applications including peer-to-peer (P2P) content provisioning and the fast-growing mobile *infotainment* industry. In spite of their close resemblance to MANET, with which they share the same underlying philosophy, VANET networks have a number of specific characteristics that set them apart from MANET.

The presentation will discuss the state of the art in VANETs as well as a zero-infrastructure for multimedia over peer to peer for VANET.

### Categories and Subject Descriptors:

C.2.1 Network Architecture and Design, Wireless communication C.2.2 Network Protocols, Routing protocols

### General Terms:

Algorithms, Design

### Keywords:

VANET, multimedia, peer-to-peer

### About Prof. Stephan Olariu

Professor Olariu is a world-renowned technologist in the areas of wireless networks, mobile multimedia systems, parallel and distributed systems, parallel and distributed architectures and networks. He was invited and visited more than 120 universities and research institutes around the world lecturing on topics ranging from wireless networks and mobile computing, to biology-inspired algorithms and applications, to telemedicine, to wireless location systems, and security. He is the Director of the Sensor Networks Research Group at Old Dominion University.

He has coauthored/edited four books: *Solutions to Parallel and Distributed Computing Problems: Lessons from Biological Sciences* (with A. Zomaya and F. Ercal), Wiley and Sons, New York, 2001, ISBN 0471353523, *Numerical Simulations and Case Studies*, (with S. Salleh, A. Zomaya and B. Sanugi), Wiley and Sons, New York, 2005, ISBN 0-471-69461-4, *Handbook of Bio-inspired Algorithms and Applications*, (with A. Zomaya), ISBN 1-584-88475-4, *Wireless Sensor Networks and Applications*, Cambridge University Press, to appear 2006, with four more books in preparation. He has also published 200+ articles in archival journals and 200+ papers in conference proceedings.

Professor Olariu is an Associate Editor of *Networks* and *IEEE Transactions on Parallel and Distributed Systems* and serves on the editorial board of *Journal of Parallel and Distributed Computing*, *Journal of Ad hoc and Sensor Networks*, and *Parallel, Emergent and Distributed Systems*