Broadband Forum Q4 2018 Meeting

Your quarterly resource for updates on recent activities and our most critical work and focus areas.

A Word from our CEO - Laying the foundations of the next billion

The Broadband Forum meeting in Glasgow last week brought down the curtain on a year of enormous achievement and the significant milestone of reaching one billion broadband connections in the global market. You have all played a part in helping us to get there – congratulations!

As we look forward to the festive season and the new year ahead, we have a Broadband Forum which is transforming and thriving at an accelerating pace – staying ahead of the dramatic changes taking place in our industry.

Our transformation has been designed to ensure broadband technologies and their ecosystems are enhanced and developed further to meet the demands of the coming era of 5G, Internet of Things (IoT), automation, virtualization, and Artificial Intelligence (AI). We have seen new Work Areas launched, we have developed the increasingly successful BASe events around the world, we are co-operating with other industry forums and our interoperability pavilion at the Broadband World Forum in Berlin was our most successful yet. Most importantly, we have seen the breadth and scope of our work expand, not just in terms of addressing new and emerging technologies, but in our approach - with a number of 'open source' initiatives launched this year. As far as this goes, I truly believe this represents how dynamic our work at the Forum is becoming and how we are ensuring the whole network is prepared for the future, from the Cloud to the Connected Home.

With all these achievements, we can now look forward to 2019 with increasing confidence and commitment to our role in the future of broadband. Your work and effort is being increasingly backed in terms of supportive marketing and public relations and, very soon, an impressive new website we can all be proud of.

So, enjoy the celebrations ahead. Give yourselves a well-deserved pat on the back, and get ready for an exciting 2019 as we help to move the industry towards the next billion lines of broadband.

Robin

Word from our Chief Marketing Officer - Shaping the future of broadband as we accelerate into 2019

When I was first introduced at the Q3 Broadband Forum meeting in Montreal last September, I shared my view that the "Broadband Forum" was already one of the premier brands in broadband based on its rich history of contributions to the industry to date. My mission, I shared, was to build on this strong foundation.

What I've discovered over the last quarter as I've learned more about the Forum, its projects, and the dedication of its members, is that I underestimated the opportunities that exist to raise our profile and extend our brand. These are incredibly exciting times for the broadband industry, and as we showed the world with our events and announcements this last quarter, our work is a key a catalyst to this excitement … and we are just getting started.

Our major announcement in Q4 was that the world surpassed 1 billion fixed broadband installations in 2018, and the Broadband Forum was a major contributor to this achievement. This was significant news for our industry, and as Robin said above, it is something for which we, as a collective, should be extremely proud.

This milestone message provided the foundation for ramping up our profile at the 2019 Broadband World Forum in Berlin. Our "1 Billion" announcement and its close association to our TR-069 protocol provided a great backdrop for showcasing the evolution of TR-069 – User Services Platform, also referred to as USP – at our Interop Pavilion at the Broadband World Forum Expo. Other demonstrations that were showcased included our Broadband Access Abstraction project (enabled by our Open Broadband initiative) and a Gfast interoperability demo. These demonstrations were very well-received and were a clear message to the industry that the Forum is accelerating into 2019 with ground-breaking work ongoing across a variety of Work Areas.

Amplifying this message was our very own Executive Summit at the show, attended by more than 200 participants, from global operators, members of the trade media and top-tier analysts to vendors and fellow standard bodies. In addition, Q4 saw another great turnout for our BASe Series events – this one in Las Vegas, North America. This saw an additional 150 participants receive updates on the cutting-edge technologies and innovative work in our industry from leaders such as Google, Nokia, Corning Optical Communications, Huawei, and Calix.

The media and analysts also reacted very positively to other announcements leading up to Broadband World Forum during the quarter, including the announcement of two new

projects – Open Broadband – Broadband Access Abstraction and our Wi-Fi Easy Mesh project with the prpl foundation – which were covered by multiple top-tier publications including SDX Central and Telecom TV.

As we accelerate into 2019, it's essential that we keep this momentum going. To do so, we need your help in keeping us informed of any innovative work you are carrying out in your respective project areas. Even with what we are already aware of, the coming year is already shaping up to be our best yet, and with your help it can only get better. So, don't forget to raise your glass as you celebrate the holidays at least once to the Broadband Forum and its fantastic achievements in 2018, and to our noble work in enabling the next billion lines of broadband in the year (and years) ahead!

Have a great holiday season!

Amazon Alexa Voice Services keynote evangelizes industry collaboration highlights productive Q4 Broadband Forum Meeting

Amazon Alexa Voice Services UK General Manager Theunis Scheepers keynoted Broadband Forum's fourth quarter meeting last week in Glasgow, Scotland, UK, where he told the packed audience that device compatibility is essential in order to maximize the selection of available devices, which in turn drives mass adoption of the connected home market.

Scheepers' keynote kicked off a busy week that saw another keynote from Huw Saunders, Director of Network Infrastructure at the UK's broadband regulatory and competition authority Ofcom, a Birds of a Feather (BoF) session focused on "Powering in an Ultra-Fast World", and major progress made within projects across all work areas and Open Broadband initiatives, including in areas like 5G, the User Services Platform (USP) and CloudCO.

Ofcom keynote opens Broadband Forum Q4 Meeting

Leading UK communications regulator Ofcom opened the packed-out plenary session at the Broadband Forum quarterly meeting in Glasgow this week.

The keynote session, delivered by Ofcom Director of Network Infrastructure Huw Saunders, discussed the challenges of delivering high-quality broadband services and the potential gaps in broadband customers' knowledge.

The presentation covered the momentum behind fiber roll-out developments across the UK, including the UK government's goal of connecting 15 million premises to full fiber by 2025, with coverage across "all parts of the country" by 2033.

Saunders told the audience of Ofcom's plans to keep up with this demand, by exploring possible new broadband measurement solutions, approaches and data sources, the potential to charge operators for service interruptions, as well as proposing a new holistic solution to improve broadband measurements.

BASe OFC call for papers

The highly popular BASe series continues to thrive and expand with the addition of a new format called BASe-POINT. A half day focused seminar, BASe-POINT OFC will focus on one of the optical industry's hottest topics – NG-PON – and explore compelling new use cases and emerging trends, including the technology's use for 5G backhaul.

Join companies including Verizon, Nokia, Calix, Go-Foton! and PICadvanced and others for this exciting seminar.

For more information, or to find out more about our BASe sponsorship opportunities for 2019, please contact: info@broadband-forum.org.

Work Area Updates from Glasgow, Scotland

What's next for the Architecture and Migration Work Area

- **Target:** The Architecture and Migration Work Area maintains primary architectural work of the Broadband Forum. This work reflects the control, management and data plane aspects of the Broadband Forum's defined architectures. These architectures are augmented to leverage new industry practices, while protecting the investment in broadband networks already deployed.
- **Progress:** The Work Area formed a new project, addressing the use of quality attenuation methods in broadband networks. Work also began on a new market report, which addresses how challenges can be overcome when deploying fiber in the broadband network.
- **Outcomes:** The Application Layer Testing (ALT) project stream (MD433) addressed all straw ballot comments received in the ALT architecture straw ballot (WT-421) held at the meeting.

After the Q3 meeting in Montreal, long standing Chair David Thorne left the Broadband Forum to enjoy retirement. David Sinicrope is now the acting Work Area Director leading into 2019.

The Architecture and Migration group began work on a new market report (referred to as "Multi access broadband - performance networking on demand – today"), highlighting industry challenges of deploying fiber in the broadband network and how they can be overcome with multiple technologies, including Wi-Fi, 4G and 5G and satellite. This will enable faster deployment of high-speed access to end-users which will deliver the capacity and bandwidth required for demanding user applications, as well as provide resiliency for mission critical applications. The target for completion of the document is scheduled for Mobile World Congress 2019.

The Work Area started a new project – referred to as quality attenuation - which addresses the use of quality attenuation methods. This is a new approach to system analysis, giving far greater insight than traditional measurements (e.g. bandwidth) to gauge quality of experience and of application outcomes. The analysis decomposes a round trip time into six separate constituent components allowing the network performance to be analyzed for design and trouble-shooting. This permits service providers to carry out a root cause analysis that considers factors such as performance degradation (packet loss/delay), structure (architecture/design), network dimensioning (link speeds etc.) and network load and scheduling.

ALT project stream (MD433) addressed all straw ballot comments received in the recent ALT architecture straw ballot (WT-421). As a result, the editors have some homework to do to integrate the comment resolutions and are aiming for publication in early Q2 2019. Work also continued on the ALT data models (WT-424) and the implementors guide (WT-422). ALT defines how test traffic is specified and generated at the application layer. It supports

specification of test traffic that exhibits the complexity resulting from multiple types of applications and subscribers aggregated in a common network.

Work resumed full speed on the performance measurement Customer Equipment (CE) to IP edge architecture document (WT-390I2). This work defines the capabilities required in Customer Equipment and the IP Edge for service assurance of broadband subscribers using Simple Two-way Active Measurement Protocol (STAMP) performance measurement, including architectural and nodal requirements.

For more information about the Architecture and Migration group, please see: https://wiki.broadband-forum.org/display/BBF/Architecture+and+Migration.

BUS empowers Connected Home with USP update and new Wi-Fi performance metrics

- **Target:** To enable service providers to manage and deliver carrier class Wi-Fi.
- **Progress:** The group has resolved final comments on its Wi-Fi In-Home Performance Metrics (TR-398) and is in the final stages of its Wi-Fi network service elements in the Device:2 data model for USP and TR-069.
- **Outcomes:** The finalized TR-398 is planned for release in February 2019 pending member approval. Device:2.13, which will include new Wi-Fi network management objects, is on target to be launched in Q2 2019.

The Broadband User Services (BUS) Work Area has been pushing forward on its mission to improve the in-home Wi-Fi experience for subscribers and allow service providers to deliver "carrier grade" In-Home networking. It is pleased to have resolved final comments on its Wi-Fi In-Home Performance Metrics (WT-398) document, giving clear expectations for developers of Wi-Fi equipment. In addition, the group is finalizing Wi-Fi network service elements (for mesh and repeater systems) in its Device:2 data model, enabling users to on-board, manage, and monitor these components in their deployments.

Following the success and buzz around the USP (TR-369, the evolution of TR-069) at Broadband World Forum, the group also made great strides towards version 1.1 of the protocol, incorporating feedback from interested developers and service providers and results from group testing events held so far. The next USP Plugfest is scheduled for April 1, 2019 and will help the Work Area gain feedback on version 1.1 of the protocol. An associated certification program for the protocol is also expected to be completed shortly after the 2019 Q2 meeting, taking place in Seoul, Korea.

For further updates from BUS, please see: https://wiki.broadband-forum.org/display/BBF/Broadband+User+Services.

Common YANG scores a hattrick at Q4!

- **Target:** Specify YANG modules that are applicable to multiple Work Areas, NETCONF/YANG test plans and certification for the defined YANG modules, and maintain YANG Best Current Practices, processes, procedures and tools.
- **Progress:** Continued work on managing the Access Node Control Protocol (ANCP) and alarm management, enabling additional functionality for network troubleshooting and data analysis.
- **Outcomes:** Amendment 2 of the YANG Modules for Fiber-to-the-distribution-point (FTTdp) Management was approved for straw ballot, updating existing models to align with the latest revisions of underlying ITU specification.

Since the last meeting, Amendment 2 of the Common YANG Modules for Access Nodes (TR-383a2) was approved. This amendment is just one achievement within the Work Area and prepares the work for applicability beyond copper-based access by enhancing the YANG Modules for reuse in Optical Line Terminations (OLTs), providing ultrafast broadband over a Passive Optical Network (PON).

Secondly, the group approved the creation of an Amendment 3 which will further enhance the suite of YANG Modules, focusing on aspects such as alarm management, managing the Access Node Control Protocol (ANCP), and hardware management. These developments will meet service provider requirements, enabling additional functionality for network troubleshooting and data analysis.

In addition, Amendment 2 of the YANG Modules for FTTdp Management (WT-355a2) was approved to proceed to straw ballot. This Amendment adds Reverse Power Feeding support for Distribution Point Units (DPUs) and updates existing models to align with the latest revisions of underlying ITU specifications.

Last but not least, many of the Work Area participants also took part in an IETF ad-hoc meeting which discussed aspects related to IPFIX-based bulk data collection. This turned out to be a very interactive discussion, allowing the authors of the [draft-boydseda-ipfix-psamp-bulk-data-yang-model](#) to further enhance their work. It is expected this IETF activity may well be referenced by Common YANG in future work.

In summary, the Work Area made significant progress and maintains its leading role in the overall YANG standardization ecosystem.

For an overview of the Common YANG Work Area's work, please visit: https://wiki.broadband-forum.org/display/BBF/Common+YANG+Work+Area.

Full steam ahead for OB-BAA, as it prepares for its second release

Following the success of the first release of the Open Broadband – Broadband Access Abstraction (OB-BAA) project earlier this year, the group successfully demonstrated an updated version of the release for the first time to the world at this year's Broadband World Forum, in Berlin.

The demo highlighted how OLTs and DPUs from multiple vendors can be managed and controlled using the same commands and messages based on the NETCONF protocol and the associated standard YANG data model, using OB-BAA.

Following this, the team is now hard at work on the second release which is scheduled for February 2019. This work aims to support additional functionalities for existing access network elements to be virtualized for management and control purposes in Cloud Central Office (CloudCO) implementations. In addition, the second release adds more examples to manage and control network elements using the standard YANG data models specified in the Broadband Forum's TR-413 technical specification.

For more information on OB-BAA, please visit: https://www.broadband-forum.org/projects/ob-projects/ob-baa.

Fan collaborates to drive next-gen fiber access networks

- **Target:** To move forward with the straw ballot of the ITU-T PON YANG data model (WT-385).
- **Progress:** Work on the NETCONF requirement for access nodes was carried out jointly with the SDN NFV Work Area group.
- **Outcomes:** Final ballot of the PON abstraction use cases for time critical functions, such as Dynamic Bandwidth Assignment (DBA) and definition of the open interface for time critical API functions was completed during the meeting. Several test plans were also brought forward across XGS-PON and NG-PON2 for final ballot.

Since the Q3 meeting, the Fiber Access Networks (FAN) Work Area has been busy progressing a number of key documents that will bring a range of benefits to global service providers.

Following the passing of the Functional Model for PON Abstraction Interface document (TR-402) at the Q3 meeting, this work has proven to provide the capabilities to define the PON abstraction use cases for time critical functions, such as DBA on PON systems. This will in turn allow service providers to reduce costs and accelerate development of PON systems by disaggregation of time critical functions.

Progress on the PON Abstraction Interface Specification (WT-403) was also made prior to the meeting, with final ballot confirmed in early December. WT-403 defines the open interface for time critical API functions.

In addition to this, several test plans were brought forward for final ballot as part of the work of the Interoperability Project Stream, which include:

- The NG-PON2 TC Layer Test Plan (WT-426), which defines the NG-PON2 Transmission Convergence Layer Test Plan.
- The XGS-PON TC Layer Test Plan (WT-309, Issue 2), which defines the XGS Transmission.
- The XG(S)-PON and NGPON-2 PON PMD Layer Test Plan (WT-423).

Also in straw ballot stage with the PON YANG Project Stream is WT-385. The group has also agreed to create WT-431 for EPON YANG development. EPON YANG will be based on appropriate YANG models already developed within the Forum and IEEE. The group is also updating and testing nctool for NETCONF interop testing. There are ongoing discussions on making SD-417 OLT Management Study into a working text for general purpose use.

The NGPON Wavelength Management project stream has agreed to update WT-352 Issue 2. Collaboration on extending WT-352 Issue 2 to include missing use cases will be discussed during teleconferences.

For the latest updates from the FAN Work Area, please visit: https://wiki.broadband-forum.org/display/BBF/Call+Agendas+and+Minutes+-+FAN

Physical Layer Transmission sees light at the end of the tunnel for Gfast Issue 2 certification

- Target: To carry out work which will help service providers deploy equipment that will give a better quality of experience for their end users.
- Progress: The Physical Layer Transmission group work continued on its Gfast Performance Testing document, Reverse Powering Feeding, Wi-Fi Performance Testing and many more projects.
- Outcomes: Gfast Issue 2 certification has been sent to final ballot. Dates for Gfast Plugfests in 2019 have also been set.

Having completed the resolution of straw ballot comments on Issue 2 of ID-337 (Gfast certification) arising from the ongoing BETA test program, the group agreed to send the document to final ballot. Issue 2 addresses 212MHz operation, Gfast over coax (profiles 106c and 212c) and increases performance requirements. Progress was made on Gfast Performance Testing (WT-380) in specifying test cases for multi-line testing with non-collocated Customer Premises Equipment (CPE).

Work progressed on WT-338 Issue 1 Amendment 1 and Issue 2 – the Reverse Power Feed test plan. This allows for testing of remote powering of access network equipment from the customer premises. The plan is to send Issue 1, Amendment 1 to straw ballot in February 2019.

A new project stream, FANCE (Fiber Access Networks - Copper Extensions), was established to work on WT-301 Issue 3, which includes FASTBACK - copper backhaul from a DPU using bonded Gfast. In addition, a new project, WT-419, was initiated to address extending fiber access over existing local copper infrastructure. This will include technology-agnostic use cases taken from SD-419 along with descriptions of technology specific ways to address these use cases based on G.hn, MoCA and Gfast.

In conjunction with BUS, the group completed the resolution of straw ballot comments on Wi-Fi Performance Testing (WT-398), which is now entering final ballot. Work progressed on the analysis and requirements for video support in-premises (SD-410), and performance testing of in-premises video support over Wi-Fi (WT-434). This will help service providers deploy equipment to give a better quality of experience for their end users.

Work progressed on the Infrastructure for Testing Mitigation of Interference between Power Line Communications (PLC) and Digital Subscriber Line (DSL), also known as WT-425.

Work also continued on performance requirements for long reach VDSL2 and work on measurements that will set performance targets will now begin. VDSL2-Long Reach (VDSL2-LR) is the technology of choice for operators to migrate their aging ADSL network towards a single technology vectored VDSL2 network. Vectored VDSL2-LR provides ADSL2 plus like rates on long loops (10Mb/s at 4km), while providing VDSL2 performances on shorter loops.

Dates for Gfast Plugfests at the University of New Hampshire InterOperability Laboratory (UNH-IOL) in New Hampshire for the first half of 2019 have been set as follows:

- March 11-15, 2019
- May 13-17, 2019

To gain further insight into what the Physical Layer Transmission Work Area is doing, visit: https://wiki.broadband-forum.org/display/BBF/Physical+Layer+Transmission.

5G Transport Architecture looks towards 2019

- **Target:** To form industry-agreed specifications of the routing and transport network infrastructure for applications such as mobile backhaul/transport infrastructure, video distribution and data center interconnect.
- Progress: Work continued on the market drivers and the transport architecture for 5G.
- Outcomes: The Ethernet Virtual Private Network (EVPN) which was carried out at Q3 has now been made publicly available on the Forum's website as TR-350 Issue 2. This work will provide the architecture and equipment requirements for cloud services, video distribution and mobile backhaul.

Progress was made during the meeting on the market drivers and the transport architecture for 5G and work will carry on into 2019. The use of Segment Routing was introduced at this meeting, which builds on the use of deterministic transport and helps to integrate Software Defined Networking (SDN) into the transport architecture (SD.5GTransport).

Deterministic transport, in the form of IEEE Time Sensitive Networking (TSN) and IETF Deterministic Networking (DetNet) are technologies that augment existing packet networking, providing deterministic latency, latency variation and loss for applications that demand these stringent constraints.

The EVPN work discussed in the Q3 newsletter has now been published and is available on the public website. This work provides the essential architecture and equipment requirements for using the EVPN technology developed in IETF and IEEE for providing cloud services, video distribution and mobile backhaul. EVPN provides scalability, resiliency and operational enhancements over previous technologies used to provide Ethernet services such as PBB, VPWS and VPLS. These enhancements help meet the higher performance and more versatile needs of today's networks and, in particular, transport for 5G networks, both fixed and mobile.

Planning for 2019 was also carried out, with potential new projects suggested. This information is available on the wiki.

To find out more about the Routing and Transport Work Area's work, see: https://wiki.broadband-forum.org/display/BBF/Routing+and+Transport.

Innovation Group empowers an ultra-fast world with BoF session

A BoF session on 'powering in an ultrafast world' was held on the first day of the quarterly meeting in Glasgow this week. The jam-packed session addressed the issues and challenges operators and equipment providers are facing when building ultrafast access networks.

Presentations were given by AT&T, Openreach, Huawei, InCoax, Nokia and VoltServer and were followed by discussions on how the Broadband Forum can overcome key hurdles in enabling rapid and remote broadband deployments. Several suggestions for future work were made and the first step will be to look deeper into common operator challenges, particularly around battery back-up under local power fail and how they can be improved to support high availability broadband services and DPU powering (both forward and reverse).

For more insight into the Innovation group's work, please visit: https://wiki.broadband-forum.org/display/BBF/Innovation+Group.

Making milestones: SDN/NFV Work Area ends successful year with newly published application notes and significant progress in CloudCO and FANS

- **Target:** To drive the migration of SDN and NFV into broadband networks to facilitate the agile deployment of new customized distributed broadband services and applications.
- **Progress:** The Work Area gained significant momentum, with a new project stream confirmed - Automated Intelligent Management. This work will explore how machine learning and AI can improve service providers' operations, as well as management of access and home networks. A document on FANS interfaces (WT-386) also reached final ballot, with its associated white paper also entering straw ballot.
- **Outcomes:** The Work Area published seven of its 14 application notes that have been authored, these form the basis of the use cases that drive the interfaces and test cases for CloudCO. These use cases were demonstrated for the first time at this year's Broadband World Forum and are now publicly available on the Broadband Forum website.

During the Q4 meeting, a new project stream within the Work Area was launched – "Automated Intelligent Management". In light of this, work on the first working text (WT-436: Access & Home Network O&M Automation/Intelligence) of the project stream began. This project will focus on how machine learning and AI can be applied to data to improve the operations of service providers and help manage access and home networks. It was agreed at the meeting to add several use cases which will be worked upon in the future, with the aim to help drive automation into network operations, while reducing Operational Expenditure (OpEx) costs and improving customer experience.

First contributions to a new working text (WT-435: NETCONF Requirements for Access Nodes and Broadband Access Abstraction) were also discussed and agreed. This builds on a study document previously produced within the FAN group to help provide the necessary management capability between the CloudCO and any management and control elements that need to interact with them.

Continuing this momentum, the group also agreed to start work on a new specification for management of a virtual OMCI interface. This work will consider the virtualization of PON OMCI functionality and the related standardization that is required to achieve interoperability between various management functions.

The group's work on CloudCO Interfaces (WT-411) made a leap in progress following an agreement to significantly restructure the document, including the addition of models to support access network maps and equipment inventories. Moving forward, collaboration will be carried out with the Common YANG group to develop these models into YANG models.

The FANS Project Stream also made great progress, as it entered its final documentation on FANS interfaces (WT-386) into final ballot and its associated technical marketing whitepaper entering straw ballot. This delivers the first issue of a suite of documents that will enable the industry to share a single physical network infrastructure between multiple Communication Service Providers (CSPs), allowing them to differentiate their products which are offered over the infrastructure.

Lastly, work on the group's co-existence and migration document (WT-408) saw several contributions discussed, which led to the agreement that the editor would undertake a clean-up of the document to align with new guidelines that were agreed during the meeting. This will help provide a clearer direction for the document to enable contributors to progress its development.

More information about the SDN/NFV Work Area can be found at: https://wiki.broadband-forum.org/display/BBF/SDN+and+NFV.

WWC continues to execute on 5G

- **Target:** Address the needs of converged operators, which have both wireline and mobile networks deployed and are in a position to leverage all their assets with combined subscriber offerings.
- **Progress:** The Wireline-Wireless Convergence Work Area (WWC) completed its study on Fixed Mobile Convergence (FMC) and its input contributed to the finalization of the 3GPP study work. The group also progressed to defining the document structure and plan to execute on the necessary specifications to make FMC a reality.
- **Outcomes:** Complete solutions to FMC will be delivered in the release 16 timeframe as originally planned.

Work in the WWC Work Area continued to gain pace, addressing the needs of converged operators with both wireline and mobile networks deployed who are in a position to leverage all their assets with combined subscriber offerings. This will allow converged operators to provide a uniform experience to their customers irrespective of the access or appliance they are using. This will be supported by a common and streamlined back office systems and control plane.

On the journey to making this happen, the study work on 5G fixed access concluded at the Q4 meeting. The study, being carried out jointly with 3GPP, outlined the necessary changes to 5G core specifications and to Broadband Forum specified networks. This puts the work on track to deliver a family of specifications on FMC, coordinated with 3GPP's release 16 efforts.

The Forum is taking an important role in developing 5G, making recommendations for the connection points between the fixed and 5G mobile core networks in order to drive core convergence. This work, led by the 5G project stream, is detailed in SD-407 5G FMC.

Joint sessions were held across the Technical Committee examining other aspects of 5G where the Forum's expertise could be applied. In particular, with BUS, which saw the go forward plan to execute CPE changes for FMC firmed up. This will enable USP, and its predecessor, TR-069, to also contribute to the value proposition of FMC and 5G.

WWC is now entering the normative phase of this work with the specifications set to be finalized by the end of 2019.

For more on the Wireline-Wireless Convergence Work Area, please see: https://wiki.broadband-forum.org/display/BBF/Wireline-Wireless+Convergence.

Welcome to new and returning members!

We are pleased to welcome new and returning members to the Q4 meeting, including Furukawa Electric, Predictable Network Solutions (PNSol), BQ and TQ Delta.

We would like to welcome PNSol, Talk Talk Group, Domos and our newest Principal member, Telstra, to their first quarterly meeting.

Are you interested in becoming the next member of the industry's leading standards body in defining Broadband Networks - the Broadband Forum? Membership will not only accelerate your company's progress but enable you to become a key influencer in developing 5G, the Cloud, the Connected Home and Access Networks. Those who are interested in joining before the end of 2018 are invited to apply for a five Quarter Membership. 2019 Annual Memberships are also now being accepted.

To learn more about the benefits of Membership, please contact Rhonda Heier, Membership Development Manager, at rheier@broadband-forum.org.

Documents:

- WT-384 - passed final ballot
- WT-331: Using PON for Mobile Backhaul - passed final ballot
- WT-338i1 (Reverse Power Feed)- in final ballot
- WT-416 - out for final ballot
- WT-114i3a4 (BA17ade RTX): VDSDL2 - going to final ballot
- WT-347 (CPE SELT Calibration) - going to final ballot

For a full list of all work in progress, click here. Please feel free to share this information with your colleagues, so they are engaged and aware of the developments of this work.

Broadband Forum in the news

The Broadband Forum's CEO Robin Mersh has contributed a number of articles to well-known publications over the past quarter, including Pipeline magazine's October edition on 5G transport. An article on ALT and USP is scheduled for publication in Telecom Tech Outlook in December, as well as a by-line on OB-BAA in InterComms magazine.

The Forum made a number of major announcements in the month of October, including the results of its latest USP Plugfest, the launch of its new open source WiFi Mesh project with the prpl foundation, its plans to take the 'reigns' on the highly regarded Ultrafast Broadband Seminar from TNO and also a piece on the Forum's new approach to combining the best of open source and open standards, live from the renowned Broadband World Forum. These announcements attracted attention from a number of top-tier publications, including Optical Connections, Advanced Television, Telecompaper and Telecom TV.

For all of the Forum's latest news and updated, make sure you are following the Broadband Forum on LinkedIn.

Events Calendar

2019 Broadband Forum Meetings

And don't forget to save the dates for next year's meetings. Here's a first glance of what the calendar looks like:

- 2019 Q1 Meeting: March 18-21 - Warsaw, Poland, Europe
- 2019 Q2 Meeting: June 17-20 - Seoul, Korea, Asia
- 2019 Q3 Meeting: September 2-5 - Europe
- 2019 Q4 Meeting: December 2-5 - Americas

Sponsorship opportunities are available for the Forum's 2019 quarterly meetings.

Sponsoring a meeting is a great way to highlight your company and exhibit your company's innovation in the broadband industry – including demonstrations or prototypes – while showing your support of the Broadband Forum. Opportunities vary and can be customized to accommodate a variety of budgets.

Please view the list of our standard sponsorship packages and benefits at: https://wiki.broadband-forum.org/display/BBF/Sponsorship+Opportunities.

If you are interested in sponsoring a meeting, please contact Rhonda Heier at rheier@broadband-forum.org.

Other dates for your diary:

- CES: Jan 8-11, Las Vegas, Nevada, US
- Convergence India: January 29-31, New Delhi, India
- Gigabit Access 2019: April 2-3, Brussels, Belgium
- ONUG Spring Meeting: April 7-8, Dallas, Texas, UK
- China SDN/NFV/AI Conference 2019: April 17-18, Beijing, China

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