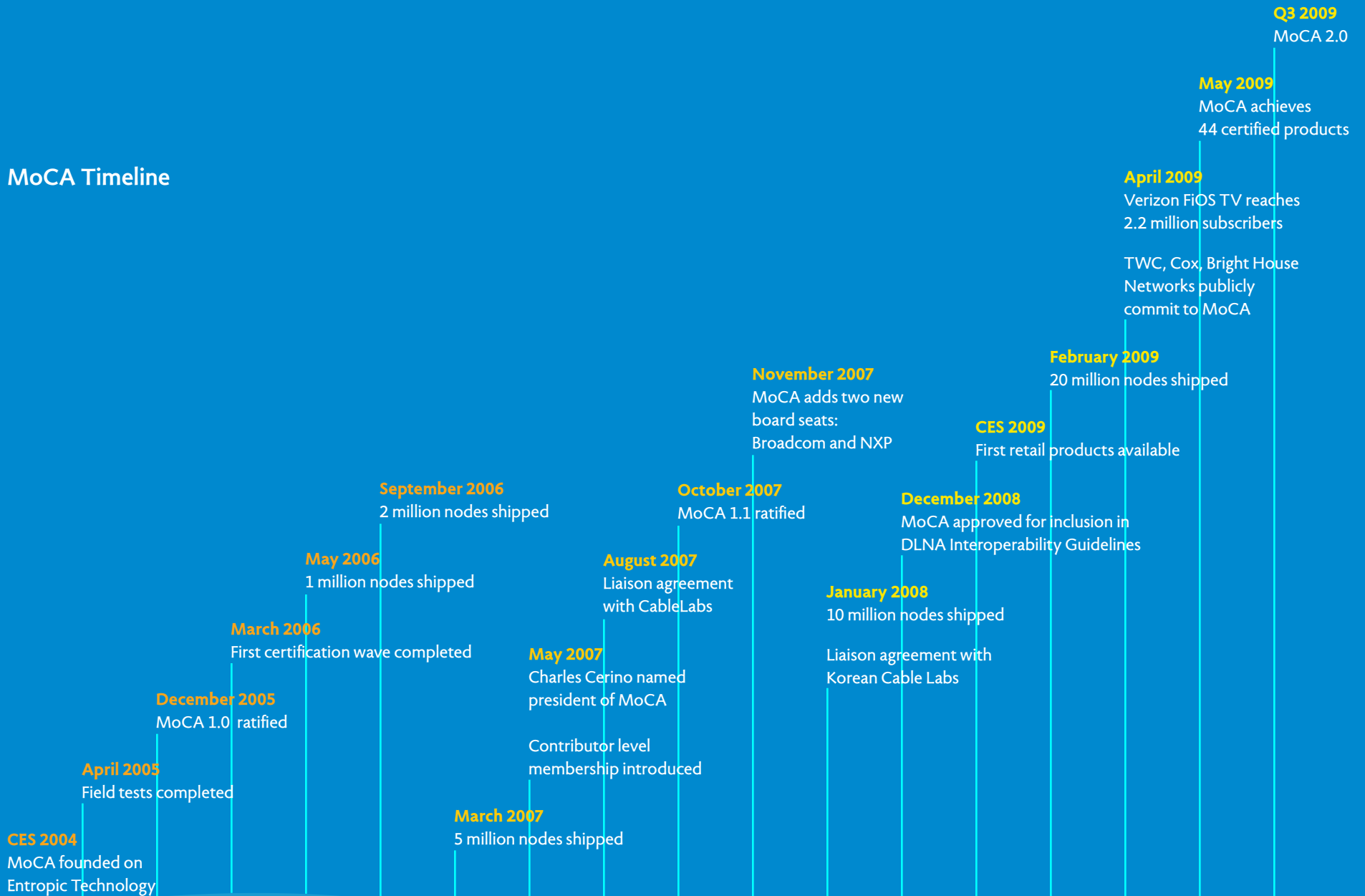




## MoCA Timeline



## President's Message

Dear MoCA members,

As president of the Multimedia over Coax Alliance, I am both pleased and honored to report that our efforts in establishing MoCA as the industry standard for home entertainment networking are working. Membership has grown at twenty-five percent per year for the last five years and continues to remain strong.

Our goal this year is to position the MoCA standard as the universal solution in the United States and globally by leveraging a string of milestones.

- More than 20 million MoCA nodes have shipped;
- Verizon continues to ramp FiOS TV and reports 2.2 million subscribers;
- Time Warner Cable, Cox Communications and Bright House Networks have publicly committed to MoCA in their networks;

- Netgear and D-Link have introduced products into the retail channel;
- Broadcom and Entropic have certified their integrated chips;
- DLNA has incorporated MoCA into their Interoperability Guidelines for 2009.

While each successive day yields another milestone and accomplishment, 2009 will remain a year of many challenges.

We must carefully consider every decision while maximizing benefits and conserving resources. This is why MoCA is the right solution for multimedia networking inside the home. MoCA 1.1 provides all service providers a reliable and affordable technology standard that guarantees performance and reliability while reducing total cost of ownership.

The imminent MoCA 2.0 technology standard will once again ensure future-proofing success for cable MSOs, satellite, IPTV and telco operators as well as the retail channel and consumers.

The Specification Work Group meets regularly to complete the 2.0 technology release goal set by our active and engaged Board of Directors.

The Marketing Work Group, Consumer Task Force, Technical Work Group and the Certification Task Force are diligently supporting our continued success.

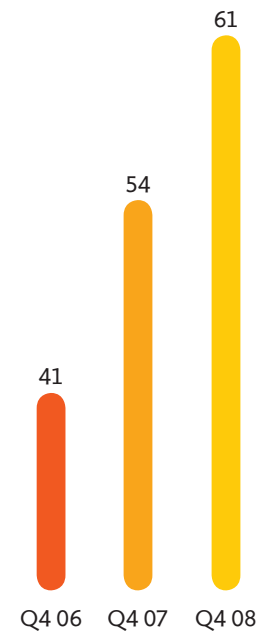
I salute the membership for their inspired and relentless efforts and applaud the continuing support each member company has demonstrated. Collectively, I know we will meet our goals and make MoCA the international standard we all use to connect our home entertainment networks.

I encourage all of you to review the latest marketing effort, [connectmystuff.org](http://connectmystuff.org), for some insightful and fun videos of MoCA and home entertainment networking.



Charles Cerino  
President, MoCA

### Membership Growth



## Board of Directors



### **Rich Prodan, Ph.D.**

*VP & CTO, Broadband Communications Group, Broadcom Corporation*

A member of Broadcom's executive management team, Rich coordinates and promotes advanced developments of new technologies from advanced Physical Layer cable transmission technology to the integration of data, voice, and video applications and services. While CTO of CableLabs, Rich played an instrumental role establishing next generation DOCSIS 2.0 and 3.0 cable modem standards. He was also an eight-year advisor to the FCC Advisory Committee on Advanced Television Service testing and developing HDTV systems for the US.



### **Allen J. Huotari**

*Technical Leader, CTO Office  
Cisco Consumer Business Group, Cisco Systems*

Allen is a member of the CTO office for Cisco Consumer Business Group (formerly Linksys) and is responsible for the investigation of emerging technologies, and for the definition of functional requirements in next generation networking products (with special emphasis on gateways and multimedia). In addition to MoCA, Allen currently participates in WiFi Alliance, HomePlug Powerline Alliance, and Digital Living Network Alliance (DLNA).



### **Charles Cerino**

*VP Comcast Center Technology  
Comcast Corporation*

During Charlie's tenure at Comcast, he has held system, region and corporate engineering positions. He has been active in the Delaware Valley Chapter of the SCTE serving as a Founder, Board member and President. Charlie also chaired the NCTA's engineering sub-committee on CLI and FCC regulations. He has focused his career on exploring new technologies and was instrumental developing and launching cable modem service for Comcast.



### **Vince Groff**

*Executive Director, Corporate Development  
Cox Communications*

Vince determines strategies and leading corporate development for Cox products and services. Key activities include establishing alliances and ventures within the industry as well as with key partners and suppliers. He is also Cox's lead investigator of the business impact of emerging technologies and start-up companies, and works closely with the Venture Capital community. Previously, Vince led Cox's interactive television product development effort and the OpenCable initiative. He is also involved in the Consumer Electronics plug-and-play project and other CableLabs standards efforts.



### **Anton Monk, Ph.D.**

*VP of Technology & Co-Founder  
Entropic Communications, Inc.*

Dr. Monk is responsible for new technology and standards activities at Entropic. Prior to co-founding Entropic, he led standards activities, physical layer system design and IC verification for several Conexant product lines, including cable modems and fixed wireless access. Before Conexant, he was involved in the development of cable and satellite ICs at Comstream Corporation and performed communication system research at the Jet Propulsion Laboratory, Pasadena, California.



### Will Beals

Director of Hardware Systems Architecture  
EchoStar Technologies L.L.C.

Will has worked on EchoStar's digital Set-Top Box (STB) design and engineering for more than 20 years, primarily designing STBs for DISH Network. He is currently charged with investigating and developing new STB technologies for cable, satellite, telco and IPTV providers.



### Etan Cohen, Ph.D.

Principal Engineer  
NXP Semiconductors

Etan is a Principal Engineer in the STB business line of the Home business unit of NXP. Prior to NXP Etan has worked at Conexant in the targeted technology development group - working on 802.11, Gigabit Ethernet, and MoCA technologies. Etan started his career at Angeles Design Systems developing CAD tools for communication system designs.



### Tom Leacock

Engineer Manager, Panasonic Engineering Promotion Center of America, Panasonic

Tom has worked on the development of home networking and digital video processing for both displays and cameras for over twenty years. He is currently involved in the standardization of home networking via MoCA and its application to digital set top boxes and displays.



### Brian Whitton

Executive Director of Access Technologies  
Verizon Communications

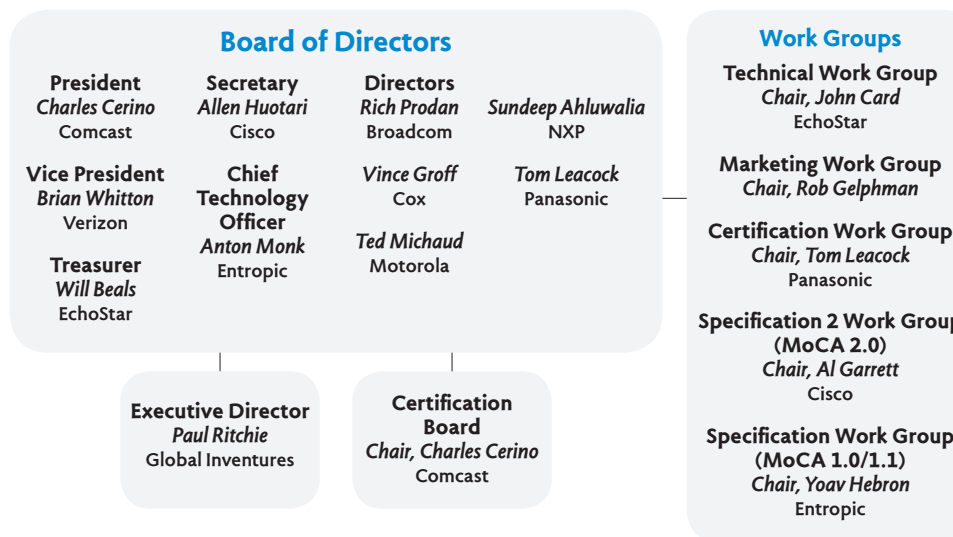
Brian is responsible for directing the design and development efforts of next generation access network platforms. Prior to his current position, Brian was Assistant VP of technology development for GTE. He also has held positions in product development, business operations development, engineering, systems development, business planning and technology planning.



### Ted Michaud

Distinguished Member of the Technical Staff  
Motorola Broadband Communications Sector  
Motorola, Inc.

Ted joined Motorola, then General Instrument Corporation, as a member of the engineering staff. A 26-year veteran of the CATV industry, he has served in various engineering positions for the company.



## Chief Technology Officer Report



Entropic EN2510 Chip



Actiontec MI424WR  
Broadband Home Router



Spirent Tech-X Flex Tester

Multimedia home networking has come a long way in the past few years. At the time of the formation of the Multimedia over Coax Alliance, many service providers, video equipment vendors, consumers and the press still hoped that all video content would be able to move throughout the home over wireless or powerline networks. This quickly changed as those responsible for delivering premium video content to the home realized that a robust, high-quality, high-speed and high-coverage network was critical to the successful deployment of new features such as multi-room DVR capabilities. We now take for granted that coax is the selected medium and that MoCA is the de-facto standard for coax networking.

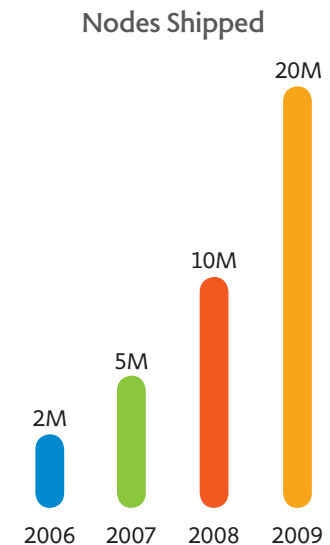
The past year has seen MoCA growing market share and continuing to innovate. The largest deployer of MoCA-based technology, Verizon, recently announced 2.2 million FiOS TV subscribers. Other service providers are expected to launch MoCA-based services in the second half of 2009 leading to an explosion of new services and features for consumers across the U.S. MoCA continues to make strides to address the market outside the U.S., as well.

With attendance and speaking engagements in Korea and at multiple conferences in Europe, we are ensuring that those markets that have in-home coax infrastructure are aware of the incredible success MoCA is having in the U.S.

On the technical side, 2008 saw the completion of the MoCA 1.1 Specification and Certification Test Plan and the first certification of MoCA 1.1 devices. MoCA 1.1 added a number of valuable capabilities over the original MoCA specification. Among other features, net throughput was increased to 175Mbps; the number of nodes supported was increased to 16 and a reserved bandwidth mechanism was added. This last item allows service providers to guarantee bandwidth on the MoCA network for premium content while still allowing personal content to flow over the same network. This ensures that personal and premium / service provider content can coexist while protecting the quality of experience that consumers expect of their Pay TV services and finally enables the convergence of these traditionally separate market segments.

Finally, MoCA is not standing still. The MoCA 2.0 effort kicked off with an extensive market requirements definition phase in mid-2008 and is on a fast path to complete a specification by summer of 2009. MoCA 2.0 will be fully backward compatible with MoCA 1.0/1.1 and will feature a baseline net throughput of 400Mbps and support up to 800Mbps. MoCA 2.0 will significantly outperform any other home-networking technologies in the market and have the same robustness, reliability and coverage benefits of its predecessors.

**Anton Monk, PhD**  
*Chief Technology Officer, MoCA*



## Workgroup Reports

### Technical Work Group

The TWG continues its role as manager of the other working groups. We have recommended an update to the board for MoCA WG procedures, which the board has accepted. We are currently defining a copyright assignment process by which MoCA can release technical information on the public web site to promote interoperability. The first document scheduled for consideration is the MIB specification developed by TWG members to promote interoperability over SNMP-based management systems.

The TWG has also been asked to examine on-coax spectrum usage by a number of MoCA members. We have begun discussions on that subject during our weekly conference calls.

TWG membership is open to all promoter and contributor members. We welcome Silicon Image as our most recent contributor member.

**John Card**  
*Technical Work Group Chair*

### Certification Work Group

In 2008, the MoCA Certification Board granted certification to 21 new MoCA devices including our first MoCA 1.1 certification. This brings the total number of certified devices to 44.

There was a significant effort by the Certification Working Group (CWG) to complete the 1.1 Certification Test Plan (CTP) as we transitioned from a single ASIC vendor to many interested ASIC vendors contributing to the CTP. The CWG was meeting 3 times per week for more than one hour for over a year to complete this task.

The Certification Working Group completed and released the Certification Test Plan (CTP) for MoCA 1.1 in October, 2008. Also released within that document was a new version of the MoCA 1.0 CTP which is more user-friendly and is now integrated with the 1.1 CTP. The format of the new CTP was changed to allow simple integration with automated testing software in the future.

Also new, easier to use testing templates were made available for both MoCA 1.0 and 1.1 certification tests. All the new documents

are now available in the members only section of the MoCA web site. Members showed interest in developing automated test SW to speed up both the self-testing performed by each member before certification testing and the certification tests at NTS labs. A CWG subcommittee was formed to look into this task and will continue into next year.

MoCA renewed the exclusive testing contract with NTS laboratories for another 18 months. New MoCA 1.1 Golden Node (GN) devices were installed in NTS laboratories along with the MoCA 1.1 testbed for certification of 1.1 devices.

Before the new devices could be used as GNs for certification testing at NTS, the devices went through many weeks of testing to confirm the proper operation of the devices and to validate the testing procedures in the new CTPs. All documents were updated and added to the web site.

The CWG revised the CWG policies and procedures which define the operating rules of the CWG and the procedures for adding

and replacing different manufacturers' GNs in the certification testbed. Also revised were the certification requirements for devices modified after receiving certification. Certifications of these modified devices are called Re-certifications. The Re-certification requirements for a previously certified device will vary depending on the modifications. The CWG established guidelines for members to explain what changes would require more certifiable testing. These guidelines are included in the CWG Policies and Procedures document.

**Tom Leacock**  
*Certification Work Group Chair*



*Actiontec ECB2200  
MoCA Network Adapter*



*D-Link DXN-220 HD MediaBridge  
Coax Network Adapter*

## Marketing Work Group

All marketing is essentially a communications function. The charter of the MoCA Marketing Work Group (MWG) is to communicate a value proposition that succinctly positions MoCA among home entertainment networking alternatives that resonates with industry representatives and consumers.

Our objectives are to grow the membership and proliferate the standard. I'm pleased to state that the MWG is accomplishing its objectives. Membership continues to grow year over year. We now have close to 60 members as of this writing and more than 20 million MoCA-enabled nodes have shipped.

We will continue to court and solicit service providers in the US. Time Warner Cable, Cox Communications and Bright House Networks are on record as to their commitment of rolling out MoCA-enabled networks this year. We will leverage these cable MSOs and Verizon, as testimony to the MoCA performance and reliability advantages as we establish our presence among network operators and OEMs in Europe and Asia.

At the International CES 2009, led by the Consumer Task Force (CTF), MoCA began an outreach program targeting consumers in support of our CE vendor members' recent product introductions. The goal of this program is to develop a friendly and non-technical vehicle for educating and entertaining the consumer regarding home entertainment and home networking. Using elements of social media as part of our communications toolbox, we aim to solicit candid conversation among and between consumers regarding home networking. Connectmystuff.org is the focal point for our efforts. On connectmystuff.org you'll find videos, a blog and news clips about all aspect of the industry relevant to home entertainment and networking.

Our public relations program is active and essential for garnering the credibility and attention of our members, prospective members and industry at large. MoCA is in the press on a daily basis. We have established MoCA as a spokesman for home networking.

The MoCA conference and event program, managed by Roberta Silverstein, MoCA Event Director, garners interest and

compliments wherever we go. Randall Hull, MoCA Creative Director, oversees the MoCA brand and assures successful incorporation throughout all elements of our marketing efforts. Together, Roberta and Randall create a visible and attention getting public showcase for MoCA.

A key element of any successful marketing and communications program is integration and ingratiation in and among other standard bodies, alliances and consortiums. We have liaison agreements with Cable Labs in the US and Korea Cable Labs, where Charlie Cerino spoke last year. Relations with WiFi Alliance and HomePlug are collegial. We are active in DLNA's marketing committee.

Most importantly, the success of the MWG is the direct result of the skills, knowledge, expertise and wisdom of its participants. MoCA has the most effective, highest performing and best marketing work group in the industry standard consortium business. Thanks to all for your participation and enthusiastic assistance and support.

**Rob Gelpman**  
*Marketing Work Group Chair*



*Netgear NETGEAR MCAB1001  
MoCA Coax-Ethernet Adapter*



*Motorola QIP6416 Hybrid QAM/IP  
High-Definition Set-Top Terminal*



*Cisco Explorer 8642HDC  
High-Definition Set-Top Terminal*

## Consumer Task Force

Last year the Consumer Task Force (CTF) was formed with a specific mission, develop and implement the MoCA consumer facing strategy. This includes awareness, education, and brand building. The goal, position MoCA as The Solution for Home Entertainment Networking.

In 2008 the CTF produced the second installment of the MoCA video series, *MoCA Saves the Day*. This video clearly communicates the applications and benefits of MoCA, and will be used at various trade shows, on the MoCA web site, and in other viral marketing efforts.

As we look at the consumer challenge, we continue to see the confusion consumers are facing differentiating between and selecting the right solutions for residential applications. In response, the CTF launched connectmystuff.org, the first social media effort by a home networking consortium. It will evolve into a resource of information consumers can use to solve their connectivity problems.

Connectmystuff.org will serve as the online hub for future viral marketing and thought leadership efforts. While most of

the planned content is video, in 2009 we're planning to launch a solutions finder. This tool will help consumers easily find the appropriate solution for their application. Of course, MoCA is well positioned as the solution for Home Entertainment Networking.

The longer term retail outlook for MoCA is promising, but not without challenges. To be successful in the mass market, MoCA must establish a brand in the channel and among consumers, and maintain its leadership position over newcomers vying for the coax cable.

Since its inception, the CTF has tackled many key issues and has paved the way toward delivering on the vision. From a pure marketing perspective, the efforts made in the CTF are not only intended to drive results with consumers, but create awareness amongst major CE manufacturers, service providers and friendly consortiums.

**Mike Ehlenberger**  
*Consumer Task Force Chair*

## National Technical Systems

MoCA Certification programs are intended to provide some overriding assurance that products by one vendor will work with products by another vendor when incorporating the same technology standard. The issue isn't about lack of trust; it is about verification. Verifying compliance through a rigorous certification program provides the assurance to members and consumers that all products using a particular standard, no matter the manufacturer, will interoperate or "talk to" each other. *Trust, But Verify* becomes the guiding purpose behind all certification programs, including those for MoCA.

As with any technology standard there is always room for interpretation by participating vendors when designing and manufacturing their products. Despite best intentions and efforts, some products just do not work with others though based on the same standard. If you don't make sure, via certification, that your product is interoperable, you negate one of the very reasons that standards and alliances are established in the first place – interoperability. A common complaint by consumers (from wireless routers to kid's building blocks) is a lack of interoperability. Interoperability is part of the brand promise of any standard body.

Although interoperability is certainly one of the most important reasons for certification, it isn't the only reason. Certification can be a valuable marketing tool as it is an essential component of the trust building that goes into all branding. And all brands are essentially a promise to the customer regarding trust. Customers want to know and trust that they can pick a product from a store shelf with the assurance that it will work with other and future products.

Certification also contributes to overall branding in other ways as it provides name recognition for the standard/alliance. Products based on MoCA

that work with other products using MoCA, could inspire consumers toward purchasing additional products using MoCA. Repeat purchase is the catalyst behind the proliferation of a standard and building brand presence. With the increasingly crowded market place of competing products, technologies and standards vying for presence in the home, it is important to make sure that you get your products certified before they're released.

**Raymond Chung**  
*National Technical Systems, Inc.*

***D-Link's membership in MoCA has allowed D-Link to learn, influence, and drive the MoCA technology such that it can be successful for the industry and for D-Link customers.***

**Daniel Wong**  
Director of Product Management, D-Link

***As the first retail consumer electronics company who is providing MoCA 1.1 technology in our adapters and routers, MoCA allows us to provide the ultimate, unparalleled home networking performance for video streaming, high-def content viewing and gaming.***

**Chris Geiser**  
Product Line Manager, Access Products, Netgear

***Inside the home, MoCA was a perfect solution, allowing us to take advantage of coaxial cable already in place, saving installation time and expenses while providing the ultimate in performance.***

**Brian Whitton**  
Executive Director of Access Technologies, Verizon

## Member Highlights

Broadcom selected to integrate MoCA connectivity into our system-on-a-chip (SoC) solutions so that global cable, satellite and telecommunications service providers could cost effectively transform a subscriber's existing coax cable infrastructure into a whole-home media distribution network.

At Broadcom, we believe the MoCA technology specification meets the needs of both consumers and service providers. Consumers want whole-home digital media distribution services for secure access, storage and sharing multiple types of digital content such as HDTV and video-on-demand (VoD) programs, recordings on digital video recorders (DVRs) and Internet-based content incorporating video, music and photos and Voice over Internet protocol (VoIP) services.

With the role of multichannel providers including cable, satellite and telecommunications operators changing from just providing content to offering layered new services, MoCA technology continues to be a key component in the successful adoption of those new services.

Clearly, the continued dedication of MoCA to the distribution of digital video and entertainment via existing in the home coaxial cable enables companies, such as Broadcom, to uphold the highest connectivity standards we are known for while maintaining our competitive edge as the proliferation of whole-home entertainment networking grows.



## MoCA Members

### *Promoters:*

Broadcom	Entropic Communications
Cisco	Motorola
Comcast	NXP Semiconductors
Cox Communications	Panasonic
EchoStar	Verizon

### *Contributors:*

ARRIS	ST Microelectronics
DIRECTV	Silicon Image
Intel	Texas Instruments
	Time Warner Cable

### *Affiliates:*

Cable Labs	Korea Digital Cable Labs (KLabs)
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### *Associates:*

Actiontec	Pace
Advanced Digital Broadcast	PPC
Alcatel•Lucent	Pulse Engineering
Ambit	Samsung
Analog Devices	Sasken
Askey	Soontai
Bel Fuse	Spirent Communications
CAIW (Netherlands)	Sunrise Telecom
Calix	Tata Elxsi
CommScope	Tellabs
D-Link	Thomson
EXFO	Toshiba
Hitachi	Trilithic
Horizon Semiconductors	Tyco Electronics
Humax	ViXS Systems
Infineon	Westell
JDSU	Wistron NeWeb Corporation
LG Electronics	YCL Electronics
Mototech	Zinwell
Netgear	ZyXEL Communications

**M@CA**



It's in your  
**house!**

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[www.connectmystuff.org](http://www.connectmystuff.org)

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