

BEFORE THE
Federal Communications Commission
WASHINGTON, D.C.

In the Matter of)	
)	
Video Device Competition)	MB Docket No. 10-91
)	
Implementation of Section 304 of the Telecommunications Act of 1996)	
)	
Commercial Availability of Navigation Devices)	CS Docket No. 97-80
)	
Compatibility Between Cable Systems and Consumer Electronics Equipment)	PP Docket No. 00-67
)	

COMMENTS OF MOTOROLA, INC.

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TABLE OF CONTENTS

I. INTRODUCTION AND SUMMARY.....2

II. THE INTERNET ERA OF TELEVISION IS HERE.4

A. The Marketplace Is Enabling Greater Customization Of The Consumer’s Video Experience.....5

B. Motorola Is Helping To Advance The Internet Era Of TV.10

III. COMMISSION POLICIES MUST ENSURE THAT NETWORK OPERATORS, DEVICE MANUFACTURERS, AND SERVICE PROVIDERS HAVE THE FLEXIBILITY TO INNOVATE.....13

A. The Commission Should Be Sensitive to the Fact that Different Technologies and Approaches May Best Meet Different Consumers’ Demands.....13

B. The Commission Should Encourage Voluntary, Industry-Driven Solutions As Much As Possible.20

IV. THE COMMISSION MUST REFRAIN FROM ADOPTING ANY TECHNOLOGY MANDATES.....22

A. Technology Mandates Chill Innovation and Investment.22

B. Technology Mandates Around Navigation Devices Have Not Been Successful.26

C. The Commission Can Minimize Potential Problems By Focusing Any Requirements On Its Policy Objectives, Not Technical Specifications.....28

V. CONCLUSION31

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Motorola, Inc. (“Motorola”) respectfully submits these comments in response to the above-captioned Notice of Inquiry (“*Notice*”).¹ Motorola is a leading provider of network and customer equipment to multichannel video programming distributors (“MVPDs”) and broadband Internet service providers (“ISPs”), and is developing and deploying technologies that facilitate greater consumer control over their video viewing experience. Motorola welcomes this opportunity to share its views on the questions raised in the *Notice*.

¹ *In re Video Device Competition; Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, Notice of Inquiry, 25 FCC Rcd 4275 (2010) (“*Notice*”).

I. INTRODUCTION AND SUMMARY

Motorola commends the Commission for launching this proceeding on the video device marketplace. Motorola strongly supports the Commission's policy goals of "spur[ring] investment and innovation, increas[ing] consumer choice, allow[ing] for unfettered innovation in MVPD delivery platforms, and encourag[ing] wider broadband use and adoption."² As the Commission recognized in this *Notice* and the companion *CableCARD FNPRM*, the current *CableCARD* rules have not been successful in fulfilling these goals.³ Motorola urges the Commission to take this opportunity to adopt policies that encourage more innovation, investment, competition, and experimentation, and avoid imposing technology mandates that (like the *CableCARD* rules the Commission seeks to phase out) would only serve to increase costs and hamper innovation.

Today, the video device marketplace is dynamic and highly competitive, and becoming more so by the day. Competition among traditional and non-traditional providers of video devices is driving innovation and experimentation in technologies, services, and business models. MVPDs, for example, are starting to deploy solutions that enable the distribution of MVPD content to a variety of devices in subscribers' home networks. Likewise, there are a wide and growing array of "smart" video devices sold at retail that can access content from a variety of sources and deliver that content in an integrated fashion to consumers. Consumers, used to

² *Notice* ¶ 1.

³ *See id.* ¶ 6 ("[T]he Commission's rules as they currently exist have yet to realize Congress' charge to develop a fully competitive retail market."); *see also In the Matter of Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices*, Fourth Further Notice of Proposed Rulemaking, 25 FCC Rcd. 4303 (2010) ("*FNPRM*").

the freedom, flexibility, and diversity of content available on the Internet, are demanding greater control over the video content they purchase, and the marketplace is responding.

This confluence of technological innovation and evolving consumer demands is ushering in the Internet Era of Television. Motorola is a leader in this market-driven dynamic, developing innovative solutions that enable consumers to watch video content on a diverse array of devices, where and when they want to watch. Motorola is incorporating innovative new technologies, features, and functionality into its devices, including MPEG-4 and 3DTV, as well as MoCA and HPNA for home networking. Motorola has introduced Medios, a cloud-based solution that leverages Web-based technologies to allow service providers to deliver the personalized media experience consumers desire to multiple screens on multiple devices over legacy networks. Likewise, Motorola's Mover allows customers to share video content among different devices, including PCs, personal media players, and mobile phones.

The Commission should adopt policies that promote continued innovation and investment, and give all device manufacturers and service providers the flexibility to incorporate new technologies, features, and functions in video devices to meet consumer demands. The AllVid concept discussed in the *Notice* tracks, in certain respects, the gateway technologies and devices that already are coming to the marketplace, but that does not mean it is the best solution for every consumer being served by every MVPD. Consumers today demand greater customization and control over their viewing experience, and a "one-size-fits-all" mandate from the Commission does not accommodate that trend. In today's dynamic marketplace, there are many options and issues to consider in developing such a device, and the only way service providers, device manufacturers, content suppliers, and policymakers can be sure that any choice

adequately meets consumer demands today -- and in the future -- is to test those choices in the crucible of the marketplace.

As the Commission explores various approaches for implementing Section 629, it should avoid imposing technology mandates. Such mandates risk choking off investment and innovation and distorting the video marketplace. As the questions in the *Notice* suggest, the technological issues raised in this proceeding are exceedingly complex and rapidly evolving. It is difficult, if not impossible, to predict how the marketplace will develop in this area. Consequently, there is a significant risk that mandating particular solutions will fail to accommodate technological changes and evolving consumer preferences, and end up doing more harm than good. The Commission's recent experiences with CableCARD and the IEEE 1394 Firewire interface provide cautionary tales in this respect.

The Commission's policies and rules should encourage voluntary, marketplace-based solutions to the maximum extent possible. If the Commission decides to impose rules in this area, such rules should be minimal, and should focus on performance requirements rather than technical specifications as to the design and feature set of the device. Above all else, any rules the Commission adopts should facilitate, rather than impede, innovation and experimentation in the networks and devices that deliver video content to consumers.

II. THE INTERNET ERA OF TELEVISION IS HERE.

The *Notice* seeks comment on an AllVid adapter and other next-generation solutions aimed at fulfilling the retail availability goals of Section 629 of the Communications Act.⁴

⁴ *Notice* ¶ 1 (“Our goal in this proceeding is to better effectuate the intent of Congress as set forth in Section 629 of the Communications Act of 1934, as amended. In particular, we wish to explore the potential for allowing any electronics manufacturer to offer smart video devices at retail that can be used with the services of any MVPD and without the need to coordinate or negotiate with MVPDs.” (footnotes omitted)).

Today, the marketplace already is moving steadily towards achieving the Commission's and Congress's goals in this area. We have entered the Internet Era of Television, where consumers expect, and technology enables, services and devices that deliver the capability to view whatever content consumers want, when they want, on whatever device they want. Motorola, for its part, is developing fully integrated and customizable media solutions that enable personalized, rich media experiences for consumers.

A. The Marketplace Is Enabling Greater Customization Of The Consumer's Video Experience.

Consumers are demanding the ability to watch their favorite content on any device at any time, as well as the ability simultaneously to interact with their friends and others who share their interests. Television remains the primary way most people view video content,⁵ but that traditional model is evolving. Competition in this marketplace is no longer limited solely to manufacturers of TVs, MVPD set-top boxes, and stand-alone recording devices. Many people -- across all demographic groups -- also consume video content via their PC, gaming consoles,⁶ mobile handsets,⁷ tablets, and other devices, and the video that is being consumed is no longer limited to traditional multichannel video services, but also includes Internet content and personal

⁵ See, e.g., Nielsen Co., *What Consumers Watch: Technology Enhances the Video Experience*, Three Screen Report, 1st Quarter 2010, at 2 ("The amount of time spent watching television is still increasing: viewers watched two more hours of TV per month in Q1 2010 than in Q1 2009"), available at http://en-us.nielsen.com/content/dam/nielsen/en_us/documents/pdf/Three%20Screen%20Reports/Nielsen_Three%20Screen%20Report_Q12010.PDF.

⁶ See Yukari Iwatani Kane, *Beyond Gaming: Watching TV on Your Xbox*, Wall St. J., Nov. 12, 2009, available at <http://online.wsj.com/article/SB10001424052748704328104574516240890098438.html>.

⁷ For example, Motorola's new Droid X mobile handset comes with the Blockbuster On Demand from the V-Cast Video application. This service will give subscribers access to "hundreds of new feature film releases available for download the same day they appear on DVD and Blu-ray." Jason Ankeny, *Verizon premieres Blockbuster On Demand on V Cast via Droid X*, FierceMobileContent, June 23, 2010, available at <http://www.fiercemobilecontent.com/story/verizon-premieres-blockbuster-demand-droid-x/2010-06-23>.

media.⁸ Consumer demand is driving device manufacturers and service providers, traditional and non-traditional, to develop a variety of smart video devices and other solutions that facilitate consumer control over their video content experience across different screens on different devices.

The *Notice* underscores this trend. It defines a “smart video device” as a “product that is capable of navigating the universe of video content available to a viewer.”⁹ It further recognizes that, while this concept “traditionally” referred to MVPD set-top boxes, today the universe of devices is expanding “to include video game systems, digital video recorders, and home theater personal computers.”¹⁰

The growing number of video device options is driving competitive responses at many different points in the marketplace. For example, competition among MVPDs is promoting a virtuous cycle of equipment innovation as DBS, cable, telcos, and other multichannel video providers incorporate new features and functions in their devices in order to attract and retain customers. Likewise, over-the-top video providers have introduced yet another dynamic into the marketplace for video devices, as device manufacturers work to develop new ways to integrate

⁸ See, e.g., Pew Internet & Am. Life Project, *The State of Online Video*, at 3 (June 2010) (“*Pew Online Video Survey*”) (“Seven in ten adult internet users (69%), or roughly half of all U.S. adults (52%) have used the internet to watch or download video.”), available at <http://www.pewinternet.org/~media/Files/Reports/2010/PIP-The-State-of-Online-Video.pdf>; Keirse Research, *Over-The-Top Video Viewing Habits Update (United States) January 2010* (Jan. 2010) (“*Keirsey OTT Survey*”), available at http://www.keirseyresearch.com/pdf/OTTV_Jan_2010_Update.pdf. The results of both of these surveys confirm that the number of consumers using the Internet as their source for video content is growing, and that these consumers increasingly are using alternative devices, such as gaming consoles and Internet-equipped blu-ray players. See *Pew Online Video Survey* at 3-4; *Keirsey OTT Survey* at 6.

⁹ *Notice* ¶ 1 n.2.

¹⁰ *Id.*

content from the Internet and other sources. All of this competition among business models and technologies enhances innovation and experimentation, and the benefits accrue to consumers.

These competitive forces have fostered rapid innovation in the marketplace for MVPD-supplied devices. For years, these devices performed little more than conditional access and navigation functions. Today, these devices enable access to video-on-demand (“VOD”) and other interactive services, include digital video recording (“DVR”) capability, and support home networking functions and features that allow consumers to watch their video content on multiple screens.¹¹ Devices that incorporate switched digital video (“SDV”) functionality enable service providers to use bandwidth more efficiently.¹² EBIF-based interactive applications¹³ and 3DTV technologies¹⁴ allow content producers and service providers to engage with consumers in whole new ways. Broadband connectivity allows service providers and device manufacturers to deliver new, innovative services that integrate content from the Internet and other sources.¹⁵

¹¹ For example, AT&T’s U-verse includes a Multi-Room DVR feature that supports up to four simultaneous SD streams and up to three simultaneous HD streams. *See AT&T Completes U-verse Multiroom DVR Rollout*, Multichannel News, Nov. 11, 2008, available at http://www.multichannel.com/article/135491-AT_T_Completes_U_verse_Multiroom_DVR_Rollout.php.

¹² *See Using Bandwidth More Efficiently With Switched Digital Video*, Motorola White Paper (2007), http://www.motorola.com/mot/doc/6/6578_MotDoc.pdf.

¹³ *See* EBIF.tv -- Programmers/Broadcasters, <http://www.ebif.tv/end-to-end/programmers-broadcasters.php> (last visited July 12, 2010).

¹⁴ *See, e.g.*, News Release, Verizon Communications, *Verizon Hits Home Run for FiOS TV Customers in New York and Northern New Jersey With First Major League Baseball 3D Telecasts* (July 7, 2010), available at <http://newscenter.verizon.com/press-releases/verizon/2010/verizon-hits-home-run-for.html>; Press Release, Comcast Corp., *Comcast Delivers 2010 FIFA World Cup™ In Next-Generation 3D* (June 3, 2010), available at <http://www.comcast.com/About/PressRelease/PressReleaseDetail.ashx?PRID=994>.

¹⁵ *See, e.g.*, News Release, Verizon Communications, *Verizon Enhances FiOS TV With YouTube and Internet Radio* (Apr. 27, 2010), available at <http://newscenter.verizon.com/press-releases/verizon/2010/verizon-enhances-fios-tv-with.html>.

Over-the-top video providers are helping to drive further innovations across the video device marketplace. These competitors are bringing Internet content (like YouTube videos)¹⁶ to the television and traditional content (like movies over Netflix)¹⁷ into homes over Internet connections. Established companies like Apple are finding innovative new ways to get video content to the television.¹⁸ Companies like Vudu¹⁹ and Roku²⁰ are leveraging ever-increasing broadband speeds to deliver video content to consumers using innovative business models. And Google recently announced the development of its Google TV service, which promises to integrate traditional television content, Internet video content, and even personal media content (such as personal videos, photos, etc.) in a customizable user interface.²¹

¹⁶ See, e.g., Thomas Claburn, *YouTube Comes To TVs Through Sony PS3, Nintendo Wii*, Info. Week, Jan. 16, 2009, available at http://www.informationweek.com/news/personal_tech/TV_theater/showArticle.jhtml?articleID=212901022.

¹⁷ See Xbox 360, Netflix-Ready Device, <http://www.netflix.com/NetflixReadyDevicesDetails?pdid=5> (last visited July 12, 2010). The success of the over-the-top Netflix service highlights the fact that video services are moving beyond set-top boxes, TVs, and other forms of hardware, and now include applications that consumers can access on a variety of devices, such as PCs, or that can be licensed to a variety device platforms.

¹⁸ For example, Apple has developed its Apple TV service, which allows consumers to download and view video content straight from iTunes. See *AppleTV -- Apple Store*, http://store.apple.com/us/browse/home/shop_ipod/family/apple_tv?mco=MTY3ODQ5OTY (last visited July 13, 2010). In addition, Apple recently released a Mac mini which can directly connect to a television through a built-in HDMI port, allowing consumers to directly play their iTunes video collection on their television. See *Apple -- Mac Mini -- Features of Apple's Smallest Desktop Computer*, <http://www.apple.com/macmini/features.html> (last visited July 13, 2010).

¹⁹ Vudu advertises a true 1080p HD, 5.1 surround sound experience and access to over 3,000 HD movies on demand. There is no subscription fee but users pay to rent or own individual movies and TV series. In addition Vudu offers 120 channels of free on-demand television shows along with access to YouTube. See *VUDU-Home*, <http://www.vudu.com> (last visited July 13, 2010).

²⁰ Roku's promotional materials state that "[w]ith Roku, you get instant access to thousands of movies, shows, sports, and more — with more choices added all the time. Use your existing subscriptions, or choose from an amazing selection of free and on-demand entertainment." Roku includes access to Netflix, Amazon Video on Demand, Major League Baseball, classic movies, and a host of other content and services. See *Roku Digital Video Player*, <http://www.roku.com> (last visited July 13, 2010).

²¹ See Salahuddin Choudery, *Announcing Google TV: TV meets web. Web meets TV*, Official Google Blog (May 20, 2010), <http://googleblog.blogspot.com/2010/05/announcing-google-tv-tv-meets-web-web.html>.

The television itself is turning into a multi-function device, as television set manufacturers incorporate broadband Internet accessibility, as well as their own -- and third-party -- services and applications. For example, Samsung sells Internet-ready TVs that allow consumers to access Internet content from Yahoo!, Blockbuster, Amazon, and other sites.²² Panasonic's Viera TVs use a service called VieraCast that allows viewers to access video content from Netflix, Amazon, and YouTube, and use applications like Skype.²³ Some Sony TVs come with the Sony BRAVIA Internet Video service, which offers access to movies, TV shows, sports, and other Internet video content, as well as applications like Twitter.²⁴ By providing an all-in-one experience, these devices are re-defining the marketplace for video devices.

Traditional MVPDs are responding with equipment innovations of their own. MVPDs are beginning to integrate Internet content into their services,²⁵ and the development and deployment of EBIF-enabled set-top boxes has opened the door to any number of new Web-like features and functions, including new interactive television applications²⁶ and innovative remote control applications.²⁷

²² See Internet@TV | Samsung, <http://www.samsung.com/us/internetTV/> (last visited July 13, 2010).

²³ See Learn about televisions, vieracast from Panasonic, <http://www2.panasonic.com/consumer-electronics/learn/Televisions/vieracast> (last visited July 13, 2010).

²⁴ See BRAVIA Internet Entertainment | Sony | SonyStyle USA, http://www.sonystyle.com/webapp/wcs/stores/servlet/ContentDisplayView?hideHeaderFooter=false&storeId=10151&catalogId=10551&langId=-1&cmsId=STATICS_BIV_showcase (last visited July 13, 2010).

²⁵ See, e.g., Todd Spangler, *FiOS Flicks On YouTube*, Multichannel News (Apr. 27, 2010), available at http://www.multichannel.com/article/451921-FiOS_Flicks_On_YouTube.php.

²⁶ See Todd Spangler, *Operators Eye 25 Million EBIF Homes This Year*, Multichannel News (May 12, 2010), available at http://www.multichannel.com/article/452592-Cable_Show_2010_Operators_Eye_25_Million_EBIF_Homes_This_Year.php.

²⁷ For example, Comcast's Chairman and CEO, Brian Roberts, demonstrated an innovative EBIF-enabled remote control application for the Apple iPad at the 2010 Cable Show. See Todd Spangler, *Cable Show 2010: Comcast Wants To Bring 'Xfinity Remote' To DTAs*, Multichannel News (May 13, 2010), available at

(footnote continued...)

MVPDs also are starting to harness IP and other technological innovations to provide consumers with yet more viewing options. TV Everywhere allows MVPD customers to watch programming on any Internet-connected device, not just the television.²⁸ Likewise, network DVR solutions provide an alternative way for consumers to record and playback content without needing a standalone DVR in the home.²⁹ These and other solutions help advance the Commission's policy goals in this area by giving consumers greater flexibility in how they access and view video content.

B. Motorola Is Helping To Advance The Internet Era Of TV.

Motorola is a key participant in these marketplace changes. For example, today, Motorola is deploying significant numbers of set-top boxes with multi-room DVR functionality. Motorola has two versions of multi-room DVR that use MoCA technology. The first was implemented in 2006, when Verizon introduced its multi-room DVR service.³⁰ This particular version used a proprietary application layer protocol to enable home-networking functionality. Since that time, industry efforts have led to greater standardization of some of the protocols involved in providing this functionality, and Motorola has incorporated those standards into its

(...footnote continued)

http://www.multichannel.com/article/452616-Cable_Show_2010_Comcast_Wants_To_Bring_Xfinity_Remote_To_DTAs.php.

²⁸ See, e.g., Todd Spangler, *Comcast To Launch 'On Demand Online' In Early December*, Multichannel News (Nov. 13, 2009) (noting that Comcast's version of TV Everywhere "will allow access to the Internet-video service from up to three computers both inside and outside a user's home"), available at http://www.multichannel.com/article/388970-Comcast_To_Launch_On_Demand_Online_In_Early_December.php.

²⁹ See Todd Spangler, *Network DVR Inches Ahead*, Multichannel News (Apr. 12, 2010) available at http://www.multichannel.com/article/451298-Network_DVR_Inches_Ahead.php.

³⁰ See Mike Robuck, *Verizon Rolls Out Multi-Room DVRs*, Communications Technology (Aug. 17, 2006), available at http://www.cable360.net/ct/news/ctreports/videoreport/Verizon-Rolls-Out-Multi-Room-DVRs_18564.html.

latest products.³¹ Comcast recently announced the initial deployment of its AnyRoom DVR service in about 20 markets served by Motorola equipment.³² And several of Motorola's other cable customers are in trials of multi-room DVR functionality using MoCA,³³ and should be deploying that service in the foreseeable future. Motorola also supports HPNA-enabled home-networking solutions used by AT&T and other IPTV networks.³⁴

Motorola is incorporating other inter-industry solutions to expand equipment options for consumers. For example, Motorola's multi-room DVRs incorporate technologies consistent with guidelines published by the Digital Living Network Alliance ("DLNA").³⁵ Likewise, Motorola's Mover product, which was honored this year as the 2010 CES Innovations Design and Engineering Award recipient,³⁶ sits on such a home network and enables recorded content to be shared with a variety of DLNA-compatible devices. Additionally, Motorola is moving to home-

³¹ See Press Release, Motorola Inc., *Motorola Continues to Expand Industry-Leading Set-Top Portfolio with New All-Digital, High-Definition Dual-Tuner MR-DVR* (May 11, 2010) (describing home-networking capabilities of Motorola's newest line of MoCA-equipped set-top boxes), available at <http://mediacenter.motorola.com/content/detail.aspx?ReleaseID=12800&NewsAreaId=2>.

³² See Jeff Baumgartner, *Comcast: 'AnyRoom DVR' is Live in 20+ Markets*, Light Reading Cable (July 1, 2010), available at http://www.lightreading.com/document.asp?doc_id=193947&site=lr_cable&.

³³ See Brian Santo, *TWC taps Motorola for multi-room DVR*, CEDMagazine.com (April 1, 2009), available at <http://www.cedmagazine.com/News-TWC-Motorola-multi-room-DVR-040109.aspx>.

³⁴ See, e.g., Press Release, Motorola, Inc., *Motorola Wins End-to-End Fiber-to-the-Home Business with Hotwire Communications* (Sept. 22, 2008) at <http://mediacenter.motorola.com/content/detail.aspx?ReleaseID=5798&NewsAreaId=2>; Craig Matsumoto, *Why AT&T Likes HomePNA*, Light Reading Cable (Feb. 28, 2007), available at http://www.lightreading.com/document.asp?doc_id=118351&WT.svl=news1_7. The HomePNA Alliance ("HPNA") is a global non-profit corporation founded in 1998 to develop, certify, and promote high performance home networking technology that operates over existing home coax and telephone wiring. See Welcome to the HomePNA Alliance, <http://www.homepna.org> (last visited July 13, 2010).

³⁵ DLNA is an organization comprised of 245 companies with the goal of developing new products, devices, and services that are interoperable and compatible using open standards and other industry specifications. See About DLNA, http://www.dlna.org/about_us/about/ (last visited July 13, 2010).

³⁶ See Press Release, Motorola, Inc., *Motorola Expands Media Mobility Solutions to Video Service Providers* (Jan. 7, 2010) at <http://mediacenter.motorola.com/content/detail.aspx?ReleaseID=12258&NewsAreaId=2>.

networking architectures that further rely on DLNA guidelines and enable the distribution of content from a primary gateway device in the home to simpler, DLNA-based IP client devices.

Furthermore, Motorola continues to innovate in the set-top box products it supplies to MVPDs. Motorola's set-top boxes embrace new technologies -- such as MPEG-4³⁷ and 3DTV³⁸ -- to help operators increase the quantity and quality of content that is available to customers, and facilitate customers' consumption of that content on any device, at any time. For example, Motorola's KreaTV™ application platform for IPTV providers allows those providers to easily and efficiently add new services and functionality, such as new channel guide applications, VOD applications, or web-based applications like weather tracking or bulletin boards. Notably, the KreaTV™ platform utilizes open interface standards to run across all of Motorola's set-top box models.

In addition, Motorola is developing cloud-based solutions aimed at extending Web-based tools and services to legacy cable systems. Motorola Medios is one such initiative. Medios is a service management software suite aimed at enabling greater customization of the user experience using standard web-development tools. Medios seamlessly integrates MVPD, Internet, and other content via a single, familiar user interface, and gives customers the ability to access their favorite content via that interface across multiple displays and devices. In this way, Medios helps service providers put customers in charge of their video content viewing experience. Medios also leverages open standards so that service providers can evolve their

³⁷ See, e.g., Press Release, Motorola, Inc., *Motorola Introduces MPEG-4 Encoders for Enhanced Video Quality and Bandwidth Management*, (June 18, 2008) at <http://mediacenter.motorola.com/content/detail.aspx?ReleaseID=6113&NewsAreaId=2>.

³⁸ See, e.g., Press Release, Motorola, Inc., *Motorola Introduces Innovative 3DTV Set-tops for Cable*, (April 12, 2010) at <http://mediacenter.motorola.com/content/detail.aspx?ReleaseID=12642&NewsAreaId=2>.

existing infrastructure to provide these new capabilities, rather than forcing providers to invest in new infrastructure. For example, Medios supports multiple DRM solutions, so that service providers have maximum flexibility in securing content across multiple devices.

III. COMMISSION POLICIES MUST ENSURE THAT NETWORK OPERATORS, DEVICE MANUFACTURERS, AND SERVICE PROVIDERS HAVE THE FLEXIBILITY TO INNOVATE.

The *Notice*'s vision of an AllVid adapter that gives users greater control over their video content viewing experience tracks, to some extent, what is happening in the marketplace today. The standards and technologies discussed in the *Notice* have a variety of different strengths and weaknesses, and some undoubtedly will be incorporated into one or more of the many video devices that are being developed and deployed. Device manufacturers will mix and match these technologies to differentiate their products, to meet the particular needs of different consumers and service providers, and to innovate and develop even more powerful solutions. The Commission should recognize and encourage these marketplace-driven developments.

A. The Commission Should Be Sensitive to the Fact that Different Technologies and Approaches May Best Meet Different Consumers' Demands.

The *Notice* proposes the development of an "AllVid adapter" that "would perform only the functions necessary to support devices connected to the home network, and should connect to home network devices using a nationally supported standard interface that is common across MVPDs."³⁹ It then discusses and seeks comment on various components of the proposed AllVid device, as well as proposed standards and specifications to mandate for those various components.⁴⁰

³⁹ *Notice* ¶ 24.

⁴⁰ *Id.* ¶¶ 25-36.

The AllVid concept is premised on the notion that the “intelligence” would largely reside in “smart devices” in the home. Under this model, the AllVid device is essentially a “dumb” gateway or set-back device whose functionality is limited primarily to security, tuning, reception, and upstream communication as directed by the smart video device.⁴¹ Such an approach may not be the most efficient or effective in every given circumstance. Device manufacturers and MVPDs are developing home-networking solutions where intelligence can be located in the cloud, in gateway devices located inside or outside the home, in set-top boxes or other devices in the home, or some combination thereof. For example, one can imagine an approach where service discovery is done by the gateway, conditional access is done in the cloud, and content decoding is done by the smart device.

Ultimately, the best approach to use in any given situation will depend on a number of factors, including the different network architectures used by MVPDs. DBS networks, for example, enable only one-way communication from DBS transmission facilities to the customer’s set-top box.⁴² As DIRECTV and DISH have noted, this means that significant intelligence must reside in the set-top box (*e.g.*, the box must include DVR and other capabilities), and such intelligence cannot be located in the cloud (in contrast to cable and telco networks).⁴³ There are also differences between cable and telco networks, and even between

⁴¹ *Id.* ¶ 16.

⁴² *Id.* ¶ 36 (noting “the DBS industry’s inherently one-way distribution model”).

⁴³ In fact, DIRECTV has noted that the effect of this is that the network, as far as DIRECTV is concerned, does not end until *after* the end user device. *See* The National Broadband Plan: Competitive Availability of Navigation Devices: Hearing Before the Subcomm. on Communications, Technology, and the Internet of the H. Comm. on Energy and Commerce (Apr. 29, 2010) (testimony of Eric Shanks, Executive Vice President, Entertainment, DirecTV) (“All of our intelligence and the features I have just described reside in the set top box. The box is the brains of our operation. Unlike cable, there is no headend in the ground that can store all the ‘smarts’ needed to ensure these services work. Our headend is essentially in the set-top box in the home.”), *available at* http://energycommerce.house.gov/Press_111/20100429/Shanks.Testimony.04.29.2010.pdf.

different cable networks and different telco networks, and these differences will affect the solutions that each individual provider finds most efficient for delivering the service and most cost-effective for both the provider and the customer.

This highlights an inherent risk in mandating a particular solution: it forces market participants to a “lowest common denominator” approach where all MVPDs adopt a set of technologies that are common throughout the MVPD marketplace. In this example, the fact that DBS providers cannot utilize the cloud as a source of intelligence does not mean that the Commission should adopt a set of specifications for the AllVid device that prevents other MVPDs from using the cloud. Leveraging the cloud as a source of intelligence could lead to increased efficiency in service delivery and cost-effectiveness for both the provider and consumers, and the Commission should not foreclose that possibility. It also does not mean that the Commission should adopt different sets of rules for different network architectures.⁴⁴ Such an approach would create significant marketplace distortions and prevent some providers, but not others, from optimizing the service to fit their particular networks. Moreover, there is a further risk that such an approach inevitably leads to a patchwork of regulations -- exceptions, exemptions, and waivers -- that creates more confusion than clarity and slows innovation to a crawl. In any event, consumers will lose as innovation suffers and costs rise.

Different network architectures are only part of the story. The *Notice* discusses the strengths and weaknesses of particular technologies or standards to perform the various functions that the *Notice* has identified as integral to the AllVid adapter. This discussion should serve to highlight that device manufacturers and service providers face a number of choices, and what is

⁴⁴ See *Notice* ¶ 36 (seeking comment “on any network-specific functions that may need to be included in particular operators’ AllVid adapters”).

the “best” choice almost always will depend on the particular circumstances of the situation, not the least of which is the particular demands of various consumers with different needs, levels of expertise, financial situations, and so forth.

The *Notice* seems to recognize this when it asks about different possible configurations for the AllVid device.⁴⁵ In one configuration, the device would be a “set-back device, capable of communicating with one navigation device or TV set.”⁴⁶ In another configuration, the device “would act as a whole-home gateway, capable of simultaneously communicating with multiple navigation devices within the home.”⁴⁷ Both configurations have strengths and weaknesses. The gateway configuration may incorporate more functionality and give households with more devices greater flexibility and ease-of-use, but the gateway device also may be more expensive as a result. The set-back configuration may result in a less expensive AllVid adapter and may be easier to use for a smaller household or one with fewer devices, but it also may be a more cumbersome and more expensive solution for larger households that have to purchase several of the devices.⁴⁸ Ultimately, neither solution can be said to be “more appropriate” than the other in the abstract. What is “appropriate” will depend on the particular service provider and customer.

The same is true with respect to the “physical connection” that the AllVid device would use. The *Notice* proposes mandating 100-BASE-TX Ethernet “as the physical layer technology

⁴⁵ *Notice* ¶ 25.

⁴⁶ *Id.* The *Notice* proposes that, in this configuration, the AllVid device be capable of providing at least two simultaneous video streams, to allow for picture-in-picture viewing and to allow consumers to watch one program while recording another. *Id.*

⁴⁷ *Id.* The *Notice* proposes that, in this configuration, the device provide at least 6 simultaneous video streams within the home. *Id.*

⁴⁸ It also bears emphasis that many consumers may not prefer *any* AllVid solution in their home, and the Commission should avoid policies that would force such consumers to buy or lease a gateway or other device they do not want or need.

used to connect the AllVid adapters with navigation devices.”⁴⁹ It is certainly the case that many device manufacturers are incorporating Ethernet connections into devices today.⁵⁰ However, 100-BASE-TX Ethernet is not even the latest version of the Ethernet standard.⁵¹ Moreover, other technologies may work better in particular situations. For example, the *Notice* mentions MoCA as a standard that “could serve as the bridge between AllVid adapters and retail navigation devices,”⁵² but many consumers may prefer WiFi and other wireless technologies to limit the amount of wires that are criss-crossing their homes. If the Commission decides to require a particular physical layer technology, on what basis would it choose Ethernet over MoCA or WiFi? Even if the Commission decides, by way of example, just to establish Ethernet as a “baseline” to ensure some level of standardization, why require Ethernet connections in (and, thereby, raise the cost of) a device specifically designed, as an example, for WiFi use?

In the recent *1394 Waiver Order*, the Media Bureau explained that “IP communication over Ethernet *and* WiFi has achieved overwhelming marketplace acceptance for home networking of media devices.”⁵³ It added that “Ethernet and Wi-Fi already have strong marketplace support, connecting home theater computers, video game consoles, and Internet-connected video devices.”⁵⁴ Given these statements regarding rapid, market-based innovation in

⁴⁹ *Notice* ¶ 26.

⁵⁰ As described above, there are numerous examples of televisions, gaming consoles, and other devices that are incorporating Internet connectivity, usually in the form of an Ethernet connection. *See supra* at pp. 6-10.

⁵¹ *See* News Release, Institute of Electrical and Electronics Engineers, Inc., *IEEE and Gigabit Ethernet Alliance Announce Formal Ratification of Gigabit Ethernet Over Copper Standard* (June 28, 1999), available at <http://standards.ieee.org/announcements/802.3ab.html>.

⁵² *Notice* ¶ 26.

⁵³ *In re Intel Corporation; Motorola, Inc.; TiVo, Inc.; Requests for Waiver of Section 76.640(b)(4)(ii) of the Commission’s Rules*, Memorandum Opinion & Order, DA-10-1094 ¶ 7 (rel. June 18, 2010) (emphasis added) (“*1394 Waiver Order*”).

⁵⁴ *Id.* ¶ 10.

IP connection paths, it would make little sense for the Commission to mandate that one or the other (or even both) be mandated for inclusion in the AllVid device.

A similar situation exists with respect to the *Notice*'s proposal for a standard for encryption and authentication. Specifically, the *Notice* proposes that digital transmission content protection over Internet protocol ("DTCP-IP") is a "logical choice for content encryption and device authentication" because it has been approved by both MPAA and CableLabs as "an acceptable method of content encryption to prevent content theft," and because "it is the content protection scheme used in the DLNA standard."⁵⁵ This is a critical component of the AllVid proposal because protecting content from piracy is a core priority of content producers and distributors. Content suppliers have already raised concerns about the required use of DTCP-IP,⁵⁶ and there are numerous other ways of securing content in the home network, including both hardware- and software-based alternatives.⁵⁷ Moreover, even if the Commission takes as given that DTCP-IP is the logical choice for content protection today, it cannot reasonably predict whether better methods will be developed in the future, and it should not adopt mandates that, in effect, preclude content suppliers and distributors from employing improved methods in the future.⁵⁸

⁵⁵ *Notice* ¶ 28.

⁵⁶ *See* Letter from Alicia Smith, Counsel to Sony Pictures, to Marlene H. Dortch, Secretary, FCC, MB Dkt. No. 10-91, at 1 (July 1, 2010) (noting that DTCP "perhaps does not provide enough flexibility to provide the consumer a wide range of options").

⁵⁷ The *Notice* also appears to assume that conditional access should be handled in the AllVid adapter. *See* *Notice* ¶ 28. However, it is unclear whether placing conditional access in the AllVid device is even necessary. For example, one might imagine a gateway that does not play any role in conditional access. Instead, the conditional access could be performed in the cloud, thereby helping to reduce the costs of the devices.

⁵⁸ For example, DTCP-IP today only protects the transmission of content between devices. It does not protect the content once it is on the device. Protecting content on the device is a wide open area for technological and business model innovation, and the Commission should not foreclose this potential innovation.

The examples thus far have focused on how mandating the use of certain technologies can hamstring network operators and content producers and distributors, but such mandates can also reduce the flexibility and innovative space for device manufacturers. For example, some of the largest and most popular device manufacturers in the world do not use certain standardized or widely-used solutions for various functions in its devices. As the *Notice* recognizes, certain Apple products do not support Flash-based video or applications.⁵⁹ Apple has offered its explanation as to why it does not support Flash,⁶⁰ and whether this decision proves to be a wise one for Apple rightly will be left for the marketplace to decide.

Likewise, many device manufacturers develop products that do not use the *Notice*'s proposed standard for service discovery -- universal plug and play ("UPnP"). Despite arguments by TiVo that UPnP is an "obvious choice," it is far from "obvious" that UPnP is the best solution. The fact that device manufacturers thus far have been reluctant to incorporate it into their devices suggests that there are enough questions about the viability and workability of the technology that the Commission should be wary about mandating its use in the AllVid adapter. More importantly, as these examples highlight, device manufacturers today do not necessarily agree on what the best solution is, given a particular set of circumstances. That is not a negative development. In fact, these differences of opinion mean increased choice and increased competition among device manufacturers, with the benefits accruing to consumers.

In light of the foregoing, the best, most consumer-friendly approach for the Commission to adopt would be to encourage innovation, experimentation, differentiation, and competition.

⁵⁹ *Notice* ¶ 31 n.56.

⁶⁰ *Id.*

The Commission could achieve this outcome by allowing the marketplace to continue to evolve unfettered by government mandates.

B. The Commission Should Encourage Voluntary, Industry-Driven Solutions As Much As Possible.

The *Notice* includes a discussion on two potential paths for standardization. The first approach involves forced standardization by government fiat. The *Notice* references, by way of example, the *Carterfone* and *Computer Inquiry* decisions that “required that the telephone network be terminated in a standardized RJ-11 interface.”⁶¹ The second approach involves standardization by marketplace acceptance. The *Notice* cites the example of broadband services, where “divergent and rapidly developing network technologies terminated in an adapter that presents a standardized Ethernet interface.”⁶²

The *Notice* suggests that “[o]ne possible reason for the lack of success in the implementation of Section 629 to date is that it was modeled on the earlier telephone service approach, rather than the second, broadband approach.”⁶³ Motorola agrees with this basic intuition, but, to the extent the Commission seeks to emulate the broadband model in this proceeding, it should let marketplace forces work towards the development of standards-based solutions, rather than some hybrid approach where the Commission mandates some standards that seem to have had some success in the marketplace so far.

⁶¹ *Notice* ¶ 18.

⁶² *Id.*

⁶³ *Id.* ¶ 21.

As the *Notice* recognizes, in the case of broadband services, the marketplace was able to develop an interface that was able “to accommodate innovations in delivery technologies.”⁶⁴ On the other hand, the government-mandated RJ-11 interface worked in the case of the telephone network because the network itself “was based on a nationwide standard.”⁶⁵ In light of the fact that MVPDs use a variety of network architectures to deliver their services, it stands to reason from the *Notice*’s discussion of the two examples of standardization that the marketplace acceptance model is the more appropriate model for the Commission to follow.

The Commission can play a constructive role in this marketplace without mandating particular solutions. There are numerous industry-led initiatives today addressing the very types of interoperability issues raised in this proceeding. DLNA, mentioned above, is one such inter-industry group with which Motorola is involved.⁶⁶ Another organization is the Digital Entertainment Content Ecosystem (“DECE”), which is developing innovative rights management solutions to allow consumers to enjoy movies, TV shows, and other entertainment across multiple devices, under different business models, and from different providers.⁶⁷ Here, too, Motorola is an active participant. These efforts hold the promise of providing flexible solutions to help advance the Commission’s objectives in the *Notice*, without the drawbacks associated with mandated solutions. The Commission can play a constructive role by helping to encourage

⁶⁴ *Id.* ¶ 20.

⁶⁵ *Id.* ¶ 19.

⁶⁶ According to DLNA, “[b]ecause all devices designed around DLNA guidelines will be able to communicate, manufacturers and content providers will have an opportunity to explore new ways to differentiate and expand existing product categories.” Frequently Asked Questions about DLNA, http://www.dlna.org/about_us/faqs/ (last visited July 13, 2010).

⁶⁷ See DECE | Digital Entertainment Content Ecosystem, at <http://decellc.com/> (last visited July 13, 2010).

these and other voluntary, inter-industry efforts and working to involve various stakeholders in the process.⁶⁸

IV. THE COMMISSION MUST REFRAIN FROM ADOPTING ANY TECHNOLOGY MANDATES.

One of the critical lessons from the CableCARD experience is that even well-intentioned technology mandates do not inure to the public benefit, but rather chill investment and innovation in new services and technologies. The Commission cannot get around this problem by merely adopting industry-developed standards or standards that already have had some success in today's marketplace. When the Commission requires that a particular technology be used in a device via forced standardization, that requirement is a mandate, regardless of whether that technology was developed by industry participants. To the extent that the Commission decides mandates are necessary for the AllVid adapter, it should focus any rules on policy objectives rather than the specific technological means to achieve those objectives. Although not the best solution, this approach would at least allow industry participants the flexibility to innovate different ways to achieve the Commission's goals.

A. Technology Mandates Chill Innovation and Investment.

The *Notice* indicates a preference for standards-based solutions. Standards can be entirely appropriate in certain cases. However, *forced* standardization can be harmful to innovation and, ultimately, consumers.⁶⁹ This is particularly true in the information technology ecosystem, where the risk of the government "getting it wrong" in choosing the best standard is

⁶⁸ The AllVid concept also raises difficult business and customer-service issues. *See Notice* ¶ 43. For example, how is QOS assured since all the home networking and retail devices are outside the MVPD's domain -- *e.g.*, who does the consumer call when there is a problem? These types of technical and business issues are difficult to administer through the regulatory process, and better addressed through market-driven efforts.

⁶⁹ The *Notice* recognizes the "inherent conflict between innovation and standardization." *Id.*

extremely high, given that technology advances so rapidly in this area.⁷⁰ This is the case when, as here, “the technologies themselves are subject to rapid change.”⁷¹

Moreover, government failure in mandating technological standards is most likely to occur when a marketplace is still maturing.⁷² The Commission has made this observation in the past. For example, in the 1998 *Navigation Device Order*,⁷³ the Commission recognized that when “markets involved are in the early stages of becoming competitive,” it is a “perilous time” to adopt regulation, because doing so may “stifle growth, innovation, and technical developments at a time when consumer demands, business plans, and technologies remain unknown, unformed or incomplete.”⁷⁴ The marketplace for smart video devices and home networking solutions is still evolving and innovation is accelerating. It would indeed be “perilous” to mandate technological standards at this early stage of the marketplace’s development, when, to borrow the Commission’s phrase, insight into “consumer demands, business plans, and technologies remain[s] unknown, unformed or incomplete.”⁷⁵ As

⁷⁰ See Stacy Baird, *The Government at the Standards Bazaar*, 18 Stan. L. & Pol’y Rev. 35, 62 (2007) (“Standards development in the area of information technology requires eloquence in incorporating flexibility into a standard to accommodate technical advances and changes in the marketplace.”).

⁷¹ See *id.* at 64-65 (quoting Stanley L. Besen & Leland L. Johnson, *Compatibility Standards, Competition and Innovation in the Broadcasting Industry* 135 (1986)).

⁷² See, e.g., Baird, *supra* note 70, at 64.

⁷³ *In re Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, Report and Order, 13 FCC Rcd. 14775 (1998).

⁷⁴ *Id.* ¶ 15.

⁷⁵ *Id.*; see also Michael Katz and Carl Shapiro, *Systems Competition and Network Effects*, J. Econ. Persp., Vol. 8, No. 2, Spring 1994, at 113 (“In the case of choosing a standard at the start of the product’s life, it may be very difficult to determine which standard is the ‘correct’ one.”).

commentators have observed, “[i]t is counterintuitive to inject the government into such a highly dynamic environment.”⁷⁶

Further, mandating use of specific technological standards can add burdensome costs to devices and services. For example, CableCARD requirements have cost cable operators and their customers an estimated \$1 billion, yet less than one percent of cable customers use CableCARD-enabled retail devices today.⁷⁷ On the other hand, when technology requirements are determined by marketplace demands, consumers generally benefit. As CEA President Gary Shapiro said, “The American economy and consumers have historically benefited from the [technology industry’s] perennial cycle of improvement. Innovations get better, faster and less expensive for consumers.”⁷⁸

Forced standardization also would make it difficult for the AllVid adapter to respond to changes in the marketplace. Here are some examples of the challenges that may be posed by marketplace innovations:

- When new enhanced audio or video codecs are introduced, is the gateway required to transcode these back to MPEG-2 and/or MPEG-4 for backward compatibility?
- How are other potential new MVPD services, such as 3DTV, 1080p, or 10.2 channel sound, offered through the gateway when they might require changes in the codec, transport, performance, or signaling mechanisms to the rendering/display device?
- How easily can smart devices accommodate new services delivered by the AllVid adapter?

⁷⁶ See Baird, *supra* note 70, at 64.

⁷⁷ Comments of National Cable & Telecommunications Association, CS Dkt. No. 97-80 at 48 (June 14, 2010) (“NCTA CableCARD Comments”).

⁷⁸ See Gary Shapiro, Op-Ed., *Here’s How to Deepen the Recession*, CBS News (July 23, 2009), available at <http://www.cbsnews.com/stories/2009/07/22/opinion/main5180932.shtml>.

The *Notice* itself seems to recognize this problem when it asks how it “could enable evolution of the AllVid system...in order to accommodate technological innovation over time.”⁷⁹ If the Commission adopts standards or specifications as rules, however, there is no solution to this issue that does not involve costly and time-consuming rules changes, waivers, or other procedures.

Presumably, in order to accommodate new innovations, a standards-setting body would have to update the existing standard. This updating process can take time, and may be subject to holdup and delay by stakeholders who may have an interest in preserving the status quo. These delays are even longer, and reacting to changes in technology or consumer demand even more difficult, when the standard is adopted as a rule by the government.⁸⁰ In that case, not only must the parties go through the standardization process, they also must go through rulemaking procedures, and then, potentially, judicial review of any Commission decision. Moreover, even if the AllVid adapter is comprised of existing standards, there is still no guarantee that the adapter itself will be successful in the marketplace once deployed, or that it will somehow be insulated from technological obsolescence.⁸¹

⁷⁹ *Notice* ¶ 36.

⁸⁰ The Commission has recognized in the past that sometimes the regulatory process cannot keep pace with the pace of marketplace-driven innovation. *See In re 2000 Biennial Regulatory Review of Part 68 of the Commission’s Rules and Regulations*, Report and Order, 15 FCC Rcd. 24944 ¶ 11 (2000) (“The rapid pace of change in both network and terminal equipment technologies, however, has made it increasingly difficult for the regulatory process to keep pace.”) (“*2000 Part 68 Biennial Review Order*”).

⁸¹ *See Baird, supra* note 70, at 53 (describing the various means of industry standards setting, yet noting that “there is no assurance of success” and that “some standards are not successful even if they are adopted by formal means”).

B. Technology Mandates Around Navigation Devices Have Not Been Successful.

The Commission's prior efforts to mandate the use of particular technologies in navigation devices have not achieved their intended results. The CableCARD is a case in point. The Commission required cable operators to support one-way CableCARD devices at a time when two-way services were not yet in demand. However, by the time CableCARD-enabled devices were sold at retail, consumers were demanding two-way, interactive service that these devices could not provide. The Commission noted this history in its companion *FNPRM*, observing that "most manufacturers have abandoned the [CableCARD] technology,"⁸² and tentatively concluding that CableCARD is not a viable long-term solution.⁸³

Commenters who filed in response to the *FNPRM* overwhelmingly agreed that CableCARDS have not fulfilled the Commission's or Congress's navigation device goals.⁸⁴ Despite the substantial investment in CableCARD technology, only about 520,000 CableCARD-enabled retail devices are deployed today.⁸⁵ Commenters pointed to several reasons for this

⁸² *FNPRM* ¶ 8.

⁸³ *Id.* ¶ 12.

⁸⁴ *See, e.g.*, Comments of Beyond Broadband Technology, CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 2 (June 14, 2010) ("BBT CableCARD Comments"); Comments of Comcast Corporation, CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 10 (June 14, 2010) ("Comcast CableCARD Comments"); Comments of John Staurulakis, Inc., CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 1 (June 14, 2010); Comments of Motorola, Inc., CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 4 (June 14, 2010) ("Motorola CableCARD Comments"); NCTA CableCARD Comments at 3; Comments of OPASTCO *et al.*, CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 2 (June 14, 2010) ("OPASTCO CableCARD Comments"); Comments of Panasonic Corporation, CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 4 (June 14, 2010); Comments of Telecommunications Industry Association, CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 2 (June 14, 2010) ("TIA CableCARD Comments"); Comments of Time Warner Cable Inc., CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 4-5 (June 14, 2010) ("TWC CableCARD Comments"); Comments of U.S. Chamber of Commerce, CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 2 (June 14, 2010) ("U.S. Chamber of Commerce CableCARD Comments"); Comments of Verizon, CS Dkt. No. 97-80, PP Dkt. No. 00-67, at 1 (June 14, 2010) ("Verizon CableCARD Comments").

⁸⁵ *See* Letter from Neal M. Goldberg, Vice President & General Counsel, NCTA, to Marlene H. Dortch, CS Dkt. No. 97-80, at 1 (June 23, 2010).

situation, each of which highlights the problems with technology mandates.⁸⁶ Verizon accurately summarized the CableCARD experience this way: “Mandating the use of particular technologies is a recipe for failure.”⁸⁷

The Commission’s 1394 Rule⁸⁸ is another example of the perils of technology mandates. The Media Bureau recently concluded in its *1394 Waiver Order* that the 1394 Rule failed to meet marketplace demand for home networking.⁸⁹ The Bureau correctly recognized that Ethernet and WiFi today have wide marketplace support,⁹⁰ and concluded that petitioners met the Commission’s policy objective by including these or other IP interfaces in their devices.⁹¹

As the CableCARD and 1394 experiences suggest, no matter which technologies or standards are mandated for use on the AllVid adapter, they will be rapidly overtaken by new innovations. Government-mandated standards can delay innovation, discourage entry, and distort the marketplace in ways that harm innovation and, ultimately, consumers.⁹² Marketplace

⁸⁶ For example, CableCARD-enabled devices only support one-way cable services, which is unappealing in a market where consumers increasingly demand VOD and other interactive services. *See, e.g.*, Comcast CableCARD Comments at 10-11; Motorola CableCARD Comments at 5; NCTA CableCARD Comments at 4-5; TWC CableCARD Comments at 4; U.S. Chamber of Commerce CableCARD Comments at 3. CableCARD technology simply is *outdated* in a video marketplace that is migrating to IP-based networks and non-CableCARD security solutions. *See* Motorola CableCARD Comments at 5; *see also* OPASTCO CableCARD Comments at 2 (“[T]he Commission’s rules that require a separate security element apart from the navigation device did not anticipate or account for the functionality of Internet Protocol television (IPTV) technology.”).

⁸⁷ Verizon CableCARD Comments at 1; *see also* TIA CableCARD Comments at 2 (“The rules associated with CableCARD demonstrate the perils of imposing specific technology mandates, which can slow innovation and harm the consumer.”).

⁸⁸ *See* 47 C.F.R. 76.640(b)(4)(ii).

⁸⁹ Even though, when the Commission adopted the 1394 Rule, “it appeared that IEEE 1394 would be the marketplace leader in connecting consumer electronics devices,” this has not turned out to be the case. *1394 Waiver Order* ¶ 9. Instead, “[s]ince the time of adoption [of the 1394 requirement], however, most home networking devices have migrated toward technologies based on IP.” *Id.* ¶ 2.

⁹⁰ *Id.* ¶ 10.

⁹¹ *See id.*

⁹² *See 2000 Part 68 Biennial Review Order* ¶ 21 (“We are convinced that industry rather than Commission development of technical criteria will *decrease development time and allow manufacturers to bring innovative* (footnote continued...)”).

distortion is especially likely here if any new mandates apply only to traditional MVPDs. As over-the-top video providers race ahead to innovate, MVPDs will be slowed to a walk with both hands tied behind their backs, constrained by outdated technologies. This is exactly what has happened in the CableCARD context, where cable providers, but not DBS, have been encumbered by CableCARD-related costs and demands by CE manufacturers that cable innovations be made backward compatible with one-way retail devices.

C. The Commission Can Minimize Potential Problems By Focusing Any Requirements On Its Policy Objectives, Not Technical Specifications.

The Commission should allow marketplace demand and consumer preferences to drive innovation in this area. If, however, the Commission determines that some rules are necessary, it should focus on the policy objectives it hopes to achieve, and direct industry participants to meet those objectives, rather than specifying which technologies or standards they must use. In this way, the Commission can ensure that device manufacturers and service providers have some flexibility to continue to innovate around the end policy goal, rather than requiring industry participants to use technologies that, while perhaps successful in the marketplace today, could be superseded by unforeseen technological developments tomorrow.

For example, the Commission could set guidelines on the types of functionality that the AllVid adapter could include, but could give operators the flexibility to deploy adapters beyond such guidelines. Doing so would ensure that the Commission's policy objectives are being met, while still giving device manufacturers and service providers the flexibility to innovate and

(...footnote continued)

consumer products, especially for the provision of advanced services, to the market on an expedited basis. This expedited process should benefit consumers by lowering the costs of terminal equipment and by ensuring that new technologies are widely available.” (emphasis added)).

experiment with different technologies, services, and business models. Indeed, the Media Bureau followed this basic approach in its recent *1394 Waiver Order*.⁹³ In the AllVid context, the Commission could similarly focus on baselines and policy objectives in framing any mandates.

Phrased differently, any rules “should set out requirements to achieve interoperability, *i.e.*, *performance* standards, as opposed to specifying the particular *implementation* of an interoperability requirement Thus, the law would not describe the specific technical means to achieve interoperability, but would have an objective means to assure that the mandated objective (‘performance’) of interoperability is met.”⁹⁴

“Performance” standards are more likely to include flexible mechanisms for updating standards and accommodating improvement and compatibility as the technology evolves.⁹⁵ Even if the standards described in the *Notice* accurately capture the best technologies and standards currently available today, the Commission cannot be sure that they will be the best tomorrow. And if history is any guide, they almost certainly will not be. By adopting “performance” standards, the Commission can ensure that its policy objectives are met without hindering innovation and imposing other costs associated with specific technological mandates.

Finally, to the extent the Commission considers any rules in this area, it should not impose such requirements solely on traditional MVPDs and MVPD-supplied equipment. As the

⁹³ As noted, the Bureau found that the IP-based interfaces can “provide the *baseline* of connectivity that the IEEE 1394 output requirement was intended to achieve.” *1394 Waiver Order* ¶ 8 (emphasis added). Moreover, the petitioners “met the Commission’s *policy objective* by including connections on their set-top boxes that will enable cable subscribers to enjoy the full range of services offered by their cable providers in a secure, digital format that third-party devices on their home networks can receive.” *Id.* (emphasis added).

⁹⁴ See Baird, *supra* note 70, at 92 (emphasis in original).

⁹⁵ See *id.*

Notice recognizes, the lack of CableCARD-compatible devices has hindered the development of a retail marketplace for CableCARD products.⁹⁶ In the past, notably with the digital transition, the Commission has taken steps to ensure the availability of compatible devices.⁹⁷ If the Commission moves forward with adopting rules, similar steps may be warranted to ensure that device manufacturers are developing AllVid-compatible devices. Likewise, the Commission should consider whether to take steps to encourage, or even require, non-traditional video providers to develop products and services that are AllVid-compatible. If these service providers are allowed to innovate at a more rapid pace than traditional MVPDs, it could hasten the inevitable obsolescence of the AllVid adapter.

⁹⁶ See *Notice* ¶ 10.

⁹⁷ See 47 C.F.R. § 15.117 (requiring generally that all television sets sold in the United States be equipped with a DTV tuner, and setting forth a timeline for compliance).

V. CONCLUSION

Motorola urges the Commission to adopt policies that let marketplace demand and consumer preferences continue to drive innovation in the video device market. To the extent the Commission elects to adopt rules in this area, it should avoid technology mandates, but rather consider rules that establish performance-based requirements that accommodate, to the greatest extent possible, innovation, experimentation, and competition.

Respectfully submitted,

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