Calling for speakers on Energy and Sustainability at the Q2 Town Hall Innovation Series (THIS) sessions!

The first inaugural Town Hall Innovation Series (THIS) sessions at the Q1 Broadband Forum meeting were well-attended by the membership and guest attendees. Greater collaboration between Video Content Providers and Broadband Service Providers to capitalize on broadcasting opportunities was called for, and improved coordination and collaboration between different government agencies and standards organizations was identified to bridge the digital divide across the United States.

Cutting edge research and technology were presented at THIS Birds of a Feather (BoF).

The importance of SLA-aware real-time control across optical, computing, and mobile networks was highlighted as a key enabler for 5G Ultra-Reliable Low-Latency Communication (URLLC). Colorless Multi-Access (CMA) network was introduced as a new frontier, blending the best of access technologies.

Thank you to all our speakers!

Going forward, these Town Hall sessions will take place at each quarterly Members' meeting, and we are inviting speakers to get involved. We plan to focus on different topics each quarter, with the focus in our Q2 meeting being Energy and Sustainability. The topics presented at THIS sessions can stimulate future work for the Forum and act as a catalyst for new projects.

Please contact THIS@broadband-forum.org if you would like to present on a subject matter or suggest a topic.

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Engaging pool of Town Hall Innovation Series sessions this quarter

OutSys: Collaborate on broadcast or pay the price

Greater collaboration between video content providers and broadband service providers is needed to capitalize on broadcast opportunities, according to **Fabrizio Guidotti, of OutSys**.

Kicking off the Broadband Forum Town Hall Innovation Series, held as part of the Q1 meeting, Guidotti, outlined how broadcasters, such as the BBC, are pondering whether to switch-off terrestrial television and radio signals in the years ahead to focus on Internet content streaming only. This follows viewers' growing preference to access TV via their broadband network. Currently, television

broadcasters have to run two separate platforms to deliver the same service. By dropping one of them, they can save money and resources.

At the same time, said Guidotti, linear TV broadcasters and video OTTs are all competing to acquire the exclusive rights to live event streaming – the latest revenue stream to tap into as the Video on Demand (VoD) market is becoming saturated and overcrowded. While linear and live event streaming can be delivered using both Unicast and Multicast, delivering it using infrastructure designed for VoD that use Unicast only can have consequences, Fabrizio warned.

"Service providers and video content providers have to keep expanding their infrastructures to avoid service disruptions, and this endless growth is costly in terms of money, time, and resources," he added.

Although Guidotti said he was not suggesting replacing any Content Delivery Network Systems, he did highlight the need for additional features and capabilities to handle multicast streaming.

"The service provider can pre-allocate the Multicast Groups with assured bandwidth, latency, and distribution capabilities on its network infrastructure and then assign them to the video content providers," he said.

To achieve these outcomes, Guidotti called for greater collaboration between video content providers and broadband service providers. Without this, Fabrizio warned, they are doomed to keep continually expanding their infrastructures or having to negotiate a new procedure for each broadband provider and video content provider to deploy their custom multicast model.

According to Guidotti, the Broadband Forum is the right place, with the right culture, for all stakeholders to meet and come to an agreement – but more video content providers to join the conversation! Guidotti called for the launch of a new initiative within Broadband Forum to address the issue the industry faces.

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"Giant step forward for America's connectivity goals but not across the finish line yet"

The US is in the beginning stages of a once in a lifetime investment in high speed, reliable broadband networks and user adoption/skills training. However, greater coordination and collaboration between different government agencies and standards organizations is needed to bridge the digital divide across the United States, according to a panel during another engaging THIS session.

Greg Bathrick, Board Member and Distinguished Fellow at Broadband Forum and Area Vice President of Commercial Development at Calix, said: "Technology has changed lives, but there are many communities that still have not benefitted, with broadband no longer a luxury but a requirement."

Bathrick moderated an informative session with **Kevin Sievert, Acting Broadband Program Director at State of North Dakota,** and **Kevin Noll, Principal Access Architect in the Office of the CTO at Vecima**

and President of Loudoun Broadband Alliance. The panel outlined how the pandemic proved that for remote working and learning, reliable broadband was paramount. But Internet connectivity with the sufficient speeds was lacking in many states across the United States, and across the globe.

Participants also stressed the need to deliver reliable connectivity to reach everyone. The 25 Mbps download speed with 3 Mbps upload speed proposed by the FCC was regarded as not enough. The group highlighted that the Broadband Equity, Access, and Deployment (BEAD) Program and American Rescue Plan Act (ARPA) will be pivotal. North Dakota is very near completing its broadband network buildout and is expecting BEAD funding slightly above the $100 million minimum grant; in comparison Texas, where the Q1 meeting is taking place, is estimated to receive $3.5 billion by Cartesian group.

Sievert pointed out that almost 100% of the population in North Dakota have access to 100 Mbps services and the key to that success has been driven by the local telcos, coops and cable players. North Dakota will be working in the coming months to develop a comprehensive Digital Equity Plan that will help drive adoption- and education. Sievert advised that the success of connectivity has to measure against a key criteria consisting of access, reliability, affordability and useability.

Meanwhile, Noll advised that Loudoun County, Virginia, had the highest concentration of data centers on the planet, carrying 80 percent of the world's internet traffic. While many in the county have access to gigabit or faster speeds with the largest service providers, there is a huge divide in the county with 8,700 households without access to broadband Internet and many homes without cellular coverage. Noll stressed that rural communities are always playing catch up in terms of internet access.

Noll emphasized that if operators cannot provide affordable or reliable internet access, then they are not doing their job properly. Noll highlighted the impact broadband access has on education, and new employment and job searches. We are building broadband networks to help people in their daily lives."

When evaluating grantees and their applications, Sievert advised that the deployment priorities included unserved to underserved and different organization types, such as small businesses in communities they serve. Sievert agreed that wireline technologies deliver the high-speed connectivity needed and believes the time is right to deliver fiber in rural areas.

Noll advised that when the Broadband Forum produces specifications, members need to consider the motivations for operators and the need to focus on connecting those situated in less profitable areas – lowering the operational costs of equipment and infrastructure, while also maximizing the return on investment.

The group agreed that in some cases service providers have exaggerated reach and delivery speeds, and that regulatory government agencies are in need of improved and more accurate testing tools of the broadband service
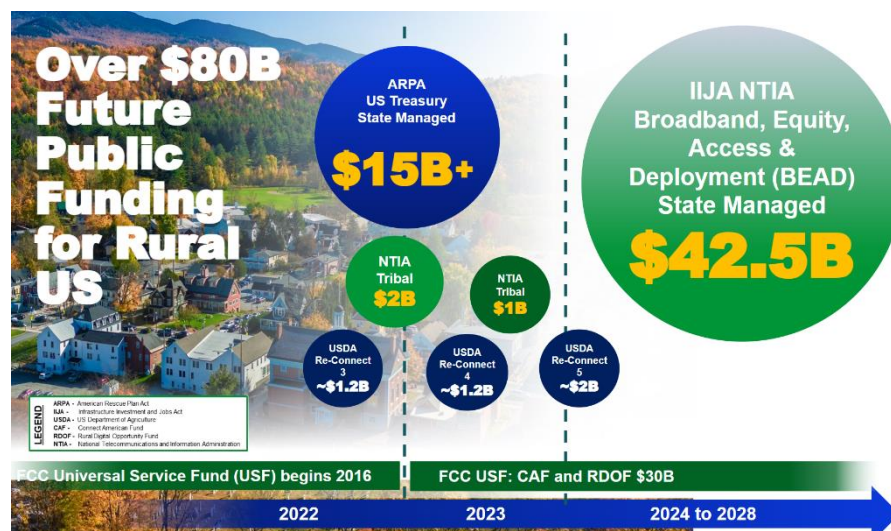
and speeds provided to hold service providers more accountable. By combining new funding and next-generation technologies with standardization, fairer allocation of resources to underserved and unserved locations can be delivered in the future.

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Real-time SLA-control technology key to unlocking new opportunities

Kota Asaka, of NTT Access Network Service Systems Laboratories, highlighted the importance of SLA-aware real-time control technology across optical, computing, and mobile networks. Asaka advised that the percentage of the working age population (15-64) has been decreasing in developed areas. Service providers have therefore been tasked with efficiently providing network services with a reduced workforce.

Remote services such as remote surgery or remote inspection require large bandwidth and low latency. Asaka outlined the advantages of an All Photonics Network (APN) as it provides an end-to-end optical direct connection without an optical/electrical/optical conversion at the node. However, Asaka pointed out that the remote services could not be achieved by APN itself, but by collaborating with computing and mobile networks.


An example showcased a drone with 4K/8K video collecting footage for inspection at a bridge. By sharing resources, there was a collaborative operation between the APN, computing resources and mobile controllers. Asaka provided examples of real-time control while experiencing congestion at the computing resource or mobile base station. With a real-time controller, in-service dynamic control could be achieved.
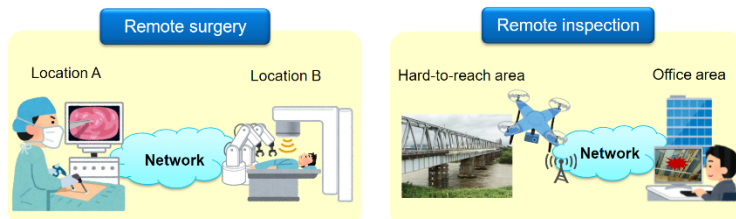
Asaka advised that Broadband Forum's Automated Intelligent Management (AIM) architecture is consistent with what has been proposed and WT-436 could be suitable as a baseline text. The next step proposed could involve analyzing the gap between the document and real-time technology. Marrying standardization with real-time control technology could unlock a plethora of new opportunities for the industry.

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AT&T Labs – Now is the perfect time for a Colorless Multi-Access network

"This is a revolutionary access technology which cost-effectively supports both dedicated and shared services across a single passive optical network with one waveform, one Central Office node, one NTE/CPE device, and a single control plane."
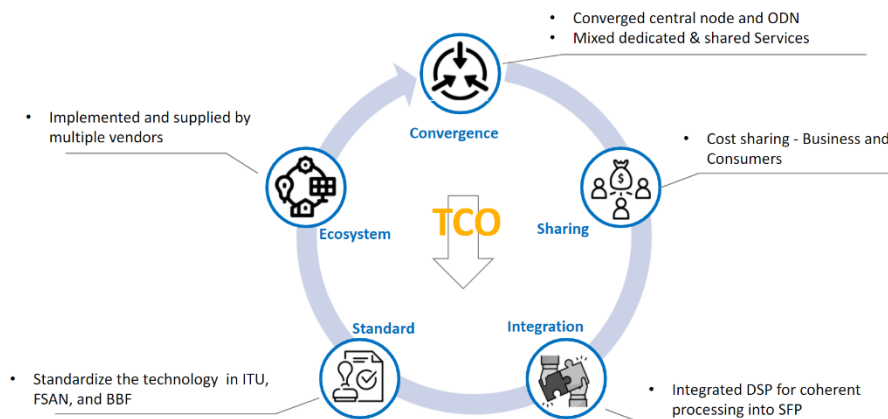
This was the message delivered by **Bhushan Padhiar, Principal Member of Technical Staff at AT&T Labs** during Broadband Forum's Q1 Meeting.

According to AT&T, Colorless Multi-Access, a proposed next-generation access technology, transforms the access architecture to provide access convergence supporting services currently offered over a multitude of access technologies including point-to-point (dedicated), point-to-

multipoint (shared), and WDM. This new technology efficiently converges most legacy services onto a single waveform from one Central Office network node across one common passive optical network with one control plane which has the potential to greatly consolidate and simplify the access network for operators.

CMA Ecosystem

- Converged central node and ODN
- Mixed dedicated & shared Services

Convergence

- Cost sharing - Business and Consumers

Sharing

- Implemented and supplied by multiple vendors

Ecosystem

TCO

- Standardize the technology in ITU, FSAN, and BBF

Standard

Integration

- Integrated DSP for coherent processing into SFP

AT&T called for more vendors and operators to provide feedback and get involved. With this framework, the next step would be engaging standards organizations such as Broadband

Forum, ITU-T and FSAN to standardize the technology and define the architecture and management interface.

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