

**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	)	
	)	CS Docket No. 97-80
Commercial Availability of Navigation Devices	)	
	)	
Compatibility Between Cable Systems and Consumer Electronics Equipment	)	PP Docket No. 00-67
	)	

To: The Commission

**REPLY COMMENTS OF NAGRAVISION**

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Nagravision, a Kudelski Group company, is the leading supplier of *open* conditional access systems (“CAS”), digital rights management (“DRM”) and integrated on-demand solutions for content providers and digital TV operators over broadcast, broadband and mobile platforms.<sup>1</sup>

The Commission should address the structural problems to competition, and refrain from technology mandates that limit innovation.

**I. STRUCTURAL OBSTACLES TO COMPETITION**

The AllVid system as described by the Commission in the *Notice* is a system that can create an environment with competition between retail navigation devices, but the AllVid system

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<sup>1</sup> Nagravision is a division of the Kudelski Group, a publicly traded company based in Switzerland. Its technologies are currently being used by more than 120 leading Pay-TV operators worldwide securing content delivered to over 124 million devices, and more than 14 million households served by MPVDs in the United States.

is not sufficient to do so by itself. There are additional structural problems in the marketplace which *must* also be addressed in order to enable effective competition, and accomplish the goals of Section 629.

**A. OTHER COMMENTATORS AGREE THAT STRUCTURAL PROBLEMS SHOULD BE ADDRESSED**

Nagravision's Comments on the *Notice*<sup>2</sup> point out that technology very similar to CableCARD have been successful in Europe, and that the differences between the two systems are structural and not technical.<sup>3</sup> Our Comments describe our position that unless the structural problems are addressed, the aims of Section 629 are unlikely to be realized.<sup>4</sup>

We suggest that there are two methods of resolving the structural problem: the Commission should

1. *either* require Simulcrypt interfaces,
2. *or* restrict suppliers from providing both conditional access *and* navigation devices (such as AllVid adapters and smart video devices).

Either of these approaches would address the structural problems described,<sup>5</sup> and will allow a competitive environment to emerge, thereby achieving the objectives of Section 629.<sup>6</sup> Without addressing the structural issues, the goals of Section 629 cannot be met.<sup>7</sup>

In nearly every other country with digital television network, and in US satellite and telecom MVPD deployments, Simulcrypt interfaces are in place. For example, Europe has

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<sup>2</sup> *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, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67, 25 FCC Rcd 4275, 75 FR 27264 (2010) (“*Notice*”).

<sup>3</sup> *Comments of Nagravision*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) (“*Comments*”) at 2-3.

<sup>4</sup> *Id.*

<sup>5</sup> *See id.*; *Comments of Nagravision*, GN Docket Nos. 09-47, 09-51, 09-137, CS Docket No. 97-80 (Dec. 21, 2009) (“*Nagravision Comments on PN27*”) at 4-6.

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

effectively mandated Simulcrypt,<sup>8</sup> and has a robust marketplace for navigation devices.

Massillon Cable Television has argued that the structural barriers to effective competition could be alleviated by deployment of Simulcrypt-compatible head-end interfaces.<sup>9</sup>

Others support our contention that the structural problems described above must be addressed:

The American Cable Association (“ACA”) explains that the CableCARD regulations have resulted in both higher costs to its member operators, as well as solidifying the Motorola/Cisco duopoly in the set-top box market.<sup>10</sup> ACA agrees with NagraVision’s contention that the CableCARD regulations were handicapped by the existing set-top box duopoly,<sup>11</sup> and contrary to the regulatory aims, the regulations did not lead to competition in either wholesale or retail markets for navigation devices.<sup>12</sup> NCTA’s comments notwithstanding, only a fraction of the wholesale set-top box marketplace is filled by the “growing number of consumer electronics

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<sup>8</sup> Council Directive 95/47/EC has the effect of requiring DVB Simulcrypt in the European Union, *see* Council Directive No. 95/47/EC, O.J. L. 281/51 (1995); “Italian regulation requires access to conditional access systems (CAS) on fair, reasonable and non-discriminatory terms for third parties and contains simulcrypt obligations”, Commission Decision No. 2004/311/EC, O.J. L. 110/90 at 104 (2004); *see also NagraVision Comments on PN27*.

<sup>9</sup> Letter from Mark J. Palchick, Counsel to Massillon Cable Communications Inc., to Marlene H. Dortch, Secretary, Federal Communications Comm’n, Sept. 17, 2009, CS Docket No. 97-80 at 1 (“... the absence of SimulCrypt technology in Motorola and Cisco headends may be artificially limiting competition for price and features among set top boxes”); Letter from Robert Gessner, President, Massillon Cable TV, Inc., to Marlene H. Dortch, Secretary, Federal Communications Comm’n, Aug. 21, 2009, CS Docket No. 97-80, at p. 2 (“Cable providers need access to (and support for) a system known as SimulCrypt in order to preserve the benefits of low-cost set-top converters ...”) (emphasis in the original, internal citations omitted).

<sup>10</sup> *American Cable Association Comments*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 5.

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

manufacturers” that cable operators purchase set-top boxes from,<sup>13</sup> and even those devices are licensed and tightly controlled by the duopoly CA providers.

Sony Electronics’ comments suggest that one possible criticism of the AllVid proposal “is that it treats the symptoms afflicting the navigation device market, but does little to cure the underlying illness”<sup>14</sup>—that is, Sony also suggests that there may be an underlying structural issue that must be addressed as NagraVision contends. Sony suggests that the Commission could require implementation of conditional access interoperability technologies like Simulcrypt as a way of addressing the structural issue.<sup>15</sup>

Sony also suggests that the Commission consider prohibiting conditional access suppliers from also supplying navigation devices, as a way to “attack ... the underlying impediments to a competitive navigation device market”.<sup>16</sup>

#### **B. THE STRUCTURAL PROBLEMS SHOULD BE ADDRESSED USING EITHER SIMULCRYPT OR SUPPLIER DIVERSITY**

In the vast majority of cases, cable operators are purchasing both conditional access technologies and set-top boxes from the same vendor. We have previously described this situation as “vendor lock”.<sup>17</sup> The duopoly CA vendors effectively prevent competition by cryptographically locking the head-end to the rest of the system. This cryptographic lock should be addressed by the Commission.

An AllVid system could fail as easily as the CableCARD system did, as it is subject to the same vendor lock market forces which provide an incentive to the entrenched vertical suppliers.

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<sup>13</sup> *Comments of the National Cable & Telecommunications Association on the Commission’s Notice of Inquiry*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) (“*NCTA Comments*”) at 9.

<sup>14</sup> *Comments of Sony Electronics Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 29.

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *See NagraVision Comments on PN27* at 5-6.

The Commission should remove the vendor lock. We have proposed two ways in which this may be done: require Simulcrypt interfaces, which enable competition between conditional access systems; or require supplier diversity between conditional access and navigation devices, which would serve to remove the opportunity to lock out competition in navigation devices.

Either of the above solutions to the vendor lock will remove a barrier to competition. This barrier must be removed for AllVid to succeed.

## **II. COMMENTATORS AGREE THAT THE COMMISSION SHOULD NOT REQUIRE SPECIFIC TECHNOLOGIES**

Many of the comments received in response to the *Notice* warn the Commission against requiring *any* specific technologies. This warning is made equally from all corners of the industry—by technology advocates and providers, consumer electronics manufacturers and MVPDs.

### **A. THE COMMISSION SHOULD NOT MANDATE SPECIFIC TECHNOLOGIES FOR ALLVID SINCE IT COULD STIFLE INNOVATION AND COMPETITION**

The Commission should use extreme caution in making any rules that require products to implement specific technologies. Technology mandates can be stimulating to innovation and the marketplace, or to the contrary can require unneeded, unnecessary technology which serves to stifle innovation and competition.

In the case of AllVid, many technology providers with applicable technologies in the marketplace do not ask the Commission to mandate their technology.<sup>18</sup> Both technology

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<sup>18</sup> *Comments of the Multimedia over Coax Alliance*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 8 (“Specifying particular interfaces can inhibit future innovation.”); *Comments of the HomeGrid Forum*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 3 (“the Commission [should] focus on identifying *capabilities* not *technologies*.” (emphasis in the original)); *Comments of the HomePNA Alliance*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 4 (“HomePNA does not believe it is in the Commission’s or the consumer’s best interest for the Commission to mandate use of a specific physical layer technology”); *Comments of the HomePlug Powerline Alliance*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 3 (suggesting a network adaptor interface such as GMII, RGMII, or

providers that seem well-positioned in the marketplace<sup>19</sup> and those that do not seem as well-positioned<sup>20</sup> agree that technology mandates, *even for their own proprietary technologies*, are not good public policy.

Systems providers suggest that the Commission should focus on encouraging standards, rather than mandating specific technologies.<sup>21</sup>

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SGMII instead of any specific home networking technology); *Comments of the Digital Living Network Alliance*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 10, 12 (describing the evolution of DLNA guidelines and its certification program as preferable to mandating specific interfaces); *Comments of the RVU Alliance*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 6 (“The FCC should allow [rapidly changing network interfaces] to continue their respective advancements.”).

<sup>19</sup> See, e.g., *Comments of the Multimedia over Coax Alliance* at 8; *Comments of the Digital Living Network Alliance* at 10, 12.

<sup>20</sup> See, e.g., *Comments of the HomeGrid Forum* at 3; *Comments of the HomePlug Powerline Alliance* at 3; *Comments of the HomePNA Alliance* at 4; *Comments of the RVU Alliance* at 6.

<sup>21</sup> *Comments of the Alliance for Telecommunications Industry Solutions*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 4 (“ATIS believes that the Commission should not impose any regulations or technology mandates on the industry at this time. Instead, ATIS urges the Commission to support and encourage the collaborative work of industry pertaining to IPTV and set top boxes underway in ATIS Committees.”); *Comments of Arris Group, Inc. on the Notice of Inquiry*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 8 (“[T]he rapid pace of technology innovation and changes in consumer demand are best managed by competitive market forces among equipment manufacturers and service providers.”); *Comments of Cisco Systems, Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 at 4 (“[The Commission] should avoid mandating specific standards that would similarly lock in a particular implementation, hindering innovation and preventing consumers from accessing new products and services.”); *Comments of Motorola, Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 19-20 (“[T]he best, most consumer-friendly approach for the Commission to adopt would be to encourage innovation, experimentation, differentiation, and competition. The Commission could achieve this outcome by allowing the marketplace to continue to evolve unfettered by government mandates.”); *Comments of Panasonic Corporation of North America*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 6 (“[T]he Commission should not ossify this innovative [home networking] environment by mandating a particular home networking technology in its rules.”); *Comments of the Telecommunications Industry Alliance*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 6 (“[T]he Commission should avoid technical mandates that are more prescriptive than necessary to achieve its underlying policy objectives. Picking technologies, as implementation of the AllVid could entail, carries with it the risk that the Commission will fail to predict which technologies will most enhance consumer welfare.”); *Comments of Time Warner, Inc.*, MB

Service providers that are working toward an effective solution including home networking warn that specific technology mandates—even those that currently match their technology choices—will present an obstacle to an agile marketplace.<sup>22</sup>

Indeed, even NagraVision’s request that the Commission require Simulcrypt interfaces<sup>23</sup> does not amount to a technology mandate; in fact it is the opposite. If the Commission were to require Simulcrypt interfaces, this would establish a platform upon which multiple different technology providers may compete (with little or no additional complexity or costs). This is the best sort of requirement—it has the effect of establishing a system whereby the marketplace can evolve and innovate, yielding better products with higher functionality at lower costs.

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Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 7 (“the FCC can best promote pro-consumer innovations by encouraging cross-industry voluntary solutions by all constituencies in the video content creation and distribution chain (content, service and equipment) not by mandating technical standards that may limit innovation and are likely to be quickly outmoded.”).

<sup>22</sup> *Comments of Cablevision Systems Corporation*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 17 (“Innovation must be driven by consumers and market forces, rather than by technology mandates from the government ....”); *Comments of DIRECTV Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) (“*DIRECTV Comments*”) at 26-27 (“Many of the NOI’s proposals ... would mandate standardization at the cost of entrenching current technology and limiting innovation. This approach is inconsistent with Congressional intent and the Commission’s goal in this proceeding of promoting new services and innovative offerings.”); *Comments of the National Cable & Telecommunications Association on the Commission’s Notice of Inquiry*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 26 (arguing that “[t]he Commission should not seek to capture and mandate on particular implementation”, but should encourage “all parties to work with all stakeholders and in private sector industry and standards organizations ....”); *Comments of Time Warner Cable, Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 8 (“[N]o one can predict precisely how technology and the marketplace are likely to evolve, ... illustrated by the failure of the IEEE-1394 interface requirement ... that the [Commission] now is wisely considering abandoning in favor of a more flexible approach.”); *Comments of Verizon*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 17-18 (arguing that Ethernet and WiFi “may not be the appropriate solution in all cases for all providers,” and that “mandating a specific physical standard the Commission would foreclose important progress ....”).

<sup>23</sup> See *Comments of NagraVision* at 5.

**B. THE DIFFERENCES OF OPINION ON DTCP-IP REINFORCE THE NOTION THAT THE COMMISSION SHOULD NOT MANDATE SPECIFIC TECHNOLOGIES**

The Commission's request for comment on whether DTCP-IP is a good choice for protecting the AllVid interface drew many, often diverse comments. Some pointed out that DTCP-IP was ill-suited for AllVid because it was too narrowly focused and could not handle the business models envisioned. Others disagreed and supported DTCP-IP as the most practical technology currently available.

Nagravision and other companies that did not support DTCP-IP as the "logical choice for content encryption and device authentication"<sup>24</sup> do support DTCP-IP in other contexts on a voluntary basis. It is suitable for many applications, just not all applications envisaged by the far-reaching AllVid interface and therefore is not suitable as an exclusive solution.

Many commenters described the insufficiency of DTCP-IP of addressing the full needs of MVPDs, manufacturers and consumers alike in an AllVid system.<sup>25</sup> First, DTCP-IP is a link protection technology and not a DRM. Second, DTCP-IP does not have a broad enough set of usage permissions to support all of today's services, let alone to support innovative new services. Third, DTCP is not robust enough to be trusted as the single mandated security solution for AllVid.

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<sup>24</sup> Notice at ¶ 28.

<sup>25</sup> See *Comments of AT&T Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) ("AT&T Comments"); *Comments of Charter Communications Inc. on the Commission's Notice of Inquiry*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) ("Charter Comments"); *DIRECTV Comments*; *Joint Comments of DISH Network L.L.C. and EchoStar Technologies, L.L.C.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) ("DISH Comments"); *Comments of the Motion Picture Association of America, Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) ("MPAA Comments"); *Comments from Cryptography Research, Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) ("Cryptography Research Comments"); *Comment from SypherMedia International, Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) ("SypherMedia Comments"); Letter from Alicia W. Smith to Marlene H. Dortch, Secretary, Federal Communications Commission, July 1, 2010, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 ("Sony Pictures Letter").

## **1. DTCP-IP IS A LINK PROTECTION AND NOT A DRM**

The fact that DLNA has selected DTCP-IP as mandatory for those products that follow their logo guidelines is cited by the Commission as one of the supporting factors in its consideration as a solution for AllVid.<sup>26</sup> We note that DLNA points out that DTCP-IP is part of their “Link Protection” recommendations, and is *not* mandatory for DLNA certification.<sup>27</sup> Indeed, DLNA has been working on and has yet to complete additional guidelines for DRM interoperability that address requirements and needs beyond those provided by link protection.<sup>28</sup>

There is broad agreement among many commenters that DTCP-IP is insufficient, inadequate or inappropriate for AllVid because it is merely a link protection technology and not a DRM.

## **2. DTCP-IP DOES NOT HAVE A BROAD ENOUGH SET OF USAGE PERMISSIONS**

Intel and DTLA point out that DTCP-IP has settings to support the Commission’s Encoding Rules.<sup>29</sup> The Commission’s Encoding Rules were established seven years ago in the context of a different system architecture than AllVid.<sup>30</sup> In these rules, the Commission also recognized the importance of allowing for future changes due to new business models.

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<sup>26</sup> *Notice* at ¶ 28.

<sup>27</sup> *Comments of the Digital Living Network Alliance*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) (“*DLNA Comments*”) at 8 (“Under the Guidelines, devices may support ‘DLNA Link Protection’, which includes a requirement for inclusion of DTCP-IP ....” (emphasis supplied)).

<sup>28</sup> *DISH Comments* at 12.

<sup>29</sup> *See Comments of Intel Corporation to Notice of Inquiry on AllVid Gateway*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 7 (“DTCP-IP enables content suppliers to encode the content they deliver consistent with the Commission’s Encoding Rules.”); *Comments of Digital Transmission Licensing Administrator LLC to “AllVid” Notice of Inquiry*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 8 (“DTCP would be applied to content in accordance with the Commission’s (and DTLA’s) Encoding Rules.” (citation omitted)).

<sup>30</sup> *Implementation of Section 304 of the Telecommunications Act of 1996*, Second Report and Order and Second Further Notice of Proposed Rulemaking, CS Docket No. 97-80, PP Docket No. 00-67 (rel. Oct. 9, 2003).

Addressing the Commission’s Encoding Rules is a minimum requirement, not a full expression of the usage permissions that may be offered to consumers.

Several commenters explain that DTCP-IP does not support the breadth of usage permissions needed for AllVid.<sup>31</sup> It is helpful to consider DTCP-IP as a system with a limited vocabulary—it understands three to five basic usage permissions with a couple of additional control parameters. DLNA’s Link Protection application of DTCP-IP is further restricted to “streaming protected content in the home”.<sup>32</sup> If DTCP-IP is the intermediary between the service provider and the consumer, then innovative product offerings cannot be made if they cannot be described by the limited vocabulary available with DTCP-IP. Imagine a fruit supplier that had apples, oranges, bananas and mangos to sell, but the vendor can only carry apples and oranges in his store. The market for bananas and mangos will never develop.

DIRECTV reinforces this point with a real-world example by pointing out that DTCP-IP “cannot ... ensure that content ‘may be rented again for \$1.99’ or ‘expires after July 13.’”<sup>33</sup>

The MPAA describes the limited usage permissions available in DTCP-IP, adding the concern that if DTCP-IP were the exclusive protection technology for the AllVid interface, “consumers would not be able to receive innovative services that require more robust usage information, such as the electronic sell through model that allows a group of devices belonging to a household’s ‘domain’ to share content”<sup>34</sup> and this limitation would “hinder deployment of new business models.”<sup>35</sup>

In *ex parte* communications, Sony Pictures Entertainment reviewed the “potential limits of DTCP, which perhaps does not provide enough flexibility to provide the consumer a wide

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<sup>31</sup> See *AT&T Comments* at 35; *Charter Comments* at 8; *DIRECTV Comments* at 17; *MPAA Comments* at 5; *Charter Comments* at 8; *Nagravision Comments* at 8.

<sup>32</sup> *DLNA Comments* at 8.

<sup>33</sup> *DIRECTV Comments* at 17.

<sup>34</sup> *MPAA Comments* at 5.

<sup>35</sup> *Id.* at 6.

range of options.”<sup>36</sup> Sony Pictures went on to describe two other yet-to-be-deployed standards and industry initiatives that could enable a richer consumer experience.<sup>37</sup>

### **3. DTCP-IP IS NOT ROBUST ENOUGH TO BE THE SINGLE SECURITY SOLUTION FOR ALLVID**

Nagravision remains concerned that DTCP implementations may not be as secure as they need to be. Cryptography Research describes in great detail the importance of having robust end-to-end security—and because MVPDs have developed very robust security systems, any AllVid protection standards must be similarly robust.<sup>38</sup> Time-Warner points out that the very act of selecting a single content protection technology for an AllVid standard creates a security risk by attracting attacks and complicating breach responses.<sup>39</sup> An AllVid security solution will attract concentrated attacks by well-funded, organized enterprises. If an AllVid security solution is not sufficiently robust, content will be widely exposed. If the Commission avoids mandating specific technologies, then whether or not DTCP-IP is the right choice ceases to be a problem and the process of developing and evolving content protection technologies to meet the needs of the market will continue unabated.

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<sup>36</sup> *Sony Pictures Letter* at 1.

<sup>37</sup> *Id.* at 2.

<sup>38</sup> *Cryptography Research Comments*.

<sup>39</sup> *Comments of Time-Warner, Inc.*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67 (July 13, 2010) at 9-10 (“[R]eliance on a single content protection technology significantly increases the likelihood that it will be compromised ....”, and “[R]eliance on a single remedy for all breaches would hinder the ability to respond in the most effective and efficient way.”).

### **III. CONCLUSION**

The Commission should address the structural problems to competition and refrain from technology mandates that limit innovation and security.

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