

## From the desk of Rouzbeh



Dr. Rouzbeh Yassini

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**Hello,**

As you read in our UNH BCoE January newsletter, CES was a hotbed of interest in connected and autonomous cars. The IEEE and its 802 standards body that my colleague and IEEE Fellow Paul Nikolich chairs jump started these activities almost 4 years ago, and while I was at CES, he was working with engineers and colleagues from around the world to develop in-car networking standards.

And his group is being pushed a little bit by an industry announcing trials all over the place, including [LAS VEGAS](#), [PARIS](#), and [LONDON](#).

### **IEEE 802.3 Ethernet: In-Car Networking — a new trend and large market (hundreds of millions/annum)**

Paul: Hello all my UNH BCoE newsletter readers. I have just returned from two weeks of IEEE 802 LAN/MAN Standards Committee meetings held in Los Angeles and Atlanta where hundreds of networking industry professionals gathered to develop technical interoperability standards on many next generation networking technologies.

One of the newer and interesting activities is specifically focused on In-Car Networking. In the past, automotive original equipment manufacturers (OEMs) have the subsystems in their vehicles connected by several proprietary means; MOST, CAN, FlexRay, LIN, JASPAR, AUTOSAR, J1850 and FireWire<sup>1</sup>. These are all too slow and non-interoperable, therefore the automotive industry has come to IEEE 802 LAN/MAN Standards Committee, globally recognized as the premier Physical and Media Access Control standards development body, to express the needs for their future vehicles.

The requirements are clear (at least to me): a single twisted pair link up to 10 meters long to carry data at a rate of Gbps, while tolerating a harsh physical environment in terms of temperature and vibration. Oh, and it must supply DC power as well. These requirements are driven by the need to incorporate multiple 4K resolution cameras' video streams into the control systems that will be providing driving assistance or perhaps even fully automated autonomous vehicles in the early/mid parts of the coming decade.

The intrepid engineers that have been developing 802.3 Ethernet twisted pair standards for 30 years welcomed the challenge. In the nomenclature of IEEE 802 standards they formed the Multi-gig Automotive Ethernet PHY Study Group<sup>2</sup> to determine exactly what the minimum requirements are and demonstrate that they are feasible to be met while remaining economically viable. The study group made great progress in preparing a draft Project Authorization Request and Criteria for Standards Development for consideration by the 802 LMSC Executive Committee at its upcoming March 2017 Plenary Session in Vancouver British Columbia.



They still have more work to do in refining the proposal, but as Chairman of IEEE 802 LMSC, I am confident the project will be approved and the industry will be off to the races to develop the standards, produce the silicon, components, systems and test equipment necessary to supply robust networking functionality at low cost for the vehicles of the future.

#### **FCC Measuring Broadband**

Separately, the FCC, in its 2016 [REPORT](#) to measure broadband speeds in the U.S., has determined that median speeds provided by top ISPs have continued to increase, growing 22% from 32 Mbps to 39 Mbps over the past year. The report said that other than DLS providers, the ISPs were delivering 100% of advertised rates, or better rates, than advertised. The 78-page report was issued at the end of 2016.

Thank you again for your interest in our efforts to make broadband service access universal.

#### **Rouzbeh**

1 Automotive Networks Strive To Satisfy Safety And Bandwidth Needs  
<http://electronicdesign.com/communications/automotive-networks-strive-satisfy-safety-and-bandwidth-needs>

2 <http://www.ieee802.org/3/NGAUTO/public/jan17/index.html>