

Attachment 1

TECHNICAL DECLARATION

of Stephen P. Dulac

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I. QUALIFICATIONS

1. My name is Stephen P. Dulac. I am Director, Engineering Technology in the AT&T Entertainment Group (“AEG”) Video, Space and Communications Organization. I specialize in set-top box system engineering, including content protection and conditional access technology, accessibility features, and energy efficiency measures. My current responsibilities include developing technical standards, negotiating content security agreements with programmers, and assisting in developing sound public policy for the regulation of MVPDs and set-top boxes in particular.

2. On behalf of AT&T, I served in 2015 as an Alternate on the FCC’s Federal Advisory Committee on Downloadable Security (“DSTAC”), a working group created by the STELA Reauthorization Act of 2014 (“STELAR”) for the purpose of identifying, reporting, and recommending performance objectives, technical capabilities, and technical standards of a not unduly burdensome, uniform, and technology- and platform-neutral software based downloadable security system. In 2011-2012, I also served on the FCC Video Programming Accessibility Advisory Committee (“VPAAC”) that was formed to provide the Commission with recommendations regarding the provision of closed captioning, video description, and emergency information.

3. I have worked with the DIRECTV service since the late 1980s, when it was being developed by its founder Hughes Electronics. I have been responsible over the last 15 years for the DIRECTV set-top box content protection roadmap, and I lead negotiation of security provisions in agreements with content providers.

4. I received a Bachelor of Science in Electrical Engineering and a Master of Science in Telecommunications Engineering, both from the University of California at

Los Angeles. I am a Senior Member of IEEE, and I co-authored a paper (“Satellite Direct-to-Home”) in the Proceedings of the IEEE in January 2006. I currently hold twenty-one patents covering a variety of set-top box and Pay-TV technologies.

II. INTRODUCTION

5. At its February 2016 meeting, the Federal Communications Commission (“Commission”) proposed regulations regarding the commercial availability of navigation devices.¹ These regulations would require multichannel video programming distributors (“MVPDs”) to offer three flows of information² to third parties and also would impose on MVPDs parity requirements allegedly designed to allow equitable treatment by MVPDs of other navigation devices. The Commission does not identify the technical standards that must be used to implement these regulations. Rather, it describes characteristics of acceptable standards that would need to be developed, and proposes a deadline for the availability from MVPDs of the “Information Flows” using those standards.

6. Based on over twenty-five years of experience, I believe these proposed regulations will cause numerous, significant, and intractable problems and are unlikely to result in the Commission’s desired outcome. This declaration describes those problems.

¹ Notice of Proposed Rulemaking and Memorandum Opinion and Order, *Expanding Consumers’ Video Navigation Choices; Commercial Availability of Navigation Devices*, MB Docket No. 16-42 & CS Docket No. 97-80, FCC 16-18 (rel. Feb. 18, 2016) (“*Device NPRM*”).

² These are “(1) service discovery (information about what programming is available to the consumer, such as the channel listing and video-on-demand lineup, and what is on those channels), (2) entitlements (information about what a device is allowed to do with content, such as record it), and (3) content delivery (the video programming itself, along with information necessary to make the programming accessible to persons with disabilities).” *Device NPRM* ¶ 2.

7. The key problem is that technical standards for the three Information Flows do not exist. Moreover, the Commission's proposed path for creating these standards is not viable at all, let alone in the timeframe suggested. The standards-setting process will be far more difficult and time consuming than the Commission assumes. Moreover, implementing the standards – if they are ever developed – will be burdensome. In the case of one-way DBS systems, providing the three Information Flows will require the provider to update and potentially replace tens of millions of set-top boxes that must serve as the virtual headend for the Information Flows.

8. While the Commission's proposal is insufficient for any complete analysis of the cost impact to be generated, in the event that set-top box replacements become necessary to enable this virtual headend functionality, the impact would be billions of dollars. The proposal will also require protocol updates, system modifications, sub-system and end-to-end testing, all of which will consume substantial resources of MVPDs and their technology providers, and which, industrywide, could represent additional expenditures running into the billions of dollars.

9. Nor are the proposed regulations necessary. Existing market-driven approaches are currently allowing consumers to access MVPD programming on numerous devices and are leading to elimination of MVPD set-top boxes.

III. INDUSTRY STANDARDS MEETING THE COMMISSION'S PROPOSED REQUIREMENTS DO NOT EXIST

10. There are no industry standards that are suitable "as is" to implement the Commission's proposed Information Flows. On the contrary, DSTAC worked for months, and ultimately wrote a Report containing detailed technical information about the available technologies and standards that are in use, or that are available for use, for

delivery of MVPD services, without identifying any such existing standards. In the six months after that report was issued, interested parties have submitted numerous responses and ex parte communications concerning these available standards, again without identifying any implementable standards to support the proposed Information Flows.

11. This is not surprising because the Commission’s proposed Information Flows share almost nothing in common with modern practices. In contrast with the standards the Commission apparently envisions, DLNA VidiPath and RVU are industry standards that rely on Remote User Interface (“RUI”) technology. In an RUI-based approach, the MVPD server generates the user interface, and, thus, third-party client software does not need to be customized for any particular MVPD. In VidiPath, the interface is generated via HTML5, while RVU uses a lower-level graphics protocol. As explained by the RVU Alliance, “[t]he use of RUI in consumer electronics such as televisions and DVRs was simply not a practicality more than a dozen years ago when the CableCARD regime was established under the FCC. Since then, however, both LAN technologies and graphics processing capabilities have improved to where RUI can be integrated with just about any CE device.”³ RUI “optimally separates service delivery and service display functions: without having to implement the source device’s menus whatsoever, a client can control that source device and deliver the services requested by the consumer for display. After the consumer is finished using the source device, he is returned to the client CE device’s user experience.”⁴ Because the VidiPath and RVU

³ See RVU Alliance Progress Report at 3, MB Docket No. 15-64 & CS Docket No. 97-80 (filed May 28, 2015).

⁴ *Id.*

standards use RUIs generated by the MVPD, those standards simply have no need for anything resembling the unbundled Information Flows proposed by the Commission.

12. The DSTAC and follow-up discussions similarly identified no current technology that would meet the Compliant Security System (“CSS”) definition that the Commission proposes to require MVPDs to implement. The Commission states a CSS must be “licensable on reasonable and non-discriminatory terms, and must not be controlled by MVPDs.”⁵

13. All content protection systems today, whether Conditional Access (“CA”) systems, Digital Rights Management (“DRM”) systems, or link protection systems, can be used by MVPDs only when approved for use via bilateral agreements with content providers.⁶ For example, DTCP-IP, a link-protection system administered by Digital Transmission Licensing Authority (“DTLA”), has received much attention in both the DSTAC Report and the *Device NPRM*. DTCP-IP does not operate independent of content owners, however. While DIRECTV uses DTCP-IP today, it may only do so because the content owners have approved its use in bilateral agreements with DIRECTV. This approval in turn stems from the earlier approval that came from DTLA’s “Content Participants,” which is a group of content owners (*e.g.*, movie studios) that DTLA consults as it develops licensing terms. MVPDs are able to license and use DTCP-IP in their products only after license terms are specified to the satisfaction of the DTLA Content Participants and its use is approved in agreements with content owners.

⁵ *Device NPRM* ¶ 58.

⁶ See “DSTAC WG1 Requirements of Content Owners on DBS Providers” at p. 5, § 6 (“Content security”), <http://apps.fcc.gov/ecfs/document/view?id=60001121443>.

14. The introduction of 4K UltraHD services provides a recent example of how content owners control DTCP-IP license terms. In late 2013, content owners released a MovieLabs enhanced content protection specification that did not allow the use of DTCP-IP for high-value 4K UltraHD content.⁷ There are many possible reasons for this omission of DTCP-IP in the MovieLabs specification. DTCP-IP's robustness rules, which describe best practices for ensuring devices provide protection against tampering by hackers, had not been updated for decades. In addition, the DTCP-IP capability for revoking compromised devices was inadequate. Not only was there little flexibility in signaling which devices should be revoked and under what circumstances, but there was no mechanism for subsequently renewing an upgraded device once revoked. Distributors interested in pursuing 4K UltraHD service offerings began to work with content owners to develop an alternative DTCP-IP digital output that would be acceptable to them.⁸ To satisfy content owners' concerns, DIRECTV added new security elements, including enhanced device robustness requirements, new client device compliance requirements, and a whitelist of authenticated client devices authorized by content licensors.⁹ Because

⁷ See MovieLabs, *MovieLabs Specifications for Next Generation of Video and Enhanced Content Protection*, <http://www.movielabs.com/ngvideo/index.html>.

⁸ See Steve Dulac, Director, Engineering, DIRECTV, *RVU Alliance Update: DTCP-IP Protection for 4K/Ultra HD Services* (June 3, 2015), submitted by DIRECTV in MB Docket No. 15-64 on June 8, 2015, <http://apps.fcc.gov/ecfs/comment/view?id=60001060329>.

⁹ See *id.* at slides 3-5. The whitelist mechanism gives MVPDs the ability to quickly change which client devices can receive services, a key protection against piracy that would be nullified by the Commission's proposal to disallow MVPDs from controlling content protection systems.

it satisfied content providers' concerns, DIRECTV was able to launch a 4K UltraHD Video On Demand service in late 2014 using this alternative solution.¹⁰

15. By contrast, although DTLA has also attempted to respond to the MovieLabs requirements, its process has been much slower. In January 2016, DTLA announced characteristics of a DTCP2 license program that would be expected to become available later this year assuming it has received final approval from the DTLA Content Participants. Even if DTCP2 does become available later this year, a total of three years will have passed since the MovieLabs specification release and the availability of a compliant solution from DTLA. DIRECTV, by contrast, was able to respond with an innovative solution in less than half that time.

16. If MVPDs are forced to adopt a CSS that they cannot control, they will not be able to utilize modifications to existing content protection systems as needed to meet content owners' needs, but rather must wait a lengthy period for the entity that licenses the CSS to make necessary changes as well. Many of MVPDs' competitors – like OVDs – would not be subject to these restrictions on innovation. This same problem would occur if there was a security vulnerability in an existing CSS. MVPDs that have deployed that CSS will not be able to quickly fix the problem and update its devices, but rather must wait lengthy periods for the entity that licenses the CSS to react.

17. DTCP-IP also cannot support delivery of services via the cloud because there is no DTCP-IP solution supporting cloud delivery that content owners have approved. DTLA published a specification for “DTCP+” about 5 years ago that included

¹⁰ See <http://news.directv.com/2014/11/13/directv-continues-to-revolutionize-television-as-first-multi-channel-video-provider-to-deliver-4k-ultra-hd-vod-to-customers-home/>.

some use cases allowing content sharing beyond a local area network. However, to my knowledge, these DTCP+ cloud use cases have not been implemented in practice, nor have they been approved by content owners in bilateral agreements. DTLA reported in a February 11, 2016 letter to the Commission that it is “unaware of any technological or licensing impediment to extending DTCP or DTCP-2 in the cloud,” and claimed that the DTCP-IP localization feature need only be replaced with “other techniques commonly used by service providers to assure that content is securely delivered only to authorized subscribers.”¹¹ However, DTLA’s slide presentation about DTCP2 that accompanies this letter does not address cloud delivery whatsoever.

18. DTLA has asserted that “substantial progress had been made by an interested technology vendor in cooperation with DTLA toward a version of DTCP for the headend (DTCP-HE),” but that leaves many questions unanswered. For example, will this version of DTCP-HE only work with closed two-way networks – such as those used by a cable operator – or will it also work over open broadband networks as will be required by satellite providers? Nor am I aware that DTLA’s Content Participants have been engaged in this process. It is simply unclear from DTLA’s letter if DTLA intends to develop an update to DTCP and DTCP2 licensing that enables cloud delivery, or whether it will leave cloud delivery to be developed external to DTLA licensing.

¹¹ DTLA 2/11/16 Ex Parte, MB Docket No. 15-64.

IV. THE STANDARDS-SETTING PROCESS IS FAR MORE COMPLEX THAN THE COMMISSION ASSUMES

19. The Commission proposes that Open Standards Bodies (“OSB”) could develop the technical standards needed to realize the Commission’s proposal.¹² That process, however, will be more complicated and take far longer than the Commission expects.

20. *First*, it is not at all clear that an OSB exists that meets the Commission’s proposed criteria. Moreover, creating an OSB that meets the Commission’s criteria would be challenging. One might envision an OSB with Bylaws that force the Board of Directors to have a “fair balance,” and for which votes are successful only if a sufficient representation across different interest groups has voted in favor. Such an OSB would be unlikely to produce a successful standard. Standards development organizations are consensus-driven. When there is conflict – as there is bound to be with different interest groups – the result is either no standard, or, at best, competing standards. I am aware of no standards-setting process that has been successful where the participants have such opposing goals as has been documented in the final DSTAC Report.

21. Furthermore, even the task of creating an OSB is time consuming. It must develop rules for handling, among other things, intellectual property, membership levels and fees, confidentiality, and certification programs before the OSB can even begin its work. The need to include participation of every major MVPD, with their wide diversity

¹² The Commission proposes to define an OSB as a “standards body (1) whose membership is open to consumer electronics, multichannel video programming distributors, content companies, application developers, and consumer interest organizations, (2) that has a fair balance of interested members, (3) that has a published set of procedures to assure due process, (4) that has a published appeals process, and (5) that strives to set consensus standards.” *Device NPRM* ¶ 41.

of networks and technologies, will make establishing an OSB an enormous challenge even without considering the impact that the other interest groups will have on the process.

22. *Second*, while the *Device NPRM* discusses certification for content security purposes, it does not discuss certification for the purpose of confirming error-free device interoperability. A robust interoperability certification program covering all interfaces and devices is essential to allow the arm's-length relationships between MVPDs and device makers that the Commission expects.

23. There are a variety of methods that device manufacturers can use to ensure consumers are satisfied when they connect consumer devices. The methods used vary depending on the level of cooperation and openness that exists between participants. For example, where there is a high level of cooperation and openness, manufacturers of devices may share product prototypes in their respective labs under mutual non-disclosure agreements (“NDAs”) or they may participate in regularly scheduled “plugfests” hosted by industry associations, in which many manufacturers meet in a neutral location under NDA and test device interoperability. In “arm's-length” interoperability testing, where there is less cooperation and openness, independent test facilities are established that perform interoperability testing using certification test tools developed under the direction of the standards development organization. DLNA Vidipath uses this “arm's-length” model for interoperability testing of clients, while Vidipath servers are not subject to compliance testing.

24. Because the Commission's three Information Flows and CSS are more complex than VidiPath's RUI-approach, any interoperability testing will need to cover

both client and server testing, as even proponents of the Commission's proposed rules acknowledge.¹³ Furthermore, as client devices being tested may not be capable of field upgrades, the certification test program will have to be comprehensive, covering all possible interface specifications, addressing myriad possible error conditions, and resolving differences of interpretation of the standards among device developers.

25. These certification programs are costly to develop and operate, and will take many additional months or years to be fully operational even after industry standards are adopted. To give an example of the time needed to develop standards and certification programs, RVU certified its first device in December 2011, approximately 44 months after work on the standard began internally at DIRECTV in April 2008. Notably, RVU development process took nearly four years to complete even though the goals of the participants – DIRECTV and various consumer electronic device manufacturers – were aligned, which will not be the case for the standards-setting process for the three Information Flows. DLNA, in comparison, took much longer to have a VidiPath certification program ready for the first device to be certified. The Commission's proposed two-year deadline is impossibly short given the substantial work that must be done by the OSB, and this does not even consider the normal product update cycle of 18-24 months that can only begin once the OSB work is nearing completion.

26. *Third*, the OSB will need to develop operating policies (or “rules of engagement”) for navigation devices. The Commission's “Encoding Rules,” established through the MOU launching the CableCARD era, and thrown out by the D.C. Circuit more than a decade later, are an example of operating policies. Standards-setting bodies

¹³ Public Knowledge 10/20/16 Ex Parte, Attachment at 3, MB Docket No. 15-64.

do not normally develop rules and policies for device operation, nor are they equipped to resolve conflicts encountered in practice or to enforce compliance with rules and policies. Rather, operating policies are normally driven by private business-to-business relationships or other contractual agreements. It is unclear how these will be addressed in the regime contemplated by the Commission.

27. There are many examples of operating policies that will need to be established to implement the FCC scheme. There will need to be policies for authentication of users (*e.g.*, rules for how frequently usernames and passwords must be entered), authentication of devices (including MVPD management of blacklists for privacy non-compliance, for security non-compliance, and certification non-compliance), and resource prioritization (*e.g.*, how to manage a limited number of available content streams from the MVPD). In resource prioritization, for example, suppose that one third-party device needs a stream from an MVPD at a certain time, but that MVPD interface has no streams available at that moment due to its being tied up supporting an earlier request from another third-party device. Policies for choosing which device takes precedence can be established readily in the Apps Approach where the MVPD can gather input from the customer via its UI to allow better resolution of conflicts, even when they occur real-time.

28. The determination of these operating policies will embroil the OSB and the Commission in an unending string of disputes to manage this regulatory regime. Any mandate for operating rules will inevitably result in the OSB or the Commission choosing winners and losers. Even delays in the FCC or the OSB making these decisions result in winners and losers. In 2008, for example, the MPAA petitioned the Commission to allow

MVPDs to apply selectable output control (“SOC”) to enable the ability to remotely shut off a set-top box’s analog outputs for a new service offering video-on-demand services during the pre-DVD release window. It took nearly two years, however, for the FCC to allow the practice through a temporary waiver. One year later, DIRECTV launched Home Premiere, a \$29.99 HD VOD service with movie titles appearing no sooner than 60 days after theatrical release. Home Premiere was shuttered soon afterwards, however, due to insufficient demand. Given the two years of delays waiting for the Commission’s temporary waiver during which the market continued to shift, plus a public vetting process that allowed opposing business forces to create a coordinated response, the service had missed its window of opportunity.¹⁴

29. *Fourth*, because no industry standards exist that meet the Commission’s proposal, there is no “Fallback” or “Safe Harbor” available for use if the standards-setting process fails or takes too long. Commenters have made several proposals for modifying existing standards to cobble together a solution both during and after DSTAC. These proposals, however, are wholly inadequate. They are uniformly far from ready to be turned into sets of implementable standards. Not only do they lack completeness; they also exhibit a gross misunderstanding of the VidiPath, UPnP, and other standards that they reference. These proposals would remove VidiPath’s key requirements, in particular the use of an RUI, and replace them with a diametrically opposite set of new unproven

¹⁴ See Matthew Lasar, *Hollywood’s Selectable Output Control: has it gone from FUD to dud?*, arstechnica (Apr. 1, 2012) (“Bottom line: as the antagonists debated the selectable output control question, the Apple TV, Netflix, Hulu, Boxee revolution raced along, making the SOC debate less relevant, and early release windows more difficult to define.”), <http://arstechnica.com/tech-policy/2012/04/hollywoods-selectable-output-control-has-it-gone-from-fud-to-dud/>.

requirements for the Information Flows. In contrast to VidiPath, these proposals would make the MVPD server, not the MVPD app, the adaptation point – the point of connection to each operator’s private, unique protocols. They will require re-architecting of MVPD networks, and, at least in the case of one-way DBS systems, re-architecting of set-top boxes as well, to generate these Information Flows. Moreover, these proposals reference unproven guidelines that were never implemented and were abandoned by DLNA. Key among these abandoned guidelines are the electronic programming guide (“EPG”) guidelines, for which no certification test capability was ever developed and which were never deployed.

30. An example of the difficulties of using existing standards is how national emergency alerts system (“EAS”) messages are provided. The AT&T U-verse network utilizes “forced tuning,” where the navigation device is commanded by a proprietary headend signal to tune to a pre-designated channel carrying the national EAS message. DIRECTV, on the other hand, replaces the input sources of all linear channels with a single input source carrying the EAS message in place of those channels’ regularly scheduled content. EAS is delivered by other MVPDs through additional proprietary signaling means. To accommodate the third-party navigation devices, new standards for signaling EAS to them will need to be developed and at least some networks will have to be upgraded to add new commanding or input source switching.

31. Another example is device authentication, *i.e.*, ensuring that the device is associated with a service subscriber and allowed to receive content. In two-way systems, standards for managing user credentials and providing regular renewals will need to be agreed upon. In one-way DBS systems, the MVPD-provided set-top box will need to

perform the authentication function. Thus, a separate device authentication solution will need to be developed for DBS, and the DBS set-top box will need to be upgraded to accommodate that solution.

32. These are just some of the examples of the issues created by the *Device NPRM* proposal. There will certainly be other examples stemming from how DIRECTV, with its one-way satellite broadcast architecture, will need to modify potentially tens of millions of set-top boxes to support the Commission's proposed Information Flows.

33. No mechanism to encourage cooperation exists, either. In the past, when the Commission mandated a particular technology, such as V-chip or closed captioning, there was a complete standard that had already been implemented. It is important to note as well that previous tech mandates have always been very narrow in scope. In comparison with the closed captioning standards, which addressed a single, relatively narrow issue, the *Device NPRM*'s proposed interfaces could easily be an order of magnitude more complex given that they affect literally every aspect of MVPD service.

V. THE PARITY REQUIREMENTS ARE BURDENSOME AND WILL DISCOURAGE INNOVATION

34. The Commission proposes parity requirements that appear to require MVPDs to support many interfaces, including at least one for every device platform that the MVPD supports.¹⁵ That is, whenever an MVPD makes its programming available on a device through an application, it must also enable third-party device or software developers to access MVPD programming on that device. These requirements are a disincentive for MVPDs supporting all but the most popular consumer electronics

¹⁵ *Device NPRM* ¶ 63.

devices because the incremental cost to add support for a device platform effectively doubles as a result of needing to accommodate third-party device or software developers. The parity requirements dis-incentivize MVPDs from introducing new services, because, to offer these improvements, they not only will have to perform incremental upgrades to its own network and devices, but also will be burdened to do the same for any interfaces based on the Information Flows.

35. To illustrate, if an MVPD develops an application for iOS devices and implements an Application Program Interface (“API”) to that application, the MVPD also will need to develop and deploy the three Information Flows and CSS in a manner that is compliant with iOS platforms. The MVPD will need to engage in those same double efforts if it develops an application for Android devices. This continues for each platform supported. Since standards for the Information Flows do not exist (nor does a CSS exist), it is impossible to assess at this point in time whether any of the development and deployment work performed for one platform can be repurposed for another.

36. DIRECTV has firsthand experience with the difficulties and costs of ensuring service parity for different navigation devices. In 2005, DIRECTV began upgrading its video encoding technology from MPEG2 to MPEG4 in order to move from delivering a dozen or so High Definition channels to more than one hundred channels. At that time, TiVo manufactured High Definition STBs for use with DIRECTV that worked solely with MPEG2. These TiVo devices became incompatible with DIRECTV’s HD service following the upgrade to MPEG4. Rather than potentially lose customers who had purchased these TiVo devices (which TiVo was under no obligation to replace), DIRECTV was compelled to replace hundreds of thousands of TiVo devices with new

HD DVRs at its own expense. In 2011, DIRECTV and TiVo subsequently launched an MPEG4 compatible DIRECTV-TiVo HD DVR, which continues to be available today.¹⁶

37. Additionally, when DIRECTV launched in 1994, it employed a retail model in which DBS set-top boxes and corresponding DBS satellite dishes were available in retail stores from consumer electronics brands like RCA and Sony. Subscribers would purchase these third-party devices and install them on their own. While these devices were required to be certified to comply with DIRECTV's "Digital Satellite System" specification, they were designed by third-party consumer electronics firms that also developed the user interface, the devices, and the remote controls.

38. At that time, there were many independent satellite dealers that provided installation and service for approximately two million large direct-to-home C-Band satellite dishes in use. These independent dealers began to sell DBS equipment and installation services, and DBS operators like DIRECTV offered incentives to these dealers for new subscribers.

39. Over time, DIRECTV found itself subject to increased operating costs related to supporting a wide variety of subscriber equipment in homes. Troubleshooting problems were exacerbated by the large number of set-top box models in the field, and product reliability was tougher to control. Additionally, the need to support so many legacy devices created obstacles to introducing new features and innovating across DIRECTV's service.

40. Accordingly, approximately a decade after the service launched, DIRECTV shifted to a business model where it was the sole buyer of set-top boxes and

¹⁶ See http://www.directv.com/technology/tivo_receiver.

dishes, and it distributed these devices to retailers, dealers, and its own installers. These devices quickly began to display the DIRECTV brand and to provide a common user experience and remote control to improve customer support. To be more competitive with other providers (including Dish Network, which already was vertically integrated with set-top box provider Echostar), DIRECTV began developing application-layer software for the set-top boxes and purchasing the hardware itself from competing OEMs including Thomson (now Technicolor), Samsung, Pace (now Arris), and Humax. As a result, DIRECTV offers faster time-to-market for new features, has greater flexibility to innovate, and enjoys lowered operational costs as it can better manage set-top box reliability and installation quality. Today, the great majority of all customer communications are handled directly through DIRECTV's customer care teams, and a large majority of installations and service calls are handled directly by DIRECTV's home services organization.

41. The *Device NPRM*'s parity obligation also raises significant competitive business confidentiality issues. To remain competitive, MVPDs are continually developing and launching new technologies and features. For example, they may deploy a new video format such as UltraHD HDR or immersive audio. According to the parity requirements, an MVPD would need to make the Commission-defined interfaces available with the new capability when it launches the new capability. This would require the MVPD to be sharing information with its competitors prior to launch, so as to plan the necessary modifications to the Information Flows or the CSS.¹⁷ The Apps

¹⁷ See *supra* ¶ 28 (describing a similar problem in the context of attempts to provide pre-release video-on-demand services).

Approach, on the other hand, maintains confidentiality of applications during development cycles.

VI. AT&T IS USING THE APPS APPROACH TODAY TO COMPLY WITH CONTENT AGREEMENTS AS WELL AS TO ELIMINATE SET-TOP BOXES

42. AT&T currently uses the Apps Approach to provide consumers with the opportunity to access the content they want, where they want, and on the device of their choice. In these applications, AT&T controls the presentation of content, and can ensure it complies with all contractual obligations. The Commission's proposed Information Flows deprive MVPDs of the ability to ensure they meet these contractual obligations. For example, MVPDs will not be able to ensure that a channel is assigned the particular position in the programming lineup to which the MVPD and content provider agreed. Under the Commission's proposal, downstream devices could ignore those provisions entirely in their navigation interface. MVPDs also are constrained by their agreements with content providers in their ability to insert advertising into programming streams and user interfaces. But downstream devices using the Commission's Information Flows would be able to overlay advertising on top of the MVPD content.

43. Another key benefit of the Apps Approach is how it is enabling the elimination of set-top boxes. DIRECTV is a founding member of the RVU Alliance, which last year provided an update to the Commission on its RVU remote user interface technology.¹⁸ As described in that update, a key facet of the RVU capability is how "a TV that is connected to the home network can discover and play/record content from any

¹⁸ See RVU Alliance Progress Report at 2, MB Docket No. 15-64 & CS Docket No. 97-80 (FCC filed May 28, 2015).

compatible source of entertainment content on that network” including “Pay-TV set-top boxes (such as DIRECTV Genie).”¹⁹ Today, AT&T/DIRECTV is leveraging the availability of connected TVs supporting the RVU technology to avoid installing a DIRECTV set-top box for those compliant TVs when found in homes having DIRECTV Genie servers.²⁰ This allows AT&T/DIRECTV to install just one set-top box in a home, even when there are multiple TVs to be served. The customer experience is the same as when a DIRECTV set-top box is installed, and actually is improved due to the reduced clutter from additional equipment and wiring. Compliant RVU televisions also reduce the significant costs that AT&T/DIRECTV incurs to maintain a large inventory of STBs, and to maintain the embedded base of these devices.

44. The energy efficiency advocacy community is an enthusiastic supporter of the Apps Approach, and has been taking action to help ensure energy savings through multi-room architectures and the replacement of set-top boxes. Recognizing the potential for RUI standards such as RVU to replace set-top boxes, the Environmental Protection Agency ENERGY STAR program includes in its current product program for televisions a definition for “Thin Client Capability.”²¹ The ENERGY STAR program requests products that have Thin Client Capability to “Report the presence of Thin Client Capability . . . for display on the ENERGY STAR certified products list” and “Inform the

¹⁹ *Id.* at 3.

²⁰ See RVU Alliance, *Products*, <http://rvualliance.org/products>.

²¹ ENERGY STAR, Program Requirements Product Specification for Televisions Version 7.0, at 2 (“The ability of the TV to receive, decrypt, and display encrypted content provided by a Multichannel Video Programming Distributor (MVPD) over the Local Area Network via a server device co-located on the customer premises without the need for a client device at the TV”), <https://www.energystar.gov/products/electronics/televisions/partners>.

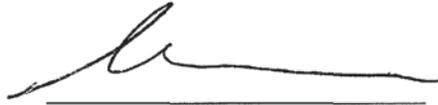
consumer in the user manual and/or on-screen prompt that the TV may be capable of operating without a set-top box from an MVPD.”²² The EPA added this provision to the television specification “as these features may appeal to consumers and be a net positive for energy efficiency in the home by decreasing the number and energy consumption of set-top boxes.”²³

²² *Id.*

²³ ENERGY STAR, Draft 1 Version 7.0 ENERGY STAR TV Specification at 2, https://www.energystar.gov/sites/default/files/specs//EPACoverLetter_Draft1V7TVs_June2014.pdf.

I declare under penalty of perjury, under the laws of the United States, that the foregoing is true and correct to the best of my knowledge and belief.

Executed on April 22, 2015

A handwritten signature in black ink, appearing to read 'Stephen P. Dulac', written over a horizontal line.

Stephen P. Dulac
Director, Engineering Technology
AT&T Entertainment Group