From the desk of Rouzbeh

Dr. Rouzbeh Yassini

"Stay tuned — a much faster, more economical access network based on NG-EPON will be coming to your neighborhood soon."

Hello,

This month as part of our newsletter, I thought I would provide you with a quick update on the FCC Incentive Auction as reviewed by my colleague Chris Grobicki. This FCC auction has been a long and complicated process to repurpose valuable low-band spectrum originally used for analog TV broadcast for new services, most probably fixed and mobile broadband data. Most of the spectrum would be licensed, however the plan is to set aside some for unlicensed use as well. The process essentially allows current licensees to relinquish their usage rights for monetary compensation funded from this auction.

But the recently concluded 2nd stage was unable to bring the process to a conclusion because there is still a wide disparity between the monetary compensation the broadcasters want for their spectrum rights versus what the telecom operators are willing to provide. The 3rd stage bidding rounds are now ongoing and can be tracked at the **REVERSE AUCTION DASHBOARD**. Complicated and slower than maybe anticipated, the process is an interesting study on how something of this complexity can be executed in a reasonably orderly fashion. Another good site that answers some additional questions you might have is the **BROADCAST LAW BLOG**.

Broadband Privacy Rules Adopted

I also thought it was interesting that the **FCC** enacted a set of broadband privacy rules. These rules require ISPs to protect their customers' sensitive personal information. So, the rules do not prohibit ISPs from using or sharing their customers' information, but they require ISPs to give their customers more data and control when it comes to how their ISP may use or share their personal information. One perspective on the rules is available **HERE** from *Access Now*.

IEEE update by Paul Nikolich

IEEE 802 Next Generation Ethernet Passive Optical Networking (NG-EPON) Access Systems

I've just returned from the IEEE 802 LAN/MAN Standards Committee's 114th plenary session held in San Antonio, TX, where more than 700 networking industry professionals gathered to advance dozens of next generation standards activities for application across a wide range of technologies, from multi-100 Gbps optical networks to low speed, low power wireless networks. This article will focus on the IEEE P802.3ca 25/50/100G-Ethernet point-to-multipoint Passive Optical Network (EPON) project. The project is focused on enabling access network operators to provide advanced bandwidth intensive services while reducing the footprint of network equipment, simplifying service upgrades, reducing network upgrade costs and reducing fiber deployment costs.

The predominant market driver for this project is the continued growth of access bandwidth usage — some have estimated it to be growing at 50% per year on average due to increases in the number of subscribers, the number of connected devices per subscriber, and more bandwidth intensive services, such as video,

being delivered to each connected device. Current state-of-the-art EPON networks have a maximum capacity of 10Gbps — this project aims to increase that capacity up to a factor of 10 times, while leveraging existing technology whose technical feasibility has been demonstrated over the last several years.

Advanced optical modulation techniques will be used while careful attention is given to the costs of installing and maintaining the point-to-multipoint optical cable plant. The project has approximately 30 active participants from a wide range of optical component suppliers, chip vendors, systems vendors and service providers. The work has been in process at IEEE 802 for the last several years, initially as a market assessment, followed by an effort to focus the project, and was formally approved in Dec. 2015. The initial draft is expected to be ready by mid-2017 and ratification of the final standard by mid-2019. I expect to see pre-standard equipment available for evaluation and field testing in the mid-2018 timeframe, with service providers rolling out services based on this technology in the 2019 timeframe. Stay tuned—a much faster, more economical access network based on NG-EPON will be coming to your neighborhood soon.

IEEE and Smart Cities

As major cities around the world implement smart city initiatives, standards bodies like IEEE are taking notice, and have begun to work toward achieving standards for smart city technologies and activities. There is a large portfolio of efforts and this **ARTICLE** provides an overview of some groups and their work.

Other items in the IEEE e-newsletter standards update for Q4 '16 focus on listing smart city applicable **STANDARDS** (such as the 802.2 work Paul noted in this newsletter), standardization and compliance **INDICATORS**, as well as a **VIEW** on how the IoT and Big Data fit into smart cities.

Another ITU Broadband Report

At the end of November, the ITU issued its **2016 REPORT** on Measuring the Information Society. The extensive report, produced annually, lists 175 or more countries and their broadband status (South Korea once again tops the connectivity list), and also interestingly notes that while mobile phones are too expensive for many people globally, mobile broadband is cheaper and more widely available than fixed broadband.

And finally, as we seemingly speed to the end of 2016, I want to wish you all a peaceful and merry Christmas and a productive and joyful new year.

Rouzbeh