“The Networked Vehicle Meets The Grid”

An Executive Workshop Supplement to the IEEE International Electric Vehicle Conference

Register for Workshop including Tour of CUICAR with focus on “Connecting vehicle and Grid”

Clemson University’s Deep Orange 2 is not just a car, but a customizable digital dash and Kinect-based camera interface that interprets gestures

Clemson University
International Center for Automotive Research
Greenville, South Carolina USA

Thursday, March 8, 2012

To register, email to SUBJECT LINE: REGISTER FOR MARCH 8 EXECUTIVE WORKSHOP

To: Inger Jacobs, Associate, Networked Vehicle Association
   ijacobs@networkedvehicle.org

Please note that there will be a $100 fee for the special event; $80 for IEEE IEVC conference participants.
### AGENDA

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<td>8:30 - 9:00</td>
<td>Registration in lobby of CUICAR Building</td>
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| 9:00    | Welcome and Overview  
**Joachim Taiber**, Clemson University; **Andrew Penny**, Networked Vehicle Association |
| 9:15    | Lessons Learned from E-Mobility Testbed  
**Klaus Schaaf**, Program Director, Volkswagen/Wolfsburg AG |
| 10:00   | Building the Infrastructure  
**CH2M HILL**: **Michael O’Halloran**, Director of Technology |
| 10:45   | Integration of Electric Vehicles with the Grid: What does this mean from a communications point of view?  
**Mike Rowand**, Director, Advanced Customer Technologies, Duke Energy |
| 11:30   | Networking Lunch  
**Welcome**: **David Wilkins**, former U.S. Ambassador to Canada  
**Canada-U.S. MOU**: **Mayor Dan Mathieson**, Stratford, ON, with Clemson, NVA |
| 12:00   | Demo exhibit: **Deep Orange**: Deep Orange Program Leader **Dr. Paul Venhovens** |
| 1:00    | Tour Through CUICAR – demonstrations regarding connected vehicle and EV |
| 2:00    | Networked Vehicles Innovation: Integrated Large Scale Testbed Architecture for Next Generation Wireless Spectrum Sharing Environment  
**Rangam Submarian**, Principal Wireless Technology & Business Strategy, Idaho National Lab |
| 3:00    | **PANEL: Interaction of EVs With The Smart Grid**  
**MC**: **Andrew Penny**, NVA |

- **Michael Rowand**, Duke Energy
- **Paul Pebbles**, Business service Manager, Fleet – Volt, ONSTAR
- **Rangam Submarian**, DOE National Lab
- **Klaus Schaaf**, Volkswagen
- **David Woessner**, Head of Strategy Consulting, P3 North America
- **Maurice Thompson**, Director, M2M Devices & Telematics Program, Verizon Wireless

Touring the Clemson University International Center for Automotive Research (CU-ICAR) will showcase some of the latest advances in automotive engineering. Students and faculty will demonstrate Deep Orange 2, the latest prototype vehicle designed and engineered by CU-ICAR automotive engineering students. The prototype vehicle showcase will include a demonstration of a **breakthrough Human Machine Interface** and center stack design demonstrating personalized driver interaction through a reconfigurable dashboard.
The networked vehicle is enabling the faster adoption of vehicles that use the electric grid as a primary source of power. This Workshop is aimed at uniting Canadian networked vehicle (auto and Information and Communications Technology) sectors, with globally-based executives in those sectors as well as the electric power sectors, including experts from global energy companies such as Duke Energy, one of the leading energy companies focused on renewable energy. Executives from organizations like BMW, VW, GM, Bosch, CH2M and Cisco, will meet to unite their perspectives on the applications of information and communication networks on electric vehicles, and how they interplay with the electric power systems.

If as many experts believe, “The fossil fuel century is over,” then the rise of electric vehicles will be as transformative as the original creation of the petroleum infrastructure. Networking will be the ‘gating’ factor for the ability of the electric vehicle to cross the chasm to mass adoption.

This event is associated with the first IEEE International Electric Vehicle Conference (http://electricvehicle.ieee.org/), and will take place at the Auditorium of the Graduate Engineering Center at the Clemson University International Center for Automotive Research (CUICAR, see http://www.cuicar.com).

**EXECUTIVE WORKSHOP CONTEXT**

The “Networked Vehicle Meets The Grid” event IS the fourth Executive Workshop of the NVA. Called the “premier event of the ICT-Auto mega-sector”, its predecessor, the Mobile Apps on Wheels event, was an executive workshop for the founders of the Networked Vehicle Association: BMW-ITRC, CA, Cisco, HP, IBM, INTEL, Verizon, AT&T, QNX, and dozens more companies, universities and organizations. The VPs of Technology and of Business Development from these organizations shared hands-on demos and participated in moderated “Innovation Storms” to jointly explore the uses of the technology. The Mobile Apps on Wheels Executive Workshop series focused on real-world demos of ICT vehicle applications -- both in-car and in portable devices -- and highlighted the electric vehicle as a platform of special interest to ICT-Auto.

More than 100 experts and opinion leaders from Canada, the US, Asia and Europe, representing both the private and public sector in the field of automotive ICT, gathered for two days at two of the world’s most respected drivers of mobile computing -- Berkeley and Stanford universities -- to explore new opportunities for the “networked vehicle” and reinvent the vehicle sector through concrete business and technology opportunities designed to bring mobile broadband services into the vehicle.

The fourth NVA event IS focused on connecting the communication network and the grid network for a large scale deployment of electrified vehicles. Dozens of new electrical vehicles models are introduced to the market in the next few years and a multitude of charging infrastructure suppliers are competing for market share.

A key aspect is to find suitable charging stations when EV’s need to be recharged and to make the financial transaction process as seamless as possible. With increasing penetration rates of EV’s in urban communities the impact of charging vehicles on the grid needs to be considered as well as the additional amount of energy that needs to be generated from renewable sources. In rural areas it is important to provide EV charging corridors, especially along highway roads.
The build-out of a charging and communication infrastructure for electrical mobility needs to be funded. This requires new business models including rethinking fuel and road use taxation.

**NVA Partners**

**Background: Support for NVA Executive Workshops**

“This workshop is unique -- the combination of Presentations with total participation does more than ‘describe’ the future -- it allows us to shape the future. I am looking forward to helping my colleagues develop some of the concepts we sparked.” -- Dr. Sumedh Sathaye, Senior Researcher in Network Computing Systems, IBM T.J. Watson Research Center

“The NVF Workshop is an exemplary environment for exploration of the future of the vehicle as a mobile computing and communications platform. These workshops are throwing light on a previously dark space in our intelligent planet: a billion vehicles with their global travelers.” -- Flavio Bonomi, Head, Cisco Research

“Social networks are creating the world’s first global ‘plaza’, where we can see the evolution of new social conversations, services, and patterns of work. The NVF workshop uses these virtual tools to augment our discussions, bringing experts from around the world to contribute to the conversation.” -- Joel Hoffman, Worldwide Automotive Lead, INTEL

“The cloud is the next stage in the evolution of the Internet. Its impact will be sweeping, fundamentally changing the way we connect with each other and with information. My complements on the very successful conference in Spartanburg. I got a lot out the different discussions and presentations. The NVF is a great organization , and helped clarify how the cloud makes information available to a mass market.” -- Dr. John Wargin, Director, Automotive, HP

“Interoperability’ is the major challenge for First Responders. The NVF workshop is a welcome development, bringing the industry players together with the public sector and association representatives, to aid the process of establishing a Technology Roadmap for First Responders. I look forward to further sharing of ideas by recognized thought leaders, and
the creation of the necessary partnerships, through the NVF.” -- Steve Palmer, Executive Director, Canadian Police Research Center.