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Rouzbeh Yassini
University of New Hampshire, Rouzbeh.Yassini@unh.edu

From the desk of Rouzbeh

Dr. Rouzbeh Yassini

Microsoft announced last month that it is proposing a $10 billion dollar effort to connect 23.4 million Americans in rural areas to broadband.

Hello,

The phrase "$10 billion investment" is an eyecatcher.

It caught my attention when Microsoft announced it could spend up to that amount on developing and deploying TV White Space over the next few years. BCoE has worked hard over the recent past with an eye toward helping entrepreneurs begin deploying TVWS systems that enjoy reasonably priced equipment — as we did for broadband and its cable modems. What follows is a snapshot of our TVWS efforts, along with some interesting reports by my colleague Paul Nikolich from his recent IEEE meetings on 802 standards efforts in Berlin.

Microsoft

TVWS began some 13 years ago as an 802 standards effort by a Radio Regulatory Technical Advisory Group. Now, after years of investigatory and development work with TVWS technology, Microsoft **ANNOUNCED** last month that it is proposing a $10 billion dollar effort to connect 23.4 million Americans in rural areas to broadband.

As I touched on above, since 2013 BCoE has also expended significant effort in **RESEARCHING** TVWS spectrum and technology:

- We spearheaded a four-month **TRIAL** in conjunction with Gigabit Libraries Network to evaluate efficacy of the technology in rural New Hampshire and published a **DETAILED REPORT**;
- In conjunction with the UNH Electrical Engineering department we established a **SECOND TRIAL**, this one in Durham (home of UNH), building on our experience using improved technology and best practices methodology;
- We subsequently published a highly technical **REPORT** on this effort with operational details, propagation analysis, areas for further investigation and final conclusions and recommendations;
- We developed **DOWNLOADABLE** financial models to assist in planning a municipal TVWS network;
- Using our extensive and in-depth field experiences we have published **RECOMMENDATIONS** for municipalities interested in trialing or deploying TVWS based technologies;
- And we continue to monitor **DEVELOPMENTS** relating to TVWS technology and spectrum, hoping that with the Microsoft initiative renewed energy will be brought to bear on this promising area of technology.

As Microsoft has reinvigorated focus on the use of TVWS spectrum BCoE will follow this development with ongoing interest and provide our readers with updates.

Two interesting new areas for IEEE 802 are in the fields of Automotive Networking and Lightwave Communications.

IEEE, by Paul Nikolich

The IEEE 802 LAN/MAN Standards Committee held its 09-15 July 2017 plenary session in Berlin, Germany. It was well attended with almost 700 participants working on 50+ standards activities. Two interesting new areas for IEEE 802 are in the fields of Automotive Networking and Lightwave Communications. Both were the subject of tutorials held Monday evening; IEEE 802 Ethernet Networks for **AUTOMOTIVE** and An Overview on **HIGH-SPEED OPTICAL WIRELESS/LIGHT COMMUNICATIONS**.

Automobiles have used proprietary networks for decades, gradually increasing their use within vehicles. But now these networks have become essential components of vehicles what with the number of devices that need to connect with a reliable, high capacity networking increasing exponentially. This is the sweet spot for standardization — the need to create standards enabling multi-vendor interoperability, higher volumes, and lower costs while meeting the networking requirements.

The 802.3 Ethernet Working Group is the ideal place to develop the specifications for a new physical layer for these networks and they kicked off a new Study Group last March to prepare a draft Project Authorization Request, which was formally authorized in June with work beginning last week named "NGAUTO", also known as IEEE P802.3ch Multi-Gigabit Automotive Ethernet PHY Task Force. See their **WEB PAGE** for details.

The light-wave communications activity described in the above tutorial is focused on four areas; low volume/high and low data rates, and high volume/high and low data rates. The aim for this activity is to take advantage of the huge amount of license-exempt spectrum that light frequencies provide for data communications applications. This recently has become feasible with the wide deployment of technologies such as LED lighting and ubiquitous smart phone cameras.

The 802.11 Wireless LAN Working Group created a new Study Group at its July meeting to explore the technical feasibility and market readiness to support the creating of a new Optical Physical Layer project within 802.11 Working Group called the "Light Communication Study Group". Please see **LINK** for details.

All-in-all, the IEEE 802 LAN/MAN Standards Committee remains a vibrant community of globally based technologists that continue to standardize the best technologies for global commercialization of products and services benefiting humanity.

Rouzbeh