

2019 Annual Report

Chairman's Letter

Dear members and industry colleagues,

2019 was a momentous year for both the broadband industry and Broadband Forum – highlighted by major transformations, key accomplishments, and great progress in our strategy to enable purposeful innovation and proliferate broadband connections globally. Across our areas of focus – 5G, Connected Home, Cloud, and Next Generation Access – we saw continuing and rapid progress, and I am proud to say that Broadband Forum played a key role in paving the way to a better broadband experience for the world's 1 billion+ broadband connections, as well as facilitating adoption for the next 1 billion.

2019 also saw significant changes within the Forum in terms of resources, initiatives, membership, and structure. We launched a new website that provided an improved vehicle for communicating our efforts to the world. Our Broadband Acceleration Seminar (BASE) initiative blossomed, with an expansion in BASE events and participation – including our 3-day Ultra-Fast Broadband (UFB) BASE event in Den Haag – and the launch of a successful BASE sponsorship program. This visibility led to a wide variety of new members joining our ranks, especially in the areas of Connected Home and 5G. But perhaps the biggest change in 2019 was our transformation to an "open" organization. The result of our efforts to strike a balance between the discipline of standards and the agility of open source development, we made a smooth transition in 2019. We now allow universal visibility and access to our work, stimulating transparency and collaboration across the industry. Broadband Forum continues to lead in shaping the future of broadband, fostering incremental revenue-generating services and seamless migration, and providing value in a way that best serves the industry, our membership, and end users. In many ways broadband has now become the fourth utility and is seen as a key enabler for economic prosperity.

Many other initiatives stemming from the 100+ active Broadband Forum projects saw significant progress in 2019. Our Open Broadband initiatives continued to mature, with highly acclaimed demonstrations at 2019 Broadband World Forum and two new Open Broadband Labs. Additionally, new initiatives such as Broadband Quality Experience Delivered (QED) and in Wi-Fi In-Premises Performance Testing gained momentum along with continued expansion of our testing and certification programs. Each work area yielded strong results in 2019 while blazing paths to mass adoption for exciting new technologies, services, and experiences. I encourage you to watch the myriad of videos by work area leaders across our [website](#), or visit our [YouTube Channel](#), to keep informed on our progress.

It's an exciting time to be a part of Broadband Forum. The depth and breadth of our work continues to grow, and we enjoy the passionate involvement of our membership. It is therefore with great regret that 2019 will mark my last year as Broadband Forum Chairman. I will be stepping down at our 2020 Q1 meeting as I retire from BT after over 35 years of service in June 2020. I will deeply miss the comradery of our membership, and thrill of being on the forefront of broadband industry innovation. I have had the privilege to work with and learn from so many people in the broadband industry and it has been my honor to serve you as a Board Director and Chairman of the Broadband Forum. Looking forward, I am confident in Broadband Forum's direction, purpose and leadership. 2020 promises to be another phenomenal year for the Forum as its membership continues to shape the future of broadband together.

On behalf of the Board and staff, may I take this opportunity to thank you for your continued support.

Sincerely,



Kevin Foster

CEng. FIET, Chairman, Broadband Forum



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Kevin Foster
Chairman



Tom Starr
President



David Sinicrope
Vice President



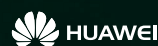
Frank Van der Putten
Treasurer



Bernd Hesse
Board Member
and BASe Chair



John Blackford
Board Member
and Secretary



Ning Zong
Board Member



Aleksandra Kozarev
Board Member



Robin Mersh
CEO



Helge Tiainen
Board Member



Manuel Paul
Board Member



Mauro Tilocca
Board Member



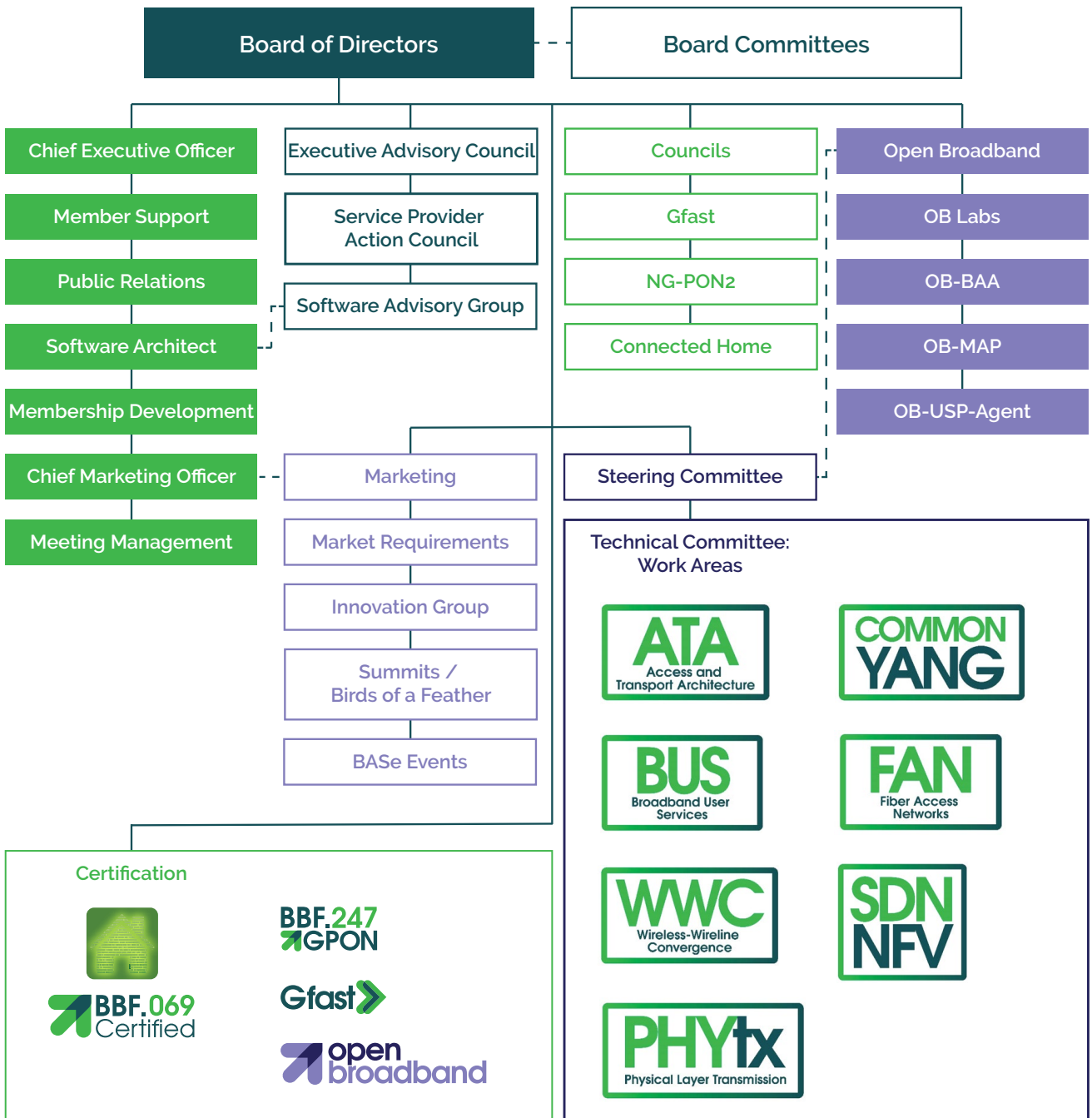
Lincoln Lavoie
Technical
Committee Chair



2019 Published Work

CLOUDCO-APPN-441:	.....	Converged Core-as-a-Service (with PNF based User Plane)
CLOUDCO-APPN-442:	.....	Value Added Service (VAS) based on NERG
CLOUDCO-APPN-445:	.....	Monitoring, Diagnostics, and Optimization in a Residential Broadband System
CLOUDCO-APPN-447:	.....	NERG Overlay LSL with vG_MUX PNFL
DTP-337:	.....	Issue 2 Amendment 1: G.fast Certification Test Plan
IR-069i2a1:	.....	TR-069 Conformance Test Plan
IR-181:	.....	CWMP Interoperability and Functionality Test Plan
IR-337i2:	.....	G.fast Certification Test Plan Issue 2
MR-350:	.....	Issue 2: Ethernet Virtual Private Networks for Integrated, Scalable Layer 2 and Layer 3 VPN Services
MR-421:	.....	Protect Your Services with Application-Layer Testing
MR-452.1:	.....	Motivation for Quality Verified Broadband Services (Broadband QED)
MR-455:	.....	Hybrid Access - Assisting Targeted FTTP Deployment
MR-459:	.....	Control and User Plane Separation for a Disaggregated BNG
MR-464:	.....	Migrating Fixed Access to 5G Core
TR-104:	.....	Issue 2 Corrigendum 1: Provisioning Parameters for VoIP CPE
TR-106:	.....	Amendment 9: Data Model Template for TR-069-Enabled Devices
TR-114:	.....	Issue 3 Amendment 3: VDSL2 Performance Test Plan
TR-115:	.....	Issue 3 Amendment 2: VDSL2 Functionality Test Plan
TR-135:	.....	Amendment 4 Corrigendum 1: STBService:1.4.1
TR-140:	.....	Amendment 3 Corrigendum 1: StorageService:1.3.1
TR-181:	.....	Issue 2 Amendment 13: CWMP/USP Data Modeling
TR-196:	.....	Issue 2 Amendment 1 Corrigendum 1: FAPService:2.1.1
TR-208:	.....	Issue 3: Performance Test Plan for In-Premises Powerline Communications Systems
TR-249:	.....	Issue 2: Testing of G.993.2 Self-FEXT Cancellation (vectoring)
TR-285c2:	.....	Broadband Copper Cable Models
TR-301i2c1:	.....	Architecture and Requirements for Fiber to the Distribution Point
TR-338a1:	.....	Reverse Power Feed Testing
TR-355:	.....	Amendment 2 Corrigendum 1: YANG Modules for FTTdp Management
TR-355:	.....	Amendment 2: YANG Modules for FTTdp Management
TR-369:	.....	Amendment 1: User Services Platform (USP)s
TR-378:	.....	Nodal Requirements for Hybrid Access Broadband Networks
TR-383:	.....	Amendment 2 Corrigendum 1: Common YANG Modules for Access Networks
TR-385:	.....	ITU-T PON YANG Modules
TR-398:	.....	Corrigendum 1: Wi-Fi In-Premises Performance Testing
TR-398:	.....	Wi-Fi In-Premises Performance Testing
TR-421:	.....	Application-Layer Test Traffic Architecture and Requirements
TR-423:	.....	Issue 2: PON PMD Layer Conformance Test Plan
TR-469:	.....	Conformance Test Plan for USP Agents (Previously ID-369)
WT-285j2:	.....	Broadband Copper Cable Models

Forum Organization



Leadership Groups

Broadband Innovation Group

The Broadband Innovation Group was formed as the incubator for new projects such as the developments in 5G. As envisaged in the Broadband 20/20 vision document, the Innovation Track began work on Broadband Assured IP Services. The Forum has long recognized the need for performance-assured services that are secure, standardized, on-demand and user-initiated and is leveraging several new technologies (SDN, NFV, Gfast, NG-PON2, etc.), its IP expertise and experience with more than 1 billion TR-069 installations. The Broadband Innovation Group also works with various member groups to host "Birds of a Feather" events held at most quarterly meetings.

Christele Bouchat, Nokia and Mauro Tilocca, Telecom Italia – Co-Chairs

Executive Advisory Council

Introduced in 2017, the Executive Advisory Council was established to provide an executive C-level and forward-thinking lens through which the Forum can keep an insight on industry trends to shape our future. The genesis of the Council is the profound changes in the industry - a paradigm shift both in terms of technology and methodology. The questions regarding the impact on business value and what sort of deliverables are required is the main conversation of the BBF's Executive Advisory Council.

Robin Mersh, CEO BBF - Chair

Service Provider Action Council

The SPAC (Service Provider Action Council) is a key influential standing committee keeping the Forum connected to user requirements - the key financial realities of the market. Open exclusively to the service provider membership, it offers continuous direction on requirements to ensure that strategic work has the service provider engagement needed to achieve timely standards development.

Mauro Tilocca, Telecom Italia – Chair

Software Advisory Group

The SAG (Software Advisory Group) comprises contributing Forum member companies and provides a center of software expertise acting as a "think tank" within the Forum. It advises on engagement with external SDOs and open source organizations on the processes and modeling tools needed to enable the Forum to work as an agile software-focused organization, the challenges of IPR, and balancing the Forum's role on the definition of requirements and service attributes with the implementation of code and prototyping.

William Lupton, BBF – Chair

Steering Committee

The Steering Committee's primary goal is to execute the Forum's strategy via the Work Areas of the Technical Committee. It is the main conduit for the leadership to monitor work in progress across the Forum. The Steering Committee influences the technical work and acts as a clearinghouse for new projects. It also oversees the formation of project streams (groups of related projects) and the appointment of Work Area Directors. Implementation of procedures and use of tools and the technical content of Broadband Forum meetings also fall to the Steering Committee, as well as coordination of the important items in the Forum's Liaison Program with almost every industry standards body and open source organization.

Lincoln Lavoie, UNH-IOL – Technical Committee and Steering Committee Chair

Open Broadband

Broadband Forum's Open Broadband initiative brings open source and open standards together, paving the way to dramatically change our industry and bring the full promise of broadband to fruition.

The future of broadband will be the result of the marriage between the flexibility, innovation, and speed of "open software" and with the discipline, efficiencies, and global scale made possible by "open standards".

Delivering excellent point solutions will always be critical. However, in a broadband ecosystem undergoing radical change of technology and approaches, focusing on individual elements alone is likely to be a limiting strategy. This is why the Forum is taking an approach to the drivers and technologies that feed broadband transformation to serve the industry and our members. By bringing the best ideas of open source together with the interoperability and standards required for mass market solutions, the Forum is bringing true innovation and scale to the industry.

Open Broadband projects within the forum continue to thrive since their inception in 2017. The following are currently active Open Broadband projects:

Open Broadband - Broadband Access Abstraction (OB-BAA)

Enabling standardized, automated and accelerated deployment of new cloud-based access infrastructure and services. Link [here](#) for more information.

Open Broadband Multi Access Point (OB-MAP)

Ensuring that the software of open-source innovators like [prpl Foundation](#), and their mesh software projects will be scalable to large service providers deployments via carrier grade manageability. Link [here](#) for more information.

Open Broadband – User Services Platform Agent (OB-USP-Agent)

Creating a reference implementation of the User Services Platform (USP) specification from an "agent" perspective. Link [here](#) for more information.

OB-BAA demonstration at Broadband World Forum 2019



OB-MAP and OB-USP-Agent demonstration at Broadband World Forum 2019



Open Broadband Labs

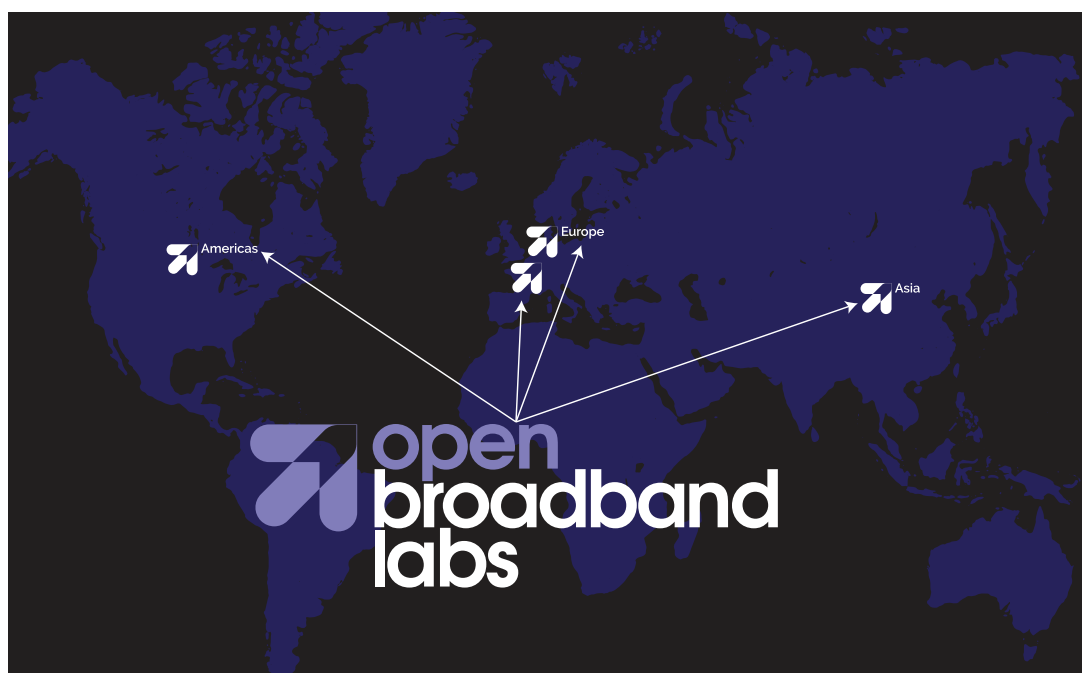
Open Broadband Labs offer a common hardware and software platform for an open laboratory to promote the development of network transformation and cloud evolution leveraging open source software. Each Open Broadband Lab is a collaborative industry resource that encompasses proprietary, "open" source and standard implementations coming together to represent service provider existing and planned deployments. The initial intention for the scope of the Open Broadband Labs is:

- A rich set of test resources to be used for staging, functional, performance, interoperability, testing and continuous integration of broadband NFV/SDN, CloudCo, cloud-based services and applications, management, and orchestration
- Provides the industry and BBF members with defined interfaces and reference test environment for how their products and solutions can fit into the NFV/SDN cloud-based architecture
- The Forum's motivation stems from requirements related to BBF projects and is not a constraint for third parties
- The BBF's role is to select labs based on regional requirements, available funding
- Broadband Forum does not fund each Open Broadband Lab – but helps facilitate funding (Hosting Labs are independent of the BBF and independently funded)
- OB-Labs provide services according to fair, reasonable, and nondiscriminatory terms
- Make services available to the entire industry (without limitation), platforms may vary

The combination of Broadband Forum's Open Broadband, Open Broadband Labs, and CloudCo initiatives are providing an industry sandbox to accelerate multi-vendor innovation and incubation in areas like 5G, network slicing, and wire-less-wireline convergence.

A growing series of [CloudCO Application Notes](#) which define a number of operator use cases and act as a blueprint for tests to be performed in the labs. Together, these initiatives are accelerating network transformation and migration to a cloud-based broadband infrastructure for carriers globally, and bringing the promise of SDN and NFV to fruition.

The future of broadband will be the result of the marriage between the flexibility, innovation, and speed of an "open software" with the discipline, efficiencies, and global scale made possible by "open standards". The Open Broadband initiative brings together the best ideas of an open source with the interoperability and standards required for mass market solutions, thereby acceleration true innovation and scale in the industry. Key to this strategy has been the creation of an array of Open Broadband Labs around the world to enable open source collaboration and ensure interoperability. In 2019, the number of recognized Open Broadband Labs expanded to include labs in Asia, Europe (2), and North America. More information on the Open Broadband Labs can be found [here](#).



Interop and Certification

Since its inception the Forum has had an objective to establish interoperability in the broadband marketplace. Today, the Broadband Forum Interoperability and Certification program encompasses end-to-end broadband testing requirements including fiber, DSL, MPLS and home networking related interoperability and conformance testing.

The BBF Testing and Certification programs include:

1. Developing common test requirements
2. Establishing a test suite which normally includes functional and performance tests
3. Hosting test events also known as plugfests, which can include private members only multivendor plugfests, conformance testing, public interoperability demonstrations and/or certification

Certification Program Impact

- Creates confidence and minimizes risks
- Establishes a trusted industry standard for implementation and high customer satisfaction
- Leverages vast experience and expertise
- Avoids extensive provider testing before purchase
- Significantly reduces costs and accelerates time to revenue for all stakeholders
- Provides a starting point for service provider integration and fosters a diverse marketplace across silicon and products



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ADIRAH

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COMMSCOPE

arcadyan



BROADCOM



BROADCOM

Calix

Calix

Calix



CIG

casa systems

GREENWAVE SYSTEMS

DZS



ECONET



FiberHome



SERCOM

genexis

METANOVA

ZTE



MULTIMEDIA

HUMAX

NOKIA



SCKIPO

KAON



NOKIA

VIAYI

SAGEMCOM

SERCOM

softat home



Broadband Acceleration Seminar (BAsEe) Series

Broadband Forum is the industry's most respected organization for accelerating broadband innovation and deployment, and its fast-growing Broadband Acceleration Seminar (BAsEe) series provides key insights into the state of broadband innovation, technology, standards, and ecosystems.

Held in conjunction with major industry conferences, each BAsEe event draws hundreds of key influencers from global broadband service providers, suppliers, analysts, and government officials who appreciate our uncompromising educational focus and our member's leading-edge perspectives.

BAsEe series touches upon the areas of focus of the Forum – 5G, Connected Home, Cloud, and Access | Next – and provides sponsors with unparalleled access to broadband industry innovators and leaders. BAsEe events have become renowned throughout the industry as truly unique events created by tech innovators for tech leaders.

In 2019, we expanded the BAsEe initiative to include the 3-day Ultra-fast Broadband (UFBB) BAsEe event in Den Haag, the Netherlands. This event, produced in conjunction with leading consulting firm TNO, built on an already successful format that TNO had developed over that last decade and resulted in a fantastic 2019 event – setting that stage for future growth and development. In addition, we initiated an extremely successful BAsEe sponsorship program in 2019, which allowed industry leading vendors an unparalleled opportunity to elevate their global broadband leadership. 16 distinct companies took advantage of a variety of sponsorship opportunities to reach our elite Broadband Forum membership base and tap into its expansive sphere of influence. For more information on BAsEe sponsorship and events, link [here](#).



BAsEe Sponsors 2019

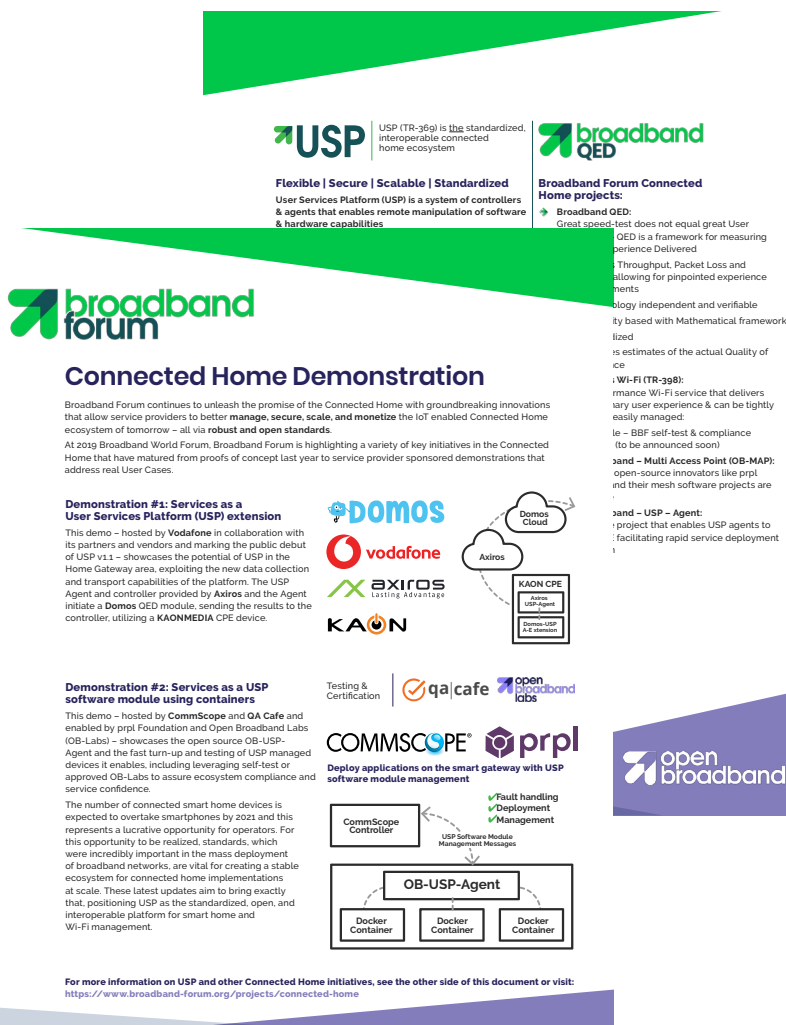
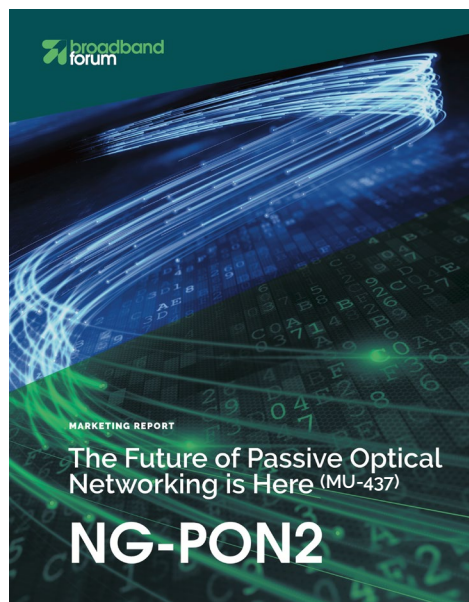
Global Platinum	 Calix	 F-Secure	 GiGAWiRE	 GoFoton	 HUAWEI
Global Silver	 DOMOS	 INCOAX	 MOCA ACCESS	 casa systems	 NOKIA
Event Silver	 Actelis NETWORKS	 devolo	 EXFO	 Lightron	
Event Silver	 ASSIA				

Technology Councils

The charter of each technology council is to foster the global market development of its representative technology through educational and awareness initiatives.

Each council, the Gfast Council, the NG-PON2 Council, and the Connected Home Council, was formed to centralize and disseminate the expertise and experience of each respective market in order to facilitate the rapid deployment of each technology. Each council meets regularly, and develops a roadmap for educating the market on their respective technology and providing deployment updates. Typical vehicles are formal published Market Updates, technology White Papers, webinars, wall charts and surveys. In addition, the technology councils are very active as content engines in developing content for BAsE events and moderating BAsE panels. Lastly, as the technology councils are monitoring market trends and conducting surveys, they provide use case ideas back into the working areas and interoperability/certification programs to stimulate market expansion and ecosystem development.

Examples of Market Updates created by technology councils include:



Recognizing Member Contributions

The BBF recognizes the outstanding contributions of those who have shaped the growth of Broadband, worldwide

Distinguished Fellow Award

The Distinguished Fellow title is bestowed by the Broadband Forum to exceptional individuals who have over time provided a major influence on the direction and success of broadband development

2019 Recipients:

- Kevin Foster, BT
- Jason Walls, QA Cafe

Circle of Excellence

The Broadband Forum recognizes the exceptional contributions of its members through the "Circle of Excellence" award, which is awarded at our annual meetings.

2019 Recipients:

- Kenneth Wan, Nokia

Outstanding Contributors

Once a year, at the annual meeting, the Outstanding Contributor awards are given to individuals who, during the previous year, went above and beyond the call of duty within the Forum work areas.

2019 Recipients:

- Daniel Egger, Axiros
- Robert Peschi, Nokia
- Hugh Singleton, BT
- Jonathan Newton, Vodafone
- Tim Carey, Nokia

visit <https://www.broadband-forum.org/contributors> for information on BBF member recognition

Participating Organizations

2019 saw an increase in membership and participation. Below is a list of member companies organized alphabetically by membership level. Please note that Open Broadband initiative projects include a wide variety of non-member companies and industry organizations not listed.

PRINCIPAL LEVEL

5V Technologies, Ltd.
A1 Telekom Austria AG
ADTRAN
ADVA Optical Networking Ltd
Advanced Digital Broadcast S.A.
AEPONYX
Allion Labs
Altice Labs, S.A.
ASSIA, Inc.
AT&T
AVM Audiovisuelles Marketing und Computersysteme GmbH
Axiros
Benu Networks
BiFrost Communications
Broadcom Corporation
BT
Cable Labs
Calix Networks
Cambridge Industries Group Limited
Candela Technologies
Casa Systems
CenturyLink
Charter Communications
China Mobile Research Institute
China Telecom Global Limited
China Unicom
Chunghwa Telecom Labs
Ciena
Cisco Systems
CommScope
Corning
Cyta
Deutsche Telekom AG
D-Link
Domos AS
Dot11 Labs
Dual Beam Merger Ingenieros SL
DZS (DASAN Zhong Solutions)
EANTC
Econet (Suzhou) Limited
Ericsson
EXFO Inc

F-Secure
Futurewei Technologies Inc.
Genesis Technical Systems
Go Foton
GreenWave Systems
Huawei Technologies Co., Ltd.
Hybrid Access Technologies
InCoax Networks AB
Incognito Software
Intel
Inteno Group AB (Genexis BV)
IO Intelligence
Juniper Networks
KAONMEDIA Co., Ltd.
Keymile (merged with Dazan Zhong)
LAN
Luster Teraband Photonics Co., Ltd.
Maxlinear
Metanoia Communications
Methode Electronics
MT2 SAS
National Broadband Network
National Information Solutions Cooperative (NISC)
NEC
NetComm (merging with Casa Systems)
Nokia
NTT Corporation
Octoscope
Orange
OutSys
PIC Advanced SA
Pico VR
Plume
Predictable Network Solutions Ltd
Proximis
QA Cafe
Qualcomm Incorporated
RAD Data Communications
Radisys Corporation
Roqos, Inc.
Sagemcom Broadband
Sckipio Technologies
SIDN
SK Telecom

Sky UK
SoftBank Corp
Sparnex Instruments
Spirent Communications GmbH
Sumitomo Electric Industries
Support Robotics Limited
Swisscom (Schweiz) AG
Technicolor
Telebyte, Inc.
Telecom Italia S.p.A.
Telefonica S.A.
Telenet NV
Tellabs
Telstra Corporation Ltd
TELUS Communications, Inc.
Tessares
Tibit Communications
TQ Delta
Ubilinx Technology, Inc.
UNH InterOperability Lab
VCTI
Verizon
Viavi Solutions
VMware
Vodafone Group Services
Volt Server
ZTE Corporation

AUDITING LEVEL

Actiontec Electronics
Arcadyan Technology Corp.
Askey Computer Corp.
BQ
Fiberhome
Telecommunications Technologies CO., LTD.
Foxconn Industrial Internet (FI)
Friendly Technologies (FTL) Ltd.
Furukawa Latam
Gemtek Technology Co.
Hisense Broadband
Multimedia Technologies Co., Ltd.
HUMAX Co., Ltd
Icoteria Sp. z o.o.
Infirera

Intec
Integrated Silicon Solution Israel
JABIL CIRCUIT (SHANGHAI) COMPANY LTD
Metaswitch
Reply AG
SaskTel
Seliro
Sercomm
TDC A/S
Teldat
Telecom Argentina
Telekom Slovenije, d.d.
Telenor Norge AS (SY)
Telkom SA Ltd
TP-Link
Triductor Technology
Westermo
Wistron NeWeb Corp.
Zykel Communications Corporation

ASSOCIATE LEVEL - INFLUENCER

China Academy of Information and Communications Technology (CAICT)
Continental Automated Buildings Association (CABA)
Easy CWMP
ETRI
Industry Development Augmentation Division
Informa T & M (Broadband World Forum)
Layer123
Mocalliance (MoCA)
National Exchange Carrier Association
National Media and Infocommunications Authority
Point Topic
TNO
Trinity College Dublin

Financial Report

John Waddell & Co, Certified Public Accountants, conducted the review of the 2019 Broadband Forum financial statements. The following tables provide an overview of the financial position and key financial metrics of the organization at the close of 2019.

Statement of Financial Position
December 31, 2019
 (With Comparative Totals for December 31, 2018)

ASSETS		
	(Reviewed) 2019	(Audited) 2018
Cash	\$ 562,449	\$ 510,696
Accounts receivable	24,050	10,662
Prepaid expenses and deposits	24,720	56,554
Website, net of accumulated amortization	11,405	9,954
Investment in marketable securities	1,556,944	1,317,798
	\$ 2,179,568	\$ 1,905,664
LIABILITIES AND NET ASSETS		
Liabilities		
Accounts payable	\$ 224,756	\$ 217,689
Deferred membership dues	643,250	505,600
Total Liabilities	868,006	723,289
Net Assets		
With donor restrictions	16,083	16,083
Without donor restrictions		
Designated for reserves	1,000,000	1,000,000
Undesignated	295,479	166,292
Total Net Assets	1,311,562	1,182,375
	\$ 2,179,568	\$ 1,905,664

Statement of Activities
For the Year Ended December 31, 2019
(With Comparative Totals for December 31, 2018)

	Without Donor Restrictions	With Donor Restrictions	(Reviewed) 2019 Total	(Audited) 2018 Total
Revenue				
Membership dues	\$ 1,432,274	\$ -	\$ 1,432,274	\$ 1,476,337
Meeting fees	183,755	-	183,755	187,275
BASe income	227,310	-	227,310	-
Sponsorship fees	12,000	-	12,000	79,625
Interest and investment income (loss)	239,415	-	239,415	(38,238)
Total Revenue	2,094,754	-	2,094,754	1,704,999
Expenses				
Program services:				
Meetings	555,988	-	555,988	613,499
Member services, tools, and other	133,888	-	133,888	141,785
Trade shows, marketing and PR	721,425	-	721,425	523,068
Total program services	1,411,301	-	1,411,301	1,278,352
General and administration	554,266	-	554,266	460,575
Total Expenses	1,965,567	-	1,965,567	1,738,927
Change in Net Assets	129,187	-	129,187	(33,928)
Net Assets				
Beginning of Year	1,166,292	16,083	1,182,375	1,216,303
End of Year	\$ 1,295,479	\$ 16,083	\$ 1,311,562	\$ 1,182,375

BBF Team

CEO | Robin Mersh | rmersh@broadband-forum.org

CMO | Geoff Burke | gburke@broadband-forum.org

Membership development | Rhonda Heier | rheier@broadband-forum.org

Member support | April Nowicki | anowicki@broadband-forum.org

Secretariat | Gabby Bond | gbond@broadband-forum.org

Software architect | William Lupton | wlupton@broadband-forum.org

Marketing coordinator | Tiffany Cracknell | tcracknell@broadband-forum.org

Media and public relations | Brian Dolby | brian.dolby@proactive-pr.com

Links and Contacts

Enquiries | info@broadband-forum.org

Support | tools@broadband-forum.org

Member sites and sign-up | <https://wiki.broadband-forum.org>

Public site | www.broadband-forum.org

Download this report | www.broadband-forum.org/about-bbf/annual-report