University of New Hampshire
Broadband Center of Excellence

Broadband Center of Excellence Newsletter

# *From the desk of Rouzbeh*

Dr. Rouzbeh Yassini

*"... there's been an approximate 10% growth in number of Internet users over 2015..."*

**per ITU state of broadband report**

**Hello,**

The ITU/UN issued its 2016 annual "State of Broadband" report in mid-September and it shows that the poorer the country, the more it lurches slowly forward, toward gaining universal broadband availability. ITU says 3.9 billion people will still be offline at the end of this year, but ITU also notes that there's been an approximate 10% growth in the number of Internet users over 2015, to 3.5B from 3.2B. Here's one data point I found interesting: ITU price research found that a monthly fixed broadband package cost 1.7% of average income in developed countries; 31% of average income in developing countries; and 64% of average income in Africa. Wow! There's a lot more in the 106-page report.

**BCoE RFP**

We issued our second **RFP** in late September. It seeks to award up to $100K on projects that address socio-economic benefits of Smart Sensors, particularly those that can benefit a rural or disadvantaged community or address a major societal concern.

**IEEE**

As for news from the IEEE 802 LAN/MAN Standards Committee, you may have seen reports that the Internet of Things (IoT) market sector is growing at a significant pace. In fact, some of the stakeholders in that market have come to the IEEE 802 LAN/MAN Standards Committee to add a new feature to the 802.11 Wireless LAN standard to enable the growth of that market — it's called "Wake Up Radio" (WUR). A draft WUR project request was prepared at the September 2016 IEEE 802.11 Working Group Interim Session in Warsaw, Poland. A group of about 40 individuals from about a dozen companies met to put the finishing touches on the draft project request. This proposed project will add technology to the 802.11 Wireless LAN Standard which will specify the addition of a very low power companion radio that will always be in listen mode. When a specialized 'wake-up packet' is sent from an access point, the wake up radio will detect it, then notify the primary connectivity radio to come out of sleep mode.

This functionality will consume very little power — less than one milliwatt — to satisfy the need for low power devices that only have to be network connected for brief, infrequent periods of time — like battery operated devices in IoT use cases such as fitness trackers, healthcare monitoring devices, smart home devices, industrial sensors, devices measuring natural phenomenon and wearables. A typical active 802.11 receiver consumes hundreds of milliwatts and is always on — that's too much for the battery powered IoT applications. Furthermore these IoT applications are growing at a tremendous rate. As specified by the WUR group in their proposal: "... worldwide shipments of wearable devices are expected to reach 110 million by the end of 2016 with 38.2% growth over the previous year. According to the International Data Corporation (IDC) Worldwide Quarterly Wearable Device Tracker **LINK**, an expanding lineup of vendors combined with fast-growing consumer awareness and demand will generate double-digit growth throughout the 2015–2020 forecast period, culminating in shipments of 237.1 million wearable devices in 2020." You can get all the details at **LINK**.

**Municipal Broadband**

Finally, I saw an **OVERVIEW REPORT** on municipal and private fiber networks published in *Broadband Communities* magazine's Aug.–Sept. issue. They report that there are 178 such efforts underway, 8% more than last year. Thought you might enjoy it.

**Rouzbeh**