

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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 DIRECTV, INC.

William M. Wiltshire
Michael Nilsson
WILTSHIRE & GRANNIS LLP
1200 Eighteenth Street, N.W.
Washington, DC 20036
(202) 730-1300

Counsel for DIRECTV, Inc.

Susan Eid
Sr. Vice President, Government Affairs
Stacy R. Fuller
Vice President, Regulatory Affairs
DIRECTV, INC.
901 F Street, N.W.
Suite 600
Washington, DC 20004
(202) 383-6300

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SUMMARY

This proceeding marks a new direction in the Commission’s effort to promote a more competitive market for devices used to navigate multichannel video programming distributors’ (“MVPDs”) offerings. Shifting emphasis away from CableCARDs, the Commission now seeks to encourage “smart devices” that would, through the use of an “AllVid” adapter or gateway, function with all MVPD platforms and be able to access and navigate a full suite of MVPD and non-MVPD video content.

DIRECTV acknowledges the importance to consumers of innovation in “gateway” devices, which has been a focus of industry efforts for several years. But DIRECTV is gravely concerned that the Commission’s proposal to mandate its AllVid regime would interfere with market-based initiatives already in progress, constrain ongoing development and delivery of new devices and services, and harm consumers. DIRECTV strongly urges the Commission to consider such consequences very carefully before proceeding further in this area.

From DIRECTV’s perspective, the AllVid proposal suffers from the following three basic misconceptions.

State of the Market. The proposal assumes that the set-top box market is stagnant when in fact it is vibrant and already moving toward the cross-platform interoperability envisioned by the Commission. The Commission’s view appears to be based on observations of one particular MVPD: cable. By contrast, DIRECTV’s set-top boxes are already highly sophisticated, with technology that allows DIRECTV’s one-way network to provide services comparable to those of its two-way competitors. Moreover, they are robust enough for DIRECTV to constantly add new features—75 in the 15 months since the Commission launched its National Broadband Plan alone.

Most recently, using an industry standard developed by the RVU Alliance, DIRECTV is poised to release the first set of devices that will allow *precisely* the “shopping mall” of video content envisioned by Chairman Genachowski. RVU client devices (such as televisions) will be able to offer video from any number of “stores” (such as Netflix, YouTube, and an MVPD). But, as with a physical mall, the makeup of the stores themselves will be determined by the service provider, not the mall owner. Thus, Netflix will look like Netflix, YouTube will look like YouTube, and DIRECTV will look like DIRECTV. Such initiatives are concrete evidence of a dynamic market at work—yet they are barely acknowledged in the *NOI*. The Commission should not proceed with its current AllVid concept without a better appreciation of the state of the market for navigation devices and related equipment, as a government mandate would likely disrupt progress toward the very outcome it seeks.

Complexity of Implementation. The *NOI* also underestimates the many technical issues that would have to be resolved to make the AllVid concept a reality. MVPD navigation devices, including DIRECTV set-top boxes and RVU gateways, function by responding to “network data” delivered from the MVPD. Only by understanding and interpreting this network data can the set-top box display programming and perform related functions properly. Set-top boxes decipher this information using proprietary protocols contained in software downloads. RVU gateways likewise interpret the network data sent by the MVPD, but then stream video and rendered graphics to client devices using the Internet Protocol (“IP”) so that those devices need only display—not process—that information.

The Commission proposes for AllVid adapters to use IP to transmit to downstream smart devices. But this does not answer the question of how smart devices can understand and interpret the network data sent to them. It is like deciding that two people will communicate by

speaking to one another, but failing to decide what language they will use to do so. Unless the Commission designates such a “language” through the development of common protocols—a process that would take years even in the best of circumstances (and which would necessarily result in winners and losers defined by Commission rules rather than by the market)—smart devices would be unable to so much as change the channel, much less process more advanced features such as VOD or mosaic channels.

Similarly, the Commission’s proposed authentication protocol (DTCP-IP) ensures that content will be delivered securely to authenticated devices over an IP communications link, but does not manage that content once it reaches the downstream device. DTCP-IP cannot, for example, ensure that content stored on such a third-party device will honor expiration dates and other limitations. This, too, would require the development of new protocols.

Impact of Mandate. Lastly, the Commission ignores the likely results of imposing an AllVid mandate. It appears to envision that MVPDs would deliver video, audio, and network data to smart devices on an unbundled basis, enabling the smart device to repackage some or all of those inputs as it sees fit. The smart device, not the MVPD, would determine the customer experience. Even if the Commission were able to resolve the incomplete aspects of its proposal noted above, such a regime would *still* have significant unintended consequences.

- It would place MVPDs in legal jeopardy because they do not have the license from programmers to allow third parties to display content as those parties see fit.
- It would disadvantage satellite compared to cable. Satellite set-top boxes rely on storage to provide in its one-way architecture the types of services that are familiar in a two-way network, such as VOD and an interactive programming guide. Were the Commission to prohibit AllVid adapters from having storage capability, such features would be lost.

Moreover, even if the Commission were to permit AllVid adapters to have storage capacity, the AllVid approach would reduce MVPDs to “dumb pipes” and thereby significantly advantage cable systems (which have greater capacity and the ability to offer a triple-play bundle) while hamstringing satellite systems (which have traditionally relied upon innovative video services to compete).

- It would result in navigation devices of varying functionality. This would be unfair to and confusing for subscribers who, after all, pay MVPDs to receive *all* of their features. It would also greatly reduce an MVPD’s incentives to roll out new features that might not be available to a significant number of subscribers.
- It would degrade customer service. Today, customers know to call DIRECTV with a problem, and DIRECTV is familiar with all aspects of its viewing experience. If smart devices each offer their own user interface and their own suite of functions, customer service becomes far more difficult and clear lines of responsibility are lost.
- It would lock in current technology and thereby limit flexibility to incorporate future advances.
- It would complicate intellectual property issues. By *requiring* the use of particular technologies, Commission-mandated standards invite opportunistic behavior by those who claim the rights to such technologies.
- It would likely stymie, and would certainly delay, market-driven solutions such as RVU, which otherwise will be developed and deployed based on consumer demand.

For all of these reasons, DIRECTV strongly urges the Commission to reconsider its approach to navigation devices. Rather than impose an inflexible government mandate, the

Commission should encourage ongoing industry efforts to create the type of devices, and the type of marketplace, that consumers demand.

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COMMENTS OF DIRECTV, INC.

In this proceeding, the Commission seeks comment on its concept for a new generation of “smart video devices” that are both compatible with the services of all multichannel video programming distributors (“MVPDs”) and also able to provide additional capabilities, including the display of “over-the-top” video delivered over the Internet.¹ DIRECTV acknowledges the Commission’s interest in this area, as it has been a focus of industry efforts led by DIRECTV for several years. This, however, is an area in which unwise regulatory intervention could have seriously negative consequences—interfering with market-based initiatives already in place and harming consumers. We strongly urge the Commission to consider such consequences very carefully before proceeding further with any “AllVid” proposal.

From DIRECTV’s perspective, it appears that the AllVid concept reflects three fundamental misconceptions. First, it assumes that the set-top box market is stagnant, when in

¹ *Video Device Competition*, Notice of Inquiry, 25 FCC Red. 4275 (2010) (“*NOI*”).

fact it is vibrant and already moving toward the cross-platform interoperability the Commission envisions. Second, it underestimates the complexity of implementing a government AllVid mandate and the many technical issues that would have to be resolved to make the concept a reality. And third, it ignores the likely results of imposing such a mandate, including less innovation and more consumer confusion. Any one of these considerations should give the Commission pause; combined, they counsel against proceeding further with an AllVid mandate as currently proposed.

I. THE ALLVID PROPOSAL MISCONCEIVES THE STATE OF THE SET-TOP BOX MARKET

A. DIRECTV Today Offers Highly Innovative, “Smart” Devices

The AllVid proposal arises from the Commission’s conclusion that, “[w]hile MVPD services have become far more robust in the intervening years, for the most part the consumer experience with respect to the equipment that is required to access those services has not.”² Yet the evidence cited to support this conclusion relates to just a single type of MVPD: cable.³ This narrow focus has led the Commission to overlook the larger dynamics at play across the MVPD industry—including initiatives introduced by DIRECTV.

In the sixteen years since it entered the MVPD market, DIRECTV has had to innovate in order to distinguish itself from its entrenched cable competitors. In recent years, this challenge has grown, as cable and telco MVPDs now offer a bundle of video, broadband, and voice services. In order to compete while offering a video-only product, DIRECTV has had to present consumers with the most innovative and compelling video service available.

² *Id.*, ¶ 15.

³ *See id.* ¶¶ 7-8 (describing problems with implementation of the CableCARD regime); *id.* ¶ 10 (describing how “[m]ost cable subscribers continue to use the traditional set-top boxes leased from their cable operator”); *id.* (noting that relatively few devices are used with CableCARDS); *id.* ¶ 12 (describing problems with tru2way regime); *id.*, ¶ 13 (expressing concern that the disparity between relatively inexpensive leased cable boxes and other devices could “undermine development of a vigorous retail market in navigation devices even if tru2way is successfully deployed”).

Because DIRECTV's satellite-delivered video service uses what is generally a one-way technology, nearly all of the advanced features that have come to define the DIRECTV consumer experience reside in our set-top boxes.⁴ DIRECTV was the first MVPD to deploy MPEG-4 compression and to introduce a substantial slate of HD programming—facilitated by technology in our set-top boxes. We have won eight Emmys for our technology, including our interactive NFL Sunday Ticket and other sports features, all of which are powered by features in the set-top boxes. Our newer features—ranging from our DVR Scheduler on computers and smart phones to DIRECTV TV Apps to Common Sense Media ratings in our programming guide to 3D television—all rely on technology residing in the set-top box. Moreover, we regularly upgrade our set-top boxes to keep up with technological advances. In the last fifteen months alone—*i.e.*, since the Commission initiated the National Broadband Plan—we have downloaded via satellite 75 new features to existing set-top boxes in our subscribers' homes. Most of our subscribers did not need new equipment to access these enhanced features and functions because we made the investment to design our equipment with additional storage, processing power, and other capabilities beyond those immediately required. Moreover, because DIRECTV has an ongoing relationship with its subscribers (and therefore a vested interest in their continued satisfaction), DIRECTV has periodically upgraded equipment free of charge when necessary to support a new capability.⁵ Without the capabilities built into our set-top boxes, DIRECTV would never have

⁴ DIRECTV has previously described the wide range of functionalities DIRECTV places in the equipment used to access its services. *See, e.g.*, Reply Comments of DIRECTV, Inc., NBP Public Notice #30 at 4-6, GN Docket No. 09-47 *et al.* (filed Jan. 27, 2010) (“DIRECTV NBP Reply Comments”).

⁵ For example, the first high-definition set-top boxes with MPEG-4 compression introduced by DIRECTV cannot support the 3D services recently launched on the system. Accordingly, DIRECTV has offered a free upgrade to any subscriber that has such equipment attached to a 3D-capable TV set. There is no reason to believe that a third-party manufacturer would make a similar offer to accommodate a major innovation by an MVPD.

been able to compete successfully with cable and telco systems that generally have greater capacity and also have the ability to offer a triple-play bundle of services.⁶

Unlike cable, where two manufacturers control the set-top box market, six different manufacturers currently make (or are scheduled to make) DIRECTV set-top boxes, including TiVo.⁷ DIRECTV equipment is, and has always been, nationally portable.⁸ Our set-top boxes have always been available at retail, even if the majority of our subscribers prefer to lease them from us.⁹ For years they have included Ethernet ports that allow an Internet connection. Among other things, DIRECTV has used that broadband connection to enable a hybrid video-on-demand offering.¹⁰ In the next generation of equipment, such broadband connections will allow display of streaming Internet content in conjunction with DIRECTV's own programming. The existence of such devices belies the *NOI*'s sweeping conclusion that massive government intervention is needed to create a more "competitive market" for set-top boxes.

B. The RVU Alliance Is Now Deploying Technology That Will Bring to Life The Commission's Vision of a Video "Shopping Mall"

Advanced as they are, even DIRECTV's existing set-top boxes do not yet achieve two Commission goals in this proceeding: cross-platform portability and a full suite of content from MVPD and non-MVPD sources.¹¹ Yet ongoing industry efforts are even now working to address these issues. The Commission envisions a new regime of interoperable smart devices

⁶ This also suggests why Commission-mandated homogenization of the way in which MVPD content is presented would be entirely inappropriate. *NOI*, ¶ 43.

⁷ DIRECTV set-top boxes are made by LG, Humax, Samsung, Pace, and Technicolor. TiVo has manufactured set-top boxes for DIRECTV in the past, and will introduce a new box later this year.

⁸ See Comments of DIRECTV, Inc., CS Docket No. 97-80, at 3-5 (filed Aug. 24, 2007).

⁹ *Id.* For all of these reasons, the Commission exempted DIRECTV from navigation device requirements applicable to cable. See *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, 13 FCC Rcd. 14775, ¶¶ 64-66 (1998), *aff'd on recon.*, 14 FCC Rcd. 7596, ¶ 37 (1999).

¹⁰ This "hybrid" approach involves programming delivered by satellite and broadband.

¹¹ *NOI*, ¶ 15.

that would promote what might be thought of as a “shopping mall” for video services. As Chairman Genachowski put it: “Just as a shopping mall presents customers with numerous retail outlets, smart video devices would offer viewers a single window into pay TV content and Internet content—as well as content that a viewer has already bought or archived.”¹²

But government intervention is not needed to achieve the Commission’s goal. Rather, the market has already recognized the consumer demand for such capability and is moving to meet this desire, with DIRECTV in the vanguard. Consumers are already well acquainted with the market’s initial efforts in this direction. For example, AppleTV plays digital content originating from the iTunes Store, YouTube, Flickr, and MobileMe on televisions and computers—and Apple is reportedly contemplating significant upgrades to this product.¹³ Sezmi offers an HD media recorder and reception system that combines traditional TV content, on-demand movies, and Internet video.¹⁴ VUDU’s set-top box provides access to thousands of movies and TV shows on demand, as well as access to YouTube, Pandora, and Flickr – and its technology is already built into products from consumer electronics manufacturers such as LG, Mitsubishi, Samsung, Sharp, and Toshiba.¹⁵ Roku makes a set-top box that provides unlimited access to Netflix’s streaming catalog, Amazon Video on Demand, and MLB.TV.¹⁶ Moreover, Roku just announced a technology partnership with Clearleap designed to enable cable operators

¹² *NOI*, Statement of Chairman Genachowski.

¹³ See Nick Belton, “Apple Hopes to Re-Enter the Living Room,” *NEW YORK TIMES* (July 2, 2010) (reporting that Apple “is working on an update to its television software, and will offer a completely redesigned interface for it”) (*available at* <http://bits.blogs.nytimes.com/2010/07/02/apple-hopes-to-re-enter-the-living-room/?hp>).

¹⁴ <http://www.sezmi.com/what-is-sezmi/>. See also J. Newman, “Sezmi’s Promising Cable TV Alternative,” *BLOOMBERG BUSINESSWEEK* (June 29, 2010) (*available at* <http://www.businessweek.com/idg/2010-06-29/sezmi-s-promising-cable-tv-alternative.html>).

¹⁵ http://www.vudu.com/product_overview.html.

¹⁶ <http://www.roku.com/roku-products>.

and/or programmers to deliver content through a “branded channel” on the Roku player.¹⁷

Recently, Google and several partners announced the GoogleTV initiative, promising an ecosystem in which Google would provide a “wrapper around a TV show” offered by an MVPD.¹⁸

Although none of these developments alone currently provides the complete “shopping mall” that Chairman Genachowski has described,¹⁹ it is inevitable that consumer demand for devices that will allow them to enjoy all available content—whether from an MVPD, the Internet, or storage on their personal computers—will drive industry efforts in this direction. One leading example of such efforts was introduced just last year by the RVU Alliance, a group of consumer electronics, technology, and distribution companies poised to deploy “technical specifications for the distribution of digital audio/video home networked entertainment content augmented with pixel accurate remote user interface graphics.”²⁰ In other words, RVU technology establishes a standardized method for providing an MVPD’s content, graphic interface, and features to downstream, third-party (or “client”) devices.

The RVU standard supports a gateway server that will allow subscribers to:

- Receive the same experience at every TV through the same look and feel.
- Access, record, and play back high-definition programming from any TV in the home.
- Access personal media content (*e.g.*, videos and photos) from any TV in the home.

¹⁷ See G. Dickson, “Clearleap, Roku Make Over-the-Top Play,” *BROADCASTING & CABLE* (June 24, 2010) (*available at* http://www.broadcastingcable.com/article/454151-Clearleap_Roku_Make_Over_the_Top_Play.php).

¹⁸ Paul Sharma, “GoogleTV and its Possible Implications,” *WALL ST. J.*, (July 6, 2010) (*available at* <http://blogs.wsj.com/source/2010/07/06/google-tv-and-its-possible-implications/>).

¹⁹ Of course, a consumer could also easily move between services by selecting a different input using his or her television’s remote control.

²⁰ <http://www.rvualliance.org/resources/faq>. DIRECTV has been working on solutions to support a home gateway with Internet connectivity since 2005. To bring that concept to fruition, it became one of the five founding members of the RVU Alliance, along with Broadcom, Cisco, Samsung, and Verizon.

- Interact with weather, enhanced sports, and other interactive applications from any TV in the home.
- Access MVPD content on additional devices (including personal media players and PCs).²¹

The RVU standard enables DIRECTV or any other MVPD to offer its content through a single home gateway²² that distributes content to multiple televisions or other RVU-compliant devices—eliminating the need for additional set-top boxes in each room.

RVU is an open standard that uses many of the standards developed by the Digital Living Network Alliance (“DLNA”) as a foundation.²³ Indeed, many RVU Alliance members are also active in DLNA, including its ongoing efforts to develop an interoperable commercial video player standard. Because RVU Alliance members are principally focused on multichannel video, however, they chose to work separately on issues related to content delivery in order to accelerate the standardization process. While the RVU standard is now being implemented as a stand-alone technology, it could be adopted into DLNA Guidelines—just as DLNA previously adopted standards such as Universal Plug and Play (“UPnP”) and Multimedia over Coaxial Cable (“MoCA”).

Because RVU technology can be applied by any MVPD platform, a consumer electronics manufacturer can design a compliant device—and a consumer can purchase one—secure in the knowledge that it will work with any RVU-enabled device or service, regardless of provider.

This achieves the portability sought by the Commission. An RVU-enabled device (be it a

²¹ *Id.*

²² The *NOI* anticipates that the AllVid device could take the form of either a set-back “dongle” or a gateway. *See NOI*, ¶ 25. DIRECTV has focused its development efforts (and these comments) on the latter approach, as it believes subscribers want fewer devices and less clutter around their viewing area. In DIRECTV’s implementation, the gateway will initially be connected directly to the primary television, but the expectation is that eventually the gateway could be located anywhere in the home (*e.g.*, in an attic or a garage).

²³ http://www.rvualliance.org/about_rvu.

television, computer, or mobile handset) would be able to present consumers with a menu of choices that include MVPD service—for example, NetFlix, Hulu, DIRECTV, FiOS, Comcast, etc. The source selection menu might look something like this offering from Samsung, only with MVPD “apps” added.²⁴



Like a mall owner, the consumer electronics manufacturer would be able to present a variety of “stores” on each device. But, just as with a physical mall, the makeup of each “store” will be up to the individual provider. So NetFlix’s “store” will look like NetFlix, YouTube will look like YouTube, and Amazon will look like Amazon—just as they do on the Internet. By the same token, DIRECTV’s service will look like DIRECTV. The consumer can choose which provider’s format and options she prefers, and then enter that “store” to get her preferred experience. Thus, the RVU standard facilitates *precisely* the “shopping mall” approach described by Chairman Genachowski.

²⁴ http://www.samsung.com/us/samsungapps/img/img_appsheader.jpg.

RVU technology is available today, its development driven by market forces rather than regulatory edict.²⁵ A broader DLNA solution is also under active development, likewise responding to consumer demand. These initiatives are concrete evidence of a dynamic market at work—yet they are barely acknowledged in the *NOI*. Overlooking these developments runs directly contrary to the Congressional directive that “the Commission should take cognizance of the current state of the marketplace and consider the results of private standards setting activities” in implementing the navigation device statute.²⁶ Accordingly, the Commission should not proceed with its current AllVid concept without a better appreciation of the state of the market for navigation devices and related equipment. A government mandate will almost certainly delay or disrupt progress toward the very outcome it seeks.²⁷

II. THE ALLVID PROPOSAL MISCONCEIVES THE WORK REQUIRED FOR IMPLEMENTATION

The *NOI* “introduce[s] a concept” of an AllVid device that, the Commission hopes, will “unleash competition in retail market for smart, set-top video devices.”²⁸ But the path from “concept” to “retail market” can be long and subject to missteps. This path is far more complicated for a commercial-grade multichannel video service than is the case for either voice or broadband applications.²⁹ An examination of both the technology used in DIRECTV’s own set-top boxes and that standardized by the RVU Alliance illustrates the numerous issues that must be resolved before video devices can communicate with one another. Yet even after

²⁵ Compare *NOI*, ¶¶ 7-8 (discussing “the failure of the CableCARD solution to create a strong retail market for navigation devices”), ¶ 12 (noting that the Commission is “not convinced that the tru2way solution will assure the development of a commercial retail market”).

²⁶ The sole mention of DLNA in the item is found in the context of a broader discussion of authentication standards. See *NOI*, ¶ 28. RVU is not mentioned at all.

²⁷ S. Conf. Rep. No. 230, 104th Cong, 2d Sess. 181 (1996) (“Conference Report”).

²⁸ *NOI*, ¶¶ 2, 1.

²⁹ *Id.*, ¶¶ 18-21 (attempting to place AllVid proposal in the context of voice and video markets, and suggesting that prior Commission efforts to regulate navigation devices have failed because they were “modeled on the earlier telephone service approach, rather than the second, broadband approach”).

drawing upon established industry standards for several parameters, many of the most critical elements of the Commission’s AllVid proposal remain unspecified and would require substantial time and effort to develop. Thus, an AllVid regime would be far more difficult to implement than the Commission appears to recognize.

A. MVPD Navigation Devices Require Close Coordination With The Network

The Commission envisions that, while “the [AllVid] adapter would communicate with the MVPD service, performing the tuning and security decryption functions that may be specific to a particular MVPD; the smart video device would perform navigation functions, including presentation of programming guides and search functionality.”³⁰ It would appear that the Commission also assumes the contrary; that “navigation functions” *do not* require “communicat[ion] with the MVPD service.” Yet both DIRECTV’s existing set-top boxes and the soon-to-be introduced RVU server rely on regular communication with DIRECTV’s service in order to perform these functions, as they must be able to understand and act upon continually updated network data. These devices simply will not work without close coordination with the network. And without some way to replicate this kind of coordination, third-party devices attached to an AllVid gateway will not work. Thus, while the Commission believes that AllVid would “encourage MVPDs to develop and introduce innovative services without being inhibited by the need to consult with navigation device manufacturers,”³¹ MVPDs will *have* to “consult” with third-party manufacturers in order for their devices to function.

1. DIRECTV Set-Top Boxes

DIRECTV offers much of its functionality by designing highly intelligent set-top boxes that are able to provide features and functions that subscribers to two-way networks take for

³⁰ *Id.*, ¶ 3.

³¹ *Id.*, ¶ 23.

granted.³² This, however, requires constant coordination between the set-top box and DIRECTV's network. DIRECTV's set-top boxes function properly because proprietary software allows them to understand and respond to a constant stream of proprietary "network data" originating from DIRECTV. Such proprietary network data includes the wealth of conditional access, electronic program guide, and interactive television data with which the set-top box functions, as well as software upgrades. Thus, for example, the set-top box of a subscriber in Bethesda, MD would receive proprietary network data telling the box that it is in the Washington DC local market and explaining the associated programming rules (*e.g.*, which local stations or sports networks are available, black-out information, and local VOD pricing). It would also be instructed both to display the program guide information appropriate to the Washington, DC market (*e.g.*, program titles, categories, start and end times, and parental ratings) and to ignore information appropriate to Boston, Philadelphia, and Richmond.

DIRECTV's set-top boxes operate in response to network data delivered via satellite using proprietary—and in many cases secure—protocols that are processed by the various layers of software (*e.g.*, middleware, application layer) in the set-top box itself. This, in turn, means that before DIRECTV can implement new features (such as, for example, providing ratings information from Common Sense Media in the guide), it must first update the software in each set-top box to ensure compatibility with the additional information. Even after the new code for the software has been written and tested, it must be downloaded over an extended period of time and in various iterations so that every compatible subscriber box gets the required upgrade. Only *after* that process has been completed can DIRECTV begin to transmit the new version of the

³² See generally Stephen P. Dulac and John P. Godwin, *Satellite Direct to Home*, 94 PROC. IEEE 1 (Jan. 2006).

guide. Otherwise, the boxes would not know how to process the new data stream and thus would not be able to present the guide correctly.

To take another example, DIRECTV stores certain VOD programming in encrypted form on a secure portion of the hard drive on the customers' set-top boxes, rather than on the network.³³ In order for this to work, however, DIRECTV's boxes must be able to decrypt VOD programming for presentation and allow viewing during the availability window dictated by the copyright holder in that particular program (*e.g.*, 24 hours). Here again, the boxes do so by responding to proprietary network data (*e.g.*, conditional access authorization messages, rental prices and expiration dates) provided via satellite. Again, this necessitates close coordination between DIRECTV's network and the set-top box.³⁴

2. RVU Devices

DIRECTV's set-top boxes function because DIRECTV retains control of their communication with the network. The software that enables them to process network data is proprietary, as are many of the communication protocols by which the network data are delivered to the set-top boxes. This software, and these protocols, have undergone continual modifications and improvements throughout the sixteen years since DIRECTV began offering service.

In order to devise a standard that would work across MVPD platforms, the RVU Alliance had to come up with a different approach. RVU gateways are conceptually similar to DIRECTV's set-top boxes in that they use proprietary software to decipher network data. However, they translate that data into a standardized output that can be understood by client

³³ DIRECTV NBP Reply Comments at 8.

³⁴ Similarly, DIRECTV's ability to insert local political and retail advertising requires the set-top box to respond to network data provided via satellite. *See id.* at 10.

devices. In so doing, it was not enough to simply convert information from MVPD proprietary protocols to the Internet Protocol (“IP”) for transmission to client devices. Rather, the RVU Alliance had to find a way for client devices to *understand and interact with* the video, interface, command-and-control, and security information delivered to them—just as DIRECTV’s set-top boxes understand and interact with the information delivered to them. Otherwise, MVPD network data delivered to client devices, even in IP, would be incomprehensible.

The RVU Alliance addressed this problem by eliminating the need for any third-party device to process the network data of any particular MVPD. Instead, RVU gateways transmit a “remote user interface” that renders graphics and security commands for intact delivery to the client, meaning there is nothing for the client to process that is specific to any MVPD. Put another way, the RVU gateway interprets the network data sent by the MVPD and then streams video and rendered graphics in IP to client devices, meaning those devices need only display—not process—that information.³⁵

B. Many AllVid Proposals Leave Critical Elements Unspecified

The Commission’s AllVid proposal does not anticipate the use of a remote user interface such as that developed by the RVU Alliance. Rather, it anticipates that raw audio, video, and (presumably) network data would be transmitted via IP to be processed and presented by smart devices. In such a regime, smart devices would need to understand and interact with network data delivered to them from the network via the AllVid adapter in order to function properly.

The Commission, however, appears not to have meaningfully grappled with the critical question of compatibility between the smart device and the MVPD network. In many instances, the *NOI* proposes the use of already-available standards in order to promote compatibility with

³⁵ This differs from a traditional set-up in that the client device, not the set-top box, is responsible for video decoding, graphics overlay, and IR commands. A television with a HDMI input does nothing but render uncompressed video.

the full spectrum of MVPDs.³⁶ Specifying such standards, however, does not ensure that the smart devices will actually work. Rather, additional protocols would have to be developed to allow smart devices to interact with the network data sent to them. Development of the protocols necessary to transform each MVPD's proprietary network data into a standardized form of network data that can be processed by third-party devices would surely take years. It would also risk the production of devices that are effectively outdated upon introduction, as advances embodied in network data would always outpace Commission-mandated standards.³⁷

1. The Commission Would Have to Develop Additional Standards Related to the Communication Protocol

The Commission proposes to have the Internet protocol “act as the communication protocol between the AllVid adapter and navigation devices.”³⁸ As the Commission notes, “IP is the *de facto* standard protocol for data transmission, and current and next-generation audio-visual equipment is capable of handling IP communication.”³⁹ Because it is “familiar to hardware and software developers,”⁴⁰ it is a natural choice for a communications protocol – and has been adopted by RVU as well.

Yet choosing a communications protocol addresses only the manner of the transmission of information. It does not, in and of itself, enable comprehension of the *content being transmitted* (in this case, MVPD network data). It is like deciding that two people will communicate by speaking to one another, but failing to decide what language they will use to do

³⁶ *E.g.*, NOI, ¶ 16. As discussed below, RVU uses many of these standards as well. *See* <http://www.rvualliance.org/resources/faq>.

³⁷ Alternatively, the Commission-mandated standards would constrain advances by MVPDs and other video services, pending proceedings before the Commission for a technology update.

³⁸ NOI, ¶ 27.

³⁹ *Id.*

⁴⁰ *Id.*

so. In the same way, simply designating IP as the means of communication does not ensure that a smart device can understand information delivered to it via that protocol. The Commission could solve this issue as the RVU Alliance did by requiring the AllVid gateway to deliver graphical user interfaces to the smart devices.⁴¹ If the AllVid concept takes a different approach, however, it is unclear how such devices would be able to interact with AllVid gateways.

- At the most basic level, without protocols that would allow it to decipher MVPD network data, a smart device could neither tune to a particular channel nor change the channel. Such a device would receive video. But, even if it had its own guide, it would have no way to correlate that guide with the location of a particular channel in the video stream. It could not relate information in the guide to the channel received, nor could it communicate back to the gateway to change the channel. A protocol would have to be invented to give the device a frame of reference for the video it receives and requests.⁴²
- Without appropriate protocols to decipher network data, smart devices could not incorporate features such as NASCAR Hotpass,⁴³ the Wimbledon Experience,⁴⁴ the US Open Golf Experience,⁴⁵ or DIRECTV SportsMix that display multiple feeds and other

⁴¹ The Commission envisions that “the AllVid adapter would perform video rendering for the purposes of verifying a subscriber’s purchase of MVPD content such as [VOD].” *Id.*, ¶ 29. DIRECTV does not understand the Commission’s use of this term in the content ordering context to mean the same thing as RVU’s use of “video rendering.”

⁴² Although certain protocols exist for this functionality, none yet exist that work with all MVPDs.

⁴³ With NASCAR HotPass, each of the five dedicated driver channels offer multiple camera angles, real-time car telemetry, in-car audio communication and a dedicated announcer team.

⁴⁴ The Wimbledon Experience provides subscribers unprecedented access to more early round matches, real-time statistics and information on demand, and the ability to view up to six matches simultaneously on a special Wimbledon Mix channel.

⁴⁵ The US Open Golf Experience expands national coverage of the US Open golf championship provided by NBC and ESPN, including a mosaic of three channels in addition to the national feed as well as real-time leaderboards and scorecards for individual players.

information on a single screen. The smart device would receive the video streams, but would not be able to understand how to display them.⁴⁶

- Without appropriate protocols to decipher network data, a smart device could not accept a request for VOD programming. The third party device would need to query the AllVid gateway to determine what programs are available—information DIRECTV would give to the gateway via network data. Similarly, the device would be unable to understand network data associated with conditional access,⁴⁷ EAS messages, closed captioning data, parental controls,⁴⁸ and practically every other command that an MVPD might deliver via the AllVid gateway.⁴⁹

These are but a few illustrations of the considerable work left to be done even after specifying IP as the communication protocol.

2. The Commission Would Have to Develop Encryption and Authentication Standards

The Commission proposes digital transmission content protection over Internet protocol (“DTCP-IP”) technology “as an acceptable method of content encryption to prevent content theft.”⁵⁰ The Commission notes that both MPAA and CableLabs have approved DTCP-IP, and

⁴⁶ For example, without protocols, a smart device could not present graphical highlights that, as the customer uses her remote’s arrow keys to move them from one video window to another, automatically cause the associated audio to follow. Nor, when the customer presses “select,” would the device cause the channel to be changed to the desired full-screen video feed.

⁴⁷ See *NOI*, ¶ 29 (proposing “video rendering” for purposes of content ordering and billing).

⁴⁸ The Commission asks generally how a home network would handle emergency alert system (“EAS”) messages, closed captioning data, and MVPD parental controls. *NOI*, ¶ 34. While existing standards for those functions would likely be incorporated into any such protocols, they would not themselves be sufficient.

⁴⁹ At the suggestion of TiVo, the Commission proposes UPnP protocols for service discovery. *Id.*, ¶ 30. This is a widely used protocol for this function, used by RVU devices among others. The ability of devices to “recognize” each other, however, does not mean that they will actually be able to communicate with one another.

⁵⁰ *Id.*, ¶ 28.

that the technology is incorporated into the DLNA standard (on which RVU is based).⁵¹ DIRECTV agrees that these considerations weigh heavily in DTCP-IP's favor, and the RVU Alliance has specified this technology for its own standard.

The use of DTCP-IP does not, however, provide an end-to-end solution for prevention of content theft. DTCP-IP provides what is known as "link protection," ensuring that content will be delivered securely to authenticated devices over an IP communications link. It does *not* provide digital rights management ("DRM") for that content once it reaches the downstream device. It cannot, for example, ensure that content stored on such a third-party device will honor commands such as "may be rented again for \$1.99" or "expires after July 13." High-value content cannot be transmitted in a manner that does not include DRM capabilities on the receiving device. To the extent the AllVid proposal contemplates storage on smart devices rather than on the AllVid gateway, DTCP-IP alone would be inadequate for such a configuration.⁵² An additional DRM standard would have to be developed, and would have to be able to evolve so as not to inhibit innovation.⁵³

3. Developing Standards Would Be Difficult and Time-Consuming

Third-party smart devices will not function in the absence of standards allowing them to understand the full spectrum of existing and future MVPD network data. The Commission's recent experience with CableCARDS, however, illustrates the difficulty of developing such

⁵¹ *Id.*

⁵² *See id.*, ¶ 16 (limiting AllVid functionality to conditional access, tuning, reception, and upstream communication). By contrast, DTCP-IP works perfectly with RVU's architecture, because RVU streams video to downstream devices rather than permitting storage on them. In RVU, the gateway itself provides the storage within a secure DRM regime. There is thus no need for an RVU gateway to instruct a downstream device to delete a particular pay-per view movie after 24 hours because the gateway itself handles that instruction.

⁵³ The Communications Act prohibits the Commission from prescribing regulations that would jeopardize security of MVPD programming and other services, or impede an MVPD's rights to prevent theft of service. 47 U.S.C. § 549(b).

standards, especially in the context of a regulatory mandate.⁵⁴ Even assuming a smoothly-running process, this would surely take years of work.⁵⁵ Such a process would require coordination among a wide array of MVPDs with different technologies and system architectures, not just cable operators. They would, moreover, have to account for the entire range of services offered by *all* MVPDs in order to make the standard truly cross-compatible.⁵⁶

By the time such standards could be developed, the technology could well prove outdated soon after introduction—a result made worse to the extent it is frozen in a regulatory mandate. It would be unreasonable to expect a large group of companies with disparate interests to agree upon such a complex standard in the timeframe envisioned by the Commission’s current proposal.⁵⁷

III. THE ALLVID PROPOSAL MISCONCEIVES THE CONSEQUENCES OF ITS MANDATE

As described above, the AllVid proposal is incomplete in critical respects, and would likely take years to implement. Yet even if the Commission were able to resolve the incomplete aspects of its proposal, an AllVid regime *still* would not work as the Commission intends and would in fact harm consumers. It would: (1) place MVPDs in legal jeopardy because they do

⁵⁴ See, e.g., Comments of the Consumer Electronics Association and the Consumer Electronics Retailers Federation on the Fourth Further Notice of Proposed Rulemaking, CS Docket No. 97-80, PP Docket No. 00-67 at 3 (filed June 14, 2010) (citing to numerous documents describing what it characterizes as “the failure of most cable operators to support CableCARD-reliant devices”).

⁵⁵ The Commission seeks comment on the National Broadband Plan’s suggestion of a December 2012 implementation deadline. *NOI*, ¶ 37. Given the AllVid proposal’s relatively embryonic status, DIRECTV believes such a deadline is not reasonably achievable.

⁵⁶ For example, they would need to support DIRECTV’s NASCAR Hotpass even if Time Warner offered no such service; so too would they have to support DISH Network’s customer self-service interactive channel even if DIRECTV or Comcast had no such feature. Such differences have been known to result in delay as stakeholders argue over whether the protocol should support features they do not offer.

⁵⁷ For example, development of the final ATSC standard by a Grand Alliance of just seven companies working with four prototype digital ATV systems took two and a half years to complete. See *Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, 11 FCC Rcd. 17771, ¶ 4 (1996). Even after a standard is completed, a certification and testing regime, acceptable to all interested parties, would need to be developed and administered. In the most optimistic scenarios, this would further delay the process.

not have the rights to unbundle their content; (2) disadvantage satellite compared to cable and telco competitors; (3) result in navigation devices of varying functionality, frustrating consumers and stifling innovation; (4) degrade customer service; (5) lock in outdated technology; (6) complicate intellectual property issues; and (7) stymie market-driven solutions such as RVU.

A. MVPDs Do Not Have Rights to Unbundle Their Products and Services As Contemplated by an Unbundling Mandate

The *NOI* specifies neither the exact content that MVPDs would be required to deliver to smart devices nor the manner in which they would do so. But it appears to envision that MVPDs would deliver video, audio, and network data to smart devices on an unbundled basis, enabling the smart device to repackage some or all of those inputs as it sees fit. The smart device, not the MVPD, would determine the customer experience.⁵⁸ MVPDs would even be prohibited from selling devices not conforming to this new, Commission-mandated network architecture.⁵⁹

DIRECTV cannot legally operate in this manner. Like all MVPDs, DIRECTV obtains programming for its subscribers by entering into licensing and carriage agreements with copyright holders such as Disney, Fox, NBC-Universal, Time Warner, CBS, and Discovery. DIRECTV cannot distribute this programming to subscribers however it wishes. Rather, its programming agreements specify—often in great detail—the manner in which DIRECTV can do so. In particular, programmers do not permit DIRECTV to sublicense content to others or to delegate to others the manner in which the programming is presented. They allow DIRECTV only to distribute programming on some or all of DIRECTV’s “distribution system,” a term specifically defined to include DIRECTV-controlled navigation devices. As described below, an

⁵⁸ This is likely what the Commission means when it suggests that AllVid devices will only “perform[] the tuning and security decryption functions” while the smart device would perform the “presentation of program guides and search functionality.” *NOI*, ¶ 3. *See also Id.*, ¶ 43 (claiming that “device manufacturers,” not MVPDs, “distinguish their products from one another by providing better user experiences”); *id.* (asking whether the Commission should “adopt rules governing the way in which MVPD content is presented”).

⁵⁹ *Id.*, ¶ 39.

unbundling mandate would allow third parties to distribute programming and data in ways not contemplated by (and often forbidden by) DIRECTV's programming contracts.

On-demand content. DIRECTV has negotiated for the rights to distribute some content on an on-demand basis. These rights allow DIRECTV to send certain content to *DIRECTV* set-top boxes for storage until a customer orders it. The agreements typically specify the protections that must be employed by DIRECTV in its set-top boxes, especially for high-value content. DIRECTV obtained such rights only with difficulty, as most competing MVPDs need not store VOD content in their set-top boxes. These agreements generally do not authorize DIRECTV to send pay transactional studio-release content to third-party devices for storage because DIRECTV cannot ensure the security of such devices.⁶⁰

Programming guide data. CEA argues that programming guide data should be provided “in a form that would allow competitive devices to display the data as they wish.”⁶¹ DIRECTV pays to obtain this data from Tribune Media Service. Its agreement with Tribune does not permit DIRECTV to provide the data to third parties—presumably, because Tribune would like to sell its data to them as well.

Packaging and Placement. Some of the most important rights to programmers involve product packaging and placement. To the extent third-party smart devices control the user interface, the manufacturer of such devices controls, or at least influences, such matters. This could result in violation of DIRECTV's carriage agreements in any number of ways. For example:

⁶⁰ See Part II.B.2, above, for a description of security issues related to delivery of VOD content to third-party devices.

⁶¹ *NOI*, ¶ 44.

- A manufacturer (*e.g.*, Sony) could make a smart device that gave more favorable placement to VOD content offered by a particular content provider (*e.g.*, Sony Pictures). Certain DIRECTV contracts prohibit such discriminatory treatment, yet under an AllVid mandate, DIRECTV would have no way to prevent this.
- A third party device could replace or delete commercials included with the programming, or otherwise alter the content of the programming, in violation of certain carriage agreements.
- A third party manufacturer could design its device to list adult content next to a family channel’s content in VOD and programming guide screens. Certain DIRECTV contracts prohibit this, yet DIRECTV would have no way of prohibiting smart devices from doing so.
- A third party device could change the channel placement or the “neighborhood” in which a particular channel is placed, contrary to certain contractual (and perhaps regulatory) obligations.⁶²
- A third party device could seek to increase capacity by more heavily compressing certain channels, contrary to certain contractual (and perhaps regulatory) obligations.⁶³

⁶² See 47 C.F.R. § 76.66 (i)(5) (“All television stations carried under mandatory carriage, in a particular market, shall be presented to subscribers in the same manner as television stations that elected retransmission consent, in that same market, on any navigational device, on-screen program guide, or menu provided by the satellite carrier.”)

⁶³ See 47 C.F.R. § 76.66(l) (“Each television station carried by a satellite carrier, pursuant to this section, shall include in its entirety the primary video, accompanying audio, and closed captioning data contained in line 21 of the vertical blanking interval and, to the extent technically feasible, program-related material carried in the vertical blanking interval or on subcarriers. For noncommercial educational television stations, a satellite carrier must also carry any program-related material that may be necessary for receipt of programming by persons with disabilities or for educational or language purposes. Secondary audio programming must also be carried. Where appropriate and feasible, satellite carriers may delete signal enhancements, such as ghost-canceling, from the broadcast signal and employ such enhancements at the local receive facility.”); 47 C.F.R. § 76.66(k) (“Each local television station whose signal is carried under mandatory carriage shall, to the extent technically feasible and consistent with good engineering practice, be provided with the same quality of signal processing provided to television stations electing retransmission consent, including carriage of HD signals in

- A third party device could make unauthorized copies of the programming.

A regime requiring MVPDs to “unbundle” network data could not help but run afoul of the MVPDs’ licensing agreements due to actions beyond their control. The Commission should not implement a proposal that would place MVPDs in legal jeopardy in this manner.

B. An AllVid Mandate Would Skew Competition In Favor of Cable

We have previously described how DIRECTV, unlike cable operators, places most of its functionality in the set-top box.⁶⁴ Among other things, DIRECTV relies on its set-top boxes for the storage of content and data that cable operators can place on the network. For example, DIRECTV downloads VOD programming onto a secure portion of the hard disk of a subscriber’s set-top box. When a subscriber chooses to access that programming, the box decrypts it for presentation on the television and it remains available to the subscriber for viewing during the availability window dictated by the holder of copyright in that particular program (*e.g.*, 24 hours or July 13, whichever comes first). Cable, by contrast, can dedicate a program stream to a particular customer, with the appropriate restrictions, upon ordering. There is no need to pre-deliver that content to the customer.

Other DIRECTV functionalities rely on storage as well. For example, DIRECTV recently integrated new features into its on-screen programming guide, including ratings and reviews offered by Common Sense Media, a non-profit organization that provides parents the trustworthy information they need to help manage their children’s media lives. This upgrade has also enhanced the user interface by adding photos, cast biographies, and other information

HD if any local station in the same market is carried in HD. A satellite carrier is permitted to use reasonable digital compression techniques in the carriage of local television stations.”)

⁶⁴ See Part I.A, above; DIRECTV NBP Reply Comments at 6-11.

related to each available television program. All of this data must be stored in a secure portion of the hard drive in the subscriber's set-top box.

A Commission mandate for “thin” gateways without storage capability would compromise all DIRECTV functionality that depends upon integration of information stored in the set-top box, placing DIRECTV at a significant disadvantage to cable. Even assuming that all client devices have storage, there is no reason to expect a third party manufacturer to make any of that capacity available for DIRECTV's exclusive use. Moreover, in the unlikely event that a smart device *did* offer storage capacity in that way, DIRECTV would not have the legal right to send content to that device, as it would then lose control over the subscriber's ability to access that programming and would have no way to bill for the service— two requirements demanded of DIRECTV by copyright holders.

The Commission has raised the possibility of allowing satellite operators to include storage in an AllVid gateway.⁶⁵ While such an option would improve the situation, it would not fully resolve the disparate impact of an AllVid regime on satellite vis-à-vis cable. At a fundamental level, the AllVid proposal appears to envision an industry in which MVPDs deliver content and third party device manufacturers use that raw material to innovate. If MVPDs are reduced to “dumb pipes” in this way, the Commission will significantly advantage those systems with the greatest capacity and ability to offer a triple-play bundle of services (*i.e.*, cable) while hamstringing those systems that have traditionally relied upon video innovation to compete (*i.e.*, satellite).

⁶⁵ *NOI*, ¶ 36.

C. An Unbundling Mandate Would Result in Devices With Varying Functionality, Frustrating Consumers and Hindering Innovation

Even assuming creation of a protocol by which third party smart devices could understand and interact with network data provided by DIRECTV,⁶⁶ many such devices would lack critical functionality offered by DIRECTV. Indeed, the very point of an unbundling regime is to allow third-parties to pick and choose the aspects of an MVPD's services their smart devices will support. Thus, one device might choose not to support Common Sense Media ratings, another might choose not to support 3D programming, *etc.*

Moreover, such devices might well not support new DIRECTV features. Even devices that can understand today's network data would require upgrades to understand new feature sets developed in the future. Indeed, it is precisely in anticipation of such upgrades that DIRECTV includes additional capabilities (*e.g.*, storage, processing power) in its set-top boxes beyond that necessary for near-term use. Where DIRECTV controls the navigation devices, it can ensure that such devices receive appropriate upgrades. Third party manufacturers of smart devices, however, often lack an ongoing relationship with their customers. They may prove unwilling or unable to provide such upgrades when DIRECTV adds new features, or their equipment simply may not be able to handle them.

Such a result would recreate one of the fundamental defects the Commission sees in the current state of the industry—devices that are “unable to access many of the MVPD services that leased set-top boxes are able to access.”⁶⁷ It would also be unfair to DIRECTV subscribers, who, after all, pay DIRECTV to receive *all* of DIRECTV's services. Moreover, there is no way to ensure that consumers can make a truly informed decision when purchasing third-party

⁶⁶ See Part II.A, above.

⁶⁷ *NOI*, ¶ 15.

equipment. Even if the smart device manufacturer disclosed the services a subscriber could not receive today, there is no way to adequately advise consumers that their devices may not work with future innovations. Such a subscriber, moreover, would likely blame DIRECTV, the entity with whom he or she has the primary ongoing relationship, should a future innovation not be supported by third-party equipment.

The inability to offer all of its subscribers new features, moreover, would diminish DIRECTV's incentives to offer such features in the first place. If DIRECTV had to wait to offer features until enough third-party manufacturers agreed to upgrade their devices, there would remain little reason for DIRECTV to act first. For example, DIRECTV has recently been able to roll out 3D television in a matter of months by downloading software to nearly all of its set-top boxes, an advantage made possible by the decision to build boxes with extra processing capacity in the first place. Under an AllVid proposal, DIRECTV would have to wait until third-party smart device manufacturers decided to upgrade their compatible devices to receive 3D—or try to justify the expense of a 3D rollout to a fraction of its subscriber base while leaving the others behind. Moreover, DIRECTV would have to disclose its proprietary plans for strategic initiatives to third parties, and could thereby lose the “first mover” advantage of innovation. In such circumstances, DIRECTV (and other MVPDs) would have less incentive to pioneer new products and services—and without these raw materials to work with, even smart devices would be unable to offer consumers significant new products and services.

D. An Unbundling Mandate Would Disrupt Customer Service

As DIRECTV has described elsewhere,⁶⁸ a requirement that MVPDs unbundle features so that third-parties could provide their own, unique user interfaces would severely impede

⁶⁸ See DIRECTV NBP Reply Comments at 14-15.

customer service. When DIRECTV itself offered numerous user interfaces, customer service representatives had to be trained to help DIRECTV subscribers navigate all of these interfaces. Not surprisingly, they were not always able to do so—often because the subscriber did not know enough about his or her own equipment to provide a frame of reference for assistance. Today, with a single user interface and standardized equipment specifications, DIRECTV customer service representatives can more efficiently resolve subscriber inquiries. Indeed, the DIRECTV web site offers help pages for consumers with questions about their service or equipment support that would not be possible with numerous equipment variations.

An AllVid mandate would risk reintroducing the customer service problems DIRECTV has overcome. Indeed, it would likely augment those problems because no one would ultimately be responsible for problems with third-party devices. This is a familiar problem to anyone whose broadband service, wireless modem, and computer are not supplied by the same provider: if a problem arises, no one entity is responsible for the entire package. As the primary point of contact for its subscribers, the resulting consumer frustration would inevitably be aimed at DIRECTV—a significant problem for a company that gains a competitive advantage by maintaining a high level of customer satisfaction.⁶⁹

E. Proposed AllVid Standards Would Entrench Current Technology

While some proposed AllVid standards require further development, others impose standardization when they should allow flexibility. Of course, some standardization is required to allow interoperability and cross-platform compatibility. Many of the *NOI*'s proposals, however, would mandate standardization at the cost of entrenching current technology and

⁶⁹ This is, of course, a problem with any non-proprietary standard, including RVU. Yet, because RVU delivers rendered video and graphic interfaces, *see* Part II.A.2, above, it will present far fewer variables from a customer service perspective than would an AllVid architecture in which the gateway passes through unbundled data streams.

limiting innovation. This approach is inconsistent with Congressional intent and the Commission's goal in this proceeding of promoting new services and innovative offerings.⁷⁰

1. Equipment

In the “home gateway” configuration, the Commission proposes requiring AllVid devices to support at least six transport streams. The basis for this requirement is the capability to support simultaneous use of three TVs with picture-in-picture.⁷¹ The Commission should not dictate this capability. Nothing about the AllVid concept appears to depend on the number of transport streams provided to third-party devices. In particular, DIRECTV sees no basis to make any such decision based on the picture-in-picture feature.⁷² DIRECTV does not support this feature today, because it has found that subscribers almost never use it. With the advent of DVR technology, most subscribers choose to watch shows consecutively rather than concurrently. Moreover, DIRECTV's news and sports “mosaic” channels permit viewers to watch *eight* channels simultaneously—making those channels far superior to picture-in-picture.⁷³

Just as DIRECTV is in a better position than the Commission to know whether its subscribers want or care about picture-in-picture, MVPDs are generally in a better position than the Commission to determine and update the optimal capability of any home networking gateways. MVPDs know, for example, the number and type of set-top boxes they have in subscribers' homes today, and thus have data upon which to determine what capabilities best

⁷⁰ See Conference Report at 181 (Congress intended “that the Commission avoid actions which could have the effect of freezing or chilling the development of new technologies and services”); *NOI*, Statement of Chairman Genachowski.

⁷¹ *NOI*, ¶ 25. In the “set-back box,” configuration, devices would be required to provide at least two video streams. *Id.*

⁷² *Id.* (“In the second configuration, the AllVid equipment would act as a whole-home gateway, capable of simultaneously communicating with multiple navigation devices within the home, and providing at least six simultaneous video streams within the home (which would allow picture-in-picture in three different rooms), possibly through a modular system that could accommodate more streams as necessary.”).

⁷³ <http://www.directv.com/DTVAPP/content/directv/technology>.

match those characteristics. The Commission should not prohibit MVPDs from scaling the number of tuners in the gateway to subscriber needs, and allowing MVPDs to offer a range of products tailored to specific installations. For example, a standard gateway with three tuners may be sufficient for most households (or even an overabundance in certain cases, such as an apartment). But an MVPD could also make available a gateway with additional tuners for use in larger households with more TVs—but only where the additional expense is justified by the subscriber’s need. Just as competition has given DIRECTV reason to innovate with its set-top boxes, competition will give MVPDs every reason to include sufficient tuners to meet market demand.⁷⁴

2. Physical Connection

The Commission proposes using 100-BASE-TX Ethernet as the physical layer technology used to connect AllVid adapters with smart devices.⁷⁵ It reasons that this technology operates at speeds adequate to allow transfer of multiple high definition MPEG-2 signals, has developed as a *de facto* connection for data transmission, will likely be installed on devices “for the foreseeable future,” could enable compatibility with existing devices, and could defer costs.⁷⁶

As with equipment specifications, DIRECTV sees no reason for the Commission to set standards for physical layer technology.⁷⁷ Any number of IP-based interfaces are available in the

⁷⁴ In a similar vein, were the Commission to adopt an AllVid mandate, it should not require such devices to include ATSC tuners. *NOI*, ¶ 35. For most DIRECTV subscribers, a tuner would be an expensive redundancy, imposing additional costs and patent licensing fees for a functionality that they already have in their TV or that duplicates what they already receive and pay for through DIRECTV. In those markets where DIRECTV does not provide local signals via satellite, it already offers a “side car” tuner to subscribers who need that equipment to receive off-air signals. *See* Letter from William M. Wiltshire to Marlene H. Dortch, MB Docket No. 07-18 (filed Jan. 31, 2008) (discussing seamless integration of local broadcast channels).

⁷⁵ *NOI*, ¶ 26.

⁷⁶ *Id.*

⁷⁷ *See id.* (asking “whether the Commission would need to mandate a physical layer technology at all”).

market, each with its own distinct advantages and disadvantages.⁷⁸ Moreover, a vibrant market exists for low-cost devices that act as bridges from one connector to another, should such a bridge be necessary. For example, consumer electronics stores offer a host of devices that plug into a USB or Ethernet port to enable reception of wireless broadband services via WiFi. In these circumstances, the Commission should not designate a single interface for inclusion in all devices going forward.

Here, too, Commission-imposed standardization could lock in current technology and thereby preclude the use of a standard developed in the future. DIRECTV sees the clear trend as being away from Ethernet ports. DIRECTV's first RVU-capable products, for example, have integrated MoCA technology in addition to Ethernet.⁷⁹ DIRECTV's next generation of devices may have MoCA only, while future generations may add WiFi. Each such technology has different cost and performance characteristics, and DIRECTV is in a far better position than the Commission to choose among them, or offer equipment with different combinations and capabilities.

Several years ago, the Commission required all high definition cable boxes to include IEEE 1394 "Firewire" ports.⁸⁰ At the time this rule was adopted, this was the state-of-the-art

⁷⁸ As documented in the ongoing CableCARD proceeding, even though most parties agree on the use of IP communications, the various proposals for implementation have resulted in a "cacophony of interface proposals." See Reply Comments of the National Cable & Telecommunications Association on Fourth Further Notice of Proposed Rulemaking, CS Docket No. 97-80, PP Docket No. 00-67, at 18-19 (filed June 28, 2010).

⁷⁹ Comcast's new AnyRoom DVR will reportedly rely on MoCA connectivity to serve the entire home, as does Verizon FiOS. See, e.g., M. Silbey, "Motorola Set-Tops for Comcast AnyRoom DVR," MEDIAEXPERIENCES2GO (July 2, 2010) (available at <http://connectedhome2go.com/2010/07/02/motorola-set-tops-for-comcast-anyroom-dvr/>).

⁸⁰ *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, 18 FCC Rcd 20885, ¶ 24 (2003).

digital interface, and its inclusion was supported by a wide range of parties.⁸¹ Subsequently, consumer electronics manufacturers wanted the ability to offer other interface technologies. Yet HD cable boxes were still required to include IEEE 1394 ports even though many designers believed those ports would go unused and customers would prefer different digital interfaces. Five years after the market recognized this issue, the Commission granted a temporary waiver of this requirement to allow inclusion of any IP-based interface.⁸² Having just dealt with difficulties arising from one technology-specific mandate in this area, the Commission should hesitate before creating a new one.

3. Content Encoding

Noting a recent controversy involving the Adobe codec, the Commission appears to have concluded that “navigation devices should be designed to decode content that has been encoded in a number of specified formats [*e.g.*, MPEG-2, MPEG-4] and the AllVid adapter should be designed to transfer content in at least one of those formats.”⁸³ This, reasons the Commission, would allow MVPDs to encode their content as they wish without the need for the AllVid adapter to transcode the content, which could make the AllVid adapter more expensive and less energy efficient.⁸⁴

As the first MVPD to employ the MPEG-4 codec—an advancement that facilitated our high-definition local-into-local service—DIRECTV agrees with a policy of allowing MVPDs to encode their content as they wish. Yet we believe the lesson to be learned here is that the Commission should resist mandating codec standards altogether. This is yet another case in

⁸¹ See *id.*, ¶ 8 (describing Memorandum of Understanding proposed by representatives of cable television and consumer electronics industries, including use of IEEE 1394 ports).

⁸² *Intel Corp., Motorola, Inc, TiVo, Inc. Requests for Waiver of Section 76.604(b)(4)(ii) of the Commission’s Rules*, DA 10-1094 (Med. Bur., rel. June 18, 2010).

⁸³ *NOI*, ¶ 31.

⁸⁴ *Id.*

which overstandardization can frustrate innovation. For example, in developing its digital broadcast standard, the Advanced Television Standards Committee (“ATSC”) specified use of the then-dominant MPEG-2 codec. Even before broadcasters switched to all-digital transmission, however, MPEG-2 had already been surpassed by the far more efficient MPEG-4 codec, which DIRECTV began using in 2005. Broadcasters now find themselves shackled with an outdated, less efficient technology—and will be for the foreseeable future, as any upgrade will have to wait for agreement from all broadcasters and consumer electronics manufacturers (and the development of contingency plans for stranded consumers).⁸⁵ The Commission should not make the same mistake here.

F. Proposed AllVid Standards Would Complicate Intellectual Property Matters

An AllVid mandate would complicate intellectual property issues related to video distribution. The Commission asks whether “a requirement that all rights holders license their relevant intellectual property on reasonable and nondiscriminatory terms [would] allow the market to flourish and provide adequate incentives for innovation.”⁸⁶ It also asks whether it has legal authority to adopt such a requirement.⁸⁷

DIRECTV is a frequent user of standards subject to intellectual property protections. We are also holders of intellectual property rights that go into such standards, and are members of not only several standards setting organizations (“SSOs”) but also several standards-related patent pools. While we agree that standards work best when rights holders license their

⁸⁵ See, e.g., John Wein, “Broadcast TV Spectrum Gains Not Seen in Advanced Compression or DTS,” COMM. DAILY (June 28, 2010) (noting that, because they rely on MPEG-2 compression, broadcasters will not be able to enjoy efficiency gains from newer codecs). Were broadcasters able to use MPEG-4—as do the ATSC standards adopted in Japan and Brazil—the efficiencies gained would be sufficient to allow significant amounts of spectrum to be repurposed for wireless broadband use almost immediately.

⁸⁶ *NOI*, ¶ 32.

⁸⁷ *Id.*

intellectual property on reasonable and non-discriminatory (“RAND”) terms, our experience suggests that Commission intervention quite often results in precisely the opposite outcome.

SSOs such as the RVU Alliance do not themselves obtain the intellectual property upon which their standards are built. Indeed, most SSOs prohibit discussions within the organization of patent licensing terms for antitrust reasons, although most require participants who contribute to the standard to commit to RAND licensing and other agreed terms.⁸⁸ Those who participate in standards setting have thus become adept at using only those technologies offered by contributors that provide intellectual property on RAND terms—and avoiding others. The consensus-driven procedures used by standards setting bodies allow for solutions to these very complex issues. For example, such bodies can make parts of their standards optional rather than mandatory, or they can require companies to offer RAND pricing *before* being allowed to participate in the standard.

When the Commission sets standards, however, workarounds are (by definition) impossible. By codifying the ATSC standard, for example, the Commission has quite literally made it illegal to deploy workaround technology in the case of intellectual property misbehavior. Users of that standard can only hope that the Commission enforces some RAND licensing standard.⁸⁹ But recent cases suggest that the Commission may be ill-equipped to engage in such

⁸⁸ See, e.g., Institute of Electrical and Electronics Engineers, Inc. Standards Association, IEEE-SA STANDARDS BOARD BYLAWS, § 6.2 (Dec. 2009) (*available at* <http://standards.ieee.org/guides/bylaws/sect6-7.html#6>) (“A Letter of Assurance shall be either: a) A general disclaimer to the effect that the Submitter without conditions will not enforce any present or future Essential Patent Claims against any person or entity making, using, selling, offering to sell, importing, distributing, or implementing a compliant implementation of the standard; or b) A statement that a license for a compliant implementation of the standard will be made available to an unrestricted number of applicants on a worldwide basis without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination. . . .”).

⁸⁹ With respect to the possibility of compulsory RAND licensing for an AllVid standard, it is important to note that not all rights holders would even arguably be subject to the Commission’s jurisdiction. SSOs typically require participants and contributors to agree contractually, in advance, to some licensing obligations (such as RAND pricing), but these commitments do not reach to non-participants. Those outside parties remain free to enforce their patent and copyright rights as they see fit (including the right to exclude). Similarly, where a

enforcement.⁹⁰ Rather than lay the groundwork for opportunistic behavior, the Commission should allow the market to operate as it has in countless other standard-setting scenarios.

G. An AllVid Mandate Would Derail Market-Based Solutions, Including RVU

As discussed above, market demand is already driving the industry to develop interoperable video standards. The RVU standard is complete, and work for a similar standard within the larger DLNA is ongoing. In a matter of months, DIRECTV subscribers will be able to use RVU-compliant devices to integrate their DIRECTV service with other, online and MVPD offerings using a single home gateway and no other set-top boxes. Cable will surely respond in kind—either by (as we hope) joining the RVU Alliance or by developing similar solutions. The video “mall” will be a reality.

Yet the standardization and other requirements necessary to implement AllVid would not be compatible with an RVU deployment. An AllVid mandate would thus penalize members of the RVU Alliance, including DIRECTV, for their innovation in developing, commercializing, and deploying the remote user interface standard. Because RVU would not comply with AllVid standards as currently described, an AllVid mandate would render RVU immediately non-viable and would effectively strand any consumers who had purchased RVU-compliant devices. Millions of dollars in research and development would be lost in favor of an inflexible

patent pool is established, it includes only those patents voluntarily contributed by the participants, and does not necessarily include all relevant patents required by the subject technology.

⁹⁰ In one case, a coalition of television manufacturers charged that patent holders of essential inputs in the ATSC transmission standard engaged in unreasonable and discriminatory pricing. *See Media Bureau Action: Petition for Rulemaking and Request for Declaratory Rulemaking Filed by the Coalition United to Terminate Financial Abuses of the Television Transition*, 24 FCC Rcd. 2407 (2009). Those patent holders, in turn, argued (among other things) that the Commission never created a RAND pricing requirement and could not enforce such a requirement if it had. *See* Comments of Funai Electronic Co., Ltd. and Funai Corp., Inc. MB Docket No. 09-23 (filed Apr. 27, 2009). The Commission has yet to resolve this issue. In another case, a Canadian company with a patent related to V-chip technology has aggressively pursued licensing agreements with manufacturers. *See, e.g.,* Press Release, “WiLAN Fraud and V-Chip Patent Litigation Against LG” (Jan. 19, 2010) (*available at* http://www.wilan.com/Theme/WiLan/files/documents_news/100119%20WiLAN%20Initiates%20Fraud%20and%20V-Chip%20Patent%20Litigation%20Against%20LG_Final.pdf).

