

Video Veritas: Building a 21st Century Video Platform for a High Performance Society

**Report of the 28th Annual Aspen Institute Conference
on Communications Policy**

John B. Horrigan, Rapporteur



Video Veritas

Building a 21st Century Video Platform for a High-Performance Society

John B. Horrigan
Rapporteur



THE ASPEN INSTITUTE

Communications and Society Program

Charles M. Firestone
Executive Director
Washington, D.C.

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For all other inquiries, please contact:

The Aspen Institute
Communications and Society Program
One Dupont Circle, NW
Suite 700
Washington, DC 20036
Phone: (202) 736-5818
Fax: (202) 467-0790

Charles M. Firestone
Executive Director

Patricia K. Kelly
Assistant Director

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The Aspen Institute
One Dupont Circle, NW
Suite 700
Washington, DC 20036

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Contents

FOREWORD , <i>Charles M. Firestone</i>	v
EXECUTIVE SUMMARY	ix
VIDEO VERITAS , <i>John B. Horrigan</i>	
Introduction	1
Video in America—Trends and Consumer Viewing Habits	2
Pervasive Connectivity and Fragmented Attention Threaten Traditional Models.....	7
Changing Goals, Changing Regulation.....	8
Critical Issues.....	14
Conclusion: A Road Map to the Future.....	34
Endnotes	37
APPENDIX	
Conference Participants	41
About the Author.....	45
About the Communications and Society Program.....	47
Select Publications from the Aspen Institute Communications Policy Project	49

*This report is written from the perspective of an informed observer at the
Aspen Institute Conference on Communications Policy.
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in this report should be taken as embodying the views or carrying the endorsement
of any specific participant at the Conference.*

Foreword

There is a fundamental shift underway in how video is being viewed. While cable and broadcast television continue to be the dominant modes of transmission, “over the top” delivery of content via the Internet provides new ways to distribute personalized and targeted programming directly to the viewer. This, and the proliferation of mobile devices and tablets can deliver video to the viewer anywhere, anytime. As a result, the advertising-based broadcast business model is undergoing significant challenge and change.

Meanwhile, the policy regime regulating video is also lagging behind. Conceived in 1934 as radio dominated the airwaves, the Communications Act has added television, cable and satellite in essentially separate regulatory chapters. And the Internet is barely even mentioned in the Act itself. Thus, much of today’s video transmission is controlled by regulations that originated long before the technology was around.

With this backdrop, the participants of the 28th Annual Aspen Institute Conference on Communications Policy gathered in Aspen, Colorado, from August 11–14, 2013, to look to the future of video regulation. Organized by the Aspen Institute Communications and Society Program, 33 leading communications policy scholars, experts, executives and citizen advocates investigated new realities and new regulatory possibilities in this time of expeditious change.

Rapporteur John Horrigan was on hand to document the spirited dialogue and deliver the group’s findings. The resulting report, *Video Veritas: Building a 21st Century Video Platform for a High-Performance Society*, looks at the changing landscape of video regulation and offers recommendations for policy that can accommodate the new video market.

Horrigan begins the report with a look at the current trends and consumer viewing habits for video in America. Television’s revenue as a percentage of GDP has increased over the years due to an ever-increasing selection of available TV channels. And viewers are watching more television per week than ever before. “Over the top” (OTT) viewing of television on the Internet is also gaining a lot of momentum, particularly among younger demographics. While its popularity has not yet

cut into traditional TV-watching numbers (and in fact can enhance those numbers by time-shifting the watching of those programs), OTT is becoming more and more commonplace, with 78 percent of online American adults having streamed or downloaded online video in 2013.

More and more people's attention is migrating from traditional media to smartphones and tablets that can connect to the Internet. Even though viewers have more choices on where to watch their content, most of the advertising dollars are still being spent on traditional television.

While new online entrants to the video market provide a disruption for traditional video models, they still face great challenges. The ability to purchase appealing content (such as the rights to sports) and access to new platforms are both barriers to entry that will be difficult to overcome.

Horrigan next looks at how regulation has tried to adapt to changes in the video market over the years. The expansion of online connectivity has forced policymakers once again to reconsider what principles should guide video regulation.

In 2004, Federal Communications Commission Chairman Michael Powell set forth a concise list of five guiding principles that focus on consumer rights and protections in the digital age—a contrast from the lengthy “Blue Book” rules of the mid-20th century. While these principles have served informally as a basis for policy for almost ten years, they remain fragile, and as Horrigan states: “This fragility is the motivation for addressing emerging critical issues and developing a new policy road map.”

It is with these critical issues in mind that Horrigan next delves into four areas of policy challenges that the participants focused on:

- *Production of Content: Changing Costs Mean New Funding Sources Necessary for Public-Interest Goals*
- *Devices: Possibility of Market Power Calls for Policy Monitoring*
- *Consumers: The Need for Empowerment and Inclusion Amid Digital Abundance*
- *Distribution: The Uncertain Prospects for Network Upgrade*

Through these lenses, the dialogue came to the conclusion that the video marketplace is an integral part of an overarching social and economic system, and has a responsibility to contribute to a higher standard of living for all citizens. It must be a competitive and economically sustainable marketplace that also fulfills its important social goals. While there may not be an end-all-be-all solution to finding the perfect video-policy framework, Horrigan details the Conference participants' recommendations for stakeholder action in the areas of funding, competition, consumer empowerment, government leverage and multi-stakeholder forums. Ideally, this is a start to moving in the right direction toward regulatory reform.

Acknowledgments

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I also want to acknowledge and thank John Horrigan, our talented rapporteur, for his excellent synthesis of the discussions and debates that transpired during the Conference, as well as our participants, listed in the Appendix, for their contributions to these important issues. Finally, I want to thank Ian Smalley, Project Manager, and Rachel Pohl, Program Associate, for their help in producing the Conference and this report, along with the Communications and Society Program's Assistant Director Patricia Kelly, who oversaw its editing and publication.

Charles M. Firestone
Executive Director
Communications and Society Program
The Aspen Institute
Washington, D.C.
April 2014

Executive Summary

Changes in technology and consumers' consumption of video content make it imperative that government regulators, industry and other stakeholders come together to re-think policy models that may no longer apply. Evidence shows that consumers continue to exhibit strong demand for video content, with much viewing still occurring in traditional ways through broadcast and cable television. Yet the proliferation of viewing devices and options—so-called “over the top,” or OTT, viewing of content on the Internet—poses a threat to existing business models, as well as to opportunities for new ones. Audiences are increasingly fragmented and so are people's attention spans, but at the same time, there is an unparalleled opportunity to deliver more personalized, more targeted and more relevant content than ever before. This upends traditional flows of advertising dollars upon which the media industry relies and calls into question traditional regulatory structures that originated prior to the development of these new business models.

Participants in the 2013 Aspen Institute Conference on Communications Policy examined the future of video regulation, recognizing from the outset the need for policy to adapt to changing conditions. Participants delved into four areas of the video and broadband ecosystem that present distinct business and policy challenges:

- **Production of content:** Notwithstanding the falling cost of consumer electronics, high-quality video content will continue to be expensive to create and, in some cases, costs may increase. The added expense may make it difficult to create certain kinds of content, such as content with public-service characteristics, i.e., community news, civic information, education and diverse voices, especially if there is a continued reliance solely on traditional video-delivery platforms instead of new ones, such as the Internet.
- **Devices:** Even with vigorous competition in some segments of the device market, potential anti-competitive pitfalls may warrant scrutiny. Device makers may seek to reinforce their competitive advantages by expanding the prevalence of their

proprietary operating systems across multiple devices. The level of choice in the set-top box market for viewing traditional linear video at home was of particular concern to some participants. Other participants, in contrast, highlighted the danger of trying to unnecessarily influence a market that is increasingly challenged by a fast-growing array of nontraditional competitors using Internet-enabled set-top boxes, such as Apple TV, Roku, Xbox, Sony PlayStation and others. Innovation often can address such problems, and for that reason, government support for upstream research and development (e.g., in the university setting) is crucial to foster innovation that drives device competition.

- **Consumers:** As beneficial as innovations in the video market have been to consumers, the changes place new focus on equity and privacy. As new means of consuming digital content become the societal norm, those without the means or skills to use them are left out of opportunities in education, civic engagement and culture. Consuming digital content typically requires that consumers share personal and behavioral data, which can increase choice and relevancy for consumers, but which also may raise concerns about privacy and trust.
- **Distribution:** Although today's broadband networks meet the performance needs of most consumer-use cases today, upgrading distribution networks to keep pace with evolving needs is expensive, resource-intensive and risky. Meeting consumer demand has been and continues to be primarily the province of the private sector, but wise use of public assets (e.g., rights-of-way, spectrum) can help facilitate the private sector's ability to enhance and expand network platforms. New applications—such as use of video and other digital content to improve results in the classroom—will demand enhanced network capabilities. This means stakeholders must better align incentives to ensure ongoing improvements in America's broadband networks, especially for those areas (such as rural America) where the economic prospects for investment face the greatest challenges.

To address these challenges, stakeholders could take action in the following areas:

- **Funding:** With the cost of production increasing, nontraditional sources of funds may fill gaps for public-interest content pertaining to education or government. Such sources include franchise fees (with a broader range of uses), inducement prizes (modeled after the Department of Education’s Race to the Top) or opening up public facilities (such as universities) to lower costs for content developers. Revising the mission of the Corporation for Public Broadcasting may help address needs for public-interest content.
- **Competition:** Some participants believed that the Federal Communications Commission (FCC) should move forward with its AllVid Section 629 Notice of Inquiry in order to foster greater competition in the set-top box industry. Others, however, argued vigorously that this action would be counterproductive and harmful to the innovation and competition evident in today’s market, pointing to the burgeoning market for online video facilitated by new Internet-enabled set-top boxes. Policymakers should also promote entry into the market through public databases. Such a database for spectrum use could promote spectrum sharing and thereby lower the cost of entry to the wireless market. Databases on patents and copyrights could promote fair and legal use of content, thus inviting new entrants into the content-development industry. Congressional action on legislation to inhibit “patent trolls” and patent wars could facilitate competition.
- **Consumer empowerment:** Some participants argued that the Federal Trade Commission should create an online portal to help consumers make informed choices about service plans and how business or government uses their data. Some argued that passage of a baseline privacy law modeled on the Kerry-McCain approach could potentially contribute to a more trusted online environment for consumers, while other participants stressed that privacy issues are very complex and,

in many cases, the context may be too nascent for making any binding policy conclusions or new regulations. Stakeholders should look for ways to scale and further implement existing programs (such as Internet Essentials or those funded by the 2009 stimulus bill) to close broadband adoption gaps.

- **Government leverage:** Government agencies should collaborate with existing community broadband adoption initiatives to draw non-users to online use, given that many government services serve populations with low broadband adoption rates. Through aggressive initiatives to use digital means in delivery of government, educational and health services, government can improve the broadband adoption and even investment-upgrade calculations for individuals and companies. Local governments should streamline regulation to make network upgrades (by incumbents or entrants) less costly.
- **Multi-stakeholder forums:** Stakeholders should use multi-stakeholder forums to address issues such as interoperability across platforms or devices, decency of video content and (in absence of legislation) consumer privacy. This mechanism allows the private and nonprofit sector to monitor and address issues and to develop more flexible solutions in lieu of protracted regulatory proceedings.

In other areas, policymakers should take a permissive yet watchful posture. Data caps and usage-based pricing is one example. Service offerings that include data caps can result in pricing options that are attractive to consumers and draw more people online, especially those who have not yet adopted broadband. For that reason, prohibiting such experimentation in service models is unwise, especially if doing so is based on speculation with no evidence of actual harm. At the same time, policymakers should monitor this area to be sure data caps are not used anti-competitively and only act on a case-by-case basis when competitive harm in the overall marketplace is clear. Similarly, policymakers should consider relaxing limits on cross-ownership between broadcast and newspaper companies, but monitor the market for any deleterious consequences.

Looking to the future, the goal is to have a video marketplace that contributes to a rising standard of living for all citizens. To get there, the video marketplace will have to be economically sustainable, which in turn requires robust business models, competition, transparent information for consumers and efficient investment in network upgrades and innovation. The video marketplace will also have to deliver on social goals, as a trusted environment where there is universal access to content that is diverse, local, entertaining, culturally rich, educational—all while adhering to free speech values and being a public sphere that contributes to democratic governance. Such a rosy scenario is not inevitable, and any number of wild cards could retard progress toward it. A “privacy and surveillance backlash” could arise that makes consumers less willing to share personal data or otherwise engage with digital applications; this could inhibit development of new applications and undermine business models dependent on advertising. Bandwidth capacity—either wireline or wireless—may not grow fast enough to elicit new innovations or drive ongoing marketplace competition, which underscores the importance of creating an environment where the private sector continues to invest in network capacity.

Even if all the answers are not apparent today on how to develop a framework so that the video industry can contribute to social and economic goals, understanding the challenges and uncertainties can help chart a pathway to those ends.

VIDEO VERITAS
BUILDING A 21ST CENTURY VIDEO PLATFORM
FOR A HIGH-PERFORMANCE SOCIETY

John B. Horrigan

Video Veritas

Building a 21st Century Video Platform for a High-Performance Society

John B. Horrigan

Introduction

The video market has been buffeted in recent years by the same forces that have affected the markets for music and news—inexpensive electronic devices that are shrinking in size and expanding in capability, along with the expansion of broadband networks that are more capable and more ubiquitous than ever. These changes are the fruits of investment and innovation by network providers and device manufacturers, which, in turn, have led to a huge growth in programming choices for consumers and new opportunities for content creators. At the same time, there remain many of the public purpose goals associated with video, such as providing information about government and civic affairs and communicating information in times of emergency. The task for policymakers is to align regulation in a rapidly changing environment to best serve the public interest.

In the midst of rapid change, old rules do not map neatly to new realities, and new rules may become dated quickly or developed with limited information. With these issues in mind, the Aspen Institute Communications and Society Program convened a group of 33 stakeholders in August 2013 to consider the future of video regulation. Though the conversation ranged widely—from details about the video market, the consequences of current regulation and business models—high-level economic and social goals for the video market framed the discussion. With its ability to entertain, inform and engage citizens in their communities, video should contribute to a rising standard of living for citizens. This requires a competitive marketplace and the development of robust business models to deliver services. It also needs efficiently functioning markets in which consumers have enough information to make choices, businesses can invest efficiently and innovation can flourish.

On the social side, video has historically had a public-interest dimension. The social goals that video helps further include:

- Delivery of public goods such as information about public safety and the means for public safety agencies to do their jobs.
- Universal availability—making sure that the means to receive video are available to all members of society.
- Localism—providing the wherewithal for people and institutions to create and share video content that is relevant to local communities.
- Diversity—providing the means by which a range of voices, in terms of points of view and socioeconomic backgrounds, can participate in public discourse.
- Free flow of information—in addition to ensuring that video adheres to free speech values the video market should also make sure that users can access lawful content over video and other data networks.
- Trusted environment—users of video and other data networks should feel secure that service providers do not misuse the data that users share with providers and that users have the tools to understand clearly the consequences of sharing personal data online.

These social and economic goals for video shaped the discussion of potential regulation of the future video-market environment.

Video in America: Trends and Consumer Viewing Habits

In terms of the economic state of the media industries at the start of this decade, the overall picture is one in which the total revenue of the U.S. commercial media, as a percentage of gross domestic product (GDP), has stayed steady over a long time horizon, dating back to 1950; though it has declined in recent years, from highs in the late 1990s to 2000. As of 2010, the media industries—defined as books, newspapers,

magazines, recorded music, theater, broadcast television, home video, multichannel TV and the Internet—accounted for 2.1 percent of U.S. GDP. In 1950, when several of those categories did not exist, the share also stood at 2.1 percent. In the late 1990s, the figure stood at 2.6 percent, with the decline in the ensuing decade coming from a fall-off in revenue from newspapers, broadcast TV, magazines and recorded music.¹

Online television is the new player with the potential to upend the market for TV viewing.

For television, the long-term picture is brighter. Television's revenue as a percentage of GDP stood at 0.38 percent in 1970, 0.93 percent in 1999 to 2000, and 1.12 percent in 2010. The growth in television stems from the expansion of multichannel subscriptions, which in turn has fueled the explosion in the number of TV channels, which consumers have embraced. In 1970, just 7 percent of homes subscribed to pay TV, a figure that grew to 87 percent in 2010 with the rise in subscriptions to multichannel video programming distributors (MVPD). Standard television has maintained its place in people's lives as measured by the increase in the amount of time people spend watching it. The average household spent 43 hours per week watching television in the early 1970s, a figure that rose to 58 hours by the early 2010s. More recently, according to Nielsen, the amount of time per week per person for TV viewing has grown from 33 hours and 48 minutes for the 2008–2009 season, to 34:01 for 2009–2010, and 34:12 in 2010–2011.²

Online television is the new player with the potential to upend the market for TV viewing. With the advent of YouTube, Hulu, Netflix, iTunes, Amazon and services offered by incumbent MVPDs (e.g., Comcast or Time Warner Cable), consumers have the option of switching off traditional linear television and watching TV programming on Internet-connected devices, including new smart TVs capable of receiving content directly over the Internet without the need for an MVPD subscription. Recent data indicates that watching video online when measured across the general population does not occupy a large share of viewing right now, but importantly, it is growing rapidly, especially

among the younger demographics. Nielsen finds that as of late 2011 people report watching 33:43 hours of television per week, but just 30 minutes with video on the Internet and eight minutes of video on a mobile phone. For young adults (between the ages of 18 and 24), online video is more popular; they watch 51 minutes of online video, 14 minutes of video on a mobile phone and 25 minutes of television per week.

...as of late 2011...young adults...watch 51 minutes of online video, 14 minutes of video on a mobile phone and 25 minutes of television per week.

Even with the changes in the composition of viewing, the number of MVPD subscriptions has remained steady. Between 2010 (year-end) and June 2012, the number of subscriptions grew modestly from 100.8 million households to 101.0 million. During that time, cable MVPDs lost market share, falling from 59.3 percent to 55.7 percent of the market, with direct broadcast satellite gaining (33.1 percent to 33.6 percent) and telco MVPDs growing (from 6.9 percent to 8.4 percent).

As for the new and old ends of the market, the FCC reports that the number of households that rely only on broadcast television has not changed in recent years, with 11.1 million households having only over-air television in 2012, the same as in 2010. Broadcast industry revenues were \$24.70 billion in 2012, an increase from \$22.22 billion in 2011 fueled mainly by political advertising. Broadcasters increasingly rely on fees from MVPDs for retransmission consent; in 2008 revenues from retransmission consent were 4.5 percent of total industry revenues, a figure that tripled to 14.5 percent in 2012.³ SNL Kagan projects that retransmission fees will account for 23 percent, or \$6.05 billion, of broadcast station revenues by 2018. As for online video delivery (OVD) services, SNL Kagan counts 22.8 percent of households as Internet-connected TV households, meaning that some device such as a game console or OVD set-top box enables the viewing of online content on the television.

Nonetheless, the possibility of consumers cutting the TV cord (i.e., foregoing pay TV options altogether and watching video programming

over the Internet) raises concerns for established industry players. At present, the incidence of cord-cutting is not high in the United States. According to Deloitte, less than 1 percent of MVPD subscribers will cut the cord in 2013. A separate study by Leichtman Research found that 0.4 percent of households had dropped their pay TV service to rely exclusively on Internet services to watch TV programming.⁴ Still, the greater prevalence of this practice among young people is cause for concern by the MVPD industry in the long term.

Notwithstanding data showing that online video is not cutting greatly into TV watching in traditional measures, online viewing of video occupies a significant place in people's media habits. Overall, some 78 percent of online American adults have watched or downloaded online video in 2013, up from 69 percent in 2009; for those between the ages of 18 and 29, nearly all (95 percent) had watched or downloaded online video in 2013. Also of note is uploading video; some 14 percent of online adults had uploaded video in 2009, a number that more than doubled—to 31 percent—by 2013.⁵

The current state is, therefore, one of impending disruption as “over the top” (OTT) video delivery (i.e., consumers watching video online and eschewing traditional television) seems poised to upend broadcast or cable as a means of video delivery. As discussion unfolded, however, different views surfaced on the pace and path by which this disruption may unfold. It is true that new entrants often turn monopoly platforms into commodities. Broadcast television undercut profit margins for newspapers and movies, cable challenged broadcast, and satellite has done the same for cable. The Internet has mortally challenged the business model of the printed newspaper, while the mobile Internet threatens the Windows and Intel stronghold on the online access platform. Wireless and fiber access promise to be new challenges to broadband Internet service providers in the cable and telephone industries. As ineluctable as these patterns may be, however, the high fixed cost to entry for online access means that the disruption to the access market may not happen as quickly as some envision, although it is clearly occurring.

One possible inhibitor to rapid change in the market is ease of use. There is no “eBay for video” that aggregates content in a way that makes it seamless for consumers to navigate video across different display devices.

Standards also come into play in two ways. First, with the multiplicity of access devices (computers, tablets, handheld), video standards should enable different platforms to operate together. For set-top box manufacturers, this may raise the cost of developing new set-top devices that might hasten convergence and thus market disruption—although it should be noted that many new Internet-enabled set-top boxes rely on their own proprietary standards. Second, harmonizing TV standards, which would result in more efficient spectrum use, would (by freeing up more spectrum in the commercial market) promote competition in the video marketplace.

Another inhibitor to new entrants in the video market is access to content. If a new “over the top” video provider wants to appeal to a wide swath of the market, it needs access to the programming that appeals to a range of consumers. Yet contracts negotiated by the content industry for certain types of programming, such as sports and other must-have programming, tend to be long term, expensive and at times, restrictive. A new entrant in video, both MVPDs and online video distributors alike, may not even have the opportunity to negotiate for desirable sports programming until early in the next decade. This control over licensing by the content owners continues to play a significant role in new distribution opportunities and no doubt will impact the pace at which change in the video market unfolds.

The pace of market change also depends on whether new means of access complement old ways or substitute for them.

The pace of market change also depends on whether new means of access complement old ways or substitute for them. Traditional ways of watching television (e.g., in front of a large screen in the home) will not go away quickly; many people who do this will also watch video on a new-media device such as a tablet. And even though the phenomenon of “cutting the cord” is more prevalent among young adults, not everyone embraces new video platforms. That said, behavior on the

margins—a minority of elite users flocking to new ways of consuming content—can have real impacts on traditional markets well before new practices become mainstream.

Pervasive Connectivity and Fragmented Attention Threaten Traditional Models

The broadcast and MVPD industries have operated on the assumption that viewers are physically stationary and that their attention is devoted to one screen. This makes selling ads relatively easy. Today, however, broadcasters' practice of selling ads to support program development and profitability is becoming more problematic as people's attention migrates to other platforms. For MVPDs, subscription growth has been tepid and traditional cable providers have lost market share to direct-broadcast satellite (DBS) and telephone companies. The strong forces tearing at traditional models fall into two closely related categories: attention and time.

The strong forces tearing at traditional models fall into two closely related categories: attention and time.

With respect to attention, Kleiner Perkins analyst Mary Meeker has pointed out that people's attention is migrating away from traditional media to devices whose main purpose is to connect to the Internet. Meeker's analysis contrasts people's time-use patterns next to advertising spending and finds gaps that are not likely to spark optimism in the traditional media business. People spend 42 percent of their time with media on television, where 43 percent of advertising dollars go. However, they spend 6 percent of their time on print media today, even though 23 percent of ad spending is on print. For the Internet—and for mobile especially—the gaps suggest a shift in ad spending is in the offing. Some 26 percent of people's media time is devoted to the Internet, while 22 percent of ad spending is. For mobile, just 3 percent of ad dollars are spent there, while 12 percent of people's media time is on their mobile devices.⁶

Trends in shipments of mobile devices show that people are more likely to spend more time accessing video and other online content from them in the future. In just three years since their introduction, shipments for tablet computers have surpassed those for desktop computers and notebooks, according to fourth-quarter 2012 data. In terms of consumer adoption, more than half of Americans have smartphones (56 percent according to 2013 Pew data) and more than one-third (34 percent) have tablet computers. With the proliferation of devices, some 60 percent of Americans access the Internet on a mobile device.⁷

In just three years...shipments for tablet computers have surpassed those for desktop computers and notebooks....

The growth of mobile, coming on top of a decade of growing Internet use and adoption of high-speed Internet at home, gives people more choices than just passively watching a large screen. Analysis of Americans' time use shows that, over the 2003 to 2011 time horizon, about one-third of the time people spend online comes from leisure time—and half of that comes *out* of watching TV or other video.⁸ Overall, prime-time TV viewing has been flat since the 1990s, but it has also shifted in composition. Broadcast TV viewership has fallen from shares in the 40 percent range in the early 1990s to about 25 percent in the late 2000s. At the same time, ad-supported basic cable has grown from a 10 percent share in the early 1990s to 36 percent by 2009. From these figures, though apparently good news for cable, it is clear that broadcast television has already suffered a decline in viewership that attracts advertising—and that cable will suffer the same fate, as individuals spend more time on mobile devices.

Changing Goals, Changing Regulation

Today's need for a new policy framework for video is not the first time policymakers have had to adapt due to changes in the market. There was considerable discussion about how both policy goals and the regulatory climate have changed over time. The discussion began with

the “Blue Book,” which the FCC first published in 1946. It set forth a number of objectives that public policy in the communications arena should promote:

- Local self-expression
- Development of local talent
- Children’s programming
- Religious programming
- Educational programming
- Public affairs programming
- Editorials
- Political broadcasts
- Agricultural programming
- News programming
- Weather and news reports
- Sports programming
- Service to minority groups
- Entertainment programming

While being mindful of these goals, regulation historically sought to encourage the build-out of communications platforms and, at the same time, tried to adapt as technology changed. In the development of broadcast television from the 1940s through the 1960s, policy granted spectrum rights to a limited number of players, held local broadcasters to a public-trustee standard in providing news programming and encouraged a diversity of political views through the Fairness Doctrine. Regulators ensured that programming met standards of decency and that there was ample local educational programming. As deregulation gained favor in the 1970s, broadcast was not immune to this trend; the Fairness Doctrine was repealed, some ownership rules were relaxed and financial syndication rules were eased and eventually disappeared from the landscape.

By the 1970s, cable television was beginning to gain a foothold in the marketplace and regulators took a series of steps that facilitated the build-out of cable infrastructure. Some steps, such as compulsory copyright for broadcast signals, helped make cable television more attractive to consumers. Others, such as allowing cable companies to

access city rights of way and utility poles to run cable lines, allowed cable to cover larger portions of the market. Throughout the 1970s, the regulatory adjustment saw the FCC migrating from a posture of protecting broadcasters to aiding the entry of cable into new markets. The 1972 cable rules adopted by the FCC sought to strike a balance between cable and broadcast interests. Even as the rules made it easier for cable to enter local markets, the FCC also established “leapfrogging” rules that restricted cable from importing distant signals to local markets and “syndicated exclusivity” rules that required cable to black out programs from distant signals if those signals duplicated programming offered by local broadcast stations.

As cable and broadcast competed against each other in the 1980s and 1990s, policy continued to recalibrate. The policy issues for this era fall into the following categories: universal coverage, competition, diversity/public affairs, consumer protection, content, deregulation and educational programming. Although policy in this era did not necessarily add up to a common theme, this period coincided with more consumers subscribing to cable television. Basic cable subscriptions rose from 23 percent of households in 1980 to 68 percent by 2000, with DBS adding another 16 percent to the share of households not wholly reliant on broadcast television. The diminishing role of broadcast in people’s TV-watching menu allowed the digital-TV transition to begin in this era, as the FCC loaned broadcasters spectrum that allowed them to move broadcasts to high-definition television, thereby freeing old broadcast spectrum for other uses. To replace local-programming origination rules for cable, funds set aside from local franchising fees provided resources for public, educational and government programming, and emerging DBS providers also had to reserve channel capacity for these purposes.

On competition policy, the FCC’s most forceful move in this era was to ensure DBS competitors had fair access to content for their services. In 1992, the Commission’s program access rules prohibited exclusive contracts among cable networks that were wholly or partially owned by cable operators. This encouraged entry by DBS services, which now had the opportunity to offer consumers programming widely available in the market.⁹ On the legislative front, Congress passed the Cable Television Consumer Protection and Competition Act of 1992

in response to rising cable rates since the mid-1980s, which granted the FCC narrow authority to regulate rates (only for a “basic tier” of service that multiple-system operators defined to *exclude* packages that contained the most desirable programming and only in the absence of effective competition). The most consequential part of the legislation was the so-called “must carry” provision, which gave broadcasters the right to demand that cable systems carry their signals or “retransmission consent,” which prohibits cable from carrying broadcasters without the broadcasters’ consent—something that increasingly comes at the price of cash compensation.

The 1996 Telecommunications Act terminated the FCC’s authority for extensive cable rate regulation. Other provisions of the 1996 Act impacted the video environment, including lengthening the term of licenses for broadcast and radio to eight years and easing the path to license renewals by eliminating comparative hearings that often led to lengthy and expensive proceedings on renewals. The legislation also relaxed ownership restrictions in broadcasting; a company could now own stations so long as the total number of stations reached no more than 35 percent of households nationwide (up from a 25 percent cap).

The late 1990s up to today marks the era where additional platforms—both wireline and wireless—capable of providing access to video content have been built. These broadband platforms enable ubiquitous Internet connectivity and online video. In this era, many of the goals of policy are the same as in prior eras, though the means of attaining them differ. Universal network coverage, which in the 1970s and 1980s meant creating conditions to foster cable build-out while ensuring the viability of broadcasting, now means universal broadband. The value of universality in the broadband era means different things in different contexts:

- For **wireline broadband**, this involves transitioning the Universal Service Fund to support-network construction in the mostly rural areas that lack it.
- For **wireless**, it means allocating spectrum so that mobile broadband is widely available—and that it fills access gaps where it is too expensive to build wireline networks. For competition, this has meant foregoing regulation of Internet

service providers, given the growth in competitive broadband platforms, while allowing statewide franchising for companies with interest in the video market to hasten market entry.

- For **diversity of programming and innovation**, the FCC's Open Internet rules aim at ensuring that Internet Service Providers continue to facilitate the free flow of lawful content from anywhere online without precluding them from managing traffic or offering specialized services, including video services, or otherwise impeding the investment in next-generation broadband platforms. The FCC's "C Block" device rules are another example of encouraging diversity and innovation in content. As a condition of Verizon's purchase of C Block spectrum in 2008, the FCC required that licensees "shall not deny, limit or restrict the ability of their customers to use the devices and applications of their choice on the licensee's C Block network." The FCC underscored this policy in a 2012 ruling that assessed a \$1.25 million fine on Verizon for requiring customers to subscribe to the company's mobile broadband service if they wanted to tether their handheld devices to laptops for online access.
- For the **Internet and education**, the E-rate program has been the vehicle for providing network connectivity for schools so they can use the Internet in the classroom. This program, authorized by the Telecommunication Act of 1996, channels money from the Universal Service Fund to schools and libraries for provision of telecommunications and Internet service. Depending on the level of need at the school, which is determined by the share of students eligible for free or reduced-price lunches, a school can receive discounted rates for service of between 20 percent and 90 percent. The authorizing legislation caps the E-rate fund at \$2.25 billion annually; though in 2010 the FCC passed a rule indexing funding levels to inflation.

Legislation also drove policy to promote decency in online content. The Communications Decency Act of 1996 offered Internet service providers a safe harbor from liability for indecent content sent over their networks, while outlawing use of "interactive computer services"

to send indecent material to persons under the age of 18. Free speech activists successfully challenged the provisions on indecency on First Amendment grounds. The First Amendment proved to be a strong weapon against legislation trying to regulate indecent content online. The Child Online Protection Act of 1998 was also ruled unconstitutional on the grounds that restrictions on commercial distributors of content considered “harmful to minors” was too broad in its use of “community standards” as the means to determine whether any particular content was indeed harmful to minors. Efforts to protect minors from harmful online content was eventually enshrined in the Children’s Internet Protection Act, which required libraries receiving E-rate funding to install filters on computers that prevent libraries’ online terminals from accessing indecent material. Today, many providers at all levels of the Internet ecosystem offer parental-control tools and support awareness and education programs to empower users to make the content choices that are most appropriate for themselves and their families.

New Policy Principles

With the growth in online connectivity among American consumers in the late 1990s and early 2000s, policymakers began to think anew about principles to guide policy. In 2004, FCC Chairman Michael Powell set forth the following principles, a framework his successor Kevin Martin embraced:

1. Consumers are entitled to access lawful Internet content of their choice.
2. Consumers are entitled to run applications and services of their choice, subject to law enforcement.
3. Consumers are entitled to connect their choice of legal devices that do not harm the network.
4. Consumers are entitled to competition among network providers, application and service providers and content providers.
5. All these principles are subject to reasonable network management.

This concise list of principles that focus on consumer rights and protections stands in contrast to the lengthy “Blue Book” rules of the mid-20th century, which focused a great deal on cultivating specific content areas. Although the new FCC list of principles has served informally as a framework for policy for nearly a decade, they are fragile, since litigation has slowed subsequent efforts to modify and codify them (e.g., the current court proceeding on the FCC’s 2010 Open Internet Order). This fragility is the motivation for addressing emerging critical issues and developing a new policy road map.

Critical Issues

Against a backdrop of trends in the video industry, participants looked at issues facing industry and policymakers in four areas: distribution, production of content, devices and consumers. They also discussed two issues that may impact video: data caps and usage-based pricing.

Distribution: The Uncertain Prospects for Network Upgrade

The discussion on the means of distributing video content concentrated on the broadband network—its quality and the prospects for upgrading the network’s speed and capacity. In an era when channel scarcity is not a problem, the main issue facing policymakers is how to create an environment in which broadband platform providers have incentives to continually invest in their networks and meet an ever-widening range of demands and diversity of uses.

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Network platforms that enable video are both diverse and widely available. Broadcast television is available to 99 percent of Americans and 98 percent of them watch programming on broadcast networks. For the MVPD market, networks pass 100 percent of households (including satellite) and 92 percent of households use some form of premium TV. Broadband networks pass more than 95 percent of homes (i.e., at least one wireline network is available to nearly all households in the United States), and 72.4 percent have broadband service. There is reasonable diversity of providers for broadcast and MVPD, and for broadband most homes have at least two wireline options, along with options such as satellite and mobile broadband service providers.

There were differing views on the quality of the current network and prospects for upgrade. For wireline broadband, although most homes have multiple options for service at the FCC's current universal service standard of 4 Mbps download and 1 Mbps for upload, it is often the case that for high speeds (in excess of 25 Mbps), most consumers only have a choice of one provider: the cable company. However, this is rapidly changing as telcos and others continue to invest in their wireline networks. Although lower levels of broadband speeds are sufficient for most of today's consumer usage, the "chicken and egg" nature of the broadband investment proposition surfaced. On the one hand, today's network upgrades carry the risk that consumers will not demand higher speeds to justify those investments; it is not clear what applications will generate sufficient revenue to pay for them. On the other hand, without the availability of higher network capacity, developers may not have the sufficient incentives to develop innovative, new, bandwidth-intensive applications that will put network capacity to use.

The following equation captures how investors evaluate (positively in the formulation below) the prospects for investing in a new broadband network.¹⁰

$C + O < (1-r)R + SB + (-CL)$, with the terms defined as follows:

C = Capital Expenditures

O = Operating Expenditures

r = Risk

R = Revenues

SB = System Benefits (i.e., the benefits that drive increased revenues outside the communities where the new or incremental investments are made)

CL = Losses Due to Competition

For the investment to occur, the benefits—which are the discounted stream of revenues the network will generate plus the system benefits, which are essentially the external benefits of faster networks that investors may not be able to capture, offset by revenue losses that may arise as competition drives prices down—must exceed the costs (capital plus operating expenses).

Market forces may be sufficient to bring forth investment in new or upgraded networks. At the same time, the uncertain level of risk in projecting future revenue streams, as well as external benefits (e.g., greater effectiveness and efficiency in delivering government or educational services) may tilt the calculation against investment. History suggests that a change in government policy that has affected one or more of the six factors has preceded every significant investment into a new or upgraded communications network.

Given this analysis, Conference participants agreed that a principle for stakeholders going forward should be:

Policy should incent investments to upgrade existing network assets to higher and better uses. More specifically, this means that policy should encourage:

- *Transition of public assets to higher and better uses;*
- *Experimentation to enable all platforms to find more efficient means to deliver video faster, cheaper and better; and*
- *Movement of content to the most efficient platform(s).*

This principle, and its related corollaries, will mean different things when thinking about the upgrade proposition for different players in the broadband and video markets. For broadcasters, this means encouraging the transition to orthogonal frequency-division multiplexing (OFDM), which is a means of digital broadcasting that “has developed into a popular scheme for wideband digital communica-

tion whether wireless or over copper wires, used in applications such as digital television and audio broadcasting, wireless networking and broadband internet access.”¹¹ This improves the efficiency of the use of spectrum for broadcasters and the potential for new revenue streams.

Participants recommended that broadcasters who do not move toward OFDM in an adequate time frame either lose retransmission consent rights or put 5 percent of their revenues into a trust fund for public programming. For public broadcasters, participants recommended that markets with more than one public-broadcasting station consolidate into a single station, with proceeds from the sale of reclaimed spectrum going to a trust fund for public programming.

For telecommunications companies, participants said that a prompt transition to an “all IP” network would improve the investment prospects for network upgrades. If carriers are able to transmit data on an all Internet Protocol (IP) networks and do not have to also support a legacy time division multiplexing (TDM) network, carriers would have more funds available for network investment, as they would not have to support those legacy networks while investing in new networks. This transition entails a significant review of existing regulations, and the discussion did not go into specifics about the regulatory changes that would facilitate the “all IP” goal. However, there was general agreement that the transition to an all IP network without the overhang and expense of operating two parallel networks, over a rapidly approaching time horizon and without speaking to specific regulatory changes, would improve the incentive proposition for network upgrades.

...a prompt transition to an “all IP” network would improve the investment prospects for network upgrades.

For cable providers, market forces appear to be pushing cable companies to invest in technology that increases the speed of existing hybrid fiber coaxial (HFC) plants. Currently, cable companies are rolling out DOCSIS 3.0, which enables theoretical data rates of 160Mbps downstream and 120Mbps upstream.

New entrants to the market face financial and regulatory challenges. Beyond raising capital, the process is inherently local, as entrants have to gain access to rights-of-way to run new plants and deal with local officials on community issues that generally go along with accessing public rights-of-way. Participants suggested that cities be given the latitude to encourage new investment and not have other jurisdictions—state or federal—impose constraints on cities that encourage new investment, so long as the same incentives are open and applicable to all providers.

Distribution networks raise other policy issues beyond the possibilities of upgrades. Interoperability of devices among platforms is one of these issues. From a consumer perspective, it is optimal for a device or application that runs on one platform to be able to function with devices or applications that run on another. This not only is convenient for consumers, it also improves incentives for innovation in the market. Participants believed that the market would provide sufficient incentives to ensure interoperability, but noted that policymakers should nonetheless watch for possible anticompetitive behavior at all levels of the Internet ecosystem.

Equity of access is another issue, and not just whether a sufficient number of Americans have access to or use broadband networks. On network deployment, discussants thought private investment supplemented by the Universal Service Fund for funding investment for hard-to-serve populations would do an adequate job in ensuring that the vast majority of households would have access to broadband. At the same time, especially as wireless increasingly becomes the last-mile solution in some rural areas, stakeholders should pay attention to whether large institutions in rural areas (e.g., government or health care facilities) will have sufficient capacity should the bulk of network investment in rural areas go to wireless. In terms of access for individuals, participants recommended that schools receiving E-rate funds stay open past school hours to provide access for low-income individuals without broadband at home.

Participants also raised a number of issues that go to the end-user experience of video content, which often depends crucially on marketplace rules for distribution. For example, “must carry” rules require cable systems to show local broadcast stations on their cable offerings.

There were a variety of viewpoints on this, with some participants saying that the rules add to the diversity of programming, and others saying it is unfair to competitive providers and still others suggesting that “must carry” should apply only to nonprofits and public broadcasting. Yet another notion was that the rules should be done away with as a way to move content to less expensive and more efficient platforms.

As to required content, the presence of so many choices over so many platforms for children’s content means that there is no longer any need to require children’s programming. Similarly, many argue for the elimination of required public, educational and government (PEG) channels. PEG programming can move to video on demand and online availability, though some participants suggested further study of the issue before eliminating PEG outright. For political content, participants thought it made sense to encourage, but not mandate, that political candidates have time set aside on local airwaves and that entities that pay for political ads—on all platforms—disclose their identities to the public.

Competition policy also entered into the discussion over distribution. First, several participants noted that policymakers should monitor vertical integration among content owners and access providers to avoid the potential hazards of exclusive programming arrangements. Second, some participants said that keeping a media ownership rule at the national level makes sense, though the FCC should reexamine the thresholds it uses when deciding whether a broadcaster can own a newspaper in the same market. As newspapers lose readers, some would like to merge with local broadcasters; current FCC rules presume that such combinations are in the public interest in the top 20 markets only, since such large markets support other outlets that can compete with a combined newspaper/broadcast entity. Expanding this list of markets is something participants thought the FCC should consider.

Licensing also entered the picture, with some participants noting that, notwithstanding innovations in the marketplace and changes in the competitive landscape, “content is still king” when it comes to thinking about drivers of competitive advantage. In that context, current practices for the licensing of content raise some concerns. As noted, entrants into the video market often face significant hurdles in obtaining the programming they need to attract consumers. Not only

can licensing fees be onerous, some desirable content (such as sports) is locked into long-term contracts. This denies entrants the chance to offer content that appeals to viewers. The rising cost of retransmission consent fees that MVPDs must pay broadcasters is another content issue for entrants into the video market. Although discussants did not reach a consensus on what policymakers should do about program licensing or retransmission consent, there was agreement that examining these issues should be part of a path forward in video regulation.

**...“content is still king” when it comes to thinking
about drivers of competitive advantage.**

A final set of issues lent themselves to multi-stakeholder processes to sort out, with participants suggesting this approach over a strong regulatory posture. Rules on decency of content seem dated as platforms for video converge, yet there is an understandable desire to discourage indecent content from finding its way to the screens of children. A multi-stakeholder approach that searches for technological solutions and focuses on increasing consumer awareness and education could empower consumers to take sufficient precautions against the display of indecent content, while loosening rules that may unduly burden broadcasters.

An animating theme for the discussion of video was ensuring the availability of high-quality broadband networks in the United States. Yet participants could not agree on one aspiration: namely, that all network platforms should meet a common standard—one based on the undifferentiated ability to transmit the highest level of video quality generally available in countries that are members of the Organization for Economic Cooperation and Development (OECD). Although several people argued that this goal may be important to demonstrate international competitiveness and efficient spectrum use, others worried that such a goal may encourage inefficient network investment and may not be flexible enough to allow investment to follow the evolution in consumer demand patterns.

Production of Content: Changing Costs Mean New Funding Sources Necessary for Public-Interest Goals

Participants identified the production of high-quality, diverse and local programming as the important goal in thinking about content in the future. Although the legal and business issues in this area are similar to those of the past (along with some new ones, such as data caps), the discussion challenged the notion that technological change is driving *down* all the costs of producing content. That makes funding, in addition to legal and business issues, the hurdles to overcome to ensure a future with the kind of digital content that society expects and needs.

Diverse video content refers to the variety of programming, news, entertainment and online video vignettes that abound these days. The cost of these different kinds of content varies in expected ways. Commercial entertainment is on the expensive range of the spectrum, and many of the new tech-enabled techniques to produce content (e.g., digital editing, three-dimensional video, production for high-definition video and others) require expensive equipment and talented employees to turn artists' creativity into entertainment for the market. Notwithstanding technological advances that lower the cost of the electronic tools of the trade and the costs of distribution, quality entertainment is typically on the cutting edge creatively, which corresponds to the high end of the market for electronic tools and the talented workers who put it all together.

Other drivers of cost have to do with, ironically, the proliferation of affordable devices, which allows consumers to enjoy content in a number of different ways. Producers must optimize content to appear on screens of different sizes and resolution. People are also coming to expect content to have the capacity to be personalized to them and appeal to local interests (i.e., hyper-localism). All of these costs may work to counter some of the lower costs enabled by digital production and distribution, whether it is high-quality entertainment or public-affairs programming for a community.

More information about consumers may help offset the rising cost of content. As companies know more about consumer preferences, they can target audiences more effectively. Netflix, for instance, collects granular data about consumers' viewing habits to guide the company in what new programs to develop.¹²

More information about consumers may help offset the rising cost of content.

Intellectual property (IP) is another issue where the rich flow of data creates challenges. The ease of access to digital content can, on the one hand, inspire others to create high-quality digital video that can have commercial and public-service benefits. At the same time, creators expect compensation; there must be enough IP protection to justify the release of content, balanced with strong fair-use protections after release, so such content is part of a video ecosystem that encourages creativity. This requires that there be mechanisms in place to balance sensible, fair use of content with IP protection. Such mechanisms include effectively taking down IP-infringing content under the Digital Millennium Copyright Act (DMCA) and better databases to keep track of rights more effectively—with incentives for copyright holders to register. Finally, there are international issues to consider, such as trade restrictions on the global programming market and cross-border content regulation (e.g., libel, indecency or hate speech). Participants suggested that U.S. content producers should have limited liability for possible infractions to limit their financial exposure and encourage bolder programming.

With cost of developing content remaining substantial and possibly increasing, and complex legal and business issues to solve, participants postulated that the production of quality video will have higher financial and transaction costs in the foreseeable future. This is particularly true for the development of programming that serves as an outlet for diverse voices, as well as for programming that is local and otherwise serves public purposes. Participants therefore explored new mechanisms to fund those categories of content. These included:

- Tying obligations to government benefits; meaning, for example, that cities that receive federal funding should require public facilities, such as schools or universities, to make their content and facilities available for the production of locally relevant content. Similarly, tax incentives for local video production might also encourage the creation of content that fosters diversity and localism.

- Exploring new sources of subsidy; for example, universities developing massively open online courses might be a source of funding for content.
- Broadening uses of existing franchise fees (or other similar local fees) to support local content available on a variety of platforms.
- Broadening the mission of the Corporation for Public Broadcasting.
- Using inducement prizes from government or foundations to encourage the creation of local content.

Devices: Possibility of Market Power Calls for Policy-Monitoring

End-user devices are the means by which people experience video and other digital content. In discussing issues that arise in the market for devices, participants defined devices as anything “that is connected to a network and displays (and/or stores and transmits) digital video content.” Front and center in any discussion about devices is the nature of the technology and how it can impact the competitive landscape that businesses face and consumers experience. From the technological perspective, it is possible for businesses to try and reinforce their competitive advantages in the distribution of video by expanding the prevalence of their proprietary operating systems across multiple devices. Someone with a smartphone running on a particular operating system may be reluctant to use a tablet that runs on a different operating system—especially if access video or other types of content on the different devices is not seamless (i.e., if software and content providers have exclusive agreements that tie content to specific software platforms). Additionally, it is possible for content developers to use standards in video so that their content runs only (or, if not exclusively, with costly work-arounds) on particular kinds of devices. At the same time, some participants argued that the opportunity to win customers across different devices and operating systems can encourage innovation and investment, as firms aim to serve customer needs.

This brings competition policy squarely into the discussion of devices in the video market. In addition to the competition issues raised with standards, some participants also argued that there have been historical concerns over the extent of the cable providers' ability to be able to control the video devices that connect to the network. This could have harmful consequences in two ways: (1) it could stifle innovation in the device field; and (2) it could limit competition in the device field.

More consumer choice would be ideal, along with strong safeguards against piracy and unauthorized use. However, new entrants to the MVPD marketplace, such as telcos and online-video distributors (including those that use an Internet-enabled set-top box), are increasingly making inroads in this market, bringing more innovation and more competition.

Other issues create additional challenges for policymakers as they evaluate the market for devices that display video. Externalities in the development of new displays may inhibit investment in them. A company developing a new type of display, such as flexible displays or low-power displays, may not be able to capture all the economic value in the marketplace. Consumers may be willing to pay extra for low-power displays, as they lower energy bills, and the environment benefits from less pollution from power generation. But because those benefits are not captured by the display manufacturer through higher prices, overall investment in energy-saving displays may be below the socially optimal level. Intellectual property is another concern in that patent trolls and patent litigation can sap resources that might otherwise go to investment in new products.

The potential policy responses in these areas fall into two categories. First, the presence of externalities and the potential for private-sector under-investment suggests that the public sector has a role to play in funding research and development. This is not to say that government should invest directly in new display technology or other devices in the video market. Rather, as has traditionally been the case, there is a role for government to play in funding upstream research (e.g., enabling research with uncertain commercial value) in the university setting that effectively primes the pipeline for ideas and talent that may someday have commercial relevance.

The second set of policy responses pertain to several important social issues. They fall into the categories of equity, privacy, protection of content and accessibility for those with disabilities. Some participants raised the question of whether the proliferation of devices to access video and other digital content, and their use in areas such as education and health care delivery, creates societal inequities if certain population segments, such as the poor, cannot afford them.

...there is a role for government to play in funding upstream research...that effectively primes the pipeline for ideas and talent that may someday have commercial relevance.

With smaller video devices making it easy to record our environment ubiquitously, personal privacy has greater importance. People may be unaware that cameras are recording many of their activities, and, conversely, if they are aware, they may be less willing to use applications on the devices.

The protection of digital content means discouraging piracy, which is easier than ever to copy. Such protection is not only important to content developers, but some participants also noted that allowing piracy to occur may encourage a culture of ignoring the law.

Finally, accessibility of devices arose in the context of people with disabilities. Some 19 percent of Americans have some sort of disability, which means millions of people. As they use the latest innovations, they will require devices to include a functionality that enables them to consume content in a manner that overcomes impairments in sight or hearing. Participants emphasized that the industry must be mindful of these needs when developing new devices.

Turning to specific policy prescriptions, participants suggested the following:

- **Competition:** To address market power that limits competition in the device field, public databases could lessen transactions costs that inhibit entry. Some suggested that spectrum-

sharing could invite new players into the mobile market and reliable databases on available spectrum could facilitate spectrum-sharing. Others suggested that databases on patents and copyright could make it easier to promote fair and legal use of content and new technology. In the market for video content, some participants recommended that the FCC address its AllVid Section 629 notice of inquiry to create the conditions for greater competition in the set-top box market. However, others took strong exception to this notion, pointing to the proliferation of competitive entry into the MVPD market as well the proliferation of online video and the availability of alternative set-top boxes from several large and growing online video distributors. Giving consumers more choice, while continuing to provide balanced protections against illegal copying and distribution of content, could spur greater competition in the content-creation industry. A multi-stakeholder forum to monitor and advise policymakers on competition issues could aid in resolving problems as an alternative to litigation or legislation.

- **Research and development:** Create a “focus center” (not unlike the National Network for Manufacturing Innovation) for device, display, battery and spectrum innovation. This would take action from Congress and involve the Defense Department and the National Institute for Standards and Technology.
- **Patent wars and trolls:** Congress should act on current legislation proposed to limit patent trolls, entities that accumulate patents for the purpose of spurring litigation to collect licensing fees from alleged infringers. Technology companies argue that such litigation is unwarranted, costly and stifles innovation. Lawsuits from patent trolls, also known as “non-practicing entities,” because they own patents but do not use the patents for business purposes, cost firms \$29 billion in 2011 (up from \$7 billion in 2005).¹³ Additionally, the Patent and Trademark Office should discourage litigious patent wars.

- **Re-shoring:** The United States has experienced an increase in manufacturing in recent years as some companies close overseas manufacturing facilities in favor of building new ones here. To encourage this, some argued that policymakers should adjust the tax code accordingly for global companies, have a stronger trade policy on IP theft and force localization of manufacturing abroad.
- **Maker movement:** The improvement in manufacturing materials and the decline in machines to manufacture goods have led to a “maker movement,” in which individuals or small teams of people can design and manufacture electronic devices. This innovative movement could benefit from investments in education to support it and better IP laws to limit misappropriation of “maker” products.
- **Coordination across stakeholder forums:** Regarding privacy, accessibility and security, participants noted that these issues to date involve a number of stakeholder conversations on specific issues, which is constructive as far as it goes. However, these discussions are often disconnected and would benefit from better coordination.
- **Access to devices:** Participants suggested that as the FCC undertakes reform of the Lifeline/Link-Up program, it should also consider support for devices to access video content from the Universal Service Fund. Additionally, the government should encourage the adoption of new devices through the power of the government as user. That is, through delivering services electronically, government should provide incentives for citizens to adopt the latest devices and services as a way to improve the effectiveness and efficiency of service delivery.

Consumers: The Need for Empowerment and Inclusion Amid Digital Abundance

Even as consumers benefit from innovation in the video market, they also need support in two areas to maximize these benefits:

- Cultivating a trusted environment, which involves ensuring that:
 - There is enough transparency and user-friendly information to help people navigate the marketplace; and
 - Sufficient privacy protections exist, so that consumers understand how businesses and the government use the data that consumers share with them.
- Increasing access and use—expanding the adoption of new services through development of digital skills that will lead to sustained use of broadband-enabled services.

These focus areas resulted in the overarching theme of *empowering consumers* in a market where there is a robust choice of ways to access digital content. People can and do have multiple devices to go online, often with service plans from more than one provider. More choice is not always an unalloyed good; it can impose new informational burdens on consumers as they try to discern the attributes of new means to access and consume content. Tools to empower consumers need to have broad impact throughout society—including those presently not online.

Tools to empower consumers need to have broad impact throughout society—including those presently not online.

In elaborating on what it means to create a *trusted environment* for consumers, the discussion began with privacy. A bedrock idea was the need to make sure consumers have informed choices about how businesses or government use the data they share online. Using personal information in a materially different way requires sufficient transparency and informed choices for individuals. Advertisers can benefit from using individuals' personal data to target ads and offer discounted services, but consumers should have clear information about how this process works and what the trade-offs are.

Some participants also said that a baseline privacy law, such as the Kerry-McCain bill, is a necessary precondition to develop a trusted environment; while others pointed to a continued reliance on a robust, voluntary, multi-stakeholder process. Whatever approach stakeholders adopt requires effective enforcement mechanisms and strong remedies. Though distinct from privacy, effective data security—the assurance that the data that consumers share is not stolen—will contribute to people’s sense that the online environment is trustworthy. Whether mechanisms to ease consumers’ worries about privacy and security come in the form of legislation or multi-stakeholder forums, participants agreed that one federal standard was necessary to aid compliance from companies. They also generally agreed that the Federal Trade Commission should have exclusive regulatory jurisdiction over privacy issues.

The point of departure for discussion of increasing broadband adoption was recognition of the current broadband adoption gap; the National Telecommunications and Information Administration (NTIA) shows that as of late 2012, 72.4 percent of Americans subscribe to broadband at home. This leaves 27.6 percent of Americans without a subscription to high-speed Internet service at home, an improvement from the 35 percent figure identified in the National Broadband Plan, but a sizeable gap nonetheless. Ideas to close the gap fell into two categories: (1) scaling and implementing initiatives hatched in the past four years; and (2) using government, in its role of delivering services, as a lever to draw more people online.

In the public sector, the FCC and NTIA have driven broadband adoption efforts in different ways over the past several years. At NTIA, the Sustainable Broadband Adoption and Public Computing Center programs received \$450 million in stimulus funding as part of the Broadband Technology Opportunities Program (BTOP) to help increase broadband adoption and use. Although to date there has been no comprehensive evaluation of these BTOP projects, NTIA has produced the “Broadband Adoption Toolkit” that highlights successful strategies other grantees have employed.

With the encouragement of the FCC, Connect 2 Compete (C2C) is a nonprofit that seeks to increase the number of broadband subscribers. C2C’s focus has been on ad campaigns to promote broadband’s relevance to targeted communities, working with cable companies

on low-cost broadband offers for qualifying customers and providing wireless broadband devices as the home broadband service option.

One of the private sector's notable initiatives to promote broadband adoption has been Comcast's Internet Essentials program, whose establishment was a condition of the Comcast/NBC Universal merger. The program offers families with children who receive free or reduced-price lunches in school Internet service at \$9.95 per month, a discount on a computer and digital-literacy training. Since the program's inception in 2010, some 220,000 families have taken advantage of the Internet Essentials offer.

Participants noted the disparate nature of these efforts—and that this is not necessarily bad. Different approaches will suit different communities, and the decentralized and diverse nature of initiatives thus far (with a light touch of coordination from NTIA on BTOP) can generate much-needed lessons on what contributes to success. At the same time, a consensus emerged that it is time to scale up (particularly with respect to the relatively nascent C2C initiative) and further implement broadband adoption programs.

**...it is time to scale up...and further implement
broadband adoption programs.**

One way to think about scaling up programs is to think of broadband adoption in conjunction with institutions that rely on their customers or constituents being connected to high-speed Internet at home. One suggestion was a “motor voter” program that would encourage people coming into a government agency to learn about and subscribe to broadband in the course of carrying out a transaction with government (e.g., at the motor vehicle administration). Another idea is to integrate broadband programs into other government programs that serve populations likely to have low home broadband adoption rates. An example of this is the Department of Housing and Urban Development's (HUD) recent partnership with C2C to make it easier for HUD residents to get broadband service. In addition to advertising the availability of C2C, the partnership allows public-housing providers

to use HUD funds to establish Neighborhood Network computer labs to provide access to broadband and, importantly, training to residents on how to use the Internet. By partnering with HUD or other state or federal agencies, the hope is to be able to expand the footprint of initiatives that have arisen in the past several years.

These partnership approaches to scaling initiatives are also about meeting people where they are—bringing broadband, as in the HUD example, close to home via a trusted institution. This technique can come into play in other contexts. Content is one example: The development of content relevant to communities that have low broadband access can make the investment in time, effort and money to get online more attractive. To that end, participants suggested that the Corporation for Public Broadcasting devote resources to the development of online video content that would appeal specifically to low-adopting population segments, such as senior citizens, low-income citizens and communities of color. Investing in broadband—both infrastructure and access—at community anchor institutions (CAIs), such as libraries or health care facilities, would also give additional access points for those without broadband at home.

Another key element in any discussion of CAIs is schools. Ensuring that schools are connected to the Internet has been a priority since the creation of the E-rate program in the Telecommunications Act of 1996. That program has provided discounted Internet services to schools, yet there is widespread agreement that the program needs to be modernized to support 1:1 video capability for the educational environment. That is, schools should have sufficient capacity to support video to each connected student at a school. Participants also expressed support for the Obama administration's ConnectED initiative, which aims to have 99 percent of America's schools connected with next-generation broadband infrastructure within the next five years.

Some participants also proposed an online tool to give life to the concept of empowering consumers. An online portal, not unlike those used to help people navigate through health care insurance choices, could go a long way toward giving consumers the information they may need to make choices about service. This tool could help users of all kinds. Even sophisticated users, with multiple devices and service plans, could benefit from a tool that could help them compare various service

plans (e.g., is there a data cap on a plan? If so, what is it? Do I have to purchase a multiyear contract?). For current non-broadband users, such a tool could help them make decisions that suit their budgets, but also provide an avenue to additional information on digital skills.

Crosscutting Issue: Data Caps and Usage-Based Pricing

The economics of video in an environment where technology is changing rapidly, traditional market silos are collapsing and revenue streams are under threat, led to extensive discussion about pricing.¹⁴ The topic of data caps and associated pricing strategies elicited discussion because data caps represent an evolution from the “all you can eat” approach to Internet service provision in the first decade or so of the commercial Internet. Under “all you can eat,” for a fixed fee per month, consumers could surf to their heart’s content with no worry about charges based on the amount of data they downloaded. With data caps, different fees or actions may be levied against consumers, depending on their provider’s terms of service, if they exceed a monthly limit of data consumption. With usage-based pricing, consumers may be charged extra for more data usage, while other methods may involve a decrease in download speed, or suspension or termination of service.

The rationale for data caps, or usage-based pricing, typically has to do with price discrimination and network management. Usage-based pricing is a form of price discrimination, and it is based on the principle that prices correlate with usage.¹⁵ If a heavy user of broadband exceeds his or her monthly data cap and thus incurs an additional charge, then that user’s willingness to pay is better aligned with the fee paid for service. In today’s broadband market, providers often offer tiered pricing plans that allow heavy users to pay more for higher monthly usage limits—again aligning willingness to pay with price. The flipside is that such tiered pricing also allows service offerings that charge less for lower monthly data caps, thereby opening up subscription options for those with less willingness to pay, such as low-income households. This sort of pricing discrimination is especially important in industries where there are high fixed costs for service provision, but low incremental costs for units of output. It allows businesses to recoup high levels of capital expenditure, while encouraging adoption of service through pricing plans tailored to consumers’ willingness to pay.

Another potential benefit from usage-based pricing is that by opening up the possibilities of higher charges to heavy consumers of digital content, more efficient network management might result. Providers of “edge services” may innovate to deliver services in a more bandwidth-intensive way in order to help their customers avoid overage charges. Customers might alter their behavior to avoid overage charges. These behavior changes may mean carriers can “make less expensive infrastructure upgrades over longer periods.” There is little evidence that data caps elicit such changes in behavior, making this rationale for data caps and usage-based pricing “mostly theoretical.” Similarly, data caps or pricing tiers have very little to do with managing congestion in networks. Because service providers do not differentiate price by time of day, users have no incentive to alter their behavior at peak times. Service providers possess, and employ, other techniques to address instantaneous congestion.¹⁶

At the same time, data caps have the potential to impact competition. Concerns may arise if, for example, an ISP offers a content provider an exclusive arrangement *not* to count its content against a users’ data cap, thereby effectively foreclosing other content providers from securing that same, or a similar, arrangement. Additionally, some argue that if data caps materially reduce the demand for data-intensive services (such as video or cloud services), this may reduce incentives for entrepreneurs to enter markets such as video, although there is little indication that is occurring today. The impact on consumers is another dimension of the problem. Some argue that the “mental transaction costs” that data caps introduce for consumers may depress broadband usage if consumers have to track their data consumption in order to avoid running up against data caps. At the same time, usage-based pricing may positively increase broadband adoption rates as lower prices for lower levels of usage may encourage more people to purchase broadband.

Participants noted that data caps for monthly home broadband services are very high—as much as 300 GB per month for many providers, although some tiers of service have limits as low as 30 GB (such as Cox’s starter service). The best available information suggests that data caps affect no more than 1 to 2 percent of broadband users. Given this, many of the concerns are speculative in nature at this point, but nonetheless policymakers should monitor impacts that may arise from data

caps. Participants were therefore in agreement on several propositions related to data caps:

- It would be unwise to discourage data caps in the market for home broadband access.
- Policymakers should guard against anti-competitive practices in the use of data caps and undertake any enforcement action on a case-by-case basis.
- Policymakers should explore ways to make sure data caps do not suppress the use of broadband for clearly defined “national purposes,” such as education or health care. Participants recognized the challenges inherent in this idea. A technical solution, though attractive, may be difficult to execute in practice and may even raise constitutional concerns about what content may be included or excluded from cap limits.

Conclusion: A Road Map to the Future

Communications networks that transmit video, data, voice and text are part of a wider social and economic system and, as such, should contribute to a high and rising standard of living for all citizens. To ensure that the video and communications sectors can contribute to that overarching goal, participants identified a number of possibilities, including:

- Developing new funding mechanisms for public-interest content through expanded use of franchise fees and other similar local fees, inducement prizes and use of public facilities for content production;
- Increasing the share of Americans with broadband at home by scaling up existing broadband adoption programs and using government programs as levers to draw non-users online;
- Ensuring that there is a trusted environment for consumers by encouraging multi-stakeholder discussions, voluntary industry self-regulation or—potentially—through a baseline privacy

law and an online portal to give consumers more information about the attributes of service plans;

- Monitoring the competitive dynamics throughout the multilayered Internet ecosystem. This includes the market for content, where licensing practices and retransmission consent rules can impact entry. It also includes seeding innovation through financial support of upstream research and development (e.g., in university settings);
- Improving incentives for network upgrades through reducing regulatory barriers at the local level that may increase build-out costs, and using government to drive consumer demand for bandwidth through e-service delivery, promotion of digital skills and literacy, and supporting ConnectED and efforts to use digital tools in the classroom.

There are uncertainties in attaining each of these goals. Funding demands, whether for public-interest content like ConnectED or broadband adoption programs, may exceed stakeholders' resources. Keeping pace with innovation will challenge the capacity of policymakers in areas such as competition policy and privacy. New business models and service offerings can make new products appealing and affordable to a wide range of consumers, yet place information demands (on product attributes and sharing data) that can inhibit use—at least for some people. The proposition for upgrading networks depends on a number of factors—such as capital costs, uncertain market demand and competitive risks—that may not always align perfectly.

To address how to reach the goals for video in the face of uncertainties, stakeholders should develop a policy road map to chart out specific steps to attain them, using the framework developed here as a guide. The goals from this report serve as a starting point for developing specific policy instruments to attain them. In undertaking this, the framework in this report suggests that there are two things that should go along with developing a policy road map. First, stakeholders must agree on what metrics to track to attain goals and, where necessary, to develop metrics for understanding whether programs are attaining desired goals. Second, stakeholders should recognize complementari-

ties in designing policy. If, for instance, a goal is to increase the amount of public-interest content and the range of voices creating it, then promoting digital skills among all citizens would complement increased funding for such content. More money for technology in schools might go further if there are also resources and training for teachers on how to use technology in the classroom. Improving incentives for network upgrades through regulatory relief may prove more effective if stakeholders also help bolster demand for bandwidth by promoting e-delivery of government services and bolstering technology adoption in low-income areas.

Thinking through the specifics requires a wide participation of actors (from the private, public and nonprofit sectors) and careful parsing of responsibilities. Regulatory reform can accomplish a great deal, but Congress may need to make legislative changes in other areas. Federal action may accomplish a great deal, but state and local policymakers may be the right locus for action in other areas. In the end, stakeholders need to be creative in offering ideas but, more importantly, cultivate an environment where the industries that create video and other digital content can contribute to an inclusive society and a high-growth economy.

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APPENDIX



The Future of Video Regulation

August 11-14, 2013
Aspen, Colorado

Conference Participants

Rebecca Arbogast

Vice President, Global Policy
Comcast Corporation

Robert Atkinson

Founder and President
The Information Technology
and Innovation Foundation

Farid Ben Amor

Graduate Student
University of Southern California

Paula Boyd

Director, Government and
Regulatory Affairs
Microsoft Corporation

Julie Brill

Commissioner
Federal Trade Commission

Jeffrey Campbell

Vice President, The Americas
Global Government Affairs
Cisco Systems, Inc.

Jonathan Chaplin

Managing Partner
New Street Research

Stephen Conroy

Former Minister for Broadband,
Communications and the
Digital Economy
Australia Senate

Donna Epps

Vice President, Public Policy &
Strategic Alliances
Verizon Communications

Charles M. Firestone

Executive Director
Communications and Society
Program
The Aspen Institute

Julius Genachowski

Senior Fellow
Communications and Society
Program
The Aspen Institute

Note: Titles and affiliations are as of the date of the conference.

Richard Green

Director
Liberty Global, Inc.

Dale Hatfield

Executive Director, Silicon
Flatirons Center
and
Adjunct Professor
University of Colorado at
Boulder

John Horrigan (*rappporteur*)

Senior Research Fellow
Media and Technology Institute
Joint Center for Political and
Economic Studies

Reed Hundt

Principal
REH Advisors

Julia Johnson

President
Net Communications

Karen Kornbluh

Senior Fellow, Digital Policy
Council on Foreign Relations

Eddie Lazarus

Executive Vice President
and
General Counsel
Tribune Company

Blair Levin

Fellow
Communications and Society
Program
The Aspen Institute

Eli Noam

Director, Columbia Institute
for Tele-Information
and
Professor of Economics
and Finance
Columbia Business School
Columbia University

Brent Olson

Vice President, Public Policy
AT&T Services, Inc.

Ajit Pai

Commissioner
Federal Communications
Commission

Peter Pitsch

Executive Director,
Communications Policy
and
Associate General Counsel
Intel Corporation

Ed Richards

Chief Executive
Ofcom

Johanna Shelton

Senior Policy Counsel
Google

Angela Simpson

Acting Deputy Assistant Secretary
and
Chief of Staff
National Telecommunications
and Information Administration
U.S. Department of Commerce

Jeff Smulyan

Chief Executive Officer and
Chairman of the Board
EMMIS Communications

Gigi Sohn

President and Chief Executive
Officer
Public Knowledge

Steven Teplitz

Senior Vice President,
Government Relations
Time Warner Cable

Alfredo Tímermans

Chief Executive Officer
Telefonica Internacional USA,
Inc.

Kevin Werbach

Associate Professor
The Wharton School, University
of Pennsylvania

Richard Whitt

Corporate Vice President &
Global Head of Public Policy
and Government Relations
Motorola Mobility

Corie Wright

Director, Global Public Policy
Netflix, Inc.

Staff:

Ian Smalley

Project Manager
Communications and Society
Program
The Aspen Institute

About the Author

John Horrigan is an independent communications and technology policy consultant and a Senior Fellow at the Joint Center for Political and Economic Studies. Horrigan's work focuses on consumers' use of information and communications technologies and drivers of broadband adoption and usage.

Before joining the Joint Center, Horrigan was Vice President for Policy and Research at TechNet, where he developed research characterizing the job impacts of mobile applications and wrote reports on progress on broadband adoption since the delivery of the National Broadband Plan (NBP). Horrigan also authored TechNet's 2012 "State Broadband Index" that ranks U.S. states on where they stand on broadband adoption and deployment. He has served as a consultant for the Partnership for Connected Illinois and to the National Telecommunications and Information Administration's "Broadband Adoption Toolkit."

In 2009-10, Horrigan was part of FCC Chairman Genachowski's leadership team tasked with developing the NBP. In that capacity, he developed the research agenda for the "Inclusion" portion of the NBP and conducted the FCC's first national survey on broadband adoption and usage. Before that, he spent nine years at the Pew Research Center's Internet & American Life Project.

Horrigan received his Ph.D. in public policy from the University of Texas at Austin and his B.A. in government and economics from the University of Virginia.

About the Communications and Society Program

www.aspeninstitute.org/c&S

The Communications and Society Program is an active venue for framing policies and developing recommendations in the information and communications fields. We provide a multi-disciplinary space where veteran and emerging decision-makers can develop new approaches and suggestions for communications policy. The Program enables global leaders and experts to explore new concepts, exchange insights, develop meaningful networks, and find personal growth, all for the betterment of society.

The Program's projects range across many areas of information, communications and media policy. Our activities focus on issues of open and innovative governance, public diplomacy, institutional innovation, broadband and spectrum management, as well as the future of content, issues of race and diversity, and the free flow of digital goods, services and ideas across borders.

Most conferences employ the signature Aspen Institute seminar format: approximately 25 leaders from diverse disciplines and perspectives engaged in roundtable dialogue, moderated with the goal of driving the agenda to specific conclusions and recommendations. The program distributes our conference reports and other materials to key policymakers, opinion leaders and the public in the United States and around the world. We also use the Internet and social media to inform and ignite broader conversations that foster greater participation in the democratic process.

The Program's Executive Director is Charles M. Firestone. He has served in this capacity since 1989 and also as Executive Vice President of the Aspen Institute. Prior to joining the Aspen Institute, Mr. Firestone was a communications attorney and law professor who has argued cases before the United States Supreme Court. He is a former director of the UCLA Communications Law Program, first president of the Los Angeles Board of Telecommunications Commissioners, and an appellate attorney for the U.S. Federal Communications Commission.

Select Publications from the Aspen Institute Communications Policy Project

Spectrum as a Resource for Enabling Innovation Policy,
by William Webb

The 2012 Aspen Institute Roundtable on Spectrum Policy (AIRS) convened shortly after the presidential election to consider ways that spectrum policy could improve the economy through innovation. The 32 leading communications policy experts in attendance focused on how spectrum policies could help create an environment that makes it easier to use spectrum as a resource for innovative new goods and services. The participants first identified problems facing new entry and innovation today, and then recommended solutions, looking specifically at the interstices among licensed and unlicensed approaches, spectrum sharing and flexibility, and new institutional arrangements to manage these solutions. The report, written by British spectrum expert William Webb, sets forth 11 recommendations that he gleaned from the conference dialogue to guide future spectrum policy development with regard to facilitating innovation. 2013, 45 pages, ISBN Paper: 0-89843-584-6, \$12.00

Rethinking Communications Regulation, by Richard Adler

As the Internet and other information and communications technologies grow exponentially, and as a new ecosystem is emerging that could conflate previously distinct methods of communication into a single digital medium, questions arise as to whether the traditional silos of regulation are still appropriate. The report resulting from the 27th Annual Aspen Institute Communications Policy Conference addresses the overarching concern as to whether the Communications Act needs a radical revision. Written by rapporteur Richard Adler, the report considers the key goals of a new communications regime and offers regulatory and non-regulatory approaches for achieving these goals in a digitally connected world. 2013, 65 pages, ISBN Paper: 0-89843-583-8, \$12.00

The Reallocation Imperative: A New Vision for Spectrum Policy,
by Preston Marshall

The report resulting from the 2011 Aspen Institute Roundtable on Spectrum Policy addresses new ways of allocating, clearing, using and/or sharing spectrum controlled by private parties and government agencies. Written by rapporteur Preston Marshall, the report attempts to step back and establish a broad vision for reallocating spectrum in the United States in the public interest, discussing new approaches that will facilitate more effective and efficient spectrum use. A number of recommendations are laid forth to guide future spectrum policy development, Congressional actions, and technology explorations. 2012, 54 pages, ISBN Paper: 0-89843-570-6, \$12.00

Updating Rules of the Digital Road: Privacy, Security, Intellectual Property, by Richard Adler

Given the current growth and importance of the Internet, the report of the 2011 Aspen Institute Conference on Communications Policy titled *Updating Rules of the Digital Road: Privacy, Security, Intellectual Property*, highlights the elements that will allow for greater use of broadband as the common medium: security, privacy and intellectual property regulation. Written by rapporteur Richard Adler, the report explores a range of threats that plague the use of today's communications media and provides a series of recommendations which aim to ensure that users' communications are secure, private and protected.

The report reflects the issues and ideas raised by business leaders, academics, and policy experts at the Twenty-Sixth Annual Aspen Institute Conference on Communications Policy. 2012, 70 pages, ISBN Paper: 0-89843-563-3, \$12.00

Spectrum for the Next Generation of Wireless, by Mark MacCarthy

Spectrum for the Next Generation of Wireless explores possible sources of spectrum, looking specifically at incentives or other measures to assure that spectrum finds its highest and best use. It includes a number of recommendations, both private and federal, of where and how spectrum can be repurposed for wireless use. In November 2010, the Aspen Institute Communications and Society Program convened the Aspen

Institute Roundtable on Spectrum Policy, where 31 experts and leaders addressed the consequences and solutions to the increasing demand for spectrum. *Spectrum for the Next Generation of Wireless* is the report resulting from the Roundtable discussions. 2011, 68 pages, ISBN Paper: 0-89843-551-X, \$12.00

Rewriting Broadband Regulation, by David Bollier

The report of the 25th Annual Aspen Institute Conference on Communications Policy in Aspen, Colorado, considers how the United States should reform its broadband regulatory system. Participants looked at international models and examples and examined how data and communications should be protected in the international arena. The resulting report explores a range of policies for U.S. broadband regulation, many of them derivative of the National Broadband Plan adopted by the Federal Communications Commission only a few months before the conference.

Participants also ventured into new and interesting territory with the novel concept of “digital embassies.” They saw this as a way of dealing with jurisdictional issues associated with the treatment and protection of data in the cloud, i.e., data that is provided in one country but stored or manipulated in another. The concept is that the data would be treated throughout as if it were in a kind of virtual embassy, where the citizenship of the data (i.e., legal treatment) goes along with the data. This policy seed has since been cultivated in various other regulatory environments. 2011, 37 Pages, ISBN Paper: 0-89843-548-X, \$12.00

Scenarios for a National Broadband Policy, by David Bollier

The report of the 24th Annual Aspen Institute Conference on Communications Policy in Aspen, Colorado, captures the scenario building process that participants used to map four imaginary scenarios of how the economy and society might evolve in the future, and the implications for broadband policy. It identifies how certain trends—economic, political, cultural, and technological—might require specific types of government policy intervention or action. 2010, 52 pages, ISBN Paper: 0-89843-517-X, \$12.00

Rethinking Spectrum Policy: A Fiber Intensive Wireless Architecture,
by Mark MacCarthy

Rethinking Spectrum Policy: A Fiber Intensive Wireless Architecture is the report resulting from the Aspen Institute Roundtable on Spectrum Policy, held at the Aspen Wye River Conference Center in November 2009. Written by rapporteur Mark MacCarthy, the report captures the insights of the participants, exploring innovative ways to respond to the projections of exponential growth in the demand for wireless services and additional spectrum. In addition to discussing spectrum reallocations, improved receivers, shared use and secondary markets as important components for meeting demand, the report also examines opportunities for changes in network architecture, such as shifting the mix between fiber and wireless. 2010, 58 pages, ISBN Paper: 0-89843-520-X, \$12.00

ICT: The 21st Century Transitional Initiative, by Simon Wilkie

The report of the 23rd Annual Aspen Institute Conference on Communications Policy in Aspen, Colorado addresses how the United States can leverage information and communications technologies (ICT) to help stimulate the economy and establish long-term economic growth. The report, written by Roundtable rapporteur Simon Wilkie, details the Aspen Plan, as developed in the summer of 2008, prior to the economic meltdown beginning in September 2008 and prior to the election of Barack Obama as President. The Plan recommends how the Federal Government—through executive leadership, government services and investment—can leverage ICTs to serve the double bottom line of stimulating the economy and serving crucial social needs such as energy efficiency and environmental stewardship. 2009, 80 pages, ISBN Paper: 0-89843-500-5, \$12.00

A Framework for a National Broadband Policy, by Philip J. Weiser

While the importance of broadband access to functioning modern society is now clear, millions of Americans remain unconnected, and Washington has not yet presented any clear plan for fixing the problem.

Condensing discussions from the 2008 Conference on Communications Policy and Aspen Institute Roundtable on Spectrum Policy (AIRS) into a single report, Professor Philip Weiser of the University of Colorado at Boulder offers a series of specific and concrete policy recommendations for

expanding access, affordability, and adoption of broadband in the United States. 2008, 94 pages, ISBN Paper: 0-89843-484-X, \$12.00

The Future of Video: New Approaches to Communications Regulation,
by Philip J. Weiser

As the converged worlds of telecommunications and information are changing the way most Americans receive and relate to video entertainment and information, the regulatory regimes governing their delivery have not changed in tune with the times. These changes raise several crucial questions: Is there a comprehensive way to consider the next generation of video delivery? What needs to change to bring about a regulatory regime appropriate to the new world of video? The report of the 21st Annual Conference on Communications Policy in Aspen, Colorado, outlines a series of important issues related to the emergence of a new video marketplace based on the promise of Internet technology and offers recommendations for guiding it into the years ahead. 2006, 70 pages, ISBN Paper: 0-89843-458-0, \$12.00

Clearing the Air: Convergence and the Safety Enterprise, by Philip J. Weiser

The report describes the communications problems facing the safety enterprise community and their potential solutions. The report offers several steps toward a solution, focusing on integrating communications across the safety sector on an Internet-Protocol-based backbone network, which could include existing radio systems and thus make systems more dependable during emergencies and reduce costs by taking advantage of economies of scale. The conference participants stressed that the greatest barriers to these advances were not due to lagging technology but to cultural reluctance in adopting recent advances. Writes Weiser, "The public safety community should migrate away from its traditional reliance on specialized equipment and embrace an integrated broadband infrastructure that will leverage technological innovations routinely being used in commercial sectors and the military." 2006, 55 pages, ISBN Paper: 0-89843-4, \$12.00

Reforming Telecommunications Regulation, by Robert M. Entman

The report of the 19th Annual Aspen Institute Conference on Telecommunications Policy describes how the telecommunications

regulatory regime in the United States will need to change as a result of technological advances and competition among broadband digital subscriber lines (DSL), cable modems, and other players, such as wireless broadband providers. The report proposes major revisions of the Communications Act and FCC regulations and suggests an interim transitional scheme toward ultimate deregulation of basic telecommunications, revising the current method for universal service subsidies, and changing the way regulators look at rural communications. 2005, 47 pages, ISBN Paper: 0-89843-428-9, \$12.00

Challenging the Theology of Spectrum: Policy Reformation Ahead,
by Robert M. Entman

This report examines the theology of spectrum—that is, the assumptions and mythology surrounding its management and use. The report looks at how new technologies affecting spectrum, such as software-defined radio, can challenge the conventional wisdom about how spectrum should be managed. Such innovations allow for access to unused frequency space or time on frequencies that are otherwise licensed to an exclusive user. 2004, 43 pages, ISBN Paper: 0-89843-420-3, \$12.00

Spectrum and Network Policy for Next-Generation Telecommunications,
by Robert M. Entman

The report of the 18th Annual Aspen Institute Conference on Telecommunications Policy offers policy alternatives in both spectrum and network policy to achieve new gains for the telecommunications field. The first essay suggests new management approaches to encourage more efficient uses of spectrum while preserving the commitment to reliability of service and public-safety values. The second essay debates the competitive structure of the telecommunications industry and its implications for building next-generation networks (NGN) and identifies three areas to encourage optimal development of the NGN: operate the NGN on a price-deregulated basis and begin to address access regulation issues, secure the intellectual property rights of content suppliers, and adjust the system of subsidized pricing to bring about competitively neutral pricing. 2004, 92 pages, ISBN Paper: 0-89843-394-0, \$12.00

Reports can be ordered online at www.aspeninstitute.org/publications or by sending an email request to publications@aspeninstitute.org.