Wireless with strings Attached

Net Neutrality and the Grounding of Wireless Innovation

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contents

executive summary

In the digital age, Americans are more "connected" than ever before. The Internet and mobile devices serve as powerful platforms for real-time interaction. Thanks to the commercial potential of these technologies, the marketplace has been flooded with creative new businesses and tools. The rapid growth of these technologies, however, has outpaced the ability of lawmakers to regulate them. As a result, a movement is taking shape to give the government blanket authority over how Americans connect, interact, and innovate. This regulatory movement marches under the banner of "network neutrality."

Any company or industry that connects users together operates a network. With the growing popularity of mobile and Internet technologies, nearly all modern commerce requires the use of networks. As *Wireless with Strings Attached* explains, the term "neutrality" encompasses such a vague, broadly defined set of rules and restrictions that it can be used to justify nearly any possible regulation of any imaginable network.

Therefore, "net neutrality" is nothing more than old-fashioned government regulation, originally designed for a single monopoly telecommunications carrier, but now dressed up for the digital age. While these new regulations were first sought for operators of Internet networks, the scope of neutrality is growing. The term "wireless net neutrality," first introduced in February 2007, describes the regulatory movement's goal of putting the nation's cellular-phone providers under government control.

This paper exposes the arguments, motivations, and strategies for "wireless net neutrality" and reveals how this plan, based on revisionist history, resuscitates failed policies to enact the anti-consumer agenda of corporate special interests. To expand the government's powers over all developing technologies, supporters of regulation must convince lawmakers and the public of the truth of three central assertions:

1. "Neutrality" is a time-tested and fundamental attribute of all networks.
2. "Neutrality" is required and responsible for a successful network.
3. "Neutrality" is threatened, and it must be restored.

Wireless with Strings Attached provides historical perspective on the real contribution of "neutrality" to the Internet's development. Contrary to the three claims above, most of the Internet is not "neutral" and never has been. In fact, evidence suggests that the Internet could not have developed under a broad neutrality regime.

In the past, when government has attempted to regulate networks, the result has been less choice, less innovation, and more corruption. In the telecommunications industry, such regulations were so damaging that a second wave of regulations was devised to undo the damage caused by the first.

Despite this historical precedent, neutrality proponents paint regulation of the wireless industry as pro-competition, pro-innovation, and pro-consumer. To justify imposing this broad regime of government control, they must argue that the wireless industry is "broken." *Wireless with Strings Attached* refutes this claim, and reveals how neutrality threatens to destroy a thriving and competitive market:

- According to government statistics, 98 percent of customers can choose among three or more wireless providers, and no provider controls more than a 30-percent market share.
- As a result of this competition, the cost charged per minute of mobile service has plummeted 85 percent over the last decade.
- If wireless providers can be treated as public utilities, then any competitive business could fall under government control for any reason, at any time. This would result in higher prices, less competition, and less innovation.
- Proposed regulations are driven by companies seeking favorable outcomes from government that they cannot achieve in the market.
- These outcomes will not benefit consumers. Wireless net neutrality would subvert market forces and usurp the freedom of consumers to choose the best technology, resulting in a consolidated industry built on fundamentally inferior technology.

More than 80 years of government mismanagement of the nation's airwaves has created a system where regulators could impose a neutrality regime without any mandate from the American people or their elected representatives. The government continues to exercise complete control over the use and allocation of the airwaves, despite overwhelming evidence that treating spectrum like property is beneficial for both government and consumers.

Poor management has left much spectrum unused or inaccessible, severely handicapping the rise of next-generation wireless technologies and jeopardizing America's competitiveness in the digital economy:

- Because of this mismanagement, it is estimated that only 5 percent of the nation's spectrum is in use at any given time, even though all frequencies are allocated.
- Wireless providers in the European Union have access to twice the amount of spectrum as U.S. carriers.
- Experiments in several countries reveal that the privatization of spectrum ownership and management results in greater competition, innovation, and consumer choice.

Because wireless innovators must use this overregulated and mismanaged spectrum to reach their customers, any aspect of a wireless company's business practices is vulnerable to regulation.

Unlike misguided and corruptible government action, the need for participants in a competitive market to maximize competition is an effective driver of pro-consumer reform. *Wireless with Strings Attached* describes how the desired benefits of wireless net neutrality are already beginning to materialize without a new regulatory regime. Contrary to the claims of neutrality activists, the market is working, and Congress and the Federal Communications Commission (FCC) should let this continue. In a competitive market, innovators will be free to create new platforms, and consumers, not government, will pick the winners.

2008: A Happy New Year for the Mobile Phone?

On January 24, 2008, the FCC began to auction off the 700 megahertz (MHz) spectrum, a process that may sound obscure to consumers and policy makers alike, but that is of key significance to all. Those 700 MHz frequencies, now used by ultra-high-frequency (UHF) television, will become available when analog broadcasting ceases in February 2009. The switch to digital broadcasting means more than a clearer, crisper television picture. The freeing of these frequencies will also shape the future of wireless communications, because companies can now bid to use these frequencies for—among other things—wireless Internet signals.

In recent years, consumers have witnessed an explosion of innovation and lower prices in mobile phones, both welcome developments. There is no guarantee, however, that innovation will continue to climb or that prices will continue to drop. The reason lies in the regulatory movement that marches under the banner of "network neutrality." Proponents argue that this is "the most important public policy you've probably never heard of."[1] Though most prominently associated with the Internet, the idea of network neutrality also applies to mobile phones and threatens any new technology that helps people connect, interact, and innovate.

What Is Network Neutrality?

Political organizations such as MoveOn.org and Common Cause label network neutrality "the key to Internet freedom"[2] and claim it has the power to prevent an impending "disaster for our economy, our culture and our democracy."[3] Behind these grandiose attributions, net neutrality lacks a precise definition. When, in August 2006, the Federal Trade Commission (FTC) assembled a task force to study the topic, the chairman concluded that "there is no one definition of what net neutrality is. Even people who say they're pro–net neutrality have very different definitions of what they think it means."[4]

Two of the most ardent supporters of new legislation to enforce net neutrality, Mark Cooper of the Consumer Federation of America and Ben Scott of Free Press, define neutrality as "the operation of the network in a manner that does not impede, block or slow the flow of content, services or applications or impair the functioning of devices connected to the network."[5]

In other words, a "neutral" network operates like a road without speed limits, lane markings, or traffic lights. Once the road is built, consumers can drive any car they choose, at the maximum possible speed, to any destination they can reach.

The roads that carry information on the Internet are privately owned. Net neutrality advocates, such as the Save the Internet Coalition, fear that without laws to keep these roads neutral, owners will "discriminate in favor of their own search engines, Internet phone services, and streaming video—while

slowing down or blocking their competitors." Only net neutrality, they argue, can stop network operators who "want to reserve express lanes for their own content and services—or those from big corporations that can afford the steep tolls—and leave the rest of us on a winding dirt road."[6]

Network neutrality sounds like a complicated, high-tech concept, but it dates from a time before the Internet and mobile phone. It is a concept designed for a single, monopoly phone carrier, an arrangement that no longer exists.

Playing Monopoly

While the term "net neutrality" did not exist before 2003, AT&T (and the "Baby Bells" created by the breakup of AT&T in 1984) has been subject to similar regulations since 1910. The service that connects consumers to the Internet's backbone is often referred to as the "last mile." Because consumers can access the Internet over phone lines, the portion of the "last mile" provided by AT&T and the Bells was regulated until 2005.

These rules resulted from unique historical arrangements between the government and the Bell monopoly. They were never intended to apply to competitive carriers or to data networks. Indeed, aside from the Bells, no Internet service provider (ISP) has ever been subject to neutrality regulations.

Regulators have consistently and explicitly sought to isolate all forms of Internet traffic from burdensome government rules. According to Robert Cannon, the former senior counsel for Internet issues at the FCC, regulators determined as early as 1970 that data networks were part of "an innovative, competitive market with low barriers to entry and little chance of monopolization." Viewing this market, the FCC concluded that there was no demonstrated need for regulation or safeguards." The FCC, Cannon continues, "never had any intention whatsoever at any time of regulating data processing."[7]

Proponents of neutrality seek to override these intentions and subject all data networks to the same restrictions once imposed exclusively on the Bell monopoly. For net neutrality advocates, the future of the modern Internet depends on reviving and expanding 600-year-old rules from English common law.

These regulations, covering what is referred to as "common carriage," are defined by Columbia Professor Eli Noam as guarantees "that no customer seeking service upon reasonable demand, willing and able to pay the established price, however set, would be denied lawful use of [a] service or would otherwise be discriminated against."[8] For more than a century, the U.S. government has labeled certain transportation and communications services as common carriers. The results have been dismal: rather than protect consumers, common-carriage rules actually protect monopolies, block competition, and restrict innovation.

In the case of AT&T, common carriage was not imposed to punish or prevent a monopoly, but rather to create one. Not only were these regulations accepted willingly, but AT&T's executives considered them a key part of the company's business model. If AT&T could convince lawmakers that it would be redundant to have more than one company investing in telecommunications infrastructure, it could have the government prevent competitors from entering the market. In exchange, AT&T would assume the status of "common carrier."

To achieve this goal, AT&T President Theodore Vail in 1907 coined the slogan "one system, one policy, universal service,"[9] and began characterizing his company as a "natural monopoly." A monopoly is defined as "natural" when a single firm must serve the entire market to remain profitable. If two firms were simultaneously to invest, both would fail, making competition unsustainable, wasteful, and inefficient.

While AT&T was certainly not a natural monopoly in 1907, burdensome regulations imposed over the next quarter century made Theodore Vail's vision a self-fulfilling prophecy. According to Adam Thierer, "universal service, the final element of AT&T's strategy to eliminate competition, was in place thanks to the explicit actions of both federal and state legislators and regulators. Once AT&T's motto was adopted as the nation's *de facto* regulatory policy, no other firm was in a position to adequately extend service in accordance with the new federal and state mandated social policy."[10]

The common-carriage regime that created and protected the Bell monopoly is widely regarded as a complete failure. As described by Stanford University professor Bruce Owen, "there is little clear evidence that traditional regulation ever achieved even its narrow objective of making non-discriminatory service available to all." Instead, Owen finds, "the remedy makes the disease worse. Regulators and regulation often have served as deterrents to technical innovation." Owen concludes that "no approach to controlling . . . regulated monopolists in the communications industry has been successful, and most have injured consumer interests."[11]

Many of the "solutions" proposed by net neutrality advocates are based not on previous regulation, but actually on deregulation designed to undo the damage caused by the common-carriage regime. Faced with an unwieldy state-sanctioned monopoly, the FCC first deregulated the devices (e.g., phones, fax machines, modems) that could be used on AT&T's network. In its 1968 *Carterfone* decision, the FCC ended AT&T's monopoly over devices, allowing consumers to use any equipment that did not harm the network.

Congress further deregulated the Bell monopoly through the Telecommunications Act of 1996. To reintroduce competition into the market (long since forbidden by common carriage), this act opened up the networks of common carriers for use by competitors. Economists such as the Brookings Institution's Robert Crandall found that inventing new regulations to effect deregulation "is not only a mistake; it is an exercise in futility."[12] Regardless of the means employed, Congress's aim was not to create a new regulatory regime, but rather to return to the thriving, competitive, and deregulated telecommunications industry that existed before common carriage.

Shortly after passage of the 1996 act, FCC Commissioner Susan Ness proclaimed that "the overall thrust of the new law is straightforward: increase competition and reduce regulation." Ness explained that the new regulations were not intended to be a permanent regime, but a "transition" to a deregulated model for the industry, where "monopoly-based safeguards are no longer necessary." Nothing better exemplified this intent, Ness believed, than the inclusion of provisions granting "the Commission increased freedom to deregulate as markets become competitive."[13] In other words, once the damage caused by common carriage had been undone and competition restored, providers would no longer be required to open their networks to competitors.

The 1996 "forced line sharing" scheme failed to create significant competition. Instead, as Bruce Owen explains, "market forces took an end run around the Bell bottleneck." Today, Owen continues, "cell phone companies and cable television companies offer local phone services that compete with the former Bell telephone monopolies. Competition has finally come to local telephone service, not because of a century of government regulation, but in spite of it."[14]

Net neutrality advocates have revised history to paint neutrality as a fundamental, widespread, and successful principle. In reality, most of the networks that make up the Internet have never been regulated and are far from "neutral." Aside from the Bell monopoly, ISPs and their networks have been explicitly protected from regulation. As we have seen, the first wave of neutrality rules imposed on the Bell system decreased competition and limited innovation, resulting in a state-sanctioned monopoly. A second wave only attempted to undo this damage. Ultimately, however, market forces were responsible for restoring competition to the marketplace.

If the Internet's core consists of non-neutral networks that evolved in the absence of regulation, what role did neutrality rules play in creating the modern Internet?

Those Who Rewrite History Are Doomed to Repeat It

The stated intent of net neutrality regulations is to make the Internet "neutral." In reality, however, the Internet is not a single entity, but rather a vast network of private networks converging at nearly 135,000 unique points in North America alone.[15] These networks vary widely in size, appearance, and purpose. The Department of Justice concluded in September 2006 that because of significant oversimplifications, "proponents of 'net neutrality' regulation do not agree on a definition of what conduct should be prohibited, nor what networks would be regulated, or even the extent to which pieces of the Internet need to be regulated."[16]

Legislation proposed in Congress fails to provide clarification. Despite this considerable ambiguity, Sen. Olympia Snowe (R-ME) contends that her bill will prevent the Internet from turning into "a former Soviet Union supermarket" where consumers "have access to that supermarket, but what will be on the shelves will be limited and dismal."[17] Rep. Edward Markey (D-MA) argues similarly that his legislation in the House will protect the Internet from becoming "a system of informational apartheid."[18]

In an August 2007 PRI study, K. Lloyd Billingsley refutes these claims and describes the disastrous implications of this legislation for the future of the Internet. He concludes that "Congress should not—nor should any state—make any law imposing a regulatory regime of net neutrality. That regime would yield negative consequences for consumers, quash innovation and investment, and prove difficult or impossible to change in the future."[19]

Inherent ambiguity in the purpose and scope of net neutrality makes this term a convenient justification for the limitless regulation of nearly any industry. Even competitive and thriving businesses are susceptible to scrutiny under the banner of "neutrality." The current study exposes the motives behind "wireless net neutrality," a proposal, based on revisionist history, to resuscitate failed policies in order to put the nation's cellular-phone providers under government control.

Was the Net Ever Neutral?

Advocates of applying neutrality rules to all networks, both within the Internet and beyond, frequently point to the prominent role that these "tried and tested" regulations have played in making "the Internet the greatest engine of economic growth and democratic communication in modern memory."[20] According to Free Press co-founder Robert McChesney and Stanford University law professor Lawrence Lessig, it is the Internet's neutrality "that has made it such a powerful force for economic and social good. The protections that guaranteed network neutrality," they assert, "have been law since the birth of the Internet."[21] In reality, the vast majority of the Internet's infrastructure has never been subject to neutrality rules.

At several points throughout the Internet's history, regulators explicitly rejected such provisions, concluding that government intervention would threaten the Internet's growth. As a result, the commercial networks that make up the Internet's backbone have evolved with little regulation or oversight. The products of this evolution are far from neutral. It is precisely this lack of neutrality that helped create what Common Cause calls "the great freewheeling information superhighway you've grown to love."[22] This explains why, as Andrew Orlowski explains, "most of the senior engineers responsible for developing the [Internet] of today oppose 'neutrality' legislation."[23]

According to David Farber, known as the "grandfather of the Internet," net neutrality "brings organizations like the FCC too close to the regulation of the Internet. We've avoided that over the years, and the Internet has thrived on that. The hazy legislation that's being proposed really requires fairly precise and deep understanding of the Internet in order to regulate it, and that's not something the FCC has been notably successful in doing."[24]

To understand how commercial networks assembled in the absence of regulation to form the Internet of today, it is helpful to consider the Internet's history. The precursor of the modern Internet was a government-run national research network known as the National Science Foundation Network (NSFNET), established in 1986 by the NSF to interconnect colleges and universities. In April 1995, the NSFNET backbone was broken up into several commercial networks operated by the private sector.

As explained in a University of Illinois study of the Internet's privatization, "the new network was designed to create competition for backbone services. In designing this new network, the NSF put little constraints on the design and use of the network. Specifically, the NSF did not set forth any policies or requirements on the future of the new networks."[25]

The individual networks that formed the Internet's backbone were under no legal obligation to connect with one another. The commercial network owners were free to operate closed networks, or discriminately pick and choose with which partners they would share traffic. To prevent this, some called for new regulations to keep these networks open and "neutral."

A 1994 article in *The New York Times* lamented that "the emerging electronic web could become a patchwork of private roads, perhaps isolating some users."[26] An article in *Salon* presented another frightening scenario: "Basic questions about the Net's fate are being decided in boardrooms right now. Will the Internet service business remain a competitive market teeming with new players . . . or an oligopoly of big players cooperating to set rules and rates for the rest of the industry and the public?"[27]

These same fears have been resurrected in the current debate over net neutrality. As described by the Center for Creative Voices in Media, "oligopoly gatekeepers" are threatening "the wide open Internet we enjoy today . . . .This closed Internet model will resemble the early 'walled garden' days of America Online, where its customers were limited to AOL content and could not access the Internet." "For many consumers," the group warns, "their only broadband choice may be the walled garden of the cable company or the walled garden of the phone company."[28]

Advocates for expanding net neutrality to the mobile-device market espouse a similar rationale. The Public Interest Spectrum Coalition, organized by proponents of net neutrality, petitioned the FCC

to regulate "the current cozy wireless oligopoly," which has "no incentive to open their networks" and provide "open and unfettered access . . . without gatekeeper control."[29]

As the Internet developed, fears that the operators of unregulated private networks would construct barriers and restrict access proved unfounded. Instead, these networks voluntarily interconnected, forming the backbone of the modern Internet. The new Internet backbone was forged by market forces, not government design.

Boardwatch Magazine explains that this cooperation would appear counterintuitive, because "private backbone operators are not inherently inclined to 'share' customers by connecting them with someone else's customers." Despite this fact, "the desire of customers to be connected to THE Internet forces the commercial interests to deal with the subject of interconnection."[30]

Even government regulators opposed new regulations for the Internet's backbone networks. In a 2000 study, Michael Kende, the FCC's director of Internet policy analysis, questioned why "Internet backbone providers are not governed by any industry-specific interconnection regulations." Kende found ample evidence that "market forces encourage interconnection between backbones and thereby protect consumers from any anti-competitive behavior on the part of backbone providers." Ultimately, Kende concluded, "Internet backbone services are best governed by commercial interactions between private participants."[31]

These commercial interactions between networks enable consumers to access any content or service, anywhere on the Internet. In this sense, the Internet's core networks could be considered "open." Network interactions, however, are not unconditional. Through a complicated set of arrangements between network operators, some networks agree to share their data for free, while others charge fees. Networks that require a contract or agreement are referred to as "walled gardens." Generally, smaller networks must pay to gain access to larger networks. In this sense, these networks are hardly "neutral."

We can visualize these individual networks as closed circles. When two circles make contact, traffic can flow from one network onto another. Since traffic is already flowing on the individual networks, however, a traffic light at the intersection is needed to prevent collisions. These networks converge at hundreds of thousands of points to make up the modern Internet.

Could today's Internet have evolved in the presence of strict neutrality rules? The government initially established public meeting places where commercial networks could intersect and exchange traffic in a neutral manner. At these junctions, all networks treated one another as peers (a practice known as "peering"), accepting any traffic unconditionally. Because all networks were considered equals, regardless of size, these neutral meeting points quickly became congested.

Before users could exchange data between networks, they encountered a bottleneck at these meeting points, which were described by Neil Weinberg in *Forbes* as "giving drivers on a six-lane highway access via a dirt road."[32] However, because network operators were not tied by law to neutrality rules, they were free to design innovative, non-neutral solutions to the problem. Their first realization, as described in the July 1998 *COOK Report*, was that the neutral practice of "open peering at the public exchanges is essentially worthless."[33]

This resulted in development of the private traffic exchange points that exist today. At these terminals, networks meet as "walled gardens," completely free to negotiate the terms for sharing traffic with other networks. A 1996 article in *The San Francisco Chronicle* predicted that if networks were not free to develop and evolve, the Internet would "go the way of fads such as the Hula-Hoop or pet rock."[34]

The Rise of Wireless Net Neutrality

If You've Seen One Network, You've Seen Them All

In several attempts via Congress and the FCC, net neutrality advocates failed to impose strict neutrality rules on the Internet. Undeterred, Columbia University law professor Tim Wu (the "father of net neutrality," who coined the term in 2003) changed tactics. Observing rising consumer outrage over contracts and restrictions imposed by wireless carriers,[35] Wu hoped to gain public acceptance of neutrality regulations by targeting the unpopular industry.

Wu was well aware that, as the lines continue to blur between telephone, Internet, and video providers, neutrality rules imposed on one set of networks will ultimately apply to all. Hence, in February 2007, he introduced the concept of "wireless net neutrality," declaring that "wireless carriers should be subject to the same core network neutrality principles under which the cable and DSL industries currently operate."

As Wu explains it, "the industry is a textbook oligopoly"that "may be relatively competitive," but it "is nothing like the market for blue jeans or vodka."[36] Therefore, the existence of a state-sanctioned monopoly carrier is not a prerequisite for regulation. Instead, any competitive industry that fails to meet the Wu jeans-vodka threshold could be open to government scrutiny.

Wu invents this arbitrary threshold to obscure key differences between today's competitive, unregulated wireless industry and the stagnating, overregulated Bell monopoly of the twentieth century. With sleight of hand, he attempts to make these differences disappear: "Today we call them Verizon and AT&T, but their real name is the Bell system. Their ideology, which today governs the cell phone world, is called 'Vailism'"[37]—referring to Theodore Vail's vision of a government-sponsored telephone monopoly centered on "one system, one policy, universal service." The contrast between wireless carriers and Vail's Bell system, however, is quite stark.

According to historian Robert Garnet, "Vail obviously saw government regulation as the way to eliminate competitors: the one-way ticket, not only to universal service, but also to monopoly profits."[38] Vail recognized the power of regulation to discourage or prohibit competition. When he launched his strategy in 1907, AT&T's rivals controlled 51 percent of the market.[39] By the time common-carrier rules were officially codified by Congress in 1934, AT&T had become the largest company in history, controlling 98 percent of long-distance infrastructure and 83 percent of telephones.[40]

Digital wireless carriers have never operated as legally sanctioned monopolies. On the contrary, several national and regional carriers fiercely compete for customers in a rapidly growing market. According to the FCC's most recent data, 98 percent of customers can choose among three or more

wireless carriers, an increase of 10 percent over the past six years.[41] In contrast to the regulated Bell monopoly, none of the leading wireless providers control more than a 30-percent market share.[42]

The market for mobile devices is also fiercely competitive. Whereas the Bell monopoly forced consumers to purchase phones from Western Electric, a tightly controlled Bell subsidiary, wireless customers can select phones made by numerous manufacturers. Nearly all wireless customers—a full 90 percent—can choose devices from more than six manufacturers.[43] As with wireless carriers, no device manufacturer controls more than a 30-percent market share in the United States.[44] Customers have benefited from this robust and growing competition.

While strict government-imposed price regulations prevented the Bell monopoly from rapidly changing rates, wireless carriers have been free to adjust rates as necessary to attract customers in a competitive marketplace. As a result, the cost charged per minute of mobile service has plummeted 85 percent over the last decade.[45]

Unlike the single government-subsidized monopoly telephone carrier created under Vailism, wireless carriers have welcomed competition, private investment, and redundant infrastructure. By labeling his company a "natural monopoly," Theodore Vail sought not only government regulation, but also significant public investment. As Richard Gabel explains, "regulation is a two-sided coin; on one side lies the aspect of public protection—profit limitations, the obligation to provide service at nondiscriminatory rates, and so forth."

"The other side of the coin," Gabel continues, includes the benefits of being considered a public utility, such as "bars to competitive entry, exclusive franchise, and the right of eminent domain."[46] These benefits constitute a substantial public subsidy, and Vail embraced the "utility" classification in 1909, declaring AT&T to be "a public utility giving good service at fair rates."[47] A key argument for net neutrality relies on this historical classification.

According to Mark Cooper and other self-styled consumer advocates, "The phone companies say they should be able to do as they like with 'their pipes.' But they ignore the billions of dollars in public subsidies and incentives they've received over the years that allow them to dig up public rights-of-way, build rural networks, and write off the depreciation of their wires."[48]

Digital wireless carriers have never operated as public utilities, and their networks have been constructed using private resources. According to the FCC, wireless providers have invested nearly $200 billion to build and improve their networks, and the number of cell sites now exceeds 180,000.[49] Each wireless provider operates its own network using independent infrastructure. Unlike the "natural monopoly" claimed by Vail, the wireless market supports several overlapping and competing networks.

Wireless Public Utilities: Making Cell Phones More like Fire Hydrants

Digital wireless carriers never accepted benefits or subsidies from the public and were never burdened with an obligation to protect the public. Some net neutrality advocates, however, seek to impose common-carrier restrictions on wireless carriers without conferring any utility benefits. In December 2007, a coalition led by Public Knowledge filed a petition with the FCC seeking to classify wireless providers as common carriers. Specifically, the petition argues that text-messaging services

should be "neutral," rendering any restriction of these networks a violation of "obligations held by all [common] carriers" and "contrary to the public interest."[50]

This petition suggests that any unregulated competitive business might be treated as a common carrier. Using this logic, a Ford dealership could be required to open its showroom to Toyota salesmen, and a popular neighborhood restaurant could be forced to open its menu to dishes from competing chefs. These regulations would undoubtedly serve the short-term "public interest," but would ultimately remove the incentive to compete and innovate.

If Public Knowledge succeeds in classifying wireless providers as common carriers, the result will be less competition, less innovation, and higher prices. Public Knowledge fails to consider the disastrous utility benefits that accompany common-carrier status. For instance, many states grant common carriers the power of eminent domain, allowing them to take private property if doing so would serve a public good.[51] Common carriers also gain the right to build on public land at no cost and without restriction.[52] Most important, common carriers are shielded from competition and immune from oversight by the Federal Trade Commission. According to FTC chairwoman Deborah Platt Majoras, "the common carrier exemption is likely to frustrate the FTC's ability to stop deceptive and unfair acts and practices and unfair methods of competition."[53]

With common-carrier privileges, regulated wireless providers could consolidate their market share and restrict competition. These government benefits were directly responsible for creating and protecting the twentieth-century Bell monopoly. The FCC was careful to avoid repeating these errors when considering how the emerging wireless industry should be regulated. In 1994, the commission determined that "success in the marketplace thus should be driven by technological innovation, service quality, competition-based pricing decisions, and responsiveness to consumer needs—and not by strategies in the regulatory arena."[54] As explained by industry analysts Jonathan Nuechterlein and Philip Weiser, the FCC recognized that "competition made most forms of traditional common carrier regulation superfluous at best and counterproductive at worst."[55]

The Two Pillars of Wireless Net Neutrality

Therefore, most proponents of wireless net neutrality focus not on Public Knowledge's vision of resurrecting the failed common-carrier regime, but rather on expanding two sets of rules originally designed to deregulate the state-sanctioned Bell monopoly and reverse the damage caused by common carriage. The first set of rules—similar to the 1968 *Carterfone* decision, which ended the AT&T/Western Electric monopoly on telephones—would require wireless carriers to permit use of any device or application on their network. The second set of rules, based on provisions in the Telecommunications Act of 1996, would force carriers to lease use of their network to competitors at wholesale rates.

The rationale for these rules echoes the bewildering logic used by Congress in 1996: less regulation promotes competition, but deregulation cannot be achieved without regulation. This recalls the Marxist dialectic that the state will eventually wither away, but in the meantime it must become all-powerful. As explained by one industry insider's 1996 Senate testimony, "In the near term, regulation must play its role as a substitute for competitive processes until true local competition—and market forces—fully develop."[56] Similarly, the Wireless Founders Coalition for Innovation recently argued that wireless net neutrality is "a slight regulatory nudge" that will "result in a major push by market forces."[57]

As noted, allowing competitors to piggyback on the Bell system's network failed to induce competition or lower prices. Even Common Cause, a strong supporter of net neutrality, acknowledges that the provision "failed to serve the public and did not deliver on its promise of more competition, more diversity, lower prices, more jobs and a booming economy. Instead, the public got more media concentration, less diversity, and higher prices."[58] Tim Wu also noted that "the line-sharing rules were a failure," and he does not include a recommendation for similar rules in his wireless net neutrality proposal.[59]

The movement to impose an updated version of forced line sharing on the wireless industry has been led by Google, which petitioned the FCC in July 2007 to give "smaller entities the opportunity to create viable businesses from reselling the services of a wireless carrier."[60] For Google, using the government to bypass a competitive market could significantly enhance the company's profits.

Google's business model hinges on collecting information about consumers through its search platform and charging advertisers for the ability to target these consumers with personalized advertisements. As wireless customers increasingly transmit data as well as voice, Google has expressed interest in targeting customized advertisements to mobile devices. According to a study conducted by ABI Research, mobile-advertising revenue is projected to grow from $3 billion to $19 billion over the next four years.[61] To break into this market, Google would be forced to work with an existing carrier.

An article in *The New York Times* explains the potential pitfalls in this approach. Carriers would likely "give Google a cool reception. Companies like Verizon Wireless and AT&T have spent billions of dollars building and upgrading their networks, establishing relationships with customers, subsidizing handsets and creating their own mobile Internet portals. Now they want to make sure those investments pay off, in part, through mobile advertising."[62]

Microsoft, one of Google's biggest rivals in Internet advertising, teamed with a major carrier in November 2006 to develop new tools for mobile advertising. To land this partnership, Microsoft CEO Steve Ballmer courted wireless carriers, at one point declaring, "I love the mobile industry."[63] Google, however, hopes to keep 100 percent of the profit generated by its mobile-advertising initiative. To accomplish this goal, it could build its own competing wireless network or have the government hand it a slice of an existing network. Because the cost of constructing a new nationwide network is projected to exceed $17 billion,[64] Google instead proposed imposing forced-line-sharing rules on the wireless industry.

The second set of rules suggested by advocates of wireless net neutrality would force carriers to welcome use of any mobile device or application on their network. Based on the *Carterfone* decision, Wu's proposal would mandate that "all mobile carriers must activate any device that the consumer wishes to activate and use on their network" and that "all mobile carriers are prohibited from selling telephones that are purposely disabled, locked or rendered incapable from operating on more than one carrier."[65]

Wu argues that expanding *Carterfone* to the wireless industry makes sense because these rules were "a smashing success" when applied to the Bell monopoly. "The *Carterfone* principle," Wu explains, "gave birth to a new market in home and business telecommunications equipment," including "the fax machine, the answering machine, and, perhaps most importantly, the modem."[66]

The ability of *Carterfone* to promote innovation and consumer choice in telecommunications devices hinged on a key prerequisite: the standard phone jack. As a regulated monopoly, the Bell system aimed to create a common network covering the entire country. Because this network employed uniform technologies and standards, designing a standard phone jack that could be used by any device posed few technological difficulties.

As opposed to the phone network built by the Bell monopoly, wireless networks evolved without regulation. Wireless carriers each designed and adopted their own technologies, standards, and features to attract consumers in a competitive market. These standards are incompatible, and many embedded technologies are supported by one network but not by others.

Wu's proposal fails to account for this difference between the Bell system and the wireless industry. Wu explains that "if Apple wanted to build a wireline telephone, it would simply build one that could plug into the standard household phone jack. It could sell the device directly to consumers—and it would work whether they bought their phone service from AT&T, Verizon or any of hundreds of smaller telcos."[67] While this logic suits the standard phone jack, it cannot be applied to wireless networks.

According to a study by economists Marius Schwartz and Federico Mini, "the seemingly obvious analogy to attachment of devices to the traditional wireline network does not fit." The reason, Schwartz and Mini continue, is that the interaction between devices and the Bell system's network was "relatively simple and stable." Applying *Carterfone* rules to the wireless industry, however, "will be considerably harder than establishing the phone jack. There is a strong likelihood of getting things wrong and stifling innovation."[68]

In particular, entrusting the government with selecting common standards and features would eliminate competing versions. If allowed to compete in a deregulated market, other technologies might have proven superior to the one chosen. Instead, customers could be left with a new, open, and completely interoperable industry, built on a fundamentally inferior technology.

Just as Google promotes forced "line sharing" in order to facilitate its entry into the lucrative mobile-advertising market, the effort to impose *Carterfone* rules on the wireless industry is also led by a company with ulterior motives. The Internet telephone company Skype employs Voice over Internet Protocol (VoIP) technology, allowing customers to communicate over broadband data networks. Skype users require a broadband Internet connection, though this access can be offered by any carrier using any technology (e.g., DSL, cable modem, mobile broadband).

As wireless carriers increasingly offer mobile broadband services, imposing *Carterfone* regulations would give Skype the opportunity to compete with wireless carriers using these carriers' own networks. As Google seeks to do through forced "line sharing," Skype could compete with wireless carriers while piggybacking on wireless networks. In other words, Skype seeks to become a competing carrier without constructing its own network.

To achieve this goal, Skype filed a petition with the FCC in February 2007 asking the commission to establish "a set of technical standards" to "ensure both that consumers retain a right to run the

applications of their choosing and attach all non-harmful devices to the wireless network." Though Skype suggests that such rules would "unlock the full benefits of wireless price competition and innovation,"[69] enforcing arbitrary standards on a competitive industry would ultimately restrict innovation and harm consumers.

Unlike the forced-line-sharing rules described by Wu as a "failure," few dispute the success of the original *Carterfone* rules in promoting an innovative and competitive market in telecommunications devices. However, devising similar rules for the wireless industry would pose complications and dangers far too difficult for government to navigate. In addition, consumers desire more variety and freedom in mobile devices. In a competitive market, carriers are responsive to consumer demand, and this paper's final section will describe how the wireless industry is adapting to achieve the benefits of *Carterfone* in the absence of damaging government standards and mandates.

Meanwhile, the next section will explain the concept of wireless spectrum, and why this is the tool of choice for implementing wireless net neutrality.

wireless spectrum

Who Owns the Airwaves?

The term "wireless spectrum" describes the airwaves that carry information to and from wireless devices. These waves act like invisible wires for radio, television (broadcast and satellite), Wi-Fi Internet, cellular networks, and even household devices such as baby monitors and garage-door openers. Each wave has a fixed size and speed (referred to as its wavelength and frequency, respectively), and devices can distinguish one signal from all others by "tuning in" to the proper frequency. Airwaves and physical wires differ in two fundamental ways.

As explained by Nuechterlein and Weiser, "we know who owns a wire or cable and, at least as a legal matter, that firm or person generally has the right to control how it is used. In contrast, there is no obvious 'owner' of the airwaves. Also, a wire or cable is usually wrapped in shielding material and is thus reasonably well protected from interference by external signals. Not so with the airwaves: there is no natural 'shielding' in the air that can keep two signals from interfering with each other if they use the same frequency in the same place at the same time."[70] These differences create profound public-policy issues.

Because two broadcasters cannot simultaneously transmit using the same frequency, a system must exist to ensure that only one entity uses a given frequency at a given location and time. The easiest way to accomplish this is to treat spectrum like real estate. Just as property rights prevent construction of two houses on the same lot, the owner of a swath of spectrum could have the exclusive right to broadcast over his frequencies or rent out unused portions to tenants.

The dawn of the broadcast age, however, coincided with the rise of Progressivism in the early twentieth century. Progressives like Theodore Roosevelt believed that government power was necessary to prevent "a chaotic scramble of selfish interests." In Roosevelt's philosophy, "what the people surely need is the extension of government power."[71] In this political framework, the airwaves were viewed not as privately owned real estate, but as more akin to the national forests and parks established by Roosevelt.

In 1925, then–Secretary of Commerce Herbert Hoover declared that spectrum "is a public medium, and its use must be for a public benefit."[72] Just as Congress helped create the AT&T monopoly to serve a public need for universal service, Congress also passed the Radio Act of 1927 to establish airwaves as a public utility to be used only to serve a public good. Under this law, federal regulators would allocate the right to use spectrum (through a licensing system) to broadcasters who met a "public interest" standard. As explained by these regulators, "the emphasis must be first and foremost on the interest, the convenience, and the necessity of the listening public, and not on the interest, convenience, or necessity of the individual broadcaster or the advertiser."[73]

As guardians of the people's interest, government assumed complete ownership of the spectrum and responsibility for it. Regulators not only decide which broadcasters can use a given set of frequencies, but they also set terms on how that spectrum can be used. The Communications Act of 1934 made it illegal to broadcast without a license, protecting government-approved broadcasters from competition and giving them monopoly use of the airwaves. These policies closely paralleled the government's treatment of the Bell monopoly.

For more than six decades, regulators awarded free licenses to applicants who, in their judgment, best served the public interest. Until the 1980s, the FCC held long-drawn-out hearings to select the best-suited candidate if more than one applicant sought a swath of spectrum. A report by the Congressional Budget Office explains that "selections among applicants that otherwise met the standards for acceptable licensees were often based on insignificant and arbitrary differences, or even pure political favoritism."[74]

The FCC briefly experimented with awarding free licenses to qualified applicants by lottery, but the ensuing flood of applications from enterprising spectrum "speculators" proved costly and unmanageable. In 1993, Congress ended the free assignment of spectrum based on flawed or arbitrary criteria, and instead authorized the FCC to auction frequencies to the highest bidder. This marked an important transition toward creation of a viable private market for spectrum, much like the market that exists for real estate.

The FCC understood how establishing property rights for spectrum would serve the public interest. Given the explosion of innovation in wireless devices, an FCC report determined in 1997 that "no government agency . . . can reliably predict public demand for specific services or the future direction of new technologies." Therefore, the report concludes, "the freedoms inherent in property rights will allow competition to function more effectively, much as it does in those sectors of the economy where the basic inputs are privately owned."[75] In 2002, the commission's Spectrum Policy Task Force echoed this finding, declaring that "to increase opportunities for technologically innovative and economically efficient spectrum use, spectrum policy must evolve towards more flexible and market-oriented regulatory models."[76]

Treating spectrum like property is beneficial both for government and for the public. By selling its spectrum holdings to private entities, the government can raise substantial revenue. Those who buy spectrum would be motivated to sell unneeded frequencies to interested buyers in a private market, ensuring that spectrum does not lie dormant. As a result of this secondary market, the number of "property" owners would increase, and consumers would benefit from greater competition, more choices, and lower prices.

The introduction of spectrum auctions was an important first step toward realization of a property-rights model of ownership; however, remnants of the inefficient "command-and-control" model still remain. In particular, the FCC continues to decide which services are permitted for a given block of frequencies, thereby limiting the ability of a secondary market to develop. As explained by Nuechterlein and Weiser, a truly private model would permit firms to "freely exchange spectrum rights in a genuinely private market and then use their licenses to provide whatever services meet consumer demand, subject only to the most minimal 'traffic cop' and 'zoning' role by the government."[77]

Where Has All the Spectrum Gone?

Under today's system, excessive government control over the assignment and use of auctioned spectrum creates unnecessary restrictions and waste. The spectrum administered by regulators is mired in a patchwork of bewildering bureaucratic policies strung haphazardly together over the past 80 years. The result is a complicated and bulky framework that renders significant chunks of spectrum unused and inaccessible. Because this system is poorly suited to adapt to changing technologies, it also hinders the pace of wireless innovation. Nothing illustrates this more clearly than the organization of spectrum-management authority.

Spectrum-assignment decisions require coordination among the FCC, the National Telecommunications and Information Administration (NTIA; part of the Department of Commerce), and the Department of State. The NTIA manages spectrum for the federal government and military, overseeing more than 270,000 frequency allocations. The NTIA provides little incentive for the government to use its spectrum efficiently, issuing just a mild reminder for "federal agencies to use only as much spectrum as they need."[78] Because of this mismanagement, it is estimated that only 5 percent of the nation's spectrum is in use at any given time, even though all frequencies are allocated.[79]

This regulatory morass also impedes the ability of private companies to sell spectrum to interested parties who may be able to use it more efficiently. Former FCC chairman Michael Powell refers to this as the "mother may I?" phenomenon, because "businesses must go to the FCC for permission before they can modify their spectrum plans to respond to consumer demand."[80] According to Thomas Hazlett and Gregory Rosston, it is because of these constraints that "the U.S. cellular industry is allotted little more than half the radio spectrum used in European Union countries."[81]

In addition to wasting spectrum, government management of the allocation and licensing process also protects incumbents, limits competition, and harms consumers. Just as Theodore Vail welcomed regulation to shield AT&T from competitors, many incumbent broadcasters support a government-run command-and-control spectrum regime.

As explained by Stanford professor Lawrence Lessig, "those whose way of doing business depends upon the comfortable life of government-backed monopolies over spectrum will do what they can to make sure that those monopolies are not threatened by this new, free way of using spectrum."[82] If the government's power over the airwaves were loosened, new entrants could flood the market and threaten the incumbents' dominance. Therefore, entrenched broadcasters fight to preserve the status quo, a system Hazlett describes as "structurally hostile to new competitors."[83]

After recognizing that government control of the airwaves severely restricted the availability of spectrum for wireless innovation, lawmakers mandated in 2005 that certain spectrum occupied by incumbent broadcasters must be vacated and auctioned by February 18, 2009. These frequencies, referred to as the "700 MHz band," are currently used for traditional analog over-the-air broadcasts. As broadcasters complete the transition to more efficient, higher-quality, digital technology, they will no longer require spectrum in the 700 MHz band.

The FCC compared the auction of 700 MHz spectrum to a sale of choice real estate, declaring in 2005 that "this is 'beachfront' spectrum, with propagation characteristics that make it ideal for

providing wireless broadband access through foliage and building walls."[84] Just as the government routinely raises revenue from the sale of unneeded land and property to private citizens,[85] Congress will allocate the profits from this sale of "beachfront" spectrum. Indeed, much of the anticipated revenue has already been spent. The Congressional Budget Office estimates that the auction will raise $12.5 billion;[86] however, the Deficit Reduction Act of 2005 requires that $7.4 billion be used toward closing the budget deficit.

If spectrum were truly treated as property, the 700 MHz auction could be viewed as a simple transaction. Because of the increasing sophistication of wireless technology, the government cannot effectively manage the spectrum it controls. Therefore, the auction provides an opportunity to sell this property to the highest bidder, relinquishing all control to the private sector. The new owners would be free to deliver any wireless service and to resell or license surplus spectrum as needed. Because the government would be selling its spectrum at a fair market price, it would relinquish all claims over the property, making the term "public airwaves" as antiquated as "French Louisiana."

So You've Decided to Purchase Spectrum. . .

Even though the auction mechanism resembles a straightforward sale of property, the government remains reluctant to relinquish its command-and-control authority. In particular, the FCC is bound by the 80-year-old public-interest standard, which requires that all use of the airwaves must serve a public good. Even though spectrum licenses are sold to private entities at considerable cost, licensees are saddled with conditions and restrictions referred to as "service rules." These rules give regulators nearly limitless authority over a license holder's business practices. This often includes dictating how, when, and where a given piece of spectrum can be used.

For example, winning bidders in the 700 MHz auction must follow a strict timeline for building new networks and expanding coverage. According to the FCC, "if licensees fail to meet the end-of-term buildout requirements, the FCC will automatically reclaim the unserved portions of the license area and make them available to other potential users."[87] In other words, the FCC can repossess spectrum without compensation. Unlike the sale of property, the government can repeatedly sell and repossess spectrum without violating the owners' Fourth Amendment guarantees against unreasonable search and seizure.

Even though a competitive market in wireless services has developed in the absence of regulation, wireless providers must purchase spectrum from the government to serve their customers. For companies such as Google and Skype, which seek to gain competitive advantage through government regulation, the FCC's service rules provide an ideal opportunity to impose wireless net neutrality. These companies petitioned the FCC to incorporate their visions of wireless net neutrality into the 700 MHz service rules.

In promoting the wireless equivalent of forced line sharing, Google invoked the FCC's public-interest standard. According to Chris Sacca, Google's head of special initiatives, "the nation's spectrum airwaves are not the birthright of any one company. They are a unique and valuable public resource that belongs to all Americans."[88] In reality, however, the government cannot simultaneously protect spectrum as a "public resource" and sell it to the highest bidder. In the past, license holders agreed to abide by the public-interest standard in exchange for free spectrum. If the same public-interest standard is

applied to auctioned spectrum, bidders will be asked to pay for a commodity that was previously free. Therefore, the market value of the spectrum at auction will decrease. As an aspiring provider of wireless products and services, Google will directly benefit from the devaluation of spectrum.

In drafting the 700 MHz service rules, FCC chairman Kevin Martin recognized that requiring the winning bidder to share spectrum access with competitors would remove the incentive to develop the network and invest in new technologies. According to Martin, "applying network neutrality obligations . . . or mandatory wholesale requirements to networks can undermine investment incentives."[89]

The final auction rules included some concessions to supporters of *Carterfone* provisions. For a portion of the auctioned spectrum, the winning bidder must allow any device or software application to operate on the network. These rules would prevent providers from blocking VoIP services such as Skype. Importantly, however, the rules do not require that operators adopt FCC-mandated standards (akin to the standard phone jack) guaranteeing that any device be compatible with every network: "wireless service providers may continue to use their choice of operating systems, and are not required to modify their network infrastructure or device-level operating systems to accommodate particular devices or applications."[90]

Even Tim Wu acknowledges that "it is in the carriers' own interest" to voluntarily "work together to create clear and unified standards for developers."[91] As described in the next section, the carriers' own interest is defined and driven by consumer demand. Wireless providers are beginning to adapt willingly to their customers' desire for more choice and flexibility in wireless devices, rendering the FCC's *Carterfone* rules unnecessary.

Imposing service rules on auctioned spectrum severely constrains the ability of licensees to innovate and adapt to changing market conditions. While it may be difficult for the FCC to extricate spectrum from an 80-year-old tangle of rules and regulations, the benefits would be substantial. Consider the decision to privatize the NSFNET backbone in 1995. Before privatization, the Internet backbone was treated as a public good. The NSF enforced a strict "acceptable-use policy," requiring that the network be used only for research and education purposes. Congress and the NSF recognized the enormous potential of the Internet to transform communications and commerce, and they came to understand that this potential could only be harnessed by completely shedding all remnants of government control.

The government so successfully relinquished control of the NSFNET that, only five years after privatization, a National Research Council report remarked, "it is difficult to recall and acknowledge that the federal government has played a major role in launching and giving momentum to the computer revolution, which now takes pride of place among the nation's recent technological achievements." Could the same success be achieved with the nation's spectrum?

Successful Examples of Spectrum Reform

Experiments in several countries reveal that the privatization of spectrum ownership and management results in greater competition, innovation, and consumer choice. In Guatemala and El Salvador, broad spectrum reforms have been in place for more than a decade. According to Hazlett and colleagues, "private parties are granted exclusive control over the use of wireless bandwidth, and regulators are

largely constrained to define, issue, and protect requested spectrum rights." These policies resulted in an "abundant quality of bandwidth available to wireless phone networks" and have promoted "greater competition among carriers and more productive employment of radio spectrum."[93]

In Australia, the government instituted a new spectrum-ownership model in 1992. As described by Ian Hayne, leader of the Spectrum Marketing Team of the Australian Communications Authority, this policy "implemented a property-like rights regime in radio frequency spectrum, giving licensees unprecedented flexibility to buy and sell spectrum as a resource in an open market."[94] Ten years after the reforms were enacted, an independent government review determined that "the capacity to establish competitive markets in spectrum" is apparent, and that "all new spectrum licenses should be issued using market-based mechanisms."[95]

New Zealand has also largely removed spectrum management from government hands. Hazlett explains that "the government cedes regulatory control over frequencies to private parties, which then allocate the use of radio spectrum."[96] A recent report from the Ministry of Economic Development confirms that these policies are offering "significant opportunities to reduce costs, raise productivity and enhance the quality of life."[97]

The pace of innovation in the wireless industry is limited by the flexibility and availability of the radio spectrum. Just as the Internet has become the greatest driver of economic growth in the United States' history, the development and adoption of next-generation mobile broadband technologies are critical for remaining competitive in the global economy. These technologies cannot arise if regulators continue to entangle spectrum in a web of bureaucracy. Not only are the rules and restrictions harmful, but they are completely unnecessary.

The Wireless Industry Is a Moving Target

The phone service provided by AT&T changed very little during the twentieth century. As a regulated monopoly, the company was under no competitive pressure to offer new products or services. Even though more choices and better features would have benefited consumers, lawmakers continued to nurture this cumbersome behemoth, in large part because it was convenient. Designing and implementing regulations is a laborious process, and, once in place, the rules are highly resistant to change. Therefore, regulation is best inflicted on a slow-moving target. The wireless industry has never operated in the slow-motion world of public utilities. Wireless carriers are constantly innovating to meet consumers' needs in a competitive marketplace. Because regulations cannot possibly adapt to the speed of innovation, regulators must craft rules that attempt to anticipate future trends and developments. If they guess correctly, the regulations remain relevant. If they miss the mark, however, poorly crafted language could prevent legitimate innovation.

For a competitive and rapidly evolving industry, the risks posed by regulation cannot be justified, as businesses will automatically gravitate toward policies that maximize customer satisfaction. As a result, the desired benefits of wireless net neutrality are already beginning to materialize without the harms inflicted by regulation.

Proponents of wireless *Carterfone* rules appeal to consumers' desire for more choice and freedom in the mobile-device market. According to Wu, "these telephones are their property, yet they are not allowed to do with these telephones what they want." Because carriers prevent devices from being used on competing networks, Wu laments, "the basic rules that we're used to of personal property, of Americans owning what they buy, seem to be suspended in this industry."[98]

These arguments resonate with both consumers and policy makers. Rep. Edward Markey, chairman of the House Subcommittee on Telecommunications and the Internet, articulated this frustration in July 2007: "How crazy is this? You can take your number with you, but you can't take your new $500 phone with you."[99] When the government created and protected an AT&T/Western Electric telephone monopoly in the twentieth century, only the government could end it. In the wireless industry, however, competition and consumer demand are effective drivers of change.

Ironically, the outrage expressed by supporters of regulation actually helps eliminate the need for regulation. For example, the Better Business Bureau recently reported a dramatic rise in complaints over the restrictions and fees included in wireless contracts.[100] Lawmakers further incited dissatisfaction by drafting and promoting the Cell Phone Consumer Empowerment Act of 2007, a bill that would mandate more "consumer-friendly" contract terms. Ultimately, wireless carriers preempted the need for regulation, independently incorporating new policies to improve customer satisfaction.

In a highly competitive market, wireless providers cannot risk alienating customers with unpopular policies. In order to compete, companies must remain responsive to customer demands and complaints. The overwhelming dissatisfaction over contract terms made changes inevitable, and the pace of government action was incapable of competing with the industry's rapid response time. As explained by an AT&T spokesman, the company is "driven primarily by what our customers tell us . . . we are always looking to do what's fair and right for the customer."[101]

The movement for government-mandated wireless *Carterfone* rules has stimulated the public's demand for greater control over mobile devices and applications. Opening wireless networks to any phone or software would benefit both consumers and carriers. Wireless providers have recently taken steps toward realizing this goal, not because of a government mandate, but because it is in their best interest.

Making all wireless networks, devices, and technologies inter-compatible will be far more challenging than designing the standard phone jack. The process will require innovation, collaboration, and experimentation. If regulators act to micromanage and manipulate this process, there is substantial risk that inferior and flawed platforms will be foisted on the consumer. Even strong supporters of wireless net neutrality acknowledge these risks.

In its petition to the FCC, Skype recognizes that new standards should be developed not by government, but through an "industry-led mechanism." Rather than permit the evolution of new standards through innovation and experimentation, however, Skype requests that the FCC "oversee these industry efforts" and make final conclusions "by a specified date."[102] As a result, consumers would lose the freedom to choose the best technologies. Instead, arbitrary new standards would be forced on the market by committee vote.

No government mandate is required to create an "industry-led mechanism." Carriers, software developers, and advertisers have a strong motivation to maximize the number of users they can reach. Surprisingly, the strongest industry-led initiative to create new common standards was launched by one of the most vocal supporters of wireless net neutrality: Google. In October 2007, the company unveiled a new open-source mobile operating platform that will be free of charge and fully open to applications created by third-party developers. Instead of lobbying the FCC to mandate adoption of its software, Google believes its product will gain acceptance on the open market.

This move marks a significant departure from the core tenet of wireless net neutrality that "the government must protect our airwaves from the same corporate gatekeepers that have stifled innovation and competition in Internet markets."[103] As recently as July 2007, Google's Chris Sacca explained why the company supported government action to remove these gatekeepers: "What we fear is that in an uncompetitive environment where the carriers control the destination sites that you, the user, choose, you won't have the opportunity to choose us. . . . In that situation, we suffer and you suffer."[104]

By unveiling a new mobile operating system and working with carriers, developers, and consumers to bring its product to market, Google has distanced itself from this belief that the "gates" erected by wireless providers are impervious to consumer demand. If government gains the authority uni-

laterally to select and implement new technologies, this new gatekeeper would pose a far more ominous threat to Google. Unlike wireless carriers, which are responsive to consumer demand, the government's decisions are highly vulnerable to influence from special interests.

Rather than gamble that the government would endorse Google's software, the company instead formed the Open Handset Alliance, a broad industry coalition committed to building and promoting the new platform. Google also offered $10 million in prize money to help third-party developers create innovative and compatible applications. Under a wireless net neutrality regime, these funds would likely be used to lobby regulators for adoption of this software in the final *Carterfone* rules. Google's decision to shun government-mandated standards enables the company to invest in pursuing what CEO Eric Schmidt calls "a fresh approach to fostering innovation in the mobile industry."[105]

Public Knowledge president Gigi Sohn, a vocal supporter of net neutrality, applauded Google's announcement as a harbinger of open networks: "American cellular companies should take notice and realize that this trend is one they will not be able to stop."[106] Despite this apparent acknowledgement that market forces make open networks inevitable and regulation unnecessary, a coalition led by Public Knowledge recently reaffirmed its support for government-imposed *Carterfone* rules. In a letter to the FCC, the Public Interest Spectrum Coalition argues that "a rule to require carriers to open their networks" remains necessary because Google's initiative provides "no assurance that this open platform will be adopted in the marketplace."[107]

Contrary to the predictions of wireless net neutrality proponents, the "gatekeepers" have welcomed Google's open-handset initiative. Sprint Nextel's senior vice president of product development proclaimed, "Sprint realizes that to grow the mobile marketplace and fully exploit the amazing potential of mobile communications, we have to empower rather than restrict wireless users."[108] T-Mobile also embraced a commitment "to innovation and fostering an open platform for wireless services to meet the rapidly evolving and emerging needs of wireless customers."[109]

Verizon Wireless, the nation's second-largest carrier, shocked observers in November 2007 by shedding its gatekeeper status altogether. Instead of merely opening its network to Google's software, Verizon announced that it will welcome the use of any device or application. Lowell McAdam, CEO of Verizon Wireless, boasted that this move gives Verizon a unique competitive advantage: "the ability to tap into every innovative mind out there in the country."[110] The new Verizon policy encompasses all the consumer benefits of *Carterfone*, without the need for government intervention. As a result, innovators will be free to create new platforms and technologies, and consumers, not government, will pick the winners.

conclusion: no to network neutrality

Network neutrality encompasses a vast array of regulations, rules, and restrictions traditionally imposed on public utilities to protect the public good. Though the term may be a recent invention, its underlying concept is a time-tested failure. Neutrality rules played little role in the birth or development of the Internet, but were indispensable for creating and protecting the twentieth-century AT&T monopoly referred to as "Ma Bell."

In contrast to the revisionist history presented by net neutrality advocates, the policies of neutrality are historically used as instruments of collusion between monopolists and government to block competition and restrict innovation. The driving force for neutrality legislation is often provided by companies that directly benefit by manipulating government to gain an unfair advantage in the marketplace.

Unlike Ma Bell, the digital wireless industry has never been subjected to government manipulation, allowing a thriving and competitive market to evolve. Treating wireless carriers as public utilities would short-circuit this market, placing control over rapidly evolving technologies in the hands of government regulators. As a result, future wireless innovations would be dictated by bureaucrats and lobbyists, not driven by popular demand.

Such policies beget consolidation and monopolization, and rarely serve the public interest. When companies are accountable to government, and not consumers, they lose a significant incentive to innovate. The dizzying rate of change and improvement in products and services observed in today's wireless market would be replaced by the stagnant pace of government deliberation.

Spectrum is the foundation on which wireless technologies are built. It is remarkable that a rapidly developing industry can stand on a foundation so rigidly controlled and restricted by regulation. In today's wireless market, the house is state-of-the-art, but the foundation is in desperate need of renovation. The government has taken crucial steps toward putting this foundation in the hands of innovators, but inflexible and obsolete restrictions remain. Poor management has left much spectrum unused or inaccessible, severely handicapping the rise of next-generation mobile broadband technologies.

Today's spectrum-management regime constrains the ability of developers to innovate and adapt to changing market conditions. The nation's competitiveness in wireless innovation requires continued movement toward fewer rules and more private control over the airwaves. Wireless net neutrality proposals reverse this trend, introducing a new loophole for companies hoping to manipulate government to obtain an unfair advantage.

A stated justification for wireless net neutrality is the consumer's desire for more choice and flexibility in mobile devices. This outcome benefits both consumers and wireless providers. The industry's recent embrace of this goal demonstrates that in a competitive market, the consumer is always more powerful than the regulator. Wireless net neutrality rules will silence and disenfranchise consumers, not empower them.

Recommendations: Airwaves for the People, Not for the Government

The FCC should therefore not impose wireless net neutrality rules, and neither should any other federal agency, Congress, or any state. The FCC should auction most spectrum with no strings attached and confer complete ownership, without the threat of repossession. Wireless companies should not be turned into public utilities. Forced network sharing should be a relic of the past, and no government agency should mandate a device policy. All issues of "neutrality" should be dealt with like any other complaints against the business practices of private companies: after the fact, and through the legal system. PRI's *Net Gains or Net Losses? The Net Neutrality Debate and the Future of the Internet* showed that current regulatory arrangements are fully sufficient to deal with disputes over Internet access. Those arrangements are also sufficient for wireless.

Congress should affirm that the public interest is best served when the airwaves are controlled by innovators, not bureaucrats. The public should be allowed to obtain, use, and trade spectrum without any government interference. Congress should consider stripping the FCC of authority to prevent private companies, using private funds and private spectrum, from conducting business freely in an open market. Unimpaired by a new regulatory regime, the market will continue to provide consumers with the innovation and lower prices they have come to expect.

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