

#CommActUpdate: Modernizing the Communications Act

Initial Comments of Competitive Carriers Association

Competitive Carriers Association (“CCA”) submits these comments in response to the Energy and Commerce Committee’s (“Committee”) white paper on modernizing the Communications Act. CCA’s membership comprises more than 100 competitive wireless providers ranging from small, rural carriers serving fewer than 5,000 customers to regional and national providers serving millions of customers. CCA also represents almost 200 Associate Members, consisting of small businesses, vendors, and suppliers that serve carriers of all sizes. Together, CCA’s members represent a broad assortment of entities committed to the belief that a competitive wireless market is a critical driver of the U.S. economy.

In weighing reforms to the Communications Act of 1934 (“Act”) and the structure of the Federal Communications Commission (“FCC” or “Commission”), CCA encourages the Committee to focus on three governing principles. First, communications laws and regulations should no longer be divided into sector-specific areas that the FCC developed in response to (or for the benefit of) particular types of technologies or infrastructure. Second, any revisions to the Act should encourage the FCC to stimulate competition through transparent, upfront rules, and eliminate regulations that cater to entrenched incumbents at the expense of innovation. Finally, Congress should reaffirm the importance of *connectivity*, and support the continued expansion of positive “network effects”—regardless of the particular technology of the day.

Treat Providers of Similar Services Similarly

In its white paper, the Committee rightly notes that one of the most common criticisms of the Act is that its sector-based structure, based primarily on distinctions between specific network technologies, does not reflect the realities of today’s telecommunications marketplace.

CCA agrees, and encourages Congress to equalize the treatment of like services regardless of their delivering infrastructure.

A level playing field for all industry participants is necessary for competition to flourish. Under the current statutory regime, in which each of the Act's titles governs a specific sector of the communications industry, regulation is inconsistent and often based on outdated models of how the industry functions. This approach can prove especially challenging to wireless service providers that face a regulatory regime drafted when wireline carriers dominated the telecommunications industry. Reforming this structure to remove barriers to competition would encourage continued growth and innovation in the wireless market, boost the nation's economy, and deliver substantial benefits to consumers.

One example of how the current structure of the Act encourages disparate regulatory treatment of industry participants is the administration of the Universal Service Fund ("USF") program. When the modern USF was first created, funding for wireless providers was tied to cost characteristics and locations of wireline voice providers.¹ Since that time, the telecommunications landscape has shifted dramatically, with consumers demonstrating a strong, sustained preference for mobile wireless services, including mobile broadband.² In 2011, the Commission took steps to make broadband available in remote areas where deployment might otherwise not be possible, but continued to include preferences for wireline incumbent local exchange carriers ("ILECs") that serve to undermine competition.³ Rather than pursuing a

¹ See Connect America Fund *et al.*, Report & Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17669 ¶ 8 (2011) ("CAF Order and FNPRM").

² See, e.g., Industry Analysis and Technology Division, Wireline Competition Bureau, Internet Access Services: Status as of June 30, 2012, at 1 (rel. May 2013) (noting that "[g]rowth is particularly high in mobile Internet subscriptions," with the number of mobile subscriptions up 28 percent from June 2011), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0520/DOC-321076A1.pdf.

³ See CAF Order and FNPRM, 26 FCC Rcd at 17674 ¶ 28.

consumer-oriented, competitively-neutral policy in distributing USF support for high-cost areas, the Commission instead:

- continued to overcompensate wireline providers for building out facilities;
- allocated more than \$2 billion in annual funding for rate-of-return ILECs without providing a mechanism to make this funding available to more competitive providers; and
- established an overall budget for high-cost support that would direct nearly *ten times* more support to aging wireline infrastructure than to innovative new wireless offerings—resulting in a net reduction in funding for mobile wireless services in contradiction to clear consumer choice.⁴

The problem with the administration of USF support helps illustrate the historical bias that can persist, often unwittingly, through legacy regulatory structures within the FCC.

Removing critical programs such as USF from legacy, infrastructure-based bureaus would not only help make the FCC more responsive to the modern telecommunications marketplace, but also encourage continued growth and innovation in the broadband market.

Encourage Upfront Rules that Expand Competition Instead of Regulation

Spectrum is a government-created commodity. There are no spectrum stores or spectrum mines. Government administration and oversight of the nation's spectrum resources is intrinsic to having spectrum at all. At the same time, the FCC has not always used the least intrusive regulatory tools at its disposal or has declined to use those tools until the challenges to competition become so great as to require costly, time-consuming and highly disruptive regulatory intervention. To limit the need for after-the-fact regulation, any Communications Act update should both empower and encourage the FCC to adopt transparent, upfront rules.

The best way to encourage and promote wireless competition is to ensure that there are effective safeguards in place to prevent the exercise of market power—rules and policies that,

⁴ See Comments of RCA—The Competitive Carriers Association, *Connect America Fund et al.*, WC Docket No. 10-90 at 2 (filed Jan. 18, 2012).

among other things, prohibit excessive consolidation and preserve access to key inputs such as spectrum—to consumers’ ultimate benefit. As FCC Chairman Wheeler remarked during one of his first days in office, “competition does not always flourish by itself; it must be supported and protected if its benefits are to be enjoyed.”⁵ The wireless industry, although an important economic driver, suffers from highly concentrated market power, as the FCC has repeatedly recognized.⁶

The adoption of a reasonable spectrum aggregation rule represents the type of limited regulatory intervention that can prevent the wireless industry from sliding into duopoly, where heavy-handed regulation would be required. The two largest wireless providers currently control nearly 78 percent of the desirable, “beachfront” spectrum below 1 GHz nationwide, and significantly more in the nation’s largest markets.⁷ Meanwhile, the broadcast incentive auction provides one of the few near-term opportunities to allocate additional low-band spectrum for commercial wireless services—and more importantly, provides another chance for competitive carriers to gain access to this critically important spectrum, which has superior propagation characteristics that are essential to in-building penetration in urban areas and expanded broadband coverage in rural areas and everywhere else.

Many authorities have weighed in on the importance of including spectrum aggregation limits in the auction rules, which can have a beneficial impact on auction revenues even as they ensure the future competitiveness of the wireless market.⁸ Certainty in the spectrum auction

⁵ See Tom Wheeler, “Opening Day at the FCC: Perspectives, Challenges, and Opportunities” (Nov. 5, 2013), available at <http://www.fcc.gov/blog/opening-day-fcc-perspectives-challenges-and-opportunities>.

⁶ See, e.g., *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Mobile Conditions with Respect to Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd 3700, 3704 ¶ 2 (rel. Mar. 21, 2013) (“Sixteenth CMRS Report”) (failing to find that the wireless industry is effectively competitive).

⁷ See Sixteenth CMRS Report, 28 FCC Rcd at 3787 ¶ 118.

⁸ See, e.g., Martin Cave and William Webb, *Spectrum Limits and Auction Revenue: The European Experience*, attached to Ex Parte Letter of Rafi Martina, Sprint, to Marlene H. Dortch, Secretary, Federal Communications

rules will encourage participation in the auction by smaller providers because they will have assurance that the dominant incumbents will not be able to foreclose their bids by exercising their market power. But upfront rules also provide clarity to dominant carriers, who otherwise would be forced to speculate about the possibility of the FCC requiring mandatory divestitures of spectrum after the fact. An absence of clear rules of the road would likely lead to either depressed bidding (should a carrier underestimate how much spectrum it would be eligible to bid on and keep) or prime spectrum sitting on the sidelines (should a carrier overestimate its eligibility, and therefore need to divest spectrum after the fact).

Whatever the substance of the rules, all players stand to benefit from knowing them before the game starts. Congress can foster competition in the wireless market by reaffirming its mandate in Section 309 of the Act that the Commission design and implement spectrum auctions in a manner that will “avoid[] excessive concentration of licenses and [] disseminat[e] licenses among a wide variety of applicants,” through clear upfront spectrum aggregation rules, rather than uncertain after-the-fact remedies. Doing so will not only empower non-dominant competitors to challenge the dominant carriers on price, quality, and service, but also reduce the risk that the dominant carriers guess wrong about applicable FCC policies and make inefficient decisions based on faulty assumptions.

Recognize and Support Positive Network Effects

The more people who join a network, the more valuable the network becomes. Perhaps the best example is the telephone. The more people who own telephones, the more valuable the

Commission, WT Docket Nos. 12-268, 12-269 (filed July 29, 2013); Peter Cramton, *The Rationale for Spectrum Limits and Their Impact on Auction Outcomes* (Sept. 9, 2013), attached to Ex Parte Letter of T-Mobile USA, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 12-268, WT Docket No. 12-269 (filed Sept 9, 2013); Reed E. Hundt and Gregory L. Rosston, *Articulating a Modern Approach to FCC Competition Policy* at 3 (Sept. 2013), available at <http://siepr.stanford.edu/?q=/system/files/shared/pubs/Competition.Policy.2013.pdf>.

telephone is to each owner because each owner has more people able to receive calls. The same kind of “network effect” extends to modern communications networks. If communications networks were not required to interconnect with one another, the value of each stand-alone network would be far less than the fully integrated set of networks.

An updated Communications Act should recognize and encourage positive “network effects.” To assure that the benefits of network effects continue to extend to the digital age, competitive carriers should be able to interconnect with both incumbent network operators and next-generation telecommunications networks. The public at large benefits when all carriers have access to infrastructure not only in the form of voice and data roaming on the networks of the dominant providers, but also through access to facilities used for backhaul, transport and interconnection with those carriers’ affiliated wireline networks.⁹ As the marketplace develops and technologies continue to change, interconnection and access obligations help protect and expand the positive network effects for all consumers.

Under the auspices of the IP-transition, however, some have argued that the fundamental interconnection obligations under the Act should no longer apply. Congress should reject these arguments. “Relief” from statutory and regulatory interconnectivity provisions would be misguided and stifle innovation and competition at a time when the wireless industry is a powerful growth engine for the U.S. economy. ILECs, by virtue of their ubiquitous and entrenched networks, have substantial market power and the ability and incentive to exclude competitive carriers from the telecommunications marketplace by denying them interconnection. Ensuring the connectedness of networks is critical, whatever the management protocol of that network infrastructure—industry participants must be able to connect to other networks for their

⁹ See, e.g., Connecting America: The National Broadband Plan at 49 (2010), *available at* <http://download.broadband.gov/plan/national-broadband-plan.pdf> (“For consumers to have a choice of service providers, competitive carriers need to be able to interconnect their networks with incumbent providers.”).

network to have any real value to consumers. By reinforcing essential interconnection requirements, Congress can ensure that competition in the telecommunications marketplace will not be stifled by legacy network operators.

Conclusion

The wireless industry is an important engine of economic growth in the United States, directly or indirectly supporting 3.8 million jobs and contributing \$146.2 billion to the nation's GDP in 2011.¹⁰ Despite the critical role of wireless technology, issues critical to maintaining competition in the wireless industry are segregated due to the current structure of the Act and the FCC. To address these disparities, heighten Commission focus on wireless competition and intermodal competitiveness, and promote competition in all aspects of the telecommunications marketplace, Congress should update the Act to cut across silos and compartmentalized thinking and treat similar services similarly, encourage the creation of transparent *ex ante* rules, and ensure that the positive networks effects of seamless connectivity extend into the digital era.

CCA looks forward to working with the Committee on revising the structure and focus of the Act and the Commission to better reflect the marketplace of today and be better prepared to ensure competition in the market of the future.

¹⁰ See Dr. Raul L. Katz, *et al.*, "Economic Impact of Wireless Broadband in Rural America," at 8-9 (2011), available at http://www.teleadvs.com/wp-content/uploads/RCA_FINAL.pdf; Roger Entner, "The Wireless Industry: The Essential Engine of U.S. Economic Growth," at 4 (2012), available at bit.ly/1ndVGsG.



January 31, 2014

The Honorable Fred Upton
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House Energy and Commerce
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2183 Rayburn House Office Building
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The Honorable Greg Walden
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Re: Modernizing the Communications Act

Dear Chairmen Upton and Walden:

The Computer & Communications Industry Association (CCIA) hereby submits its response to your recent inquiry about “Modernizing the Communications Act.” CCIA represents large, medium-sized, and small companies in the high technology products and services sectors, including computer hardware and software, electronic commerce, telecommunications and Internet products and services – companies that collectively generate more than \$250 billion in annual revenues.¹ Since the early 1980s when the Reagan Administration broke up the AT&T monopoly, CCIA has worked to promote competition in all telecommunications markets, both wired and wireless. In keeping with the FCC’s Computer Inquiries of the same period, CCIA supported the regulatory distinction between “enhanced” computer information services and “basic” underlying telecommunications transmission network facilities and services.

The Telecommunications Act of 1996 preserved the same framework. Fast forward to the 21st Century and we find that same distinction between the wildly competitive world of websites and applications (information services) on the one hand and basic network access connections on the other, remaining a very relevant one. Industry re-consolidation has produced newly concentrated access markets offering most

¹ A complete list of CCIA members is available at <http://www.cciagnet.org/members>.

consumers and small businesses some choice of access providers, but not much. Even large businesses have few alternatives for critical high capacity broadband connections, known as “special access.” The economics of capital-intensive wired and wireless local networks has simply not changed enough to make multiple network build-outs sustainable, anywhere but in the most lucrative and dense geographic markets.

Our comments focus on three of your questions in particular. We address questions 2, 4, and 5, which relate to recommended changes in current law, characteristics of sustainable laws, and the distinction between telecommunications and information services.

Question 2. What should a modern Communications Act look like? Which provisions should be retained from the existing Act, which provisions need to be adapted for today’s communications environment, and which should be eliminated?

The TV broadcast retransmission provisions of Title VI, established by the Cable Act of 1992, are a part of the Telecommunications Act that should be modified in light of 21st century video market realities. Before 1992, cable operators merely were required to pay compulsory copyright license fees set by the Copyright Office for local broadcast programming they were already required to carry by the FCC “must carry” rules. Then the retransmission consent rules were enacted to allow broadcasters to negotiate for additional payments directly from cable TV operators. Detailed rules also covered terms for importation of distant broadcast signals, when, for example, a local market was missing a station of one of the 4 major national networks. Now that satellite providers, telecoms, and “over the top” Internet options have entered the video distribution market, and the broadcast industry has consolidated, these 20 year old rules are being abused by the 4 major broadcast networks whose owned and affiliated stations still operate local monopolies. FCC territorial exclusivity and program non-duplication rules protect TV broadcasters’ monopoly under Title III of the Telecom Act and give local TV stations major leverage in programming markets. In negotiations over retransmission fees, networks threaten to pull their programming from specific geographic markets if their demands are not met. American consumers have been experiencing a record number of program blackouts in recent years, while retransmission fees demanded by broadcasters from cable and satellite pay TV providers continue to escalate. This ends up costing

consumers in higher monthly bills, in addition to the inconvenience and disappointment of the blackouts. Solutions to this problem have already been proposed in this Congress, and they deserve serious and expeditious consideration.

Question 4. As noted, the rapidly evolving nature of technology can make it difficult to legislate and regulate communications services. How do we create a set of laws flexible enough to have staying power? How can the laws be more technology-neutral?

Sustainable laws are those that focus on core values and outcomes, not technology, means or methods. The 1996 Telecom Act, with its focus on advanced communications services for all Americans at reasonable rates, interconnected networks, and competition, is mostly an example of such a sustainable law. It centers around enduring values like communications services for all Americans, regardless of geography, network interconnection and competition, public safety and interoperability. With the exception of broad wired vs. wireless network categories, with only the latter involving spectrum considerations, the law is largely technology-neutral, and thus flexible in its application to new technologies. It does not distinguish for example, between analog and digital voice, data and video transmissions across networks, or whether Internet protocol (IP) is being employed or not. The Act's nondiscrimination provisions are what created enough certainty for entrepreneurs about the ability to innovate without permission from network operators, that AOL, Yahoo!, Google, eBay, Amazon, Facebook, and countless other online services could be commercially launched and fully scaled up. Treating Internet access as just another information service, which is permissible, but not required by the Act, actually upsets this certainty, even as it provides comfort to Internet access companies.

Question 5. Does the distinction between information and telecommunications services continue to serve a purpose? If not, how should the two be rationalized?

The distinction between "telecommunications" and "information services" serves the purpose of clarifying what is physical underlying network infrastructure, especially critical bottleneck end user connections, and what are "over the top" services or applications that depend on physical telecommunications networks for transmission to

and from user end points. Telecommunications networks do not depend for their functioning on any particular information service, but instead operate independently. Information services, on the other hand, are not available to any end user without a physical network connection. For this reason, CCIA believes that the distinction remains useful to Congressional policy deliberations. For example, ISP bundling of information services with network access connections creates market incentives and capabilities for anticompetitive discrimination that do not exist with respect to either service on a standalone basis. Thank you for this opportunity to share our perspectives with your Committee.

Respectfully submitted,

A handwritten signature in cursive script that reads "Catherine R. Sloan".

Catherine R. Sloan
Vice President, Government Relations
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To: House Energy and Commerce Committee
From: Consumer Electronics Association (CEA)
Date: January 31, 2014
Subject: White Paper – Modernizing the Communications Act

The Consumer Electronics Association (CEA) greatly appreciates the opportunity to comment on the first in a series of white papers on modernizing the Communications Act. The white paper provides a list of stakeholder questions on how to tackle updating the Communications Act. Our member companies are currently considering these and other questions related to updating the Communications Act. While we don't have specific answers to all the questions at this time, we would like to share with the Committee our suggested guiding principles for reform. A number of these principles address some of the questions queried in the white paper.

We agree that the rapid advancement of digital technology and telecommunications has outpaced the current U.S. regulatory regime. The Telecommunications Act of 1996 defined economic regulations and classifications of telecommunications services and providers. Many of these regulations have become outdated and are no longer relevant. Attempts to classify new IP-based networks and services into outmoded regulations can stifle innovation, create uncertainty in the marketplace, and diminishes the increase in productivity that is directly attributed to such innovations.

Policymakers understand the need to establish a new communications policy framework that encourages the continuing transformation and modernization of communications networks. As you begin to debate and examine regulatory policy in this new era, CEA offers the following guiding principles for consideration.

Minimal Federal Regulation:

Government should encourage industry to develop solutions to important public interest obligations (i.e., E911 and access for the disabled) before it mandates solutions. Further, as new technologies emerge, it is critical to avoid creating a patchwork of state laws governing these technologies. For example, IP-based services, including Voice over Internet Protocol services, are interstate in nature, and where subject to regulation should be subjected only to federal jurisdiction.

There are distinct and important differences between IP networks and traditional communications networks. Any regulation of IP networks must only be to cure a proven

market failure or address vital public safety issues. Policymakers, therefore, should only impose a minimal level of regulation and should refrain from imposing legacy economic regulations on these new networks.

For innovation to continue to flourish, we believe that IP-based services should generally be unregulated. We urge government to resist preemptive regulation in response to “hypothetical” harms.

New Regulatory Regime Must Provide Certainty:

Regulatory certainty is critical for the development and deployment of innovative products and services. One of the biggest pitfalls of the 1996 Telecom Act was its extreme complexity, and that the regulations were open for interpretation and debate long after they were adopted. This regulatory ambiguity has resulted in the FCC being preoccupied with litigation and differing levels of marketplace uncertainty. A clear and concise **technology neutral** regulatory environment is essential to the success of this new digital age.

Advancing Innovation by Encouraging Compatibility and Portability:

The current and future success of all IP services depends on preserving the existing paradigm between consumer electronics manufacturers, service providers, network operators and content developers. This paradigm relies on a commitment to an open and unfettered consumer access to lawfully acquired content, services and applications and protecting a consumer’s ability to connect devices of their choice.

We are very excited about new entrants in the video services providers' marketplace - creating more consumer choice in providers. We believe that these new services should be allowed to develop and not be saddled with burdensome and inappropriate regulations. However, we also believe that we must work to ensure a robust marketplace for consumer electronics devices that will attach to these new video services.

To do so, device manufacturers need to have certainty that their products will be able to connect to IP-based video services, as well as be portable and compatible with all IP video services nationwide. High-speed broadband networks offer a platform for innovation that will thrive if application developers, device manufacturers and network providers are free to compete and invest in new technologies without undue restrictions imposed by other industry players.

Creating a video marketplace that allows for optimum compatibility will result in more product offerings, which will provide more consumer choice. No regulation should limit IP-video services’ abilities to operate with a wide variety of devices. Whenever possible, policies should promote a robust device retail marketplace. For example, policies should discourage service providers from incorporating proprietary standards and restrictive licensing terms that would result in giving video service providers complete control over the consumer experience, determining what devices consumers can use to access video content and how they use them. If nationwide capability and portability is not embraced, the retail

marketplace for “edge network” technologies like TiVo and Roku, and the incentive to create new technologies, will no longer exist.

Promote Fair Access to Digital Content:

Digital content that is currently available on a multichannel video programming distribution platform is becoming increasingly available on an Internet platform, providing consumers more choice at different price points. We must ensure that suppliers of digital video programming content, particularly those affiliated with incumbent cable operators and other dominant broadband distributors, do not deny or unfairly limit competing distributors’ access to such content.

While these principles are intended to provide initial feedback, we hope they provide some insight into the key issues of importance to the CE industry and the future of innovation. We thank you for the opportunity to provide comment and looked forward to a continued dialogue on this important matter. For more information or questions, please contact Veronica O’Connell, Vice President of Congressional Affairs





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January 31, 2014

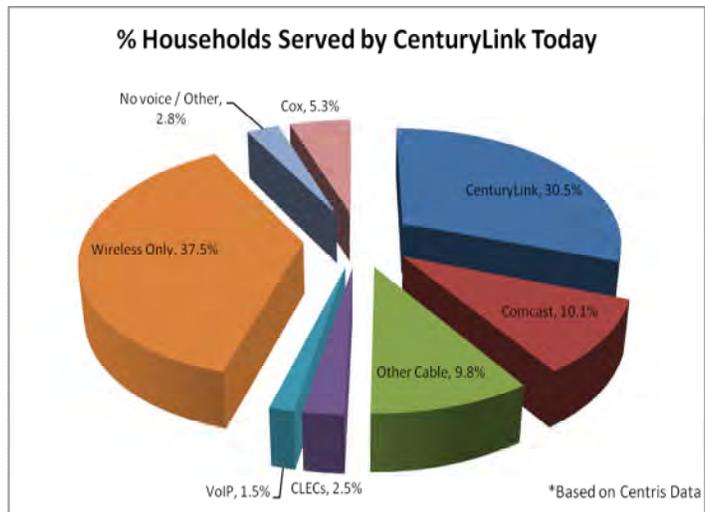
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Re: CenturyLink Response to Committee White Paper on Modernizing the Communications Act

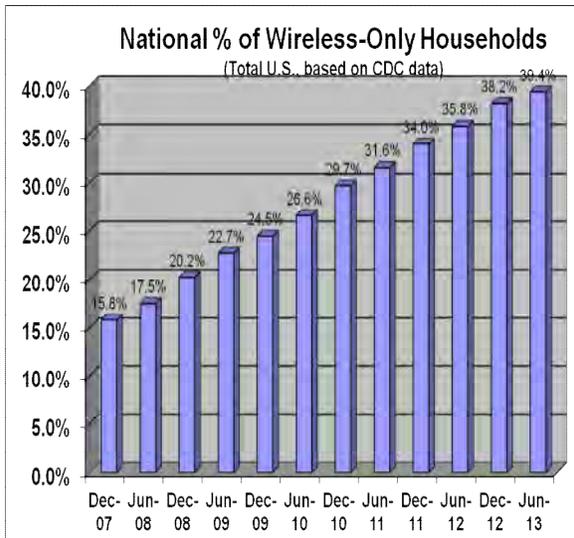
Executive Summary

CenturyLink commends the Committee for launching this important initiative to address the communications industry’s fundamental transformation, particularly over the past 18 years. In many ways, that industry is virtually unrecognizable today, as Americans purchase their communications services—many of which were unknown in 1996, and most of which were unimaginable in 1934—more often than not from non-incumbent providers other than those contemplated by the applicable provisions in the Communications Act.

- In 1996, incumbent phone companies (ILECs) regulated under Title II (like CenturyLink) provided telephone service to *nearly all households*. Today, CenturyLink serves only 3 in 10 households in its incumbent service territory.
- The story is no different for consumer broadband services. Nearly 90 percent of Americans now have a choice of five or more fixed or mobile broadband providers, and ILEC wireline broadband services account for only 41% of fixed residential broadband connections and less than 16% of all broadband connections.



- These market transformations are attributable to Americans' use of numerous alternatives to ILEC services: cable telephony, VoIP, wireless voice and texting, and Internet-based alternatives, such as e-mail and social media. This restructuring of the industry has been swift and unrelenting. Indeed, just in the past six years, wireless-only households increased from 16% to nearly 40% nationwide.



If anything, business markets are more competitive, with more than 30 providers offering enterprise broadband services nationally or to large areas of the country.

The various titles in the Communications Act, and the major amendments to those titles, were adopted to address specific technologies and market conditions that existed at the time. While they were coherent and reasonable frameworks for those technologies and market conditions, they no longer make sense or serve the public interest because of vast

technological and market changes.

Indeed, many of the Communications Act's market-opening and consumer-protection provisions have now become impediments to competition and innovation. If the Communications Act is not substantially reformed and harmonized, the legislative framework can only harm the public interest and hold our nation back as we compete in a global marketplace.

- *Outdated Provider and Service Classifications.* The current Act is founded on now-meaningless regulatory silos and classifications, tied to technology, provider identity (*i.e.*, "incumbent" vs. "non-incumbent") and geography.
- *Unwarranted Regulatory Advantages and Disadvantages.* These outdated silos and classifications lead to arbitrary and counterproductive results.
 - *"Incumbent" Wireline Providers.* ILECs are singled out for various onerous regulations not applicable to their cable, competitive LEC, wireless and VoIP competitors. For example, despite intense competition, FCC rules still require CenturyLink to tariff its enterprise broadband services in some parts of the country, which prevents it from reducing its prices to offer competitive rates to individual customers. The FCC has yet to act on CenturyLink's petition to allow it to provide the customized prices and features enterprise customers demand, in line with its larger competitors.

- *Telecommunications Services.* Classification of a service as a “telecommunications service,” rather than an “information service,” triggers various regulatory obligations, including universal service contributions approaching 20% and Title II nondiscrimination requirements.
- *Interstate and InterLATA Services.* Current regulation also depends on whether a service is classified as interstate (or intrastate) and interLATA (or intraLATA). Indeed, for wireline services, an entirely different regulatory regime applies to a service that terminates across a state boundary, even though both the provider and customer likely view that boundary crossing as irrelevant.

Congress should forge a new Communications Act founded on three basic tenets:

1. ***Competitive and Technological Parity.*** “Like” services, meaning those that are used interchangeably, should be subject to the same regulation, regardless of technology and provider. In particular, Congress should disband ILEC-specific regulation, which threatens to slow the ongoing TDM-to-IP transition and dampen further competition and innovation.
2. ***Narrowly-Circumscribed Public Interest Principles, Rather than Prescriptive Regulation.*** While Congress may not be able to “future-proof” new communications legislation, it can dramatically increase its staying power by grounding it in carefully-defined public interest principles, rather than detailed prescriptive regulation.
3. ***Meaningful Periodic Review.*** All the Communications Act’s provisions should be subject to automatic sunset provisions, by which statutory obligations would cease to be in force after a certain date unless affirmatively retained and justified by the FCC.

Communications legislation rooted in these principles will successfully guide this vital industry, enabling it to provide yet unforeseen communications technologies and services to the benefit of all Americans.

CenturyLink's Responses to Committee White Paper

CenturyLink commends the Committee for launching this important initiative to establish a legislative framework that acknowledges and accommodates the communications industry's fundamental transformation, particularly over the past 18 years. In many ways, that industry is virtually unrecognizable today, as Americans purchase their communications services—many of which were unknown in 1996, and most of which were unimaginable in 1934—more often than not from providers other than those contemplated by the applicable provisions in the Communications Act. Despite minor tinkering on the edges, today's Communications Act has not been amended since 1996, and many of the most impactful provisions in the Act are unchanged since 1934.

The various titles in the Communications Act, and the major amendments to those titles, were adopted to address specific technologies and market conditions that existed at the time. While they were coherent and reasonable frameworks for those technologies and market conditions, they no longer make sense or serve the public interest because of the vast changes in technologies and market conditions. Thus, the Communications Act's structure is now founded on meaningless silos and classifications that serve only to confer arbitrary regulatory advantages (and disadvantages) to certain providers. In this way, many of the Communications Act's market-opening and consumer-protection provisions have now become an impediment to further competition and innovation. Indeed, if the Communications Act is not substantially reformed and harmonized, the legislative framework can only harm the public interest and hold our nation back as we compete in the global marketplace.

The Communications Act therefore must be revised to fit today's technologies and markets, whether through wholesale revision or by adding a new title that supersedes the others with respect to broadband and IP-based services. In either case, Congress must recognize that it is impossible to predict the development of the communications industry and counterproductive to try to do so. Instead Congress should forge a new Communications Act founded on three basic tenets: competitive and technological parity; narrowly-circumscribed public interest principles, rather than prescriptive detailed regulation; and meaningful periodic review.

1. The current Communications Act is structured around particular services. Does this structure work for the modern communications sector? If not, around what structures or principles should the titles of the Communications Act revolve?

The various titles of the Communications Act as it stands today each reflect distinct technologies, market conditions, and regulatory purposes of different decades from the past century. The core of Title II was adopted in 1934 and based on common carrier legislation that had applied to the transportation industry since the late 1800s. Title II was designed to regulate the prices and services offered by monopoly utility providers of basic voice telephone service. Significant amendments to Title II were adopted in 1996 to promote a transition from those monopoly markets to competitive markets by requiring incumbents to facilitate competitive entry and assigning special rights to entrants. In addition, the FCC was given power to deregulate—to forbear from applying its rules or statutory provisions where they were no longer needed—but this power has been used sparingly and nearly all of Title II remains in place today despite vast differences in telecommunications technologies and markets between today and 1934, or even 1996. As demonstrated below, there no longer are dominant providers, much less monopoly

utilities. Thus, the Communications Act's primary purpose must shift from regulating the (now very unlikely) exercise of market power to facilitating market competition, through the limited application of rules analogous to property rights (e.g., numbering resources), contract laws (e.g., interconnection), dispute resolution mechanisms, and public interest obligations (e.g., 911, universal service) on which all markets rest.

Title III was established to regulate broadcast and two-way radio services, subject to restricted use of spectrum and extensive regulatory oversight, including restrictions and mandates regarding the content distributed over broadcast transmissions. This title was substantially amended by section 332 to authorize and create a regulatory framework for mobile voice telecommunications service. Section 332 specifically authorized a more competitive framework for mobile voice services, facilitating competition and establishing different and much more relaxed regulatory treatment of mobile voice communications. Today, customers clearly treat mobile and fixed voice services as substitutes, such that the different regulatory treatment of the two technologies distorts competitive markets and harms consumers.

In 1984, Title VI was added to the Communications Act, regulating cable television services. The framework was founded on franchise monopolies, with the focus of the Act aimed at controlling the exercise of market power. This title also was amended substantially, first in 1992 and again in 1996, with the emphasis on market-opening provisions designed to promote competition. Today, members on both sides of the aisle agree that the laws governing video services are broken. The market for distribution of video content has evolved beyond what could have been conceived in the 1990s. Broadband is the primary driver of video and voice markets,

and consumers are accessing content in many different ways. In this environment, the scope and emphasis of video distribution regulation must be modernized.

At the same time, the Communications Act also does not account for technologies that were only in their infancy or not even contemplated in 1996, such as email, texting, voice over Internet protocol (VoIP), and social media. Fundamental revisions to the Communications Act therefore are now warranted. In restructuring this legislation, Congress should ensure competitive and technological parity; establish narrowly-defined public interest principles, rather than prescriptive regulation; and guarantee meaningful periodic review of the Communications Act.

Limitations of the Current Communications Act

It is widely understood that the current Communications Act is unworkable. In many ways, the Act has become an obstacle to common-sense regulation, particularly to regulation that accounts for the realities of today's communications markets. As noted, the Act currently is structured around particular service categories, such as telecommunications services (Title II), radio communications (Title III) and cable communications (Title VI). Within these titles, the Act further classifies services and providers in ways that determine the applicability of hundreds of prescriptive regulations. While these classifications and regulations may have made sense in the past, that is no longer the case, due to pervasive intermodal competition and continual technological innovation. Moreover, while there is no reason to think that these market developments are over, today's Communications Act also contains no effective means to adapt to these changing conditions.

These limitations are discussed in more detail in the following paragraphs.

- *The Act is premised on numerous outdated classifications.*

Without a doubt, the last major amendment of the 1934 Act—the 1996 Act—represented a huge step forward. To a large extent, the 1996 Act departed from the 1934 Act’s “natural monopoly” theory of regulation, recognizing the potential for competition in all communications markets, and it took various steps to facilitate that competition. Yet the 1996 Act continued to view the world as split between “dominant” incumbent providers and “non-dominant” competitive providers—a dichotomy that becomes increasingly meaningless as more and more customers avail themselves of the numerous alternatives to incumbent-provided services.

Other equally suspect classifications abound in the current Communications Act: wireline vs. wireless service, telecommunications vs. information service, traditional time-division multiplexed (TDM) voice service vs. VoIP service, interstate vs. intrastate, interLATA vs. intraLATA, and local exchange carrier (LEC) vs. interexchange carrier (IXC). Such classifications have no place in 21st Century regulatory policy.

The irrelevance of these classifications today can be illustrated in a simple example. John Smith, who lives in St. Louis, needs to communicate with his brother in Atlanta. In 1996, his only option likely would have been to call his brother on a wireline phone, unless he happened to be one of the relatively rare Americans with a cell phone or email account. Mr. Smith’s wireline call most likely would have been originated and terminated by an ILEC and carried by his chosen IXC.

Today couldn't look more different. Mr. Smith could still reach his brother using a traditional wireline phone—which may or may not be provided by an ILEC.¹ Of course this assumes that Mr. Smith's household falls into the 60% still subscribing to wireline telephone service. Either way, Mr. Smith would also have various other ways to communicate: a wireless, VoIP, or (video or audio) call; an email; a text; and assorted forms of social media. Nevertheless—despite their essential interchangeability—these communication methods generally are subject to differing regulation today, depending on provider classification (*e.g.*, ILEC, CLEC, wireless provider) and technology used to provide them (*e.g.*, wire, wireless, Internet).

“Incumbent” Providers. For the most part, the aims of the 1996 Act have been achieved, leading to a wealth of consumer-enhancing services and customer choices. As anticipated by the drafters of that legislation, cable providers and telephone companies now compete head-to-head for packages of telephony and video services. Adding to this intermodal competition, Americans routinely use cell phones for all their communications needs. Wireless penetration in the United States has rocketed from less than 13 percent in 1996 to 90 percent today,² with more wireless

¹ Most likely Mr. Smith's calling plan would no longer distinguish intraLATA and interLATA or intrastate and interstate calls.

² See Second Annual Report and Analysis of Competitive Market Conditions with respect to Commercial Mobile Services, FCC Report, Table 1 (1997), available at <http://wireless.fcc.gov/auctions/data/papersAndStudies/fc9775.pdf> (reflecting 34 million CMRS subscribers at end of 1995); U.S. Census Bureau website, available at <http://www.census.gov/popest/data/national/totals/1990s/tables/nat-agesex.txt> (U.S. population approximately 263 million as of July 1, 1995); CTIA website, <http://www.ctia.org/your-wireless-life/how-wireless-works/wireless-quick-facts>.

subscriptions than American citizens.³ Even more startling, wireless service has displaced wireline voice service altogether in 40% of American households.⁴ An endless array of Internet applications, fueled by nearly ubiquitous wireline and wireless broadband coverage, has further eroded the perceived network bottlenecks that underlay the structure of the 1996 Act.

Eighteen plus years of investment and innovation by telecommunications providers of all types have drained the terms “incumbent” LEC, “competitive” LEC and wireless provider of any significance that would justify differing regulatory treatment. Consumers today view the services offered by these competitors as largely indistinguishable, as evidenced by the seismic shifts occurring in the marketplace since 1996.

When the 1996 Act passed, incumbent telephone companies like CenturyLink provided telephone service to nearly all households.⁵ Today, that number is 3 in 10 for CenturyLink,⁶ and

³ CTIA website, <http://www.ctia.org/your-wireless-life/how-wireless-works/wireless-quick-facts>.

⁴ Stephen J. Blumberg & Julian V. Luke, *Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January-June 2013*, Division of Health Interview Statistics, National Center for Health Studies, Centers for Disease Control and Prevention at 1, available at <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201312.pdf> (Dec. 20, 2013) (estimating that 39.4% of American homes had only wireless telephones during the first half of 2013) (*CDC Wireless Substitution Report*).

⁵ See, e.g., *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, Notice of Proposed Rulemaking, 11 FCC Rcd 14171, 14174-75 (1996) (In enacting the 1996 Act, “Congress acknowledged that **incumbent** LECs have constructed and put in place high quality, reliable, redundant local networks that can provide virtually ubiquitous service, and that they possess an approximate 99.7 percent share of the local market as measured by revenues [footnote omitted]....Moreover,...virtually all existing customers subscribe to the **incumbent** LEC....”); H.R. Rep. No. 104-204, pt. 1, at 50 (1995) (104th Cong., 1st Sess.) (“...[T]he seven BOCs control over 80 percent of the local telephone network. The top 10 telephone companies control 92 percent of the local telephone network....For much of the past 60 years, the provision of local telephone service has been a monopoly service, and the telephone companies operating today have been the monopoly suppliers.”).

ILEC fixed access lines account for less than 18% of the total market for wireline and wireless voice services (including VoIP services).⁷ During this time, ILECs have lost half their access lines.⁸ Even for those households still subscribing to wireline voice service, 16 percent report receiving all or mostly all calls on wireless phones.⁹ Voice service has become a commodity.

There has been no less transformation in broadband markets. While most consumers accessed the Internet (if at all) through a dial-up provider in 1996—typically over an ILEC-provided voice line—some 89 percent of Americans now have a choice of five or more broadband providers, and 85 percent can choose between at least two *fixed* broadband providers.¹⁰

According to the Commission’s most recent Wireless Competition Report, approximately 98 percent of Americans have a choice between two or more wireless broadband providers, 92 percent have a choice of at least three providers, and 82 percent have a choice of at least four.¹¹

Most opt for an alternative to ILEC-provided fixed broadband service. Such ILEC services

⁶ Approximately 37.5% of households in CenturyLink’s serving area are wireless-only and another approximately 32% take voice service from another provider (or none at all).

⁷ This figure reflects the 82 million ILEC access lines and VoIP connections listed in the FCC’s Local Competition Report, the 56 million non-ILEC access lines and VoIP connections identified in that report, and the 326 million wireless accounts reported by CTIA, all as of the end of 2012.

⁸ ILEC access lines have fallen from 165 million in 1996 to 82 million today.

⁹ *CDC Wireless Substitution Report* at 1.

¹⁰ The Information Technology & Innovation Foundation, *The Whole Picture: Where America’s Broadband Networks Really Stand*, at 20 (Feb. 2013), available at <http://www2.itif.org/2013-whole-picture-america-broadband-networks.pdf> (citing National Broadband Map).

¹¹ *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd 3700, 3706 (2013) (note: see Table, “Estimated Mobile Wireless Broadband Coverage by Census Block, Oct. 2012”).

account for only 41% of fixed residential broadband connections and less than 16% of all broadband connections (including wireless broadband connections).¹² In a more recent development, CenturyLink and other ILECs now provide these services in competition with such businesses as Google.¹³

If anything, business markets are even more competitive. More than 30 providers offer enterprise broadband services nationally or to large areas of the country.¹⁴ For its part, CenturyLink garners only about 9% of revenues in the nationwide market for these services, behind CLEC tw telecom.¹⁵ Hence, for all these services, any ILEC dominance or “bottleneck” that existed in 1996 is long gone.

Like many industry participants, CenturyLink has transformed itself to stay competitive. Growing from its roots as primarily a rural telephone company, CenturyLink now provides a spectrum of services to residential customers and business customers of all sizes across the globe. Such services include data networking, cloud computing, managed hosting, and cybersecurity services. In these emerging areas, CenturyLink competes with established

¹² Wireline Competition Bureau, *Internet Access Services: Status as of December 31, 2012*, at 23, 26 (Dec. 2013), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db1224/DOC-324884A1.pdf.

¹³ See Google website, <https://fiber.google.com/cities/provo/#header=check> (Google broadband offering in Provo, Utah).

¹⁴ CenturyLink Petition for Forbearance, *In the Matter of CenturyLink’s Petition for Forbearance Pursuant to 47 U.S.C. § 160(c) for Dominant Carrier Regulation and Computer Inquiry Tariffing Requirements on Enterprise Broadband Services*, WC Docket No. 14-9, at 28 (filed Dec. 13, 2013).

¹⁵ *Id.* at 31-32.

communications companies, Internet-based players such as Amazon and an endless cast of new entrants.

The communications industry also is in the early stages of the TDM-to-IP transition, whereby voice service is becoming simply another application riding on next-generation data networks stretched across the country. This transition will take much longer for ILEC providers such as CenturyLink, given the geographic scale and scope of their legacy wireline networks and systems. Such providers are certainly not “incumbent” or “dominant” in any sense for IP services and therefore should not be treated as such.

But, ironically, the 1996 Act’s market-opening and consumer-protection provisions have now become a drag on further innovation and competition. As noted, ILECs such as CenturyLink no longer have market power in their legacy markets and are far from “incumbent” in the emerging markets in which they increasingly compete. As implemented by the FCC, however, the Communications Act continues to saddle these providers with asymmetric regulation preventing them from competing effectively. This asymmetry, in turn, harms consumers by reducing competition and ultimately it may end up denying them an alternative provider and the different services it would provide.

Telecommunications Services vs. Information Services. “Telecommunications service” and “information service” providers similarly compete against each other today. Given the murky distinctions between the two service classifications, it is often unclear even to the provider itself how to classify a particular service, and the FCC has not always sought to clarify such distinctions. For example, the FCC has declined for more than a decade to determine whether VoIP constitutes a telecommunications service or an information service.

Technology- and Geography-Based Classifications. Both technology and geography have ceased to be meaningful factors for distinguishing communications services as well. Communications providers now routinely use wireline, wireless and Internet-based technologies to compete against each other. And consumers increasingly buy “all-distance” plans that ignore state and LATA boundaries.¹⁶ Hence, regulatory classifications based on technology (*e.g.*, wireline/wireless, TDM/VoIP) and geography (*e.g.*, interstate/intrastate, interLATA/intraLATA) have become 20th Century anachronisms.

- *The Act imposes overly-prescriptive regulation based on these classifications, thereby providing favored treatment to certain providers.*

These outdated classifications in the Communications Act are not without consequence. Time and again, they form the basis for favored (or disfavored) regulatory treatment. ILECs in particular are subject to much more numerous and onerous regulations than their wireline, wireless and VoIP competitors. Such obligations include intrusive network sharing and network access and burdensome reporting obligations. In addition, the tariff construct, which dates back to stagecoach days, generally forbids a dominant carrier from reducing its prices below those in its tariff, even if necessary to meet competition. While the FCC has forborne from this requirement in some cases, it has not done so across the board. CenturyLink, for example, can offer non-tariffed broadband services to enterprise customers only in certain parts of its ILEC service territory. It has tried unsuccessfully for more than two years to gain this authority from

¹⁶ See, *e.g.*, AT&T website, <http://www.att.com/gen/general?pid=10994> (describing AT&T’s Unlimited Nationwide Calling One plan, which allows a customer to make unlimited domestic direct-dialed long distance calls anytime, anywhere in the United States for a flat monthly rate).

the FCC—the same flexibility enjoyed by CenturyLink’s much larger competitors. CenturyLink recently filed a forbearance petition again asking the FCC for this customer-enhancing reform.

Other regulatory classifications in the Act have far-reaching implications as well. Classification of a product as a “telecommunications service,” rather than an “information service,” triggers an obligation to pay universal service surcharges approaching 20% —making it difficult to price that product in a competitive manner. Such telecommunications services are also subject to common carrier and nondiscrimination obligations, which do not apply to information services. Regulation also varies significantly depending on whether a service is classified as interLATA (rather than intraLATA) and interstate (rather than intrastate). Indeed, for wireline services, an entirely different regulatory regime applies to a service that terminates across a state boundary, even though both the provider and customer likely view that boundary crossing as irrelevant.

Overall, these arbitrary distinctions in the Communications Act have at least four negative consequences. *First*, they provide favored treatment to certain providers and unfairly disadvantage others. Usually, those disadvantaged are the traditional “incumbent” providers already burdened with other legacy regulations. Not surprisingly, the services that have thrived most since 1996 are those subject to lesser regulation, such as wireless and Internet-based services. *Second*, such disparate treatment creates inefficient incentives for a provider to use a particular technology or structure its offerings in a certain way, in order to fit within a favorable regulatory classification. *Third*, these classifications impose substantial compliance costs. *Finally*, the high stakes involved with these classifications often trigger litigation and lingering uncertainty—both anathema to investment and innovation.

- *The Act contains no effective means to adapt regulation to changed circumstances.*

The current Communications Act also lacks an effective mechanism for adapting to changes in technology and competitive conditions. This is not for lack of trying by Congress. The 1996 Act included two provisions intended to serve this purpose: section 10, allowing providers to seek forbearance from regulations and statutory provisions, and section 11, requiring the FCC to perform a similar review of its regulations every two years.

But the results of these provisions have been inconsistent. In earlier years, forbearance led to some meaningful reform, though recently that has been much less the case. In 2010, for example, the FCC declined CenturyLink's request for forbearance from dominant carrier regulation of its voice (and other) services in Phoenix, despite a showing that more than half of voice customers in that area had left CenturyLink for a cable or wireless provider. Then, last year, CenturyLink was forced to withdraw a forbearance petition requesting the same pricing flexibility for its enterprise broadband services enjoyed by its much larger competitors. As noted, CenturyLink recently revised and re-filed that petition. Even when it has led to regulatory relief, forbearance has hardly been an expeditious vehicle for regulatory reform, as the FCC has almost always taken the full 15 months permitted by statute. For its part, section 11 has generally led to regulatory flexibility only on the fringes. There are also limits on how the FCC's forbearance and biennial review authority can be used. In particular, the FCC cannot use these tools to revise or update the classifications and prescriptive requirements contained in the statute and the FCC's regulations.

Structure and Principles Underlying a New Communications Act

These limitations in the current Communications Act can be substantially remedied by employing the following approach to new legislation: “like” services, regardless of technology or provider, should be subject to like regulation; the new Act should be founded on narrowly-defined public interest principles, rather than prescriptive regulation; and it should contain sunset provisions to ensure meaningful periodic review, consistent with changing market and technological conditions.

- *Like Services / Like Regulation.*

Competitive parity and technological neutrality must guide the formulation of new legislation. “Like” services, meaning those that are used interchangeably, should be subject to the same regulation, regardless of technology and provider.

Looking back, the 1996 Act was, to some degree, outdated within a year or two of signing. The same could easily happen with an updated Communications Act premised on today’s services and providers, or even predictions of tomorrow’s. The key to creating legislation with “staying power” is to ground it in principles that are service- and provider-agnostic. In other words, services that are “substitutable” should be subject to the same regulation, regardless of who provides them, the technology that is used to provide them, and how they may have been classified in the past. For example, a customer’s voice call should be regulated the same whether wireline, wireless or VoIP, and whether provided by ILEC, CLEC, wireless provider or information service provider.

It also is critical that the law not interfere with technological evolution, such as the natural progression to IP. Given IP efficiencies, all providers have substantial incentives to

transition to IP as expeditiously as their business cases will allow. ILEC-specific regulation in this area could well slow that transition and dampen the competition and innovation resulting from all providers competing based on service functionality and desirability, rather than regulatory favoritism.

- *Narrowly-Defined Public Interest Principles, Rather than Prescriptive Regulation.*

While Congress may not be able to “future-proof” new communications legislation, it can dramatically increase its staying power by grounding it in fundamental public interest principles, rather than detailed prescriptive regulation. This approach will give the FCC the tools necessary to adapt regulation to changes in technology and the communications marketplace. It will also provide incentives for providers to design services based on anticipated consumer demand, rather than favorable regulatory treatment. And, by sticking to narrowly-circumscribed public interest principles in a new Communications Act, Congress is much less likely to trigger multi-year litigation and investment-sapping uncertainty like that which followed the 1996 Act.

The substance of the new Communications Act should be driven solely by need. Industry-specific legislation and regulation of communications generally is no more necessary today than for computer software or network equipment. Traditional “incumbent” providers, such as CenturyLink, no longer control a bottleneck into American homes and businesses. Since 1996, ILECs have lost half their access lines, with 82% and 84% of consumers, respectively, now opting to obtain voice services and broadband services from non-ILEC providers. Moreover, any perceived market power arising from ILECs’ control of legacy TDM networks will further dissipate as communications services and customers increasingly transition to next-generation IP networks. Congress need not wonder how this inevitable transition to IP will

affect the communications marketplace. For two decades, IP providers have successfully exchanged data traffic through commercially-negotiated peering arrangements without government oversight. These dynamic arrangements have performed remarkably well, as Internet traffic has skyrocketed and new bandwidth-intensive services have been brought online every day. As the IP transition progresses, voice services currently carried on the ILECs' traditional TDM networks will continue to migrate to IP, where they will become one of the many services carried on those dynamic networks.

Given these ongoing trends, Congress should tread lightly as it considers new legislation, to avoid distorting these consumer-enhancing developments. In general, Congress should err toward less regulation. It can do so with knowledge that any instance of *under*-regulation will be readily apparent in the future—and easily remedied by Congress or the FCC—whereas *over*-regulation will not be so easily detected, despite its corrosive impact on investment, innovation and competition.

Of course, certain consumer protection and public safety principles must be guaranteed, such as privacy, access to emergency services, and cybersecurity. However, other federal agencies—such as the Federal Trade Commission, Department of Justice, and Department of Homeland Security—may be better situated to address these matters in a coherent manner consistent with their oversight of other sectors of the economy.

A new Communications Act should focus in particular on accomplishing its core objective: “mak[ing] available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient,

Nation-wide, and world-wide wire and radio communications service[.]”¹⁷ Such key issues as universal service and wireless auctions appear to fall within the scope of this objective. With regard to universal service, continuing service in high-cost areas now depends on reliable government funding. The days when ILECs could subsidize high-cost areas through above-cost pricing in urban areas are long past. Similarly, so-called “carrier of last resort” obligations simply do not fit today’s competitive environment. To be clear, CenturyLink does not question the public policy goal of ensuring universal access to essential telecommunications and information services. But such access must be funded by the government and not individual carriers and their customers. For this reason, such remnants of monopoly regulation should now be discarded.

- *Sunset Provisions.*

As noted, the best way to create sustainable legislation is to avoid detailed prescriptive requirements—particularly service-, technology-, and provider-specific requirements. But it is also important to establish a mechanism that guarantees meaningful periodic review of existing regulation to ensure that it is still necessary and well-suited to current marketplace conditions. All the Communications Act’s provisions should be subject to automatic sunset provisions, by which statutory obligations would cease to be in force after a certain date unless affirmatively retained and justified by the FCC. The 1996 Act included such a provision in section 272 for most separate affiliate requirements applicable to Bell Operating Company long distance services. Several years ago, the FCC allowed these requirements to sunset, based in part on the disappearing standalone long distance market. Without this sunset provision, which enabled Bell

¹⁷ 47 U.S.C. § 151.

companies to eliminate inefficient corporate structures and practices without harm to consumers, it is likely that at least some of these plainly unnecessary provisions would still be in effect today.

As noted, 18 years of experience with forbearance and the biennial review mechanism have demonstrated the need for both an automatic trigger and a duty to justify retention of any statutory or regulatory provisions consistent with reasoned decision-making. Such safeguards are essential to keeping a new Communications Act as relevant and up-to-date as possible.

2. What should a modern Communications Act look like? Which provisions should be retained from the existing Act, which provisions need to be adapted for today's communications environment, and which should be eliminated?

The promise of the 1996 Act largely has been fulfilled. While the 1996 Act contemplated various means of competitive entry, it was widely understood that full facilities-based competition was the legislation's ultimate goal. In particular, the drafters recognized the prospect of cable and telephone companies competing head-to-head. Such competition has occurred with a vengeance, particularly for services once dominated by telephone companies. Cable companies now provide voice service to 27 million American households.¹⁸ By offering compelling "triple-play" packages, comprised of video, broadband and voice service, cable companies have gained a commanding presence in many metropolitan areas. This success has by no means been limited to consumer markets. Comcast, Time Warner Cable, and Cox each now bring in more than \$1 billion in commercial revenues annually.

¹⁸ See National Cable & Telecommunications Association, *Industry Data*, <http://www.ncta.com/industry-data>.

Somewhat less anticipated, wireless services have also caused droves of customers to leave ILEC providers. Wireless subscriptions long ago surpassed wired lines in service, with 40 percent of households now relying exclusively on their cell phone for voice service. Such “cord cutting” will undoubtedly continue, as nearly ubiquitous LTE service boasts broadband speeds comparable to wireline services.

Given these changed circumstances, a stripped down Communications Act is now warranted. Such legislation should conform to the principles outlined in CenturyLink’s response to Question 1 above: uniform regulation of like services; a focus on narrowly-defined public interest principles, rather than prescriptive regulation; and sunset provisions guaranteeing meaningful periodic review of the legislation’s regulatory framework.

**3. Are the structure and jurisdiction of the FCC in need of change?
How should they be tailored to address systemic change in
communications?**

Yes. Just as Congress must do away with the Communications Act’s outdated classifications and prescriptive regulation, the FCC should be restructured to eliminate the silos that perpetuate regulation based on stale, out-of-touch assumptions about the industry. While the FCC is filled with dedicated, highly professional public servants, the agency’s structure frequently results in regulation by inertia. Were the government to start from scratch, the nation’s communications regulation undoubtedly would bear little resemblance to that which exists today. Of course no one would even think of classifying providers with 18% of the voice market as “dominant” providers. No one would even think of mandating tariffs preventing certain providers in the highly-competitive enterprise market from reducing their prices to meet

competition. No one would even think of compelling certain providers to continue providing service in unprofitable areas without corresponding government compensation.

Thus modernizing the Communications Act is only half the job. The FCC also must reinvent itself to address the radically different realities it faces in 2014. The best agency structure will depend on various factors. A structure based on function (*e.g.*, policy-making, enforcement, auctions) could work well, but that is only one possibility that should be explored.

4. As noted, the rapidly evolving nature of technology can make it difficult to legislate and regulate communications services. How do we create a set of laws flexible enough to have staying power? How can the laws be more technology-neutral?

CenturyLink wholeheartedly agrees that rapid and unending change in the communications marketplace makes it virtually impossible to enact prescriptive legislation with staying power. No one can reliably predict marketplace developments even five years out, or anticipate the new services this dynamic industry will generate. The best Congress can do is ensure that it does not impede this undeniable progress, by modernizing the Communications Act consistent with the principles set forth in CenturyLink's response to Question 1.

5. Does the distinction between information and telecommunications services continue to serve a purpose? If not, how should the two be rationalized?

The telecommunications service / information service distinction is one of many outdated and counterproductive classifications found in the current Communications Act. This particular distinction dates back to the 1980s (and earlier) when "enhanced services"—precursors to today's information services—first became available. To address concerns about ILECs leveraging their perceived telecommunications service bottlenecks to disadvantage fledgling enhanced services

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providers (which incidentally included the likes of IBM), the FCC established various safeguards based on the enhanced/telecommunications service distinction—a distinction which was carried forth in the 1996 Act’s information/telecommunications service classification.

Thirty years later, this history bears no relationship to the modern communications marketplace. The distinction between information services and telecommunications services is ever more murky, turning on factors that mean little to technologists and lawyers alike. While resting on seemingly arbitrary factors, the information/telecommunications service distinction has weighty consequences—including applicability of monopoly-era common carrier and universal service contribution obligations. Such distinctions thus drive both product design and purchasing decisions and create incentives for gaming. Historical assumptions about information service providers needing protection are equally antiquated, as providers such as Google, Amazon, and Netflix exercise their well-reported market might, and a seemingly endless list of start-up providers demonstrate the relative ease of breaking into this dynamic ecosystem.

As discussed in response to Question 1, a new Communications Act should dispense with the information/telecommunications service classification (as well as the many other equally-outdated classifications in the current Act) and instead create a regulatory framework based on three tenets: uniform regulation of like services; a focus on narrowly-circumscribed public interest principles, rather than prescriptive regulation; and sunset provisions guaranteeing meaningful periodic review and updating of the Act.

Please let me know if you have any questions.

Sincerely,

/s/ David C. Bartlett



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January 31, 2014

Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515

Re: Center for Individual Freedom's Comment re: *Modernizing the Communications Act*

Dear Members:

On behalf of 300,000 supporters and activists across the nation, the Center for Individual Freedom (CFIF) commends the House Energy and Commerce Committee for initiating a thorough review of the Communications Act with an aim to modernize it. Signed into law in 1934 and revised in 1996 – when the term “Internet” itself remained unfamiliar to many Americans – CFIF believes that this review and revision of the Act is long overdue, and that a new Act should be rooted in market-based principles to spur competition and incentivize private sector investment.

Everyone can agree that the way we communicate and conduct business has changed drastically since 1996 – let alone 1934. Innovative new products and services, built upon wired and wireless broadband networks, have transformed society. Consumers now possess a plethora of choices in how they communicate with each other. Whether it is through mobile phones, the Internet, voice over Internet Protocol (VoIP), high-speed fiber optic cable, or traditional wireline service, consumers have more communications options now than they could ever have been imaged when the Act was updated 18 years ago.

Unfortunately, the regulatory framework that exists today was put in place for a monopolistic era in which one incumbent landline telephone company served virtually all consumers with telephone-only service. A new, modernized, market-based framework should include the following:

- Reflect today's competitive Internet ecosystem with an *ex post* consumer protection standard based on demonstrable harm to consumer or competition and not prescribe preemptive regulations to future technologies;
- Encourage innovation and investment in new and innovative technologies; -Avoid picking winners and losers in the marketplace by treating like Internet services equally; and
- Provide flexibility for businesses to experiment and allow different business models to evolve.

Competition is the bedrock of a robust free market system, whether in the market of computer chips or potato chips. Competition drives down prices and ensures that consumers have as much choice as possible. And what is true of handheld goods is just as true with information services. Today's telecommunications market is driven by fierce competition, with new products and services reflecting the changing needs and desires of an increasingly interconnected populace. Accordingly, a new framework that acknowledges that competition flourishes between Internet players throughout the entire Internet ecosystem will provide the regulatory clarity needed to ensure that the private sector continues to invest billions annually in the infrastructure of the future – networks upon which untold innovations will surely occur and amaze.

While passing landmark legislation is often difficult, particularly in today's volatile political climate, the current modernization process provides Congress with a tremendous and unique opportunity to accomplish something big that both parties can and should support.

We applaud Chairmen Upton and Walden for their efforts to begin this difficult process, and we look forward to working closely with the Energy and Commerce Committee going forward in the coming months. Thank you very much for your continuing efforts in this important matter.

Sincerely,

Timothy H. Lee
Senior Vice President of Legal and Public Affairs

STEPHEN LEE FINCHER
8TH DISTRICT, TENNESSEE

COMMITTEE ON
FINANCIAL SERVICES

SUBCOMMITTEE ON
FINANCIAL INSTITUTIONS

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January 23, 2014

The Honorable Fred Upton
Chairman, Committee on Energy and Commerce
United States House of Representatives
2125 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Chairman,

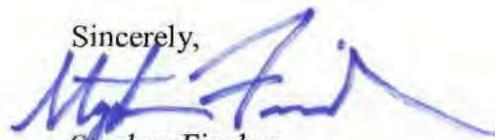
I was recently made aware that the Committee on Energy and Commerce is working on modernizing the laws governing the communications and technology sectors of this country. As you know, the original law governing communications in the United States was enacted in 1934; however, there have not been any reforms made to this law in 17 years since the *Telecommunications Act of 1996* was passed.

As you and your committee work toward modernizing the telecommunications laws this Congress, I would like to respectfully request that you keep in mind the build out of high speed internet all over the United States, specifically in rural areas, on behalf of my constituent, Mr. Chris Morris, of Collierville, in Tennessee's 8th Congressional District. Specifically, please review the recent industry concentration of telecommunication companies and its impact on rural broadband deployment. In addition, Mr. Morris is concerned about the recent Supreme Court decision regarding net neutrality and its impact on broadband service. I have attached a copy of Mr. Morris' correspondence to this letter.

As a Member of Congress who represents tens of thousands of rural constituents, I can tell you that broadband deployment and high-speed internet is of huge importance in West Tennessee.

Thank you for your consideration of this request. Good luck in your committee deliberations on our nation's telecommunication laws. Please feel free to contact me with any questions or comments you may have.

Sincerely,



Stephen Fincher
Member of Congress

Dear Congressman Fincher,

You contacted me in response to my previous correspondence in regard to the state of telecom market in the US. Over the phone you said that Congressman Fincher was not on the appropriate committees to have a significant effect in the telecom area. But you also requested ideas on how to improve the situation.

1) The big telecom companies have been given billions of dollars of incentives to build out high speed internet all over the country. By and large, they have taken the incentives and failed to build the networks. Much of this is because the incentive contracts were so weak to begin with that they basically allowed this robbery in the first place. So I ask that Fincher vote against any incentive program at any point in the future that in any way benefits any major telecom company. If congress can't get incentive programs right, let's not do them at all.

2) I would like someone from Congressman Fincher's office to meet with or call someone in the higher echelons at Comcast and put pressure on them. Let them know that everyone hates their service and prices and voters are putting heat on you for allowing a near oligopoly to run unchecked.

3) I want Congressman Fincher to oppose any effort to weaken net neutrality and support all efforts to strengthen net neutrality.

One of the reasons that the US is the only super power on the planet is because of our tremendous investment in scientific innovation in during the cold war and our development and adoption of a free and open internet.

But now in 2014 we are slashing science and research funding and allowing private enterprise to turn our open and free internet into a tool for nothing but delivery of passive entertainment.

In a few years the US won't even have a seat at the table of countries that are innovating and developing the technologies that improve lives, create jobs, and promote peace and prosperity.

In a time when congress is a complete failure with approval ratings below cockroaches and hemorrhoids, wouldn't it be smart to take some common sense steps to actually do something that supports (1) American ingenuity and progress, (2) free and open markets, and (3) directly benefits the pockets of Congressman Fincher's constituents?

Sincerely,

Chris Morris

COMPTEL’s Responses to Questions in “Modernizing the Communications Act”
January 31, 2014

COMPTEL, the leading industry association for competitive communications service providers, submits its responses to the questions in the Committee on Energy and Commerce’s first white paper on “Modernizing the Communications Act.”¹

For more than 30 years, COMPTEL has advocated for competitive policies in the communications industry. COMPTEL has more than 200 members, including local competitors, broadband providers, mobile and fixed wireless carriers, cable operators, cloud and other edge/application service providers, as well as suppliers and professional partners. COMPTEL has a number of large, national companies with thousands of employees. However, nearly two-thirds of our members are small and medium-sized businesses (“SMBs”), a majority of which have \$10 million or less in revenue and fewer than 100 employees. COMPTEL member companies utilize private investment to drive technological innovation and create economic growth with their competitive broadband, voice, video, Internet, data and other advanced services.

As the Committee begins to review the Communications Act, it should identify bipartisan goals for improving consumer access to the nation’s communications networks and services. Among the goals Congress should aim to achieve are:

- Ensuring that the communications networks serve everyone, including residential, business, and wholesale customers;
- Promoting competition, universal service, and public safety and security; and

¹ Modernizing the Communications Act
<https://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/CommActUpdate/20140108WhitePaper.pdf>

- Ensuring all consumers have access to advanced services and technologies and protecting the public interest.

Where the marketplace does not produce reasonably comparable services for businesses or individual consumers across the country, or deliver such service to rural or remote areas, then our nation's laws and policies must continue to require or incent providers to make such services available and maximize network coverage so that every American may take advantage of the opportunities and benefits of a connected nation.

Questions for Stakeholder Comment

1. *The current Communications Act is structured around particular services. Does this structure work for the modern communications sector? If not, around what structures or principles should the titles of the Communications Act revolve?*

There is much about the Communications Act that has worked well. A significant benefit of the current Act is that it was built upon the fundamental bipartisan principles of connected networks and competitive markets. Since 1996, an estimated \$1.2 trillion in investment has been made in the communications industry. New technologies and services have been introduced and widely adopted, many of which were in their infancy or not even in existence when the Act was passed. These developments demonstrate that the Act has succeeded in promoting significant investment and advancing the deployment of the networks and services over the last 18 years. It is important that Congress identify and review the statutory provisions that have worked well to promote these benefits and those that have not promoted these results. Congress must study the marketplace—the different types of consumers—residential, business and wholesale consumers; the types of services they purchase; where they purchase those services; how many providers are providing those services; whether consumers have adequate choice; and whether they are sufficiently

protected by a competitive marketplace. This is a complex task, one that Congress should consider requesting that its expert agency, the Federal Communications Commission (“Commission”), study. While the Commission offers some reports to Congress on various parts of the industry (e.g., Annual Mobile Wireless Competition Report), many areas are not adequately reported on, such as the business marketplace or the wholesale communications marketplace, and Congress should request that the Commission analyze and report on these matters.

- 2. What should a modern Communications Act look like? Which provisions should be retained from the existing Act, which provisions need to be adapted for today’s communications environment, and which should be eliminated?*

If the examination of the Communications Act and the marketplace is as exhaustive as COMPTTEL suggests in our response to Question 1, a modern Communications Act would look very similar to the current Act. While there may be a number of provisions across the current Act that might be improved or updated, the fundamental, timeless policies that ensure access to networks and interconnection—principles that ensure consumers and businesses have a choice of providers—have to remain in place. These provisions are necessary to support a healthy wholesale communications marketplace, resulting in a more competitive retail market.

- 3. Are the structure and jurisdiction of the FCC in need of change? How should they be tailored to address systemic change in communications?*

The Commission’s authority to promote universal service and communications networks that are available to all consumers (residential, business, and wholesale) is critical for the nation’s security and economic growth. Today, consumers rely upon voice, video and data services. It is difficult to predict what services they may rely upon in the future, but one

thing is certain: the nation's networks deliver the services and applications that consumers rely upon. Accordingly, Congress must ensure that the Commission maintains the authority to advance the availability of communications networks and services throughout the nation. Moreover, the Commission must maintain appropriate jurisdiction to oversee these markets and, where necessary, intervene to ensure consumers have adequate choice and protection.

This Committee already has identified several improvements that should be made to ensure that the Commission can function more effectively through H.R. 3675, the Federal Communications Commission Process Reform Act. For example, that legislation will permit more than two Commissioners to meet without violating the Sunshine Act if certain conditions are met. COMPTTEL believes, as the Committee does, that this provision will improve the Commission's internal deliberations. Moreover, it will facilitate the discussions of the Federal-State Joint Boards on Universal Service and Separations, as well as the Joint Conference on Advanced Services—three bodies on which state regulators and the federal Commissioners sit.

4. *As noted, the rapidly evolving nature of technology can make it difficult to legislate and regulate communications services. How do we create a set of laws flexible enough to have staying power? How can the laws be more technology-neutral?*

The question is not which services to regulate or not regulate, but how the agency addresses market power or market dominance, and what tools are available for the agency to ensure a market is effectively competitive and consumers continue to benefit from innovation and choices of providers and services. Any policy framework that is flexible in its approach to the marketplace—allowing for changes in technology and services to continue to develop—will best serve the consumer. COMPTTEL believes that the 1996 Telecommunications Act is this type of flexible framework.

It is unclear if current law can be more technologically neutral. It is actually agency interpretation and implementation of the law that has produced mixed results in relation to technology and services. For example, while the Act does not define network elements in terms of technology used and the definition of “telecommunications service” specifically precludes consideration of facilities used, the Commission has done just that with regard to its last mile access policies and failed to take sufficient action with regard to interconnection, resulting in implementation that is not technology neutral, even where the Act is for both last mile access and interconnection. Moreover, the FCC itself has recognized the problem with its own findings for last mile access, stating that “the FCC’s current approach is a hodgepodge of wholesale access rights and pricing mechanisms that were developed without the benefit of a consistent, rigorous analytical framework. . . . For example, some wholesale access policies vary based on technology – including whether the facility or service operates using a circuit-or packet-based mode or is constructed from copper or fiber-regardless of economic viability of replicating the physical facility.” *FCC National Broadband Plan* at 47. However, the Commission has yet to correct its course even though its own National Broadband Plan recommended doing so.

Indeed, the FCC has recognized that the “nation’s regulatory policies for wholesale access affect the competitiveness of markets for retail broadband services provided to small businesses, mobile customers and enterprise customers” *Id.* Nonetheless, the Commission’s own inconsistent interconnection and access policies have a significant impact on the economy; and, as the physical facilities and technology of the network continue to transition, the negative economic impact will become more pronounced. Consequently, any legislative change should ensure the Commission focuses on impairment, barriers to entry, and

traditional market power analysis—not base its policies on the technology riding over the network.

5. *Does the distinction between information and telecommunications services continue to serve a purpose? If not, how should the two be rationalized?*

A policy framework should focus on the necessary wholesale inputs needed to provide end-user services, regardless of the type of retail service being offered. In particular, the framework should focus on the interconnection of networks and last mile access to the customer. All networks should be required to interconnect. In addition, because last mile access to customers is the most costly to construct, the Act should provide wholesale access to the underlying transmission component of the last mile facility (i.e., access to the telecommunications service). Specifically, any legislation should ensure interconnection between networks and wholesale access to the transmission component at just and reasonable rates. This makes sense for two reasons: (1) focusing on interconnection and the transmission layer puts the focus on the layer of the network with the most potential for market power abuse (last mile access to the consumer);² and (2) ensuring a healthy wholesale market will

² According to the most recent data available from the FCC, 90% of households reside in areas where no more than two fixed broadband providers are capable of delivering speeds of 6 Mbps downstream. Federal Communications Commission, “Internet Access Services: Status as of June 30, 2012,” Industry Analysis and Technology Division, Wireline Competition Bureau, May 2013, p. 9 http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-321076A1.pdf. This indicates a significant bottleneck of access to just two providers for most residential consumers. Moreover, the business market does not fare any better. Indeed, it is significantly worse. This is because cable does not have the presence in the business market it has in the residential market, so the ILEC is often the only last mile provider, meaning that the ILEC bottleneck is even more significant in the business market. According to the Commission’s latest Local Competition Report, as of December 31, 2012 there were 59 million wireline retail local telephone service connections to businesses, 25 million of which are served by a non-ILEC. Local Telephone Competition, Status as of December 31, 2012, Industry Analysis and Technology Division, Wireline Competition Bureau, November 2013, p. 5, Figure 4 (“November 2013 Local Competition Report”). Using USTelecom’s estimate that 96 percent of cable

minimize the need for regulation of the retail markets.

Thank you for the opportunity to comment.

Alan Hill
SVP, Government Relations
COMPTEL


telephony lines serve residential customers, (USTELECOM, “Evidence of Voice Competition and ILEC Non-Dominance Mounts,” April 2, 2013, at 8; Available at: <http://www.ustelecom.org/news/research-briefs/ustelecom-research-brief-april-4-2013>.) of the 29 million lines on coaxial cable (see *November 2013 Local Competition Report* at 17, Table 6.), only 1.2 million lines served business customers. Based on these calculations **95% of the competition in the business market comes from traditional (non-cable) CLECs**, and they rely substantially on wholesale inputs from the large ILECs (typically the only last mile connection provider) to offer their services to this critical market. See *November 2013 Local Competition Report* at 9-10.

Subject: Re: Communications Act Update

Date: Thursday, January 30, 2014 at 6:54:41 AM Eastern Standard Time

From: Martin Ferro-Thomsen

To: CommActUpdate

Hon. Fred Upton
Chairman
Energy and Commerce Committee
US House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Hon. Greg Walden
Chairman
Communications and Technology Subcommittee
Energy and Commerce Committee
US House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Re: Communications Act Update

Dear Representative Upton and Walden,

I am the founder and CEO of Conferize, the global online platform for conferences and attendees. We were named as a leading technology company in Europe by Red Herring Europe in 2013. In 2012 we won the European Venture Summit among 850 of the top startups on our continent.

The industry of conferences and professional meetings is a trillion dollar global market. Before Conferize most conferences existed largely offline and unavailable to non-attendees. Conferize now connects conferences more directly with the Internet to make information and networking available to online users. This gives the busy professional unprecedented access to the latest knowledge from thought leaders in any industry.

Today most conference organizers struggle with declining tickets sales. Conferize is dedicated to helping organizers market and sell their events to a wider and more targeted audience. This trend is aligned with the travel and hotel industries that have been streamlined and made more transparent with greater customer satisfaction in return.

Given recent court action in the US and now the modernization of the Communications Act, it is not clear how the landscape will change for startups and internet companies.

Conferize serve many users and conferences in the United States and would like to continue to do so. We want the freedom to promote our services now and in the future, whether we make online partnerships, advertising, or mobile applications. Startups can create partnerships with internet service providers, car companies, device manufacturers, or any of a myriad of actors.

We ask that you continue to ensure we have the freedom to do so.

Sincerely,

Martin Ferro-Thomsen

Founder and CEO, Conferize
Amagerfælledvej 56
2300 Copenhagen S

Denmark

[REDACTED]

[REDACTED]

Also Co-Founder of the Danish founded international company Issuu, a Time.com Best Website. Issuu, a 'YouTube for publishing', is today in the US top-100, serving 70+ m users worldwide and almost 8 bn pages every month.

Chairman Fred Upton
Chairman Greg Walden
Energy and Commerce Committee
Subcommittee on Communications and Technology

January 31, 2014

Subject: Modernization of Communications Act

Dear Chairmen Upton and Walden:

The Digital Energy Solutions & Sustainability Campaign (DESSC) appreciates the opportunity to provide input into the Committee's consideration of revisions to the *Telecommunications Reform Act of 1996*. DESSC brings together information and communications technology (ICT) companies and associations, non-governmental organizations, and other stakeholders who recognize the enabling role that ICT plays in improving our environment and driving long-term economic growth. DESSC, which was launched in 2008, is hosted by the Information Technology Industry Council.

The U.S. and the world face three difficult challenges simultaneously: Significant energy security and economic growth challenges while at the same time finding ways to reduce the emission of carbon and other gases released through the use of fossil fuels. Improving society's energy efficiency or productivity is one of the most effective and direct ways to begin addressing the triple challenge of energy security, economic growth and carbon emissions. The Alliance Commission on National Energy Efficiency Policy published its *Energy 2030 Report* on Feb. 7, 2013. The *Report* recommended ways to double the energy productivity of the U.S. economy by 2030. It estimated that energy efficiency policies could result in an additional 1.3 million jobs, save U.S. businesses \$169 billion a year, increase GDP by 2%, decrease energy imports by more than \$100 billion a year, and reduce CO2 emissions by 1/3.

Information and communication technology can play a powerful role in improving the economy's efficient use of energy. That broadband and information technologies can boost economic productivity is well understood. Perhaps less recognized, but equally well documented, is that broadband and IT also can transform the relationship between economic productivity and energy consumption. Sensors, communications and better decisions based on data can improve electron flows on power lines, traffic flows on highways, and air flows in buildings. Former



EPA economist John “Skip” Laitner has calculated how many kilowatt-hours (kWh) of energy are saved in the economy for every kilowatt-hour of energy used by ICT. He notes there is a large band of uncertainty in such calculations and that the savings ratio could be as low as 6:1 and as high as 14:1. But he believes it’s reasonable to say that 10 kWh of equivalent energy are saved for every kWh of additional electricity used by ICT.

One of DESSC’s central tenets has long been that sound communications policy that encourages continued innovation and investment in the Internet ecosystem is a critical component of sound energy policy. To that end, DESSC is interested in a modernized Communications Act that will ensure innovation and investment in this sector continues. We encourage the Committee to ensure that a regulatory framework is in place that provides access to information and communications technologies throughout our country, and allows the technologies to continue to evolve, thus enabling the potential for greater energy efficiency and productivity.

To continue this conversation in the future, I can be reached at [REDACTED], and [REDACTED].

Sincerely Yours,

Christopher G Hankin
Executive Director



January 31, 2014

The Honorable Greg Walden
Chairman
Subcommittee on Communications and Technology
House of Representatives
Washington, DC 20515

Re: Modernizing the Communications Act

Dear Mr. Chairman:

Thank you for the opportunity to comment on the issue of modernizing the Communications Act.

I. DOES THE STRUCTURE OF THE COMMUNICATIONS ACT MAKE SENSE FOR THE MODERN COMMUNICATIONS SECTOR?

The Communications Act predates the intermodal competition that has engulfed the communications sector. In 1996, Congress assumed that local exchange competitors would utilize the same technology as the incumbents. The unforeseen reality is that voice-over-Internet Protocol (VoIP) and mobile wireless services are compelling substitutes for the landline telephone. The FCC’s Local Telephone Competition Report now lumps them all together in the same category (“[r]etail local telephone service customers are served by two wireline technologies – “end-user” switched access lines and interconnected VoIP “subscriptions” – and by mobile wireless subscriptions.”).¹

Over a three year period, interconnected VoIP subscriptions increased at a compound annual growth rate of 17 percent, mobile telephony subscriptions increased at a compound annual growth rate of about 4 percent, and retail switched access lines declined at about 9 percent a year.²

Cell phones are being used by 91 percent of adults, according to the Pew Research Center.³ Fifty-five percent of the nation’s households either don’t have a landline phone at all, or received “all or almost all” calls on wireless telephones, according to the latest study conducted by the Centers for Disease Control of the U.S. Department of Health and Human Services.⁴

In fact, less than 20 percent of retail local telephone service connections were served by incumbent local exchange carriers subject to legacy regulation in late 2012.⁵ With such extensive competition, there is simply no longer any need—let alone rationale—for legacy utility regulation in the telecommunications market.

The late Professor Alfred E. Kahn, a former chairman of the New York Public Service Commission and top official in the Carter administration, observed that the industry has fundamentally changed and that regulation designed for a bygone era can be harmful.

The industry is obviously no longer a natural monopoly, and wherever there is effective competition—typically and most powerfully, between competing platforms—land-line telephony, cable and wireless—regulation of the historical variety is both unnecessary and likely to be anticompetitive—in particular, to discourage the heavy investment in both the development and competitive offerings of new platforms, and to increase the capacity of the Internet to handle the likely astronomical increase in demands on it for such uses as on-line medical diagnoses and gaming.⁶

The traditional rationale for utility regulation, *i.e.*, that the market was not fully competitive, is gone; therefore, all voice services should be subject to uniform regulation. Wherever consumers can choose between alternative providers of voice services, providers of those services should be subject to minimally-necessary regulation that does not discriminate on the basis of the technology employed or on providers' regulatory origins.

II. WHAT SHOULD A MODERN COMMUNICATIONS ACT LOOK LIKE? WHICH PROVISIONS SHOULD RETAINED, ADAPTED OR ELIMINATED?

First and foremost, there is a need to adapt or eliminate the FCC's authority to "promote competition." With regard to competition policy, the FCC lacks both a clear focus as well as basic procedural safeguards. In the merger context, the Commission interpreted the public interest test—which has never been clearly defined—to require that mergers must "enhance" as opposed to not "substantially lessen" competition. The commission also assigned the burden of proof to the applicant instead of the government.⁷ The FCC has effectively eliminated judicial review of its merger determinations by dragging out its deliberations until desperate applicants offer to make "voluntary" concessions. Sometimes the concessions have nothing to do with the merger. As J. Gregory Sidak and Hal J. Singer point out,

the Commission is increasingly inclined to set conditions for approval that are primarily intended to satisfy "public interest" (more accurately, private pressure) groups with economic or social agendas, rather than to defend consumers from the potential consequences of increased market power.⁸

The purpose of the 1996 amendments was to “promote competition and reduce regulation.” While this is laudable goal, Congress should bear in mind that Moore’s Law—which dictates the doubling of computer power, or the halving of its cost, every 18 months⁹—is primarily responsible for competition in the communications sector. In its approach to competition policy overall, the FCC does not confine itself to “unfair competition.” As a result, some FCC efforts to promote competition have been wasteful and counterproductive. For example, it was a costly mistake when the FCC tried to attract new entrants in the local exchange by setting whole sale rates at or below cost. According to Robert W. Crandall,

In the post-1996 era of telecom regulation, considerable effort was put into creating an environment conducive to the entry of new carriers into fixed-wire local markets. The entrants this attracted offered little in the way of innovation or new services. They were mainly interested in exploiting the arbitrage opportunities created through the regulation of wholesale and retail rates, and most of them failed with a vengeance when the telecom stock market bubble burst in 2000-02.¹⁰

As it turned out, the regulatory strategy of the [FCC] and of the state regulators to promote entry into local fixed-wire services was not only wasteful but unnecessary. Meaningful mass market competition did not develop through unbundled network elements or their platform. For the most part, these policies simply transferred billions of dollars from incumbent telephone companies to fund marketing campaigns required to sell the same service under a different name. Instead, competition has developed in ways totally unanticipated by regulators, namely through unregulated wireless providers and cable broadband platforms.¹¹

On the other hand, Congress clearly helped promote competition when it gave the FCC authority both to auction new licenses for mobile wireless services and to forbear from regulating those services in 1993, and the FCC played an enormously positive role when it subsequently deregulated the mobile wireless market (according to former FCC Chairman Reed E. Hundt, “by auctioning spectrum with no rules attached and preempting all state regulation, we had totally deregulated the wireless industry.”).¹²

The communications sector is highly competitive today, and Congress should carefully consider the extent to which regulatory intervention is required to promote competition. For example, the FCC is actively considering establishing limits on how much spectrum mobile wireless providers can acquire.¹³ The FCC seems to be trying to structure the incentive auction to give Sprint and T-Mobile an advantage vis-à-vis AT&T and Verizon Wireless, as well as to pay television licensees less than they are willing to accept to relinquish their spectrum rights.

This despite the fact that over the past 18 years, the average cost of mobile voice service in the U.S. has dropped from 40 cents to a nickle per minute; the average price of mobile data services fell 89 percent in just two years (2009-10).¹⁴ “Since 2009, annual mobile capital investment is up 40 percent, while annual investment has been roughly flat in Europe and Asia.”¹⁵ 4G coverage is only 26% of the European population versus 90% in the U.S., and the European Union now wants to promote consolidation and investment.¹⁶ So it’s no surprise that *The Wall Street Journal* recently reported that AT&T is shopping for a mobile-network operator in Europe, in part because U.S. regulators are blocking AT&T from growing it’s U.S. operations.”¹⁷

A study by Fred Campbell concludes that “restrictions on the participation of large firms in previous FCC spectrum auctions have delayed the provision of new wireless services to 68 percent of the public by a weighted average of nearly seven years, reduced auction revenue by lowering net bids by 31-61 percent, and “[f]ailed to substantially benefit wireless competition.”¹⁸

The Department of Justice’s recent comments regarding broadband services are apropos to the communications sector generally. The Department recognizes that large economies of scale “preclude having many small suppliers”.

Broadband services differ along a number of dimensions: the speed actually delivered, the reliability of the underlying network, and whether the service is fixed or mobile. In addition to these dimensions of product differentiation, we observe in the market, and will continue to see, variation in pricing and terms of service, such as usage limitations or alternative pricing models.

In markets such as this, with differentiated products subject to large economies of scale (relative to the size of the market), the Department does not expect to see a large number of suppliers. Nor do we expect prices to be equated with incremental costs. If they were, suppliers could not earn a normal, risk-adjusted rate of return on their investments in R&D and infrastructure.¹⁹

The Department of Justice and the Federal Trade Commission possess analytical and procedural discipline that are nonexistent at the FCC. There is no reason that the “A team” should not assume full responsibility for competition policy in the communications sector. The FCC can always serve as a consultant to the extent there are novel issues presented by rapidly evolving technology.

III. HOW SHOULD THE STRUCTURE AND JURISDICTION OF THE FCC BE TAILORED TO ADDRESS SYSTEMIC CHANGE IN COMMUNICATIONS?

The jurisdiction and structure of the FCC was established to protect monopolies and cartels based on obsolete natural monopoly and scarcity rationales. Moore's Law—which dictates the doubling of computer power, or the halving of its cost, every 18 months—has upended both justifications for heavy-handed regulation. The jurisdiction of the FCC can and should be radically decreased in order to address systemic change in communications.

Network reliability is a legitimate function for the FCC. Competition and consumer protection are legitimate functions for the Department of Justice and/or the Federal Trade Commission. Public safety ought to be handled by the Department of Homeland Security. Universal Service could be handled by other agencies—*e.g.*, rural subsidies by the Department of Agriculture and subsidies for schools and libraries by the Department of Education. Universal Service is not a genuine “user fee,” therefore it ought to be funded directly out of general tax revenues.

IV. HOW DO WE CREATE A SET OF LAWS FLEXIBLE ENOUGH TO HAVE STAYING POWER? HOW CAN LAWS BE MORE TECHNOLOGICALLY NEUTRAL?

The letter itself correctly acknowledges that

[n]arrow statutory provisions tailored to address specific circumstances can quickly become outdated by the pace of innovation. Conversely, broad prescriptive rules can have unintended consequences for innovation and investment.

Fortunately, it is not clear there is a continuing need to address specific circumstances in the communications sector. Narrow statutory provisions seemed necessary in the past because many people assumed technology had reached its zenith, basic inputs were inherently scarce and the interests of consumers and investors were necessarily in conflict. All of these assumptions were wrong. In the communications sector, the technology is always improving—resulting in new efficiencies and disruptions that have led to better services and lower prices with competitive returns on investment.

V. DOES THE DISTINCTION BETWEEN INFORMATION AND TELECOMMUNICATIONS SERVICES CONTINUE TO SERVE A PURPOSE?

The distinction between information and telecommunications services was drawn to prevent the monopoly telephone system from monopolizing the emerging computer industry. Although there is no longer any danger of that, the distinction does still serve a useful purpose insofar as some people want to preserve the heavy-handed legacy

regulation that was designed specifically for telecommunications during the monopoly era between 1910 and 1934, and even expand it to cover newer technologies governed by Moore's Law.

* * *

Thank you very much for the opportunity to submit these views, which are my own and do not necessarily reflect the personal views of the officers or fellows of the Discovery Institute.

Sincerely,



Hance Haney
Senior Fellow & Director
Technology & Democracy Project
Discovery Institute

¹ "Local Telephone Competition: Status as of Dec. 31, 2012," *Federal Communications Commission* (Nov. 2013) available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db1126/DOC-324413A1.pdf, at 1.

² *Id.*, at 2.

³ "Cell phone ownership hits 91% of adults," by Lee Rainie, *Pew Research Center* (Jun. 6, 2013) available at <http://www.pewresearch.org/fact-tank/2013/06/06/cell-phone-ownership-hits-91-of-adults/>.

⁴ Stephen J. Blumberg and Julian V. Luke, et al. "Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, January–June 2013," *U.S. Department of Health and Human Services* (Dec. 2013) available at <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201312.pdf>.

⁵ "Local Telephone Competition," *supra* note 1, at Tables 9, 18. There were approximately 82 million incumbent local exchange carrier-provided retail switched access lines in service, versus 56 million non-ILEC wireline voice connections and 305 million mobile wireless connections.

⁶ Remarks of Alfred E. Kahn before the Federal Trade Commission (Feb. 13, 2007) available at <http://www.ftc.gov/opp/workshops/broadband/presentations/kahn.pdf>. Kahn is the Robert Julius Thorne Professor of Political Economy (Emeritus) at Cornell University who has also served as chairman of the New York Public Service Commission, chairman of the Civil Aeronautics Board, Advisor to the President (Carter) on Inflation, and chairman of the Council on Wage and Price Stability.

⁷ http://transition.fcc.gov/Bureaus/Common_Carrier/Orders/1997/fcc97286.txt, para. 2

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- ⁸ “Foxes in the Henhouse: FCC Regulation through Merger Review,” by J. Gregory Sidak and Hal J. Singer, *Milken Institute Review* (1st Qtr 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1090932.
- ⁹ See, e.g., George Gilder, *Telecosm: How Infinite Bandwidth Will Revolutionize Our World* (The Free Press 2000), at 6.
- ¹⁰ Robert W. Crandall, *Competition and Chaos: U.S. Telecommunications Since the 1996 Telecom Act* (Brookings 2005), at 157.
- ¹¹ *Id.*, at 157-58
- ¹² Reed E. Hundt, *You Say You Want a Revolution: A Story of Information Age Politics* (Yale Univ. 2000) at 98.
- ¹³ See Notice of Proposed Rulemaking, In the Matter of Policies Regarding Mobile Spectrum Holdings (WT Docket No. 12-269) Before the Federal Communications Commission (released Sept. 28, 2012), available at <http://apps.fcc.gov/ecfs/comment/view?id=6017112376>.
- ¹⁴ “The Danger of Meddling With Wireless,” by Robert Hahn and Peter Passell, *Wall Street Journal* (Jun. 9, 2013), available at <http://online.wsj.com/news/articles/SB10001424127887324063304578525250633145288>. See also: Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, *Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services* (Sixteenth Report) (released Mar. 21, 2013), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-13-34A1.pdf, at 14-15
- ¹⁵ Statement of Chairman Julius Genachowski Announcing Plans to Step Down (Mar. 22, 2013), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0322/DOC-319737A1.pdf.
- ¹⁶ Commission Adopts Regulatory Proposals For a Connected Continent (Sept. 11, 2013) available at http://europa.eu/rapid/press-release_MEMO-13-779_en.htm
- ¹⁷ “NSA Fallout Thwarts AT&T,” by Anton Troianovski, Thomas Gryta and Sam Schechner, *Wall Street Journal* (Oct. 30, 2013), available at <http://online.wsj.com/news/articles/SB10001424052702304073204579167873091999730>.
- ¹⁸ Maximizing the Success of the Incentive Auction, by Fred B. Campbell (Oct. 12, 2013), available at http://www.broadcastcoalition.org/uploads/auction_whitepaper_10_31_2013_FINAL_revised_v2.pdf.
- ¹⁹ Ex Parte Submission of the United States Department of Justice, In the Matter of Economic Issues in Broadband Competition (GN Docket No. 09-51) Before the Federal Communications Commission (Jan. 4, 2010), available at <http://www.justice.gov/atr/public/comments/253393.htm>.

**Comments of The Walt Disney Company in Response to the
House Energy & Commerce Committee's January 8, 2014 White Paper
on Modernizing the Communications Act**

We commend Chairman Upton and Chairman Walden on their efforts to examine the Communications Act to determine whether and how to update the Act in light of changes in technology. As the Congressional Committee responsible for oversight of communications technology and the Federal Communications Commission, the Committee's review of this critical sector of the Nation's economy is both appropriate and timely.

Thank you for the opportunity to participate in this update. Although our comments do not provide specific detail at this time, we will be actively following the process, and look forward to providing our views as well as any pertinent information as the update proceeds.

As a general matter, we believe it will be helpful for you to establish certain principles to guide your review. Certainly there will be many priorities, such as promoting consumer welfare, localism, competition, and diversity, that will guide the Committee's efforts. In addition to these worthwhile goals, we encourage you to ensure that any update to the Communications Act continues to enable content creators to be compensated for the value of their product, to retain the final say in how their content is distributed, and to negotiate for compensation for that content through private negotiation.

Investment in quality content in today's competitive environment is not without significant financial risk. Communications legislation must continue to incentivize the creation of content – whether such content is created for a local, regional, or national audience; whether such content is distributed through broadcast, cable, or the internet; and whether such content is viewed on a movie screen, a television screen, a computer screen, a tablet, or a smart phone. Allowing content creators to

be rewarded for their investment in quality content is a principle that does not become outdated over time. It is just as valid today as it was in 1992, and will continue to be valid for decades to come.

Thank you again for launching this process. We look forward to working with the Committee.



DiversiTech

DIVERSITY. IN. TECHNOLOGY.

Thursday, January 29, 2014

Chairman Upton and members of the House Energy and Commerce Committee:

Thank you for the opportunity to share our thoughts on reforms to the Communications Act. Our organization, DiversiTech LLC, was created in response to an outcry for greater depth of inclusion for those of underrepresented communities within the larger tech entrepreneurship and startup communities. We strive to keep our finger on the pulse of underrepresented communities in technology (age, gender, ethnicity, disability and sexual orientation) and we maintain productive working relationships with national leaders from these segments. DiversiTech's network now includes over 4,000 national innovators and influencers that are aspiring entrepreneurs, founders, funders, academics, technologists and industry leaders.

Much progress has been made in the technological landscape since the Communications Act was amended in 1996. While technology now plays an integral role in our economy and in the lives of most Americans, there is still a digital divide in this country that must be addressed.

According to the Federal Communications Commission's (FCC) National Broadband Map, nearly 99% of Americans have access to high-speed broadband Internet connections. And with proliferation of powerful 4G and LTE wireless networks, an increasing number of Americans are migrating to wireless devices like smartphones and tablets for their primary means of communication. But yet, while it is improving, broadband adoption among African Americans and Latinos trails that of their white counterparts.

According to a recent Pew Research Center presentation, 79% of African Americans and 75% of Latinos have broadband at home or a smartphone. African Americans trail whites by seven percentage points when it comes to overall Internet use – 80% and 87% are Internet users respectively. While considerable private investment in the development and expansion of broadband networks and competition among various Internet service providers have helped



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make broadband available to more underrepresented communities, adoption remains a key hurdle. There are a number of possible reasons for lower adoption among the communities we serve, but digital literacy is one of the most important.

While many diverse entrepreneurs are using the Internet and mobile technologies to create businesses, develop innovative new products and services and interact with consumers in new ways, others have yet to understand the quality of life enhancing resources and services that are powered by broadband Internet access. Though there is clearly room for improvement, there are promising signs. African American usage of mobile devices is on par with whites. Over 90% of African Americans own a cell phone and 56% own a smartphone. What's more, as it has been much reported, African Americans are becoming Twitter's fastest-growing demographic group.

Therefore, as you consider changes to the Communications Act, we urge you to foster a more inclusive digital ecosystem. Federal policymakers should pursue technology neutral reforms to the Communications Act that will promote continued private investment in the new mobile technologies minority groups are clearly adopting. It is a promising arena that could lead to more minority-owned and minority-oriented content and services.

Thank you again for providing this venue for us to share our thoughts. Your efforts will hopefully position our country for a future in which more Americans, from diverse backgrounds, are able to experience all that broadband Internet has to offer.

Christine Johnson
Founder and Chief Executive Officer (CEO)
DiversiTech LLC



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January 31, 2014

House Committee Chairman
The Honorable Fred Upton
Chairman, Energy and Commerce Committee
U.S House of Representatives
Washington, DC 20515

House Subcommittee Chairman
The Honorable Greg Walden
Chairman, Communications and Technology Subcommittee
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Upton and Chairman Walden:

I am writing in response to the Committee's White Paper on Modernizing the Communications Act (Jan. 8, 2014). I am a young attorney with an interest in the communications sector, with both technical and policy experience therein, and look forward to contributing to the Committee's Communications Act Update. I do not write on behalf of any other organization. Please find my responses to the Committee's questions below.

I. THE CURRENT COMMUNICATIONS ACT STRUCTURE DOES NOT WORK FOR THE MODERN COMMUNICATIONS SECTOR

A. A Modern Act Should Be Principled On Fundamental Legal Principles And Clarify The Role Of Government In Communications Sector Related Streams Of Commerce

In order to work for the modern communications sector, a modern Act should be principled on fundamental legal principles that provide a framework for market participants in the communications sector related streams of commerce, and be clear about the role of the government in these streams of commerce. These legal principles will ensure that market participants and users may in fact compete and access communications services, respectively.

The primary fundamental legal principles that should underlie a modern Act are embodied in the Commerce Clause and the Necessary and Proper Clause of the Constitution. For example, the use of the Taxing and Spending Clause in conjunction with the Commerce Clause may provide a strong foundation for both facilitating commerce and affording greater degrees of stakeholder participation. Under the Commerce Clause, a modern Act could provide as a purpose that common carriers provide resilient and reliable communications services because these services impact

multiple streams of interstate, foreign, and tribal commerce, including public safety services taking place over the top of communications services.

A modern Act should consider additional fundamental legal principles. For example, it should consider the legal principles underlying common carrier law as developed under the common law and as codified in the U.S. Code. This means that it should ensure that common carriers take reasonable steps to ensure availability of their services without discrimination.

Moreover, a modern Act should clarify the overall role of the government in the communications sector, and the various jurisdictions over related streams of commerce amongst the various government agencies such as the FCC, FTC, FAA, DOJ, DHS, HHS, DOT, DOD, DOE, etc.... Specifically, a modern Act should be clear about the role of the FCC, FTC, and DOJ in relevant competition and consumer protection matters. Additionally, it should be clear as to preemption of state and local laws.

B. A Modern Act Should Be Based On A General Framework For Common Carriers

A first step to creating a modern Act could start with the development of a general framework regarding common carrier law for all sectors that will provide simplicity, clarity, and flexibility for common carriers in order to anticipate future technological innovation in all streams of commerce, but also provide certainty to all market participants and a structure that promotes competition, access, and non-discrimination.

C. A Modern Act Should Provide One High Level Market Definition Of Common Carriers, The “Data Carriage Services Market,” The Mechanisms For The FCC To Define Sub-Markets Enabled By Data Carriage Services, And Provide Some Quid Pro Quo For Common Carriers

Building on the general framework, a modern Act would be tailored specifically to the communications sector. It could start by establishing one primary market, such as a “data carriage services market,” which is the general enabler of all other sub-market services. Thereafter, the Act could empower the FCC to regulate this market and define and regulate sub-markets, such as voice services, text services, video services, public safety services, accessibility services, etc.... From this, the Act should establish some quid pro quo for common carriers should a carrier be classified as such and be required to assume the responsibilities and liabilities of a common carrier.

D. A Modern Act Should Provide The FCC With Continued Management Authority Over The Electromagnetic Spectrum

Additionally, a modern Act should provide the FCC with continued management authority over the electromagnetic spectrum that preempts the authority of any other

authority because its leadership in working with stakeholders to develop new spectrum management models and technologies that overcome century-old issues should be continued until the sector is able to govern spectrum management itself.

E. A Modern Act Should Have Five Titles

Finally, a modern Act should have five titles. Title I should provide for General Provisions. Title II should provide for Common Carrier Provisions. Title III should provide Spectrum Management Provisions. Title IV should provide for Public Safety Provisions. Title V should provide Administrative Provisions. However, a modern Act will likely retain many current provisions.

II. A MODERN COMMUNICATIONS ACT WILL LIKELY RETAIN MANY CURRENT PROVISIONS

A modern Communications Act will likely retain many current provisions, although most likely under a reorganized title structure and framework style language. However, a modern Act should not maintain Title V-A provisions specifically regulating Cable Communications. Instead, it should provide for the classification of common carriers under Title II, neutral of the type of service, technology, protocol, application, platform, or layer. Likewise, a modern Act should subsume Penal Provisions, Forfeitures, and Miscellaneous Provisions under the four new titles described above.

III. THE STRUCTURE AND JURISDICTION OF THE FCC WILL NEED TO BE RESTRUCTURED

The structure and jurisdiction of the FCC will need to be restructured if its bureaus and divisions are to align with a modern Act as described above. This requires creating and maintaining the following bureaus, divisions, and branches:

- Front Office
 - Chairman
 - Commissioners
 - Secretary
 - Human and Resource Capital Management
 - Managing Director
 - Workplace Diversity
 - Strategic Planning
 - Business Opportunity Office
 - Communications Office
 - Inspector General
 - General Counsel
- ALJ Office
- Common Carrier Bureau—Analyze and define markets and regulate common carriers based on the Act’s Common Carrier Provisions.

- Analysis
- Full Rulemaking Authority
- Enforcement
- Public Safety Bureau—Analyze and define public safety services requirements and regulate common carriers based on the Act’s Common Carrier Provisions related to public safety services.
 - Analysis
 - Full Rulemaking Authority
 - Enforcement
- Office of Engineering and Technology—Analyze engineering issues related to land use, spectrum management, and technologies, and regulate spectrum use. Also, advise other Bureaus and Offices as to resource and technological limits to their rulemaking authority.
 - Analysis
 - Full Rulemaking Authority
 - Advising Authority
- User Affairs Bureau—Analyze user issues, interface with consumers, and advise other Bureaus and Offices as to issues users are facing.
 - Analysis
 - Notice of Inquire Authority
 - Advising Authority
- Governance Relations Office—Research and conduct outreach to various institutions based on other Bureau and Office needs, negotiate instruments with these institutions, and advise other Bureaus and Offices of inter-institutional developments.
 - State and Local
 - Indian
 - Federal Branches
 - Standards Development Organizations
 - International
 - Treaty Organizations
 - Foreign Governments

This structure should provide greater certainty as to the jurisdictions of Bureaus and Offices.

IV. A MODERN ACT SHOULD PROVIDE ONE HIGH LEVEL MARKET DEFINITION OF COMMON CARRIERS IN ORDER TO CREATE A SET OF LAWS FLEXIBLE ENOUGH TO HAVE STAYING POWER AND BE MORE TECHNOLOGY-NEUTRAL

As stated above, a modern Act should provide one high level market definition of common carriers, such as “data carriage services market,” and thereafter define the mechanisms for

the FCC to define sub-markets. The FCC would then apply common carrier rules to any market participant that the FCC deems to be a common carrier of such services.

V. THE DISTINCTION BETWEEN INFORMATION SERVICES AND TELECOMMUNICATIONS SERVICES DOES NOT SERVE A USEFUL PURPOSE

The distinction between information services and telecommunications services does not serve a useful purpose in regards to the Communications Act. On the one hand, telecommunications services could be viewed to have always been a form of information services, traditionally in the form of voice services taking place “at or over a long distance,” because information services implies a service that transports any type of information. On the other hand, telecommunications services could be viewed as an enabler of information services. Either way, it likely makes sense to drop both terms and instead use phrases such as “data carriage services,” “electronic communications carriage services,” or “information and communications technology (ICT) carriage services.”

I am excited about future developments in the communications sector, and am ready to contribute to the Committee’s work on the Communications Act Update. Please do not hesitate to contact me at [REDACTED] or [REDACTED] to further discuss this important initiative.

Sincerely,

/s/ Douglas Spoerl, Esq.

Subject: Comments - Communication Act

Date: Monday, January 27, 2014 at 4:12:07 AM Eastern Standard Time

From: Edmond Baranes

To: CommActUpdate

Dear Representatives Upton and Walden,

I am a Professor of telecom economics at the University of Montpellier in France. I make the following observations and suggestions in light of your effort to reform the Communication Act.

The Communications Act which governs America's telecommunications, radio and TV providers was designed in 1934. The Act reflects a world which is very different from today. At the time there was only a telephone monopoly. The world of the time was characterized by vertical integration: the provider of service, voice, also owned the network. The internet and broadband were not yet developed.

The Act was updated in 1996 to help deregulate the market for internet services, but it kept a clear separation for regulation of telecom and cable services. Today, the ecosystem of the internet, telecommunications and media is rich and complex. Convergence has opened the market to new players for network access, content, applications and devices.

A key development is the transition from a single sided market (telcos and consumers) to a multi-sided market (telcos, consumers, content, applications and devices). The market today is characterized both by competition and cooperation, also called co-opetition. This interweaving highlights both differences and interdependencies between technologies. The 1934 Communications Act never imagined such an ecosystem. Unfortunately the focus on a single monopoly network reinforced thinking that all new networks and technologies should be treated as silos. Hence decisions based upon this outmoded framework don't promote economic efficiency, innovation or investment. Viewing the world in silos does not account for spillovers between different networks and technologies.

In a multisided markets, networks allows relationships between many actors: consumers, content providers, applications, and devices. What matters ultimately is the well-being of consumers. The important thing is that the market produces the best incentives that produce the best innovations. Consumers have overwhelmingly chosen products and services that combine the best assets of the many players. One example is the AT&T iPhone offer. Another is the Android ecosystem which is available across a range of devices. Additionally cable offerings incorporate many independent providers of content. Therefore the silo perspective is out of step with what consumers want. Regulatory silos can no longer be justified.

Today consumers have the choice between several network operators, different network access technologies (whether fixed, wireless, or unlicensed wireless), a dizzying array of devices, and a plethora of content and applications. To a large extent, all of these technologies can act as substitutes or a complements. The new regulatory framework should take into account this complex ecosystem, which can be expensive and difficult to organize.

Competition law, or antitrust, has proven effective in other industries as they have entered the digital era. For example in December 2013, a European regulator ordered eight large banks to pay a fine amounting to more than \$2million for a cartel including two large U.S. banks(JPMorgan Chase and Citigroup) for the illegal harmonization of interest rates. The airline industry provides another example. As airlines have been deregulated, competition has increased. As such, common carriage provisions for airlines have also been relaxed without problems for consumers. As such, competition law can also work with the ICT industry, particularly telecom.

Sincerely,

Edmond Baranes

Professor of economics

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January 31, 2014

Via Electronic Delivery (CommActUpdate@mail.house.gov)

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**Re: Modernizing the Communications Act by Removing FCC Jurisdiction
over Pole Attachments**

Dear Chairmen Upton and Walden, and Ranking Members Waxman and Eshoo:

Our clients, Consumers Energy, FirstEnergy Corp., National Grid, Northeast Utilities, and South Carolina Electric & Gas Company (the "Electric Utilities") collectively own 22 of the nation's investor-owned local electric distribution companies and provide electric service to approximately 15 million customers.¹ We appreciate and support your efforts to update the Communications Act of 1934, as amended (the "Communications Act").

¹ These corporations own the following electric utility local distribution companies: The Connecticut Light and Power Company, Consumers Energy, Granite State Electric Company, The Illuminating Company, Jersey Central Power & Light, Massachusetts Electric Company, Metropolitan Edison Company, Monongahela Power Company, Nantucket Electric, The Narragansett Electric Company, New England Power Company, Niagara Mohawk Power Corporation, NSTAR Electric, Ohio Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company, The Potomac Edison Company, Public Service Company of New Hampshire, South Carolina Electric & (continued ...)

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The Federal Communications Commission (“FCC”) is a well-recognized expert agency in communications matters. The FCC, however, lacks any experience or expertise whatsoever in the safe and efficient distribution of electric services to consumers across the country. Nevertheless, the Communications Act vests the FCC with oversight over “pole attachments” (cable and telco attachments to electric distribution poles). The Electric Utilities urge you to place jurisdiction for pole attachments where it belongs -- at the Federal Energy Regulatory Commission (“FERC”), an agency expert in the transmission and distribution of electric services.

At the very least, we ask you to remove from the FCC its newly-asserted jurisdiction over the “joint-use” relationship between pole owners: electric utilities on the one hand, and Incumbent Local Exchange Carriers (“ILECs,” such as AT&T, Verizon, and Frontier) on the other. As mutual pole owners, electric utilities and ILECs have successfully entered into mutually acceptable “Joint Use Agreements” for almost a century without FCC intervention.

As an agency statutorily charged with regulating “communications” and not “electric distribution service,” the FCC historically has unduly favored cable companies, Competitive Local Exchange Carriers (“CLECs”), and ILECs, as communications entities in their dealings with electric utilities.² Ultimately, however, electric utilities, their shareholders, and most significantly, their ratepayers, suffer.

The changes proposed below will promote the safe and efficient operation of the nation’s electric distribution systems, protect electric utility ratepayers from subsidizing gigantic communications companies, and prevent onerous, over-reaching regulation of electric utility operations by the FCC, which is simply not qualified to regulate electric utility facilities or operations.

(...continued)

Gas Company, Toledo Edison Company, West Penn Power Company, and Western Massachusetts Electric Company.

² In its Chapter on Pole Attachments in its National Broadband Report, the FCC virtually ignored all comments submitted by the electric utility industry. Chapter 6 of the National Broadband Plan (“Infrastructure”) addressed pole attachment issues. In the footnotes supporting FCC staff’s recommendations, there are thirty-eight (38) citations to filings on behalf of attachers. Despite the volumes of comments submitted by the electric utility industry, there are only two (2) largely irrelevant citations to electric utility filings. See National Broadband Plan, 2010 WL 972375, Chapter 6, footnotes at pp. 134-36 (Mar. 16, 2010), available at <http://www.broadband.gov>.

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FCC Abuse of the Pole Attachment Act

The Pole Attachment Act, 47 U.S.C. §224, is part of the Communications Act of 1934, as amended. As originally enacted in 1978, the Pole Attachment Act granted the FCC jurisdiction over attachments by cable companies (then nascent start-ups) to poles owned and operated by both electric utilities and ILECs. The Telecommunications Act of 1996 extended FCC jurisdiction to reach attachments by “telecommunications providers.” Recently, with its April 2011 Pole Attachment Order,³ the FCC has now claimed that in the 1996 Act, Congress also intended to grant it jurisdiction over the “joint use” relationship between electric utility and ILEC pole owners.

In implementing the Pole Attachment Act, as interpreted by the FCC, the FCC passes judgment over and imposes requirements on electric utility engineering design standards, electric utility operating standards, the National Electrical Safety Code, and a host of other technical specifications. Despite objections by the electric utility industry, the FCC’s April 2011 Pole Attachment Order also established new, unprecedented deadlines by which electric utilities must drop everything to accommodate attachment requests by communications companies within certain prescribed time periods. In particular, the Order encouraged wireless attachments above energized electric conductors over strong concerns expressed by many utilities regarding the impact on safety, reliability, and operational efficiency of their distribution systems. Additionally, the Order reduced attachment rates to a level far below what is fair to electric utility rate payers, some of whom do not receive cable, CLEC, or other communications services transmitted via attachments to utility distribution poles.

Not only has the FCC unduly favored cable and CLECs in rate and operational matters related to pole attachments, for the first time the Order unilaterally extended FCC jurisdiction beyond pole attachments to include joint use arrangements between electric utilities and ILECs owning poles. For the previous ten years, the FCC repeatedly and explicitly made clear it *lacked* statutory authority to regulate joint use. As recently as March 16, 2010, in its own National Broadband Plan, the FCC recognized unequivocally that it lacked statutory authority to regulate joint use: “*without statutory change, the convoluted rate structure for cable and telecommunications providers will persist.*”⁴ The “convoluted rate structure” of which the FCC complained was the one mandated by Congress in 1996.

³ *Implementation of Section 224 of the Act*, 26 FCC Rcd 5240 (April 7, 2011) (“2011 Pole Attachment Order”).

⁴ See National Broadband Plan, at p. 101, Chapter 6, Recommendation 6.5 (“Congress should consider amending Section 224 of the Act to establish a harmonized access polity for all poles, ducts, conduits and rights-of-way.”)

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With its April 2011 Pole Attachment Order, the FCC decided to “re-read” the Pole Attachment Act, “reinterpret” the statutory requirements, “clarify” its previous decisions, and for the first time expand its jurisdiction to encompass the joint use relationship between pole-owning entities. Why? To drive down ILEC costs and unfairly shift burdens from the communications industry to the electric utility industry. The FCC already boasts that lower attachment rates alone will save ILECs \$320-350 million per year⁵ but there was no mention that this windfall “savings” likely will come from electric utility ratepayers.

Unlike cable companies and CLECs, ILECs own tens of millions of their own distribution poles, on which electric utilities depend to access electric utility customers in a safe and efficient manner. The historically successful “joint use” contracts between ILECs and electric utilities, which allowed a single pole distribution system to accommodate both industries’ requirements throughout most of the country, required each party to operate and maintain its own poles so the other party can access them in a safe and operationally reasonable manner. These mutually acceptable arrangements allowed electric utility and ILEC systems to develop and thrive without the necessity of “dual poles.” All of this has now been jeopardized by the FCC’s recent, unilateral expansion of its limited statutory jurisdiction.

In its attempt to regulate ILEC/electric utility “joint use” contracts, the FCC likely will continue its pro-communications approach at the expense of the electric utility industry and its consumers. The FCC might even require electric utilities to sell billions of dollars’ worth of poles to ILECs or to buy billions of dollars’ worth of poles from ILECs. It may change the maintenance and operational rights and responsibilities of electric utility and ILEC pole owners and require utility ratepayers to bear hundreds of millions of dollars in additional expenses per year. All of these and other even more egregious changes could be mandated by the FCC, yet the FCC has absolutely no practical experience or expertise with respect to electric utility maintenance, safety, reliability, and operational requirements.

Recommended Statutory Changes

In light of the above, the Electric Utilities respectfully request the Committee on Energy and Commerce and Subcommittee on Communications and Technology to consider the following revisions to the Communications Act:

- Transfer jurisdiction over pole attachments from the FCC to FERC, since the FCC has no expertise over or experience with electric utility distribution systems;

⁵ 2011 Pole Attachment Order at ¶208.

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- Prohibit the FCC from regulating the electric utility/ILEC joint use relationship;
and
- Require attachment rates be increased so that communications companies pay a more appropriate share of pole distribution expenses.

Your attention to these matters is much appreciated. Should you have any questions or concerns or require any additional information, please do not hesitate to let us know.

Respectfully submitted,

Consumers Energy,
FirstEnergy Corp.,
National Grid,
Northeast Utilities, and
South Carolina Electric & Gas Company

By: 
Jack Richards

By: 
Thomas B. Magee

Their Attorneys

Subject: public media law revisions

Date: Tuesday, February 4, 2014 at 10:30:39 AM Eastern Standard Time

From: Ellen Goodman

To: CommActUpdate

Dear Committee Staff:

I am responding to the request for stakeholder views on Communications Act updates. I have written quite a bit about the need to revise the Public Broadcasting Act for a post-broadcast world. The gist of my argument is below (the same document, prepared for the Free State Foundation), is attached with footnotes. A more detailed explication that appeared in the Harvard Journal of Law & Technology is also attached. These proposals are related more generally to a layered, technology-neutral approach to telecommunications regulation and support.

I'd be happy to participate in any way I can.

Best,
Ellen Goodman

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Public Media Policy Reform and Digital Age Realities

by

Ellen P. Goodman

Whither Public Media?

In the early Spring of 2011, it looked again as if American public broadcasting might fall to budget cuts and partisan ire. There had been several highly publicized, albeit ultimately vaporous, scandals at National Public Radio. Lawmakers and pundits who had long begrudged the trickle of federal funding into public media were incensed and loaded for bear – this seemed like a good time to end the federal government subsidy and hobble the service.

Defenders of public media ^[1] organized campaigns to save the federal funding, as they had done in decades past when there were similar threats to “zero out” funding. What this meant was

in decades past when there were similar threats to zero out funding. What this meant was bringing Big Bird up to Capitol Hill and reminding lawmakers that many people in rural “red” states loved public television and radio and these would be the people most hurt by an end to federal support.

While the arguments were familiar, times had changed. A bipartisan debt reduction commission had recommended the axe for public media subsidies. And the explosion of new digital media options made it less obvious what the rationale for public media was and why subsidies were needed for radio and TV stations, much less apps and websites connected to PBS or NPR. In the end, public media entities held on to most of their federal funding during 2011. But many states across the country ended or drastically reduced their support for public media, motivated less by political controversy than by crushing budgetary pressures.

Perhaps the most important revelation of these policy spasms was that those who practice and support public media lacked a coherent narrative about why public media still matters in the digital age. There were habitual arguments about kids and documentary programming on PBS, the sobriety of NPR news, and the rarity of community-based broadcast outlets and service to rural populations. There were appeals to efficiency, with talk about large returns on investment for public dollars in public media. There were charts showing how meager the investment actually was when compared to what citizens in peer countries pay for public media. To be sure, the quickly assembled campaigns showed grassroots support and passion for public media. But the rationales for public media seemed both disconnected from reality and scarcely evolved since the public broadcasting system began in the 1960’s.

There is a rationale for public media, although probably not as currently configured. The rationale is rooted in a narrative about innovation – about the kinds of open media platforms and educational content that are necessary inputs to innovative practices. What kinds of structures and practices are best suited to promote innovation in the creation and distribution of information? What sorts of investments in infrastructure, technology, media content, and media-related community services are under-supplied by the market?

Instead of a product delivery model, which looks to particular media products as outputs, an innovation frame values functional performance – process, not product. A forward-looking innovation frame would define public media not by a set of institutions (e.g., broadcasters) and their products, but according to specific functions that fill market gaps.

There are elements of the American public media system that are already well suited to the innovation frame. It is a system that is decentralized, with hundreds of TV and radio stations rooted in their communities. It has diversified funding sources, the vast majority of which are private and widely distributed. It has periodically developed and incubated experimental communications technologies and techniques that were ultimately widely adopted. It has had success collaborating with national and local educational institutions and non-profits, advancing the public service missions of other entities through media. The decentralized qualities and collaborative traditions of U.S. public service media institutions differentiate American public media from its better-funded European counterparts. While these attributes present governance and sustainability problems, they hold promise for the kind of innovation that research suggests thrives in an environment of diversity and disruption.

If we were to redesign public media in the digital age in order to maximize innovation – as I think we should -- we would probably want to keep a decentralized structure. Indeed, we would want

to accelerate some of its more centrifugal features. But we would need to do much more, beginning with: (1) a delineation of public media functions that track the architecture of digital networks and the goal of innovation, and (2) an overhaul of the Public Broadcasting Act of 1967^[2] to support this functional approach, liberating the support of public media from a particular distribution platform (broadcasting) and institutional structure (existing public broadcast entities).

Taking Account of Market Failure and Network Layers

The historical justification for public service media is rooted in the concept of market failure. Information has public good characteristics in that it can be consumed by one without diminishing its value to another, and it often can be exploited just as easily by one who does not pay for it as by one who does. This economic reality reduces incentives of information producers to produce and distribute information. Producers of certain kinds of information – information that is most likely to throw off positive effects on society – are subject to another disincentive on top of the ordinary public goods problem with information. This is the problem of market failure.

The market works very well, indeed increasingly well, in creating exchanges for people to purchase (either in cash or with their attention) the information they want for personal gain. But individual willingness to pay for a product will typically fail to reflect the spillover value of that product to society.^[3] Such spillover values may take the form of a better informed and educated public, more accountable government and business sectors, more robust cultural and artistic production, more social cohesion, and more innovation in the informational sphere.

The promotion of spillover value, under-produced by the market, is a classic justification for government investment in basic research in the sciences. Public service media is the equivalent in the informational sphere (along with support for the arts, culture, and education). Long before the Public Broadcasting Act was passed in 1967, the FCC had set aside TV and radio channels for noncommercial use. The idea was that commercial broadcasters were never going to produce certain kinds of content that served the public. Educational programming was the paradigmatic example.

In addition to market failure in the provision of information, there was a recognition – borne out by observation – that commercial broadcasters were not interested in providing service to very small markets. The relatively small audiences could not support the costs of running broadcast infrastructure, in addition to the costs of developing market-specific content. So it was that public broadcasting was intended not only to produce content for under-served populations, but also to provide communications infrastructure in the form of broadcast services to underserved markets (often rural). The set-aside of noncommercial radio frequencies encouraged land grant universities and other community institutions to provide those services.

In the decades since the establishment of public broadcasting, we've lost sight of where the market failures are on both the content and infrastructure sides, and what kinds of policy interventions are necessary to supplement the market. Public media – especially public broadcasting – have been beset by their own market dynamics and market failure. They have come to produce programming for the relatively small population segments that provide most of their financial support. Sometimes, this results in filling market gaps, but not always, and not all of them. In some cases, the current structure has produced unique service to rural areas, but it

has also produced duplicative service in big metropolitan areas. The assaults on, and defenses of, *All Things Considered* and *Big Bird*, as representative of public media, make for good political drama, but they really miss the point. Specific products will always have proponents and detractors. The system as a whole should be judged by whether it is structured to support the kind of welfare-enhancing innovation and access that the market is likely to under-produce.

The twentieth century vision of public service media was, in keeping with the media structures of the day, oriented around broadcast institutions: national networks and local station affiliates. This was a structure characterized by a specific transmission technology (over-the-air broadcasting) and powerful institutions that produced or organized content specifically for that platform (networks). On the other hand, the twenty-first century media ecosystem is organizing itself around functions rather than institutions or specific transmission platforms. There are content creators. There are “pipe” providers. There are server farms, backbone providers, application developers, content aggregators and other intermediaries. Increasingly, these entities operate across technological platforms. They operate in formal or informal partnership with a wide range of media players, including Twitter and Facebook, traditional content networks and mobile platforms.

In this world, market failures may occur at any layer of the network. Recent FCC investigations shed some light on where market failures in the communications value chain may reside. The 2010 National Broadband Report identified holes in broadband connectivity.^[4] The 2011 Report on the Information Needs of Communities, prepared by a special FCC task force, identified local investigative reporting as another area of market failure.^[5] The fact that the FCC in cooperation with private philanthropic foundations has tried to incentivize the production of “apps for communities,” as have local municipalities (e.g., Washington D.C.), suggest that the market may not incentivize optimal investment in digital applications that enhance public accountability and service.^[6]

The identification of likely areas of market failure raises the question of whether we have a system of public media that is designed to address them. We do not. The structure of public media that we have, including public broadcasting, cable PEG channels, and the satellite set-aside for noncommercial channels, is badly out-of-date. We can focus just on the Public Broadcasting Act to see that the law privileges a transmission technology – *broadcasting* – that is moving to the margins. And the law privileges a set of institutions -- legacy *broadcasters* -- that may not be in the best position to supplement market goods and services. The law definitely needs a redo.

A Public Media Legislative Overhaul

There is some urgency to the need to rethink public media. As we look forward to the television spectrum going up for auction some time this decade, it’s important to remember that 20% is in the hands of noncommercial licensees. This spectrum was set aside, like parkland, for a public purpose. Whether those spectrum assets produce windfalls for a few lucky nonprofits, or are redeployed for other public purposes, should be of interest to all. Independent of the fate of noncommercial spectrum, the issue of public service media fits squarely into the larger communications policy discussion about how laws constructed around legacy analog services must be reformed to reflect digital realities.

Elsewhere, I have identified some of the reasons why we should transform the Public Broadcasting Act into the Public Media Act and some of the changes that would be necessary.^[7] Digital media market failures justify certain kinds of public and noncommercial interventions. In reforming the structure and target of these interventions, we should attempt to preserve the cultural capital that public media institutions embody in a space outside of both the state and the market. Polls consistently show that Americans across all demographics respect certain public media institutions more – sometimes far more -- than other institutions, including courts, legislatures, schools, and so on. At the same time, policy inertia must not stand in the way of shaking up the ways in which public subsidy and private support are channeled to the most productive projects.

At the most general level of reform, the focus of public media support should be on “innovation infrastructure.”^[8] We can assume that certain forms of public service innovation will require investments in research and development as well as technological and economic support to scale the innovations. Public broadcasting at its best was a place for this kind of innovation, and the 20th century system made especially notable contributions in children’s programming, educational content, and access technologies (e.g., closed captioning). No one can predict what innovations the future will require. But we can expect needs to arise in the areas of digital applications and other content, digital platforms and delivery systems, cloud computing, and software to fill niches that the market does not serve in order “to ensure that all citizens of the United States have access to public telecommunications services through all appropriate available telecommunications distribution technologies.”^[9]

Today’s public media systems in the U.S. are in some ways well-suited to address these needs. They are already decentralized and distributed – a hallmark of digital networks. They already have strong local community connections and are accountable to these communities. They already have working business models based on membership support – models that other nonprofit and for-profit media entities seek to emulate. But in other ways, the existing systems are too encumbered with redundancies, governance problems, mission confusion, and misbegotten incentives to achieve the lofty goals of the Public Broadcasting Act. The good and the bad were detailed in the 2011 Report on Information Needs of Communities.^[10]

A re-worked Public Media Act would go some way to correct the misalignment between policy interventions and public needs. One of the unfortunate casualties of the public broadcasting funding battle was “digital transition” funding.^[11] This was a funding source – in the range of \$35 million a year for the past ten years -- separate from the annual appropriation that goes to public broadcasting stations. The digital funding was used for innovative digital technologies that opened up public media platforms to new voices. It was used to start a project to digitize vast quantities of content from many sources and make them available to the public in an “American Archive.” And it was used to help create some of the most popular podcasts and apps, spurring new ways of thinking about distribution.

With this funding gone, it becomes even more apparent that the current funding formulas leave very little room for research and development or new technology investments. Instead, the law rigidly allocates funds according to technology (radio and television) and directs funds to stations without regard to performance and without creating incentive for risk-taking and innovation.

The result is an over-reliance on the broadcast platform, redundant infrastructure, and the failure to support collaborations, technologies and projects outside of the broadcast network-affiliate structure.

A re-write of the Public Broadcasting Act should address these problems. Ideally, the new approach would be technology-neutral and sensitive to the ways in which digital networks operate, with different functions (such as content creation and transmission) carried out in a modular way at different network layers. I will address here just two desirable reforms.

A new Public Media Act should redefine public media infrastructure so that it includes not only broadcast transmission, but also digital distribution technologies and platforms. Under current law, about 70% of all federal annual funding for public media must be distributed to public television and radio stations. And another almost 20% is pegged for television programming.^[12] The use of technology-specific language reflects efforts to satisfy an analog conception of linear broadcast programming and undermines efforts to innovate for digital platforms. The statutory funding allocation also creates an over-investment in broadcast infrastructure. Heavy investment in broadcast infrastructure was appropriate in the 20th century. But this financial commitment to broadcast transmission technology, in preference to other kinds of infrastructure or other functional layers of the public service media network, is no longer desirable or necessary.

What really constitutes what we might call public media infrastructure – noncommercial communications infrastructure maintained in the public interest to promote access and expression -- goes way beyond the network of public broadcasting facilities, though they are an important part of it. For example, there is the “middle mile” infrastructure connecting community anchor institutions such as libraries, hospitals, and universities, as well as public broadcasters.

All of these serve as strategic access points in the community.^[13] The National Broadband Plan recommended that federal and state governments should remove obstacles that prevent these community institutions from serving as broadband anchors, especially in Tribal lands and rural areas.^[14] Broadband grants have been made to these institutions and the Universal Service Fund reform for the broadband era upon which the Federal Communications Commission has recently embarked will probably result in more support. A new Public Media Act would require networking and interconnection between its grantees and other public media infrastructure operators. Such an approach would be in keeping with other proposals to reform telecommunications law more generally built on functional rather than technical attributes of telecommunications operators.

Eligibility to receive funding under a new Public Media Act should change and the law should restructure forms of support to reward and incentivize innovation wherever it is to be found. Existing public broadcasters should be eligible to receive grants, but so should others that meet defined criteria. One possibility would be to move from the existing model, which entitles public broadcasters to funding regardless of performance, to a grant model that assists innovative start-ups in a technology and content neutral manner. The Technology Opportunities Program (TOP), located in the NTIA within the Commerce Department, is one such model. It operated between 1994 and 2004, making grants to support demonstrations of new telecommunications and information technologies to provide education, health care, or public information in the public and non-profit sectors. TOP made matching grants to state, local and tribal governments, health care providers, schools, libraries, police departments, and community-based non-profit

organizations. ^[15] This approach is one shared by other governmental grant-making entities (e.g., NIH and NSF) that are intent on promoting innovation.

Conclusion

The main obstacle to public media reform is not the fact that public broadcasting is a political lightning rod. Nor is it a shortage of specific projects that show how public media can enrich a community with information, platforms for creation, and communications infrastructure. The main obstacle to reform is that there is not a political constituency for it. Existing public broadcasters prefer to keep the existing system and existing entitlements. New non-profit entrants may see the possibilities of their innovations if they could be scaled up and networked. However, they are not organized for the political process, and they probably lack unity of vision as to how they fit into the public media ecosystem.

At the same time, it seems inconceivable that ambitious telecommunications policy reform should ignore the carbuncle of the Public Broadcasting Act in its sweep through the calcified remnants of 20th century regulation. When attention is turned to public media law reform, we should celebrate the decentralized structure of the legacy public broadcasting system, for all its frustrations. It is this very decentralization that other nations are moving towards as they reform their public media structures. At the same time, we should revive the pursuit of innovation that is the principal justification for public media support in the first place.

[1] By public service media, I refer generally to nonprofit media infrastructure and content networks that are supported by some kind of public subsidy, whether that is tax relief, a federal appropriation, a spectrum set-aside, or some other regulatory intervention. At the center of public media are the legacy public broadcasting stations and networks, but also cable PEG channels, some low power and community radio stations, and new non-profit digital news sites among other entities.

[2] [47 U.S.C. § 396 \(2006\)](#).

[3] A “spillover” is a cost or benefit imposed on people other than the producers and consumers of a good or service. ROBERT J. CARBAUGH, *CONTEMPORARY ECONOMICS: AN APPLICATIONS APPROACH* 180 (2010). I use the term here to describe positive benefits. *See, e.g.*, Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 *COLUM. L. REV.* 257 (2007) (defining spillovers as “uncompensated benefits that one person’s activity provides to another”).

[4] FED. COMM’NS COMM’N, *CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN* (2010).

[5] STEVEN WALDMAN, ET AL., *INFORMATION NEEDS OF COMMUNITIES: THE CHANGING MEDIA LANDSCAPE IN A BROADBAND AGE* (2011).

[6] <http://appsforcommunities.challenge.gov> (last visited Jan. 24, 2012).

[7] Ellen P. Goodman & Anne H. Chen, *Modeling Policy for New Public Media Networks*, 24 *HARV. J. LAW & TECH.* 111 (2010).

[8] WALDMAN, *INFORMATION NEEDS OF COMMUNITIES* at 359. The Report listed as an example the possibility of creating a “public meeting cloud” to provide a low-cost way to archive and share video of local, state and national government meetings. It quoted Eric Newton, Vice President of the Knight Foundation, observing that, “[i]f a tech fund systematically unleashes open source software applications and the technology needed to operate them, and grants money for code, coders and computers to news organizations across the country, it could spread public media innovation faster into new groups and deeper into existing ones, and create nothing less than a news renaissance in

America.”

[9] 47 U.S.C. 396(a)(1).

[10] WALDMAN, INFORMATION NEEDS OF COMMUNITIES, Chapters 6-15, 30.

[11] *Budget Agreement Cuts Three CPB Funds, Leaves NPR Intact*, Current (Apr. 12, 2011), <http://currentpublicmedia.blogspot.com/2011/04/budget-agreement-cuts-three-cpb-funds.html>

[12] . 47 U.S.C. § 396(k)(3)-(7) (2011).

[13] Comments of American Public Media, *In re* FCC Launches Examination of the Future of Media and Information Needs of Communities in a Digital Age, GN Docket No. 10-25, at 3-4, 12-13 (Fed. Commc’ns Comm’n May 7, 2010).

[14] FCC, THE NATIONAL BROADBAND PLAN at 153.

[15] Technology Opportunities Program, http://www.ntia.doc.gov/legacy/otiahome/top/grants/briefhistory_gf.htm (last visited Jan. 24, 2012).

**MODELING POLICY FOR NEW PUBLIC SERVICE MEDIA
NETWORKS**

Ellen P. Goodman & Anne H. Chen***

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I. INTRODUCTION

WE RECOGNIZE THE DANGERS OF LAPSING INTO FUZZY-MINDED ECSTASY OVER THE UNLIMITED SOCIAL POTENTIAL OF THE NEW ELECTRONIC TECHNOLOGY. . . . [HOWEVER, T]HE OPPORTUNITY IS AT HAND TO BRING US TOGETHER THROUGH THE TEACHING AND INSPIRATION POSSIBLE IN A NONCOMMERCIAL TELECOMMUNICATIONS ALTERNATIVE. . . . FROM THE CAREFUL CULTIVATION OF A PUBLIC DISCOURSE IN ITS MOST EXPANSIVE AND PROFOUND SENSE.¹

There is a growing consensus that significant structural change and policy shifts will be necessary to transform the 20th century American public broadcasting system into a 21st century system of public service media.² Indeed, the 2010 National Broadband Plan,

1. CARNEGIE COMMISSION ON THE FUTURE OF PUBLIC BROADCASTING, A PUBLIC TRUST 298–99 (1979) [hereinafter CARNEGIE II].

2. See AM. UNIV. SCH. OF COMM’N CTR. FOR SOC. MEDIA, PUBLIC MEDIA 2.0: DYNAMIC, ENGAGED PUBLICS (2009) [hereinafter PUBLIC MEDIA 2.0], available at <http://www.centerforsocialmedia.org/sites/default/files/whitepaper.pdf>; BARBARA COCHRAN, PUBLIC SERVICE MEDIA: MORE LOCAL, MORE INCLUSIVE, MORE INTERACTIVE: A WHITE PAPER ON THE PUBLIC MEDIA RECOMMENDATIONS OF THE KNIGHT COMMISSION ON THE INFORMATION NEEDS OF COMMUNITIES IN A DEMOCRACY (2010); CORP. FOR PUB. BROAD., PUBLIC RADIO IN THE NEW NETWORK AGE (2010) [hereinafter PUBLIC RADIO IN THE NEW NETWORK AGE], available at http://www.srg.org/GTA/Public_Radio_in_the_New_Network_Age.pdf; LEONARD DOWNIE, JR. & MICHAEL SCHUDSON, THE RECONSTRUCTION OF AMERICAN JOURNALISM (2009), available at http://www.journalism.columbia.edu/system/documents/1/original/Reconstruction_of_Journalism.pdf; KNIGHT COMMISSION ON THE INFORMATION NEEDS OF COMMUNITIES IN A DEMOCRACY, INFORMING COMMUNITIES 23–32 (2009) [hereinafter KNIGHT COMMISSION], available at <https://secure.nmmstream.net/anon.newmediamill/aspenc/kcfinalenglishbookweb.pdf>; Steve Coll, Reboot: A Media Policy for the Digital Age, COLUMBIA JOURNALISM REV., Nov./Dec. 2010, 28; Ellen P. Goodman, *Public Media 2.0*, in . . . AND COMMUNICATIONS FOR ALL: A POLICY AGENDA FOR A NEW ADMINISTRATION 272–74 (Amit M. Schejter ed., 2009); Josh Silver et al., *Public Media’s Moment*, in CHANGING MEDIA 276–77 (2009), available at http://www.freepress.net/files/changing_media.pdf; see also Reply Comments of Free Press, A National Broadband Plan for Our Future, GN Docket No. 09-51, at 54–65 (Fed. Comm’ns Comm’n July 21, 2009), available at <http://www.policyarchive.org/handle/10207/bitstreams/20225.pdf>; JESSICA CLARK & SUE SCHARDT, SPREADING THE ZING: REIMAGINING PUBLIC MEDIA THROUGH THE MAKERS QUEST 2.0 (2010), available at <http://www.centerforsocialmedia.org/sites/default/files/documents/pages/AIRperspective2010.pdf>. This issue has also been of growing interest internationally. See, e.g., SHELDON HIMELFARB ET AL., MEDIA AS GLOBAL DIPLOMAT 6–7 (2009), available at http://www.usip.org/files/resources/Special%20Report%20226_Media%20as%20Global%20Diplomat.pdf (discussing the value of public broadcasting as a “countervailing power” between the public and private system for new, digital media efforts in public diplomacy); IRIS, PUBLIC SERVICE MEDIA: MONEY FOR CONTENT (Susanne Nikoltchev ed., 2010); ORG. FOR ECON. CO-OPERATION & DEV., WORKING PARTY ON THE INFORMATION ECONOMY: THE EVOLUTION OF NEWS AND THE INTERNET 66–69 (2010) [hereinafter, OECD], available at <http://www.oecd.org/dataoecd/30/24/45559596.pdf> (noting the “important role” public broadcasters play in many OECD countries and the state aid that facilitates it, and citing American efforts to consider increasing resources for public service broadcasting); Graham Murdock, Building the Digital Commons: Public Broadcasting in the Age of the Internet, University of Montreal 2004 Spry Memorial Lecture (Nov. 22, 2004), available at

which sets forth national communications priorities for the next decade, calls for a new public service media network, drawing directly on proposals we made to the Federal Communications Commission (“FCC”).³ Relentless and intensifying pressure on public broadcast funding makes it even more important to identify minimally necessary functional components of a public service media network going forward.⁴

The vision of a more inclusive, innovative, and community-oriented network of public service media makers, linked to ubiquitous broadband, has emerged as a potential solution to many problems, including insufficient investments in investigative journalism, a paucity of compelling educational materials, and widening gaps between the information rich and poor. The FCC’s broadband workshops,⁵ Federal Trade Commission workshops on journalism,⁶

https://pantherfile.uwm.edu/type/www/116/Theory_OtherTexts/Theory/Murdock_Building_DigitalCommons.pdf (“Public Service Broadcasting is a project whose time has finally come both philosophically and practically. . . . [Reinvention of the public domain] requires us to jettison our familiar analogue maps and draw up a new digital chart.”).

3. FED. COMM’NS COMM’N, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN 303 (2010) [hereinafter NATIONAL BROADBAND PLAN] (citing Reply Comments of Ellen P. Goodman & Anne Chen, A National Broadband Plan for Our Future, GN Docket No. 09-51 (Fed. Comm’ns Comm’n Nov. 9, 2009), available at http://www.law.yale.edu/documents/pdf/Intellectual_Life/Goodman_publicmediacomment.pdf; Goodman, *supra* note 2), available at <http://download.broadband.gov/plan/national-broadband-plan.pdf> (“[P]ublic media must continue expanding beyond its original broadcast-based mission to form the core of a broader new public media network that better serves the new multi-platform information needs of America.”).

4. *Obama Deficit Commissioners Advise Ending all CPB, PTFP Support by 2015*, CURRENT (Nov. 10, 2010, 4:33 PM), <http://currentpublicmedia.blogspot.com/2010/11/presidents-commission-advises-ending.html>.

5. *See, e.g.*, FED. COMM’NS COMM’N, NATIONAL BROADBAND PLAN WORKSHOP: BUILDING THE FACT BASE: THE STATE OF BROADBAND ADOPTION AND UTILIZATION (2009) [hereinafter BUILDING THE FACT BASE], available at http://www.broadband.gov/docs/ws_09_adoption_utilization.pdf (presenting data on the current state of broadband adoption and utilization); FED. COMM’NS COMM’N, NATIONAL BROADBAND PLAN WORKSHOP: DEPLOYMENT — UNSERVED AND UNDERSERVED (2009), available at http://www.broadband.gov/docs/ws_04_deploy_un_transcript.pdf (discussing solutions for reaching and engaging isolated and rural communities with better broadband access); FED. COMM’NS COMM’N, NATIONAL BROADBAND PLAN WORKSHOP: DEPLOYMENT — WIRED (2009), available at http://www.broadband.gov/docs/ws_02_deploy_wired_transcript.pdf (addressing the need to deploy and operate more internet backbone services); FED. COMM’NS COMM’N, NATIONAL BROADBAND PLAN WORKSHOP: EDUCATION (2009), available at http://www.broadband.gov/docs/ws_13_edu.pdf (identifying the potential impact of increased broadband access to education); FED. COMM’NS COMM’N, NATIONAL BROADBAND PLAN WORKSHOP, OPEN GOVERNMENT AND CIVIC ENGAGEMENT (2009), available at http://www.broadband.gov/docs/ws_01_egov_transcript.pdf (discussing how broadband can improve public and civic engagement through transparency and citizen participation).

6. *See, e.g.*, FED. COMM’NS COMM’N, FUTURE OF MEDIA WORKSHOP: SERVING THE PUBLIC INTEREST IN THE DIGITAL ERA (2010), available at <http://reboot.fcc.gov/futureofmedia/blog?entryId=223657>; FED. TRADE COMM’N, HOW WILL JOURNALISM SURVIVE THE DIGITAL AGE? (2009), available at <http://www.ftc.gov/opp/workshops/news/index.shtml>.

and several recent blue ribbon reports⁷ have documented national deficits in communications infrastructure, content, and content engagement. Based on the premise that the nation's information environment lacks crucial elements, the FCC launched its Future of Media Project to probe, among other things, the role of public service media in meeting public needs.⁸

Despite information abundance, broadly inclusive social media, and the distributed means of communication that characterize the digital age, society may lack the informational tools necessary to involve everyone in democratic decision-making and to foster widespread economic and social flourishing.⁹ Information gaps are especially keen in the areas of investigative journalism¹⁰ and content directed to underserved, minority, and poor populations.¹¹ Experts are calling on digital public service media — building on, but transcending the legacy public broadcasting system — to respond to these deficits.¹² In theory, and in the highest aspirations of American

7. See, e.g., DOWNIE & SCHUDSON, *supra* note 2 (describing potential drawbacks to recent fundamental changes in American journalism); KNIGHT COMMISSION, *supra* note 2, at 9–19 (describing the information needs of local communities in a democracy, including the need for shared narrative to promote connectedness).

8. See Examination of the Future of Media and Information Needs of Communities in a Digital Age, GN Docket No. 10-25 (Fed. Comm'ns Comm'n Mar. 8, 2010) (request for comments), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-10-100A1.pdf.

9. Cf. KNIGHT COMMISSION, *supra* note 2, at 23–32 (discussing the needs of information communities); PUBLIC RADIO IN THE NEW NETWORK AGE, *supra* note 2, at 1–3 (discussing the need for public service media, and media organizations at large, to engage more directly with underserved and overlooked members of the population).

10. See GEOFFREY COWAN & DAVID WESTPHAL, PUBLIC POLICY AND FUNDING THE NEWS 12 (2010), <http://communicationleadership.usc.edu/pubs/Funding%20the%20News.pdf> (“[T]he field of investigative reporting . . . [is] an expensive but vital endeavor that newspapers and broadcast outlets have abandoned in large numbers in recent years.”); DAVID WESTPHAL, PHILANTHROPIC FOUNDATIONS: GROWING FUNDERS OF THE NEWS 2 (2009), <http://communicationleadership.usc.edu/pubs/PhilanthropicFoundations.pdf> (“[I]nvestigative reporting . . . [is] a singularly threatened and critical area of watchdog journalism.”); KNIGHT COMMISSION, *supra* note 2, at 27 (stating that journalistic “[c]overage falls short everywhere”).

11. See NATIVE PUBLIC MEDIA, AN OPEN LETTER TO OUR PUBLIC MEDIA COLLEAGUES (2009), <http://www.nativepublicmedia.org/images/stories/documents/OpenLetter.pdf> (arguing that a lack of cultural and ethnic diversity in programming makes “America’s younger and more ethnically diverse audiences . . . public media’s great, untapped resource”); see also JOHN HERRIGAN, WIRELESS INTERNET USE 32–36 (2009), <http://pewinternet.org/~media/Files/Reports/2009/Wireless-Internet-Use-With-Topline.pdf> (referencing the differences in digital access of low-income minority groups).

12. E.g., *The Future of Newspapers: The Impact on the Economy and Democracy: Hearing Before the J. Econ. Comm.*, 111th Cong. (2009) (statement of Paul Starr, Professor, Princeton University), available at http://www.princeton.edu/~starr/articles/articles09/Starr_JEC_9-24-09.pdf (calling for greater government support of “public broadcasting, which has become an important source of news and public-affairs discussion,” and asserting that countries that have invested in public funds have higher levels of newspaper readership and civic literacy than the United States); ROBERT W. MCCHESENEY & JOHN NICHOLS, THE DEATH AND LIFE OF AMERICAN JOURNALISM 117–21 (2010) (explaining the importance of free and dissenting media to democracy and arguing for subsidies to the press); see also

communications policy, public service media is tasked with generating a “social dividend”¹³ from innovative communications technologies.

For public service media to fulfill this function — indeed, for public service media to make constructive and sustainable contributions in the digital future — policymakers will need to restructure and rethink what public service media is. In comments to the FCC, we have suggested new ways to conceptualize public service media networks and outlined substantive changes that would leverage federal support for public service media to push in the right direction.¹⁴

Here, we provide a conceptual framework for public service media policy reform, borrowing from the layered model of the Internet. The layered model was developed by computer scientists to explain the functional components of the Internet and how they work together to convey Internet traffic. This model has helped to reframe telecommunications policy options by mapping them to the flow of information through digital networks. The model conceives of network tasks, including content creation and transmission, as modular and unbundled. Many entities can create content and applications, and many can transmit bits to devices of all kinds, including handhelds, televisions, and personal computers. These entities can mix and match their functions so long as they use interoperable or common standards to link the modules of content, applications, and other services. Standards (technical and other) are the connective tissue for decentralized networks of specialized functions. Each function within the network is kept as simple as possible. Network participants can then innovate freely while still hooking into the network and supporting the functionality provided by others.

The layered model of the network privileges function over the form that carries out the function, and simplicity over complexity. These preferences have significance for policymakers. The structure

DOWNIE & SCHUDSON, *supra* note 2, at 76 (nothing that the FCC and Corporation for Public Broadcasting could support more independent news reporting). Even on the political right, those generally skeptical of public service media funding have recommended increased involvement as a solution to the paucity of news and public affairs content. *See, e.g.*, FED. COMM’NS COMM’N, THE FUTURE OF MEDIA & INFORMATION NEEDS OF COMMUNITIES: SERVING THE PUBLIC INTEREST IN THE DIGITAL ERA (2010) (testimony of Adam Thierer, Cato Institute), *available at* <http://techliberation.com/2010/03/03/testimony-at-fccs-hearing-on-servicing-the-public-interest-in-the-digital-era/>; KNIGHT COMMISSION, *supra* note 2, at 35–36 (calling for “[i]ncrease[d] support for public service media to meet community information needs”).

13. This term comes from CARNEGIE II, *supra* note 1, at 297.

14. Reply Comments of Ellen P. Goodman & Anne Chen, A National Broadband Plan for Our Future, GN Docket No. 09-51 (Fed. Comm’ns Comm’n Nov. 6, 2009), *available at* http://www.law.yale.edu/documents/pdf/Intellectual_Life/Goodman_publicmediacomments.pdf.

of the networks should direct policy focus to where the action is — to the functional layers. Policy interventions should be designed to protect the public interest in the smooth functioning of the layers and the connective tissue between them.¹⁵

We argue that the layered conception of the network and associated policy implications should shape public service media policy reform. A modular, functional approach can help to reform “analog” policy structures and performance metrics for public service media. The old structures assumed a bundling of functions (namely, information creation and distribution) within a single firm: the broadcast station. The broadcast station has been the primary recipient of funding under the Public Broadcasting Act of 1967 under the assumption that this was the relevant unit for all network functions from physical infrastructure to content creation and user interfaces.¹⁶ The new model should instead postulate a web of digital public service media makers, connected by shared protocols, business rules, and noncommercial public interest missions. Using the layered model, we theorize that the three key functions (or layers) of public service media are creation, curation, and connection. These functions ride atop of the bottom infrastructure layer that can be operated by public service media or (more likely) by commercial entities. We show how these functions might be networked to create public value, and consider the associated policy implications, including reconfigured federal legislation — a Public Service Media Act — for reconfigured networks.

Part II briefly discusses the layered model and its application in telecommunications policy. It then demonstrates how the layered approach helps us to theorize a new functional model of digital public service media that better serves public service media goals and reflects the architecture of digital communications. Part III outlines a layered model for public service media in greater detail, moving through physical infrastructure, creation, curation, and connection

15. Open access, or net neutrality, requirements draw on the layered network model. The FCC’s open access requirements for 700 MHz C Block licenses it auctioned in 2008, for example, mandate that the transport layer (the wireless spectrum) support a diverse array of applications capable of running on the wireless network. See Susan P. Crawford, *The Radio and the Internet*, 23 BERKELEY TECH. L.J. 933, 983–84 (2008) (describing the provisions prohibiting network operators from blocking top-layer content or locking out devices operating on the higher levels of the network). The government has similarly applied open access policies to broadband stimulus funding. Notice of Funds Availability and Solicitation of Applications for the Broadband Initiatives Program and Broadband Technology Opportunities Program, 74 Fed. Reg. 33,132, 33,133 (July 9, 2009), available at http://www.ntia.doc.gov/frnotices/2009/FR_BBNofA_090709.pdf; Fawn Johnson, *Tech Industries Set for Spending Aid*, WALL ST. J., Jan. 15, 2009, <http://online.wsj.com/article/SB123204944545386743.html> (describing the requirement that Internet providers accepting broadband grant money must provide open access to networks).

16. See, e.g., 47 U.S.C. § 396(k)(3)(A)(iv)(I) (2006) (defraying interconnection and operating costs to facilitate the availability of public television and radio programs).

layers. Part IV concludes with two specific policy reform proposals to actualize the layered model, with Part V concluding.

II. THE LAYERED FRAMEWORK FOR NETWORKED COMMUNICATIONS

The layered model for communications and communications policy is well established.¹⁷ A number of legal scholars, including Yochai Benkler,¹⁸ Lawrence Lessig,¹⁹ Timothy Wu,²⁰ James Speta,²¹ and Kevin Werbach²² have advanced policy analyses and proposals employing variations of the layered approach.²³ Technologists²⁴ and industry experts²⁵ have done the same. These commentators argue that functional layers are optimal for modeling telecommunications policy in the digital age. The descriptive claim is that a layered model better reflects how information travels through digital networks.²⁶ The normative claim is that policy interventions will be more agile and long-lived, and will better foster innovation, competition, and free

17. See James B. Speta, *A Common Carrier Approach to Internet Interconnection*, 54 FED. COMM. L.J. 225, 246 (2002) (“Telecommunications and computer networking experts have long conceived of networks and their associated computers as exhibiting a variety of well-defined ‘layers.’”); Kevin Werbach, *A Layered Model for Internet Policy*, 1 J. ON TELECOMM. & HIGH TECH. L. 37, 58–59 (2002) (“Layering is a well-established concept among technologists, and several other scholars . . . have adopted it as a tool for legal and policy analysis.”).

18. Yochai Benkler, *From Consumers to Users*, 52 FED. COMM. L.J. 561, 562–63 (2000).

19. LAWRENCE LESSIG, *THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD* 23–25 (2001), available at http://thefutureofideas.s3.amazonaws.com/lessig_FOI.pdf.

20. Timothy Wu, *Application-Centered Internet Analysis*, 85 VA. L. REV. 1163, 1189–92 (1999).

21. Speta, *supra* note 17.

22. Werbach, *supra* note 17.

23. See, e.g., Rob Frieden, *Adjusting the Horizontal and Vertical in Telecommunications Regulation: A Comparison of the Traditional and a New Layered Approach*, 55 FED. COMM. L.J. 207 (2003); John T. Nakahata, *Regulating Information Platforms*, 1 J. ON TELECOMM. & HIGH TECH. L. 95 (2002); Lawrence B. Solum & Minn Chung, *The Layers Principle: Internet Architecture and the Law*, 79 NOTRE DAME L. REV. 815 (2004); Philip J. Weiser, *Law and Information Platforms*, 1 J. ON TELECOMM. & HIGH TECH. L. 1 (2002).

24. See, e.g., Douglas C. Sicker & Lisa Blumensaadt, *Misunderstanding the Layered Model(s)*, 4 J. ON TELECOMM. & HIGH TECH. L. 299 (2006); Douglas C. Sicker & Joshua L. Mindel, *Refinements of a Layered Model for Telecommunications Policy*, 1 J. ON TELECOMM. & HIGH TECH. L. 69 (2002).

25. See, e.g., Richard S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, 61 FED. COMM. L.J. 483, 563–67 (2009) (discussing the usefulness of the layered model); Richard S. Whitt, *A Horizontal Leap Forward: Formulating a New Communications Public Policy Framework Based on the Network Layers Model*, 56 FED. COMM. L.J. 587 (2004) [hereinafter Whitt, *Horizontal Leap Forward*].

26. See Frieden, *supra* note 23, at 215 (“The horizontal orientation . . . makes better sense in a convergent, increasingly Internet-dominated marketplace . . .”); Whitt, *Horizontal Leap Forward*, *supra* note 25, at 590 (“As technology has evolved, existing networks and markets have begun converging to common IP platforms.”).

expression, if they focus on network functionality, rather than on particular technologies or business arrangements.²⁷

A. Advantages of the Layered Model for Communications Policy

Interest in the layered model for communications tracks changes in communications networks themselves. Communications policy of the last century was organized around specific services (e.g., voice or video) and predicated on the deployment of singular technologies for each service.²⁸ For example, the law regulated voice telephony separately from radio, assuming wired transmission for one and wireless transmission for the other.²⁹ In addition to assuming a correspondence between service and technological deployment, the law assumed that service providers bundled several distinct communications functions together, such as transmission and content.³⁰

Indeed, this was how things were organized when the Communications Act of 1934 was enacted and for a long time after. Broadcast companies controlled both the transmission infrastructure for their signals and the content (programming) transmitted via those signals. Telephone companies controlled the wires used to transmit voice as well as the connections between these networks and telephone devices.³¹ Accordingly, the law regulated radio, and subsequently television, broadcasting separately from cable

27. Frieden, *supra* note 23, at 215 (“The horizontal orientation . . . provides a more intelligent model than the existing vertical orientation that creates unsustainable service and regulatory distinctions.”); Werbach, *supra* note 17, at 58 (“Rather than seeking to defend ephemeral service boundaries in a digital world, regulation should track the architectural model of the Internet itself.”); Whitt, *Horizontal Leap Forward*, *supra* note 25, at 591–92 (“By tracking the architectural model of the Internet — with IP at the center — we can develop a powerful analytical tool providing granular market analysis within each layer, which in turn puts public policy on a more sure empirical footing.”).

28. *See* Werbach, *supra* note 17, at 39–40.

29. *See, e.g.*, Communications Act of 1934, Pub. L. No. 73-416, 48 Stat. 1064 (codified as amended at 47 U.S.C. §§ 151–615 (2006)) (separately classifying wireline voice telephone services as common carriers in Title II and radio and, later, television broadcasters into Title III).

30. *See, e.g.*, 47 U.S.C. §§ 223, 228–31 (regulating common carriers with respect to transmission and assuming no content production); 47 U.S.C. §§ 315, 318, 324–25 (regulating radio with respect to transmission, for example with respect to power, and content, for example with respect to children’s television programming); 47 U.S.C. § 534(b) (regulating cable television services for both transmission, such as signal quality and content, such as program schedules); *see also* JONATHAN E. NUECHTERLEIN & PHILIP J. WEISER, DIGITAL CROSSROADS: AMERICAN TELECOMMUNICATIONS POLICY IN THE INTERNET AGE 210 (2005) (discussing common carrier, over-the-air broadcasting, and cable services regulation in Titles II, III, and VI, respectively, and “the markedly different rules contained in each for governing the corresponding physical layer platform”).

31. *See* Crawford, *supra* note 15, at 947–52 (describing telephone company control over wires and devices that attached to the network).

transmissions, both of which it regulated separately from telephone transmissions.³²

Technological advances at the end of the 20th century began to unsettle the regulatory assumptions and the industrial organization reflected in the Communications Act; the FCC and Congress slowly responded. Entities other than the phone companies developed services and devices to connect to the telephone network, and the FCC required the phone companies to unbundle the provision of telephone service from the provision of other information services and equipment.³³ Services began to migrate to different transmission technologies, such as video to telephone networks and voice to cable networks, creating the prospect of converged transmission platforms.³⁴ In this converged technological space, regulatory distinctions premised on dedicated technologies, bundled service, and transmission offerings made less and less sense. Critics called on government to break down the “siloed” approach to telecommunications regulation.³⁵ Regulators and legislators made some adjustments, but left most of the technology-specific and bundled structure of the Communications Act in place.³⁶

Something besides convergence was happening in the late 20th century to challenge policy. Network architecture began to play a more important role in the growth of new services and in the possibilities for competitive entry into all segments of the communications value chain.³⁷ Because the original Internet network engineers designed standardized connection protocols, computers could communicate with each other easily, and application developers

32. For examples of these separate regulations, see 47 U.S.C. §§ 301–99 (Title III language governing radio and subsequently television broadcasters), 47 U.S.C. §§ 201–76 (Title II regulations for common carriers, such as wireline voice telephone companies), and 47 U.S.C. §§ 521–61 (Title V provision accommodating cable television services).

33. *See, e.g.*, Use of the Carterfone Device in Message Toll Tel. Serv., 13 F.C.C.2d 420 (1968).

34. *See* JEAN-JACQUES LAFFONT & JEAN TIROLE, COMPETITION IN TELECOMMUNICATIONS 273 (2000) (“It is commonplace to note that the telecommunications, broadcasting, and computer industries are coming together.”); NUECHTERLEIN & WEISER, *supra* note 30, at 23–27 (explaining and reviewing the trend of technological convergence in the telecommunications industry); Susan P. Crawford, *The Internet and the Project of Communications Law*, 55 UCLA L. REV. 359, 367 (2007) (“[Now, c]onnections to the Internet provide access to online activities that are the functional equivalents of all of these former modalities, and are not necessarily tied to the hardware used to reach them.”).

35. *See, e.g.*, *supra* notes 17–25.

36. Werbach, *supra* note 17, at 41–42 (describing the FCC approach that left the technology-dependent horizontal approach in place, and the 1996 Telecommunications Act that essentially codified the FCC distinction).

37. *See* Werbach, *supra* note 17, at 58 (“[C]ompetitive dynamics are increasingly driven by behind-the-scenes network architectures.”); *see also* BARBARA VAN SCHEWICK, INTERNET ARCHITECTURE AND INNOVATION 28–31 (2010) (describing how the design features of different architectures can create different economic environments for innovation).

could assume widespread connectivity even when writing software to run on a range of physical networks controlled by a range of firms.³⁸ In addition, there was an explosion in device innovation as economies of scale supported the production of devices that could inter-operate across multiple networks, taking advantage of common standards.³⁹

With the proliferation of software and hardware connecting to the network, there was a need and support for what we might call promiscuous connectivity. For most of the history of electronic communications, one service didn't need to talk to another — the radio didn't communicate with the telephone network. As services became increasingly versatile across network platforms, and with all service providers wanting to connect to the Internet, rules of connection became more important. It was no longer just a question of what devices could connect to a particular network, but how networks would communicate with each other that mattered. The seamless connectivity of networks created scale. Software engineers knew that a single application, even if expensive to design, would reach all network users — indeed the users of all interconnected networks. The same was true for hardware engineers. This scale, and the associated incentives to experiment, fostered a culture of rapid innovation and competition among innovators. It is because of the role of networking in stimulating innovation and competition that networking is today central to the most pressing communications policy issues.⁴⁰

Advocates of promiscuous connectivity look to the layered model of digital communications to explain the value of networking and to structure proposals for regulatory reform. Designed at the advent of computer networking in the 1970s,⁴¹ the ingenuity of the layered model was in its adaptable and modular design. It conceived of communications systems as modules in which different functions could be carried out by many diverse entities, interconnected through technical protocols. It organized the functions of computer networking into distinct, yet permeable layers. By separating the functional responsibilities of the network, the architects of the layered model aspired to networks that were “as open, adaptable, and accessible to

38. Speta, *supra* note 17, at 246–47, 273 (“Building off of the fully digital nature of applications, [the Internet’s] standardized protocols create the opportunity for the development of new applications without interference from the network.”).

39. NÜECHTERLEIN & WEISER, *supra* note 30, at 24–27 (describing the dramatic changes in the telecommunications industry as devices have become increasingly interoperable across multiple platforms).

40. *See, e.g.*, Whitt, *Horizontal Leap Forward*, *supra* note 25, at 590 (describing, in referencing the usefulness of the layered model, how “network architecture tends to shape and drive business fundamentals”).

41. JAMES F. KUROSE & KEITH W. ROSS, *COMPUTER NETWORKING: A TOP-DOWN APPROACH FEATURING THE INTERNET* 53–54, 63–64 (5th ed. 2010) (describing the history of the layered model as it developed in the late 1970s).

inventiveness as possible.⁴² Such networks would be maximally robust and adaptable because network tasks (such as data transmission or Internet applications) could be switched out and provisioned by new entrants without disrupting service through the network as a whole, so long as the protocols that linked the functions together were accessible.⁴³ The layered model has now become the standard design for computer networking and a foundational concept for network communications.⁴⁴ It has governed, if not defined, the way computer engineers approach the field.

The two key features of the layered model — adaptability and modularity — are advantages not just for computer networking, but for communications policy as well. First, because layered networks are based on functions rather than services, they are inherently adaptable to change. Technologies are evolving, and services converging, too quickly for a service-dependent paradigm to have real meaning. Mobile devices can function as both radios and computer browsers. Computers and Internet access providers serve as telephones and telephone companies, respectively. In place of the old paradigm, the layered model conceives of communications policy in terms of functions, rather than specific kinds of technologies, platforms, or protocols.

Second, layered networks are modular in ways that mimic today's digital communications environment. Instead of being bundled together, the individual layers of the model are functionally independent. A single layer can be modified without having to change or redefine the other layers around it. A programmer can edit the protocol to the physical transmission of data, for example, without affecting higher-level communication between users and software applications. This approach more accurately reflects the roles of information providers in the digital world. There is no assumption in the layered model that a content producer also owns or operates infrastructure. Just as the modern communications paradigm has unbundled these roles, so the layered model unbundles components of information production and transmission.

These features have led scholars and practitioners to use the layered model to reframe communications policy paradigms. Timothy

42. KATIE HAFNER & MATTHEW LYON, *WHERE WIZARDS STAY UP LATE: THE ORIGINS OF THE INTERNET* 147 (1996).

43. KUROSE & ROSS, *supra* note 41, at 50 (“For large and complex systems that are constantly being updated, the ability to change the implementation of a service without affecting other components of the systems is another important advantage of layering.”). For example, the network can adapt to new email applications without disruption, because the underlying protocols, such as Post Office Protocol (“POP”) or Simple Mail Transfer Protocol (“SMTP”), remain constant.

44. *Id.* at 51–54 (describing the Internet Protocol Suite (“TCP/IP”) as a common standard for basic Internet communication); *see also* Sicker & Mindel, *supra* note 24, at 77 n.32 (describing how “[m]ost modern telecommunications protocols have layered protocols”).

Wu was one of the first to point out the suitability of a layered framework for understanding policy for the digital age. At a time when technologists and academics were just beginning to understand the implications of the Internet, he invoked its layering architecture and proposed this layered framework for analyzing corresponding policy issues. As Wu described, “[t]he essence of network layering is a grand simplification by delegation to functional submodules,” a way for enabling “specialized efficiency, organizational coherency, and future flexibility.”⁴⁵ He saw these features as advantages not only for computer networking, but for communications policy analysis as well.

Yochai Benkler furthered Wu’s approach, using the layered model to reexamine the entire regulatory structure of communications.⁴⁶ Benkler conceptualized the information environment in terms of each layer of the network — the content, logical or “software,” and physical infrastructure layers. This framework supported Benkler’s key insight: as the traditional mass media market structure of broadcasters and cable erodes, choices about what kinds of competition and innovation we want in the provision of media will have to be made at each level of the new networks.⁴⁷ That is, decisions will have to be made separately about how much proprietary control there is over access to physical transmission, to code, and to content.

Lawrence Lessig picked up on the importance of this more nuanced, modular approach, remarking on how Benkler’s use of the layered model “helps organize our thought about how any communications system functions” and “helps show something we might otherwise miss” — that the potential of a communication system to foster and reflect freedom lies in the degree to which its functional components are unbundled.⁴⁸ Lessig went on to use the layered model to describe regulatory policies, showing how the content layer of a telephone system, for example, could be “free” to all users, whereas the content layer of a cable system could be “controlled” by the infrastructure provider.⁴⁹ These insights helped shape the subsequent debate surrounding Internet regulation. The layered model thus has allowed analysts to surface and sharply frame the key issues of communications policy in the Internet age.⁵⁰

45. Wu, *supra* note 20, at 1189.

46. See Benkler, *supra* note 18.

47. *Id.* at 562 (“As the digitally networked environment matures, regulatory choices abound that implicate whether the network will be one of peer users or one of active producers These choices occur at all levels of the information environment: the physical infrastructure layer . . . the logical layer . . . and the content layer.”).

48. LESSIG, *supra* note 19, at 23.

49. *Id.* at 23–24.

50. Werbach, *supra* note 17, at 37 (“The layered model would make many of the conflicts that bedevil regulators more tractable.”). Werbach gives the formerly disparate treatment of digital subscriber lines (“DSL”) providers and cable broadband providers as

The layered model has had some impact on communications policymakers, who have come to conceptualize communications networks in at least two layers, as physical infrastructure separate from specific services offered over that infrastructure. Indeed, the most high-profile communications policy debate of recent years — the application of net neutrality principles or open access requirements — explicitly draws on the layered network model.⁵¹ The layered model has also influenced policy on spectrum management and network competition. When FCC licensing policies for wireless spectrum, for example, adopted “technology neutrality” as an organizing principle, they drew on concepts from the layered model. The rules are supposedly neutral as to the technologies that might be deployed over the underlying infrastructure of spectrum, thereby regulating horizontally across functional layers rather than bundling distinct vertical functions (e.g., transmission and service).⁵² Not only

one example: DSL providers were required to interconnect with competitors while cable providers, which offer similar services, were not. This perceived inconsistency, Werbach points out, is actually a figment of a service-oriented conception of regulation. The underlying rationale was to prevent service providers that control physical networks from controlling the content layers as well. From this perspective, the FCC could reasonably determine that cable market forces already protect against this outcome, whereas the same is not true for the DSL market. The layered-based reasoning thus shifts the focus onto the functional policy issue at stake, rather than the “almost accidental” context that currently defines the issue. *Id.* at 52–53. The FCC has since classified DSL as an “information service” instead of a “telecommunications service,” taking it out of Title II regulation and making it no longer subject to interconnection requirements. Margeurite Reardon, *FCC Changes DSL Classification*, CNET NEWS (Aug. 5, 2005, 12:54 PM), http://news.cnet.com/FCC-changes-DSL-classification/2100-1034_3-5820713.html. The reclassification coheres with this layered-based reasoning, since regulators could have determined that market forces could protect against control of the content layer by DSL providers.

51. See NUECHTERLEIN & WEISER, *supra* note 30, at 168–69, 174 explaining the network neutrality debate in terms of concern for competition between different layers of the network). The FCC’s open access requirements for 700 MHz C Block licenses auctioned in 2008, for example, mandate that the physical infrastructure layer (the wireless spectrum) support a diverse array of applications capable of running on the wireless network. See Crawford, *supra* note 15, 983–84 (2008) (describing the provisions prohibiting network operators from blocking top-layer content or locking out devices operating on the higher levels of the network). The government has similarly applied open access policies to broadband stimulus funding. Johnson, *supra* note 15 (describing the requirement that Internet providers accepting broadband grant money must provide open access to networks); see also Notice of Funds Availability and Solicitation of Applications for the Broadband Initiatives Program and Broadband Technology Opportunities Program, 74 Fed. Reg. 33,132, 33,133 (July 9, 2009), available at http://www.ntia.doc.gov/frnotices/2009/FR_BBNOFA_090709.pdf.

52. The White House and FCC have supported a policy of technological neutrality with respect to spectrum so as to be indifferent to particular spectrum-based technologies, while engineering maximum access to the spectrum. See, e.g., FED. COMM’NS COMM’N, SPECTRUM STUDY OF THE 2500–2690 MHZ BAND INTERIM REPORT: THE POTENTIAL FOR ACCOMMODATING THIRD GENERATION MOBILE SYSTEMS 10 (2000), available at http://www.fcc.gov/3G/3G_interim_report.pdf (describing the goal of technology neutrality, in the context of identifying 3G-potential frequency bands, as allowing spectrum decisions to be based on “sound engineering” at the physical infrastructure layer); Press Release,

in particular policy implementations, but also when addressing network architecture in general, the FCC has come to adopt the vocabulary of the layered model.⁵³

B. Advantages of the Layered Model for Public Service Media Policy

Insights from the layered model's conception of communications networks are nowhere more needed than in public service media policy. This policy shares the DNA of analog, pre-Internet communications policy at large. It is premised on the bundling of transmission (broadcasting) and audio or video services. It ignores the importance of network structure, connectivity, modularity, and adaptability. It further neglects the gains in diversity and robustness that can be obtained by ensuring that the layers of a communications network function in an open and interoperable manner.

Federal public service media policy is located in two sources: the Public Broadcasting Act of 1967⁵⁴ and the FCC's reservation of television and radio channels for noncommercial educational broadcast stations.⁵⁵ In both, the broadcast station is the principal target of federal subsidy and regulation. The vast majority of federal funding for public service media passes through the Corporation for

Office of the Press Secretary, Memorandum for the Heads of Executive Departments and Agencies: Advanced Mobile Communications/Third Generation Wireless Systems (Oct. 13, 2000), available at <http://www.ntia.doc.gov/ntiahome/threeg/3gmemo.htm> (directing agencies to manage spectrum in a "technology-neutral" fashion, "not favoring one technology or system over another"); *Best Practices for National Spectrum Management*, FED. COMM'NS COMM'N (Nov. 15, 2008), <http://www.fcc.gov/ib/sand/irb/bestpractices.html> (including technology neutrality as a key principle to "allow for evolution to new radio applications"); see also Kevin J. Martin, Commissioner, Fed. Comm'ns Comm'n, Remarks to the Carmel Group's Satellite Entertainment 2002: TV and Radio from Space Conference (Apr. 25, 2002), available at <http://www.fcc.gov/Speeches/Martin/2002/spkjm205.html> ("[T]he Commission should move toward policies that make sharing easier, and even desirable. For example, a robust secondary market for spectrum and flexible allocations (that are technology and service-neutral) can create strong incentives for making use of excess capacity.").

53. See, e.g., Julius Genachowski, Chairman, Fed. Comm'ns Comm'n, Preserving a Free and Open Internet: A Platform for Innovation, Opportunity, and Prosperity, Remarks at the Brookings Institution (Sept. 21, 2009), available at <http://www.openinternet.gov/read-speech.html> (referring to the Internet network architecture's openness at the infrastructure, network, and application levels).

54. 47 U.S.C. § 396 (2006).

55. See, e.g., 47 U.S.C. § 335(b)(1) (2006) (requiring digital broadcast satellite providers to reserve a portion of their channel capacity for "noncommercial programming of an educational or informational nature"); Noncommercial Educational TV Stations, 47 C.F.R. § 73.621(a) (2002) (reserving a limited number of television channels for noncommercial educational broadcasters); Implementation of Section 25 of the Cable Television and Consumer Protection Act of 1992, Direct Broadcast Satellite Public Interest Obligations, 13 FCC Rcd. 23,254, 23,285 (Nov. 19, 1998). Cable operators may also be required to devote channel capacity and equipment to noncommercial public, educational, and governmental programming. See 47 U.S.C. § 531 (2006). The FCC has been reserving channels for noncommercial educational broadcast stations since the 1950s. See *infra*, note 74.

Public Broadcasting (“CPB”) to public broadcast stations.⁵⁶ These funds are then spent on broadcast infrastructure and content.

Broadcast spectrum is another kind of subsidy for public service media — a subsidy in the form of infrastructure support for a particular transmission technology.⁵⁷ This subsidy directs policy energy toward the favored transmission platform of broadcasting and, ultimately, toward the funding of media makers that are connected with this technology, even as they produce for non-broadcast transmission platforms as well, such as broadband.⁵⁸

Like communications networks at large, 21st century public service media networks should diverge from the functionally bundled, technology-specific structure envisioned and enforced by the Public Broadcasting Act. Instead of an exclusive reliance on radio and television transmission, public broadcasting stations have long since expanded beyond broadcasting. They increasingly partner with other media makers and applications providers outside of the public broadcasting system.⁵⁹ Moreover, noncommercial media makers unaffiliated with public broadcasters are increasingly important in the creation and delivery of information to the public. Some of these are non-profit firms, while others are citizens engaging in a participatory media culture.⁶⁰

A structural model organized around functions, rather than services or platforms, would help public service media to embrace newer, non-broadcast technologies in the quickly evolving pace of modern-day communications. Moreover, the layered model’s functions-based approach would refocus public service media on the original purposes of the Public Broadcasting Act — to create, curate, and distribute high-quality media programming that engages diverse, underserved audiences at both local and national levels.⁶¹ By

56. See, e.g., Letter from William P. Tayman, Jr. to CPB Board of Directors, Proposed FY 2009 Operating Budget (Sept. 23, 2008), available at http://www.cpb.org/aboutcpb/leadership/board/resolutions/080923_fy09OperatingBudget.pdf (indicating that nearly 90% of the approved annual budget, from federal appropriates and interest, is dedicated towards station and programming grants).

57. See Goodman, *supra* note 2, at 264–65 (discussing spectrum reservation as another form of public broadcasting subsidy).

58. See, e.g., Ex Parte Letter of Ellen P. Goodman to Blair Levin, A National Broadband Plan for Our Future, GN Docket No. 09-51 (Fed. Commc’ns Comm’n Jan. 15, 2010) (pointing out that public service media entities were spending an estimate of \$2.9 million to \$27.3 million annually per licensee on broadcast delivery of content, at least a portion of which could be redirected towards broadband infrastructure).

59. See PUBLIC RADIO IN THE NEW NETWORK AGE, *supra* note 2, at 30–31 (recommending that public radio organizations partner with other content-creating organizations and community resources)

60. See PUBLIC MEDIA 2.0, *supra* note 2, at 7–8 (providing examples of public collaboration using tools such as social networks, open source platforms, and pervasive gaming); see also PUBLIC RADIO IN THE NEW NETWORK AGE, *supra* note 2, at 23 (mentioning partnerships between public radio and news organizations).

61. See 47 U.S.C. § 396(a)(6)–(7) (2006).

concentrating on public service media's core functions, the layered model would align public policy with an emphasis on inclusion, engagement, distribution, collaboration, and networked content where appropriate.

While layering helps to remake public service media network design, the Internet's implementation of layering does not perfectly map onto public service media. The layered model for the Internet adopts what are known as "end-to-end" principles, where complexity within the network is pushed to the edge of the network and away from the underlying physical infrastructure layer.⁶² Unlike the Internet, public service media networks may be complex throughout, at least in the layers above mere transmission. Core network services in public service media, unlike those in the Internet, are not necessarily "simple and cheap" as end-to-end principles assume them to be.⁶³

For example, it would be absurd to claim that content creation, which happens at the core of the network, can be done without intelligence. Indeed, intelligence and complexity are often the hallmarks of the creations imbued with a public service media mission. Unlike the Internet, which can function as a purely user-driven system, public service media requires coordination throughout the network, even though users and user-driven functionality may be critical at each layer. Thus, it is layering alone — and not the end-to-end philosophy often coupled with it — that offers the most meaningful guidance on reconfiguring public service media networks for the digital age.

Structural reform of public service media — indeed, a transformation from public broadcasting to public service media — will be crucial to achieving policy goals as the world moves ever faster from vertically bundled analog networks to the horizontal layers of digital networks. By offering an inherently adaptable, modular, and realistic approach, the layered model points the way to the reforms that will maximize fulfillment of the Public Broadcasting Act's aims.

62. End-to-end principles are conceptually distinct from layering. The key to this design philosophy is that "function should not be placed at the lower-levels of a network system," but instead left to the applications at the edges, or ends, of the network. Wu, *supra* note 20, at 1192 (emphasis omitted). Thus, "the lower-level protocols should focus only on the minimal function of transmitting data, and in all other respects be kept as simple, unintrusive, and open as possible." *Id.* See also Marjory S. Blumenthal & David D. Clark, *Rethinking the Design of the Internet: The End to End Arguments vs. the Brave New World*, 1 ACM TRANSACTIONS ON INTERNET TECH. 70, 70 (2001) ("The end to end arguments suggest that specific application-level functions usually cannot, and preferably should not, be built into the lower levels of the system — the core of the network."); Jerome H. Saltzer et al., *End-to-End Arguments in System Design*, 2 ACM TRANSACTIONS IN COMPUTER SYS. 277 (1984), reprinted in INNOVATIONS IN INTERNETWORKING 195 (Craig Partridge ed., 1988) (first technical paper describing the end-to-end concept).

63. David P. Reed et al., *Commentary on "Active Networking and End-to-End Arguments,"* IEEE NETWORK, May/June 1998, at 66, 70.

The next section discusses how a layered model for digital public service media would work.

III. A FOUR-LAYER MODEL FOR DIGITAL PUBLIC SERVICE MEDIA NETWORKS

Different renditions of the layered model for computer networking and communications policy have used different layering nomenclature and levels of detail.⁶⁴ Based on research into emerging best practices in public service media,⁶⁵ we theorize a four-layer model for the future of public service media and policy consisting of physical infrastructure, creation, curation, and connection layers.⁶⁶ We describe each layer, and the connective tissue between them, in greater detail below.

64. For example, the Open System Interconnection (“OSI”) model uses seven layers, and the Internet Protocol Suite (“TCP/IP”) uses four layers. Whitt, *Horizontal Leap Forward*, *supra* note 25, at 605–09 (explaining protocol layer models from computer networking in great detail). Communications scholars, policy experts, and media researchers have suggested a model with three to four layers. *See, e.g.*, Benkler, *supra* note 18 (suggesting a three-layer model); Werbach, *supra* note 17 (suggesting a four-layer model); Tracy Van Slyke, *Intro: Visualizing The 4 Network Layers*, BEYOND THE ECHO BLOG (Jan. 24, 2010), <http://www.beyondtheecho.net/2010/01/24/sneak-peek-four-layers-of-networks-awesome-visuals/> (citing JESSICA CLARK & TRACY VAN SLYKE, BEYOND THE ECHO CHAMBER (2010)) (describing a four-layer visualization of networks in the media systems).

65. *See generally* AM. UNIV. SCHOOL OF COMM’N CTR. FOR SOCIAL MEDIA, SCAN AND ANALYSIS OF BEST PRACTICES IN DIGITAL JOURNALISM 12–42 (2009) [hereinafter BEST PRACTICES] (identifying best practices in digital new media journalism for public service media); GUPTA CONSULTING, EMBRACING DIGITAL: A REVIEW OF PUBLIC MEDIA EFFORTS ACROSS THE UNITED STATES (2009), *available at* <http://www.cpb.org/publicmedia2.0/docs/EmbracingDigitalReviewPublicMediaEfforts2009.pdf> (providing examples of new and innovative public service media deployments); KNIGHT COMMISSION, *supra* note 2, at 35–36 (describing how public service media can best meet the information needs of communities by becoming more local, inclusive, interactive, and integrated with new technologies and communications); Goodman & Chen, *supra* note 14 (describing how digital public media can serve public purposes); Silver et al., *supra* note 2 (describing how public service media systems can become more relevant to 21st century information needs).

66. In their recent book, *Beyond the Echo Chamber*, Jessica Clark & Tracy Van Slyke conceptualize layers in the media ecosystem differently. Rather than thinking of them as layered in vertical stacks from data transport to content consumption, as in the traditional mode of network theory, they have conceived of horizontal layers representing alternative and complementary kinds of media networks: networked users, self-organized networks, institutional networks, and networks of institutions. *See* JESSICA CLARK & TRACY VAN SLYKE, BEYOND THE ECHO CHAMBER (2010).

Figure 1: Layers of Public Service Media Networks

Connection: Engaging the public with public service media content across platforms

Curation: Identifying content and applications of particular value and supporting broad access to the public

Creation: Creating content and applications the market does not support

Infrastructure: Transmitting public service media content and applications

The functions represented in these layers work together to form a new kind of public service media network. “Networking” has always been a principal goal of the public service media system. The Public Broadcasting Act and associated structures took what were scattered educational television and radio stations and networked them through national membership organizations (the Public Broadcasting System (“PBS”) and National Public Radio (“NPR”)), a non-profit funding source (“CPB”),⁶⁷ and various legal provisions.⁶⁸ The goal was to preserve local experimentation and diversity while achieving better coordination and economies of scale.⁶⁹

67. RALPH ENGELMAN, PUBLIC RADIO AND TELEVISION IN AMERICA: A POLITICAL HISTORY 83–100 (1996) (describing the early transition of public broadcasting from a collection of educational programs and television facilities to a cohesive public broadcasting system by 1967); LAURENCE JARVIK, PBS: BEHIND THE SCREEN 9, 11–23 (1997) (same).

68. Legal provisions relevant to networking include interconnection rules, *see, e.g.*, 47 U.S.C. § 396(g)(1)(B) (2006) (authorizing the CPB to establish and develop “one or more interconnection systems to be used for the distribution of public telecommunications services”), legal authority to contract with other telecommunications entities or independent producers to produce telecommunications services and distribute content, *see, e.g.*, 47 U.S.C. § 396(g)(2)(B) (2006), and copyright clauses that facilitated the exchange of intellectual property in and out of the public service media network, *see, e.g.*, 17 U.S.C. § 114(b) (2006) (granting public broadcasters the right to use sound recordings without permission or in educational television and radio programs that are not commercially distributed); 17 U.S.C. § 118(b) (2006) (granting a compulsory license to use “published nondramatic musical works and published pictorial, graphic, and sculptural works”).

69. *See, e.g.*, JEFFREY A. DVORKIN & ALAN G. STAVITSKY, “THE ACCOUNTABLE GUARDIAN”: CONCEPTS IN TENSION: THE CHALLENGE OF ENSURING BOTH OBJECTIVITY AND BALANCE AND EDITORIAL INDEPENDENCE 13 (2007), available at http://www.cpb.org/aboutcpb/goals/objectivity/whitepapers/cpb_accountableGuardian_DvorkinStavitsky.pdf (recounting how public service media’s roots were in localism); JARVIK, *supra* note 67, at 23 (describing PBS as “[i]nitially designed [to be] a mere routing system for program exchange” from local stations); Willard D. Rowland, Jr., *Public Broadcasting in the United*

Given the limitations of 20th century technology and the prevailing modes of organization in the broadcast industry, the only kind of networking possible for most of public service media's history was between national organization and local station — between hub and spoke. Indeed, this form of networking was a primary objective of the Public Broadcasting Act. The national organizations were formed to commission and aggregate a national programming schedule for distribution to local stations.⁷⁰ Some of this programming came from the few local stations that produce for the system.⁷¹ Independent producers typically had to work through a local station or a national organization in order to distribute content through the network.⁷²

Today, the concept of a media network in general is more open, fluid, and dynamic.⁷³ It is now possible for public service media

States, in ENCYCLOPEDIA OF COMMUNICATION AND INFORMATION 5 (2002), available at <http://www.netaonline.org/NFPT02-Rowland-PBinUSA.pdf> (describing how the 1967 Act built upon “the tradition and imperatives of the largely decentralized, locally focused U.S. system of noncommercial radio and television”); Richard Somerset-Ward, *Public Television: The Ballpark's Changing*, in QUALITY TIME? THE REPORT OF THE TWENTIETH CENTURY FUND TASK FORCE ON PUBLIC TELEVISION 77 (1993) [hereinafter QUALITY TIME?] (discussing the prevailing notion of localism, which presents public television as “a mass of individual, locally based, autonomous, not-for-profit stations, which might loosely be united into a nationwide service or network”).

70. 47 U.S.C. § 396(k)(3)(A)(ii) (2006) (allocating a set percentage of CPB appropriations towards “national public television programming”). These funds typically support national programming that is distributed to local stations, such as the National Program Service, which includes series such as *PBS NewsHour*, *Nova*, and *Masterpiece Theater*, as well as funding for programs produced by independent producers and targeting ethnic minorities. CORPORATION FOR PUBLIC BROADCASTING APPROPRIATION REQUEST AND JUSTIFICATION: FY 2011 AND FY 2013, at 13–14 (Feb. 2010), available at http://www.cpb.org/aboutcpb/financials/appropriation/justification_11-13.pdf.

71. The Boston station WGBH, for example, is PBS's single largest producer of television and online content, creating approximately a third of national public television programming. *Ex Parte* Comments of WGBH et al., A National Broadband Plan for Our Future, GN Docket No. 09-51, at 2 (Fed. Comm'ns Comm'n Feb. 22, 2010) [hereinafter WGBH Comments]; see also PUBLIC RADIO IN THE NEW NETWORK AGE, *supra* note 2, at 23 (noting that there are only about ten public radio stations with a significant local news capacity); QUALITY TIME?, *supra* note 69, at 138–39 (reporting as of 1991 that only a handful of local stations contribute significantly to national programming, with some 300 stations contributing no hours at all to the national schedule).

72. See, e.g., ENGELMAN, *supra* note 67, at 99 (noting that NPR sought programming from local member stations).

73. The concept of the network has shifted perceptions of media delivery systems from hierarchical, one-way structures to flatter webs of interactive units. Commentators and scholars now describe these systems as comprising a “networked information environment” or “digitally networked environment.” See, e.g., PUBLIC MEDIA 2.0, *supra* note 2, at 2, 29 (referencing the transformation to “an open, many-to-many networked media environment” and the “networked information environment”); see also Benkler, *supra* note 18, at 563–65 (discussing the historical transformation from a centralized to a more open, permeable, and decentralized media system); Yochai Benkler, *Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment*, 11 HARV. J.L. & TECH. 287, 301–14 (1998). Network theory in general, which studies the relationships between adjacent units in a particular network, has also been applied to disciplines as diverse as computer science, sociology, biology, engineering, and economics. See Lior J. Strahilevitz, *A Social Networks Theory of Privacy*, 72 U. CHI. L. REV. 919, 946–58 (2005).

entities to be networked multi-laterally, between the local spokes as well as between local and national hubs. These spokes — or more accurately, network nodes — can partner to produce, distribute, and engage with content. The nodes can be comprised of many kinds of entities locally and across communities. New information providers can network with those “in the system” intermittently or on a project-by-project basis, using the public service media assets to build capacity in information development and distribution. All of this can happen through the use of distributed computing power, social networking, and legal rules that foster collaboration. The layered model shows how we might think about this new kind of network and its relationship to policy structures.

A. Infrastructure Layer

The infrastructure layer describes the physical infrastructure that transmits public service media bits to communities and individuals. This layer originally consisted of broadcast transmission towers, broadcast spectrum licenses, and associated broadcast infrastructure. In the past, most of this infrastructure was owned and operated by public service media entities themselves.⁷⁴ Indeed, one of the objectives of the system created by the Public Broadcasting Act was to support a public service media satellite interconnection system to distribute programming to the network of local stations.⁷⁵ This broadcast and satellite infrastructure remains central to the public service media mission, but much of what public service media now offers is transmitted over broadband networks, cable, satellite, fiber optic, and other technologies owned and operated by commercial

74. The FCC first set aside 242 FM radio and television channel assignments for noncommercial, educational use in 1952. See Amendment of Section 3.606 of the Commission's Rules and Regulations, 41 F.C.C. 148 (1952); *History of Public Broadcasting in the United States, Timeline: 1950s-'60s*, CURRENT, <http://www.current.org/history/timeline/timeline-1950s-60s.shtml> (last visited Dec. 21, 2010). In 1998, “noncommercial educational television licensees reach[ed] 98% of the population through 242 UHF television stations and 124 VHF stations, the majority of which are funded in part by the CPB.” Randi M. Albert, *A New “Program for Action:” Strengthening the Standards for Noncommercial Educational Licensees*, 21 HASTINGS COMM. & ENT. L.J. 129, 137 (1998). Today, certain rules still require satellite broadcasters to reserve four percent of their channel capacity for “noncommercial programming of an educational or informational nature.” 47 U.S.C. § 335(b)(1) (2006); see Implementation of Section 25 of the Cable Television and Consumer Protection Act of 1992, 13 FCC Rcd. 23,254, 23,285 (1998). Cable operators may also be required under local franchise agreements to devote a certain amount of channel capacity and equipment to noncommercial public, educational, and governmental programming. See 47 U.S.C. § 531 (2006).

75. 47 U.S.C. § 396(g)(1)(B) (2006) (authorizing the CPB to establish and develop “one or more interconnection systems to be used for the distribution of public telecommunications services”).

entities. In other words, the function of public service media infrastructure has been unbundled from its ownership and operation.

The layered model challenges policymakers to articulate requirements and goals for public service media infrastructure, as distinct from the system's other functions. Guidance comes from the Public Broadcasting Act and the decision of the FCC to reserve broadcast channels for noncommercial stations. The siting of broadcast stations in every sizable town such that a local signal would reach everyone and everyone would have access to local television and radio created the conditions for ubiquitous public service media.⁷⁶ The goal was universal service through a locally based, public service infrastructure.

The discourse on universal service has, until recently, centered on telecommunications infrastructure⁷⁷ and the challenge of providing basic telephone connectivity to rural areas.⁷⁸ In the past several years, the focus has shifted to broadband infrastructure in recognition of the reality that basic connectivity entails access to the high bandwidth services that drive our digital lives.⁷⁹ It is in this context that the FCC has created a National Broadband Plan to ensure there is universal

76. *See id.* § 396(a)(9) (stating the government's public interest in ensuring that all citizens "have access to public telecommunications services through all appropriate available telecommunications distribution technologies"); Amendment of Section 3.606 of the Commission's Rules and Regulations, 41 F.C.C. 148, 152 (1952) (describing the demand for broadcasting service from local stations as a justification for reserving channels for their future use); 47 C.F.R. 73.621 (2002) (concluding that the FCC should set aside noncommercial channels "based upon the important contributions which noncommercial educational television stations can make in educating the people both in school — at all levels — and also the adult public").

77. Universal service describes the regulatory policies designed to add users, or keep existing users, on telecommunications networks through low rates. NUECHTERLEIN & WEISER, *supra* note 30, at 333. It is usually supported by either cross-subsidies from commercial entities or by government subsidies, such as the FCC's universal service fund program that provides need-based subsidies to low-income customers. *Id.* at 52–54, 339–47.

78. *See* Susan P. Crawford, *Transporting Communications*, 89 B.U. L. REV. 871, 899–901 (2009) (describing government regulation policies that have centered universal service funding concerns around telecommunications carriers and their networks); Hannibal Travis, *Wi-Fi Everywhere: Universal Broadband Access as Antitrust and Telecommunications Policy*, 55 AM. U. L. REV. 1697, 1703 (2006) (discussing challenges to providing broadband connectivity and stating that most legal scholarship on broadband policy has focused on debates surrounding infrastructure providers).

79. NUECHTERLEIN & WEISER, *supra* note 30, at 352–55 (describing how universal service policies may change as broadband becomes more widespread). The growth in high bandwidth applications and usage is exponential. *See* BUILDING THE FACT BASE, *supra* note 5, at 16–18, (quoting Wireless Association observations that "[w]e're . . . seeing an explosion in the area of data and data applications," and quoting Cisco Systems' predictions that wireless data usage will double every year for the next four years); *see also* Om Malik, *Data Revenues Will Push Mobile Biz Past \$1 Trillion*, GIGAOM (Jan. 15, 2010, 8:30 AM), <http://gigaom.com/2010/01/15/data-seen-pushing-wireless-revenues-past-1-trillion/> (citing predictions that in less than five years, nearly half of the world's 6.7 billion mobile users will use high-bandwidth broadband technologies).

access to broadband digital infrastructure in the United States.⁸⁰ In a sense, public service media infrastructure was the original broadband public infrastructure, providing high bandwidth service to all. As public service media has shifted to digital platforms, the public interest in universal access to public television and radio service has converged with the interest in universal access to broadband infrastructure. An interest in communicative capacity that was once segmented by the two competing transmission technologies of broadcast and telecommunications is now a singular interest in affordable access to robust digital networks.

Given the convergence of universal service interests—telecommunications and broadcast—what should public service media policy be with respect to the infrastructure layer? At a minimum, there is an interest in stimulating and supporting the development of ubiquitous broadband networks. Currently, broadband availability and penetration are not ubiquitous. Studies estimate that up to 46% of the U.S. rural population is not connected to broadband services.⁸¹ The FCC has acknowledged that rural areas in particular “have long been unserved or underserved by broadband technology,”⁸² with additional constraints based on price of access, age of user, household income, and level of education.⁸³ Low-income households are especially hard-hit; 63% of homes that have incomes less than \$30,000 do not have broadband.⁸⁴ With the United States ranked 22nd in international broadband penetration rates and 14th in advertised download speed, American consumers are paying more for slower connections with more limitations than many other consumers around the world.⁸⁵

80. *See, e.g.*, American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 118 (2009) (providing funds for rural areas without sufficient access to broadband), available at <http://www.gpo.gov:80/fdsys/pkg/PLAW-111publ5/pdf/PLAW-111publ5.pdf>; A National Broadband Plan for Our Future, GN Docket No. 09-51, at 1, 13 (Fed. Commc’ns Comm’n Apr. 8, 2009) (notice of inquiry) (emphasizing the value of high-speed ubiquitous broadband services to Americans and seeking comment on expanding broadband availability through universal service policies).

81. *See* BUILDING THE FACT BASE, *supra* note 5, at 31; NAT’L TELECOMM. AND INFO. ADMIN., DIGITAL NATION: 21ST CENTURY AMERICA’S PROGRESS TOWARD UNIVERSAL BROADBAND INTERNET ACCESS 9–10 (2010) [hereinafter DIGITAL NATION], available at http://www.ntia.doc.gov/reports/2010/NTIA_internet_use_report_Feb2010.pdf (reporting that 60% to 72% of rural Americans do not use broadband as of 2009).

82. MICHAEL J. COPPS, BRINGING BROADBAND TO RURAL AMERICA: REPORT ON A RURAL BROADBAND STRATEGY 8 (2009), available at <http://ncbm.org/wp-content/uploads/2009/05/fcc-reportbringing-broadband-to-rural-america.pdf>.

83. BUILDING THE FACT BASE, *supra* note 5, at 13–14 (describing a gap between rural and urban areas in broadband availability, with data that reveals “sharp differences across the country”).

84. *See id.* at 24. Lack of perceived need and affordability are two of the highest reported barriers to adopting broadband among American users. DIGITAL NATION, *supra* note 81, at 13.

85. *See* FED. COMMUNC’NS COMM’N, NATIONAL BROADBAND PLAN WORKSHOP: CONSUMER CONTEXT 17 (2009), available at http://broadband.gov/docs/ws_22_

Without better broadband infrastructure, public service media cannot deliver mission-driven services to everyone. Limited broadband has already begun to constrain public service media efforts to reach diverse, underserved, and young audiences. For example, Next Door Neighbors, a Nashville Public Television program that serves local immigrant and refugee communities,⁸⁶ relies heavily on broadband to reach its audience, most of which accesses the content online.⁸⁷ But the lack of access to broadband in rural areas of middle Tennessee — areas that include an increasing number of Somali, Hispanic, and other immigrant constituencies — has impaired service.⁸⁸ In addition, prohibitive streaming costs have made video delivery difficult.⁸⁹ The same obstacles — high streaming costs and limited broadband — have hindered another public service media producer, Skylight Pictures, from delivering high-resolution documentary films and other educational materials to high schools and universities.⁹⁰

In addition to their general policy interest in robust and ubiquitous broadband, public service media entities have a special role to play in the diffusion of broadband infrastructure as owners and operators of such facilities. Many of these entities have broadband assets that can be networked with other noncommercial infrastructure assets to connect anchor institutions within a community.⁹¹ Anchor institutions are generally nonprofits that are rooted in their local communities.⁹² They include “[u]niversities, community colleges, museums, libraries, municipal enterprises, hospitals, parks,

consumer.pdf; Shawn Powers, GOVERNMENT SUPPORT FOR INFORMATION INFRASTRUCTURE: AN OVERVIEW, http://fundingthenews.usc.edu/related_research/5_Carnegie_Broadband.pdf (last visited Dec. 21, 2010).

86. NEXT DOOR NEIGHBORS, <http://www.wnpt.org/productions/nextdoorneighbors/> (last visited Dec. 21, 2010).

87. Conversation with Kevin Crane, Vice President of Content & Technology, Nashville Public TV (Oct. 6, 2009).

88. *Id.*

89. *Id.*

90. Email from Paco de Onis, Producer, Skylight Pictures, to Ellen Goodman (Sept. 18, 2009 12:38am). *See generally* SKYLIGHT PICTURES, <http://skylightpictures.com/> (last visited Dec. 21, 2010).

91. *See* A National Broadband Plan for Our Future, GN Docket No. 09-31 (Fed. Comm’n Apr. 8, 2009) (notice of inquiry). *See generally* American Recovery and Reinvestment Act of 2009, 111 Pub. L. No. 5, 123 Stat. 128, 514 (2009) (describing the Broadband Technology Opportunities Program, which is authorized to award grants to ensure broadband access to “community anchor institutions”).

92. HENRY S. WEBBER & MIKAEL KARLSTRÖM, WHY COMMUNITY INVESTMENT IS GOOD FOR NONPROFIT ANCHOR INSTITUTIONS 6 (2009), *available at* http://www.community-wealth.org/_pdfs/articles-publications/anchors/report-webber-karlstrom.pdf (defining anchor institutions as institutions that “by reason of mission, invested capital, or relationships to customers or employees, are geographically tied to a certain location”).

performing arts centers and sports arenas.”⁹³ Because anchor institutions offer economic development; job training; education; health care; access to local, state, and federal government services; and are often one of the largest employers in their area, they are increasingly viewed as critical to the flourishing of the communities they serve.⁹⁴ These institutions have faced overwhelming demand for high-bandwidth connections.⁹⁵ At the same time, the high costs of building these networks for anchor institutions, which can place higher demands on the network than residential or business customers, have discouraged private sector companies from meeting these needs.⁹⁶

In response, government and non-profit organizations have built, operated, or managed regional broadband networks that focus on the needs of community anchor institutions.⁹⁷ They have aggregated demand from several institutions to offer affordable, dedicated, high-bandwidth services not available from commercial providers.⁹⁸ Even with these entrepreneurial broadband networks, however, “[m]ost community anchor institutions cannot yet connect to these providers.”⁹⁹ The federal government has acknowledged this gap. The

93. DAVID MAURRASSE, CITY ANCHORS: LEVERAGING ANCHOR INSTITUTIONS FOR URBAN SUCCESS 2 (2007), available at http://www.community-wealth.org/_pdfs/news/recent-articles/10-07/paper-maurrasse.pdf.

94. See, e.g., *id.* at 3, 6, 9–11 (listing how anchor institutions improve their communities through local educational and cultural programs, community safety, improved human and educational services, and job creation); Ira Harkavy et al., *Anchor Institutions as Partners in Building Successful Communities and Local Economies*, in *RETOOLING HUD FOR A CATALYTIC FEDERAL GOVERNMENT* 147–49 (2009), available at http://www.community-wealth.org/_pdfs/news/recent-articles/07-09/chapter-harkavy-et-al.pdf (discussing the growing recognition that anchor institutions are intricately intertwined with the economic vitality and competitiveness of their communities and cities); see also MAURRASSE, *supra* note 93, at 5–8 (recommending ways for anchor institutions to positively impact their communities).

95. Anchor institutions have requested seven times more funding than made available through the American Recovery and Reinvestment Act of 2009. Reply Comments of Commenters Supporting Anchor Institution Networks, International Comparison and Survey Requirements in the Broadband Data Improvement Act, GN Docket No. 09-47, at 3 (Fed. Commc’ns Comm’n Jan. 27, 2010) available at <http://www.internet2.edu/government/docs/Anchor%20Institution%20Network%20FCC%20filing%20FINAL%201-27-2010.pdf>.

96. Reply Comments of U.S. R&E Networks and HIMSS, International Comparison and Survey Requirements in the Broadband Data Improvement Act, GN Docket No. 09-47, at 12–14 (Fed. Commc’ns Comm’n Jan. 27, 2010), available at http://www.nlr.net/docs/R&EFiling_UCAN_1-27-10.pdf (discussing the market failure of high-capacity broadband to community anchors).

97. See, e.g., Mary Alice Ball, *Aggregating Broadband Demand: Surveying the Benefits and Challenges for Public Libraries*, 26 GOV’T INFO. Q. 551 (2009) (analyzing efforts by state public libraries to establish library cooperatives that aggregate broadband demand, and state government initiatives to develop a telecommunications network for public sector agencies).

98. See *id.* at 553.

99. See Reply Comments of Commenters Supporting Anchor Institution Networks, International Comparison and Survey Requirements in the Broadband Data Improvement Act, GN Docket No. 09-47, at 2–3 (Fed. Commc’ns Comm’n Jan. 27, 2010) available at

Commerce Department's National Telecommunications and Information Administration ("NTIA") has directed much of its \$2.6 billion in broadband stimulus grants to "comprehensive community" infrastructure projects that connect to anchor institutions.¹⁰⁰

Public service media, with its trusted name brand¹⁰¹ and historic mission to support public interest communications,¹⁰² should have a mandate to be part of this solution. All public broadcasting stations have wireless spectrum assets, and public television stations have the ability to broadcast broadband content on their digital channels to consumers. It is not on the "last mile" to the home that public service media entities will make the greatest contribution to broadband infrastructure, but on the "middle mile" between broadband service providers and community institutions that are substantially open to the public. Many legacy public broadcasting stations have robust broadband capacities that connect them to schools, other stations, and other community institutions. Those that are part of state or municipal networks in particular often operate fiber or other broadband networks between stations in the network.¹⁰³

Public service media entities can contribute to broadband connectivity by investing in their physical networks, in partnership with other community institutions, to create local hubs of broadband connectivity.¹⁰⁴ By helping provide broadband to schools, public

<http://www.internet2.edu/government/docs/Anchor%20Institution%20Network%20FCC%20filing%20FINAL%201-27-2010.pdf>.

100. Comprehensive Community Infrastructure Grants, Search Applications, Broadband USA, <http://www.ntia.doc.gov/broadbandgrants/applications/results.cfm?org=&keywords=&grantround=&id=&projtype=Comprehensive+Community+Infrastructure&state=&status=Awarded> (listing all Comprehensive Community Infrastructure BTOP grants awarded thus far) (last visited Dec. 21, 2010); U.S. DEP'T. OF COMMERCE & NAT'L TELECOMM. AND INFO. ADMIN., BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM: KEY REVISIONS IN SECOND NOTICE OF FUNDS AVAILABILITY (2010), *available at* http://www.ntia.doc.gov/press/2010/BTOP_NOFAII_FACTSHEET_100115.pdf (noting that providing broadband to anchor institutions can be a way "of maximizing the benefits of BTOP funds"); Agencies Modify Broadband Stimulus Final Round, Set Modest Satellite Funding, *Stifel Nicolaus: Telecom, Media & Tech Regulatory* (Jan. 19, 2010) (on file with author).

101. *See* Silver et al., *supra* note 2, at 264 (citing statistics reporting PBS as the highest trusted U.S. institution by the public for six consecutive years, superseding institutions such as courts of law, newspaper publishing companies, and commercial broadcast TV networks by at least a 20% margin); Lauren J. Strayer, *Corporation for Public Broadcasting: Building a Digital Democracy Through Public Media*, CTR. FOR AM. PROGRESS ACTION FUND, <http://www.americanprogressaction.org/issues/2008/changeforamerica/pdf/pbs.pdf> (last visited Dec. 21, 2010) (reporting that Americans ranked PBS the second-best use of federal tax dollars in 2008, after military defense spending, and ranked NPR fifth, after law enforcement and the space program).

102. 47 U.S.C. § 396(a)(1)–(2) (2006) (declaring that "it is in the public interest to encourage the growth and development of public radio and television broadcasting" as well as that of "nonbroadcast telecommunications technologies for the delivery of public telecommunications services").

103. *See, e.g., infra* note 105 and accompanying text.

104. The National Public Lightpath ("NPL") is a representative example of an initiative between public service media entities and others to support public interest broadband

service media entities can ensure that high definition educational material is available in the classroom. A 100-megabit high-speed fiber-optic network, for example, now allows students in the small town of Lafayette, Louisiana to engage in peer-to-peer, real-time learning with students in San Francisco, California.¹⁰⁵ Recent regulatory changes further ensure that broadband connectivity in schools can be made available to the public at large after school hours.¹⁰⁶ This kind of proactive collaboration does not simply wait for high-quality infrastructure to arrive; it draws from the collective strength of multiple sectors to provide its own means to ensure high-speed connectivity between communities.

Because public service media policy today focuses only on broadcast infrastructure, there is no capacity to support these kinds of broadband collaborations and no definitive policy push to make them happen. What is needed is an explicit recognition in policy that the public service media infrastructure layer can and should involve many entities contributing transmission capacity and interconnecting with each other. These entities need have nothing to do with the creation of public service media content or the other functions in the public service media network. Application of layered model concepts to policy, discussed further in Part IV below, would more effectively network public infrastructure together and ensure that public service media entities were able to engage in rich media content exchanges with the public.

B. Creation Layer

Atop the infrastructure layer rides the creation layer, consisting of public service media content in the form of audio and video programming, gaming, mobile applications, and new forms of data or narrative expression. Through much of public broadcasting's past, the bundling of functions within the public service media network meant that content creators were largely the same as infrastructure owners and operators. In television, the content creation function falls mostly to a few of the local television stations that

infrastructure. NPL brings together education, media, government, and technology sectors to create publicly-owned, fiber-optic networks that connect public service media stations to each other and to public education classrooms. NAT'L PUB. LIGHTPATH, <http://www.publiclightpath.org/> (last visited Mar. 8, 2010).

105. NAT'L PUB. LIGHTPATH, WHITE PAPER: DOCUMENTATION AND RECOMMENDATIONS 17–20 (2009), available at http://www.publiclightpath.org/sites/default/files/NPL_WhitePaper_Ford.pdf.

106. See Press Release, FCC, FCC Gives School E-Rate Programs More Flexibility To Allow Community Use of Broadband Services (Feb. 18, 2010), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296371A1.pdf.

produce programming for national distribution.¹⁰⁷ A larger number of local stations produce local content. In radio, NPR produces most of the national public radio programming.¹⁰⁸ Some local stations produce local programming.

The origination of content with the stations themselves led to considerable criticism in the 1980s that public broadcasting was too insular and closed to diverse content inputs.¹⁰⁹ In addition, there has been repeated criticism that public broadcasting shines very little light on local affairs, especially for a system built around local stations.¹¹⁰ Congress responded by amending the Public Broadcasting Act to require CPB to fund independent television producers.¹¹¹ While independent programming increased in the last part of the 20th century, it still remains a small portion of what gets carried on the

107. See *QUALITY TIME?*, *supra* note 69, at 138–39 (noting that “very few of the 351 stations contribute to the national schedule,” with only four that contributed more than 100 hours in 1991, and some “300 stations . . . contributing no programs at all to the national schedule”); see also ENGELMAN, *supra* note 67, at 91 (explaining that PBS’ original articles of incorporation prohibited PBS from producing national programming).

108. See Tim Emmons, *Help (Still) Wanted: A P.D. at NPR To Look After Its Main Audience*, CURRENT (Feb. 2, 2009), available at <http://www.current.org/npr/npr0902emmons-pd.shtml> (describing NPR as “the leading provider of public radio programming”). NPR produces and distributes more than 100 hours of weekly programming through more than 900 stations nationwide, with a weekly combined audience of 26.4 million listeners. *About NPR*, NAT’L PUB. RADIO, <http://www.npr.org/about/> (last visited Dec. 21, 2010); *Ex Parte Comments of NPR, National Broadband Plan for Our Future*, GN Docket No. 09-51, at 1–2 (Fed. Comm’n Dec. 28, 2009) [hereinafter NPR Comments]. NPR also has program-producing and distributing public radio partners, such as Public Radio International and American Public service media. See generally PUB. RADIO INT’L, <http://www.pri.org/> (last visited Dec. 21, 2010); AM. PUB. MEDIA, <http://americanpublicmedia.publicradio.org/> (last visited Dec. 21, 2010).

109. See, e.g., Reed Irvine, *Give Up on Public Broadcasting*, WALL ST. J., Mar. 28, 1986, at 12 (“The entire public broadcasting bureaucracy is so insulated from the market, from public opinion and even from the legislators who vote its funding that there is little chance that it will be depoliticized . . .”); see also ENGELMAN, *supra* note 67, at 110–11 (describing heated criticisms during the Reagan administration accusing NPR of being too liberal and too tied to its congressional funding to be able to provide undistorted, diverse news coverage); JARVIK, *supra* note 67, at 198–201 (recounting criticisms in the 1980s that PBS programs had a liberal bias and were not open to other perspectives); Strayer, *supra* note 101, at 3 (describing how public broadcasting’s funding system often pushes it to emphasize well-established programs “to the exclusion of new, more diverse programming”).

110. See *QUALITY TIME?*, *supra* note 69, at 127 (citing CPB estimates that local programming “has been ‘gently declining’ for a decade,” with most stations producing a little more than 100 hours a year); *Producers Defy the Trend Against Home-Brewed Local Shows*, CURRENT BRIEFING (Aug. 6, 2002), <http://www.current.org/local/index.html> (reporting a general decline of local programming in public radio and television).

111. 47 U.S.C. § 396(k)(3)(B) (2006) (declaring that a “substantial amount” of the funds allocated to CPB “shall be distributed to independent producers and production entities”). CPB currently does so with programs such as the Independent Television Service, which funds and promotes independently produced programs for public television, and the National Minority Consortia, which selects and funds programs by and for ethnic minorities. See *Funding Initiatives*, INDEP. TELEVISION SERV., <http://www.itvs.org/funding> (last visited Dec. 21, 2010); *National Minority Consortia, CORP. FOR PUB. BROAD.*, <http://www.cpb.org/aboutpb/consortia.html> (last visited Dec. 21, 2010).

infrastructure layer.¹¹² In an unbundled network structure, the infrastructure layer of public service media must be more open to content creators and deliver more local content. This Part addresses how this need might be met, focusing on what kind of content public service media ought to be supplying, who ought to be supplying it, and how it might be supplied.

1. The “What” of Public Service Media Content

Public service media’s mission has historically been to provide media content that the commercial market supplies in insufficient quantity.¹¹³ The economic rationale for public and other forms of non-market investment in media is that commercial media producers lack the market incentives to produce optimal amounts of news and information, local content, educational content, innovative or experimental content, and certain kinds of cultural content.¹¹⁴

The reasons for the mismatch between market forces and the optimal provision of media content include positive externalities, distributional objectives, and innovation in production and consumption of information. These explanations, or a collection of

112. CPB does fund independent programming through its Independent Television Service, but it is an exception to the general practice of sourcing most programming from a disproportionately small number of stations. In 2008, “the ‘big three’ stations — in New York (WNET), Boston (WGBH), and Los Angeles (KCET) — produce[d] approximately 60 percent of the programming for all public stations.” Pat Aufderheide & Jessica Clark, *Public Broadcasting & Public Affairs*, BERKMAN CTR. FOR INTERNET AND SOC’Y AT HARVARD UNIV. (2008), http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Public%20Broadcasting%20and%20Public%20Affairs_MR.pdf. WGBH alone produces about a third of national public television programming and is PBS’s largest producer of television and online content. Lonna M. Thompson et al., *Ex Parte* Comments of WGBH, APTs, CPB, NPR, and PBS on the Relationship of Rights Clearance Matters to Public Media and the National Broadband Plan, A National Broadband Plan for Our Future, GN Docket No. 09-51, at 2 (Fed. Comm’n Feb. 22, 2010).

113. See CARNegie II, *supra* note 1, at 297 (“[T]he non-profit sector . . . has a different bottom line from the business community. . . . [I]ts contributions to human betterment constitute its ‘profit.’ This is a unique form of social dividend that Western society has devised as a counterweight to the implacable economic laws of the marketplace.”); Ellen P. Goodman, *Media Policy out of the Box: Content Abundance, Attention Scarcity, and the Failures of Digital Markets*, 19 BERKELEY TECH. L.J. 1389, 1413–14 (2004) [hereinafter Goodman, *Media Policy out of the Box*] (discussing historical public elevation rationales for public service broadcasting).

114. See Machiel van Dijk et al., *Does Public Service Broadcasting Serve the Public? The Future of Television in the Changing Media Landscape*, 154 DE ECONOMIST 251, 254 (2006) (“Public service broadcasting should aim at those media objectives that are not sufficiently met by unregulated markets. Typical media objectives are pluralism and diversity, independence, quality and accessibility.”); see also Allan Brown, *Economics, Public Service Broadcasting, and Social Values*, J. MEDIA ECON., Jan. 1996 at 3, 9 (“The economic rationale for PSB takes the familiar form of government intervention to address market failure.”); Shaun Hargreaves Heap, *Television in a Digital Age: What Role for Public Service Broadcasting?*, ECON. POL’Y, Jan. 2005, at 112, 121 (“The case for intervention in any market turns primarily on the existence of market failure, and the broadcasting industry is no exception . . .”).

similar ones, are often referred to as “market failure.”¹¹⁵ The reference to “market failure” in the context of public service media subsidies can obscure and confuse the rationales for support because the term is used to cover more phenomena than its narrow meaning as an economic term of art abides. The technical meaning of market failure is that the market has failed to allocate goods and services efficiently because of defects in market transactions, and that there is another possible set of transactions that would result in a net gain for market participants.¹¹⁶ Consumers as a group would, theoretically, be willing to pay for this more gainful result in the marketplace if they could do so easily.

One of the reasons that market failure, strictly speaking, is an insufficient justification for subsidized media is that even perfect market mechanics may not yield the optimal media output. In other words, some of what developed nations have traditionally sought from public service media might not be what the public would pay for in the marketplace even if they could. These outputs are still in the public interest if they increase political accountability, social solidarity, educational levels, and imaginative and expressive freedom, among other values.¹¹⁷ The problem here is not market failure, per se, but a mismatch between what the market does — efficiently distribute goods and services — and what benefits democratic societies want from their media in addition to market efficiency — the nourishment of civil society.

To avoid the limitations of the “market failure” term, we will not use it. Instead, we identify more precisely the fissures between market capabilities and public needs that serve to justify public service media subsidies and establish the contours of public service media missions.

The first fissure has to do with the fact that media content of a certain kind is a public good that yields positive externalities for society. This is in fact a classic market failure. Something is a public good if there are no exclusive rights to consume the good and

115. In previous work, I have differentiated between “narrow market failure” and “broad market failure,” the former to describe ways in which media markets fail to function efficiently as markets in the production of desirable commodities and the latter to describe the ways in which even a perfectly functioning media market is not designed to produce some of the media that a democracy needs. Goodman, *Media Policy out of the Box*, *supra* note 113, at 1415.

116. PAUL KRUGMAN & ROBIN WELLS, *ECONOMICS* 112 (2d ed. 2009).

117. *See, e.g.*, Brown, *supra* note 114, at 4 (listing “creative freedom for program makers” as an additional rationale for public service media); Hargreaves Heap, *supra* note 114, at 116 (listing externalities such as promoting informed citizenship and social cohesion); van Dijk et al., *supra* note 114, at 266 (describing educational benefits and other externalities of high-quality public programs); OFCOM, ANNEX 11: MARKET FAILURE IN BROADCASTING, http://stakeholders.ofcom.org.uk/binaries/consultations/psb2_1/annexes/annex11.pdf (2008) [hereinafter ANNEX 11] (describing the broader social value of public service media, such as educating citizens so they can be more engaged in the democratic process).

consumption does not diminish the good itself.¹¹⁸ This definition captures the two distinguishing features of public goods: non-rivalry and non-excludability.¹¹⁹ Certain types of media content, such as content that is broadcast or made freely available online, are classic examples: they are both non-rivalrous (one person's consumption of a TV broadcast will not affect another's) and non-exclusive (no audience member or group has an exclusive right to the program).¹²⁰ Because producers cannot expect to charge for products whose consumption they cannot prevent, they are not optimally motivated to produce public goods.¹²¹ Public subsidies and other forms of government intervention (for example, in the form of intellectual property rights) serve to motivate the production of public goods.¹²²

These interventions to motivate production are particularly important where the public goods produce positive externalities — that is, social benefits whose value cannot be captured by market exchanges.¹²³ In the case of information, these positive externalities include a well-informed citizenry capable of holding public officials accountable.¹²⁴ There has clearly emerged a consensus that the most

118. Urs Birchler & Monika Büttler, INFORMATION ECONOMICS 91–94 (2007) (defining and explaining information as public goods).

119. *Id.*

120. See DEP'T FOR CULTURE, MEDIA & SPORT, THE FUTURE FUNDING OF THE BBC: REPORT OF THE INDEPENDENT REVIEW PANEL 201–08 (1999) [hereinafter ANNEX 8], available at <http://www.culture.gov.uk/images/publications/reviewcobbc.pdf>; see also C. Edwin Baker, *Giving the Audience What It Wants*, 58 OHIO ST. L. J. 311, 316–17 (1997) (distinguishing public good media products from “natural monopolies” like cars and can openers); Cass Sunstein, *Television and the Public Interest*, 88 CALIF. L. REV. 499, 514 (2000) (noting that television programming differs from “ordinary product[s]” in part because of public good characteristics); John R. Woodbury, *Comment: Welfare Analysis and the Video Marketplace*, in VIDEO MEDIA COMPETITION: REGULATION, ECONOMICS, AND TECHNOLOGY 274 (Eli M. Noam ed., 1985) (distinguishing media products from sweaters and cars because of programming's “heavy dose of public-good characteristics”).

121. Certainly, media content providers can and do charge for online content. But certain types of online media content — in many cases, content that also happens to be public media's mission to provide, such as local and international news and information — is currently not sufficiently provided by unregulated private markets. By and large, the news industry is still struggling to find viable commercial business models to support this kind of news and information. This combination of being (a) a public good that (b) is not supported by market mechanisms and (c) produces positive externalities (as discussed in the next paragraph) supplies the justification for public subsidies and government interventions.

122. See ANNEX 8, *supra* note 120; Hargreaves Heap, *supra* note 114 at 152.

123. See James T. Hamilton, *Private Interests in “Public Interest” Programming*, 45 DUKE L. J. 1177, 1181–82 (1996) (presenting a detailed explanation of positive externalities in public affairs coverage); see also C. EDWIN BAKER, MEDIA, MARKETS, AND DEMOCRACY 44–53 (2002) (considering positive externalities generated by media, such as the quality of public opinion and political participation, public interactions, exposing and deterring abuses of power, and audience impact on cultural products available to non-audience members); Daniel Farber, *Free Speech Without Romance: Public Choice and the First Amendment*, 105 HARV. L. REV. 554, 558–62 (1991) (providing a general discussion on the externalities of information).

124. MCCHESENEY & NICHOLS, *supra* note 12, at 118 (providing historical support for the notion, held by both James Madison and Thomas Jefferson, that “a free press was necessary

significant lacuna in media content today is in the area of accountability journalism. U.S. newspapers, which were always the most prolific producers of accountability journalism, have lost approximately 43% of their advertising revenue in the period from 2007 to 2009.¹²⁵ For example, U.S. newspaper classified advertising revenue dropped from \$19.6 billion in 2000 to \$6.0 billion in 2009.

Digital distribution allows media companies to unbundle news content from other, more entertainment-focused genres. This has led to an explosion of non-news content and the end of cross-subsidies that once flowed from things like classified advertisements to the production of news.¹²⁶ While certain kinds of news products are now easier and cheaper to produce (e.g., block-by-block traffic reports), other kinds of news are going uncovered. Recent reports chronicle the flight of reporters from state capitals, city halls, and more generally from the venues in which local governance takes place.¹²⁷ The powerful tool of citizen journalism fills some of the void of professional journalism, but has not been enough of a force to compensate for the lost information.¹²⁸

to create the informed citizenry that made popular sovereignty and democracy possible”); KNIGHT COMMISSION, *supra* note 2, at 3 (describing the public service function of journalism in keeping local citizens informed and helping to act as watchdogs over public officials). This is commonly known as the watchdog or “fourth estate” function of the press. See Benjamin Barron, *A Proposal To Rescue New York Times v. Sullivan by Promoting a Responsible Press*, 57 AM. U. L. REV. 73, 99 (2007) (describing how the press’s role in scrutinizing political activity and promoting good governance is encapsulated in the “[f]ourth [e]state” epithet that provides a check upon the government at all levels); Justice Potter Stewart, “Or of the Press,” Address at the Yale Law School Sesquicentennial Convocation (Nov. 2, 1974), in 26 HASTINGS L. J. 631, 634 (1975) (strongly espousing a fourth estate view of the press).

125. PEW PROJECT FOR EXCELLENCE IN JOURNALISM, THE STATE OF THE NEWS MEDIA: NEWSPAPERS (2010), available at http://www.stateofthemedial.org/2010/printable_newspaper_chapter.htm.

126. See HAROLD L. VOGEL, ENTERTAINMENT INDUSTRY ECONOMICS: A GUIDE FOR FINANCIAL ANALYSIS (7th ed. 2007) (describing the pre-digital newspaper model of cross-subsidies between content categories and the ways in which resources must be reallocated as audiences move to niche content online); OECD, *supra* note 2 at 60–61 (attributing loss of local news, greater homogeneity of news, cheapening and softening of news, and increased fragmentation to digital distribution models).

127. See, e.g., COWAN & WESTPHAL, *supra* note 10, at 6 (“Virtually every news organization that maintained a state capital presence pulled back. Statehouses like those in Denver and Des Moines, which once housed two to three dozen reporters each, have seen those numbers fall by roughly half.”); DOWNIE & SCHUDSON, *supra* note 2, at 18 (finding that fewer newspaper journalists were reporting on city halls, schools, social welfare, life in the suburbs, local business, and other areas of local governance); AJR Staff, *AJR’s 2009 Count of Statehouse Reporters*, AM. JOURNALISM REV., April/May 2009, available at <http://www.ajr.org/article.asp?id=4722> (reporting that the number of full-time newspaper reporters covering state capitals fell from 524 in 2003 to 355 by early 2009).

128. While news has expanded to blogs and other forms of new media, studies suggest that most of the news that the public receives is still driven by traditional media and by newspapers in particular. See, e.g., PROJECT FOR EXCELLENCE IN JOURNALISM, HOW NEWS HAPPENS: A STUDY OF THE NEWS ECOSYSTEM OF ONE AMERICAN CITY (2010), available at http://www.journalism.org/sites/journalism.org/files/Baltimore%20Study_Jan2010_0.pdf

Another less widely recognized positive externality concerns various forms of social capital. Citizens feel more solidarity with each other when they share stories and issues of national significance (but not necessarily of commercial value) that bind them together.¹²⁹ Under these conditions, they are likely to exhibit less prejudice and may find it easier to work together to solve problems, and public discourse is likely to be more civil, less polarized, and more productive than under conditions of social alienation or ignorance.¹³⁰ The production and circulation of certain kinds of narratives thus has the potential to create social capital that improves the ability of a diverse population to coexist and create value. For example, the documentary *Not in Our Town* about a hate crime against a gay man in a small town became a tool to create communal discussions about tolerance in towns across the country.¹³¹

A second justification for public service media subsidies relates to distributional concerns. Information of particular relevance to poor and other underserved populations tends to be under-produced because these populations cannot pay for the information either through their attention as a desirable demographic for advertising or through direct payments.¹³² Commercial media underserved these

(studying all Baltimore local news outlets and finding that nearly 95% of all stories with new information came from traditional media, most of them newspapers).

129. See ROBERT D. PUTNAM, *BOWLING ALONE: THE COLLAPSE AND REVIVAL OF AMERICAN COMMUNITY* 22–23, 92–96 (2001) (explaining how “bridging,” or inclusive, social capital can generate broader identities and reciprocity); CASS SUNSTEIN, *REPUBLIC.COM* 8–9 (2001) (pointing out the value of common experiences as a sort of “social glue” that allows citizens to understand one another, especially in heterogeneous nations that face greater risk of fragmentation, and as each nation becomes increasingly global); SUNSTEIN, *supra*, at 92–96 (discussing certain media experiences made possible by modern technology as “solidarity goods,” because they increase tolerance and bind citizens together).

130. Compare Danielle Keats Citron, *Cyber Civil Rights*, 89 B.U. L. REV. 61, 81 (2009) (describing how groups with homogeneous views tend to become more extreme when they deliberate, because they reinforce each other’s views without offering any counterarguments to tilt a viewpoint the other way), with Thomas P. Crocker, *Displacing Dissent*, 75 *FORDHAM L. REV.* 2587, 2614–15 (2007) (“Dissent opens up the possibility of change and challenges existing conceptions. . . . John Stuart Mill lamented the loss of dissent, because, by suppressing dissenting opinions, we ‘are deprived of the opportunity of exchanging error for truth.’”), and Eduardo Peñalver, *Is Public Reason Counterproductive?*, 110 *W. VA. L. REV.* 515, 529–30 (2007) (describing the value of diversity of viewpoints and ideas within the deliberative process), and SUNSTEIN, *supra* note 129, at 73–74 (discussing the benefits of access to a heterogeneous public in minimizing fragmentation and polarization).

131. PUBLIC MEDIA 2.0, *supra* note 2, at 19; *Not in Our Town*, PUB. BROAD. SERV. <http://www.pbs.org/not/> (last visited Dec. 21, 2010). The nonprofit Facing History project provides another example, using history to engage students of diverse backgrounds on issues such as racism, prejudice, and anti-Semitism through community events, classroom education, and multimedia. FACING HISTORY AND OURSELVES, <http://www.facinghistory.org/> (last visited Dec. 21, 2010).

132. See, e.g., Comments of Native Public Media and the National Congress of American Indians, A National Broadband Plan for Our Future, GN Docket No. 09-51, at 18 (Fed. Comm’n June 8, 2009), available at <http://fallfoss.fcc.gov/ecfs/document/view?id=6520219943> (describing how the “economically disadvantaged and

populations either because they did not make purchasing decisions (e.g., children) or were insufficiently numerous (e.g., rural populations).¹³³

Rural populations, even when able and willing to pay for programming, often could not aggregate enough audience members to support high-cost content—the common complaint of rural populations and the reason why there have always been subsidies for rural telecommunications.¹³⁴ Recent research on the broadband ecosystem and the provision of basic information to poor populations suggests that these populations often lack access to information that is circulated in abundance in wealthier communities.¹³⁵ The provision of

cyclically impoverished communities” of tribal lands in Indian Country have “neither the demographics nor market conditions” that would lead investors to provide access to broadband); van Dijk et al., *supra* note 114, at 259–61 (explaining why socially valuable programs may not be produced without advertising support, because of a bias against programs valued only by a small potential audience).

133. In fact, children’s programming was perceived to be so infrequently produced by commercial media that the FCC chose to implement so-called “kidvid rules” in response to the Children’s Television Act of 1990, requiring that broadcasters air a certain amount of programming for children. *See* 47 C.F.R. § 73.671(d) (2010) (requiring broadcast stations to devote three hours a week to educational children’s programming); Children’s Television Obligations of Digital Television Broadcasters, 19 F.C.C.R. 22943 (2004) (notice); Brittny Pescatore, *Time To Change the Channel: Assessing the FCC’s Children’s Programming Requirements Under the First Amendment*, 33 COLUM. J.L. & ARTS 81, 82 (explaining the kidvid rules and subsequent FCC-related policies). Commentators have argued that market failure continued in this area even after the kidvid rules were implemented. QUALITY TIME?, *supra* note 69, at 23 (“Commercial television’s reluctance to contribute real educational programming for children is evident in its failure to conform to the spirit of the Children’s Television Act of 1990.”).

134. *See* William E. Kennard & Elizabeth Evans Lyle, *With Freedom Comes Responsibility: Ensuring that the Next Generation of Technologies Is Accessible, Usable, and Affordable*, 10 COMM.LAW CONSPECTUS 5, 20–21, n.117 (2001) (describing government actions, such as matching grants and the Department of Agriculture’s Rural Utilities Service, that respond to scarcity of telecommunications services in rural areas); Edwin B. Parker, *Closing the Digital Divide in Rural America*, 24 TELECOMM. POL’Y 281, 282–83 (2000) (describing how telecommunications providers shy away from investing in rural areas because they are less likely to recoup their investment); Curt Stamp, *Left Behind: The Lack of Advanced Telecommunication Services in Rural America and Its Strain on Rural Communities — Policy Options for Closing the Digital Divide*, 7 DRAKE J. AGRIC. L. 645, 651 (2002) (“Nearly six years after the passage of [the Telecommunications Act of 1996], rural communities continue to be plagued by the unavailability of [advanced telecommunications services] largely because they cannot offer the large customer base of urban areas.”). Subsidies for rural telecommunications have traditionally come from universal service funds. *See supra* note 30 (describing universal service and mechanisms for subsidization).

135. *See, e.g.*, COPPS, *supra* note 82, at 8 (outlining the ways in which broadband is changing basic communication, work, learning, and entertainment, and stating that “[i]n rural areas . . . many Americans have no access to these applications and services, and by extension, to the global community”); NAT’L TELECOMM. & INFO. ADMIN., HOUSEHOLDS USING THE INTERNET IN AND OUTSIDE THE HOME, BY SELECTED CHARACTERISTICS: TOTAL, URBAN, RURAL, PRINCIPAL CITY (2007), http://www.ntia.doc.gov/reports/2008/Table_HouseholdInternet2007.pdf (last visited Dec. 21, 2010) (reporting that urban households with incomes above \$25,000 were four times more likely to have broadband than rural, low-income households).

public service media content (and infrastructure) tailored to reach these underserved populations serves as an economic subsidy to address inequality. An illustrative model is One Economy Corporation's Public Internet Channel, an online resource designed to serve low-income users by providing interactive information about everyday finances, such as filing taxes online, writing checks, and understanding retirement plans.¹³⁶

A third reason to subsidize media is to create the conditions for innovation that might be lacking either on the supply side in the production of content or on the demand side in the consumption of content. The Carnegie Commission Reports¹³⁷ and Public Broadcasting Act¹³⁸ both identified innovation as an objective for an American system of public service media. By this, they seemed to mean innovation in programming¹³⁹ and technology.¹⁴⁰ In the past, public broadcasting managed to launch new programming genres before the commercial media system did, such as children's programming¹⁴¹ and reality programming.¹⁴² In some technical areas as well, public service media led the way, for example by developing

136. BEST PRACTICES, *supra* note 65, at 23; *Public Internet Channel*, ONE ECONOMY, <http://www.one-economy.com/public-internet-channel> (last visited Dec. 21, 2010).

137. CARNEGIE COMM'N ON THE FUTURE OF PUBLIC BROAD., PUBLIC TELEVISION: A PROGRAM FOR ACTION 13-14 (1967) [hereinafter CARNEGIE I] (discussing public service media as an innovative alternative to commercial media, because commercial television "is obliged for the most part to search for the uniformities within the general public, and to apply its skills to satisfy the uniformities it has found"); CARNEGIE II, *supra* note 1, at 16 (recommending support for "innovative and untried programming ideas" in public service media).

138. 47 U.S.C. § 396(g)(1)(A) (2006) (describing the "full development of public telecommunications in which programs of . . . innovation" are obtained and made available as one of CPB's key purposes and activities).

139. *Id.*

140. *Id.* § 396(a)(1)-(2) (declaring a public interest in the growth and development of broadcast and non-broadcast technologies).

141. Public television incubated the Children's Television Workshop, for example, which produced classics such as *Sesame Street* at a time when commercial media was producing no children's programming. QUALITY TIME?, *supra* note 69, at 22-23 (describing public service media's "deep roots in education" whereas commercial television was reluctant to contribute real educational programming for children); *see, e.g.*, Alison Alexander, *Children's Television Workshop*, THE MUSEUM OF BROAD. COMM'NS, <http://www.museum.tv/eotvsection.php?entrycode=childrenste> (last visited Dec. 21, 2010) (providing a historical overview of the Children's Television Workshop).

142. *See* BARBARA ABRASH, THE VIEW FROM THE TOP: P.O.V. LEADERS ON THE STRUGGLE TO CREATE TRULY PUBLIC MEDIA 9-10, 21 (2007) (describing the PBS documentary series *P.O.V.* as "a showcase for first-person storytelling and subjective voices long before they became common modes of expression in mass media" through reality television); Karen Everhart Bedford, *PBS Version of 'Reality TV' Distills Drama from Real Life*, CURRENT, Jan. 29, 2001, available at <http://www.current.org/prog/prog0102doc.html> (noting that "PBS has been delivering reality-based documentaries to national audiences for decades").

closed captioning and a satellite system to distribute programming nationwide.¹⁴³

Innovation happens at the consumer end as well. Today, of course, media consumers are also producers of media. They may upload as much as they download and tweet, post, and blog about the media they consume.¹⁴⁴ There may be media content and applications that are designed to enhance how consumers re-create and enhance received media that public service media alone supplies. There is another kind of consumer innovation that has always been available, even in the 20th century media environment. This has gone by many names, such as “horizon stretching,”¹⁴⁵ “social dividend,”¹⁴⁶ or “merit goods.”¹⁴⁷

These terms relate to the idea that while the commercial market seeks to respond to consumer preferences that are well established and bankable, consumers do not necessarily bring all their preferences fully formed to the marketplace.¹⁴⁸ As a result, a purely market-based approach can create “a danger that consumers will under-invest in their own tastes, experience and capacity to comprehend because it is only in retrospect that the benefits of such investment become apparent.”¹⁴⁹ These consumers may be prepared to innovate with their preferences when exposed to more possibilities than the market will

143. JAMES DAY, *THE VANISHING VISION: THE INSIDE STORY OF PUBLIC TELEVISION* 310 (1995) (“PBS, in significant ways, pioneered the use of the newer technologies. It was the first national network to distribute its programs by satellite, the first to televise in stereo sound, and the first to develop and use Closed Captioning for the hearing handicapped and Descriptive Video Service for the blind.”); Strayer, *supra* note 101, at 4; *History of Public Broadcasting in the United States, Timeline: 1980s*, CURRENT, <http://www.current.org/history/timeline/timeline-1980s.shtml> (June 9, 2006) (noting that PBS developed closed captioning, and began offering it in 1980).

144. *See, e.g.*, Jack M. Balkin, *Digital Speech and Democratic Culture*, 79 N.Y.U. L. REV. 1, 6–9 (2004) (discussing the trend of users increasingly publishing and distributing their own content through digital media); Benkler, *supra* note 18, at 562–64 (discussing the trend of users as producers of information, especially for noncommercial purposes). This blending of the consumer and producer brings to mind notions of the “prosumer,” a term first coined by Alvin Toffler in the 1980s. ALVIN TOFFLER, *THE THIRD WAVE* 284–85 (1980). Social software has also enabled users to interact and produce more of their own content. *See e.g.*, Michael J. Madison, *Social Software, Groups, and Governance*, 2006 MICH. ST. L. REV. 153, 163–64 (classifying types and uses of social software).

145. *See e.g.*, Hargreaves Heap, *supra* note 114, at 114 (describing underdevelopment of “horizon stretching” programs as a legitimate source of market failure).

146. CARNEGIE II, *supra* note 1, at 297.

147. ANNEX 11, *supra* note 117 (arguing that “high quality programming is a merit good”); ANNEX 8, *supra* note 120, at 203 (describing quality broadcasting as a “merit good”); *see also* CARNEGIE I, *supra* note 137, at 92–99 (emphasizing quality and excellence as goals for public service media).

148. *See, e.g.*, BAKER, *supra* note 123, at 87–95 (arguing that media preferences are endogenous to market dynamics); ANNEX 11, *supra* note 117 (describing how public service media can serve as a leader rather than a follower of public opinion, sometimes determining coverage independent of stated consumer preferences); SUNSTEIN, *supra* note 129, at 73–74 (2001) (describing the role of intermediaries in endogenous preference formation).

149. GILLIAN DOYLE, *UNDERSTANDING MEDIA ECONOMICS* 66 (2002) (quoting ANNEX 8, *supra* note 120, at 203).

supply. Public service media can create laboratories for this kind of experimentation and thereby foster the development of preferences outside of marketplace constraints on what is possible. It is for this reason that there are public subsidies for museums, the fine arts, and other kinds of goods that the public may value only after exposure to them.

2. The “How” of Public Service Media Content

It hardly needs stating that the methods available for media content delivery have dramatically changed since the Public Broadcasting Act was enacted. Most obviously, public service media content, like all media content, is delivered over multiple platforms, including the Internet and mobile networks.¹⁵⁰ Digital capabilities have also changed the construction of public service media content, which must continue to evolve, and more quickly, to speak to the “digital natives” who expect to be able to manipulate rich blends of text, audio, video, and other multimedia.¹⁵¹ Public service media entities need to harness these digital capabilities by offering a diverse, innovative range of media, be they social network tools,¹⁵² crowd-sourced mapping,¹⁵³ or educational online games.¹⁵⁴ The promising projects that are already underway demonstrate the potential of public service media to be more relevant and engaging to a decisively digital demographic.¹⁵⁵

150. GUPTA CONSULTING, *supra* note 65, at 5 (“Media content from a broad array of sources, especially Web-based, is usurping content offered by traditional outlets for consumer share of mind.”). PBS, for example, reaches nearly 21 million people online each month. *About PBS*, PUB. BROAD. SERV., <http://www.pbs.org/aboutpbs/> (last visited Dec. 21, 2010). Podcasts and live streaming have also been an extremely successful form of media consumption. NPR podcasts are downloaded over 15 million times a month, and its mobile web site is viewed 4.5 million times a week. NPR Comments, *supra* note 108, at 2.

151. PUBLIC MEDIA 2.0, *supra* note 2, at 5 (emphasizing that public service media needs to be dynamically connected to the new multiplatform, participatory digital environment); Jack M. Balkin, *Media Access*, 76 GEO. WASH. L. REV. 101, 104–05 (2008) (reviewing the changes from traditional conduits of media to new business models that encourage mass participation); *see also* Madison, *supra* note 144, at 157–63 (classifying and describing types of social software, which capitalize on highly interactive online tools that characterize the digital native world).

152. *See, e.g.*, LENS ON ATLANTA, <http://www.lensonatlanta.org/> (last visited Dec. 21, 2010) (offering social networking tools to connect neighborhood organizations, arts and educational resources, and regional leaders with residents and each other).

153. BEST PRACTICES, *supra* note 65, at 37 (describing WNYC’s Are You Being Gouged? tool, where users report prices of milk, beer, and lettuce onto a crowd-sourced map); Silver et al., *supra* note 2, at 278 (citing WNYC’s “Uncommon Economic Indicators” project, which visually mapped listener-contributed stories by location).

154. Silver et al., *supra* note 2, at 277 (describing the issues-oriented game World Without Oil, produced by the Independent Television Service to simulate a sustained energy crisis).

155. *See* BEST PRACTICES, *supra* note 65, at 36–39 (offering public service media examples of projects that experiment with and integrate innovative digital technologies).

3. The “Who” of Public Service Media

Related to the expanding array of public service media genres is the expanding array of public service media practitioners. In the past, the entities responsible for the bulk of public service media content were public broadcasting stations, working at times with independent producers.¹⁵⁶ The production of media content was necessarily an expensive and specialized process. Digital technology has democratized the production of media content, dramatically lowering the barriers of entry to those who would express themselves through audiovisual media.¹⁵⁷ In addition, digital networks make collaboration among different kinds of producers much easier. As a result, there is today a much larger range of independent media outlets that are unaffiliated with broadcasters but share their noncommercial structure and public service mission.¹⁵⁸

Some of the best newsgathering and cultural projects are collaborations with these independent organizations, which often have deep connections to the local community and are producing diverse, original, and engaging content.¹⁵⁹ A public television station in Kentucky, for example, coordinated with online platforms and community groups to produce online content and a television series promoting health literacy for children, families, and minorities.¹⁶⁰ In the San Francisco Bay Area, a public station partnered with local museums and universities and used its website as a multimedia hub to integrate radio, TV, and online community coverage, through features such as a community blog.¹⁶¹

156. *See, e.g.*, WILLIAM HAWES, PUBLIC TELEVISION: AMERICA’S FIRST STATION: A NATIONAL INTIMATE ACCOUNT 78–81 (1996) (describing how national public broadcasting programs in the 1960s were recorded on tape and film and distributed to affiliates by mail, and were produced by a mix of stations, independent producers, and others abroad through exchange agreements).

157. Balkin, *supra* note 144, at 6–9 (describing the effects of digital media in democratizing free speech).

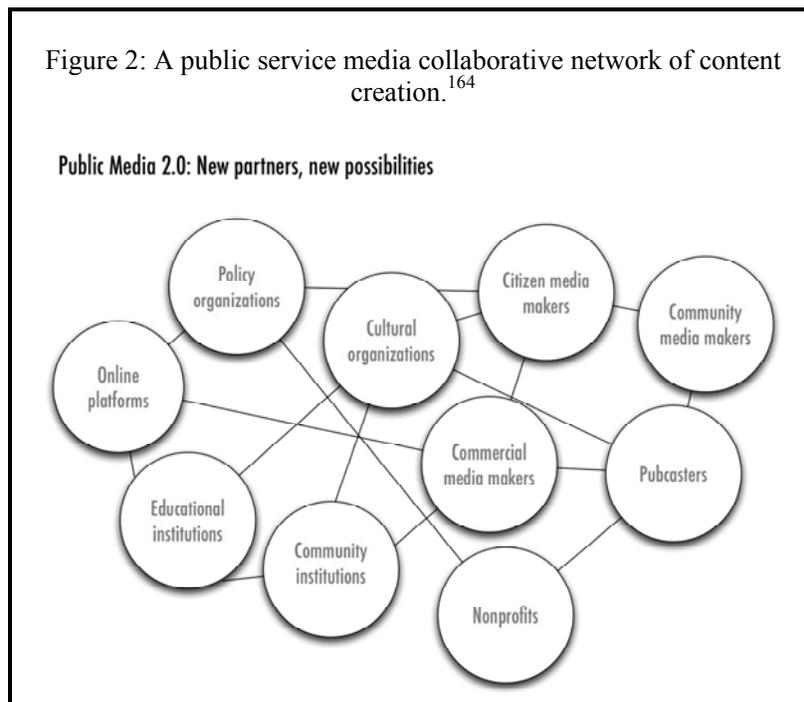
158. *See, e.g.*, COCHRAN, *supra* note 2 at 14–18 (identifying a range of new noncommercial news and information initiatives that should be deemed “public media”).

159. Silver et al., *supra* note 2, at 281–82.

160. *See, e.g.*, Comments of the Association of Public Television Stations, A National Broadband Plan for Our Future, GN Docket No. 09-51, at 6 (Fed. Commc’ns Comm’n July 21, 2009), available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7019917683>; *KET Health Programs*, KY. EDUC. TELEVISION, <http://www.ket.org/health/> (last visited Dec. 21, 2010).

161. BEST PRACTICES, *supra* note 65, at 30–31; *see also About Us*, THE BAY CITIZEN, <http://www.baycitizen.org/about/> (last visited Dec. 21, 2010) (describing itself as “a nonprofit, nonpartisan news organization dedicated to fact-based, independent reporting on civic and community issues in the San Francisco Bay Area”). The success of these and other multi-platform efforts have caught the eye of other public broadcasting organizations that see the need to fundamentally restructure their operations. *See, e.g.*, PAUL STARR ET AL., A FUTURE FOR PUBLIC MEDIA IN NEW JERSEY 10, http://www.njpp.org/files/rpt_publicmedia.pdf (2010) (identifying several existing public media models that “have shown how to build multi-platform public media on that foundation,” and concluding

The public service media network need no longer be limited to a hub and spoke arrangement of local stations moving content in and out of national centers. Instead, the digital media networks can be somewhat decentralized, allowing individual, content-producing nodes to exchange content with others across the network. In addition to traditional public broadcasting stations, these nodes now include groups as diverse as local universities, ethnic media, commercial newspapers, public policy think tanks, and online social networks.¹⁶² Incorporating non-broadcasters into the chain of media creation and distribution in this way is key to adapting to the digitally networked environment.¹⁶³ Figure 2 below presents one visualization of this collaborative environment based on Jessica Clark and Pat Aufderheide's *Public Media 2.0* report.



This depiction illustrates the key feature of the public service media creation layer: modularity.¹⁶⁵ With content production modules

that “New Jersey needs to create that foundation if it is to move ahead with the larger project of building a network of public media organizations that can flourish in the digital age”).

162. See generally PUBLIC MEDIA 2.0, *supra* note 2.

163. See PUBLIC MEDIA 2.0, *supra* note 2, at 3.

164. *Id.* at 24.

connected across a decentralized network, it becomes more feasible to specialize in content creation within a given node's area of expertise — say, science journalism — and then link the nodes together so that they can exchange, remix, and tailor content for their own use and follow-on creativity. In this way, each node can benefit from the others, collectively producing content that is more innovative, more relevant, and more accessible to the public.¹⁶⁶ Noncommercial broadcast stations and other public service media entities can develop specialties in content “verticals,” such as health and the environment, and then share this content with others who alone or in partnership with yet more nodes can increase the relevance of the content to particular communities. This is the premise of CPB's new “local journalism centers,” which are spread across the country with the mandate to develop particular content specialties that can be networked nationwide.¹⁶⁷

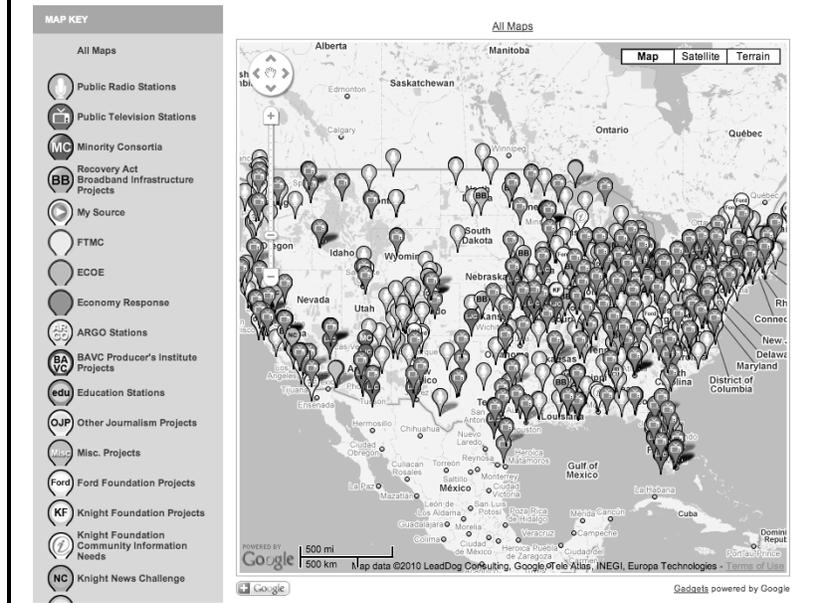
The maps in Figures 3 and 4 below show the potential for public service media collaboration in content production, either across the country or in a local region.

165. See Goodman & Chen, *supra* note 14, at 17–19 (discussing modularity of public service media content).

166. The advantages of a networked collective model have been well articulated in academic scholarship. See, e.g., YOCHAI BENKLER, *THE WEALTH OF NETWORKS* 2–5 (2006) (describing a “networked information economy” and discussing the benefits of social production in the network); LAWRENCE LESSIG, *REMIX: MAKING ART AND COMMERCE THRIVE IN THE HYBRID ECONOMY* 137–41 (2008) (describing “LEGO-ized innovation” as a feature of the Internet's success, where functionality is modularized so that others can build upon and use it in networked community and collaborative spaces); Benkler, *supra* note 18, at 562–65.

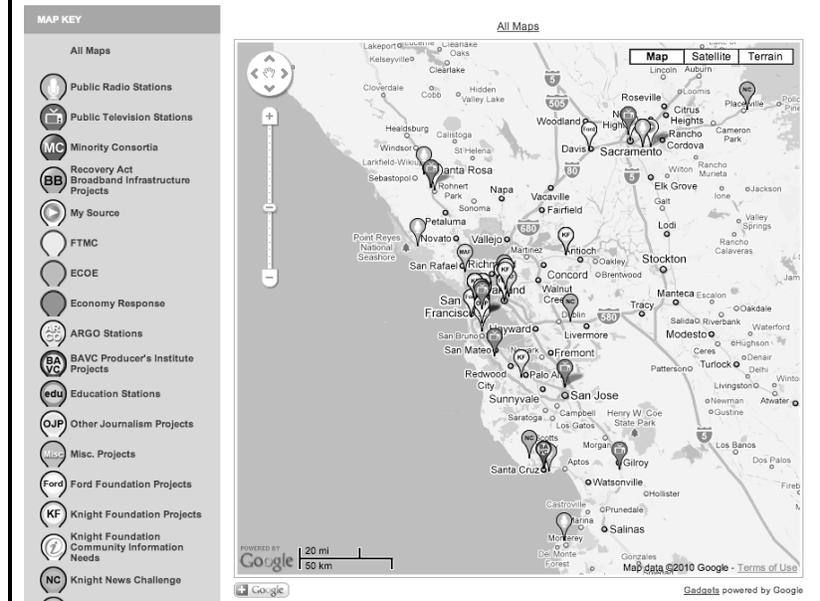
167. See *Request for Proposals: Grow the Audience: Strengthening Local Journalism*, CORP. FOR PUB. BROAD., http://www.cpb.org/grants/252/cpb_strengthlocal_rfp.pdf (June 11, 2009) (seeking grant proposals for “Local Journalism Centers”); Press Release, Corp. for Pub. Broad., Corporation for Public Broadcasting Launches Two New Local Journalism Centers and Gulf Coast Consortium (Sept. 29, 2010), available at <http://www.cpb.org/pressroom/release.php?prn=836> (noting “funding for two new Local Journalism Centers . . . [which] will expand the major journalism initiative . . . from five regions to seven regions around the country”). The CPB-funded project Argo is also designed to encourage original local reporting in specialized subject areas relevant to the locale, such as environmental policy, rural economic diversification, and public health. The project is built on a common platform that encourages sharing and access to other groups' work. Press Release, Corp. for Pub. Broad., NPR Launches New Online Local Journalism Venture with CPB and Knight Foundation Funding (Oct. 2, 2009) [hereinafter Argo Press Release], available at <http://www.cpb.org/pressroom/release.php?prn=776>; Karen Everhart, *To Add Depth to Web News, Stations Try Going 'Vertical'*, CURRENT (June 10, 2009), available at <http://www.current.org/news/news0911argo.shtml>.

Figure 3: Map of Noncommercial and Public Broadcasting Initiatives Across the United States.¹⁶⁸



168. All Maps, NATIONAL CENTER FOR MEDIA ENGAGEMENT, http://mediaengage.org/googlemap/all_maps.cfm (last visited Dec. 21, 2010).

Figure 4: Regional Map of Noncommercial and Public Broadcasting Initiatives in Northern California.¹⁶⁹



In addition to modularity with respect to fully completed units of content, any given unit of content — e.g., the story or the program — may also be broken down into components. Charlie Firestone, for example, has distilled the functions involved in producing a news story into such separate tasks as fact-finding, verification, and analysis.¹⁷⁰ In some instances, for some kinds of content, digital collaboration allows disaggregation of these tasks, thereby increasing specialization, efficiency, and productive capacity across the network.

Modularity through the public service media content layer creates possibilities for widely distributed and innovative content creation, efficient collaboration within and across communities, and more responsive forms of digital content. A policy structure that fails to provide incentives and funding for this kind of creation fails to support the purposes of public service media content. The Public Broadcasting Act and associated policies fail in just this way, largely through omission. There is almost no dedicated funding for creators that operate independently from broadcasting stations and very little

169. *Id.* (zoomed in on the Northern California area).

170. Charles M. Firestone, *The Pixelization of Journalism*, HUFFINGTON POST (Apr. 29, 2010, 2:41 PM), http://www.huffingtonpost.com/charles-m-firestone/the-pixelization-of-journ_b_557318.html.

structural incentive for broadcasters to network content in innovative and collaborative ways. We address this policy failing in Part IV below.

C. Curation Layer

Above the creation layer is the curation layer. Curation refers to two related, but distinct, functions. The first is the aggregation and promotion of public service media content, broadly defined (and perhaps even other kinds of content), that intentionally and directly serves the public service media mission. The second is the creation and support of open, searchable platforms that enable others to grab public service media content and curate it themselves or, through new creation, to extend the value and utility of content otherwise lost to ephemeral broadcast. The curation layer, like the other layers in the model, is independent from adjacent functions and consists of networked modules. Those who curate public service media content need not be the same as those who produce it or transmit it. In addition, curation can take place at various nodes across the network, and can be performed by many different kinds of entities.

The aggregation function of curation has always been central to the public service media mission. One of the purposes of the Public Broadcasting Act and the creation of a national network of public broadcasting stations was to curate the best of what was being produced at local levels.¹⁷¹ PBS and NPR aggregated national program schedules for prime time and “drive time” by selecting programs from independent and local station producers.¹⁷² The thinking was that, by fostering economies of scale through national distribution, national networks, and a national program schedule on television and radio would enable more and better production.¹⁷³ Of course, the inherent scarcities of the broadcast world meant that any national program schedule — indeed, any broadcast schedule at all — constrained consumer choice.¹⁷⁴ Programming that was not included

171. 47 U.S.C. §§ 396(a) (2006) (mentioning the public interest in developing local programming and communications); *see also* CARNEGIE I, *supra* note 137, at 92–99 (describing public television’s goals to be a system of stations, focused on and intended to “deepen a sense of community in local life”); JARVIK, *supra* note 67, at 23 (stating that PBS was “initially designed as a mere routing system for program exchange” from local stations); Rowland, *supra* note 69, at 5 (describing how the 1967 Act built upon “the tradition and imperatives of the largely decentralized, locally focused U.S. system of noncommercial radio and television”).

172. *See* ENGELMAN, *supra* note 67, at 99 (discussing how NPR sought out programs from member stations to develop its “public affairs and cultural programming”).

173. *See supra* note 68 and accompanying text.

174. CHRIS ANDERSON, *THE LONG TAIL* 18 (2006) (contrasting the “world of scarcity” in the broadcasting era to “a world of abundance” with online distribution and retail (emphasis omitted)); Goodman, *Media Policy out of the Box*, *supra* note 113, at 1392 (discussing

on the broadcast dial could not find an audience and would not be produced.

Digital technologies and media consumption habits today have fundamentally changed the job of curation, but have not diminished its importance. Curators of information no longer control the delivery of a “program schedule” or constrain consumer choice. Whatever appears in a linear programming schedule can usually be disaggregated and consumed on demand, by use of digital video recorders and online streaming. And whatever does not appear in a programming schedule can still find an audience by appealing to other sources of curatorial authority. These alternative sources of curation can be found in search engines such as Google, recommendation engines such as Digg, and social media sites such as Facebook.¹⁷⁵ Whereas the world of content constraint allowed aggregators to determine consumer choice, the world of content abundance allows them merely to guide consumer choice. Guidance of this kind is growing in value. As information comes at us faster, in greater quantities, and in smaller bits, we experience information overload.¹⁷⁶ The role of the curator in this environment is to serve as a trusted intermediary to filter and accredit information, thereby assisting in the

twentieth-century conditions where “video content was scarce and audience attention was abundant”).

175. See Jeff Jarvis, *AP Took It to the Wire But Needs To Rethink Its Role*, THE GUARDIAN (London), June 30, 2008, <http://www.guardian.co.uk/media/2008/jun/30/digitalmedia> (contrasting the “content economy v[ersus] the link economy,” which views links as “the currency of the new media economy,” because online content is deemed “valueless if no one sees it”); Jeff Jarvis, *The Imperatives of the Link Economy*, BUZZ MACHINE BLOG (July 28, 2008, 8:57 AM), <http://www.buzzmachine.com/2008/07/28/the-imperatives-of-the-link-economy/> (expanding the concept of the link economy into four imperatives); see also Benkler, *supra* note 18, at 567–68 (describing how the Internet is permitting much greater disaggregation and distribution of formerly mass media functions).

176. The problem of information overload is well established. See Yochai Benkler, *Siren Songs and Amish Children: Autonomy, Information, and Law*, 76 N.Y.U. L. REV. 23, 105 (2001) (“An important concern regarding widely distributed information production systems is the issue of information overload and the absence of means to determine what is worthwhile and what is not.” (citing Ira S. Nathenson, *Internet Infoglut and Invisible Ink: Spamdexing Search Engines with Meta Tags*, 12 HARV. J.L. & TECH. 43, 51–57 (1998) (describing literature that treats overload or “data smog” as a primary problem in information economy))). See generally DAVID LEWIS, INFORMATION OVERLOAD: PRACTICAL STRATEGIES FOR SURVIVING IN TODAY’S WORKPLACE (1999) (suggesting techniques to deal with information overload); DAVID SHENK, DATA SMOG: SURVIVING THE INFORMATION GLUT (1997) (arguing that increases in information availability can lead to increases in ignorance); KRISTAN J. WHEATON, THE WARNING SOLUTION: INTELLIGENT ANALYSIS IN THE AGE OF INFORMATION OVERLOAD (2001) (suggesting techniques to deal with information overload); RICHARD SAUL WURMAN, INFORMATION ANXIETY (1990) (positing that the information overload brought on by modern-day communications leads to anxiety over the gap between data and knowledge).

increasingly difficult task of making information consumption choices.¹⁷⁷

There are multiple sources of valuable curatorial authority. Commercial networks and brands, such as Fox News and Disney, provide one source of authority. Another source of authority comes from the algorithms we rely on to conduct searches. This is what Clay Shirky has called “algorithmic authority.”¹⁷⁸ Yet another source of authority is what we might call “social authority.” Social authority emerges from social software that allows friends or members of common communities to share recommendations based on overlapping tastes and values.¹⁷⁹

Public service media can play a valuable role in complementing these other sources of authority by augmenting the salience of mission-oriented information and narratives. The public service media entities that have engaged in content production and distribution over the last half-century have built a public trust that is unparalleled in either the media or other markets. PBS, for example, is one of the most trusted brands in the U.S. economy.¹⁸⁰ The brand value built up in the content and distribution layers can be leveraged into the curation layer for the benefit of content that may or may not come from the same entities. In other words, public service media entities can use their earned public trust, community connections, technological assets, and editorial capacities to raise the profile of high-quality content.¹⁸¹

177. See J.M. Balkin, *Media Filters, the V-chip, and the Foundations of Broadcast Regulation*, 45 DUKE L.J. 1131, 1148 (1996) (“All communications media produce too much information. . . . As a result, all media give rise to filtering by their audience, or, more importantly, by people to whom the audience delegates the task of filtering.”); see also Beth Simone Noveck, *Designing Deliberative Democracy in Cyberspace: The Role of the Cyber-Lawyer*, 9 B.U. J. SCI. & TECH. L. 1, 40–43, 57–58 (2003) (discussing filtering and selection mechanisms that reduce information overload); Frank Pasquale, *Copyright in an Era of Information Overload*, 60 VAND. L. REV. 135 (2007) (same).

178. Clay Shirky, *A Speculative Post on the Idea of Algorithmic Authority*, SHIRKY.COM (Nov. 15, 2009, 4:06 PM), <http://www.shirky.com/weblog/2009/11/a-speculative-post-on-the-idea-of-algorithmic-authority/> (“Algorithmic authority is the decision to regard as authoritative an unmanaged process of extracting value from diverse, untrustworthy sources, without any human standing beside the result. . . .”); see also Frank Pasquale, *Assessing Algorithmic Authority*, MADISONIAN.NET (Nov. 18, 2009), <http://madisonian.net/2009/11/18/assessing-algorithmic-authority/> (questioning the reliability and credibility of algorithmic authority).

179. Social tagging technologies such as rating mechanisms at Amazon.com, eBay.com, or Digg.com, where members of a group use labels, ratings, and evaluations made by other individuals or entities in the group, are one such implementation of exercising peer authority. Madison, *supra* note 144, at 163–64 (discussing types of social tagging technologies); see also BENKLER, *supra* note 166, 75–80 (describing the “relevance/accreditation” process of peer-produced valuation).

180. See Strayer, *supra* note 101 (citing statistics ranking PBS as the most trustworthy U.S. institution and second-best use of 2008 federal tax dollars by the public).

181. See THE DIGITAL FUTURE INITIATIVE PANEL, DIGITAL FUTURE INITIATIVE: CHALLENGES AND OPPORTUNITIES FOR PUBLIC SERVICE MEDIA IN THE DIGITAL AGE 94–99 (2005), http://www.newamerica.net/files/nafmigration/archive/Doc_File_2766_1.pdf

The Public Radio Exchange¹⁸² (“PRX”) provides an example of how this can work. PRX is a new kind of public service media entity. It does not hold a broadcast license, and therefore is not part of the infrastructure layer. It does not produce content, and therefore is not part of the creation layer. Rather, PRX curates over 20,000 independently produced noncommercial radio programs.¹⁸³ It serves as a programmer of sorts, making quality judgments about audio content before that content achieves mass distribution on the radio. It also serves as a market-maker, giving new voices a platform for more widespread distribution by clearing copyrights and arranging for payments back to radio producers.¹⁸⁴ Although PRX is principally a business-to-business curator, facilitating transactions in the public radio station market, it also brings content directly to consumers and engages consumers in the content selection process. Consumers are encouraged to write reviews, create playlists, join the PRX social network, and offer feedback to public radio producers.¹⁸⁵

In addition to its role as content aggregator, PRX exemplifies the second curatorial function as well: platform support. Scholars have come to recognize the importance of accessible archives in the information ecology.¹⁸⁶ Commercial entities have done a poor job,

(proposing that public service media entities create “a Web-based ‘engine’ that allows parents, teachers and the general public to access the vast, and hopefully rapidly growing, universe of public service media content”). The content need not be limited to domestic topics, either; the International Television Service has curated international content as well. *FAQ*, INT’L TELEVISION SERV., <http://www.itvs.org/about/faq> (last visited Dec. 21, 2010) (“ITVS International’s funding can support both international producers create [sic] for the U.S. and U.S. public television work for export to television networks abroad.”).

182. PUB. RADIO EXCHANGE, <http://www.prx.org/> (last visited Dec. 21, 2010).

183. See KNIGHT COMMISSION, *supra* note 2, at 51; Silver et al., *supra* note 2, at 276 (2009); PUBLIC MEDIA 2.0, *supra* note 2, at 13–14.

184. PUB. RADIO EXCHANGE, *supra* note 182.

185. Pub. Radio Exchange, *PRX.org: Help Make Public Radio More Public*, BLIP.TV, <http://blip.tv/play/gYJCjdADAg> (last visited Dec. 21, 2010).

186. Alyssa N. Knutson, Note, *Proceed with Caution: How Digital Archives Have Been Left in the Dark*, 24 BERKELEY TECH. L.J. 437, 439 (2009) (“Scholars widely acknowledge that preservation of and access to cultural artifacts is necessary for a robust cultural life. . . . [A]ccess to collective knowledge leads to the creation of new creative expression.”); see, e.g., ARCHIVES, DOCUMENTS AND INSTITUTIONS OF SOCIAL MEMORY: ESSAYS FROM THE SAWYER SEMINAR 165–68 (Francis X. Blouin, Jr. & William G. Rosenberg eds., 2007) (introducing a collection of essays discussing how archives can “play a critical role in the formation of social or collective memories,” not only because archivists decide what is remembered or forgotten, but also because they can shape cultural assumptions about what counts as knowledge); Guy Pessach, *[Networked] Memory Institutions: Social Remembering, Privatization and Its Discontents*, 26 CARDOZO ARTS & ENT. L.J. 71, 75 (2008) (“[L]andscapes of history and social remembering are . . . major forces in the construction of ideologies and people’s preferences.”); Pamela Samuelson, *Google Books Search and the Future of Books in Cyberspace*, 39 (UC Berkeley Pub. Law Research Paper No. 1535067, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1535067 (discussing the value of knowledge embedded in research libraries as “part of the cultural heritage of . . . humankind[,] which should be widely available and preserved for future generations”); see also NATIONAL BROADBAND PLAN, *supra* note 3, at 304 (“[Public

often for reasons related to intellectual property rights, of making electronic media content available over digital platforms. For example, there is no good way to access digital recordings of local news from decades past (or, indeed, to get access to these recordings in any form).¹⁸⁷ Google, with its controversial Google Books project,¹⁸⁸ is trying to create a searchable archive of the printed word, notwithstanding the intellectual property rights clearance problems.¹⁸⁹ This effort has given rise to fears that a commercial entity like Google could control access to collective wisdom and national heritage.¹⁹⁰

Noncommercial, mission-oriented archival platforms could allay these fears, provided that they were committed to open access and fostered the curatorial and creative efforts of others. CPB has taken on this challenge with an ambitious new project called the American Archive. The American Archive seeks to “identify, restore, digitize, and distribute audio and visual assets held by American public media stations and producers.”¹⁹¹ Working in association with national digital media archives, including the Library of Congress, the American Archive envisions making this content accessible to and searchable by educational and cultural institutions, public

service media’s] archival content could provide tremendous educational opportunities for generations of students and could revolutionize how we access our own history . . .”).

187. See, e.g., WGBH Comments, *supra* note 71, at 8–10 (describing the clearance problems, costs, and legal risks besetting current efforts to archive public service media assets, such as the *American Archive* and *The Boston TV News Digital Library* project); see also *About the Vanderbilt Television News Archive*, VANDERBILT UNIVERSITY, <http://tvnews.vanderbilt.edu/web/tvnews/about/?SID=20100303351806640> (last visited Dec. 21, 2010) (describing the News Archive’s partial repository of news broadcasts from U.S. national television networks, but also explaining that the project is restricted by copyright provisions and does not include public service media works).

188. See generally *About Google Books*, GOOGLE, <http://books.google.com/intl/en/googlebooks/about.html> (last visited Dec. 21, 2010); Ryan Singel, *The Fight over the Google of All Libraries: An (Updated) Wired.com FAQ*, WIRED (Feb. 18, 2010, 8:34 AM), <http://www.wired.com/epicenter/2010/02/the-fight-over-the-worlds-greatest-library-the-wiredcom-faq/> (providing an overview of basic aspects of the Google Books project and its surrounding controversies).

189. See Knutson, *supra* note 186, at 463–65 (discussing the Google Books settlement that arose out of an intellectual property dispute with authors and publishers); David Kravets, *Google Books Fosters Intellectual, Legal Crossroads*, WIRED (Feb. 18, 2010, 9:07 AM), <http://www.wired.com/threatlevel/2010/02/google-books-fosters-intellectual-legal-crossroads> (offering an overview of clearance problems); Tom Krazit, *Last Words? Google Books to Get Final Hearing*, CNET (Feb. 17, 2010, 3:51 PM), http://news.cnet.com/8301-30684_3-10455385-265.html (providing a review of legal developments surrounding the Google Books settlement).

190. See Pamela Samuelson, *Academic Author Objections to the Google Book Search Settlement*, 9 J. ON TELECOMM. & HIGH TECH. L. (forthcoming 2010), at 3–4, 6, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1553894 (discussing fears from authors and national library associations that Google might have control over “access to information, patron privacy, and intellectual freedom”); see also Samuelson, *supra* note 186, at 44 (“[T]he future of public access to the cultural heritage of humankind embodied in books is too important to leave in the hands of one company and one registry that will have a de facto monopoly over a huge corpus of digital books and rights in them.”).

191. WGBH Comments, *supra* note 71, at 8.

broadcasting stations, and the general public.¹⁹² NPR and others are undertaking to build a related Public Media Platform that would provide a platform for digital public service media content to reside, permitting the use and re-use of this content according to terms that must be worked out.¹⁹³ By making content searchable and available on reasonable terms, public service media curators could support more productive use of the content layer and encourage innovators to write applications for public service media content that magnified its expressive value and the possibility of follow-on creation.¹⁹⁴

There are significant technical obstacles to the creation of open digital platforms that allow access to rich archives of historical material. As media representatives have warned the current administration, “[b]illions of dollars worth of content assets” have yet to be indexed, archived, and made digitally accessible, and some are already in “danger of physical loss through disintegration and obsolescence.”¹⁹⁵ In addition, intellectual property rights make it difficult for any entity to make content available for digital distribution that was created for other purposes.¹⁹⁶ Experiments like PRX are only possible because NPR worked through these obstacles and adopted an Application Protocol Interface (“API”) that allowed third party curators to organize content and third party application developers to make that content maximally accessible to the public.¹⁹⁷ These steps essentially allowed content curation to become a distributed function, giving would-be curators access to the content layer below.

192. *Id.*; Comments of the Association of Public Television Stations, A National Broadband Plan for Our Future, GN Docket No. 09-51, at 4–5 (Fed. Commc’ns Comm’n July 21, 2009), available at <http://fjallfoss.fcc.gov/ecfs/document/view?id=7019917683>.

193. See NPR Comments, *supra* note 108, at 3–4.

194. See Dennis Haarsager, *NPR’s Digital Distribution Strategy*, TECHNOLOGY360 (Sept. 8, 2008), <http://technology360.typepad.com/technology360/2008/09/npr-digital-di.html> (describing several kinds of digital “distributed distribution” efforts in public service media).

195. Letter from Patricia Harrison, President and CEO, CPB, Paula Kerger, President and CEO, PBS, and Dennis Haarsager, Interim President and CEO, NPR, to President-Elect Barack Obama (Jan. 2, 2009), available at <http://www.current.org/pbpb/documents/stimulus-request-Jan09.pdf> (requesting stimulus funds for media projects, including archival work).

196. NATIONAL BROADBAND PLAN, *supra* note 3, at 304–05 (noting that current copyright exemptions “no longer fulfill their original purpose” and “should be updated to facilitate the distribution of the highest quality programming on 21st century digital platforms,” and acknowledging the difficulties in obtaining clearances from intellectual property rights holders for archival purposes); WGBH Comments, *supra* note 71, at 4–9 (describing in detail the various difficulties that prevent public broadcasters from distributing new and old archived materials).

197. See NPR Comments, *supra* note 108, at 1–4; see also Rekha, *New, Improved Public Radio Player Now Live in iTunes*, PUB. RADIO EXCHANGE (Mar. 2, 2010) <http://blog.prx.org/2010/03/new-improved-public-radio-player-now-live-in-itunes/> (describing the use of NPR API “as a source of station schedule data and on-demand programs”).

The Knight Commission's 2009 landmark report, the product of a detailed examination of the information needs of today's American communities, concluded that the health of a community's information ecology depends on its ability to "sift, organize and evaluate information."¹⁹⁸ This health depends, in other words, on information curation. The layered model of the network suggests that this task should be distributed across the network, with a diversity of curators using different forms of authority to create meaning from information made accessible and searchable over open platforms. There is currently no recognition in the law governing public service media that distributed curation is a value. There is no funding for an explicitly curatorial function. And there is scarcely any support for curation that takes place outside of the bundled broadcast creation and distribution functionality. In Part IV, we propose a change.

D. Connection Layer

The concept of connectivity infuses all layers of the public service media network. Building middle-mile infrastructure, producing public service media content, and curating that content over open platforms — all of these functions connect individuals to content that the market does not supply. The connection layer, which is the uppermost interface between individuals and public service media, describes those functions that are specifically and exclusively focused on engaging individuals and communities with public service media content. These functions are concerned with making public service media content matter to the public.

The Public Broadcasting Act specifically charges public service media entities with the task of reaching out to the public and engaging people with media content and information.¹⁹⁹ Although the rationale for outreach was never made explicit, the need for media engagement strategies follows naturally from the purposes of public service media content. Above, we outlined three principal justifications for public service media content related to commercial market gaps: to increase positive externalities (namely social capital and democratic engagement), to distribute information more equitably, and to support innovation in the supply and consumption of information.²⁰⁰

Some kinds of information need not be engaged with in order to produce positive externalities. As Robert McChesney and John Nichols note in their recent book *The Death and Life of American*

198. KNIGHT COMMISSION, *supra* note 2, at 12–13.

199. 47 U.S.C. § 396(a)(8) (2006) ("Public telecommunications services constitute valuable local community resources for utilizing electronic media to address national concerns and solve local problems through community programs and outreach programs.")

200. *See supra* Section III.B (discussing economic and noneconomic rationales for public service media).

Journalism, a flourishing press can produce positive results even if the news is initially consumed by very few.²⁰¹ This is because journalists can hold the objects of their investigation accountable in the absence of broad audiences to the extent that the information impacts the influential.²⁰² Those who are never informed may still be happy to have (and to pay for) the information just as those who never visit Yellowstone National Park may have a keen interest in its protection.

However, to the extent that the positive externality we seek includes greater citizen engagement with politics and collective decision-making, information may fail to produce these results unless it actually diffuses among the affected citizenry. We have to assume that citizens confronted with information overload and stretched to keep up with commercial media content will not come to this information without a “nudge.”²⁰³ If they would, the commercial marketplace presumably would produce this information. Thus, intentional connection strategies forged outside of the marketplace are usually necessary to capture the positive externalities that the information is capable of generating.²⁰⁴

Connection strategies are also important if the goal is to disseminate information to underserved populations. One of the arguments for public service media is that the market may fail to

201. MCCHESENEY & NICHOLS, *supra* note 12, at 105 (“Even people who do not regularly consume journalism like the idea that journalism exists They are willing to pay to see that journalism thrives even if they, for whatever reason, do not themselves plan to partake in it in substantial portions.”); *see also* Goodman, *Media Policy out of the Box*, *supra* note 113, at 1456 (“To be sure, some kinds of media products could produce classic third-party positive externalities, even if content drift fails to expose the audience to such products.”).

202. *See* C. Edwin Baker, *The Media that Citizens Need*, 147 U. PA. L. REV. 317, 324–25 (1998) (describing the importance of the watchdog role of the press, even when the general populace may be unable to or is uninterested in meaningfully understanding the social forces and structural problems at play, because the press can still influence government behavior by keeping it in check); Goodman, *Media Policy out of the Box*, *supra* note 113, at 1456 (“Prime examples . . . are investigative reporting and even the passive filming of public bodies. The press may serve a ‘watchdog’ function of exposing and deterring abuses simply by documenting proceedings, even if no one is watching.”).

203. RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE* 78–82 (2008) (explaining how free markets can be insufficient in providing the “nudges” people need, requiring government policies to help produce positive externalities).

204. *See, e.g.*, MCCHESENEY & NICHOLS, *supra* note 12, at 110 (pointing out that “[m]any of the nations that enjoy the highest rates of voter participation, civic literacy and civil liberties maintain large direct public subsidies for journalism, through public broadcasting”); *see also* Casey A. Klofstad, *Talk Leads to Recruitment: How Discussions About Politics and Current Events Increase Civic Participation*, 60 POL. RES. Q. 180 (2007) (finding that civic discussion with peers promotes participation in civic activities); Scott D. McClurg, *Social Networks and Political Participation: The Role of Social Interaction in Explaining Political Participation*, 56 POL. RES. Q. 449, 449 (2003) (finding that “the effect of social interaction on participation is contingent on the amount of political discussion that occurs in social networks”). Using technology such as the Internet can also have an appreciable impact on civic and political engagement. M. Kent Jennings & Vicki Zeitner, *Internet Use and Civic Engagement: A Longitudinal Analysis*, 67 PUB. OP. Q. 311, 319 (2003) (finding that “access to the Internet is significantly related to . . . all measures of political involvement, volunteerism, and social trust”).

produce content users do not initially signal that they want, but which may nonetheless increase social welfare once consumed. Exposure is thus key to the benefit sought, and it may well not happen without intentional engagement strategies. This is all the more true if the content depends on user participation and input as much as on user consumption.

Traditional methods of public service media outreach and engagement have included the production of teaching guides and other ancillary program-related material.²⁰⁵ More recently, legacy public broadcasting stations have started to reach out to other community institutions, such as museums and libraries, to develop joint community outreach initiatives.²⁰⁶ The objective of these efforts has been to make media more relevant to individual concerns and communities. For example, the relevance and impact of a St. Louis public radio station's reporting on economic recession increased dramatically when tied to local informational programs on how to combat mortgage foreclosure.²⁰⁷ In other cases, the engagement efforts are tied to translations and outreach in ethnic communities. Twin Cities Public Television, for example, created and then translated a collection of health and safety programs into Spanish, Hmong, Khmer, Lao, Vietnamese, and Somali in order to better reach the diverse communities of Minnesota.²⁰⁸

205. See, e.g., NAT'L CTR. FOR MEDIA ENGAGEMENT, ENGAGEMENT IMPACT RESEARCH SUMMARY — CASE FOR SUPPORT, available at <http://mediaengage.org/CommunicateImpact/ResearchSummary.pdf> (last visited Dec. 21, 2010) (recounting how public service media stations collaborated with the National Center for Media Engagement to educate local citizens through phone banks and organize collective viewing sessions of public programming).

206. See Association of Public Television Stations, *supra* note 160, at 2–10 (listing specific examples of public service media's outreach efforts in education, health awareness, civic participation, and worker development); Goodman, *Media Policy out of the Box*, *supra* note 113, at 1469–71 (listing examples of public service media initiatives that reach out to schools, libraries, museums, and the workplace to engage a wider audience).

207. See BEST PRACTICES, *supra* note 65, at 11; Letter from Jack Glamiche, President and CEO of KETC, to Patricia Harrison, President and CEO of CPB, KETC on the Impact of *Facing the Mortgage Crisis* (Sept. 11, 2009), available at http://www.cpb.org/economicresponse/letter_ketc.html (describing the community impact of the program and claiming “[w]e have an unparalleled opportunity to see [public service media] stations emerge as a significant and relevant force in their local community”). The *Facing the Mortgage Crisis* web site serves as a local online resource and social network offering information on housing, health care, financial counseling, emergency services, and family support for individuals impacted by the economic crisis. CPB is awarding grants to stations that use the St. Louis model to create similar projects in their own communities. *Facing the Mortgage Crisis*, NAT'L CTR. FOR MEDIA ENGAGEMENT, <http://www.mediaengage.org/mortgagecrisis.cfm> (last visited Dec. 21, 2010); see also FACING THE MORTGAGE CRISIS, <http://facingthemortgagecrisis.org/> (last visited Dec. 21, 2010) (describing a similar program in Detroit).

208. *Emergency and Community Health Outreach (ECHO)*, THE COMMUNICATION INITIATIVE NETWORK, <http://www.comminet.com/en/print/310018> (last visited Dec. 21, 2010). In this case, the spillover effects for the whole community of diffusing information to

The layered model of public service media helps us to conceptualize how different entities might work together, or work separately, to increase the relevance of information and thereby increase connection to public service media content. What have emerged as best practices in the public service media sphere involve multiple distribution platforms and multiple partnerships.²⁰⁹ In both cases, the practices seek to take narratives and information to people through a number of channels, including the Internet,²¹⁰ mobile phones,²¹¹ schools,²¹² key “opinion leaders,”²¹³ or community groups and institutions.²¹⁴ Across information networks, multiple individuals and entities can act as nodes of engagement. Individuals in a particular geographic community or community of interest can radiate information by informing and engaging their followers, fans, and friends.²¹⁵ These individuals, identified as “opinion leaders” in the

all is clear because “when a serious disease outbreak happens, no one can be fully protected unless everyone is first fully informed.” *Id.*

209. See BEST PRACTICES, *supra* note 65, at 26 (recommending more multiplatform collaborations, which “combine the strengths, skills, resources, and constituencies of the partners in order to amplify impact and increase depth and breadth of coverage”); PUBLIC MEDIA 2.0, *supra* note 2, at 8, 22–24 (stating the importance of distribution and coordination with other groups for public service media engagement efforts).

210. NPR.org, for example, reached over 11 million visitors in November 2009, a 14% increase from the previous year; the NPR Music web site has over a million visitors a month. NPR Comments, *supra* note 108, at 2.

211. See, e.g., CARLY SHULER, POCKETS OF POTENTIAL: USING MOBILE TECHNOLOGIES TO PROMOTE CHILDREN’S LEARNING 18, 43 (2009), available at http://www.instituteofplay.org/content/pockets_of_potential.pdf (describing the PBS KIDS Ready to Learn Cell Phone program, which delivers educational parenting tips, audio messages, and literacy-related *Sesame Street* videos to lower-income households); *id.* at 41 (describing iREAD, a Sesame Workshop mobile learning project that develops highly personalized, media-based literacy intervention systems for individual students); Press Release, NPR Launches New Breed of News App, Available Now in iTunes App Store (Aug. 16, 2009), available at http://www.npr.org/about/press/2009/081609.NPRNews_iPhoneApp.html (announcing NPR iPhone news applications, some of which offer simultaneous listening and reading services).

212. See, e.g., Association of Public Television Stations, *supra* note 160, at 2–3 (describing The Teacher’s Domain, a free collection of over 2,000 standards-based digital resources for students and teachers developed by Boston public station WGBH and drawing from trusted sources such as *NOVA* and *A Science Odyssey*); see also TEACHER’S DOMAIN, <http://www.teachersdomain.org/> (last visited Dec. 21, 2010).

213. See, e.g., BEST PRACTICES, *supra* note 65, at 39–42 (identifying key political blogs that essentially serve as opinion leaders, inspiring civic participation, engagement, and learning); PUBLIC MEDIA 2.0, *supra* note 2, at 14–15 (describing engagement efforts with online communities and key websites and outlets).

214. See, e.g., BEST PRACTICES, *supra* note 65, at 27–30 (describing public service media projects that emphasize collaboration with other groups and institutions, such as public libraries and veterans’ service organizations).

215. See Christine H. Roch, *The Dual Roots of Opinion Leadership*, 67 J. POL. 110, 110–11 (2005) (explaining the concept of opinion leadership and reviewing recent research). See generally ELIHU KATZ & PAUL F. LAZARFELD, PERSONAL INFLUENCE: THE PART PLAYED BY PEOPLE IN THE FLOW OF MASS COMMUNICATION (2d ed. 2005); PAUL F. LAZARFELD ET AL., THE PEOPLE’S CHOICE (3d ed. 1988); Elihu Katz, *The Two-Step Flow of Communication*, 21 PUB. OPINION Q. 61 (1957); Robert K. Merton, *Patterns of Influence*, in COMMUNICATION RESEARCH 180 (Paul F. Lazarsfeld & Frank N. Stanton, eds., 1949).

political science and communications literatures, act as information brokers who expose their networks to information that would otherwise go unattended.²¹⁶

Opinion leaders may have no formal relationship to public service media curators, creators or infrastructure providers. Instead, they may operate in a completely modular way, taking public service media content and using it in ways that speak to their communities. Alternatively, public service media entities may partner with opinion leaders within communities to foster deeper engagement with public service media content. One approach is the Voices & Choices initiative created by the Fund for Our Economic Future, an informal collaboration of philanthropic organizations and individuals attempting to improve the economic competitiveness of Northeast Ohio.²¹⁷ The project integrated several models of public engagement, including modern town hall meetings, online dialogue, interviews, and community conversations.²¹⁸ In response to the more than 20,000 Northeastern Ohio residents that participated in these discussions, village mayors and city leaders began to see regional collaboration and dialogue as a priority.²¹⁹

Another example comes from Kentucky. After Kentucky received some of the nation's poorest health status indicators, public radio station KET also teamed up with Foundation for a Healthy Kentucky to launch *Be Well Kentucky*, a community-media collaboration to raise public perception of individual well-being and its impact on community health.²²⁰ The collaboration repurposed a 13-part public television series on health promotion into online toolkits, offered health literacy workshops for children, families, and minority populations, and tapped community leaders from around the state to network and share their ideas and experiences implementing the programs with each other.²²¹

In the same ways that public service media policy can motivate advances in collaboration, networking, and innovation in the content and curation layers, it can do so in the connection layer. The reforms we propose below would increase incentives for the creation of strategic partnerships that engaged communities and individuals in public service media content. The goal of these reforms is engagement, as measured by new kinds of performance standards and

216. See Matthew C. Nisbet & John E. Kotcher, *A Two Step Flow of Influence?: Opinion-Leader Campaigns on Climate Change*, 30 SCI. COMM. 328, 328–29 (2009).

217. *Voices & Choices*, AM. SPEAKS, <http://americaspeaks.org/projects/case-studies/voices-choices/> (last visited Dec. 21, 2010); *About the Fund*, FUND FOR OUR ECON. FUTURE, <http://www.futurefundneo.org/en/about> (last visited Dec. 21, 2010).

218. *Voices & Choices*, *supra* note 217.

219. *Id.*

220. Association of Public Television Stations, *supra* note 160, at 6.

221. *Id.*; THE DIGITAL FUTURE INITIATIVE PANEL, *supra* note 181, at 82.

metrics, and would not be merely to increase the audience for public service media content. Rather, it would be to increase the utility of public service media content to society.

IV. POLICY REFORM FOR PUBLIC SERVICE MEDIA

A public service media system operating according to the logic of the layered model would yield greater efficiencies, greater diversity and inclusion, and greater impact. Significant changes in public service media practice and governance are possible without legislative initiative, and many of these are underway.²²² These advances, however, will not go far enough so long as the Public Broadcasting Act of 1967 remains substantially unchanged. As discussed in further detail below, existing law privileges a particular distribution technology — broadcasting — and assigns all federally funded network functions (infrastructure, creation, curation, and connection) to broadcasters. It creates few incentives for public broadcasting stations to unbundle their functions and network effectively with other entities throughout the layered network structure. For public service media to operate in newly configured media networks will require a law that recognizes the modular structure of digital networks and exploits these characteristics to serve the public better. Below are two specific recommendations to further the development of that law.

A. Amend the Public Broadcasting Act To Become the Public Service Media Act

The Public Broadcasting Act specifies in great detail how CPB should distribute the federal monies appropriated for public service media. Under the Act, CPB is required to fund broadcast stations in

222. See, e.g., Memorandum from Michael Levy to Ernest Wilson, Chairman, CPB Board of Directors Digital Media Committee, Aspen Institute Roundtable on Public Service Media (Mar. 1, 2009), available at <http://www.cpb.org/events/aspen2009/Aspen2009ReportToBoard.pdf> (summarizing 2009 Aspen Roundtable discussions on proposals for enhancing public service media, including revising business models and media platforms to account for digital environments and networks); Ernest Wilson, Acceptance Speech as Chair of CPB Board of Directors, at 3 (Sept. 16, 2009), available at http://www.ernestjwilson.com/uploads/Chairman_Wilsons_Remarks_-_Sept_16,_2009.pdf (describing the new CPB agenda of “dialogue, diversity, and digital”); *Aspen Institute Roundtable on Public Service Media*, CORP. FOR PUB. BROAD., <http://www.cpb.org/events/aspen2009/> (last visited Dec. 21, 2010); *Goals and Objectives*, CORP. FOR PUB. BROAD., http://www.cpb.org/aboutcpb/goals/goalsandobjectives/goalsandobjectives_full.html (last visited Dec. 21, 2010) (articulating updated goals and objectives for content and services, innovation, leadership, and support for public service media); PUBLIC RADIO IN THE NEW NETWORK AGE, *supra* note 2 (presenting findings and recommendations from the Public Radio Audience Growth Task Force to increase the reach of the public radio system by, among other things, exploiting the opportunities of digital networks).

preference to content creation, curation, and connection originating outside of the broadcast system and other, non-broadcast, modes of distribution.²²³ The statute requires that about 70% of all CPB annual funding for public broadcasting be distributed to public television and radio stations.²²⁴ The Act further dictates that approximately 19% of the annual appropriation goes for “public television programming,”²²⁵ and approximately 2% for “public radio programming.”²²⁶ While non-broadcast entities are eligible for this funding, the use of technology-specific language to characterize the content means that producers must try to wedge digital content into an analog conception of linear broadcast programming and strain to create older media formats or hooks.²²⁷

The statutory funding allocation creates an over-investment in broadcast infrastructure, an under-investment in content, and an anachronistic bundling of network functions. CPB community service grants to broadcast stations are unrestricted. However, CPB grant criteria demanding significant investments in broadcast transmission have the effect of yoking the grants to the physical broadcast infrastructure.²²⁸ With respect to television stations, whose broadcast infrastructure is more costly than radio, infrastructure expenses (characterized as “content distribution and delivery” expenses) constitute sixteen to nineteen percent of station budgets. This amounts to \$2.9 million to \$27.3 million in annual expenditures per public

223. See 47 U.S.C. § 396(k) (2006). Although CPB funding constitutes a relatively small portion of funding for many public television stations, its support of noncommercial media activities often provides critical leverage for other funding and the necessary breathing room to experiment with business and creative models. See, e.g., Silver et al., *supra* note 2, at 278 (describing CPB’s funding of experimental station-based online grants that will facilitate the development and incorporation of new technologies into public broadcasting); PUBLIC MEDIA 2.0, *supra* note 2, at 21–24 (describing the importance of adequate government funding for experimenting in public service media 2.0 projects).

224. See 47 U.S.C. § 396(k)(3)–(7) (2006) (describing formula for calculating allocation of funding and delineating criteria for funding eligibility). This does not include the additional appropriations dedicated to broadcast equipment upgrades. See, e.g., Larry Sidman, APTS President, Speech at the 2010 NETA Conference (Feb. 2010), available at <http://www.netaonline.org/2010/2010%20PPTs/APTS-SidmanSpeech.pdf> (discussing \$25 million in grant funds that are being made available for the Public Telecommunications Facilities Program to support telecommunications infrastructure).

225. 47 U.S.C. § 396(k)(3)(i)(III), (ii)(II) (2006).

226. *Id.* § 396(k)(3)(i)(V), (iii)(II).

227. See, e.g., *The Program Challenge Fund*, CORP. FOR PUB. BROAD., <http://www.cpb.org/grants/07challengefund/> (last visited Dec. 21, 2010) (inviting anyone to apply, including non-broadcast entities, but designing the grant to be for broadcast-oriented “series and feature length documentaries”).

228. See *FY2010 Radio Community Service Grant General Provisions & Eligibility Criteria*, CORP. FOR PUB. BROAD., https://isis.cpb.org/ISIS_Help_Files/FY2010_Radio_CSG_General_Provisions.htm (last visited Dec. 21, 2010) (setting requirements such that only certain stations that provide strong broadcast signals — over a 50-mile radius, for example, or to at least two-thirds of its coverage area population — are eligible to apply for funding).

television station licensee on broadcast delivery of content.²²⁹ Licensees spend about the same amount on content creation.²³⁰

Heavy federal investment in broadcast infrastructure was appropriate in the 20th century. But this financial commitment to broadcast transmission technology, in preference to other kinds of infrastructure or other functional layers of the public service media network, is no longer desirable or necessary. Both the CPB and public service media entities need more flexibility to invest in multiplatform content creation, curation, and community connections. Moreover, public service media entities that are not public station licensees — that operate in an unbundled fashion in other layers of the network — should be eligible for CPB funding.

The American system of public broadcasting is notoriously underfunded.²³¹ Federal appropriations of about \$400 million a year are absurdly small, especially given the emerging consensus in journalism circles that public service media should compensate for shortfalls in the production of commercial journalism.²³² To be sure, any new Public Service Media Act should, at minimum, preserve the meager funding for public broadcasters, especially as they work to leverage value derived from the broadcast infrastructure layer to other functional layers in the network. To this funding should be added an allocation for unbundled digital content creation, curation, and connection initiatives. “Digital” ought to be a category of public service media activity alongside broadcasting.²³³

Defining this larger set of public service media entities that would be eligible for digital funds is difficult, but need not frustrate a reconstruction of the public service media network or applicable policy. There are entities that share the public service media service function and are creatures of federal media policy in one way or another. These would include cable public access channels²³⁴ and

229. Goodman, *supra* note 58, at 1.

230. Ex Parte Letter of Ellen P. Goodman to Blair Levin, Executive Director, Omnibus Broadband Initiative, A National Broadband Plan for Our Future, GN Docket No. 09-51 (Fed. Comm’n Comm’n Dec. 29, 2009).

231. MCCHESENEY & NICHOLS, *supra* note 12, at 191–97 (discussing the underfunding of U.S. public service media, especially relative to international counterparts); Silver et al., *supra* note 2, at 260, 266–68 (describing the “chronic underfunding” of U.S. public service media which, at \$1.35 per capita, ranks as among the lowest-funded public service media systems in the world).

232. See MCCHESENEY & NICHOLS, *supra* note 12, at 86, 192 (describing how “only a fraction” of public service media revenues, which have remained static over the past ten years, have gone to journalism and explaining how government intervention could help achieve “healthy journalism”).

233. See NATIONAL BROADBAND PLAN, *supra* note 3, at 303–04 (“As broadband adoption and utilization continue to grow, public media will require greater and more flexible funding to support new digital platforms.”).

234. See Jerome A. Barron, *Access to the Media*, 35 HOFSTRA L. REV. 937, 949–50 (2007) (describing how many localities have required cable operators to have public access channels); Ed Foley, Comment, *The First Amendment as Shield and Sword: Content*

noncommercial channels that operate on satellite capacity set aside for public service media purposes.²³⁵ Beyond this, there are noncommercial journalistic entities, such as Pro Publica,²³⁶ Voice of San Diego,²³⁷ and The Center for Public Integrity,²³⁸ that share many of the service goals of federally funded or federally enabled media entities.²³⁹ Ultimately, we believe any statutory definition of public service media entities would suffer from over- and under-inclusiveness as well as predictable obsolescence. We believe a better course would be to define particular service characteristics of a public service media entity (such as noncommercial, objective and balanced, and primarily informational and educational) and give the CPB — renamed the Corporation for Public Service Media²⁴⁰ — discretion to make grants to appropriate entities in a manner that is entirely transparent to the public.

Constraining the CPB's discretion in all cases should be a requirement that grantees function as part of a meaningful network. This means for public service media networks what it means for telecommunications and computer networks: interconnecting across nodes of distributed and modular activity such that each node has its own delineated purpose and function, but also self-consciously works with other nodes within and between each layer. Rather than connection to a network simply in name, the distinguishing twin features here are that public service media entities would be both intentional and collaborative in working with other entities as part of a

Control of Peg Access Cable Television, 27 CAP. U. L. REV. 961, 966–67 (1998) (reviewing the history of FCC regulations authorizing the requirement of public access cable channels).

235. 47 U.S.C. § 335(b)(1) (2006) (authorizing the FCC to require satellite services to set aside a portion of channel capacity “exclusively for noncommercial programming of an educational or informational nature”); *Time Warner Entm’t Co. v. Fed. Comm’n*, 93 F.3d 957, 973–77 (D.C. Cir. 1996) (upholding the constitutionality of satellite set-aside requirements); Michael M. Epstein, *Spectrum Set-Asides as Content-Neutral Metric: Creating a Practical Balance Between Media Access and Market Power*, 35 HOFSTRA L. REV. 1139, 1155–56 (2007) (describing public access requirements for satellite providers). Link TV, which produces a *Mosaic* program summarizing TV news programming in the Middle East, is one example of a direct broadcast satellite set-aside channel for nonprofit use. Pat Aufderheide, *The 1996 Telecommunications Act: Ten Years Later*, 58 FED. COMM. L.J. 407, 410 (2006); LINK TV, <http://www.linktv.org/> (last visited Dec. 21, 2010).

236. PROPUBLICA, <http://www.propublica.org/> (last visited Dec. 21, 2010).

237. VOICEOFSANDIEGO.ORG, <http://www.voiceofsandiego.org/> (last visited Dec. 21, 2010).

238. THE CENTER FOR PUBLIC INTEGRITY, <http://www.publicintegrity.org/> (last visited Dec. 21, 2010).

239. See generally COWAN & WESTPHAL, *supra* note 10, at 2–3 (noting instances of, and suggesting improvements to, distribution of federal funds “to support the gathering and dissemination of news”).

240. Cf. DOWNIE & SCHUDSON, *supra* note 2, at 87 (advocating a renaming of CPB the “Corporation for Public Media”); Strayer, *supra* note 101, at 4 (same). CPB has already begun considering the idea. Wilson, *supra* note 222, at 2 (“[O]ne step to consider is the possibility of changing our name to better reflect our current reality and our future directions and ambitions to become the Corporation for Public Media.”).

larger, coherent whole. In addition to funding digital networks, the Public Service Media Act should incent their most effective operations in service of the goals of public service media.

B. Mandate Interconnection Throughout the Network

Part II above identifies the value that networks can generate when entities carrying out discrete network functions are able to interconnect with each other, providing for more sources of information and better access to that information. The Public Broadcasting Act recognized the value of interconnection. Indeed, one of the purposes of the CPB was to provide “interconnection systems” for broadcast stations so that they would have access to national programming.²⁴¹ Beyond this, the CPB has funded and facilitated informal networking by identifying best practices among public broadcasting stations and encouraging partnerships at various layers in the network.²⁴²

The concept of interconnection, however, is grossly underdeveloped in a Public Broadcasting Act that preceded the possibilities and needs of digital networks. Consider, for example, the Public Service Media Platform discussed in Part III.C above as an example of public service media curation. The platform provides a repository for public service media content and a structure, eventually, for open access to such content by other creators, users, curators, and connectors. It serves as a new form of interconnection if we conceptualize the nodes in the network not only as broadcast stations, but also as individuals and other public service media entities. And yet this interconnection platform has no place in the Public Broadcasting Act, no funding source, and no requirements that grantees support it.

Indeed, the Public Broadcasting Act neither specifically supports nor encourages any type of interconnection outside of the satellite interconnection system. There are a number of promising partnerships in public service media that leverage public investments in media content and infrastructure to maximize audience reach, relevance, and service. Some of these partnerships involve public broadcasting stations working together; others involve collaborations between broadcasting stations and nonprofit community institutions or

241. 47 U.S.C. § 396(g)(1)(B) (2006).

242. See, e.g., *Public Media 2.0: Digital Media Activities*, CORP. FOR PUB. BROAD., <http://www.cpb.org/publicmedia2.0> (last visited Dec. 21, 2010) (providing information on CPB-funded studies on best practices in public radio and digital public service media); *Partnership for a Nation of Learners*, CORP. FOR PUB. BROAD., <http://www.cpb.org/partnershipforlearners> (last visited Dec. 21, 2010) (describing a funding initiative encouraging public broadcasters to partner with museums and libraries to address the needs of local communities).

journalism start-ups.²⁴³ These partnerships happen largely in spite of, not because of, the incentives created by the Public Broadcasting Act.

At least in the short term, public broadcast stations have incentives to resist collaborations both within and across functional layers. Especially in light of recent sharp declines in funding for public broadcasting,²⁴⁴ stations jealously guard their relationships with funding sources and may reject collaborations that threaten to dilute support for particular institutions.²⁴⁵ All public service media entities would like access to more content, but may not want to contribute their content to others. There are obvious tensions between preserving the value of the public broadcasting “brands” and using those brands to provide curatorial services across the network for multiple sources of content. Public broadcasters with digital multicast channels may be reluctant to allow other content providers to access their infrastructure, even when these channels are underutilized.²⁴⁶

These disincentives to cooperate with other public service media entities and to interconnect with independent creators, curators and connectors should be addressed in the new Public Service Media Act and in CPB grant-making. In order to be eligible for public service media funding, prospective grantees should be incentivized to contribute content to the Public Service Media Platform or other similar curatorial and archival services. Providers of both infrastructure and content should be incentivized to provide infrastructure access on reasonable terms to other content providers, and content providers of all kinds should be incentivized to collaborate in the production of news, narratives, and other information.²⁴⁷ Finally, public service media content providers should

243. See, e.g., PUBLIC MEDIA 2.0, *supra* note 2; BEST PRACTICES, *supra* note 65; GUPTA CONSULTING, *supra* note 65. For a well-organized collection of new, community-based start-ups in journalism, see *Promising Community News Sites*, KNIGHT DIGITAL MEDIA CTR., http://www.knightdigitalmediacenter.org/leadership_blog/comments/20100202_promising_community_news_sites_-_an_update/ (Feb. 4, 2009).

244. See Sidman, *supra* note 224 (reporting a significant revenue decline for public television stations from non-federal sources); Melissa Maynard, *The Squeeze on Big Bird*, STATELINE.ORG (Mar. 4, 2010), <http://www.stateline.org/live/details/story?contentId=465517> (describing severe cuts in public broadcasting funding, including a \$36 million decline in CPB state and local funding for public television stations nationwide and an additional \$45 to \$49 million in cuts for the next fiscal year).

245. See, e.g., Jill Drew, *NPR Amps Up*, COLUMBIA JOURNALISM REV., Mar./Apr. 2010, at 33 (citing one station manager’s doubts over NPR’s collaborative efforts, suspecting that such efforts may potentially upset their funding base and viewing the scene as “inherently competitive”).

246. See, e.g., Jeremy Egnor, *World and Go! Streams Flow into PBS Plans*, CURRENT Apr. 3, 2006, available at <http://www.current.org/dtv/dtv0606multicast.shtml> (describing how most of the new shows on the Go! Multicast channel will be available only to stations that pay for the channel).

247. See, e.g., *Request for Proposals: Strengthening Local Journalism: Round Two Targeting the South and Northwest*, CORP. FOR PUB. BROAD., http://www.cpb.org/grants/252/cpb_strengthlocal_rfp.pdf (Mar. 3, 2010) (seeking grant proposals for establishing Local Journalism Centers, where public broadcasting entities can collaboratively create

be incentivized to make content available in useful ways to connectors so that the content becomes maximally relevant to the communities it is meant to serve. CPB could require its grantees, for example, to report quantitatively and qualitatively report how they are meeting the information needs of their specific communities.²⁴⁸ This would encourage greater accountability, transparency, and prioritization of local service among individual stations.

V. CONCLUSION

Public service media have the potential to meet some of the nation's most critical information needs, but only if public service media networks are reconfigured for more collaboration, innovation, and service in a networked environment. This Article shows how the Public Broadcasting Act and associated policies stand in the way of such progress. The law imposes an outdated analog structure on public service media, assuming that discrete network functions such as infrastructure, creation, curation, and connection should be bundled in a single firm using a distinct technology. The law further assumes that networking or interconnections should run almost entirely between hub and spoke, rather than throughout the network.

The layered approach that we develop here, based on models of telecommunications and computer networks, provides guidance for reconfiguring public service media policy and networks. We model four network functions derived from the original purposes of the Public Broadcasting Act. The model depicts a wide array of public service media nodes, each undertaking a particular network function and collaborating or interconnecting effectively in furtherance of these purposes. This type of network configuration promotes the kinds of innovation and diversity that make any communications network robust and that are particularly important to the mission of public service media. Public service media networks must be updated to accommodate and exploit digital technologies, but existing law stands in the way.

high-quality journalism). Argo, a new journalism project that encourages stations to submit proposals for deeper online news coverage, is another example. See Argo Press Release, *supra* note 167; Everhart, *supra* note 167.

248. In fact, the CPB recently adopted just such a recommendation after rejecting more powerful mechanisms for encouraging a commitment to local service, including incentive grants for exemplary local service and minimum local service requirements for grant eligibility. CORP. FOR PUB. BROAD., CPB MANAGEMENT'S RECOMMENDATIONS AS REVISED BY THE CPB BOARD (2010), http://64-210-228-75.acumensolutions.com/aboutcpb/leadership/board/resolutions/100922_TV_2010CSG_Recommendations.pdf. See also Resolution of the Board of Directors, Corp. for Pub. Broad., 2010 TV CSG Management Recommendations (Sept. 22, 2010), <http://64-210-228-75.acumensolutions.com/aboutcpb/leadership/board/resolutions/resolution.php?prn=934>.

We have proposed two specific legal reforms that address this disparity. First, Congress should dismantle current legislation that privileges broadcasting over digital and other technologies, and base support of public service media on service characteristics rather than type of entity or technology. Second, Congress should mandate interconnection between public service media entities to allow greater exchange and collaboration within a larger public service media network. These reforms would remake the Public Broadcasting Act into a Public Service Media Act appropriate for the structures of digital networks and the needs of digital natives.

Public Media Policy Reform and Digital Age Realities

by

Ellen P. Goodman

Whither Public Media?

In the early Spring of 2011, it looked again as if American public broadcasting might fall to budget cuts and partisan ire. There had been several highly publicized, albeit ultimately vaporous, scandals at National Public Radio. Lawmakers and pundits who had long begrudged the trickle of federal funding into public media were incensed and loaded for bear – this seemed like a good time to end the federal government subsidy and hobble the service.

Defenders of public media¹ organized campaigns to save the federal funding, as they had done in decades past when there were similar threats to “zero out” funding. What this meant was bringing Big Bird up to Capitol Hill and reminding lawmakers that many people in rural “red” states loved public television and radio and these would be the people most hurt by an end to federal support.

While the arguments were familiar, times had changed. A bipartisan debt reduction commission had recommended the axe for public media subsidies. And the explosion of new digital media options made it less obvious what the rationale for public media was and why subsidies were needed for radio and TV stations, much less apps and websites connected to PBS or NPR. In the end, public media entities held on to most of their federal funding during 2011. But many states across the country ended or drastically reduced their support for public media, motivated less by political controversy than by crushing budgetary pressures.

Perhaps the most important revelation of these policy spasms was that those who practice and support public media lacked a coherent narrative about why public media still matters in the digital age. There were habitual arguments about kids and documentary programming on PBS, the sobriety of NPR news, and the rarity of community-based broadcast outlets and service to rural populations. There were appeals to efficiency, with talk about large returns on investment for public dollars in public media. There were charts showing how meager the investment actually was when compared to what citizens in peer countries pay for public media. To be sure, the quickly assembled campaigns showed grassroots support and passion for public media. But the rationales for public

¹ By public service media, I refer generally to nonprofit media infrastructure and content networks that are supported by some kind of public subsidy, whether that is tax relief, a federal appropriation, a spectrum set-aside, or some other regulatory intervention. At the center of public media are the legacy public broadcasting stations and networks, but also cable PEG channels, some low power and community radio stations, and new non-profit digital news sites among other entities.

media seemed both disconnected from reality and scarcely evolved since the public broadcasting system began in the 1960's.

There is a rationale for public media, although probably not as currently configured. The rationale is rooted in a narrative about innovation – about the kinds of open media platforms and educational content that are necessary inputs to innovative practices. What kinds of structures and practices are best suited to promote innovation in the creation and distribution of information? What sorts of investments in infrastructure, technology, media content, and media-related community services are under-supplied by the market?

Instead of a product delivery model, which looks to particular media products as outputs, an innovation frame values functional performance – process, not product. A forward-looking innovation frame would define public media not by a set of institutions (e.g., broadcasters) and their products, but according to specific functions that fill market gaps.

There are elements of the American public media system that are already well suited to the innovation frame. It is a system that is decentralized, with hundreds of TV and radio stations rooted in their communities. It has diversified funding sources, the vast majority of which are private and widely distributed. It has periodically developed and incubated experimental communications technologies and techniques that were ultimately widely adopted. It has had success collaborating with national and local educational institutions and non-profits, advancing the public service missions of other entities through media. The decentralized qualities and collaborative traditions of U.S. public service media institutions differentiate American public media from its better-funded European counterparts. While these attributes present governance and sustainability problems, they hold promise for the kind of innovation that research suggests thrives in an environment of diversity and disruption.

If we were to redesign public media in the digital age in order to maximize innovation – as I think we should -- we would probably want to keep a decentralized structure. Indeed, we would want to accelerate some of its more centrifugal features. But we would need to do much more, beginning with: (1) a delineation of public media functions that track the architecture of digital networks and the goal of innovation, and (2) an overhaul of the Public Broadcasting Act of 1967² to support this functional approach, liberating the support of public media from a particular distribution platform (broadcasting) and institutional structure (existing public broadcast entities).

Taking Account of Market Failure and Network Layers

The historical justification for public service media is rooted in the concept of market failure. Information has public good characteristics in that it can be consumed by one without diminishing its value to another, and it often can be exploited just as easily by one who does not pay for it as by one who does. This economic reality reduces incentives of information producers to produce and distribute information. Producers of certain kinds of information – information that is most likely to throw off positive effects on society – are

² 47 U.S.C. § 396 (2006).

subject to another disincentive on top of the ordinary public goods problem with information. This is the problem of market failure.

The market works very well, indeed increasingly well, in creating exchanges for people to purchase (either in cash or with their attention) the information they want for personal gain. But individual willingness to pay for a product will typically fail to reflect the spillover value of that product to society.³ Such spillover values may take the form of a better informed and educated public, more accountable government and business sectors, more robust cultural and artistic production, more social cohesion, and more innovation in the informational sphere.

The promotion of spillover value, under-produced by the market, is a classic justification for government investment in basic research in the sciences. Public service media is the equivalent in the informational sphere (along with support for the arts, culture, and education). Long before the Public Broadcasting Act was passed in 1967, the FCC had set aside TV and radio channels for noncommercial use. The idea was that commercial broadcasters were never going to produce certain kinds of content that served the public. Educational programming was the paradigmatic example.

In addition to market failure in the provision of information, there was a recognition – borne out by observation – that commercial broadcasters were not interested in providing service to very small markets. The relatively small audiences could not support the costs of running broadcast infrastructure, in addition to the costs of developing market-specific content. So it was that public broadcasting was intended not only to produce content for under-served populations, but also to provide communications infrastructure in the form of broadcast services to underserved markets (often rural). The set-aside of noncommercial radio frequencies encouraged land grant universities and other community institutions to provide those services.

In the decades since the establishment of public broadcasting, we've lost sight of where the market failures are on both the content and infrastructure sides, and what kinds of policy interventions are necessary to supplement the market. Public media – especially public broadcasting – have been beset by their own market dynamics and market failure. They have come to produce programming for the relatively small population segments that provide most of their financial support. Sometimes, this results in filling market gaps, but not always, and not all of them. In some cases, the current structure has produced unique service to rural areas, but it has also produced duplicative service in big metropolitan areas. The assaults on, and defenses of, *All Things Considered* and *Big Bird*, as representative of public media, make for good political drama, but they really miss the point. Specific products will always have proponents and detractors. The system as a

³ A “spillover” is a cost or benefit imposed on people other than the producers and consumers of a good or service. ROBERT J. CARBAUGH, CONTEMPORARY ECONOMICS: AN APPLICATIONS APPROACH 180 (2010). I use the term here to describe positive benefits. See, e.g., Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257 (2007) (defining spillovers as “uncompensated benefits that one person’s activity provides to another”).

whole should be judged by whether it is structured to support the kind of welfare-enhancing innovation and access that the market is likely to under-produce.

The twentieth century vision of public service media was, in keeping with the media structures of the day, oriented around broadcast institutions: national networks and local station affiliates. This was a structure characterized by a specific transmission technology (over-the-air broadcasting) and powerful institutions that produced or organized content specifically for that platform (networks). On the other hand, the twenty-first century media ecosystem is organizing itself around functions rather than institutions or specific transmission platforms. There are content creators. There are “pipe” providers. There are server farms, backbone providers, application developers, content aggregators and other intermediaries. Increasingly, these entities operate across technological platforms. They operate in formal or informal partnership with a wide range of media players, including Twitter and Facebook, traditional content networks and mobile platforms.

In this world, market failures may occur at any layer of the network. Recent FCC investigations shed some light on where market failures in the communications value chain may reside. The 2010 National Broadband Report identified holes in broadband connectivity.⁴ The 2011 Report on the Information Needs of Communities, prepared by a special FCC task force, identified local investigative reporting as another area of market failure.⁵ The fact that the FCC in cooperation with private philanthropic foundations has tried to incentivize the production of “apps for communities,” as have local municipalities (e.g., Washington D.C.), suggest that the market may not incentivize optimal investment in digital applications that enhance public accountability and service.⁶

The identification of likely areas of market failure raises the question of whether we have a system of public media that is designed to address them. We do not. The structure of public media that we have, including public broadcasting, cable PEG channels, and the satellite set-aside for noncommercial channels, is badly out-of-date. We can focus just on the Public Broadcasting Act to see that the law privileges a transmission technology – *broadcasting* – that is moving to the margins. And the law privileges a set of institutions -- *legacy broadcasters* -- that may not be in the best position to supplement market goods and services. The law definitely needs a redo.

A Public Media Legislative Overhaul

There is some urgency to the need to rethink public media. As we look forward to the television spectrum going up for auction some time this decade, it’s important to remember that 20% is in the hands of noncommercial licensees. This spectrum was set aside, like parkland, for a public purpose. Whether those spectrum assets produce windfalls for a few lucky nonprofits, or are redeployed for other public purposes, should be of interest to all. Independent of the fate of noncommercial spectrum, the issue of public service media fits

⁴ FED. COMM’NS COMM’N, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN (2010).

⁵ STEVEN WALDMAN, ET AL., INFORMATION NEEDS OF COMMUNITIES: THE CHANGING MEDIA LANDSCAPE IN A BROADBAND AGE (2011).

⁶ <http://appsforcommunities.challenge.gov> (last visited Jan. 24, 2012).

squarely into the larger communications policy discussion about how laws constructed around legacy analog services must be reformed to reflect digital realities.

Elsewhere, I have identified some of the reasons why we should transform the Public Broadcasting Act into the Public Media Act and some of the changes that would be necessary.⁷ Digital media market failures justify certain kinds of public and noncommercial interventions. In reforming the structure and target of these interventions, we should attempt to preserve the cultural capital that public media institutions embody in a space outside of both the state and the market. Polls consistently show that Americans across all demographics respect certain public media institutions more – sometimes far more -- than other institutions, including courts, legislatures, schools, and so on. At the same time, policy inertia must not stand in the way of shaking up the ways in which public subsidy and private support are channeled to the most productive projects.

At the most general level of reform, the focus of public media support should be on “innovation infrastructure.”⁸ We can assume that certain forms of public service innovation will require investments in research and development as well as technological and economic support to scale the innovations. Public broadcasting at its best was a place for this kind of innovation, and the 20th century system made especially notable contributions in children’s programming, educational content, and access technologies (e.g., closed captioning). No one can predict what innovations the future will require. But we can expect needs to arise in the areas of digital applications and other content, digital platforms and delivery systems, cloud computing, and software to fill niches that the market does not serve in order “to ensure that all citizens of the United States have access to public telecommunications services through all appropriate available telecommunications distribution technologies.”⁹

Today’s public media systems in the U.S. are in some ways well-suited to address these needs. They are already decentralized and distributed – a hallmark of digital networks. They already have strong local community connections and are accountable to these communities. They already have working business models based on membership support – models that other nonprofit and for-profit media entities seek to emulate. But in other ways, the existing systems are too encumbered with redundancies, governance problems, mission confusion, and misbegotten incentives to achieve the lofty goals of the Public

⁷ Ellen P. Goodman & Anne H. Chen, *Modeling Policy for New Public Media Networks*, 24 HARV. J. LAW & TECH. 111 (2010).

⁸ WALDMAN, INFORMATION NEEDS OF COMMUNITIES at 359. The Report listed as an example the possibility of creating a “public meeting cloud” to provide a low-cost way to archive and share video of local, state and national government meetings. It quoted Eric Newton, Vice President of the Knight Foundation, observing that, “[i]f a tech fund systematically unleashes open source software applications and the technology needed to operate them, and grants money for code, coders and computers to news organizations across the country, it could spread public media innovation faster into new groups and deeper into existing ones, and create nothing less than a news renaissance in America.”

⁹ 47 U.S.C. 396(a)(1).

Broadcasting Act. The good and the bad were detailed in the 2011 Report on Information Needs of Communities.¹⁰

A re-worked Public Media Act would go some way to correct the misalignment between policy interventions and public needs. One of the unfortunate casualties of the public broadcasting funding battle was “digital transition” funding.¹¹ This was a funding source – in the range of \$35 million a year for the past ten years -- separate from the annual appropriation that goes to public broadcasting stations. The digital funding was used for innovative digital technologies that opened up public media platforms to new voices. It was used to start a project to digitize vast quantities of content from many sources and make them available to the public in an “American Archive.” And it was used to help create some of the most popular podcasts and apps, spurring new ways of thinking about distribution.

With this funding gone, it becomes even more apparent that the current funding formulas leave very little room for research and development or new technology investments. Instead, the law rigidly allocates funds according to technology (radio and television) and directs funds to stations without regard to performance and without creating incentive for risk-taking and innovation. The result is an over-reliance on the broadcast platform, redundant infrastructure, and the failure to support collaborations, technologies and projects outside of the broadcast network-affiliate structure.

A re-write of the Public Broadcasting Act should address these problems. Ideally, the new approach would be technology-neutral and sensitive to the ways in which digital networks operate, with different functions (such as content creation and transmission) carried out in a modular way at different network layers. I will address here just two desirable reforms.

A new Public Media Act should redefine public media infrastructure so that it includes not only broadcast transmission, but also digital distribution technologies and platforms. Under current law, about 70% of all federal annual funding for public media must be distributed to public television and radio stations. And another almost 20% is pegged for television programming.¹² The use of technology-specific language reflects efforts to satisfy an analog conception of linear broadcast programming and undermines efforts to innovate for digital platforms. The statutory funding allocation also creates an over-investment in broadcast infrastructure. Heavy investment in broadcast infrastructure was appropriate in the 20th century. But this financial commitment to broadcast transmission technology, in preference to other kinds of infrastructure or other functional layers of the public service media network, is no longer desirable or necessary.

What really constitutes what we might call public media infrastructure – noncommercial communications infrastructure maintained in the public interest to promote access and expression -- goes way beyond the network of public broadcasting facilities, though they

¹⁰ WALDMAN, INFORMATION NEEDS OF COMMUNITIES, Chapters 6-15, 30.

¹¹ *Budget Agreement Cuts Three CPB Funds, Leaves NPR Intact*, Current (Apr. 12, 2011), <http://currentpublicmedia.blogspot.com/2011/04/budget-agreement-cuts-three-cpb-funds.html>

¹². 47 U.S.C. § 396(k)(3)-(7) (2011).

are an important part of it. For example, there is the “middle mile” infrastructure connecting community anchor institutions such as libraries, hospitals, and universities, as well as public broadcasters. All of these serve as strategic access points in the community.¹³ The National Broadband Plan recommended that federal and state governments should remove obstacles that prevent these community institutions from serving as broadband anchors, especially in Tribal lands and rural areas.¹⁴ Broadband grants have been made to these institutions and the Universal Service Fund reform for the broadband era upon which the Federal Communications Commission has recently embarked will probably result in more support. A new Public Media Act would require networking and interconnection between its grantees and other public media infrastructure operators. Such an approach would be in keeping with other proposals to reform telecommunications law more generally built on functional rather than technical attributes of telecommunications operators.

Eligibility to receive funding under a new Public Media Act should change and the law should restructure forms of support to reward and incentivize innovation wherever it is to be found. Existing public broadcasters should be eligible to receive grants, but so should others that meet defined criteria. One possibility would be to move from the existing model, which entitles public broadcasters to funding regardless of performance, to a grant model that assists innovative start-ups in a technology and content neutral manner. The Technology Opportunities Program (TOP), located in the NTIA within the Commerce Department, is one such model. It operated between 1994 and 2004, making grants to support demonstrations of new telecommunications and information technologies to provide education, health care, or public information in the public and non-profit sectors. TOP made matching grants to state, local and tribal governments, health care providers, schools, libraries, police departments, and community-based non-profit organizations.¹⁵ This approach is one shared by other governmental grant-making entities (e.g., NIH and NSF) that are intent on promoting innovation.

Conclusion

The main obstacle to public media reform is not the fact that public broadcasting is a political lightning rod. Nor is it a shortage of specific projects that show how public media can enrich a community with information, platforms for creation, and communications infrastructure. The main obstacle to reform is that there is not a political constituency for it. Existing public broadcasters prefer to keep the existing system and existing entitlements. New non-profit entrants may see the possibilities of their innovations if they could be scaled up and networked. However, they are not organized for the political process, and they probably lack unity of vision as to how they fit into the public media ecosystem.

¹³ Comments of American Public Media, *In re* FCC Launches Examination of the Future of Media and Information Needs of Communities in a Digital Age, GN Docket No. 10-25, at 3-4, 12-13 (Fed. Commc’ns Comm’n May 7, 2010).

¹⁴ FCC, THE NATIONAL BROADBAND PLAN at 153.

¹⁵ Technology Opportunities Program, http://www.ntia.doc.gov/legacy/otiahome/top/grants/briefhistory_gf.htm (last visited Jan. 24, 2012).

At the same time, it seems inconceivable that ambitious telecommunications policy reform should ignore the carbuncle of the Public Broadcasting Act in its sweep through the calcified remnants of 20th century regulation. When attention is turned to public media law reform, we should celebrate the decentralized structure of the legacy public broadcasting system, for all its frustrations. It is this very decentralization that other nations are moving towards as they reform their public media structures. At the same time, we should revive the pursuit of innovation that is the principal justification for public media support in the first place.

January 30, 2014

The Honorable Fred Upton
Chairman
House Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Greg Walden
Chairman
House Subcommittee on Communications and Technology
2125 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairmen Upton and Walden:

Thank you for the opportunity to respond to your timely review of communications law. The Internet is an increasingly important part of our economy, and its impact on our daily lives, our culture, and all our industries and institutions is broadening and deepening. A sound legal foundation is crucial to encourage the next waves of investment and innovation, and your review couldn't arrive at a better time.

In addition to brief replies to your five questions (see page 2), we are attaching our recent report called "Digital Dynamism: Competition in the Internet Ecosystem." The report addresses some of your questions explicitly but, more than that, paints a broad picture of Internet technology and business that may inform your work at a foundational level. The report shows the increasing complexity of networks and business relationships, the overlap of firms and services, the rapid pace of innovation inherent in digital technologies, and both the fierce competition and widespread cooperation that characterize the entire arena. At root, the report makes the case that the old way of regulating communications networks is wholly inappropriate for today's Internet, let alone tomorrow's.

My colleagues at the American Enterprise Institute and I have also submitted a separate joint-letter summarizing our views on these topics.

Please don't hesitate to inquire if we can clarify items in our report, support it with further information, or be of service in any other way.

Sincerely,



Bret T. Swanson

Replies to the Committee's Five Questions

1. The current Communications Act is structured around particular services. Does this structure work for the modern communications sector? If not, around what structures or principles should the titles of the Communications Act revolve?

No, the old system was based on segregated networks that (1) delivered, for the most part, single services; and (2) did not compete with one another. Today, multiple, overlapping networks deliver multiple, overlapping services to overlapping groups of consumers, and the nature of each of these components is still shifting. The environment can be characterized as "Everything Over Everything." The definition and regulation of particular distribution mechanisms, services, and content types is thus largely obsolete and counterproductive.

2. What should a modern Communications Act look like? Which provisions should be retained from the existing Act, which provisions need to be adapted for today's communications environment, and which should be eliminated?

Because the industry it aims to govern is so much more complex and interconnected than in the past, a modern Communications Act should be much simpler. The industry- and technology-specific structure of the Act is outdated and does not need to continue.

3. Are the structure and jurisdiction of the FCC in need of change? How should they be tailored to address systemic change in communications?

If we believe regulation of distinct networks and industries is obsolete and counterproductive, the FCC should not be regulating cable, telecom, wireless, and media, under the various Communications Act titles. Furthermore, like our moves away from industry-specific regulation of trucking, airlines, and other network industries, we no longer need an industry-specific regulator for communications. For now, we probably need the FCC to maintain a role managing spectrum auctions. Someday, given inevitable technological advance, we may find an even better way to allocate, manage, and use spectrum — perhaps a system that is more decentralized and less "top-down." Until then, however, we still need an entity to administer a clean, simple spectrum allocation process.

4. As noted, the rapidly evolving nature of technology can make it difficult to legislate and regulate communications services. How do we create a set of laws flexible enough to have staying power? How can the laws be more technology-neutral?

We should simply apply basic laws that govern the rest of the economy to the Internet and technology sectors. Law specifically targeting such a rapidly moving target is folly.

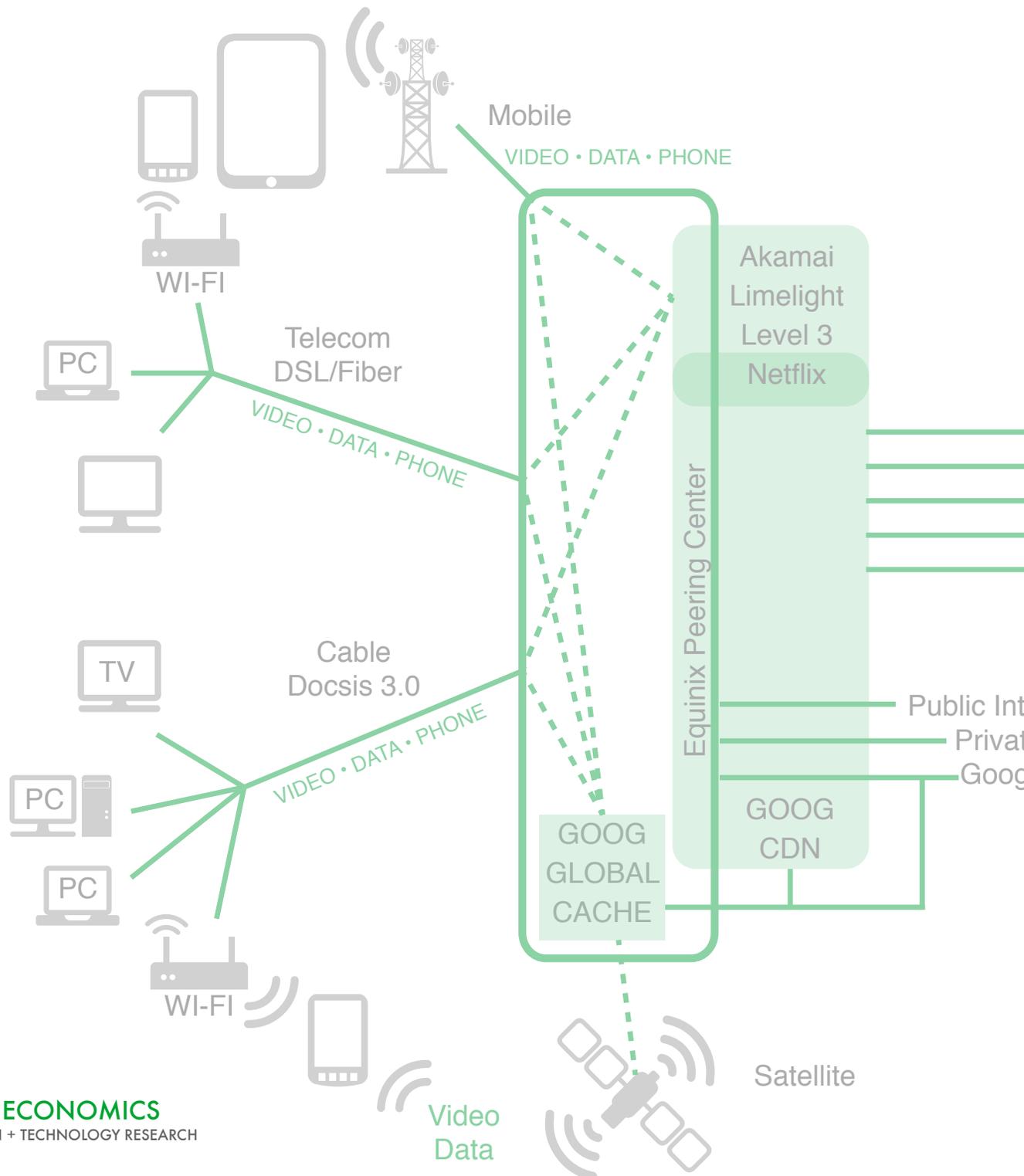
5. Does the distinction between information and telecommunications services continue to serve a purpose? If not, how should the two be rationalized?

The information-telecom distinction is obsolete and should be abandoned.

Digital Dynamism

Competition in the **Internet** Ecosystem

November 2013



Digital Dynamism

Competition in the Internet Ecosystem

November 12, 2013

The Internet is altering the communications landscape even faster than most imagined.

Data, apps, and content are delivered by a growing and diverse set of firms and platforms, interconnected in ever more complex ways. The new network, content, and service providers increasingly build their varied businesses on a common foundation – the universal Internet Protocol (IP). We thus witness an interesting phenomenon – the *divergence* of providers, platforms, services, content, and apps, and the *convergence* on IP.

The Dynamic Internet

The dynamism of the Internet ecosystem is its chief virtue. Infrastructure, services, and content are produced by an ever wider array of firms and platforms in overlapping and constantly shifting markets.

The simple, integrated telephone network, segregated entertainment networks, and early tiered Internet still exist, but have now been eclipsed by a far larger, more powerful phenomenon. A new, horizontal, hyperconnected ecosystem has emerged. It is characterized by large investments, rapid innovation, and extreme product differentiation.

- Consumers now enjoy at least five distinct, competing modes of broadband connectivity – cable modem, DSL, fiber optic, wireless broadband, and satellite – from at least five types of firms. Widespread wireless Wi-Fi nodes then extend these broadband connections.
- Firms like Google, Microsoft, Amazon, Apple, Facebook, and Netflix are now major Internet infrastructure providers in the form of massive data centers, fiber networks,

content delivery systems, cloud computing clusters, ecommerce and entertainment hubs, network protocols and software, and, in Google's case, fiber optic access networks. Some also build network devices and operating systems. Each competes to be the hub – or at least a hub – of the consumer's digital life. So large are these new players that up to 80 percent of network traffic now bypasses the traditional public Internet backbone.

- Billions of diverse consumer and enterprise devices plug into these networks, from PCs and laptops to smartphones and tablets, from game consoles and flat panel displays to automobiles, web cams, medical devices, and untold sensors and industrial machines.

Competition and Cooperation

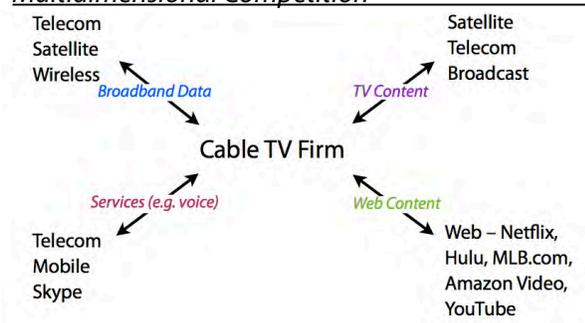
The communications playing field is continually shifting. Cable disrupted telecom through broadband cable modem services. Mobile is a massively successful business, yet it is cannibalizing wireline services, with further disruptions from Skype and other IP communications apps. Mobile service providers used to control the handset market, but today handsets are mobile computers that wield their own substantial power with consumers. While the old networks typically delivered a single service – voice, video, or data – today's broadband networks deliver multiple services, with the "Cloud" offering endless possibilities.

The competitive and cooperative relationships among all these companies are complex, dynamic, and multidimensional. A cable MSO, for example, which used to compete solely with broadcast TV, now competes with many more firms in many more markets.

In its traditional TV content business, satellite (Direct TV and Dish) and telecom (Verizon FiOS and AT&T U-verse) now offer the same hundreds of channels that cable offers. Telecom, 4G wireless, satellite, and even public Wi-Fi networks compete with cable in broadband data. Telecom and mobile compete with cable in services like voice, as do web players like Skype and messaging apps like WhatsApp. And the burgeoning world of web content – Netflix, Hulu, Amazon Video, MLB.com, the endless bounty of YouTube – competes with cable’s traditional content.

These Internet companies, however, also offer synergistic benefits to telecom and cable firms. Netflix, YouTube, and Skype, for ex-

Multidimensional Competition



ample, promote strong demand for broadband Internet access services. In the same way, the iPhone both challenged mobile carriers’ control of the handset market and yet boosted demand for mobile services. Many firms and technologies are thus often competitors and complements at the same time.

U.S. Broadband Success

The success of the U.S. broadband ecosystem suggests government policy has been mostly supportive. Light-touch or even no-touch regulation has fostered experimentation, entrepreneurship, and explosive growth in network and computer capacity and services. More than other nations, the U.S. focused on facilities-based competition. Over the past 15 years, private firms invested more than \$1.2 trillion in broadband networks, and today the U.S. boasts:

- close to 90 million residential broadband subscribers, up from around five million in the year 2000;
- 327 million mobile subscriptions and 302,000 mobile cell sites, including the world’s broadest deployment of 4G mobile networks and devices;
- broadband networks that are among the world’s very fastest, most ubiquitous, and most robust;
- Internet and IP traffic of some 20 exabytes per month, up from just 10 terabytes per month – a two-million-fold increase in two decades; and
- the great majority of the world’s most important digital innovations and firms – Google, Amazon, Salesforce.com, Twitter, mobile operating systems and millions of “apps.”

Next Generation Policy

The growth, complexity, and dynamism of this market (1) expose the conterproductivity of older policies that may no longer be relevant or justified; and (2) challenge the wisdom and authority of newer attempts at top-down micromanagement of networks, digital business models, and wireless spectrum.

Today’s policymakers and regulators should:

- recognize the complexity and dynamism of networks and the services that flow over them;
- appreciate the success of, and endeavor to sustain, the successful multistakeholder governance of the Internet;
- remove existing barriers to investment, and prevent the erection of new ones; and
- avoid prescriptions or proscriptions of particular business models or technical architectures that could stifle experimentation. **EE**

Digital Dynamism: Competition in the Internet Ecosystem

- > *From Vertical Voice Networks to Horizontal Hyperconnectivity*
- > *Overlapping Networks, Overlapping Businesses*
- > *Cloud + Wireless = Everything Over Everything*
- > *U.S. Broadband, A Success Story*
- > *What Policies Will Sustain Internet Innovation?*

BRET SWANSON > November 12, 2013

The Internet is altering the communications landscape even faster than most imagined.¹ In the last two decades, U.S. Internet and IP traffic has grown to some 20 exabytes per month from just 10 terabytes per month – a two-million-fold increase. Traffic continues to grow nearly 50 percent per year.

In the last five years, the number of mobile app downloads has exploded, from essentially zero in early 2008 to a cumulative total of more than 100 billion today.

The topology of our networks is shifting, too. Data, apps, and content are delivered by a growing and diverse set of firms and platforms, interconnected in ever more complex ways. At the same time, we use the old voice network less and less every day. The new network, content, and service providers, moreover, increasingly build their varied businesses on a common foundation – the universal Internet Protocol (IP).² We thus witness an interesting phenomenon – the *divergence* of providers, platforms, services, content, and apps, and the *convergence* on IP.

The success of the U.S. broadband ecosystem suggests government policy has been, at least directionally, supportive. Over the last two decades, light-touch or even no-touch regulation has fostered experimentation, entrepreneurship, investment, and explosive growth in network and computer capacity and services. Yet these dramatic changes lead to new policy questions and put in stark relief

older policies that may no longer be relevant or justified.

These are the chief questions of our report: What does today's Internet ecosystem look like, and how does it work? How did we get here? And what government policies are most likely to support continued investment and innovation?

The Dynamic Internet

The dynamism of the Internet ecosystem is its chief virtue. Google, Amazon, Apple, Microsoft, Facebook, and Netflix are today major Internet infrastructure companies. We used to think of them as, respectively, search, ecommerce, computer, software, social, and motion-picture-delivery firms. But today they build and operate vast data farms and fiber networks. Several build mobile devices. Several build operating systems and browsers. All are competing to be the hub – or at least a hub – of the consumer's digital life. Each, however, approaches the converged digital world from a different angle and with a distinct business model.

This is possible in large part because the network – the Internet – supplies a standard infrastructure that supports multifaceted content, services, and devices.

The traditional telecom companies are of course a central factor in the digital equation. Here, too, the field is shifting. Cable disrupted telecom through broadband cable modem services, but now cable is being disrupted by

free content from YouTube and subscription services like Netflix. Mobile is a massively successful new business, yet it is cannibalizing wireline services, with further disruptions from Skype and other IP communications apps. Mobile service providers, moreover, used to control the handset market, but today handsets have become mobile computers that wield their own substantial power with consumers. The iPhone, in other words, reorganized the whole mobile industry. The bottom line is that the competitive and cooperative relationships among all these companies are complex and dynamic.

New Policy Temptations

The Internet arrived with force in the mid-1990s and immediately challenged the existing framework of telecommunications policy. Broadband was a new technology, a new product, and it delivered new kinds of content and services. After some initial stumbles, the U.S. got broadband policy largely right in the 2000s, and the digital universe exploded. We now enjoy fiber-to-the-home and 4G wireless, among other access technologies, all linked to the endless resources of the cloud.

With this exaflood of new technology and content, and the overall growth and influence of the digital economy, however, new sets of policy questions arise. Net neutrality, for example, seeks new constraints on network architectures and business models. The definitions of net neutrality, moreover, morph as fast as the networks they propose to regulate. Although two decades of spectrum auctions and a healthy secondary spectrum market allowed the U.S. to become the world leader in mobile innovation, wireless spectrum policy is regressing, becoming more complicated and contentious. Mandated wireless data roaming is another example of a rule beyond the framework of our old telecom laws.

It is far from clear that these new rules are wise or that authorities, such as the Federal Communications Commission (FCC), have the legal power to impose them. Even as

regulators propose additional rules for the era of the broadband cloud, however, much of the old telephone regulatory infrastructure remains. We are thus layering new platforms for the regulation of the Internet on top of the largely obsolete platforms for the regulation of telephones.

Advocates of both the new rules and old rules often justify them based on a traditional view of telecom. Underlying many of these policy suggestions is a central worry – that one or two large firms might dominate the market. But does this world still exist? Just what *is* “the market”? Can any one firm “dominate” for long? And if the communications market has changed in fundamental ways, is *either* set of rules justified? In other words, might we need an even bigger, broader rethink of communications policy?

The Vertically Integrated Voice Network

The old telephone network was built to do one thing – transmit two-way voice conversations. The telephones attached at the endpoints of the network were simple, dumb devices. One company built and operated most of the network from end to end. As seen in Fig. 1, the architecture was rather simple – a vertically integrated system.

On January 1, 1984, Judge Harold Greene’s order broke up this integrated system. AT&T kept the long distance network and service, while the seven new “Baby Bells” assumed control of the local networks in seven regions. These changes, however, were largely cosmetic. They did not fundamentally alter either the technology or architecture of the network or the services delivered over it. (See Fig. 2) Far more important for competition, innovation, and consumer choice and welfare would be rival technologies and non-telephone platforms, such as cable and the Internet.

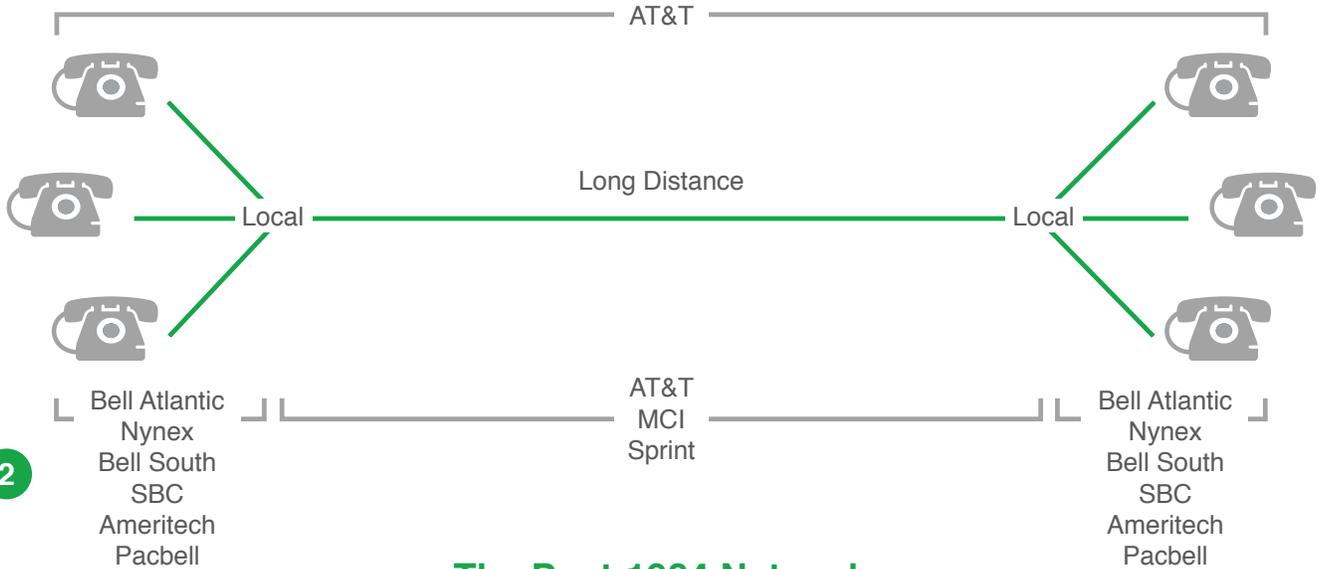
Early Convergence

In the early 1990s, the new landscape began to emerge. Using dial-up modems and serv-

1

The Vertically Integrated Voice Network

The communications network is designed, built, and operated mostly by one firm. The network does one thing. The content is supplied by the end users.



2

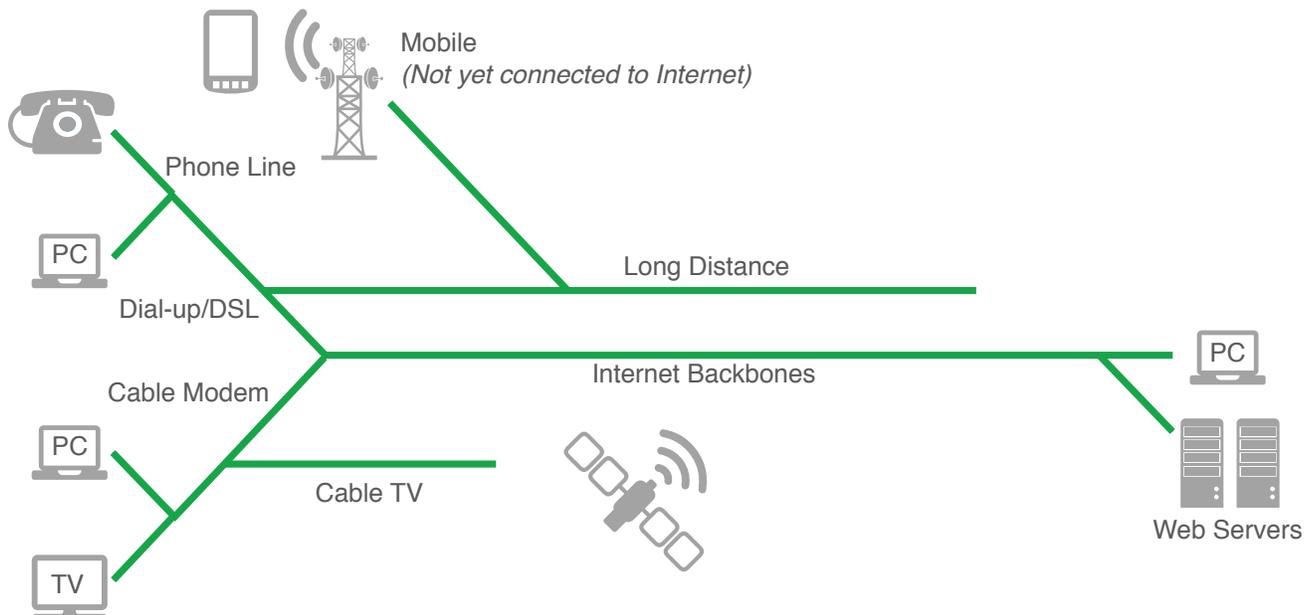
The Post-1984 Network

Same network, new names. The network breaks apart into long distance carriers (AT&T, MCI, Sprint) and local phone companies – the “Baby Bells.” The biggest technological innovation is fiber optics for long distance. Dial up modems offer limited access to the early Internet.

3

Early Convergence/Divergence Late 1990s – Early 2000s

More communications networks begin offering more choices. With cable modems and DSL lines, respectively, cable TV and telecom firms offer broadband access to a common, public Internet, which yields early convergence of data-based services and content. Mobile begins rapid growth.



ices such as CompuServe and Prodigy, and later, AOL, a fast-growing number of average Americans with personal computers (PCs) began accessing the Internet over their phone lines.

By the late 1990s, the Web took off, dot-coms boomed, and new broadband cable modem and DSL services reached several million subscribers, though narrowband dial-up service still dwarfed the new broadband technologies. Meanwhile, firms like Level 3, Global Crossing, Williams, MCI, Sprint, Broadwing and others laid tens of millions of miles of new fiber optic cable, yielding competing Internet backbones of enormous capacity.

Here we saw the beginning of “convergence.” As depicted in Fig. 3, the telecom and cable companies now offered competing Internet access services, mostly plugging into a common, public Internet backbone.

Yet in their traditional lines of business – voice and TV – telecom and cable companies still offered distinct services over distinct networks.

Mobile, satellite, and broadcast TV, meanwhile, still had almost no connection with the Internet. Mobile was still a two-way narrowband voice service. Satellite, now a competitor, instead of just a facilitator, of cable TV, was still a one-way broadcast video service.

Internet access was a new product, offering revolutionary access to information. The Internet, however, did not directly compete with voice, video, radio, satellite, or the other network services.

Exponential Digital Technologies . . .

The unrivaled, compounding power of computer and communications technologies mean today’s communications networks look little like those of the past. Moore’s law of computers, and its corollaries for digital storage and bandwidth, are at the heart of today’s new competitive landscape.

In the middle of the century, Bell Labs – the technology arm of AT&T – invented the future of communications. Just as Claude Shannon was defining the mathematical foundations of information theory, engineers down the hall were inventing the revolutionary tools – the semiconductor transistor and the laser – that would extend Shannon’s ideas into vibrant reality.

Those Bell Labs engineers assembled the original 1947 transistor by hand. Today, according to Intel, more than 100 million 22-nanometer transistors can fit on the head of a pin.³ A new Nvidia graphics chip contains more than seven billion transistors, and semiconductor fabs worldwide now manufacture annually some one quintillion (10^{18}) of these digital switches.

Bell Labs was seeking a way to make telephone network switching more efficient. It succeeded, but it accomplished much more. Succeeding breakthroughs – combining advances in semiconductor materials, quantum electron behavior, and manufacturing miniaturization – launched the nascent computer into a whole other orbit, indeed another galaxy of possibilities. Sixty years later, the exponential computer curve of Moore’s law continues.

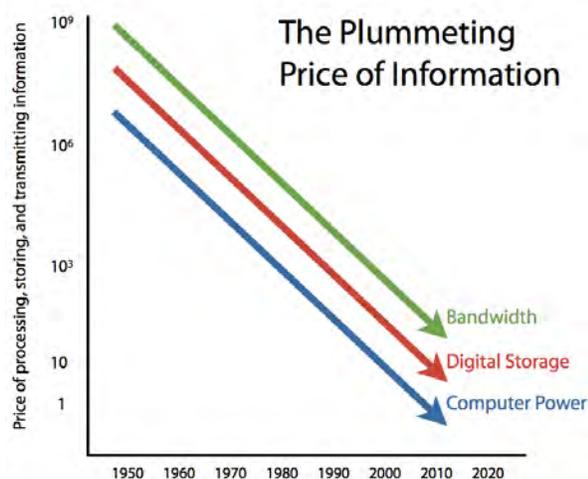
. . . Boost Experimentation & Competition

A dozen years after the arrival of the transistor, Charles Townes, in 1960, helped invent the laser (or maser, as it was first called). Where the purity of semiconductor materials enabled digital switching and storage of information at lower power, pure laser light revolutionized the ability to transmit information over long distances – and to store and read information over long spans of time – also at low power.

At the time, copper wire carried voice conversations at a bandwidth of around three kilohertz (kHz) and could be pushed to carry 14 kilohertz signals. Today, advances in digital signal processing have, in the case of

VDSL2, expanded the bandwidth of copper wire to 30 megahertz (MHz).

Yet lasers promised potential bandwidth in the terahertz (THz) range – perhaps a million times the capacity of copper. Combined with fiber optic advances by the glass experts at Corning in the 1970s and 80s, lasers set the stage for competition in the telephone industry, most memorably MCI's and Sprint's fiber optic challenge to AT&T's long-distance service in the 1980s.



Last year, NEC and Corning unveiled an experimental fiber optic link said to transmit 1.050 petabits per second (10¹⁵) over a distance of 50 kilometers.⁴ That is nearly a trillion-fold leap from the old standard 3-kilobit telephone lines.

Data storage, on both spinning magnetic disks and silicon memories, has followed a similarly exponential cost-performance curve. In 1956, IBM unveiled the first commercial disk storage system, a hulking set of fifty 24-inch plates that stored 5 megabytes and sold for roughly \$500,000 (in current dollars). But today one can find a 3.5-inch, 2-terabyte Seagate drive for \$106.99. That is an improvement factor of some 20 million – and far more if you consider size, versatility, and reliability. Flash memory, which is more compact though not as cheap as hard disks, has revolutionized small computers, such as smartphones and tablets. And now, after many hopeful years, silicon solid state drives

(SSDs) may be close to catching and overtaking hard disk storage for some applications.

When general purpose technologies like the silicon transistor and the silica-encased laser produce tools many millions of times better than the old ones, they don't just make existing infrastructure and services more efficient. They completely upset the industry landscape and, with cascading exponential ripples of new technologies, firms, and applications, create whole new industries and lift the entire economy. They are particularly open to, and supportive of, creative entrepreneurs, who can experiment with the powerful new tools and challenge existing firms, business models, political establishments, and regulatory hierarchies.

The Internet is itself a general purpose technology. It is a conceptual framework for communications constructed with these silicon and silica building blocks, with software linking them together, and content supplied by people (and now machines) across the globe.

Horizontal Hyperconnectivity

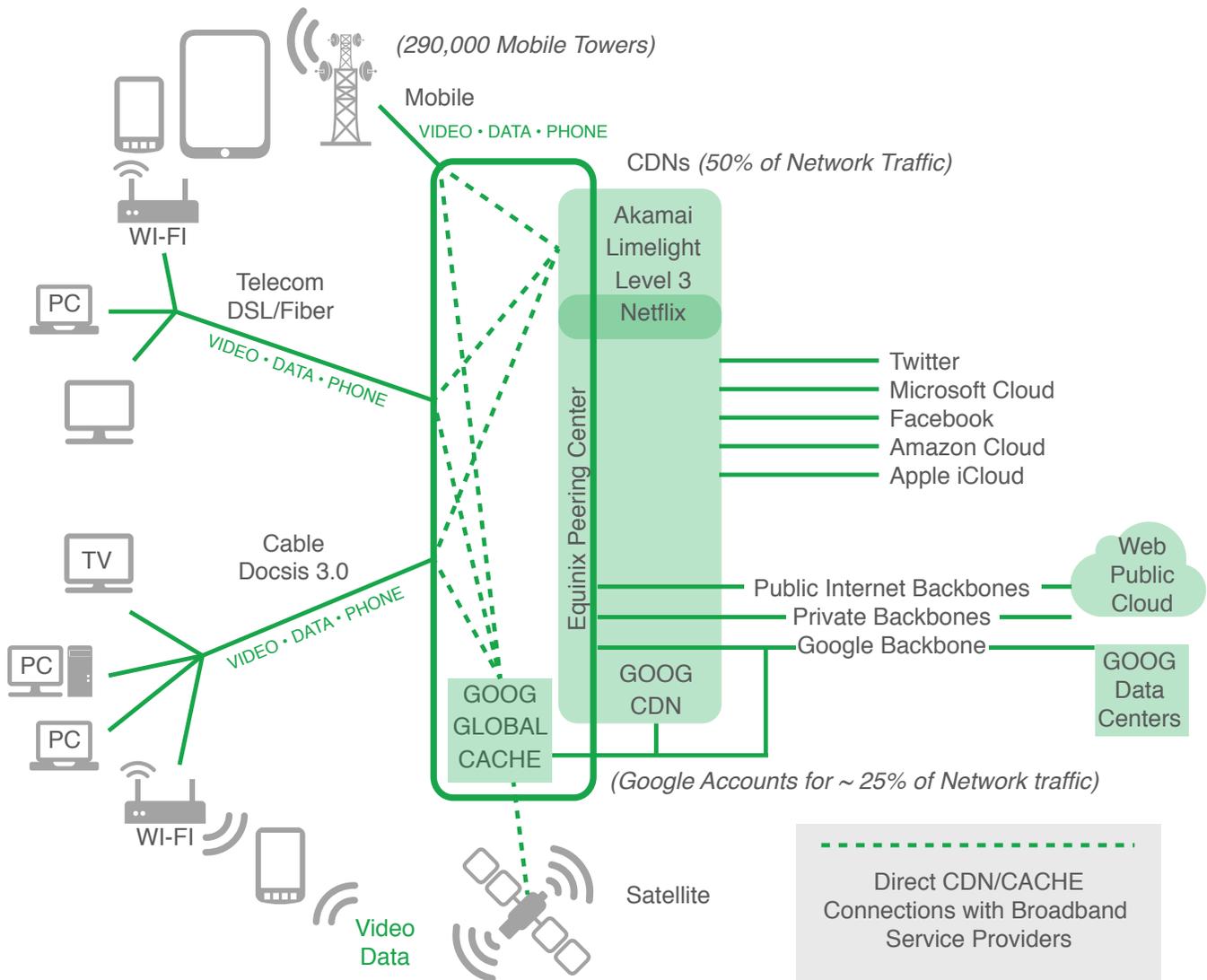
The simple, integrated telephone network, segregated entertainment networks, and early tiered Internet still exist, but have now been eclipsed by a far larger, more powerful phenomenon. A new, horizontal, hyperconnected ecosystem has emerged. It is characterized by large investments, rapid innovation, and extreme product differentiation.

- We now enjoy at least five distinct, competing modes of broadband connectivity – cable modem, DSL, fiber optic, wireless broadband, and satellite – from at least five types of firms. Widespread wireless Wi-Fi nodes then extend these broadband connections.
- Firms like Google, Microsoft, Amazon, Apple, Facebook, and Netflix are now major Internet infrastructure providers in the form of massive data centers, fiber networks,

4

Today's Hyperconnected Network

Five modes of broadband access are supplied by five types of communications service providers. Software, hardware, content, and retail companies become major Internet infrastructure providers, with massive networks and cloud computing capacity, often disrupting older services and media. Mobile devices and the App Economy achieve hypergrowth.



content delivery systems, cloud computing clusters, ecommerce and entertainment hubs, network protocols and software, and, in Google's case, fiber optic access networks.

- A wide range of consumer and enterprise devices plug into these networks, from PCs and laptops to smartphones and tablets,

from game consoles and flat panel displays to automobiles, web cams, medical devices, and untold sensors and industrial machines.

All these networks and devices, moreover, connect in an increasingly complex web (see Fig. 4).

The topology of the Internet looks wildly different than it did just a decade ago. As Christopher Yoo, author of *The Dynamic Internet*,⁵ reminds us, Internet access used to consist of a rather simple three-tier structure: access lines, regional ISPs, and backbone networks. A typical Internet session, say, sending an email or retrieving a webpage, would take the following route:

dial-up access line (tier 3) \Leftrightarrow regional ISP (tier 2) \Leftrightarrow
public Internet backbone (tier 1) \Leftrightarrow regional ISP (tier 2)
 \Leftrightarrow DS3 access line (tier 3).

This simple formula no longer holds. Today, many networks peer directly with each other. They do so, moreover, under a variety of business arrangements, including paid peering, paid transit, and content delivery services. Comcast or Verizon, for example, may peer directly with Facebook's massive cloud infrastructure. Netflix, using its own content delivery network or similar services from Akamai, may plug in directly to AT&T's or Time Warner's broadband network. Google, naturally, plugs directly into everyone's network via its geographically distributed data farms to deliver the fastest, most reliable services (search, Gmail, maps, etc.).

Network scientist Craig Labovitz was among the first to document the growing size and power of these new Internet infrastructure players.⁶ He called them "hyper giants." Indeed, by some estimates, 80 percent of today's network traffic bypasses what we used to think of as the public Internet backbone.

Early last decade, as Google's search service and advertising platform achieved global preeminence, the company realized it needed more than search algorithms and servers hosted in someone else's data farm. It needed quicker, more reliable access to end-users who wanted search answers immediately. Google's research showed that users valued quick search results more than anything. Google needed less latency, fewer hops. It needed its own global infrastructure.

So instead of operating passive servers at the end of the long ISP-backbone chain, in which data might touch a dozen or more network nodes, or hops, Google spent many billions of dollars building its own geographically distributed data centers and content delivery networks that plug in directly to the broadband service provider access networks.

Akamai had, since the late 1990s, been optimizing performance for dot-coms and content providers who wanted to reach consumers faster and more reliably. Through its network of tens of thousands of distributed "caches," it stored copies of popular pages, advertisements, banner art, and other items closer to end users.

As web video exploded in the mid-2000s, the content delivery networks (CDNs) of Akamai, Google (owner of YouTube), Limelight, and others grew accordingly. By 2010, according to network scientist Craig Labovitz, CDNs generated nearly 40 percent of all IP traffic, and today, CDNs may generate more than 50 percent of IP traffic. Today, Google alone may account for 25 percent of North American IP traffic.⁷

Like the rest of the arena, the content delivery market is highly dynamic. Soon after Netflix launched its wildly popular streaming service, it became Akamai's largest CDN customer. But just as quickly, Netflix realized it needed its own CDN infrastructure to truly optimize the user experience and has now transferred most of its video streaming to its own distributed infrastructure.

Microsoft likewise has spent billions of dollars on its own cloud infrastructure that powers its Bing search engine and its MSN, Xbox Live, Azure, and Outlook.com cloud services. Facebook had to build its own infrastructure to serve up billions of rapidly churning social network updates and to store hundreds of billions (many petabytes worth) of uploaded photographs. Apple did the same for its iTunes and iCloud services, including the App Store.

Amazon, meanwhile, leveraged its own infrastructure, which processes millions of retail transactions and user suggestions each day, to deliver a new service of outsourced cloud computer power to developers needing metered wholesale digital horsepower. Amazon also partnered with Sprint to deliver its Kindle ebooks via its Whispersync wireless service and now is challenging Netflix with its Amazon Video service.

All of these networks are of course closely coupled with the mobile infrastructure, which is ever more reliant on robust cloud services to deliver computer power and storage to “thin client” mobile devices.

These networks are linked together under a variety of technical and business arrangements.⁸ Large networks may peer with one another, or exchange traffic at no cost. But networks and content providers may also use paid peering and paid transit to improve performance and more effectively access larger networks. Such peering, or interconnection of networks, often happens at the neutral hubs of Equinix, which offers data center and exchange point services in 31 markets, including 13 in the U.S. Equinix, which builds huge high-tech warehouses with access to megawatts of electricity, boasts connectivity with 900 networks, 300 cloud service providers, 500 IT service providers, and 450 financial firms. In all, according to Packet Clearing House, in 2011 there were more than 5,000 ISPs that formed “the Internet.”

Every Service Over Every Network

The network is even more complex than this superficial picture. Hundreds of important players provide key hardware and software inputs that make the Web work. Yet, as depicted in Fig. 4, even the few developments highlighted here show the network is flatter, vastly more interconnected, more dynamic, more competitive, and more complicated than ever.

This generalized broadband IP network has driven – and been driven by – an increasingly

generalized market for content, services, and applications. Although most of the old dedicated networks still exist, almost all forms of content and services – radio, video, voice – now also flow over the Internet. Many entirely new forms of content and services, from webpages and user-generated video to Twitter and Salesforce.com, do as well. New apps, products, sales channels, online communities, and content emerge all the time.

Usage of the new communications channels is widespread and deep. The U.S. today boasts:

- close to 90 million residential broadband subscribers, up from around five million in the year 2000;
- 327 million mobile subscriptions – or more subscriptions than people; 302,000 mobile cell sites; and the broadest 4G deployment;
- more than 34 million satellite TV subscribers, with access to more than 200 channels, plus new, better broadband Internet services;
- more than 25 million satellite radio subscribers, with access to 165 channels;

The apps, content, and communications flowing over these networks are growing fast and are increasingly diverse. For example:

- Microsoft’s Skype voice-over-Internet service now accounts for one-third of all international voice traffic.
- Microsoft also has 48 million Xbox Live customers, 400 million Outlook.com users, and 250 million SkyDrive users.
- Apple’s iTunes users are purchasing over 800,000 TV episodes and 350,000 movies per day.
- Apple recently announced new content partnerships with HBO and ESPN.
- Netflix has 40 million users who view more than a billion hours of movies and TV each

Multidimensional Competition and Cooperation

Table 1 – On the Internet, technologies, products, and firms compete and cooperate in many dimensions, producing explosive innovation and consumer benefits

| Competition | Cooperation / Complementarity |
|---|---|
| Wired vs. Wireless | Broadband + Wi-Fi |
| Cable vs. Telecom vs. 4G Wireless (broadband) | Smartphone + Mobile Network |
| Cable vs. Telecom vs. Mobile (services; e.g. voice) | Browser + Web Content |
| Cable vs. Telecom vs. Satellite (content; e.g. TV channels) | Mobile + Cloud = powerful thin client |
| Mobile Firm 1 vs. Mobile Firm 2 vs. Mobile Firm 3 . . . | Broadband + Netflix |
| Mobile vs. Wi-Fi | Broadband + YouTube |
| Web vs. Apps | Mobile OS + Apps |
| Voice vs. Skype | Wi-Fi + Tablet |
| Skype vs. Facetime | 4G Wireless + Remote Sensors, Cars, Medical Devices |
| Text vs. Voice | Smartphone + Camera |
| Chat vs. Skype vs. Social Network messaging | Amazon Cloud + App Developers |
| TV channels vs. Netflix vs. Web channels (MLB.com, etc.) | Maps + App Developers |
| Smartphone 1 vs. Smartphone 2 | Satellite + Sports Content |
| Smartphone vs. Laptop | Content Delivery Network + Content |
| Tablet vs. PC | CDN + Internet Backbone |
| Cloud vs. PC | Users + Broadband + Apps + Content + Cloud |
| OS 1 vs. OS 2 vs. OS 3 vs. OS 4 | Internet User 1 + User 2 + User 3 . . . |
| OS vs. Browser | Kindle + Mobile |
| Browser 1 vs. Browser 2 vs. Browser 3 . . . | Search + Everything |
| iCloud vs. Dropbox vs. Google ecosystem | Device + OS + App |
| Device + OS + App vs. Exacloud | Device + Browser + Exacloud |

month. It is also producing wildly successful original programming, such as “House of Cards,” and recently announced major content partnerships with Disney and Dream-Works.

- Google’s Android mobile OS now powers more than a billion devices, with an additional 1.5 million activations each day.
- Dropbox, a provider of cloud storage and document- and app-interoperability features, has 175 million users.
- WhatsApp, a messaging service, has 250 million users. A similar app called Line has 200 million users.
- Facebook, which is increasingly a platform for messaging and rich content, has 665 million daily active users and 1.11 billion monthly active users, while its Instagram photo app has 100 million monthly active users.

These network markets are characterized by rapid innovation, complementary technologies and products, and intense direct and indirect competition. The parameters of complementarity and competition are many and varied. Firms and technologies cooperate and compete along many axes, which are constantly shifting. In Table 1 nearby, we list many (but by no means all) of the ways digital ecosystem firms, platforms, and technologies compete and cooperate.

On the ledger of competitive relationships, for example:

- Cable broadband competes with telecom broadband and 4G wireless broadband. For example, “Hundreds of thousands of Americans canceled their home Internet service last year,” reports *The Wall Street Journal*, “taking advantage of the proliferation of Wi-Fi hot spots and fast new wireless networks that have made Web connections on smartphones and tablets ubiquitous.”⁹

- Mobile phones compete with land-line phones and voice-over-IP services like Vonage and Skype. Indeed, 40 percent of Americans have given up any land-line phone and now use mobile exclusively.¹⁰
- Mobile computers, like smartphones and tablets, compete with PCs and laptops.
- Apple creates an entirely new market for apps, but Google quickly counters with Android, which in a matter of just a few years becomes an even larger mobile platform.
- Netflix competes with TV, cable TV, IPTV, pay-per-view, DVDs, and online rivals Hulu, Apple TV, and Amazon Video.
- Pandora Internet radio competes with over-the-air radio and satellite radio.
- Native apps, like Microsoft Office or iOS or Android mobile apps, compete with Web-based services and apps.
- Facebook “dominates” the social network world, with more than a billion users. Yet its very size discourages some users who desire more intimate (or more private) online communities, opening the market to new social network providers.
- Apple, likewise, toiled for years with a five-percent share of the PC market. Part of its narrow allure was simply that it wasn’t Microsoft. Now, with Apple playing the leading role in the smartphone and tablet markets, it is experiencing this effect from the opposite side: consumers, in search of variety and novelty, are looking for devices that “aren’t Apple.”

Many firms and technologies may not compete directly with others – they may not be full substitutes for other products, in other words. But because of the way the industry works – with its many partnerships, overlapping technological capabilities, digital modularity, rapid innovation, ease of entry, and entrepreneurial energy – products and firms that may not appear to be direct competitors,

do in fact offer partial substitutes or otherwise constrain the ability of other firms to dominate the market.

This competition is fueled, in part, by the wide range of complementary relationships, which include:

- broadband networks and rich content;
- 4G mobile networks and mobile OSes and apps;
- content delivery networks like Netflix and content providers like Disney; and
- the millions of connected users who converse and collaborate.

This highly competitive and cooperative environment is itself a platform for rapid innovation, massive investment, falling consumer prices, and rising consumer choice.

In the old telephone world, the single type of content (voice conversations) was supplied entirely by end-users (telephone subscribers) over a single network owned (largely) by one company. In the broadcast industries, the

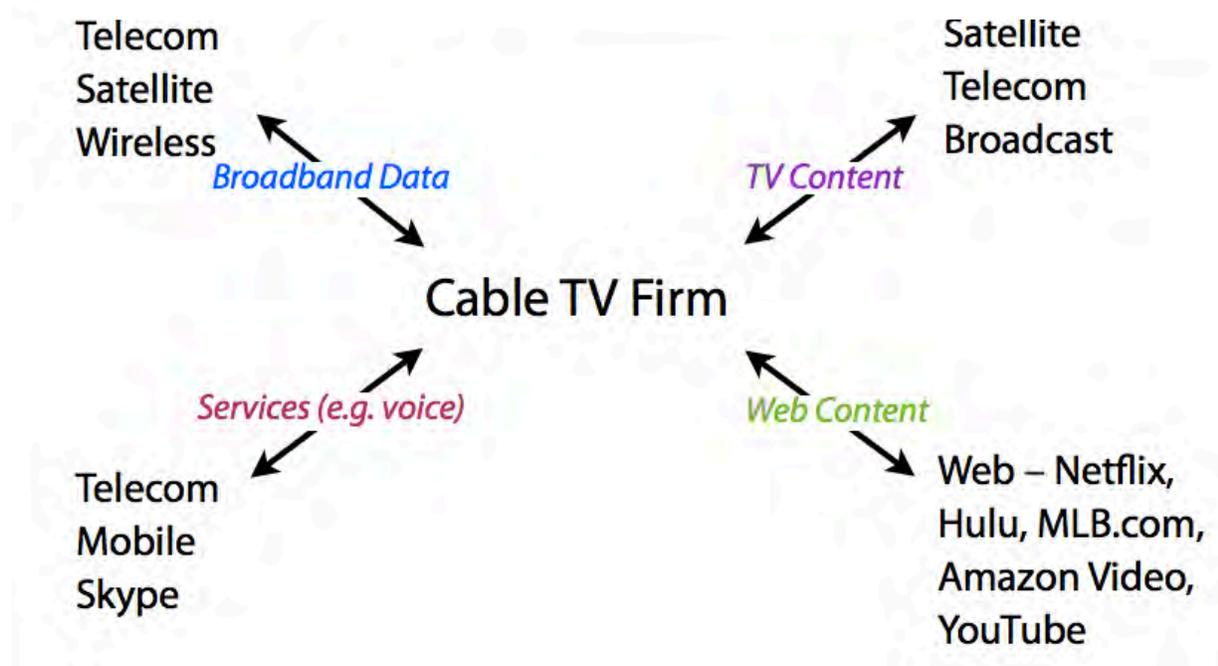
networks fed consumers mass-market content over specific, segregated channels. Radio may have partially competed with TV for the consumer's entertainment time budget. But the various networks were otherwise not in competition, nor cooperation, with one another.

Now, with only a little hyperbole, consumers enjoy “everything over everything.” And because each player has only, at most, a few pieces of the puzzle, the puzzle pieces are changing shape, and the puzzle is getting larger at a rapid rate, all players remain constrained yet hungry.

To zoom in on the competitive forces, we can choose one type of firm, say, a cable MSO, and analyze the different parameters of competition it faces (and exerts). As depicted in Fig. 5, a cable firm, which used to compete solely with broadcast TV, now competes with many more firms in many more markets.

In its traditional TV content business, satellite (Direct TV and Dish) and telecom (Verizon FiOS and AT&T Uverse) now offer the same hundreds of channels cable offers.

Fig. 5 – Multidimensional Competition



Telecom, 4G wireless, satellite, and even public Wi-Fi networks compete with cable in broadband data. Telecom and Mobile compete with cable in services like voice, as do web players like Skype. And the burgeoning world of Web content – from Netflix, Hulu, and Amazon Video to MLB.com, NBA.com, and the endless bounty of YouTube – competes with cable’s traditional content.

These Internet companies also offer synergistic benefits to cable. Netflix, YouTube, and Skype, for example, promote strong demand for cable’s broadband Internet access services. Many firms and technologies are thus often competitors and complements at the same time.

The Exacloud Frontier

New architectures and products will continue to challenge the ever-shifting status quo. Early this year, Otoy, a pioneering cloud graphics company, and Mozilla, the maker of the Firefox browser, unveiled a new way to bring any service, any app, to any device, regardless of platform or operating system. Using graphics supercomputers in the cloud, with petaflops of processing power, they can host any OS, app, or content and send a video stream of the “desktop view” to any device. High power 3D modeling like Autodesk’s AutoCAD can thus be performed on an iPad. A Microsoft Surface or Samsung Galaxy running Android can, likewise, run Apple OS X or iOS apps. Any thin-client device can play any game, without the need to buy into a particular gaming platform or purchase a particular title. All that is required is an Internet connected device and a browser.

In July, Autodesk and Otoy unveiled their first iOS app, Autodesk Remote, which allows engineers and designers to use an iPad to access their high-powered modeling software back at the office.

Mozilla’s Brendan Eich, the creator of JavaScript, calls this exacloud paradigm the future of the Web.¹¹ It opens a multitude of new business models for content and app provid-

ers and challenges the existing hardware-software arrangements. The exacloud’s rich real-time video streams also require vast network capacity, low latency, high reliability, and closely coupled wired and wireless nodes to ensure a user experience as good as that of a client running local, native apps. Policies that encourage more investment in wired and wireless broadband are thus essential.

Policy in a Polynetwork World

The “multisidedness,” modularity, network effects, and dynamic infrastructure of this ecosystem fundamentally change the way we should think about governing it.

Among those who have thought most about this new ecosystem is economist Jeffrey Eisenach, a visiting scholar at the American Enterprise Institute. In “The Theory of Broadband Competition,” a detailed review of the relationships across the digital marketplace and an application of the relevant economics, Eisenach shows how the multiplicity of players and the very nature of digital technologies yield robust innovation and competition.

Eisenach summarized his findings:

“broadband markets are now characterized, like markets in the rest of the IT sector, by dynamism, modularity, network effects, and multisidedness. The competitive dynamics of such markets are shaped by complex interactions between market-specific factors on both the demand and supply sides, but the central tendencies are straightforward.

“Dynamism is shorthand for a causal circle in which firms compete by investing to create new products and, by succeeding, differentiate themselves sufficiently to earn an economic return on their investments, which attracts the capital needed to repeat the cycle. Modularity allows this process of innovation and differentiation to exploit the specialized capabilities of multiple firms to generate complementary products; it places producers of complementary goods in competition with one another over the current rents and future directions of the platforms in which they participate; and it

creates a new type of competitor, competitive platforms, composed of loose and fluid alliances of complementers that may themselves belong to multiple platforms.

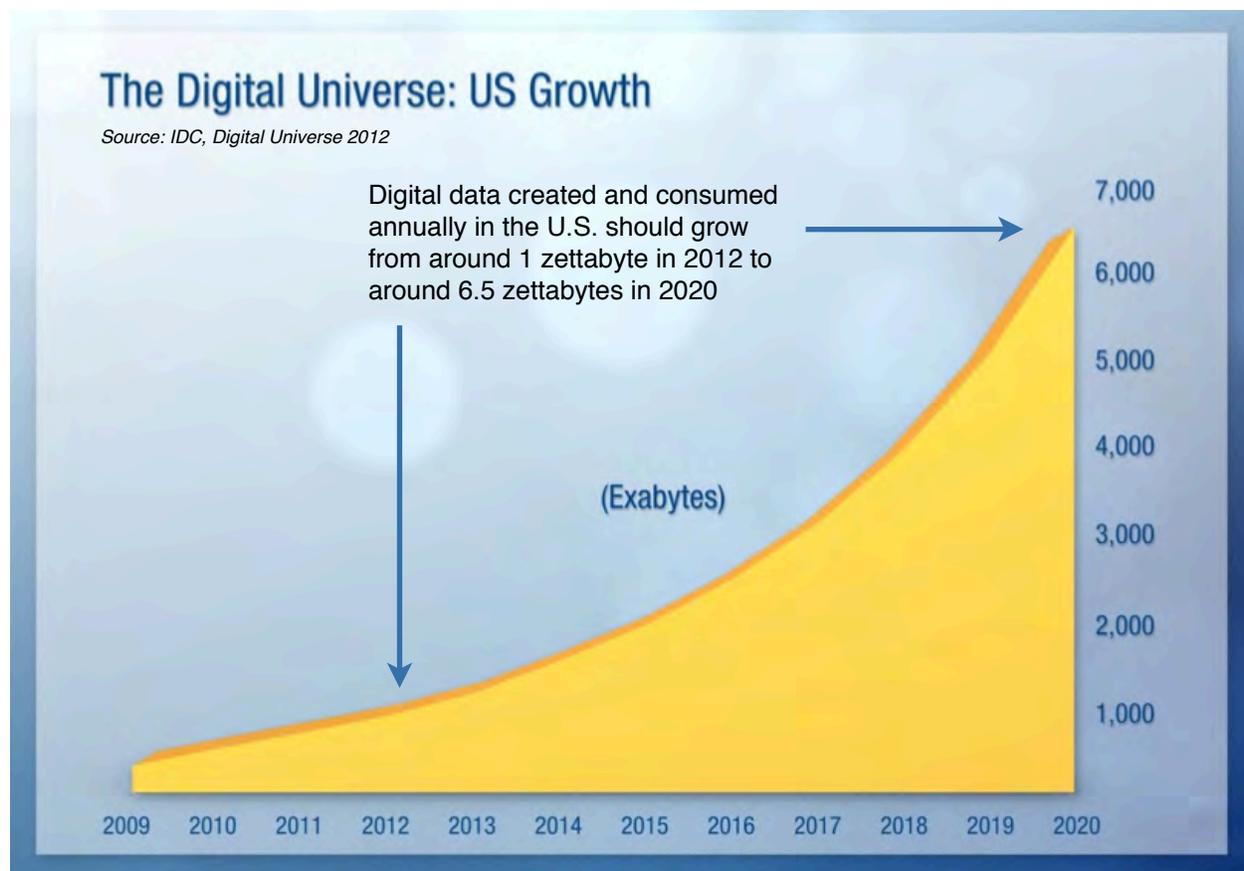
“Network effects and multisidedness function in many respects as competition ‘superchargers’ – they magnify the effects of competitive choices through demand-side complementarities of scale and scope.

“For purposes of competition analysis, broadband markets share all the key characteristics of other IT markets, including, specifically, the markets for Internet applications, content, and devices.”¹²

Clearly, no rationale exists to treat these industries like the monopolies of old. The Telecom Act of 1996, and many reforms of state telecom laws since, began to acknowledge this new, more dynamic, more competitive world. Yet even the 1996 Act barely contemplated the Internet, let alone its far reaching impact.

This failure to legislate a preconceived technical or business architecture for the Internet may have been a gift. It allowed the Internet to grow up in an largely unrestrained environment, where experimentation and entrepreneurship ruled, producing explosive and mostly beneficial results. Private firms, industry groups, and scientific associations have cooperated to build the interconnection protocols and practices that make the Internet work and have served as an effective form of multistakeholder governance. The Packet Clearing House survey, for example, found that 99.51 percent of all Internet peering relationships happen “on a handshake,” or customary, no-contract understandings.

Today, however, agencies are eager to regulate what have become the fastest growing networks – the broadband Internet and mobile – regardless of any explicit authority to do so.



Policy today, from net neutrality to wireless spectrum, is operating in a legal realm that is simultaneously a tangled clutter and a vacuum. There is both far too much law and regulation left over from a world that no longer exists, and which is often mischievously applied to circumstances it could not contemplate; and possibly too little basic legislative and regulatory guidance for the new, highly competitive digital ecosystem.

Because the old rules are a bad fit and new rules have yet to be written, the FCC has, in a number of cases, made up new rules on its own. The Open Internet Order of 2010, also referred to as “net neutrality,” regulates the technical means of managing data traffic and proscribes certain business practices and relationships. But the FCC was very creative in assuming authority over (and issuing detailed regulations governing) the Internet. Congress never gave the agency authority to do so, and firms are now challenging net neutrality in court.

Substantively, net neutrality is an example of a rule that is too pre- and proscriptive for a dynamic environment like the Internet. Had net neutrality been in force 15 years ago, important technical and business advances like content delivery networks (which deliver better network performance for a price) may have been banned and thus never developed.

The FCC’s notion of net neutrality, moreover, applies the regulations to just one component of the network – broadband access. It is based on an old view of the network as a top-down, vertically integrated monopoly delivering one type of service. For instance, Google, which now accounts for 25 percent of network traffic, is largely exempt from the rules. The decidedly non-neutral, selective targeting of particular firms and network components denies the reality of a sprawling, diverse, hyper-connected system (as pictured in Fig. 4).

Wireless spectrum policy suffers from similarly old and constrained views of the ecosys-

tem. Decades ago, the government issued spectrum licenses for TV and radio airwaves. But in an era of convergence, why should spectrum be labeled and confined to a particular technology or service? Everyone realizes this, which is why the FCC is planning incentive auctions of broadcast TV spectrum, likely to be acquired by mobile service providers.

Yet the monopoly view has infected the auction planning process. The Department of Justice and others are urging the FCC to limit the firms who can bid for and acquire these 600 MHz airwaves. In effect, the government would choose who gets the spectrum. These proposed interventions come on the heels of previous government vetoes of attempted transactions in the secondary spectrum market (AT&T’s blocked purchase of T-Mobile, for example).

A third example highlights the point that policy is behind the curve. The FCC has set the goals of expanding broadband access and adoption and of transitioning from the old, limited telephone infrastructure to modern, converged, broadband IP networks. Yet a set of our broadband investors are also required by law to keep investing in the old telephone networks that the companies, and the FCC, wish to phase out.

The companies believe much of this investment is duplicative and wasteful and that it diverts capital from modern broadband. The fact is, however, that consumers and rival firms and technologies are phasing out the old telephone networks whether anyone else wishes it to happen: use of the old telephone networks is in precipitous decline. The question is whether laws and rules should deny this reality and mandate good money after bad.

Despite these wholesale changes, the old rules treat the incumbent telecom firms as if they are still monopoly providers. In many markets and for many services, however, these companies are no longer even dominant, let alone monopolistic. Wireless serv-

ices are replacing many wireline offerings altogether. All-IP online offerings, such as Skype and Netflix, moreover, show how access infrastructure and access service are now often decoupled from application. According to a February 13, 2013, Telegeography report, Skype now accounts for one-third of all international phone traffic.¹³

Netflix, meanwhile, may account for one-third of U.S. broadband access network traffic during peak evening hours.¹⁴ A new analysis now shows by the end of 2013, just one-quarter of U.S. households will have a landline phone connection from an incumbent provider.¹⁵ Yet the regulators still label these firms “dominant.” Rules that presume the incumbents monopolize any component of the ecosystem – network infrastructure, access service, or applications – are outdated and have become severely counterproductive.

Incumbent providers have stated that as much as half of their wireline investments are steered into the old, increasingly obsolete networks purely for regulatory reasons. The old rules thus require that tens of billions of dollars a year be spent on infrastructure we want to retire, and that we not spend it on the networks of the future.

The government is basing many of its policies on a pre-Internet understanding of the digital ecosystem. Regulators often presume a firm’s large share of a narrowly defined “market” will necessarily lead to anticompetitive behavior.

But is the government defining the market correctly? Is it accounting for the new hyper-connected ecosystem? Is it acknowledging innovation’s capacity to challenge each player at every turn? Is it overestimating its ability to shape industries “better” than a natural process of innovation and competition? Is it ignoring the manifest growth and vibrancy of the industries in which it has applied the “lightest touch”? Does it consider the potentially large downside of regulation that locks in old technologies and businesses and blocks new ones? Most importantly, does

it base its policies on the real world effects on consumers and the economy? Or is the government picking winners and losers? Is it regulating, in effect, not to promote basic standards and broad-based competition but to favor particular competitors and disfavor others?

The complexity and rapid innovation of the ecosystem suggest top-down micromanagement of the industry is a more difficult task than ever. The hyperconnected nature of the value chain also suggests that a policy targeting one part of the network could easily produce unintended, harmful ripple effects elsewhere, disrupting price signals and relationships. Instead of tasking centralized bureaucracies to manage specific technologies and business models, many scholars suggest we adopt a simple standard of consumer welfare.

U.S. Broadband = U.S. Innovation

In a sense, advocates of more robust centralized bureaucratic regulation of the digital economy recognize the importance of the consumer. In their case for a heavier hand, they argue that American broadband is a failure – that it is too slow, too expensive, and not widely used, especially compared to the rest of the world.¹⁶

Regulators should intervene more aggressively, they argue, to assist certain marketplace rivals and constrain others, hoping this will boost speeds and usage and lower costs. For a time, these arguments achieved a sort of conventional wisdom. But is this view of a sluggish American broadband economy based in fact? And would the desired policies have the intended effects – or perhaps just the opposite?

Our own analysis suggests the \$1.2 trillion invested by broadband firms over the last 15 years has in fact produced networks that are among the world’s very fastest, most robust, most widespread, and most used.

U.S. Broadband Speeds Among World's Very Fastest

Tables 2-5 – Akamai's extensive global infrastructure measures actual connection speeds in real time. Its "State of the Internet" report, using four measures of access network capacity, shows some two-thirds of the world's fastest broadband networks are found in U.S. states (highlighted in green).

| Table 2 – Average Measured Connection Speed | Average Megabits Per Second |
|---|-----------------------------|
| Global | 3.1 |
| 1. South Korea | 14.2 |
| 2. Vermont | 12.7 |
| 3. New Hampshire | 12.0 |
| 4. Delaware | 11.9 |
| 5. Japan | 11.7 |
| 6. District of Columbia | 11.3 |
| 7. Utah | 11.0 |
| 8. Hong Kong | 10.9 |
| 9. Massachusetts | 10.7 |
| 9. Virginia | 10.7 |
| 11. Maryland | 10.6 |
| 12. New Jersey | 10.5 |
| 13. Connecticut | 10.4 |

| Table 4 – Fast Broadband Connectivity | % Above 10 Megabits Per Second |
|---------------------------------------|--------------------------------|
| Global | 13% |
| 1. South Korea | 50% |
| 2. New Hampshire | 48% |
| 3. New Jersey | 45% |
| 4. Japan | 43% |
| 4. Vermont | 43% |
| 6. District of Columbia | 41% |
| 6. Delaware | 41% |
| 6. Massachusetts | 41% |
| 9. Rhode Island | 40% |
| 9. Maryland | 40% |
| 11. New York | 35% |
| 11. Connecticut | 35% |

| Table 3 – Average Peak Connection Speed | Average Peak Megabits Per Second |
|---|----------------------------------|
| Global | 18.4 |
| 1. Hong Kong | 63.6 |
| 2. Japan | 50.0 |
| 3. Romania | 47.9 |
| 4. District of Columbia | 47.2 |
| 5. Vermont | 47.1 |
| 6. New Jersey | 45.7 |
| 7. South Korea | 44.8 |
| 8. New Hampshire | 44.4 |
| 9. Latvia | 44.2 |
| 10. Massachusetts | 43.8 |
| 10. Maryland | 43.8 |
| 12. New York | 43.1 |
| 12. Virginia | 43.1 |
| 14. Delaware | 42.8 |
| 15. Utah | 41.9 |

| Table 5 – Broadband Connectivity | % Above 4 Megabits Per Second |
|----------------------------------|-------------------------------|
| Global | 46% |
| 1. Delaware | 90% |
| 1. New Hampshire | 90% |
| 3. Switzerland | 88% |
| 4. South Korea | 87% |
| 4. Rhode Island | 87% |
| 6. Vermont | 86% |
| 7. New Jersey | 84% |
| 7. Netherlands | 84% |
| 9. Maryland | 82% |
| 9. New York | 82% |
| 11. Connecticut | 81% |
| 11. Czech Republic | 81% |
| 13. Japan | 79% |
| 14. Hong Kong | 78% |
| 14. Austria | 78% |
| 16. Massachusetts | 77% |
| 16. Canada | 77% |
| 16. Denmark | 77% |
| 19. Belgium | 76% |
| 19. Florida | 76% |

Source: Akamai, State of the Internet, 1Q 2013

For example, real-time speed data collected by the Internet infrastructure firm Akamai shows U.S. broadband is the fastest of any large nation, and trails only a few tiny, densely populated countries.¹⁷ Akamai lists the top 10 nations in categories such as average connection speed; average peak speed; percent of connections with “fast” broadband; and percent of connections with broadband. Nearly all the nations on these lists, with the exception of the U.S., are small, densely populated countries where it is far easier and more economical to build high-speed networks.

Akamai also, however, lists the top 10 American states in these categories. Because states are smaller, like the small nations that top the global list, they are a more appropriate basis for comparison. If we combine the two lists – shown in Tables 2 through 5 – we see that U.S. states dominate the overall compilation.

- Ten of the top 13 entities for “average connection speed” are U.S. states.
- Ten of the top 15 in “average peak connection speed” are U.S. states.
- Ten of the top 12 in “percent of connections above 10 megabits per second” are U.S. states.
- Ten of the top 20 in “percent of connections above 4 megabits per second” are U.S. states.

U.S. states thus account for 40 of the top 60 slots – or two-thirds – in these measures of actual global broadband speeds.

Other measures of actual network usage support these findings. For years the U.S. has generated some 60 percent more network traffic per capita and per user than Western Europe, the most comparable sample in terms of size, population, and income.¹⁸ The newest estimates show the U.S. widening this gap, generating more than

twice the per capita IP traffic of Western Europe.¹⁹

In a recent study of the question called “The Whole Picture: Where America’s Broadband Networks Really Stand,”²⁰ the Information Technology and Innovation Foundation found that:

- the U.S. has the third highest rate of “intermodal competition” – access to both cable and DSL – in the OECD. Only tiny Belgium and the Netherlands enjoy more access to both cable and DSL;
- the U.S. is deploying more optical fiber than all of Europe;
- entry-level broadband prices in the U.S. are second lowest in the OECD; and
- America leads the world in 4G/LTE mobile broadband.

Other measures of the U.S. digital economy point to a healthy broadband ecosystem. The U.S. has achieved a world leading share of innovation in content, application, and infrastructure advances. From YouTube and Netflix to cloud computing, operating systems, smartphones, and tablets, the U.S. leads the way.

Broader measures support this notion as well. Economist Michael Mandel, for example, estimates the App Economy, on the fifth anniversary of the App Store, has created 752,000 U.S. jobs – up from zero.²¹ All these innovations – and jobs – depend upon fast, robust broadband networks.

A New Policy Path

Given the mostly successful record of broadband access and the accompanying health of the ecosystem, re-regulation or reorganization of American broadband firms thus appears to be unwarranted.

Remember the “monopoly” threats posed by AOL and Microsoft? Or IBM? Or for that mat-

ter, the telephone company? In the late-1990s many critics even said Blockbuster was a looming monopoly in video distribution. Most often, these threats of “dominance” are not solved by intrusive policy; they are usually transcended by disruptive technology and entrepreneurial firms, even new industries. Policies that seek to constrain or reward particular firms or technologies often have the perverse impact of cementing in place the incumbent firms, technologies, and policies, far longer than is healthy.

Looking ahead, policymakers and regulators should recognize which practices have fueled broadband success, and which may be obstacles to even greater achievement. In our view, policymakers should:

- recognize the complexity and dynamism of networks and the services that flow over them;
- practice humility and restraint;
- acknowledge the multiplicity of competitive and cooperative relationships across the industry;
- remove existing barriers to investment, and prevent the erection of new ones;
- recognize the success of, and endeavor to sustain, the successful multistakeholder governance of the Internet;
- avoid prescriptions or proscriptions of particular business models or technical architectures that could stifle experimentation and investment; and
- instead look to a standard of consumer welfare, which looks at whether firm practices impose particular harms.

Jonathan Nuechterlein and Phil Weiser, authors of the authoritative communications policy book *Digital Crossroads*,²² summed up the attitude policymakers should adopt as one of humility. “With every important deci-

sion,” they advise, law makers and regulators should

“remember[] the many times in which other policymakers have been flatly wrong in their predictions of how the telecommunications market would take shape and in their assessments of the regulatory measures needed to enhance consumer welfare within that evolving market. Humility also reminds policymakers that, over the long term, the unintended, undesired consequences of regulation can dwarf the intended, desired outcomes. That fact is not a reason for doing nothing when action is needed to correct genuine market failures. But it is a reason for policymakers to respect the market’s ability to enhance consumer welfare and, as they evaluate the predicted benefits of their own regulatory involvement, to give due regard to the unpredictable course of technological and economic change.”

The best approach for digital governance, as with most arenas of policy, is likely to be “simple rules for a complex world.”²³ **EE**

¹ The author would like to acknowledge and thank Broadband for America for supporting the research in this report.

² For our purposes, “IP” is a generic reference. It encompasses a range of modern, interoperable technologies and protocols for transmission of information over data networks. It is not necessarily a specific reference to the TCP/IP protocol, although TCP/IP makes up the greatest portion of “IP.” Consistent with our view of a highly dynamic Internet, new technologies and protocols will come along. See, for example, the existing UDP protocol and Google’s new experimental QUIC protocol. The “IP” reference is not intended to cement in place any particular protocol or technology.

³ Intel. “Fun Facts: Exactly How Small (and Cool) is 22 nanometers?” <http://www.intel.com/content/www/us/en/silicon-innovations/standards-22-nanometers-fun-facts.html>

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⁸ For a comprehensive treatment of peering and interconnection, see William B. Norton's guide "The Internet Peering Playbook, 2013 Edition"; and his website, drpeering.net. Also useful on these topics are the research of Deepfield CEO Craig Labovitz (mentioned elsewhere in this report) and the reports periodically issued by Sandvine.

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<http://www.ustelecom.org/blog/consumers-still-shedding-phone-lines-rapidly>

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<http://www.bretswanson.com/index.php/2012/06/the-real-deal-on-u-s-broadband/> and
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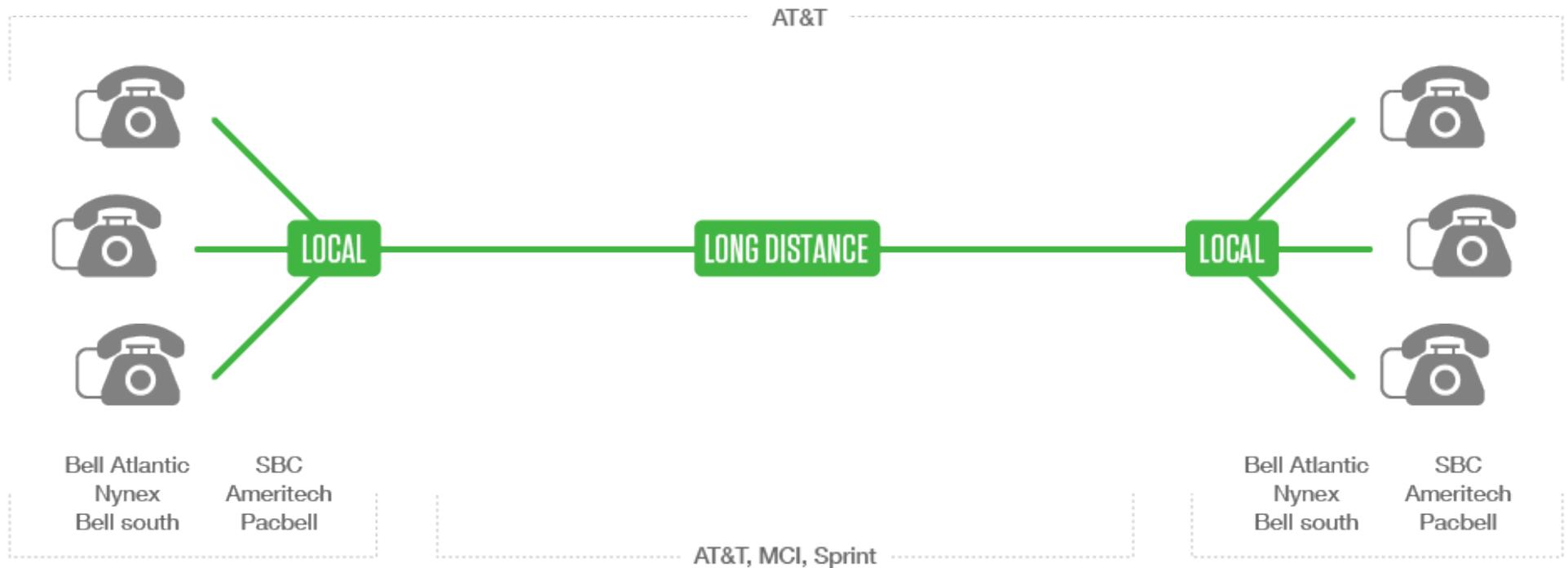
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VERTICALLY INTEGRATED VOICE NETWORK

The communications network is designed, built, and operated mostly by one firm. The network does one thing. The content is supplied by the end users.

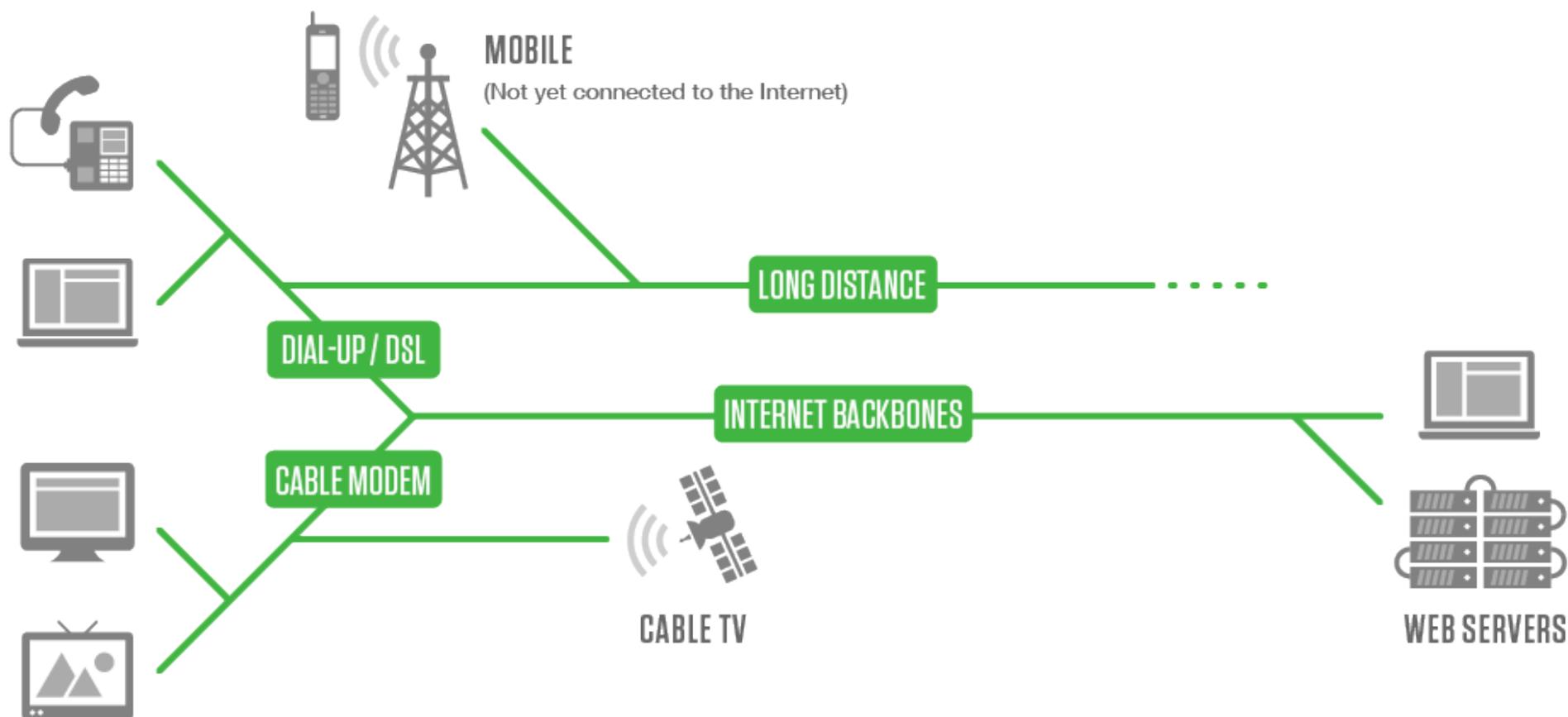


THE POST-1984 NETWORK

Same network, new names. The network breaks apart into long distance carriers (AT&T, MCI, Sprint) and local phone companies – the “Baby Bells.” The biggest technological innovation is fiber optics for long distance. Dial up modems offer limited access to the early Internet.

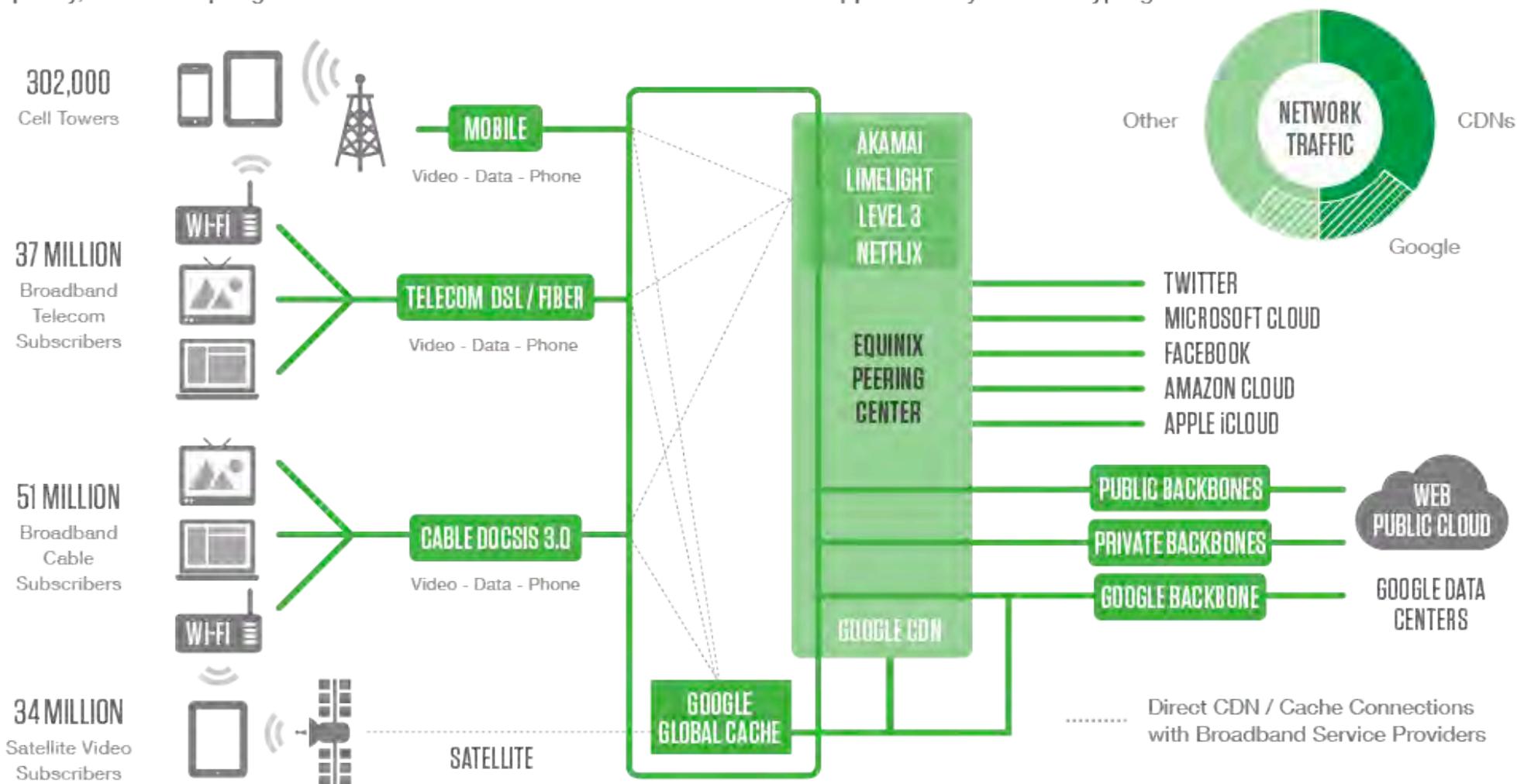
EARLY CONVERGENCE / DIVERGENCE

More communications networks begin offering more choices. With cable modems and DSL lines, respectively, cable TV and telecom firms offer broadband access to a common, public Internet, which yields early convergence of data-based services and content. Mobile begins rapid growth.



TODAY'S HYPERCONNECTED NETWORK

Five modes of broadband access are supplied by five types of communications service providers. Software, hardware, content, and retail companies become major Internet infrastructure providers, with massive networks and cloud computing capacity, often disrupting older services and media. Mobile devices and the App Economy achieve hypergrowth.



Biography of Everett M. Ehrlich

Dr. Everett M. Ehrlich is one of the nation's leading business economists. His firm, ESC Company, combines economic analysis, business development, and communications skills to solve a wide range of business problems. ESC's diverse clientele have included leading firms in the telecommunications, financial, accounting, pharmaceutical, and other industries, and such diverse organizations as the Pew Center on Global Climate Change and the professional sports unions in baseball, hockey, basketball, and soccer. He also served as Executive Director of the CSIS Commission on Public Infrastructure under co-chairmen Felix Rohatyn and Warren Rudman.

Dr. Ehrlich served in the Clinton Administration as Under Secretary of Commerce for Economic Affairs, the principal economic policy official for Commerce Secretaries Brown, Kantor, and Daley, and chief executive of the nation's statistical system. As such, he led the first comprehensive strategic review of the nation's economic statistics in four decades, leading to a major modernization of featured measures of the economy, and supervised the redesign of the 2000 decennial census. He co-chaired the White House working group on the restructuring of the U.S. economy in the face of information technology, was a leader in the U.S. planning effort of the two G-7 "Jobs Summits," and oversaw the Administration's economic analysis of global climate change.

Prior to his service in the Administration, Dr. Ehrlich was Chief Economist, and Vice-President for Economic and Financial Planning and subsequently for Strategic Planning, of Unisys Corporation. As such, he had responsibilities concerning corporate development and finance, business strategy, and economic forecasting. He reported directly to two chairmen of the company. He has also been the Senior Vice-President and Research Director of the business-based think tank, the Committee for Economic Development.

Dr. Ehrlich earlier served as Assistant Director of the Congressional Budget Office, where he directed the CBO program in commerce, trade, and technology, infrastructure and space transportation, energy and the environment, and agriculture. He joined CBO in 1977, after having served as a Legislative Aide to Congressman John Conyers, Jr., and having briefly taught economics at the university level.

Dr. Ehrlich is the author of two critically-acclaimed novels: *Big Government* (1998), and *Grant Speaks* (2000), both by Warner Books. He was, for eight years, a regular economics commentator on National Public Radio's *Morning Edition*, and his writings have appeared in *The Wall Street Journal*, *The Financial Times*, *The New York Review of Books*, *The Washington Post*, *The International Economy*, and other publications.

Dr. Ehrlich was born in New York City in 1950 and is a product of its public schools. He received a B.A. in 1971 from S.U.N.Y. Stony Brook and a Ph.D. in economics in 1975 from the University of Michigan. He lives in Bethesda, Maryland, where he and his wife of thirty-plus years follow the exploits of their three grown children and the Washington Nationals.

I am writing in response to the Committee's request for public comments on its White Paper regarding modernization of the 1996 Telecommunications Act.

My name is Everett M Ehrlich. I am now the President of ESC Company, a DC-based economics and business consulting firm. I have previously served in capacities including: Under Secretary of Commerce for Economic Affairs in the Clinton administration, Chief Economist and Vice-President for Strategic Planning of Unisys Corporation; Senior Vice-President and Director of Research for the Committee for Economic Development; Assistant Director of the Congressional Budget Office for Natural Resources and Commerce, as well as other positions. I attach a brief biography.

I congratulate the Committee on its attention to this issue. The 1996 Telecommunications Act was the last policy statement of the Telephone Era and the first of the Networked Era. When it was put in place, all you needed to know about many if not most people on Earth was one fact and you could speak to them in a matter of moments; that fact was their phone number. Today, the same is true of any datum, image, posting, or any other piece of information; that fact is their web address.

That the 1996 Act sat on the cusp of these two eras speaks to its explicitly transitional nature. It speaks volumes to the wisdom of the Act and its authors that the Act was a conscious vehicle for managing the transition from a regulated, "natural monopoly" regime for telephony to an unregulated and competitive regime for "information services." The distinction between the two was made because the intuition of the Act was that the latter would eventually supplant the former and merited treatment that would promote that end.

That intuition was more general than complete. While there was an understanding that the time was right for both greater inter-modal and intra-modal competition, the futures of cable-based, telco-based, and wireless systems could not be known. Satellite was not yet involved. Nor could the innovations that would quickly follow the Act, such as digital browsers, broadband transmission, and the other components of the contemporary Internet, be understood in advance. But the Act's authors knew that something important and fundamental was about to happen in the "information superhighway" and they decided that the best way to approach it was to let it happen, unfettered by specific regulation, but within the context of the American mixed public-private economy and the essential protections that are an essential part of that system (regarding consumer protection, anti-trust, predatory behavior, corruption, and the like).

That bet was won. Tellingly, the more that "let it happen" framework was applied, the better was the response. As the Committee's White Paper demonstrates, as a new and more permissive framework was more expansively applied – to wireless, to cable, to broadband – investment followed. It was the policy equivalent of "if you build it, they will come."

As a result, we now have a fundamentally different world than the one confronting the authors of the 1996 Act. The information networks that have subsumed the old telecommunications systems were built with private capital without guarantee of return

rather than by regulated entities that were granted monopoly franchises in exchange for returns earned with minimal risk. They combine diverse and rapidly evolving technologies, both wired and wireless, that are constantly being rebalanced in markets, unlike the static, circuit-based platform of the old phone system. They have also rebalanced the value-creating aspects of the system, from a system in which network access – dial tone – was the choke point, to a world in which access, services, content, “apps,” and other components of an integrated value proposition jockey for the consumer’s allegiance. Moreover, the providers of key elements of the system – mobile operating systems or equipment manufacturers, search providers, and the like – are as concentrated or as few or fewer in number as providers of access to broadband networks. To be sure, the structure of the modern market for information services is not the market for commodities such as number two winter wheat, but the results we have seen – in terms of investment, innovation, and affordability – speak to the essential competition now underway.

If the 1996 Act was constructed to manage this transition, then the Act was a great success. But transitions by their very nature have an end. To maintain the policy framework and regulatory structure of the 1996 Act is to deny its success. The goal of a new Act is to address the world created by the transition that the 1996 Act imagined -- it is the logical next step. Accordingly, I see the following as the objectives of successor legislation to the 1996 Act:

1. To identify as Act’s domain the role of information services in the economy and our society, consisting of not just the provision of access, but the services that reside on top of that access. Leaving aside how we treat that domain, we should be concerned and focused on information services in their entirety. Google and Apple are as relevant as ATT and Comcast to the functioning of the information services sector in every important dimension – size, market power, innovation, and sheer “importance” to the system.
2. To shift the federal framework from a supposition of harm to a supposition of competition. The argument that the 1996 Act was successful does not mean that we can walk away from the responsibility to review and, when necessary, respond to events in this crucial sector of the economy and aspect of society. But we should do so from the perspective of an approach that might be termed “essential competition.” The proscriptive regulatory framework of the 1996 Act reflected the reality that the sector was then-dominated by the legacy of regulation stemming from the 1933 Act. That system has “withered away” under the pressure of competition and its handmaiden, innovation – it should now be regarded as “essentially competitive.” Every key indicator – investment, technological progress, affordability, even profit margins – supports this view. The new framework for telecommunications policy, therefore, should respond to instances of actual harm, rather than presume that harmful effects would be realized before the fact.
3. To make the FCC, or its successor, an expert agency rather than an enforcement agency. Even if we were to abandon any and all specific regulation of the

information services sector, there would still remain a framework of consumer protection, anti-trust law, and other economy-wide policies that would apply to these activities. Thus, we should consider consolidating these various regulatory enforcement functions in the agencies created for that purpose, rather than maintaining independent enforcement in the FCC. The FCC's power could be nonetheless preserved by allowing it to make public and visible referrals to these enforcement agencies if it chose to. This would permit to enter into discussions with any party relevant to the information services sector, while maintaining the assumption of "essential competition."

4. To give the FCC, in cooperation with the NTIA, the explicit mandate to develop plans and procedures to expand the digital network and address the "digital divide." Even if we accept the idea of "essential competition," the importance of the Internet as a social thoroughfare, avatar of markets, means of obtaining information, and vehicle for expressing opinions and beliefs demands that we affirmatively extend it. We have policies in place to create that result, but they require explicit stewardship and advocacy. This would also allow the FCC to maintain its central role in important policies such as E-Rate, and to make programs to promote the use of broadband in education, health, local government, and elsewhere a higher priority than looking for areas where uncompetitive results "might happen."
5. To ensure that electromagnetic spectrum is a tradable commodity within boundaries established by the FCC to technical and engineering considerations and needs of first responders. The FCC should also be mandated to review and report on the budgetary consequences of existing patterns of spectrum use by the federal government.
6. To give the FCC the authority to mandate, review, and approve plans to effect, at the state level, the final aspects of the deregulation of telephony and the transition to an IP framework. State laws are already moving in this direction, but there is a federal interest in promoting this transition. Moreover, the FCC should be responsible for developing a new policy towards universal service that must be reflected in these state efforts; in the absence of the cross-subsidization of local service that was a part of the old regulatory system for telephony, explicit subsidies will be required and should be managed to allow a level playing field among all information service providers.

Everett M. Ehrlich
ESC Company



Subject: What is the role of the states in the future of communications?

Date: Thursday, January 23, 2014 at 1:33:11 PM Eastern Standard Time

From: Fred Goodwin

To: CommActUpdate

As you update the Communications Act of 1934, please keep in mind that Washington, DC doesn't always know everything, and sometimes those of us out in the states might know a thing or two.

The FCC pre-empted the states in the areas of broadband and VoIP regulation. I think in the case of fixed VoIP, that was a mistake. When a state legislature does it to itself, well that's nothing against Congress. Congress should recognize that states have a vital role to play in consumer protection, universal service, intercarrier dispute resolution, etc. and allow states to regulate communications in the public interest. Congress should carve out a specific role for the states, and make that role clear and unambiguous so the FCC doesn't regulate us out of the picture.

I work for a state commission, but my opinion is mine alone, and does reflect the position of my employer.

Regards,

Fred Goodwin

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January 31, 2014

The Honorable Fred Upton
Chairman
House Committee on Energy & Commerce
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry Waxman
Ranking Member
House Committee on Energy & Commerce
2322A Rayburn House Office Building
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The Honorable Greg Walden
Chairman
Subcommittee on Communications and
Technology
House Committee on Energy & Commerce
2182 Rayburn House Office Building
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The Honorable Anna Eshoo
Ranking Member
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House Committee on Energy & Commerce
241 Cannon House Office Building
Washington, D.C. 20515

Re: Modernizing the Communications Act: Response to First
#CommActUpdate White Paper

Dear Chairman Upton, Ranking Member Waxman, Chairman Walden and Ranking Member Eshoo,

Free Press and the Free Press Action Fund (“FPAF”) respectfully submits this brief response to the Committee’s call for public input as it contemplates changes to our nations communications laws.¹

We believe that as a nation we should guarantee that every American has access to adequate communications facilities at reasonable charges;² that every American should have access to facilities

¹ Free Press is a nonpartisan org with more than 650,000 members fighting to protect the public's rights to connect and communicate freely. Free Press has testified before this Committee on a range of media and telecommunications issues, including Universal Service Fund reform, the National Broadband Plan, and the application of the Communications Act to advanced telecommunications networks.

² 47 U.S.C. 151 (“For the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient, Nationwide, and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense, for the purpose of promoting safety of life and property through the use of wire and radio communication, and for the purpose of securing a more effective execution of this policy by centralizing authority heretofore granted by law to several agencies and by granting additional authority with respect to interstate and foreign commerce in wire and radio communication, there is hereby created a commission to be known as the ‘Federal Communications Commission,’ which shall be constituted as hereinafter provided, and which shall execute and enforce the provisions of this Act.”).

that allows them to transmit the information of their choosing between points of their choosing without unjust discrimination;³ and that the role of our nation’s communications policymakers and regulators should be to promote competition so that Americans are able to pay the lowest price for the highest quality telecommunications services.⁴

If these high level concepts sound familiar, it is because they are. They collectively form the core of the Communications Act, as amended by the Telecommunications Act of 1996.

As your Committee begins a process of reviewing the adequacy of our existing communications laws, we believe it is critical for members to understand that any perceived flaws in the law have much less to do with the immutable text of the law, and far more to do with the subsequent implementation by the Federal Communications Commission.

In short, we have the law we need. The challenge is how to get the Act back on track.

Below we offer a response to the First #CommActUpdate White Paper and the questions it asks. We highlight some of the misconceptions contained within the paper through a discussion of the history of the Act and its aftermath. We also respectfully suggest how to restore Congress’ bipartisan vision of a competitive, largely deregulated telecommunications marketplace through policies designed to create a market structure that acts as a regulator, buttressed by the FCC’s oversight authority.

INTRODUCTION

In the discussion of the current relevance of the Communications Act, it seems that many have lost the thread of history, and have developed an inaccurate understanding of the framework for innovation and competition that Congress established for our nation’s two-way communications networks.

Our nation’s laws are not made in a vacuum, nor are they made with haste. The lawmaking process is one that is designed to produce laws that are flexible and withstand the test of time. This is achieved in practice through the deliberative wisdom of the Congressional process, which often bases our laws around basic bedrock principles — principles that transport the law through changing times. Our Communications Act is guided by the principles of universal service, non-discrimination, interconnection, competition and reasoned deregulation.

³ See 47 U.S.C. 153 (“The term ‘telecommunications’ means the transmission, between or among points specified by the user, of information of the user’s choosing, without change in the form or content of the information as sent and received . . . The term ‘telecommunications service’ means the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used.”). See also 47 U.S.C. 254(b) (“Access to advanced telecommunications and information services should be provided in all regions of the Nation.”). See also 47 U.S.C. 160 (“The Commission shall forbear from applying any regulation or any provision of this Act to a telecommunications carrier or telecommunications service, or class of telecommunications carriers or telecommunications services, in any or some of its or their geographic markets, if the Commission determines that . . . enforcement of such regulation or provision is not necessary to ensure that the charges, practices, classifications, or regulations by, for, or in connection with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably discriminatory.” (emphasis added)).

⁴ P.L. 104-104 (“An Act To promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.”).

These principles, through the framework of the Telecommunications Act of 1996 (“1996 Act,”) were intended to foster the development of a robust, advanced and competitive two-way telecommunications *services* market, which was to facilitate competition in the video and information services markets that use telecommunications to reach end users.

Though some may feel that the Communications Act is outdated, the fact is Congress overhauled the law in 1996 with an eye towards competition and technological convergence. In particular, Title II is not a framework for monopolies offering telephone service, but a framework for competition in two-way communications networks, a framework that *specifically* included advanced broadband networks.

Furthermore, the notion that the universal service, non-discrimination, interconnection, competition and reasoned deregulation principles that are at the heart of basic Title-II common carriage is somehow outdated ignores the plain fact that many of our law’s basic principles are hundreds of years old. From the ideas embodied in the Constitution to the ideas embodied in common law, basic principles often withstand the test of time. In enacting the 1996 Act, Congress certainly understood that non-discrimination and interconnection unfettered by market power are the keys to having a robust two-way communications infrastructure, regardless of changes in technologies.

If policymakers just take a moment and to understand the history, we think they'll see that the law we have in place is still quite useful. It's just not being used.

We trust in the law, and are certain that the deliberative wisdom of Congress, if once again properly implemented, will bring the right outcomes that we all agree are desirable.

MISCONCEPTIONS ABOUT THE COMMUNICATIONS ACT

Any discussion of rewriting a law that is perceived as outdated and unworkable must start with a common understanding of the law and its history. The First #CommActUpdate White Paper does offer a largely accurate assessment of the law and its functions. However, the paper does contain a few often-mention conceptions of the law that are in some cases incomplete or inaccurate.

For example, the paper states “Title II addressed common carrier regulation of telephone and telegraph, modeled on the assumption of a utility-like natural monopoly...” The degree to which Title II is applied to a telecommunications service is indeed proportional to whether or not a market is a monopoly, but common carriage in all markets that it is applied, including communications, is not exclusively related to utilities or to monopolies. Indeed, as we discuss in this letter, there are many communications services that are offered in non-monopoly markets that are nonetheless treated as common carrier services under the law — and they are vibrant markets with high levels of investment and innovation.

The paper states, “[t]he 1996 Act also required the FCC to forbear from regulating carriers or services if the regulation is not necessary to ensure reasonable rates, protect customers, or otherwise promote the public interest.” This is true, but the entirety of Section 10 indicates that forbearance can only be granted if the regulations are not needed to ensure the outcomes required by Section 201 and 202 are continued. In other words, not only should the rates be reasonable, but the charges and practices after forbearance remain “just and reasonable and are not unjustly or unreasonably discriminatory.” It is critical that the importance of non-discrimination not get lost in this discussion.

The paper also states that a “key result of the 1996 Act is the distinction created between ‘telecommunications’ services and ‘information’ services. This distinction came as the Commission was struggling with how the Communications Act could address telephone carriers’ entry into data services.” This is simply inaccurate. The Commission first dealt with this very issue in *Computer I*, and later settled on a firm demarcation between “basic” and “enhanced” services in *Computer II*, a distinction that Congress codified with its adoption of the definitions of “telecommunications services” and “information services.” Further, the Open Network Architecture (ONA) policies contained in *Computer III* served as the basis for Section 251’s unbundling framework. The FCC was not “struggling” in any sense with this question. It had in fact come up with a wildly successful policy framework that Congress took its cues from.

The paper also overstates when it says that “[o]nce the law distinguished that ‘information’ services would be largely unregulated while ‘telecommunications’ services would remain highly regulated, information services grew at a rapid pace. Data services and the commercial Internet, which are also largely exempt from state regulation, grew out of services that were categorized as ‘information’ services.” First, as stated above, the very initial development of the Internet was made possible by the FCC’s actions in the *Computer Inquiries*. The commercial Internet backbone and access markets began their rapid ascensions well before Congress adopted the 1996 amendments to the Act. Second, it is misleading to imply that telecommunications services “would remain highly regulated,” since both then and now there are literally dozens of such services that comprise tens of billions of dollars in economic activity that are treated as common carriage under Title II of the Act, yet subject to very little regulation.

Finally, the paper contains the misconceptions that the law did not “contemplate the convergence of technologies in the modern digital era,” that the law established “different regulatory obligations based on the mode of technology,” or that the law divided “the overall regulatory scheme into separate titles based on specific network technologies and services.” Congress purposefully wrote the Act to be technology neutral; this is seen in the Act’s definitions. Title II is about two-way communications services; Title III has to stand separate because it deals with spectrum. And the 1996 changes to Title VI’s treatment of cable services was largely deregulatory and technology neutral. These are not silos, and they are not obligations based on the mode of technology.

Congress was clear: the physical networks of the 21st century would provide telecommunications services. Congress gave the FCC wide latitude in applying Title II to those networks, which Congress made quite clear would be common carriage networks.

To the extent that there is a silo problem, it is not a fault of the law, but of the FCC. Congress did make an error in not changing the FCC’s existing organizational structure to match the structure of the Act.

The existing law was in fact written in a very forward-looking manner. Congress fully understood the coming network revolution, and intended for the law to help usher it in (which, for a time, it certainly did). The law didn’t mention “Internet” everywhere, because it the law was forward looking. Meaning that Congress wanted to ensure a world of big open telecom services that could connect to the Internet or whatever information service that require telecom services to function that American innovators would think of next.

A BRIEF HISTORY OF THE 1996 TELECOM ACT AND ITS CENTRAL PURPOSE: SERVICES COMPETITION DELIVERED VIA BIG, OPEN AND COMPETITIVE TELECOMMUNICATIONS SERVICES

In the years following the break up of Ma Bell, there was a marked shift in how many members of Congress on both sides of the aisle approached the issue of communications regulation. Deregulation was the bumper sticker theme of the day, even if this overarching slogan obscured the complexity of the policy choices Congress was considering. While there were a few members who felt that government should play no role in the telecommunications and cable markets, the overwhelming majority of both Republicans and Democrats embraced the emerging “competition-then-deregulation” philosophy.

The driving forces behind this shift were the dawn of the broadband telecommunications era in the mid-1990s and the big promises cable, telco and other executives were making about the future of competition. The Regional Bell Operating Companies (“RBOCs”) wanted desperately to get out from under the policies of the court-ordered Modified Final Judgment (“MFJ”) in the AT&T breakup, which kept them from entering the long-distance, video and information-services markets. The competitive telecoms, led by AT&T Corp. and MCI, wanted equal access to the RBOCs’ local networks to offer local calling and data services. And the cable industry wanted multichannel service-rate deregulation and approval to enter the local telecom market.

All these factions told Congress that *open* telecommunications networks would solve any market-power problems in the services offered *over* those networks. With every home and business in America offered reasonably priced, fast and open advanced telecommunication *services*, there would no longer be any concern about competition in the local toll, long-distance, information-service and multichannel-video markets. The thinking was that so long as the underlying telecommunications service was a neutral distribution platform, and new entrants could get into the business of offering these other services over that platform, there would be no concern about the Bells entering the long-distance markets — and no need to regulate cable rates.

The plan’s linchpin was cable’s promise to become a telecommunications service provider, one that would not merely be an alternative for narrowband voice service, but an open and nondiscriminatory broadband telecommunications service capable of delivering high-quality voice, video and data communications.⁵

Again, for most members of Congress, the entire point of the 1996 Act was the creation of robust and open telecommunications platforms that could deliver competitive voice, video and data services. The theory Congress operated on in 1996 was that more distribution mediums (be they copper, coaxial cable, fiber, terrestrial wireless or satellite) equals competition — competition in the markets for the services delivered over those distribution mediums.

⁵ See Telecommunications Competition and Deregulation Act of 1995, Report of the Committee on Commerce, Science, and Transportation on S. 652, S. Rpt. 104-23, 104th Congress, First Session (1995) at 13 (*Senate Committee Report on S. 652*). (“Decker Anstrom testified that NCTA supports telecommunications legislation because the cable industry is ready to compete, and legislation must include rate regulation relief for cable. *He said that cable will be the competing wire to the telephone industry, and cable’s coaxial cable carries 900 times more information than telephone’s twisted copper pair.* The problem, he said, is that cable does not have the capital or, in some states, the authority to compete with the local exchange carriers.” [emphasis added])

But even though the mantra of the 1996 Telecom Act was “competition before deregulation,” the cable industry got the rate relief it asked for — regardless of marketplace conditions. Not surprisingly, FCC data show that expanded basic cable rates once again began rising annually at three times the rate of inflation, with a sharp uptick in 1999.⁶

And despite all their promises, the Bells did not enter the video markets for another decade (having completely ignored the law’s Open Video System provisions that would have enabled entry bypassing the franchise process). The cable industry also broke its promise to become the competing nondiscriminatory broadband platform. Cable instead pressured the FCC to create a loophole in the regulatory structure by defining cable’s two-way telecommunications platform as an information service and not a telecommunications service. The Commission did this — even though Congress clearly stated that “telecommunications services [include] the transport of information or cable services”⁷ when it adopted the 1996 Telecom Act.

This history is as important today as it is forgotten. Congress created the correct framework for the blossoming of competition in the voice, video, data and information-services markets. But the FCC, abetted by the courts, quickly abandoned this framework.

By tossing aside the congressional roadmap, the FCC led us to what we all live with today: despite the promise of the 1996 Act to foster a competitive advanced telecommunication *services* market, Americans now have *zero* options for broadband telecommunications services. All we have is an at-best duopoly market for wired high-speed Internet information services, a sharp decline from the choice in ISPs that Americans enjoyed in the late 1990s.

The lack of an open telecom service platform completely undermined the blueprint for video competition in particular (not to mention telecom competition), and not surprisingly multichannel service prices continue to skyrocket despite the decline in traditional cable’s market share. And the fallout isn’t over; the consequences of the FCC’s classification decisions have up until now been reserved for broadband telecommunications, but by simply calling their services information services, the remaining common carriers will be able to bring an end to the entire concept of a public telecommunications service network.⁸

⁶ From 1998 to 1999, expanded basic rates increased by 3.8 percent. From 1999 to 2000, these rates increased by 7.9 percent. In contrast, from 1999 to 2000 the rates for basic cable increased by 2.1 percent. *See FCC 2012 Cable Price Survey* at Table 3.

⁷ *See Senate Committee Report on S. 652*. (“As defined under the 1934 Act [as amended by this bill], ‘telecommunications services’ includes the transport of information or cable services, but not the offering of those services. This means that information or cable services are not included in the definition of universal service; what is included is that level of telecommunications services that the FCC determines should be provided at an affordable rate to allow all Americans access to information, cable, and advanced telecommunications services that are an increasing part of daily life in modern America. Put another way, the Committee intends the definition of universal service to ensure that the conduit, whether it is a twisted pair wire, coaxial cable, fiber optic cable, wireless, or satellite system, has sufficient capacity and technological capability to enable consumers to use whatever consumer goods that they have purchased, such as a telephone, personal computer, video player, or television, to interconnect to services that are available over the telecommunications network.”).

⁸ *See* Comments of Free Press, *In the Matter of AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition; Petition of the National Telecommunications Cooperative Association for a Rulemaking to Promote and Sustain the Ongoing TDM-to-IP Evolution*, GN Docket No. 12-353, Jan. 28, 2013.

Nothing in the law or legislative history even remotely suggests this was the path Congress intended for the FCC to follow, nor the outcome it desired.

However, the law itself remains intact. The answers to solving the problems in both the video market and the broadband market are there.

If the Internet remains an open and nondiscriminatory platform, like it has always been, then anyone can be an information service provider, broadcaster, publisher or video distributor — not just the incumbents that own the physical infrastructure.

But thanks to the FCC's misguided classification decisions, there is no guarantee *under the law* that the Internet will remain a viable delivery platform for information services, including new video distributors. When the owners of the physical infrastructure can prevent anyone else from being a distributor, that's a problem — *the exact problem* the 1996 Act was designed to solve.

Because of the actions the FCC took in the *Computer Inquiries*, the codification of that policy framework in the 1996 Act, and the FCC's half-willingness to feign interest in openness, we've seen robust innovation and investment in the edge markets that require an open delivery platform. But this investment and innovation will not continue if there is any uncertainty about the openness of the delivery platform.

While American Internet Service Providers all claim to embrace openness, their actions tell a different story. When ISPs embrace data caps and overage charges that serve no legitimate engineering or economic purpose, they send a signal to the market that scarcity, not abundance, is the business model. Artificial scarcity is a market failure, one that depresses investment and deprives Americans of the benefits of technological progress.

So the answer to this complex problem is the one that the FCC and then Congress came to before. We don't need public policy to dictate how the industry should behave; that's the consumers' job. We need public policy to allow innovation to happen. If we keep the pipes open, the content will flow and consumers will win.

The unfortunate reality is that while we already have these policies and they are the law of the land, the FCC abandoned them. The FCC's shortsighted classification decisions robbed Americans of a competitive video market and a competitive Internet access market, and robbed Americans completely of *any* broadband telecommunications service market.

Incumbents have spent a substantial amount of resources spreading misinformation about and ultimately demonizing the principle of common carriage, and by extension, Congress' competitive blueprint from the 1996 Act. This is unfortunate, because Congress' blueprint for competition was the right one, and members of both parties supported it, as did the cable and telecom incumbents and their would-be competitors.

The 1996 Act was framed as deregulation in exchange for competition. We've already got the law we need, and we need to get it back on track before we rush into legislating the incumbent's current wish lists into law. If cable and telco transmission were affirmatively put back under Title II (where Congress initially put it) and its basic non-discrimination obligations, there likely would not be much need for regulation in the telco or video markets, beyond establishing basic duties on how the markets intersect.

WHERE IT FIRST WENT WRONG — FORGETTING ABOUT FORBEARANCE

Given the history discussed above, the current heated debate over broadband's place in Title I or Title II seems so odd.

Of course two-way broadband transmission networks belong in Title II, because that's where Congress put them, and intended them to stay. But that does not mean that Congress intended for a permanent heavy hand of regulation to apply to these advanced networks. Again, Congress recognized that as competition develops, reasoned deregulation is an appropriate response.

Section 10 of the Act was the path of reasoned deregulation chosen for our nation's two-way communications networks. The FCC chose a different path to deregulation, a path that involved sometimes metaphysical-like definitional interpretations of legal classifications. The Commission felt that they could follow this path to deregulation, while preserving the Commission's ability to uphold the principles of universal service, non-discrimination, interconnection and competition.

But the legal theory the FCC based this assumption on has now, through the DC Circuit's decisions, been proven to be unworkable. The FCC's classification errors are now proving to inhibit the Commission's activities in areas that Congress clearly placed under the FCC's authority. This outcome, and its unworkability was predicted by Justice Scalia in his dissent in the *Brand-X* case:

“The main source of the Commission's regulatory authority over common carriers is Title II, but the Commission has rendered that inapplicable in this instance by concluding that the definition of “telecommunications service” is ambiguous and does not (in its current view) apply to cable modem service. It contemplates, however, altering that (unnecessary) outcome, not by changing the law (*i.e.*, its construction of the Title II definitions), but by reserving the right to change the facts... [by asserting] its undefined and sparingly used “ancillary” powers... Such Mobius-strip reasoning mocks the principle that the statute constrains the agency in any meaningful way.”⁹

In other words, the FCC's end-run around Section 10 physically “broke” the law, making it unworkable. In pursuing the principle of reasoned deregulation in a manner not laid out by Congress, as Justice Scalia put it, “the Commission has attempted to establish a whole new regime of *non*-regulation . . . The important fact, however, is that the Commission has chosen to achieve this through an implausible reading of the statute, and has thus exceeded the authority given it by Congress.”

The notion now promoted by some, that restoring the policy framework that Congress adopted (an action known as “reclassification”) would be a return to “century-old rules made for railroads and Ma Bell phone monopolies” is simply incorrect. Reclassification would simply return the framework that Congress adopted for all two-way communications networks in 1996, a framework that today still applies to many non-monopoly markets, including CLEC services, CMRS services, as well as all of the high-capacity data lines in the very competitive enterprise broadband market.

Reclassification, followed by appropriate Section 10-based forbearance will preserve the status quo deregulatory approach. Reclassification simply puts the Commission's rules back in harmony with

⁹ *National Cable & Telecommunications Ass'n v. Brand X Internet Services*, 125 S. Ct. 2688 (2005) (*NCTA v. Brand X*).

the law, and is justified by current realities of the marketplace that make the prior classification decisions inappropriate for today.

MARKET STRUCTURE AS THE REGULATOR

There is a reason the Department of Justice broke up AT&T, and that reason was not simply to bring an end to a monopoly. Indeed, the Modified Final Judgment left local monopolies in place.

The Department took the action it did in order to create a market structure that would act as a regulatory force to improve consumer welfare. The break up drew a clear market boundary between the local access network (which was and will always be subjected to the greatest level of natural monopoly barriers) and every other possible market that the local access network can connect to (be it long distance, information services, cable services, or consumer premise equipment).

DoJ's actions weren't the only path to removing Ma Bell's gatekeeper power over these adjacent markets; the FCC could have tried to regulate how Ma Bell interacted with these markets. Indeed, in some cases it did, quite successfully (*e.g. Carterfone* for CPE, and *Computer II* for information services). But the inherent eloquence of the Department's action was to simply let the market structure act as regulator first, then the FCC second.

This approach worked. Washington seems to have forgotten the success of this approach as it in many cases stood by as re-vertical integration dissolved these important market boundaries. If the Committee wishes to reduce regulation to as minimal level as possible in this market that will always be highly concentrated constrained by the economics and politics of the last mile, then it needs to think deeply about restoring a market structure that can act as the regulator.

CONCLUSION

The history of the Communications Act and its amendments certainly suggests that nothing about a service's classification depends on how the provider chooses to classify it. The Act isn't something designed to let carriers get the privileges of Title II without the obligations, based on self-designation as an information service provider.

The Act was written in the way that laws which are unlikely to see constant tinkering are always written — as clear as the drafters could be about functions, reflecting the input, debate and promises made to the American people in real time.

These promises — made by industry, members of Congress and ultimately enshrined in the law itself — were certainly not promises to only ever offer the American people *narrowband* telecommunications services. And beyond that (given what the FCC has done), certainly no one member who voted for the 1996 Act thought they were voting for a law that would ensure that the residential telecom services market would disappear completely (as it very well may in the context of the so-called IP Transition).

Furthermore, the 1996 Act was in fact about the future. In it Congress embraced the foundational principles of common carriage (and what the FCC had helped enable in *Computer II*) and asked that they be used to usher in a competitive advanced telecommunications services market.

We are now 18 years removed from this last overhaul. We are now in the future.

A child born on that February when the 1996 Act became law is about to turn 18. That child and her cohort barely use voice “calls.” She speaks and *communicates* to her world through data — text and instant messages, social media, Tumblr, and numerous other websites and applications that many members of prior generations have likely never heard of.

The *two-way communications facilities* and its underlying technology used to carry these services may have changed, as Congress fully expected they would. But the societal and policy reasons for having common carriage obligations have not. The total eradication of common carriage is certainly not the promise Washington made to America, yet that is the reality we now face. Here today, 18 years later, there is no mass-market broadband telecommunications services market. There is only “high speed Internet access” offered in a highly concentrated market. There are long-term consequences to this loss of a telecommunications services market.

If we as a nation fail to restore common carriage to our nation's central communications network, then we are ensuring that future generations of Americans will not be able to send the information of their choosing, between points of their choosing, without undue discrimination. That is the very definition of a telecommunications service. Nowhere in Communication Act or in the lengthy debates leading up to the 1996 rewrite is it suggested that Americans should not be able to access telecommunication services. That shouldn't be surprising, because it's a plainly absurd proposition.

Policymakers need to understand that the children of today and tomorrow do not and will not communicate the way prior generations did. They communicate through 0s and 1s. They communicate through words and images on a screen.

Are we as a nation seriously willing to tell our children that they should not be able to access a *public network* that lets them communicate free from undue discrimination?

Are we really prepared to tell our children that if they want to act like their parents and grandparents and make a voice call using a landline or wireless phone, they know that call will connect and won't be of inferior quality, and they won't be price gouged for it; but if they instead choose to communicate through their natural medium — data — that they get no legal protections against undue discrimination?

This discussion is indeed all about the future. We hope that the Committee does its part to restore the promises of an open and competitive telecom services market that Congress made not so long ago to the American people.

Sincerely,

Derek Turner, Research Director
Free Press, Free Press Action Fund



cc: David Redl
Ray Baum
David Grossman
Shawn Chang
Margaret McCarthy