

Lehr, William; Sicker, Douglas

Conference Paper

Communications Act 2021

28th European Regional Conference of the International Telecommunications Society (ITS):
"Competition and Regulation in the Information Age", Passau, Germany, 30th July - 2nd
August, 2017

Provided in Cooperation with:

International Telecommunications Society (ITS)

Suggested Citation: Lehr, William; Sicker, Douglas (2017) : Communications Act 2021, 28th European Regional Conference of the International Telecommunications Society (ITS): "Competition and Regulation in the Information Age", Passau, Germany, 30th July - 2nd August, 2017, International Telecommunications Society (ITS), Calgary

This Version is available at:

<https://hdl.handle.net/10419/169478>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Communications Act 2021

William Lehr
MIT

Douglas Sicker
CMU

Abstract

The Communications Act of 1934, as amended by the Telecommunications Act of 1996, is showing its age.¹ Like an old New England house that added drafty new additions over the years to accommodate a growing extended family, the Act is poorly suited to meet today's challenges. Much of what is included in the Act relates to earlier technologies, market structures, and regulatory constructs that address issues that are either no longer relevant or that cause confusion when one tries to map them to current circumstances. The legacy Act was crafted in a world of circuit-switched POTS² telephony provided by public utilities, and even when substantially revised in 1996, barely mentions broadband or the Internet.³

Moreover, the FCC has struggled in recent years to establish its authority to regulate broadband services and in its effort to craft a framework to protect an Open Internet (sometimes, referred to as Network Neutrality). While many of the fundamental concerns that the legacy Act addressed remain core concerns for public policy, the technology, market, and policy environment are substantially changed. For example, we believe that universal access to broadband and Internet services is an important policy goal, but do not believe that the current framework enshrined in Title II of the legacy Act does a good job of advancing those goals. Additionally, spectrum policy within the FCC is too closely mired in legacy decisions that blend management of scarce spectrum resources with media content considerations⁴ and industrial policy.⁵

In this paper, we identify the key concerns that a new Act should address and those issues in the legacy Act that may be of diminished importance. We propose a list of the key Titles that a new

¹ See Communications Act of 1934 as amended, available at <https://transition.fcc.gov/Reports/1934new.pdf>.

² POTS stands for Plain Old Telephone Service, and refers to analog voice service generally provided over copper pair connection. For many, POTS was the network connection to dial-up Internet before the advent of broadband network access.

³ The Telecommunications Act of 1996 mentions "broadband" once and "Internet" just eleven times (see Sections 706, 271, and 230 of the Telecommunications Act of 1996, available at <https://transition.fcc.gov/Reports/tcom1996.pdf>).

⁴ For example, in return for free access to broadcast licenses, over-the-air broadcasters are held accountable for providing public interest programming such as news, access for political advertising, and children programming. This blending of content and spectrum regulation complicates the challenge of directing spectrum resources to their most efficient uses.

⁵ For example, the history of command & control spectrum regulation bundled decisions about the appropriate technologies to use (FDM for mobile services) and market structure (how much spectrum to allocate to each licensee to enable a targeted number of competitors). As we move toward a world in which spectrum should be shared more dynamically, it is desirable to separate industrial policy and spectrum management goals as we discuss further below.

Communications Act of 2021 might include and identify their critical provisions. Our straw man proposal includes six titles: Title I establishes the basic goals of the Act and sets forth the scope and authority for the FCC; Title II provides the basic framework for regulating potential bottlenecks; Title III establishes a framework for monitoring the performance of communications markets, for addressing market failures, and for promoting industrial policy goals; Title IV focuses on managing radio-frequency spectrum; Title V focuses on public safety and critical infrastructure; and Title VI addresses the transition plan.

Our goal is to provoke a discussion about what a new Act might look like in an ideal, clean-slate world; not to address the political, procedural, or legal challenges that necessarily would confront any attempt at major reform. That such challenges are daunting we take as given and as a partial explanation for why the legacy Act has survived so long. Nevertheless, it is worthwhile having a clear picture of what a new Communications Act should include and the benefits that having a new Act might offer so we can better judge what our priorities ought to be and what reforms might best be attempted.

Communications Act 2021

William Lehr
MIT

Douglas Sicker
CMU

**** Lehr Sicker New Telecom Act ITS.docx ****

Table of Contents

- 1. Introduction..... 3
- 2. Background..... 4
- 3. Why a new Communications Act? 7
- 4. Outline for a new Communications Act 2021 10
 - 4.1. Title 1: General Provisions establishing FCC authority and scope 11
 - 4.2. Title II: Bottleneck Facilities Regulation..... 14
 - 4.2.1. Access & Interconnection 15
 - 4.2.2. Structural remedies 18
 - 4.3. Title III: Communications Market Monitoring & Enforcement..... 19
 - 4.3.1. Powell’s 4 Principles..... 19
 - 4.3.2. Universal Service 21
 - 4.3.3. Measurement, Disclosure, and Transparency 22
 - 4.3.4. Rule-making authority & process 23
 - 4.4. Title IV: Spectrum Management 24
 - 4.5. Title V: Public Safety and Critical Infrastructure 24
 - 4.6. Title VI: Transition Plan 25
 - 4.7. Those Titles that are Missing..... 27
 - 4.7.1. Sunset Media and Cable Regulation 27
 - 4.7.2. Privacy and Cybersecurity Policy and FCC's Role? 27
- 5. Conclusions..... 28
- 6. Exhibits 30
 - 6.1. Exhibit #1: Communications Act of 1934 (as Amended)..... 30
 - 6.2. Exhibit 2: Summary of Communications Act of 2021 31
- 7. References..... 32

1. Introduction

The Communications Act of 1934, as amended by the Telecommunications Act of 1996, is showing its age.⁶ Like an old New England house that added drafty new additions over the years to accommodate a growing extended family, the Act is poorly suited to meet today's challenges. Much of what is included in the Act relates to earlier technologies, market structures, and regulatory constructs that address issues that are either no longer relevant or that cause confusion

⁶ See Communications Act of 1934 as amended, available at <https://transition.fcc.gov/Reports/1934new.pdf>.

when one tries to map them to current circumstances. The legacy Act was crafted in a world of circuit-switched POTS telephony provided by public utilities, and even when substantially revised in 1996, barely mentions broadband or the Internet.⁷

Moreover, the FCC has struggled in recent years to establish its authority to regulate broadband services and in its effort to craft a framework to protect an Open Internet (sometimes, referred to as Network Neutrality). While many of the fundamental concerns that the legacy Act addressed remain core concerns for public policy, the technology, market, and policy environment are substantially changed. For example, we believe that universal access to broadband and Internet services is an important policy goal, but do not believe that the current framework enshrined in the Title II of the legacy Act does a good job of advancing those goals.

In this paper, we identify the key concerns that a new Act should address and those issues in the legacy Act that may be of diminished importance. We propose a list of the key Titles that a new *Communications Act of 2021* might include and identify their critical provisions. Our straw man proposal includes six titles: Title I establishes the basic goals of the Act and sets forth the scope and authority for the FCC; Title II provides the basic framework for regulating potential bottlenecks; Title III establishes a framework for monitoring the performance of communications markets, for addressing market failures, and for promoting industrial policy goals; Title IV focuses on managing radio-frequency spectrum; Title V focuses on public safety and critical infrastructure; and Title VI addresses the transition plan.

Our goal is to provoke a discussion about what a new Act might look like in an ideal, clean-slate world; not to address the political, procedural, or legal challenges that necessarily would confront any attempt at major reform. That such challenges are daunting we take as given and as a partial explanation for why the legacy Act has survived so long. Nevertheless, it is worthwhile having a clear picture of what a new Communications Act should include and the benefits that having a new Act might offer so we can better judge what our priorities ought to be and what reforms might best be attempted.

2. Background

Communications law in the U.S. is a complex amalgam of legislation, regulatory and court decisions that have accumulated over many decades. The Communications Act of 1934, as amended ("the Act"), is the centerpiece legislation that created the Federal Communications Commission ("FCC") as an independent regulatory agency and underlies the core provisions of telecommunications regulatory policy.⁸ The Act is comprised of seven Titles, but the ones that will concern us most here are Title I that establishes the FCC as an independent regulatory

⁷ The Telecommunications Act of 1996 mentions "broadband" once and "Internet" just eleven times (see Sections 706, 271, and 230 of the Telecommunications Act of 1996, available at <https://transition.fcc.gov/Reports/tcom1996.pdf>).

⁸ The Communications Act of 1934 has been amended by multiple acts, including most significantly, by the Telecommunications Act of 1996. For the text of these Acts, see <https://transition.fcc.gov/Reports/1934new.pdf> and <https://transition.fcc.gov/Reports/tcom1996.pdf>. The Communications Act of 1934 as amended is included in Chapter 5, sections 151 through 622 of Title 47 of the United States Code (U.S.C.) dealing with Telecommunications. Title 47 includes a total of twelve chapters, divided into 1,473 sections (see, <https://www.gpo.gov/fdsys/browse/collectionUScode.action?collectionCode=USCODE>).

authority; Title II that specifies the common carrier framework for regulating telecommunication services; Title III that addresses services that use the radio spectrum; and Title VI that focuses on services provided by cable television network providers.⁹

<<INSERT EXHIBIT# 1 HERE>>

This basic framework (circa 1996) was established in a pre-convergence world wherein the industry, technical and market boundaries between telephone networks, over-the-air broadcast services, cable television networks and computing were fairly distinct.¹⁰ Regulating telephone networks as public utilities and common carriers made sense because historically they were regarded as natural monopolies that collectively comprised a national end-to-end network that needed to interconnect with other national end-to-end telephone networks.¹¹ Over-the-air television and radio broadcasters were regulated as content providers that made use of scarce radio frequency spectrum. In both cases, the providers owned and operated network facilities based on quite different technologies.¹² Although the digitalization of telecommunications networks and the rise of demand for data communication services began to blur the boundaries between telecommunications and computing, the equipment and software used for telecommunications (and broadcast television) was sufficiently specialized and distinct from general computing hardware and software to make it feasible to sustain regulatory separation, at least in the early days. Telephone network providers and over-the-air broadcasters each could be regulated by the FCC under separate Titles overseen by separate bureaus; while computer hardware and software were exempt from FCC oversight.

⁹ In the Communications Act of 1934, the other titles include: Title IV which relates to Procedural and Administrative Provisions; Title V which addresses Penal Provisions and Forfeitures; and Title VII which includes Miscellaneous Provisions. Also, note that the Telecommunications Act of 1996, which amended the Communications Act of 1934, is also organized into Titles which are distinct from those included in the 1934 Act: Title I addressed Telecom Services; Title II addressed Broadcast Services; Title III addressed Cable Services; Title IV addressed Regulatory reform; Title V addressed obscenity and violence; Title VI addressed the effect on other laws; and Title VII included miscellaneous provisions, including Section 706 that relates to the FCC responsibility for promoting access to advanced telecommunication service. Together these Acts contributed to Chapter 5 (sections 151 through 622) of Title 47 of the U.S.C. as noted above.

¹⁰ As telephone network switches morphed into software-controlled computers and distributed computing blended data communications with computer processing and data storage functionality, it has become increasingly difficult to draw clear boundaries between the computer and communications industries. Historically, consent decrees resulting from antitrust actions by the Department of Justice in the case of IBM on one hand and AT&T on the other sought to enforce structural separation by limiting the ability of the then-dominant firms to compete in each other's markets. In the context of communications policy regulation, the provision of "computing" services entered into policy debates with the Computer I decision in the 1971 when the FCC made its first attempt to identify the boundary between data processing and communication services. For a discussion of the FCC's series of Computer inquiries, see Cannon (2002).

¹¹ In most parts of the world, the national telephone networks were owned and operated as government monopolies.

¹² Even when the two types of networks shared facilities – as was the case when over-the-air broadcasters made use of telephone network transmission lines to distribute programming to broadcast antennas – it was easy to separate the activities of telecommunication service providers and broadcasters.

With the emergence of cable television networks, the new types of providers were regulated under a new Title of the Communications Act as a separate class of service providers. Although both cable and telephone network providers had similarities in terms of offering wired network facilities that were monopolies in their local markets (and hence were subject to public utility regulatory oversight),¹³ their networks made use of quite different technologies and they offered non-overlapping services. The fact that cable television providers did offer services that competed directly with over-the-air broadcasters, including direct broadcast satellite services which emerged later, did raise complications that were addressed by adding program access and must-carry rules.¹⁴

Finally, starting in the 1980s, the emergence of mobile telephony carriers created another new class of telecommunications service providers with networks that shared the radio-frequency spectrum while offering services that initially complemented (more than substituted for) fixed telephony services. The licensing of mobile telephone services was designed to promote competition from the start. Initially, spectrum resources were allocated to support two licensed operators in each local market, with one license allocated to the incumbent local (fixed) telephone operator and the other to another, unaffiliated operator (which in many cases was the incumbent local telephone operator from another region).

In the U.S., management of the radio frequency spectrum is split between the FCC which regulates non-Federal uses (i.e., state and local government, commercial, and private use) and the National Telecommunications Information Agency (NTIA) which regulates Federal uses (e.g., by the Department of Defense, Federal Aviation Authority, etc.). As we discuss further below, this bifurcation of regulatory responsibilities is another source of stress in managing national spectrum resources.

Today, the convergence of technology toward all-IP networks is well-advanced. Traditional wired telephone and cable television network providers have evolved their networks into multi-service broadband platforms that can offer bundles of video, data, and telephony services that compete directly with each other. The evolution of cellular providers into mobile broadband platform providers and expanded availability of Wi-Fi access to fixed wire network services has helped drive the convergence of wired and wireless networking. Finally, the rise of over-the-top video entertainment is blurring the boundary between entertainment broadcasting, telecommunications, and the Internet.

In Lehr & Sicker (2016), we examined the stresses that convergence of entertainment media and the Internet pose for the future of network architecture, industry economics, and public policy.¹⁵ An important conclusion we reached in our earlier analysis is the need to clearly differentiate between broadband access regulation and Internet policy. A future in which broadband networks are based on all-IP technology does not mean that all broadband traffic should be over the Internet, even if the Internet will share resources with the broadband network and so regulatory

¹³ Cable television providers were granted exclusive local franchise licenses in return for commitments to provide services throughout the community and to support a variety of public interest needs, such as network services for the local government and a community television channel.

¹⁴ Title VI of the Communications Act of 1934 addresses the regulations governing cable communications operators (see Section 601 and following, <https://transition.fcc.gov/Reports/1934new.pdf>).

¹⁵ See Lehr and Sicker (2017).

concerns to promote both broadband access and Internet openness will overlap. Broadband access refers to the services offered over the broadband IP platforms operating by access ISPs that provide the on-ramps to the Internet, which is a network of interconnected networks, communicating via the IP-suite of protocols. One of the important applications that the Internet supports is the World Wide Web, a network of linked content sites that are hosted on servers spread across the networks that comprise the Internet.¹⁶ In common parlance, broadband, the Internet, and the Web are often used interchangeably; and although the boundaries between these may not be clear in all contexts, they are distinct.

A number of other threads indicative of the stresses the current regulatory regime is under were also briefly touched upon in Lehr & Sicker (2016). For example, the rise of wireless networking and the potential for these to more seamlessly complement and compete with wired networks is challenging traditional regulatory classification schema and the justification for different rule sets under which the networks and services are regulated. Also, the technology and markets for communications/computing infrastructure is growing more complex with the transition to cloud computing and prospective emergence of Internet of Things (IoT) technologies and services; and with these, growing policy concerns about cyber security and privacy policy. The legacy framework is not well-suited to address these issues in appropriate technology/sector-neutral ways.¹⁷

3. Why a new Communications Act?

Although significant convergence has already occurred with respect to the network technologies, the markets and services offered, and the identity of the providers who participate in the markets, the legacy regulatory framework enshrined in the Act and the supporting apparatus of regulatory and court decisions has not been harmonized. Services that appear similar and networks with similar capabilities are subject to different sets of rules. When mobile services are competing with fixed services, and over-the-air broadcasts are competing with telephone and cable provider-based services and with over-the-top services, having separate regulatory regimes for each type of provider results in regulatory distortions, confusion, and uncertainty. Although asymmetric regulation of providers with asymmetric circumstances may make sense, the present landscape of overlapping legacy rules and decisions render a difficult situation more difficult than it needs to be. Moreover, the lack of clarity in the current structure makes it more difficult to adapt the framework to accommodate new issues and address new market circumstances.

¹⁶ Other important applications that the Internet supports include file transfer, email, chat, voice telephony, social networking, etcetera.

¹⁷ For example, what (if any) role the FCC should play in framing national privacy or cybersecurity regulations is uncertain. The FCC's decision to classify broadband Internet access services as a Title II service created a gap in regulatory rules governing the management of consumer data by ISPs because the FTC, which previously has played a leading role in enforcing privacy regulations in the U.S., is prohibited from regulating firms that are subject to Title II regulation. In response to this, the FCC issued a comprehensive new rules for how ISPs should manage consumer broadband-related data (see FCC (2016), *Report and Order*, In the Matter of Protecting the Privacy of Customers of Broadband and Other Telecommunication Services, Before the Federal Communications Commission, WC Docket No. 16-106, adopted October 27, 2016, available at http://ec.europa.eu/justice/data-protection/files/eujls08b-1002_-_protection_of_personal_data_a4_en.pdf) that was rescinded by the Congress in April 2017 (see <https://www.govtrack.us/congress/bills/115/sjres34/summary>), leaving the state of privacy regulations uncertain.

One obvious solution might be to accelerate the pace of deregulation. If the net effect of convergence is to intensify competition, then some might argue that a key justification for communications sector-specific regulation disappears. From this perspective, the question is not whether we should have a new Communications Act, but rather how best to get rid of the legacy regulations we have, including eliminating the FCC as an independent regulator. We reject this perspective on several grounds.

First, the FCC's role in promoting competition in communications networks and services is only one of the roles the FCC plays.¹⁸ Broadband and other advanced telecommunications and computing infrastructure, including the Internet, have been determined to be critical infrastructures for society and the economy. Ensuring that U.S. citizens, the government, and businesses have access to appropriate critical communications infrastructure is a core industrial policy that we believe warrants sector-specific regulation. The goal is not just to manage a presumptively competitive market of communication networks and services. Were that the sole issue, then it might be appropriate to rely on general competition policy with its standard antitrust set of tools to discipline anti-competitive behavior.¹⁹ However, that is not the case. The desire to ensure universal access to telephone networks as a national industrial policy helped create the legacy monopoly franchises that have dominated wired communications networking since the beginning. Since at least 1996, the desire to transition toward increased reliance on market competition and lighter-handed regulation that provided more scope for network providers to select their technologies and determine what and how services were offered, while promoting universal access to next generation communication services, is a continuation of this basic industrial policy. Since 2010, it has been enshrined in the U.S. national broadband plan.²⁰ Although the methods for securing the sector-specific industrial policy goals may have changed, there are still significant sector-specific national industrial policy goals that need to be addressed.

Second, and closely related to the above, is the public interest and role in ensuring certain other sector-specific goals that are closely tied to how communications networks are provided and operated. For example, having identified broadband and Internet access as basic infrastructure

¹⁸ Contrary perspectives exist. For example, Layton & Kane (2017) argue that "the FCC has fulfilled its primary mission of liberalizing the telephony market; thus it is arguable that the FCC's work is complete and its staff and resources should be reassigned elsewhere" and that "Regulation is supposed to result in full competition, followed by the removal of regulation and subsequent downsizing of the regulator" (page 5, Layton & Kane, 2017). They argue that standard general-purpose competition policy (antitrust enforcement by the Department of Justice) and consumer protection policy (enforced by the Federal Trade Commission) would be superior to sector-specific competition protection (page 60, Layton & Kane, 2017). Apparently, Layton & Kane do not regard the economic features that characterize telecommunications (e.g., high fixed, sunk and shared costs; rapid technological change; network effects; and essential infrastructure) as sufficiently distinctive to warrant sector-specific treatment; but that is a position that may reasonably be challenged (although to do so would be a distraction from the main points of our paper).

¹⁹ Even were the focus solely on competition, one might argue that the special economic characteristics of communication networks (e.g., natural monopoly elements, large sunk/fixed/shared costs, rapid technological change, and significant network effects) warrant sector-specific regulation.

²⁰ See FCC (2010), *Connecting America: The National Broadband Plan*, Federal Communications Commission, available at <https://www.fcc.gov/general/national-broadband-plan>.

services, the government has a public interest in ensuring affordable access for all citizens.²¹ To the extent competitive markets can meet this challenge, direct government interventions, which may include subsidies, to address the needs of the under-served may not be needed. Indeed, U.S. policymakers have instituted universal service fund (USF) programs that result in transfer payments that exceed \$8 billion per year.²² Although it may be reasonable to conclude that the size of such programs is excessive, promoting universal service goals is likely to require some level of subsidies.

Analogous to the above goal is the need to ensure that the government has access to the critical communications infrastructure and services that it needs to address its responsibilities in providing for public safety and national defense. This includes support for e911 and lawful wire taps and surveillance (e.g., CALEA). The need to ensure such capabilities are provided appropriately creates yet another public mandate for an FCC that goes beyond competition considerations.

Third, since most of the investment in providing communications infrastructure and services is private, it is important that the national communications sector regulator be an independent regulatory authority. A government regulator that is not independent is vulnerable to political capture and shifting policies as political fortunes shift, raising justifiable concerns from investors of regulatory uncertainty, timing consistency, and expropriation of returns by regulators.

Fourth, even if the goal is to substantially de-regulate the communications sector and rely more on competitive market forces to direct how resources are allocated and production is organized in the sector, a national regulator is needed to oversee an orderly process. In addition to Federal regulations, a complex landscape of state and local regulations enshrined in state Public Utility Commission decisions and local franchise and zoning rules impose overlapping and often conflicting regulatory obligations on communication network providers and services. A Federal regulator serves a useful purpose in disciplining and coordinating conflicting local rules, relying on its ability to pre-empt local rule-making when the service or issue at hand has an inextricable interstate commerce component.²³

²¹ For the foreseeable future, it remains likely that broadband access and the Internet will remain important basic infrastructure, but how broadband and the Internet are defined may change. Moreover, it is possible that competition may be sufficiently vigorous for both that government intervention to ensure a well-functioning market for advanced electronic communication services may not be necessary.

²² The FCC administers four Universal Service Programs (High-cost support, Low-Income support, Schools & Libraries e-Rate, and Rural Health Care) that resulted in total USF payments to eligible providers of \$8.3 billion in 2015 (see Table 1.9 in FCC (2016), *Universal Service Monitoring Report*, available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-343025A1.pdf).

²³ Increasingly, the softwarization of modern communication networks makes it feasible to delocalize network functionality, enabling providers to lower costs by realizing scale/scope and other cost economies and improve quality. Today, large communication providers operate across multiple states if not nationally in ways that make it difficult to separate inter/intrastrate concerns. Lehr & Keissling (1999) explained how a centralized regulatory authority to coordinate the actions of local regulations made sense for both the U.S. and Europe regardless of whether policymakers' goal was to regulate *or* deregulate sensibly. Sicker (2004) argues that modern communications networks, including the functions usually associated with access networks continue to be less confined to state or local boundaries. Those arguments remain valid today (see Lehr and Kiessling, 1999).

Taken together, the above reasons explain why we believe an independent federal regulatory for the communications sector such as the FCC remains necessary and desirable today. However, Court decisions in recent years that have challenged the FCC's authority to regulate broadband services have called into question the FCC's jurisdictional authority under existing legislation.²⁴ For a national regulator to be effective, it has to have the capability to act, which requires it to possess the necessary resources and jurisdictional authority to act appropriately.

A key role for a new Communications Act would be to clarify the legislative mandate and the discretion that the FCC should have to regulate the communications sector going forward. In addition, a new Communications Act should clean up and level set regulatory frameworks to appropriately take care of the effects that technological progress and market growth have wrought on the silo-structure of legacy regulation. We need a framework that is more streamlined, more technically neutral, and better tuned to the realities of all-IP networks and the more fluid and dynamic market processes that exist today. Even if one were to conclude that all of what is desired already exists in the current Act, there would be advantages in having a clean slate with those principles set forth anew.

4. Outline for a new Communications Act 2021

In the following sub-sections, we set forth our proposal for how to structure a new Communications Act for 2021 and the key rationales motivating our discussion of each of the six new Titles we propose (see Exhibit 2). We also discuss some of those issues that were included in the legacy framework that we do not regard as essential for inclusion in a new Act that might be candidates for deregulation.

<<INSERT EXHIBIT #2 HERE>>

Before providing our characterization of each of the core Titles, we would like to reiterate that our intent with this paper is to initiate a dialog and to provoke thought by offering our preliminary view of how best to frame or focus the issues. We are not attempting to be comprehensive – a goal that would be impossible in any case in any single paper. We freely admit that our superficial treatment leaves many complex issues unaddressed that would

²⁴ Major parts of the FCC's first Open Internet Order in 2010 (see FCC (2010), *Report and Order*, In the Matter of Preserving the Open Internet (GN Docket No. 09-191) and Broadband Industry Practices (WC Docket No. 07-52), adopted December 21, 2010, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1.pdf) were struck down by the DC Court of Appeals in January 2014 (see <http://www.theverge.com/2014/1/14/5307650/federal-court-strikes-down-net-neutrality-rules>). In its 2010 Order, the FCC relied on its authority under its ancillary authority under Title I to regulate broadband services, which the FCC had previously classified as "information services." In its 2015 Open Internet Order, the FCC reclassified broadband access services as a Title II telecommunications service, which allowed the FCC to assert regulatory authority under Title II (see FCC (2015), "Report and Order on Remand, Declaratory Ruling, and Order," In the Matter of Protecting and Promoting the Open Internet, Federal Communications Commission, GN Docket No. 14-28, Adopted February 26, 2015, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1_Rcd.pdf, hereafter, "FCC 2015 OIO"). The reclassification of broadband access services as a "telecommunications service" and the regulatory framework the FCC has adopted under Title II for protecting Open Access continues to be challenged. The new FCC Chairman under President Trump's administration has been an outspoken critic of the OIO, and so its status as the regulatory framework for broadband or for ensuring an open Internet remains in question.

certainly pose difficulties in any real-world reform exercise, especially as those relate to legal details (which we mostly ignore since neither of us are lawyers). By focusing less on the trees, we hope to better elucidate the landscape of the forest.

4.1. Title 1: General Provisions establishing FCC authority and scope

The principle function of Title I, as in the current Act, is to establish the FCC as an independent regulator and set the scope for its authority. Agency theory provides multiple rationales for why it may be desirable to establish an independent, expert regulatory agency that is allowed scope to take discretionary action.²⁵ First, an expert regulator is better able to craft the detailed regulations that are needed to achieve the broad goals that legislators may agree on. Congress can assert that their goal is to ensure that all citizens have access to *advanced* telecommunications services at *reasonably affordable and non-discriminatory* prices, yet lack the information and resources to determine what those services or networks should look like or whether they are being made available with pricing and terms that are appropriate. Moreover, as technical and market conditions change over time, expert agencies are better able to adapt regulatory policies.²⁶ For these reasons, it seldom makes sense for the statutory language in legislation to be overly specific with respect to the actions that should be taken to achieve the goals of the legislative mandate.

Second, establishing the regulatory agency as independent helps insulate the agency (but does not isolate it) from the vagaries of changing politics.²⁷ With long-lived assets such as characterize telecommunications networks, it is important to be able to sustain long-term commitments and avoid undue regulatory uncertainty associated with shifts in political power.²⁸

²⁵ There is a rich agency theory literature associated with the design of regulatory institutions and the delegation of authority that agency implies. For a sampling, see Stigler (1971), Posner (1974), Spiller (1990), Laffont and Tirole (1993), or Kneips (2015). Much of this literature focuses on the problems that can arise as a consequence of incomplete control of the agency by the principal, in this case Congress, assumed to be acting on behalf of the public interest.

²⁶ What constitutes appropriate advanced telecommunications has evolved from analog to digital, from narrowband to broadband, from fixed to mobile, and from 1G to 4G; while the markets for services have evolved from basic telephony to multimedia. An expert agency with appropriate staff and resources is better able to keep pace with dynamically changing circumstances in a complex industry such as telecommunications than a legislative body that confronts significant fixed costs associated with initiating new legislation (e.g., administrative procedural costs and challenge of generating majority consensus for actions).

²⁷ The Executive Office has authority to appoint FCC Commissioners and propose agency budgets, which Congress has to approve. Moreover, Congress retains the authority to amend prior and enact new legislation. As noted earlier, the control of agents (the regulatory agency) by the principal (Congress) has spawned significant research commentary. The general findings indicate that Congress does retain power to discipline and control regulatory agencies, but that control causes tension with the desire to allow agencies the flexibility to make long-term commitments. See, for example, Trillas (2010), Weingast & Moran (1983), or McCubbins (1985).

²⁸ See Spulber and Besanko (1992), Evans et al. (2011), and Trillas (2010) for discussion of how agencies help address the intertemporal commitment problem.

Both rationales imply that expert agencies need discretion to interpret how to act to enforce what are often the vague guidance included in the legislative mandates.²⁹ The freedom to act independently, however, poses a challenge for regulatory design since there is the risk that too much discretion will allow the agency to pursue private interests that deviate from the public interest represented by the Congressional mandate.³⁰

There is a risk that independent regulators that are inadequately monitored and controlled might pursue their own bureaucratic self-interests or be captured by a narrow interest group. One way to address this challenge is to limit the scope of the regulatory agency by defining narrowly the range of firms or industries over which the agency has jurisdiction; another way is to ensure that all important stakeholder interests can be adequately represented in agency decision-making (so that the agency is not captured by a subset of the industry).³¹ These two strategies come into tension when the agency's authority is limited to only a subset of stakeholders with important perspectives that need to be considered. For example, with respect to broadband policy, the FCC's limited authority over edge providers of content and applications constrains the FCC to focus on ISPs. This is one of the problems with how the FCC has framed its Network Neutrality rules.³²

The challenge that must be balanced is the need to limit the scope of regulatory authority so that it is clear what the agency can regulate and what the agency cannot. Regulations may be necessary, but they impose both direct costs (i.e., administrative process and enforcement costs) and indirect costs (e.g., distortion of market incentives). Appropriately limiting the scope of regulations helps an agency credibly target its actions, and provides protection from regulations adversely spilling over into markets that do not need regulation.

In the markets that are the focus of communications policy, changes in technology and market structure have blurred industry and firm boundaries sufficiently to make the narrow classification of firms as targets for regulation problematic. For example, as we discuss further below, threats

²⁹ Under the Supreme Court's *Chevron Doctrine*, derived from its 1984 decision in a case involving the Chevron oil company, Court's should defer to expert regulatory agency interpretations of ambiguous statutory language in legislation when the agency's legal justification differs from the Court's. The resolution of such issues are matters for administrative law which governs the behavior of regulatory agencies. For a discussion of the application of the Chevron Doctrine in relationship to the Supreme Court's 2005 Brand-X decision that affirmed the FCC's decision to not regulate cable broadband services as Title II services, see May (2006). While the Chevron Doctrine has proved effective for regulatory agencies seeking to assert their authority, it also has been subject to significant challenges, often by those opposed to regulation. In January 2017, as part of the Trump administration's and the Republican-dominated Congress's broad attempt to rollback regulation across many fronts, a number of bills were passed that seek to overturn the Chevron doctrine (see <https://www.law360.com/articles/879235/house-passes-bill-ending-chevron-deference>).

³⁰ Of course, more sophisticated theories recognize that there are multiple self-interested parties and policymaking requires a balancing act among multiple stakeholders. The separation of powers between executive, legislative branches and the courts on the one-hand and Federal and State powers on the other are key components on which the U.S. government's system of checks and balances rely.

³¹ For discussions of some of the ways in which administrative law and agency design can seek to control how agencies behave, see McCubbins, Noll and Weingast (1987).

³² For further discussion of this point, see Lehr (2014) or Clark et al. (2009).

to Internet openness that may be attributed to the market power of last-mile conduit providers may come from new directions in the future, associated with other functionality that is critical to the provision of essential communication services but is not provided by traditional ISPs (e.g., access to addressing or identification information crucial for managing digital identities or for routing traffic).

As the markets for communication services have become more competitive and complicated, the FCC has sought to shift toward increased reliance on market-based regulation rather than specific Command & Control (C&C) proscriptive rules (e.g., detailed technical specifications or price regulations), and has shifted its focus toward broader or more outcome-based rules. Increasingly, market-based regulation eschews detailed *ex ante* restrictions in favor of *ex post* adjudication and enforcement on a case-by-case basis.³³ On the whole, this seems a good idea, but its efficacy depends on the FCC's ability to act credibly as a capable enforcer if and when problems requiring regulatory action should arise.³⁴ As the FCC shifts to lighter-handed, more market-based regulation, we expect the FCC's role to shift more toward acting as a referee and to rely more on industry self-regulation (including standardization processes) to manage market behavior. In this environment, the FCC will need appropriate regulatory tools, but these may stay in the toolbox if market performance is sufficiently competitive and consistent with the industrial policy goals.

Finally, in managing the transition in its role (who/what is the focus of its regulatory actions and market interventions), the FCC has an important role in helping coordinate regulatory changes at other levels of government (state and local regulation) and across policy domains (e.g., commercial and public safety). Increasingly, the softwarization of network technologies has allowed functionality to be delocalized, blurring the distinction between intrastate and interstate services.³⁵ The changing dynamics in how networks are provisioned and the need to coordinate policies across multiple domains often provides a justification for Federal preemption (or oversight) of local regulatory authority.³⁶

³³ The same information asymmetries and complexity that help motivate the delegation of authority to regulatory agencies in the first place helps motivate the shift from *ex ante* to *ex post* enforcement in regulation. The growing complexity, dynamism, and fluidity of modern communications technology and service markets contributes to driving this shift. However, even though we see a shift toward *ex post* enforcement, this does not eliminate the need for *ex ante* rules. In cases where the desired action can be clearly specified, *ex ante* rules can reduce regulatory uncertainty and facilitate market coordination. For example, the specification of reporting requirements will remain an important form of *ex ante* rules. Additionally, when *ex post* enforcement risks incurring substantial irreversible costs, *ex ante* rules may be necessary. For example, the foreclosure of markets due to the abuse of bottleneck facilities may provide a valid justification for the adoption of *ex ante* open access rules.

³⁴ In 1984, the Maytag consumer appliance company ran commercials touting the reliability of their appliances by claiming that their repairmen had little to do (see <https://www.youtube.com/watch?v=J9nNCsq-PA8>). Although they may be called upon infrequently to intervene, the "repairmen" (regulators) need to have the resources and skills to act when called upon.

³⁵ See Sicker (2004).

³⁶ The question of when federal preemption is appropriate is complex since it may be used either to erect or take-down regulatory barriers. Increased deployments of new wired technologies (e.g., Verizon's FiOS Fiber-to-the-Home deployments) and wireless (e.g., smaller cells requiring new antenna sites) raise issues for local zoning and access to rights-of-way that may be appropriate to manage on a local level. However, there is also a risk that local or state authorities might seek to hold-up providers to extract excess

In summary, therefore, we believe that Title I should reaffirm the authority of the FCC to serve as an independent expert agency for communication services with a relatively broad mandate that is consistent with generally-accepted industrial policy goals (e.g., as enshrined in the 2010 Broadband Plan) and with the authority and tools to act so as to regulate the behavior of firms that threaten those goals. Rewriting Title I would allow policymakers to reframe how the scope of the FCC is described to better reflect current technical and market realities that include the broadband Internet and the rise of cloud computing as the basic platforms for our communications infrastructure. The subsequent major Titles of the Act discussed below would set forth the FCC's responsibilities and authority in the several domains and contexts in which it may be expected to act.

4.2. Title II: Bottleneck Facilities Regulation

A key characteristic of end-to-end (e2e) networks is their vulnerability to hold-up or adverse Quality-of-Experience (QoE) impacts associated with mismanagement or under-provisioning of bottleneck facilities. In an e2e network, the bottleneck is the link with the fewest alternative ways to provision so that all services that seek to use the e2e network are constrained to share those bottleneck facilities. In the absence of regulation, this raises the potential for the owner of the bottleneck facility to restrict or provide discriminatory access to end-users or unaffiliated service providers that need access to the bottleneck to provide e2e service. By so doing, the bottleneck facility owner may seek to earn monopoly rents, or potentially worse, harm competition by seeking to raise rivals' costs. This can foreclose competition and adversely impact innovation incentives.

If bottlenecks exist for important components needed to provide e2e services, then some form of open access³⁷ regulation may be necessary to protect against abuses of market power by the bottleneck facility owner. Historically, last-mile access has been seen as the critical bottleneck.³⁸

concessions or erect barriers to competition to protect local incumbents, potentially resulting in higher costs for all consumers – not just those in the local community. Often the FCC has sought to preempt local and state rules that the FCC determined posed a threat to competition (see, for example, Hazlett (2003), Botein (2008), or Lyons (2010). In August 2016, the FCC's attempt to preempt state laws in North Carolina and Tennessee that sought to restrict deployments of municipal networks was overturned in the Courts, and has fueled an on-going debate as to whether such preemption is pro- or anti-competitive. For a discussion of the merits of rules inhibiting municipal networking, see Davidson & Santorelli (2016), Ford (2016), Sisneros & Sponsler (2016), or Wilson (2016).

³⁷ Here, we use *open access* to refer generally to regulatory frameworks that impose obligations on facility owners to provide access to their bottleneck facility to unaffiliated third parties so that they may share use of the facility. We recognize that there is a wide continuum of regulatory regimes that could fit under this umbrella, ranging from the sort of detailed unbundling access constraints imposed by the Telecommunications Act of 1996 on Incumbent Local Exchange Carriers (ILECs) to more flexible frameworks such as the one embodied in the FCC's 2015 OIO rules for Broadband Internet Access Services (BIAS). We do not here attempt to specify precisely how Title II should ensure open access, leaving such (important) details for future debate.

³⁸ Historically, the entire telephone network was regarded as a natural monopoly, which meant that the entire e2e network was a bottleneck facility for telephone services and was regulated as a public utility. Overtime, successive components of the e2e network have been deemed competitive, with the last-mile access links remaining the last focus of bottleneck regulation. Although many if not most users have multiple choices for their broadband provider when they make their subscription choices (e.g., multiple

While that may remain an important bottleneck in the future (and in such case, would provide a sufficient justification for open access rules), it is reasonable to consider other potential bottlenecks may arise in the future. Additionally, it is conceivable that technology or market conditions may evolve so that historic bottlenecks cease to exist.

Beyond last-mile infrastructure, potential bottlenecks might arise as a consequence of cybersecurity concerns or how traffic is routed or information is identified. It is conceivable that search or social networking platform capabilities may become sufficiently concentrated or lacking in economically viable alternatives for users that may render those bottleneck facilities.³⁹

While there may be technologies or industry structures that would eliminate potential bottlenecks were those technologies to be deployed at scale or were markets/industries to evolve appropriately, there is sufficient uncertainty and the potential for multiple equilibria is sufficiently great that we may end up with bottlenecks even when those need not have occurred.⁴⁰ To future-proof the new Communications Act, we believe it is important to include a framework for regulating open access to bottleneck facilities that is sufficiently flexible to be applied to newly identified bottlenecks (and to be relaxed when bottlenecks disappear).

In the next sub-sections we provide a high-level discussion of the open access regulatory authority that should be included in the new Title II.

4.2.1. Access & Interconnection

When a bottleneck facility has been identified, the regulator will need authority to mandate open access and interconnection rules to support shared use of the bottleneck facility. When the risks

wired and wireless options are available in most markets), once they subscribe they may face switching costs if they elect to move to another provider (e.g., lack of portability of email identities) and their broadband connection may be the only way that edge providers can route traffic to and from an individual subscriber (and hence, the broadband service constitutes a terminating monopoly). Moreover, as modern cable networks have expanded capacity to enable them to offer significantly higher speed services than are available via DSL broadband, a larger number of fixed wired broadband subscribers may lack viable wired alternatives; although the rise of 5G wireless may render the distinction between wired and wireless alternatives less relevant. It is not our intent here to argue whether last-mile conduit services remain bottleneck facilities in light of today's technologies and market conditions; however we believe it is reasonable to assume that they are in a significant number of contexts and so a continued regulatory capability for broadband services remains important for the foreseeable future. We have placed this discourse in this footnote because the justification for legacy bottleneck regulation of broadband while important is secondary to the novel points we hope to make here.

³⁹ Economists may reasonably differ in their judgments as to what constitutes economically viable alternatives. A cost advantage for an incumbent relative to an entrant does not render access to the incumbent's network a bottleneck facility. In market competition, firms are often overcoming cost disadvantages to compete. Access becomes a bottleneck for entry if there is no economically viable way that potential entrants might recover the costs of employing alternative solutions.

⁴⁰ For example, a public commitment to provide redundant fiber access to every home might eliminate the last-mile bottleneck problem; but such a policy seems very unlikely to be generally adopted. However, relaxation of regulatory restrictions that presently limit the ability of communities to self-provision networks might make this feasible in a growing range of communities. Our point in suggesting this example is to highlight that market economics result from the interaction of multiple factors that need not result in globally efficient outcomes or the elimination of regulatory challenges.

posed by the bottleneck are sufficiently severe for competition, then it may be necessary to mandate ex ante restrictions and impose constraints on how access to the bottleneck resource is provided. Traditionally, such rules tend to involve fairly strong C&C type rules that specify the terms for access and interconnection that the bottleneck facility provider must make available to unaffiliated users, and when resources are scarce, the mechanism for allocating access to the scarce resources (e.g., preferences/prioritization for public safety or other public interest uses; and/or limitations on discriminatory behavior). It is worth noting that any such open access rules that mandate that bottleneck facility owners provide some form of open access also include explicit or implicit price regulations.⁴¹ Furthermore, access rules also usually require interconnection rules, which may be either explicit or implicit, since "access" to a facility is not valuable unless it can be bundled with or "interconnected" with third-party services.⁴²

The current Title II's approach for providing for open access to last-mile bottlenecks is based on the common carrier framework.⁴³ The problem with this is that the legacy of common carriage regulation under the common law heritage is hundreds of years old and the application of Title II rules to telecommunication services has given rise to a complicated body of conflicting rules and decisions as regulators have struggled to figure out what parts of the framework to apply to which operators and services. At its core, common carriage embraces an open access and interconnection framework that requires the offering of common carriage services under tariffed rates that are intended to be "reasonable" (which is generally interpreted to preclude margins for monopoly profits) and non-discriminatory (which is generally interpreted to mean available to all under equivalent terms). It should be noted that this does not mean that common carriers are precluded from offering multiple tiers of quality-differentiated services. Moreover, in its application under the Communications Act, the common carrier obligation has imposed Carrier-of-Last-Resort (COLR) and Duty-to-Serve obligations on telecommunications operators.

While such obligations may be appropriate for true bottleneck facilities that are required inputs for the delivery many valuable services, not all services fit this model. Moreover, whereas open access and interconnection obligations may be needed to enable e2e markets to exist, other obligations (such as the COLR responsibilities) and rights (such as limited liability) that is associated with the common carriage tradition are logically separable. Because common carriage rules may be quite burdensome for the bottleneck facility owner and have the potential to distort competition in their own right, such open access regulation should be used sparingly. To limit the regulatory burdens of Title II regulation for new services or operators, the Act specified that Title II only applies to providers of *Telecommunications Services*, and not to other services which are designated as *Information Services*.⁴⁴

⁴¹ If there were no price regulation then a regulated firm could simply offer the mandated access at an infinite price to avoid complying. The obvious response of a regulator would be to require the firm to set a "reasonable" price, which might be higher than incremental long run cost but would not be unbounded.

⁴² Frieden (2013) notes that with the retiring of the PSTN and with it, the demise of the common carrier regulatory framework, there may be a need for new regulatory frameworks to ensure universal service obligations and interconnection in the Internet – policy goals previously promoted under Title II.

⁴³ See Trebing (1969) or Pitsch & Bresnahan (1995) for a history of common carriage regulation under the Communications Act of 1934. These articles note the tensions that existed even decades ago, but for more recent critiques of common carriage in its application to telecommunications see Yoo (2013), Jamison and Hauge (2013), or Cherry (2012).

⁴⁴ The Communications Act defines:

Over time, the FCC has used the reclassification of services and its ability to forbear using its enforcement authority to avoid imposing strong Title II regulatory obligations in a growing range of situations. A problem arises, however, when the FCC determines that it needs to impose an open access regime and would like to do something different from traditional PSTN-style common carrier regulation;⁴⁵ or when the bottleneck facility is not last-mile access or the operator who is threatening access is not a last-mile access provider.

The case of broadband regulation illustrates both situations. With respect to broadband, the FCC originally attempted to regulate broadband under its network neutrality framework by relying on its ancillary authority under Title I of the Act, motivated in part by its own prior efforts to classify broadband and Internet services as Information Services⁴⁶ (which classification precludes Title II regulation) and the FCC's desire to take a more market-based approach to regulating broadband. In response to the Supreme Court's decision denying that the FCC had the authority it claimed under Title I to regulate broadband appropriately, the FCC opted for reclassifying broadband as a Title II service.⁴⁷ Critics of the FCC's OIO framework argued that its unilateral focus on access ISPs did not adequately address the role of edge providers of content and applications in determining how access and interconnection to broadband access platforms should be managed.⁴⁸

A new Title II should be both more general and focused. It should be applicable in contexts where the bottleneck might involve something other than last-mile access; but it should also be more focused in more clearly identifying the facility or capability that constitutes the bottleneck and targeting that for the open access requirements. In setting the terms (and implicitly, the prices) under which access should be provided and the entities which have access to that, the

"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." 47 U.S.C. § 153(43);

"Telecommunications service" is "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." 47 U.S.C. § 153(46); and,

"Information service" is defined as "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service." 47 U.S.C. § 153(20)

⁴⁵ The FCC's treatment of Voice-over-IP (VoIP) services provides such an example. Although POTS remains subject to Title II regulation and in many contexts VoIP serves as a close substitute for POTS service, the FCC has refused to classify VoIP as a Telecommunications Service. Instead, the FCC has issued a series of nuanced decisions that impose some of the obligations that POTS providers face (e.g., requirements to contribute to universal service programs and to interconnect to 911 emergency services), while avoiding subjecting VoIP to Title II rules.

⁴⁶ See Note 29 *supra*.

⁴⁷ Moreover, Cherry & Peha (2014) argued that the FCC did not have discretionary authority to determine how to classify broadband and was required by the Act to reclassify broadband as a Title II service.

⁴⁸ See for example, Clark, Lehr & Bauer (2009) and Lehr (2014).

new Title II should clearly identify the range of tools that may be used. In establishing the new Title II, the Act should disavow the direct connection to common carriage to disconnect the implementation of the new Title II from prior discussions of common carriage and allow this Title II to more narrowly focus on the case of communications policy and networks. This should include eliminating from Title II the question of COLR, duty-to-serve, or other rights and obligations that are bundled into notions of common carrier regulation unless those are expressly required to support the open access and interconnection rules that are the focus of the Title.

In addition to specifying how open access to a bottleneck facility should be provided, Title II needs to provide a way to determine how bottleneck facilities are identified and then limit the scope of any bottleneck regulations. To determine whether a facility is indeed a bottleneck, there needs to be a process for clearly identifying and specifying the nature of the bottleneck. This will entail a market definition and analysis exercise. In effect, the ongoing debates over the state of competition and the viability of alternative technologies in fixed and mobile telephone services, whether a dominant carrier exists or not, and whether broadband access is sufficiently competitive already exemplify this process.⁴⁹ Defining a new Title II will not obviate the need for these contentious debates, but will provide an opportunity for resetting the dial and conducting the assessment freed from the burden of prior decisions.

4.2.2. Structural remedies

In addition to the role of the market assessment in narrowing the focus of bottleneck regulations, Title II will also need to include authority to impose structural remedies that constrain how regulated bottleneck services may be provided by operators.

Structural remedies are necessary to isolate and limit the scope of heavy-handed and distortionary bottleneck facility regulations. The whole point of the open access rules is to constrain the behavior of bottleneck facility operators and hence open access rules interfere with market processes and are distortionary by design. Structural remedies constrain how providers of bottleneck services operate in regulated and unregulated markets. Strong rules may require full organizational separation into separate enterprises. This was the model that prevailed in the U.S. following the divestiture of AT&T when ILECs were precluded from competing in long distance markets and were required to provide equal access interconnection services to long-distance, interexchange operators. Sometimes structural separation may be adopted voluntarily as was the case in the UK by British Telecom when it opted to establish Open Reach as a separate entity that would provide wholesale services on a non-discriminatory basis to all users of the platform, including third-party providers unaffiliated with BT. Softer frameworks are also feasible, such as accounting separation, in which providers track accounts separately for regulated and unregulated services.

Additionally, structural remedies are two-sided and also impose obligations or restrictions on users of the bottleneck facility. A key justification for bottleneck regulation in the first place is

⁴⁹ European Regulatory Framework sets forth a process by which a facility or service is first determined to be subject to market power (see Cave, 2009). Then, once a facility/service is determined to be subject to market power, National Regulatory Authorities (NRAs) have available a set of tools such as open access, price regulation, etc. that they may employ to address the market power issue. While the approach provides a nice logical separation of issues, critics argue that all it does is shift debates of how to regulate a bottleneck upstream, transforming them into debates about what constitutes the relevant market.

the lack of economically viable alternatives. Providers of bottleneck facilities may need to be protected from cream-skimming entry when such entry might be privately viable, but socially damaging.⁵⁰ In pricing access to platforms, a key challenge is how best to recover shared costs. Users of a platform often want to argue in favor of prices reflecting short-run incremental costs that fail to contribute adequately to the recovery of fixed and shared costs. If the provision of the bottleneck facility is not economically viable at the prices prevailing (or mandated by) the open access framework for the bottleneck provider than that implies the bottleneck has been misidentified or the framework may be in need of reform.

4.3. Title III: Communications Market Monitoring & Enforcement

The hope and expectation is that most communication services and infrastructures, including the Internet, can best be provisioned and sustained by relying on competitive markets, unimpeded as much as possible by regulations. However, we believe that markets require regulation to address legacy market power that may result from historic regulatory decisions (e.g., the grant of a monopoly franchise in the past) or from emerging sources of market power associated with new market conditions that may result in new sources of market power in the Internet ecosystem (e.g., the growing importance of social media platforms like Facebook or Twitter or ancillary platform service providers like Apple, Google, or Amazon).

Whereas Title II is reminiscent of legacy public-utility regulation and imposes heavy-handed rules governing the provision of bottleneck facilities, the goal of Title III is to provide a more light-handed, market-based framework for promoting industry policy goals (e.g., broadband access, privacy protection, and the continued introduction of innovative new services) and competition.

The focus of Title III should be to define a flexible, pro-competition regulatory framework for the digital economy that strives for minimalist intrusions into market-processes (i.e., is "light touch"). In the following four sub-sections, we highlight the key components that a new Title III will need to address.

4.3.1. Powell's 4 Principles

A key goal of current communications infrastructure policy is to preserve an open Internet that supports the innovative ecosystem of edge and network providers that has characterized the growth of the global Internet to date.

In 2004, then-FCC Chairman Michael Powell espoused four basic principles to guide policy in preserving an open Internet that were adopted as FCC policy in 2005. The four principles are that consumers should have freedom of choice to (1) access legal content, (2) use lawful applications, (3) connect safe devices, and (4) select among a competitive selection of choices for service, application and content providers.⁵¹ While these principles do not precisely explain what

⁵⁰ This might be the case if the bottleneck facility is a natural monopoly (i.e., total costs are lower when demand is met by supply from a single firm) that is not sustainable (i.e., entry is feasible for portions of the market, that if served will increase the costs of serving the entire market).

⁵¹ See Remarks of Michael K. Powell, Preserving Internet Freedom: Guiding Principles for Industry, prepared for Silicon Flatirons Symposium, Boulder CO, February 8, 2004, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-243556A1.pdf; and FCC (2005) *Policy*

behaviors would be allowed, it is relatively easy to identify examples of behaviors that would violate those principles. Not being lawyers, we find this lack of specificity a virtue rather than a problem.

Since Powell's four principles were originally announced, there appears to be general consensus (at least publicly) that these are worthwhile and desirable goals. Moreover, these principles are consistent with what we would expect to see in an effectively competitive market, which is the outcome that is generally desired. When the FCC has been challenged on these principles, most of the criticism has been with respect to whether the FCC has the authority to act and whether there is any need to act to preserve an open Internet; and with respect to how the FCC has chosen to embody and apply these principles in regulation and practice.

The FCC's efforts to implement these principles in specific rules via its Open Internet Order (OIO) proceedings⁵² has proven highly contentious, in part because the FCC has sought to implement strong rules that unilaterally impose network (traffic) management restrictions on access ISPs (but not edge providers) under Title II of the Act.

Our intent here is not to debate what should have happened in the world of the legacy Act and prevailing political environment, but rather to paint a picture of what might be a better framework were we to have a new Communications Act 2021. In that world, a decision would be made whether there was a bottleneck facility associated with last-mile infrastructure that warranted identification and regulation under a (new) Title II as discussed above. Assuming that such a conclusion was reached, then the FCC *might* define a Broadband Internet Access Service (BIAS), and perhaps other services (e.g., a Video-over-IP Access Service, or VIAS as discussed in Lehr & Sicker, 2016), that would be subject to Title II rules. In this case, the nature of the bottleneck, the conditions used to demonstrate its existence, and the specifics of what had to be provided would be specified. Presumably, this would allow for more nuanced market-by-market assessments of when Title II rules would apply based on the extent to which alternative last-mile options existed or are feasible (i.e., the market is contestable). In markets where there was adequate competition, or in the case that no bottleneck facility were identified, Title II rules would not be applied.

In markets where Title II authority was not sustained, the FCC would retain authority to act under Title III if the evidence clearly demonstrated that the Powell principles were being violated by the access ISP, content, or edge provider. To protect against the FCC's arbitrary assertion of authority and to reduce regulatory uncertainty, claims of violations of the Powell principles should focus on egregious examples where the available evidence provides strong support that violations have occurred. Parties seeking to invoke FCC action under Title III would confront a significant burden of proof that market competition was being harmed by the alleged behavior. This would ensure a fair degree of latitude for market processes to work themselves out without regulatory intervention. If a successful showing could be made, then Title III would grant the FCC authority to invoke antitrust remedies such as ordering injunctive relief or imposing fines;

Statement, In the matter of appropriate framework for Broadband Access to the Internet over Wireline Facilities, CC Docket No. 02-33 (and related matters/dockets), adopted August 5, 2005, available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf.

⁵² For discussion of OIO and its history, see Note 24 *supra*. Also, see Gilroy (2017).

and may require the FCC to initiate further regulatory proceedings to address the competitive harm.

4.3.2. Universal Service

A key component of communications policy is to promote universal, affordable access to essential communications services. Over time, universal service rules have given birth to a bloated and poorly focused tax and subsidy regime that transfers in excess of \$8 billion per year, mostly to support access to basic telephone services.

In its present form, the universal service programs cannot be regarded as a form of light-touch regulation, but do represent an important area for industrial policy – but one that might be re-examined in light of current markets, technologies, and public opinion.

We accept that that there is an obvious public interest in ensuring affordable universal access to essential infrastructure services and that the FCC is the logical authority to be responsible for crafting policies to ensure universal access to essential communication services like telephony. However, whether this requires subsidies or direct action by the FCC depends on the circumstances. We are skeptical that subsidies are required to sustain universal service to telephony in today's world in which telephony is typically just one of many communications applications supported over broadband IP network platforms. If subsidies are needed, they should be re-targeted toward broadband.

Moreover, we believe it may be appropriate to have a public debate over what should be subsidized in light of the wide disparity in broadband service quality and tiers that exist already and are likely to persist in the future. The standard of what constitutes acceptable broadband service gets higher over time. Whereas first generation broadband services offered data rates measured in single-digit Mbps and second generation in 10s of Mbps, the standard for next generation broadband services may require 100s or 1,000s of Mbps data rates, and will include improvements in other Quality of Service (QoS) metrics such as latency and reliability. Additionally, access to mobile, or at least, nomadic broadband services is becoming increasingly important, and for a growing number of subscribers may be an adequate substitute for fixed broadband service.⁵³ While we do not seek to specify what the standard should be here, we do believe the FCC has an on-going responsibility to establish such standards and set that threshold as the target for its universal service goals. At the same time, we do not think that the FCC's goal should be to ensure that all consumers have the same quality of broadband service, and expect that there will remain choices for higher quality broadband services that some consumers will select or benefit from (for both mobile and fixed broadband services).

⁵³ There are significant differences between mobile and fixed broadband services with respect to their capabilities, how they are used, and the pricing models that render them, at best, imperfect substitutes. Typically, data rates are higher and the price per MB of data are lower for fixed services that may be shared by all users in a household; whereas mobile services are often personalized and subject to lower data caps, although family plans are also common. Because a significant share of mobile traffic is off-loaded to WiFi networks connected to fixed broadband services, for many consumers, fixed and mobile broadband are complementary. Whether universal service should seek to ensure that consumers have at least one type or both types of broadband access (fixed and/or mobile) needs to be debated.

The debate over the appropriate quality of the broadband service that should be provided should consider the applications that will need to be supported, and to the extent broadband infrastructure investments tend to be long-lived, the FCC will need to consider how traffic may develop in the future. Today, most of the traffic driving demand for broadband services and investments in capacity expansion is associated with entertainment video. It is a valid question whether the public wants to subsidize access to entertainment video. On the other hand, future applications that may contribute significantly to economic growth and social goals (e.g., eHealth, smart energy systems, augmented reality systems, etc.) may benefit from having infrastructure and capacity that today is required only by entertainment video and gaming traffic. These are difficult questions that policymakers should consider as we discussed in Lehr & Sicker (2016).

Badly designed universal service programs, however, can distort investment decisions. If the subsidies are shifted to end-user credits instead of supplier subsidies (as is mostly the current program), the subsidies would be less distortionary and might better allow the public to decide how and what it wants to subsidize.⁵⁴

4.3.3. Measurement, Disclosure, and Transparency

Markets cannot work without information. If the FCC is to rely on market forces to produce efficient outcomes, then consumers, edge providers and ISPs need market intelligence data to make informed decisions about what to buy and sell. Moreover, the FCC needs the analytic capacity and resources to be able to act credibly if needed, even if most of the time it may choose to let the market forces work unimpeded. If the FCC lacks the information and cannot readily acquire the information in the marketplace on a timely basis to take informed action, its enforcement capabilities will not be credible, undermining its role as the market referee.

New networking technologies are increasingly embedding measurement capabilities to support real-time adaptive behaviors. This is part of the trend toward the Internet of Things, Big Data, and ubiquitous computing that is manifesting itself in the most developed ICT markets. We are evolving toward a digital world in which many more things can be measured and the measurements used for customized decision-making on a more granular level (in space, time, and context).⁵⁵ Making sense of all this data from multiple sources (smartphones, applications, ISPs and third-party data providers, including consumer and provider market intelligence providers) will be complex and different decisions will require different summary statistics.⁵⁶

⁵⁴ Shifting to end-user subsidies might allow better targeting for what the subsidies are used for: broadband or entertainment services. This would likely drive changes in how entertainment and broadband services are packaged and marketed, and may be more consistent with current trends toward a la carte programming.

⁵⁵ For example, Network Function Virtualization, Dynamic Spectrum Access, and Clouds enable real-time adjustments in capacity provisioning across applications and network parameters. Consumers with multiple devices could dynamically shift their use in response to market conditions (e.g., which service has a particular movie available, is connectivity better via my mobile phone or fixed network? Etc.).

⁵⁶ For example, as we explain in Bauer, Lehr and Mou (2016), there is no unique "best way" to measure even something as seemingly straightforward as broadband speed. Different measurements may be appropriate in different situations. Increasingly, in international development, policymakers are making use of composite index metrics/scores to measure such things as e-Readiness (i.e., suitability for ICT-based development). These index scores summarize many sub-indices based on weightings, which could reasonably be adjusted.

In this future of more complex data and metrics, the role of government policymakers and an expert agency like the FCC with respect to promoting access to appropriate data and information will change. The FCC should seek to play a role in (a) focused efforts to fill key data gaps that are not otherwise well-addressed by publicly available data sources;⁵⁷ (b) assist in data curation by helping consumers identify good (and bad) market data;⁵⁸ and, (c) help encourage a healthy data ecosystem. This last will require the FCC to engage in public-private partnerships,⁵⁹ promote transparency policies,⁶⁰ and hopefully, provide research funding.⁶¹ Title III should recognize the importance of sustaining a healthy ecosystem for market-related performance data.

4.3.4. Rule-making authority & process

In a changing world, the FCC will need to adapt. That means that the FCC needs clear rule-making authority and process rules granting the FCC the flexibility to change, but also protect markets from too much regulatory discretion. The process rules need to facilitate open engagement by stakeholders in the regulatory process. The process rules will add bureaucratic impediments to rapid change, but that is a necessary cost of protecting against a runaway regulator with too much discretion.⁶² In a market, decision-making is a collective, decentralized process that often requires time-consuming coordination.

⁵⁷ The FCC has a history in publishing industry statistics about a range of important issues that is used by policymakers (Congress and the regulators), industry participants, and consumers for evidence-based decision-making. This includes data on such things as the availability and quality of broadband services and a range of industry statistics. The FCC makes this data publicly available via data repositories, through disclosure mandates on industry providers, and via active collection and inter-governmental sharing. These activities should continue, but need to keep pace with changing market conditions.

⁵⁸ As the data/metrics ecosystem grows more complex, the FCC will need to play a larger role in helping consumers understand different metrics, and ideally, to highlight good (and bad) data sources to assist in disciplining the data ecosystem (i.e., helping combat the data/metrics equivalent of "fake news").

⁵⁹ For example, the Measuring Broadband USA "Sam Knows" measurement infrastructure offers an example.

⁶⁰ As the data needed and used becomes increasingly granular, privacy, security, or confidentiality concerns are likely to loom larger. This will make it increasingly important to have properly tailored data access/management policies that will preclude supporting open access to all data. When data cannot be fully disclosed, then transparency policies that allow the data to be trusted will be important.

⁶¹ Academics have a key role to play as independent, and hopefully, trustworthy reviewers and analysts of market and technology trends. Their ability to play this role will depend on their access to research support, and to the extent this can be public, it will raise fewer suspicions about whether the research might be biased by the funding source. As the time-window between research and market commercialization has narrowed, especially in a world of networked software systems, the need to bridge communications across academic disciplines (within engineering sciences to support cross-layer designs and across engineering and social sciences) and across academia, industry, and government policy is ever more important.

⁶² Process rules include things like notice requirements, evidentiary, participation, and voting rules (see, McCubbins, Noll, and Weingast, 1987).

4.4. Title IV: Spectrum Management

One of the problems with spectrum management is that it is currently bifurcated into commercial and Federal spectrum, which makes no sense in today's world. A further problem is that spectrum policy has been conflated with industrial policy. For example, the allocation of spectrum to mobile operators has been used to control the number of competitors and choice of technology. Spectrum is a scarce resource that should be managed to maximize its potential for efficient sharing of the resource (i.e., that minimizes the effects of harmful interference⁶³).

Ideally, spectrum policy would be consolidated under a single independent regulatory authority, which might actually be independent of the FCC but would have principal authority to administer non-interfering sharing of the spectrum as a technical matter. To the extent spectrum users require additional resources to acquire spectrum for socially beneficial uses, support for those would be provided independently. (We do not provide uniforms to military for free, so why provide spectrum?).

In the near term, however, transitioning to the future of shared spectrum will require industrial policy considerations since we cannot disentangle economic/policy concerns from technical spectrum management concerns overnight. For example, the choice between worst case or actual interference models and the granting of exclusion rights requires economic/market structure-relevant decisions that cannot be purely technical as argued in Lehr (2016).

4.5. Title V: Public Safety and Critical Infrastructure

We see public safety and critical infrastructure issues as a set of services that require a separate title. All of these services, including Communications Assistance for Law Enforcement Acts (CALEA), emergency 911, and FirstNet, face major technical and regulatory challenges due to the evolution of communications networks; an evolution that has largely passed by public safety to date. Primary responsibility for some of these functions may lie with DHS, with coordination with the FCC. It seems likely that some functions, like reliability, could remain at the FCC, and expanded oversight and data collection could be added.

As identified and enabled by FirstNet legislation, public safety communications ability must be brought into mobile broadband. While this effort is underway, we are far from enabling first responders with the same access to broadband Internet access that nearly all of the public has. Addressing this challenge will require coordination among the FCC, DHS, NTIA and law enforcement, and will require a sustained commitment of time and resources to build and maintain the infrastructure and operability.

Just as there is a need to modernize the communications infrastructure for first responders, we likewise need to modernize the communication between first responders and the public. This includes the 911 for summoning help, as well as the emergency-alert infrastructure (e.g., wireless emergency alerting, emergency broadcast). Both of these services are under review for modernization (such as moving toward a mobile broadband application model), but this will be a continuous, long-term effort. These services are currently, and will likely continue to be, managed by the FCC, DHS, and other public safety entities.

⁶³ We recognize that defining what constitutes harmful interference is non-trivial even if treated as a purely technical matter.

CALEA will continue to evolve as communications adopts new technologies and law enforcement seeks to gain necessary and legal intercept of communications. Of course, encryption and other evolving confidentiality and anonymity enhancing features will continue to complicate the ability for such legal intercepts to be carried out. It is likely that the FCC will continue to have a role here, but DHS and the courts will more likely take a larger part of this effort.

A more general government need will be to ensure the reliability of critical infrastructure. In a world of classic PSTN, many factors ensured a highly reliable and available communications network, but deregulation has eroded this level of critical support. Current voice systems are not as reliable as the PSTN, and there is less monitoring of these systems. However, we now have multiple means of communication, as well as enhanced mobility, which changes the calculus surrounding reliability. It is clear that some portion of the Federal government should be monitoring the state of network reliability, particularly the critical infrastructure, in whatever way that might be defined.

4.6. Title VI: Transition Plan

Nothing happens over night. A key challenge of putting in place a new regulatory regime is the need to address the transition of legacy regulations for the PSTN and broadcasting. The details of this should be considered after a better understanding of just what needs to be transitioned. It will be the case that some segments of industry may acquire regulatory oversight that they didn't have before while others find themselves with less oversight. The goal as we see it is to both reduce this burden and to make it consistent as appropriate.

Much of today's regulatory apparatus of rules and enforcement actions at the Federal, state and local levels remains focused on yesterday's technologies, markets, and associated industry value chains. A key example of that is the need to transition from legacy PSTN regulation to a future of all-IP networks.⁶⁴ Many providers are in the process of retiring legacy copper wire loops in their last-mile networks as they upgrade to fiber. Retiring the copper wire plant necessitates a number of significant adjustments by network providers, customers, and third-party service providers (e.g., providers of legacy DSL services). For example, transitioning from metallic loops to optical fiber requires changes in the physical and network interfaces at the customer locations and multiple other points in the providers' networks. Fiber optic loops can support much higher data rate services and have lower maintenance costs, but cannot be used to deliver electric power for customer premises equipment.⁶⁵ Copper and fiberoptic facilities are maintained differently and retiring the copper can allow service providers to reduce operating costs for maintaining dual plant facilities, but may impose switching costs on consumers and eliminate the ability of DSL resellers to continue to provide service.⁶⁶

⁶⁴ For a discussion of some of the issues involved, see Lehr, Bauer & Clark (2013) or Werbach (2014). The legacy PSTN is premised on ensuring the viability of end-to-end TDM voice telephony calling.

⁶⁵ Metallic wire loops could be used to power end-user equipment, allowing telephones to continue to work during electric power outages. Battery back-up is required if similar capabilities are to be provided via fiber-delivered (or wireless) telephone services.

⁶⁶ The transition costs can be significant. Copper network interface devices need to be replaced at customer premises with optical network termination equipment, which requires the service provider to

Section 214 of the legacy Communications Act establishes a framework for managing the transition, and in 2015, the FCC adopted rules to manage the retirement of copper loop facilities.⁶⁷ The framework requires providers to seek FCC approval before retiring facilities and adopted a notice procedure to inform consumers and other stakeholders of impending retirements and the decommissioning of legacy services. In April 2017, the FCC proposed relaxing the rules further, in a move opposed by some consumer advocates.⁶⁸

Regardless of ones take on how fast providers ought to be able to migrate to new services and retire old ones, and the rules needed ensure adequate protections for consumers and other competitors during such transitions, it is important to have a process for managing the transition from the legacy Act to the new one. Title VI of the Communications Act of 2021 would manage that process. The basic idea is to have a Title into which all of the existing rules and regulations that need to be transitioned can be collected and jointly overseen during the transition.

Title VI would serve several purposes. First, it would provide a framework for addressing the transition, which would include provisions for the sunseting of regulations included under Title VI. The sunset provisions might identify specific dates or may consider automatic sunset provisions after some pre-agreed but finite time period (e.g., 24 months). This transition would also need to address issues where technology updates might take longer due to cost and/or the need for public funding support (e.g., Universal Service) to address locations where the market might not otherwise transition.

Second, Title VI would allow the new framework to proceed with a greater degree of independence from the legacy framework. For example, a facility or service that is subject to the new bottleneck rules under Title II or competitive framework under Title III as described earlier could not simultaneously be subject to rules under Title VI. It is hoped that the appeal of moving to a more streamlined and market-based regulatory regime under the new Act would provide stimulus incentives to expedite the difficult process of transitioning.

dispatch maintenance personnel to the customer's premises. Note that we aren't making a statement on the viability of future DSL technologies to compete with fiber-to-the-home solutions, but these DSL solutions tend to be very short drops to the home, meaning that substantial fiber will still need to be deployed in the access network. There are examples, such as in Europe, where fast DSL solutions have proven to be a viable approach. Also note that very little residential broadband access is offered through fiber-to-the-home solutions.

⁶⁷ See FCC (2015), In the Matter of Technology Transitions, et al, Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking, Before the Federal Communications Commission, GN Docket No. 13-5 (rel. Aug. 7, 2015) ("2015 Technology Transition Order"), available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-97A1.pdf.

⁶⁸ See FCC (2017), Notice of Proposed Rulemaking (NPRM), In the Matter of Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment, Before the Federal Communications Commission (FCC), WC Docket No. 17-84, released April 21, 2017. Public Knowledge has commented that the proposed changes are "deeply concerning" and represent a "stark-departure from long-established Commission practice and precedent" in attempting to undo a framework of consumer protections and process-based rules that were negotiated in reaching the 2015 Order (see *Comments of Public Knowledge*, In the Matter of Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment, Before the Federal Communications Commission (FCC), WC Docket No. 17-84, released June 15, 2017).

4.7. Those Titles that are Missing

Finally, it is worth considering what elements of the legacy Act we think may be largely dispensed with, potentially via the Title VI transition process, and what new issues may be better addressed by other regulatory authorities than a reformed FCC. For example, Title III (Radio) and Title VI (Cable Communications) of the legacy Act address a number of areas where continued regulatory oversight by the FCC may no longer be necessary. And, privacy and cybersecurity are two looming issues of significant concern to communications policymakers that may be better addressed by other authorities than the FCC.

4.7.1. Sunset Media and Cable Regulation

For example, with the transitions in entertainment and other media services (e.g., news), including over-the-air television and radio, we question the need for the FCC to act as an independent regulator of media services. The FCC's media rules were crafted in a world of over-the-air broadcasters using scarce public airwaves to deliver their content. This seems badly antiquated in light of industry convergence, changing consumer tastes, the rise of social media, and the shift to on-demand media consumption. The pro-competitive and paternalistic content regulations embodied in the menu of program access, must-carry, and media cross-ownership rules and in the requirements to support public interest programming (e.g., news or youth) and censoring certain types of speech or programming seems ripe for reconsideration. The pro-competitive rules may be successfully transitioned to general competition rules; while the content regulation has never existed comfortably with the Constitution's First Amendment strong protections for freedom of speech. With the transition to a new spectrum management regime under the new Title IV discussed earlier, the FCC's justification for imposing programming obligations on broadcasters, which today are using public airwaves for free, should disappear.

Additionally, Title VI which subjects Cable network providers to a separate body of regulatory rules than telecommunications providers has been a continuing source of confusion and regulatory asymmetry that has become increasingly hard to justify in light of technical and industry convergence. Both the legacy cable and telephone providers are migrating toward all-IP broadband platform infrastructures and it makes sense to subject them to a common regulatory framework. This will assist in realizing the goal of technically neutral regulation.

4.7.2. Privacy and Cybersecurity Policy and FCC's Role?

Two looming concerns today and continuing for the future are threats to privacy and cybersecurity as society and the economy becomes increasingly digital. Broadband, the Internet and other components of our electronic communications infrastructure are key vectors by which these threats are manifested, raising the question of what role the FCC should play in regulatory policies to address these threats.

While privacy and cybersecurity are both issues of great relevance to the design and operation of the communications infrastructure and markets that are the principal focus of the FCC, these are not sector-specific issues. As such, a key justification for the need for an independent, sector-specific regulator is missing in this context. Although the FCC may play an important role in enforcing privacy and cybersecurity regulations, abetted in its efforts by its specialized expertise, primary regulatory responsibility in these areas may best be directed elsewhere.

In the case of privacy, an argument may be made that the FTC is better positioned to enforce general privacy protections because its mandate is not limited to a single sector, and because it has taken the lead historically in promulgating privacy standards. Arguably, the FCC's decision to reclassify broadband access as a Title II service created a gap in privacy protections because the FTC is prohibited by the Act from regulating firms subject to Title II. To address this gap, the FCC issued strong privacy rules in October 2016; but Congress moved to strike down these rules following the election of the Trump administration.⁶⁹ Regardless of whether one prefers the FTC's framework or the FCC's October 2016 framework, the current situation leaves a significant gap in existing privacy protections that would not be there under our proposed framework. It seems unreasonable to have either significantly stronger or weaker privacy restrictions on access ISPs than on other Internet providers such as Facebook, Google, and Amazon that may pose as large a threat to consumer privacy on the Internet.

In the case of cybersecurity, the Department of Homeland Security (DHS) may be better positioned to take the lead on security regulations and policy since addressing cybersecurity is also not a sector-specific issue and since it requires close coordination with criminal enforcement and national security agencies in the U.S. and internationally.

With respect to both issues, as noted, we expect the FCC to play an important role. However, the FCC's role may be to coordinate with, but generally defer to the recommendations in these areas to other agencies.

5. Conclusions

Communications policy in the U.S. is at an important crossroads. Over the past two decades we have substantially transitioned from a communications infrastructure based on the PSTN that was designed to support end-to-end electronic communications, principally comprising telephone calls, to an all-IP broadband platform that supports all forms of multimedia communications and, increasingly, cloud computing services.

While the technologies and market structures have changed significantly, our regulatory frameworks and their legislative foundation in the Communications Act of 1934 (as amended) has become increasingly outdated and ill-suited to meet present-day challenges. Whereas the legacy Act was designed to address the need to regulate a monopoly telephone network and separate broadcasting industry that made use of public air waves and was dominated by a handful of national broadcasting networks, the new world calls for more market-based regulation of a more complex and converged set of technologies that share network resources to deliver the full spectrum of electronic communication and information services (including television).

The FCC has struggled for years to deal with the fundamental market changes by tinkering with the existing framework. First with Voice-over-IP and later with broadband services (at least originally), the FCC has struggled to craft a lighter-handed regulatory framework that exempted

⁶⁹ For FCC Privacy Order from October 2016, see FCC (2016), *Report and Order*, In the Matter of Protecting the Privacy of Customers of Broadband and Other Telecommunication Services, Before the Federal Communications Commission, WC Docket No. 16-106, adopted October 27, 2016, available at http://ec.europa.eu/justice/data-protection/files/eujls08b-1002_-_protection_of_personal_data_a4_en.pdf. For Congressional action to rescind rules, signed into law in April 2017, see <https://www.govtrack.us/congress/bills/115/sjres34>.

these from the heavy-hand of common carriage PSTN regulations. The FCC has had to confront the on-going tension between dual regulatory regimes for over-the-air broadcasters and cable TV providers on the one-hand and between cable TV and telephone network operators on the other. And, with the rising importance of the Internet and the IP networks that it is a key part of, the FCC has struggled with clarifying its role as the independent regulator tasked with ensuring the healthy evolution of our national electronic communications infrastructure.

The existing framework still has too much of its weight in the old world and is poorly positioned for the world that is rapidly emerging with new providers, new services, and as yet, uncertain market changes. The rise of the Internet of Things, of Big Data analytics and AI-powered automation, and always-on/everywhere-connected mobile computing are already changing the ways we work and live, and are confronting us with new regulatory challenges (e.g., changing world of cybersecurity and privacy) as well as changing forms of old regulatory challenges (e.g., nature of last-mile bottlenecks and access to media).

This paper proposes a new Communications Act of 2021 as a way to initiate a debate over what we might do if we could simply sweep away the existing Act and start anew. In taking this clean-slate approach we consciously ignore the legal and political issues that would loom large in any real-world attempt to draft replacement legislation for the 1934 Act. Our goal is to take a step back from the existing regulatory frameworks that we have engaged with for several decades ourselves and ask what elements seem to us essential and important and worth preserving in the world we see rapidly emerging. We emphasize those elements and ignore many of the details in order to provide a clear armature for addressing the important challenge of reforming our basic regulatory framework for our communications sector regulator.

Our simplified proposal for a Communications Act of 2021 incorporates the following six titles: Title I (goals, scope and authority); Title II (framework for regulating potential bottlenecks); Title III (framework for monitoring and addressing communications markets); Title IV (radio-frequency spectrum); Title V (public safety and critical infrastructure); and Title VI (transition plan). In the relevant sub-sections we highlight the key features that we believe are required for each Title. For example, we re-frame Title II explicitly as authority to regulate interconnection and open access to bottleneck facilities and disavow and eschew any reference to common carriage or its heritage; and we recognize that bottleneck facility regulation is necessarily heavy-handed and so should be limited and isolated to focus only on facilities that are identified as critical bottlenecks. The main focus of regulatory attention should be on Title III and the role of the FCC in promoting industrial policies such as universal access and in promoting competition in markets where light-touch regulation is appropriate. We also propose adding a Title VI that is expressly focused on managing the transition from legacy regulations; and we do not propose a Title for regulating broadcast media. In making these proposals, we have sought to be provocative and hope to spark debate.

6. Exhibits

6.1. Exhibit #1: Communications Act of 1934 (as Amended)

Communications Act 1934 (as amended)

- Confusing patchwork of legacy legislation, regulatory decisions, Court decisions accumulated over decades... *showing its age...time to level set*

Legislation: 47 U.S.C. (CommAct34, TA96, CableAct92, etc.)

- CHAPTER 1 - TELEGRAPHS (§§ 1.. to 17)
- CHAPTER 2 - SUBMARINE CABLES (§§ 21 to 39) * 1,473 sections
- CHAPTER 3 - RADIOTELEGRAPHS (§ 51..)
- CHAPTER 4 - RADIO ACT OF 1927 (§§ 81.. to 120)
- CHAPTER 5 - WIRE OR RADIO COMMUNICATION (§§ 151 to 622)
- CHAPTER 6 - COMMUNICATIONS SATELLITE SYSTEM (§§ 701 to 769)
- CHAPTER 7 - CAMPAIGN COMMUNICATIONS (§ 801..)
- CHAPTER 8 - NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION (§§ 901 to 942)
- CHAPTER 9 - INTERCEPTION OF DIGITAL AND OTHER COMMUNICATIONS (§§ 1001 to 1021)
- CHAPTER 10 - LOCAL TV (§§ 1101 to 1110)
- CHAPTER 11 - COMMERCIAL MOBILE SERVICE ALERTS (§§ 1201 to 1205)
- CHAPTER 12 - BROADBAND (§§ 1301 to 1305)
- CHAPTER 13 - PUBLIC SAFETY COMMUNICATIONS AND ELECTROMAGNETIC SPECTRUM AUCTIONS (§§ 1401 to 1473)

e-CFR data is current as of November 29, 2016

Title	Volume	Chapter	Browse Parts	Regulatory Entity
Title 47 Telecommunication	1	I	0-19	FEDERAL COMMUNICATIONS COMMISSION
			20-39	
			40-69	
			70-79	
			80-199	
	II	200-299	OFFICE OF SCIENCE AND TECHNOLOGY POLICY AND NATIONAL SECURITY COUNCIL	
		300-399	NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION, DEPARTMENT OF COMMERCE	
	IV	400-499	NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION, DEPARTMENT OF COMMERCE, AND NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION	

Code of Federal Regulations

47 U.S.C. Chapter 5 – Wire or Radio Communication

- Sub Chapter I: General Provisions (47 U.S.C. §151-162) – establish FCC
- Sub Chapter II: Common Carriers (47 U.S.C. § 201-276) – “Title II” Telecom regs
- Sub Chapter III: Radio (47 U.S.C. § 301-399) -- Spectrum management, broadcast media
- Sub Chapter IV: Procedural and Administrative (47 U.S.C. § 401-416) -- process
- Sub Chapter V: Penal Provisions; Forfeitures (47 U.S.C. § 501-510) -- process
- Sub Chapter VI: Cable Communications (47 U.S.C. § 521-573) – “Title VI” Cable
- Sub Chapter VII: Miscellaneous Provisions (47 U.S.C. §601-622) -- miscellaneous

6.2. Exhibit 2: Summary of Communications Act of 2021

<h1>Communications Act of 2021</h1>	
Title I: FCC goals, scope, authority	<ul style="list-style-type: none">• Define FCC goals, scope of jurisdiction, and authority• Specify what national goals should be with respect to essential communications infrastructure
Title II: Bottleneck facility regulation	<ul style="list-style-type: none">• Replace legacy Title II Common Carrier regulation of Telecommunications Services and operators.• Provide framework for (a) identifying bottleneck facilities; (b) enabling shared (open) access and interconnection to bottleneck facilities; and (c) structural remedies to protect against spillover of bottleneck facility regulation into non-regulated markets/services.
Title III: Competitive Communications Market Monitoring & Enforcement	<ul style="list-style-type: none">• Provide framework for promoting healthy market competition and industrial policy goals for communications sector• Enforce Powell's 4 Open Internet principles protecting consumer choice• Enact Universal Service plan to ensure affordable access to minimum level of essential communications services for all• Promote healthy ecosystem for data measurement, reporting and analysis to support evidence based decision-making and regulatory enforcement actions• Provide inclusive process for evolving rules frameworks as conditions change
Title IV: Spectrum Management	<ul style="list-style-type: none">• Transition to independent spectrum regulator focused on efficient management of shared access to spectrum resources, independent of other industrial policy goals
Title V: Public Safety and Critical Infrastructure	<ul style="list-style-type: none">• Provide framework for management and interconnection of communication networks and services required for public safety, criminal enforcement, and for critical infrastructures
Title VI: Transition Plan	<ul style="list-style-type: none">• Include here all regulations from legacy Act that are in process of being transitioned either to new framework under Title above or for sunset as part of deregulation

7. References

Atkinson, R. and P. Weiser (2006), "A 'Third Way' on Network Neutrality," White Paper, The Information Technology & Innovation Foundation (ITIF), Washington, DC, 2006.

Bauer, S., W. Lehr and M. Mou (2016), "Improving the measurement and analysis of Gigabit Broadband Networks," TPRC44, September 2016, Alexandria, VA, available at SSRN: <https://ssrn.com/abstract=2757050> or <http://dx.doi.org/10.2139/ssrn.2757050>.

Botein, M. (2008), "Federal Regulation of FIOS and Lightspeed: A Tale of Two Jurisdictional Dilemmas," NYL Sch. L. Rev. 53: 1041.

Cannon, R. (2002). "Legacy of the Federal Communications Commission's Computer Inquiries, The." Federal Communications Law Journal 55: 167

Cave, M. (2009), "Regulating Telecommunications in Europe, in Internet Policy and Economics, edited by W. Lehr and L. Pupillo, Springer US: 15-28.

Cherry, B. (2012), The crisis in telecommunications carrier liability: Historical regulatory flaws and recommended reform (Vol. 32): Springer Science & Business Media.

Cherry, B. and J. Peha (2014), "The Telecom Act of 1996 Requires the FCC to Classify Commercial Internet Access as a Telecommunications Service," December 23, 2014, available at SSRN: <https://ssrn.com/abstract=2602091>.

Clark, D., W. Lehr and S. Bauer (2009), Comments of David Clark, William Lehr, and Steven Bauer, In the Matter of Preserving the Open Internet (GN Docket No. 09-91) and Broadband Industry Practices (WC Docket No. 07-52), Before the Federal Communications Commission, January 2009, available at: <http://apps.fcc.gov/ecfs/document/view?id=7020373725>.

Coase, R. H. (1959), "The Federal Communications Commission," Journal of Law and Economics, 2 (1-40).

Davidson, C. and M. Santorelli (2016), "Broadband, the States, and Section 706: Regulatory Federalism in the Open Internet Era," Hastings Sci. & Tech. LJ 8 (2016): 211.

Delp, A. and J. Mayo (2017) "The Evolution of "Competition": Lessons for 21st Century Telecommunications Policy," Review of Industrial Organization 50.4 (2017): 393-416.

Evans, J., P. Levine, N. Rickman and F. Trillas (2011), "Delegation to independent regulators and the ratchet effect," University of Surrey, School of Economics Discussion Papers(911).

Ford, G. (2016), "The Impact of Government-Owned Broadband Networks on Private Investment and Consumer Welfare," (April 6, 2016). SGLF, April 2016. Available at SSRN: <https://ssrn.com/abstract=2973274>

Frieden, R. (2013), "The mixed blessing of a deregulatory endpoint for the public switched telephone network," *Telecommunications Policy*, 37(4), 400-412.

Gilroy, A. (2017), "The Net Neutrality Debate: Access to Broadband Networks," Congressional Research Service (CRS), May 18, 2017, available at <https://www.hsdl.org/?view&did=800727>.

Hazlett, T. (2003), "Is Federal Preemption Efficient in Cellular Phone Regulation?", 56 Fed. Comm. L.J. 155, 219–20 (2003).

Jamison, M. and J. Hauge (2014), "Do Common Carriage, Special Infrastructure, and General Purpose Technology Rationales Justify Regulating Communications Networks?" *Journal of Competition Law and Economics*, 10(2), 475-493.

Knieps, G. (2015), "The Positive Theory of Regulation," Network Economics: Principles - Strategies - Competition Policy: 157-169.

Laffont, JJ. and J. Tirole (1993), *A theory of incentives in procurement and regulation*, MIT Press: Cambridge, 1993.

Layton, R. and J. Kane (2017), "Alternative Approaches to Broadband Policy," Working Paper, Mercatus Center, George Mason University, available at <https://www.mercatus.org/publications/broadband-policy-deregulation-denmark>.

Lehr, W. and D. Sicker (2017), "Would you like your Internet with or without Video," *Journal of Law, Technology & Policy*, vol 2017 (issue 1 Spring), available at <http://illinoisjltpl.com/journal/wp-content/uploads/2017/05/Lehr.pdf>.

Lehr, W., S. Bauer and D. Clark (2013). "Measuring Performance when Broadband is the New PSTN." Journal of Information Policy 3: 411-441.

Lehr, William (2016) "Spectrum License Design, Sharing, and Exclusion Rights," Journal of Law, Technology & Policy, Vol. 2016, Spring, No. 1, 1-33.

Lehr, W. (2014), "The Mistake of One-Sided Open Internet Policy," a white paper, prepared with support from the American Cable Association, July 2014, available at <http://apps.fcc.gov/ecfs/document/view?id=7521683605>.

Lehr, W. and T. Kiessling (1999), "Telecommunication regulation in the United States and Europe: The case for centralized authority," in Competition, Regulation, and Convergence: Current Trends in Telecommunications Policy Research, edited by S. Gillett and I. Vogelsang, Routledge: New York, 1999.

Lyons, D. (2013), "The Challenge of VoIP to Legacy Federal and State Regulatory Regimes." Perspectives from Free State Foundation Scholars 8.9 (2013), available at http://www.freestatefoundation.org/images/The_Challenge_of_VoIP_to_Legacy_Federal_and_State_Regulatory_Regimes_040213.pdf.

Lyons, D. (2010), "Technology Convergence and Federalism: Who Should Decide the Future of Telecommunications Regulation?" University of Michigan Journal of Law Reform 43(2).

May, R. (2006), "Defining Deference Down: Independent Agencies and Chevron Deference," Administrative Law Review: 429-453.

Mayo, J. (2013), "The evolution of regulation: Twentieth century lessons and twenty-first century opportunities," *Fed. Comm. LJ*, 65, p.119.

McCubbins, M. D., R. G. Noll and B. R. Weingast (1987). "Administrative procedures as instruments of political control." Journal of Law, Economics, & Organization 3(2): 243-277.

McCubbins, Mathew D. "The legislative design of regulatory structure," *American Journal of Political Science* (1985): 721-748.

Pitsch, P. and A. Bresnahan (1995), "Common Carrier Regulation of Telecommunications Contracts and the Private Carrier Alternative," *Fed. Comm. LJ*, 48, 447.

Posner, R. (1974), "Theories of Economic Regulation," NBER Working Paper, May 1974.

Sicker, D. (2003) "Applying a Layered Policy Model to IP Based Voice Services." *HICSS*. 2003.

Sicker, D. C. (2004). "End of Federalism in Telecommunication Regulations, The." Northwestern Journal of Technology & Intellectual Property 3: 130.

Sisneros, L. and B. Sponsler (2016), "Inhibiting Connection: State Policy Impacting Expansion of Municipal Broadband Networks," Education Commission of the States, available at <https://eric-ed-gov.libproxy.mit.edu:9443/?id=ED568882>

Speta, J. (2001), "A common carrier approach to Internet interconnection," *Fed. Comm. LJ*, 54, 225.

Spiller, P. (1990), "Politicians, Interest Groups, and Regulators: A Multiple-Principals Agency Theory of Regulation, or 'Let Them Be Bribe'," *The Journal of Law and Economics* 33.1 (1990): 65-101.

Spulber, D. F. and D. Besanko (1992), "Delegation, commitment, and the regulatory mandate," Journal of Law, Economics, & Organization, 8(1): 126-154.

Stigler, G. (1971), "The theory of economic regulation," *The Bell journal of economics and management science* (1971): 3-21.

Trebing, H. M. (1969), "Common Carrier Regulation. The Silent Crisis," *Law and Contemporary Problems*, 34(2), 299-329

Trillas, F. (2010), "Independent Regulators: Theory, Evidence and Reform Proposals," IESE Business School, University of Navarra Working Paper WP-860, May 2010.

Weingast, B. and M. Moran (1983), "Bureaucratic discretion or congressional control? Regulatory policymaking by the Federal Trade Commission," Journal of Political Economy, 91(5), pp.765-800.

Whitt, R. S. (2008). "Evolving Broadband Policy: Taking Adaptive Stances to Foster Optimal Internet Platforms." CommLaw Conspectus 17: 417.

Werbach, K. (2014), "No Dialtone: The End of the Public Switched Telephone Network," Federal Communications Law Journal 66(2).

Wilson, K. (2016), "Does Public Competition Crowd Out Private Investment? Evidence from Municipal Provision of Internet Access," NET Institute Working Paper No. 16-16, September 30, 2016, available at SSRN: <https://ssrn.com/>.

Yoo, C. (2013), "Is There a Role for Common Carriage in an Internet-Based World?", *Houston Law Review*, Vol. 51, p. 545