

SKYPE
MOBILE OPENNESS ADVOCACY
BRIEFING BOOK



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Skype on Mobile Openness

As more and more consumers use the mobile Internet, consumer demand for mobile applications is likewise increasing. Device manufacturers are investing in entirely new categories of “mobile internet devices” that are as capable as today’s laptops. Consumers understand the significant benefits of being able to communicate and interact while on the go. To meet this consumer demand, Skype invested in and developed a mobile version of Skype that is compatible with all of the major mobile operating systems – Windows Mobile, Android and iPhone. The mobile version of Skype is available to download for free.

Mobile network operators, fearing that consumers would migrate some of their conversations from the carriers’ voice networks to their data networks, have adopted restrictive terms of use, hobbled mobile “application stores” and threaten network management techniques that would block the right of consumers to download and utilize applications of their choice.

To protect the right of consumers to choose how to use their mobile Internet service, Skype filed a petition in 2007 seeking an FCC ruling that the *Carterfone* rules apply to mobile platforms, just as they apply in the wired world. Through its *Carterfone* petition, Skype is leading industry efforts to create a balanced innovation policy that protects consumer choice in the wireless marketplace.

Skype’s *Carterfone* Petition will ensure an innovation policy where value is shared across the mobile Internet. Network operators, application developers and consumers win if the FCC grants Skype’s request for a “multi-modal” approach to innovation.

The Skype Petition asks that the Commission affirm that two important consumer rights in the FCC’s *Broadband Policy Statement* — the rights to attach devices of their choice to and to use applications of their choice with broadband networks — apply to wireless networks. These rights not only promote consumer choice, but also provide a degree of regulatory certainty, giving equipment manufacturers and software applications developers the confidence that they can reach consumers without network operators playing a gatekeeper role.

Even during its pendency, the Skype Petition has had a positive impact on the debate regarding consumer rights and wireless openness in that the FCC and many other parties already have acknowledged consumer expectations for devices and applications that allow them to interconnect and move their communications seamlessly between mobile and other networks. For example, the Commission adopted openness conditions for the 700 MHz C Block, requiring that the winner of that auction (Verizon) allow consumers to use devices and applications of their choice on the C Block spectrum.

Despite this positive, but limited, development and the carriers' claims of openness, they continue arbitrarily to close their networks to many devices and applications and to prohibit the unobstructed use of Skype. For example, AT&T refused – for competitive reasons – to permit their subscribers full access to Skype's popular iPhone application. Though the Skype for iPhone application was downloaded over 2 million times after just over a week of being released, iPhone users are limited to Wi-Fi networks and cannot use the Skype application over AT&T's 3G network. The choice to use Skype on a mobile device should be the consumer's need for effective communications and not AT&T's competitive concern.

By granting the Skype Petition, the Commission will confirm for consumers that the *Broadband Policy Statement* applies to all broadband networks. This policy will ensure that consumers are able to access the applications and utilize the devices of their choice on any broadband network. Moreover, it will enable software defined or "multi-modal" competition and innovation policy where AT&T, Verizon and others compete at the access layer and equally, Skype and many other Internet applications innovate at the application layer. Protecting consumer rights on all broadband platforms, including mobile, is the only policy that consistently and reliably will maximize consumer benefits and ultimately will create a universally beneficial ecosystem driving greater competition and usage of the carriers' mobile data services. It is this "demand pull" effect that will deploy the next generation of wireless services to all Americans.

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Mobile Openness Advocacy Briefing Book



Relevant Documents

Wireless Net Neutrality: CELLULAR *CARTERFONE* ON MOBILE NETWORKS

By Tim Wu*

Over the next decade, regulators will spend increasing time on conflicts between the private interests of the wireless industry and the public's interest in the best uses of its spectrum. This report examines the practices of the wireless industry with an eye toward understanding their influence on innovation and consumer welfare.

In many respects, the mobile wireless market is and remains a wonder. Thanks to both policy and technological innovations, devices that were science fiction thirty years ago are now widely available. Over the last decade, wireless mobile has been an "infant industry," attempting to achieve economies of scale. That period is over: today, in the United States, there are over 200 million mobile subscribers, and mobile revenues are over \$100 billion. As the industry and platform mature, the wireless industry warrants a new look.

This report finds a mixed picture. The wireless industry, over the last decade, has succeeded in bringing wireless telephony at competitive prices to the American public. Yet at the same time, we also find the wireless carriers aggressively controlling product design and innovation in the equipment and application markets, to the detriment of consumers. In the wired world, their policies would, in some cases, be considered simply misguided, and in other cases be considered outrageous and perhaps illegal.

Four areas warrant particular attention:

1. ***Network Attachments*** – Carriers exercise excessive control over what devices may be used on the public's wireless spectrum. The carriers place strong controls over "foreign attachments," like the AT&T of the 1950s. The FCC's *Carterfone* rules, which allow consumers to attach devices of their choice to the wired telephone networks, do not apply to wireless networks.

* *Tim Wu is Professor, Columbia University School of Law.*

These controls continue to affect innovation and the development of new devices and applications for wireless networks.

2. ***Product Design and Feature Crippling*** – By controlling entry, carriers are in a position to exercise strong control over the design of mobile equipment. They have used that power to force equipment developers to omit or cripple many consumer-friendly features. Carriers have also forced manufacturers to include technologies, like “walled garden” Internet access, that neither equipment developers nor consumers want. Finally, through under-disclosed “phone-locking,” the U.S. carriers disable the ability of phones to work on more than one network. A list of features that carriers have blocked, crippled, modified or made difficult to use, at one time or another, include:

- Call timers on telephones,
- Wi-Fi technology,
- Bluetooth technology,
- GPS services,
- Advanced SMS services,
- Internet browsers,
- Easy photo file transfer capabilities,
- Easy sound file transfer capabilities,
- Email clients, and
- SIM Card mobility.

3. ***Discriminatory Broadband Services*** – In recent years, under the banner of “3G” services, carriers have begun to offer wireless broadband services that compete with Wi-Fi services and may compete with cable and DSL broadband services. However, the services are offered pursuant to undisclosed bandwidth limits and usage restrictions that violate basic network neutrality rules.

Most striking is Verizon Wireless, which prominently advertises “unlimited” data services. However, it and other carriers offer broadband service pursuant both to bandwidth limits, and to contractual limits that bar routine uses of the Internet, including downloading music from legitimate sites like iTunes, the use of Voice over IP, and the use of sites like YouTube.

4. ***Application Stall*** – Mobile application development is by nature technically challenging. However, the carriers have not helped in fostering a robust applications market. In fact, they have imposed excessive burdens and conditions on application entry in the wireless application market, stalling what might otherwise be a powerful input into the U.S. economy. In the words of one developer, “there is really no way to write applications for

these things.” The mobile application environment is today, in the words of one developer, “a tarpit of misery, pain and destruction.”¹

Most of the carriers exhibit similar practices in the areas discussed in this paper. However, in each area, there are variations between the four largest carriers: AT&T, Verizon Wireless, Sprint-Nextel, and T-Mobile. Speaking generally, Verizon Wireless and AT&T have the most restrictive policies; Sprint is slightly less restrictive. The fourth and smallest competitor, T-Mobile, tends to be the least restrictive on consumers and application developers. The reliance on a fourth competitor for serious variation in industry practice must be kept in mind when considering any future consolidation.

The report makes four major recommendations:

1. ***Cellphone Carterfone*** – The basic and highly successful *Carterfone* rules in the wired world allow any consumer to attach any safe device to his or her phone line through a standardized jack. The same rule for wireless networks would liberate device innovation in the wireless world, stimulate the development of new applications and free equipment designers to make the best phones possible.²
2. ***Basic Network Neutrality Rules*** – Wireless carriers should be subject to the same core network neutrality principles under which the cable and DSL industries currently operate. Consumers have the basic right to use the applications of their choice and view the content of their choice. Wireless carriers who offer broadband services should respect the same basic freedoms. Carriers can tier or meter pricing for bandwidth without blocking or degrading consumer choice.
3. ***Disclosure*** – Consumer disclosure is a major problem in the wireless world. In addition to the disclosure of areas lacking coverage and rate-plan information, carriers should disclose—fully, prominently, and in plain English—any limits placed on devices, limits on bandwidth usage, or if devices are locked to a single network.
4. ***Standardize Application Platforms*** – The industry should re-evaluate its “walled garden” approach to application development, and work together to create clear and unified standards for developers. Application development for mobile devices is stalled, and it is in the carriers’ own interest to try and improve the development environment.

Part I: The State of Wireless

1. Introduction to the U.S. Wireless Industry

In Washington, D.C., the wireless world is sometimes described as a nirvana for consumers brought on by competition and enlightened government policy. Some consumers and groups depict a very different story: a “cell hell” of “dropped calls, dead zones, billing errors, and unexpected fees and charges.”³ The truth lies somewhere in the middle. Relative to its history, the state of the wireless industry is greatly improved.⁴ Since the 1990s, when the Federal Communications Commission began to auction wireless spectrum suitable for telephones and other devices, wireless telephony has taken off. But now, a decade later, the industry is no longer an infant. As mobile platforms mature, and as consumer markets reach saturation, the state of the wireless world warrants greater scrutiny.

Some observers argue that the oligopoly structure of the wireless market makes scrutiny of the industry unnecessary, because any anti-competitive or anti-consumer behavior will be self-correcting. In the words of AT&T spokesman Mark Siegel, “this is a fiercely competitive industry,” which has grown “almost entirely through the force of competition in the marketplace, [and] more innovative devices and services.” Put simply, since there is no single cell phone monopoly, attention to these issues is unwarranted—in Siegel’s words, “this whole issue is a giant red herring.”⁵

Part IV of the paper addresses these issues directly. In short, the carrier market is simply not an open market. While entry is not impossible, under current conditions, it requires multi-billion dollar investments. The consequence is a spectrum-based oligopoly, not the “fiercely competitive” market that is sometimes portrayed. The wireless market may be relatively competitive by the standards of the telecommunications industry and regulated industries like energy generation. But the U.S. wireless market is nothing like the market for blue jeans or vodka, and it is a mistake to so pretend.⁶ The behavior of the carriers, moreover, refutes the argument that oligopoly competition is a cure-all. The practices documented in this paper are of manifest concern for consumers and for innovation in the markets adjacent to the carriers. Their pattern of parallel behavior casts doubt on arguments that the limited competition in a spectrum-based oligopoly can be expected to solve all problems.

If it is accepted that the wireless industry warrants attention, several important justifications are usually raised for the industry’s practices. It is often asserted that industry practices are made necessary by spectrum scarcity and the need to maintain network security. These arguments are important—no one wants a world of calls that never go through, or widespread identity theft practiced through cell networks. Yet, critically,

these arguments cannot be accepted as blanket justification for any and all carrier practices.⁷ Just as the network security and quality claims made by AT&T for much of the 20th century were eventually questioned, the claims made by the mobile carriers today must be examined far more closely.

The historic parallel is instructive. Wired voice telephone networks had more or less reached their full potential under AT&T by the 1960s. To reach the next stage, the most important steps were not technological but deregulatory—destroying impediments created by AT&T that restricted innovation and competition. As Eli Noam writes, “in almost all other fields of communications the US is heavily dominant. Why not in mobile wireless? The one different variable is policy.”⁸ To reach the “next stage” in wireless communications, the most important step may be opening the networks to true competitive entry. This paper specifies how that could happen.

Finally, many readers may be puzzled by the carriers’ behavior in this area. The last part of the paper addresses an important puzzle: Why would a carrier want to cripple products in the first place? Companies usually like to sell the best product possible. If a phone with Wi-Fi is a better phone, why not sell that?

This paper introduces three possible explanations. The first is that the carriers are engaging in a form of price discrimination—crippling products so that they might sell the crippled product at a cheaper price to poorer customers. This form of price discrimination, while not uncontroversial, is defensible. The problem with this explanation is that the wireless carriers do not also make available a fully-capable product for a higher price. Instead, wireless carriers demonstrate an incomplete price-discrimination strategy: offering the crippled product, but not the fully functional one.

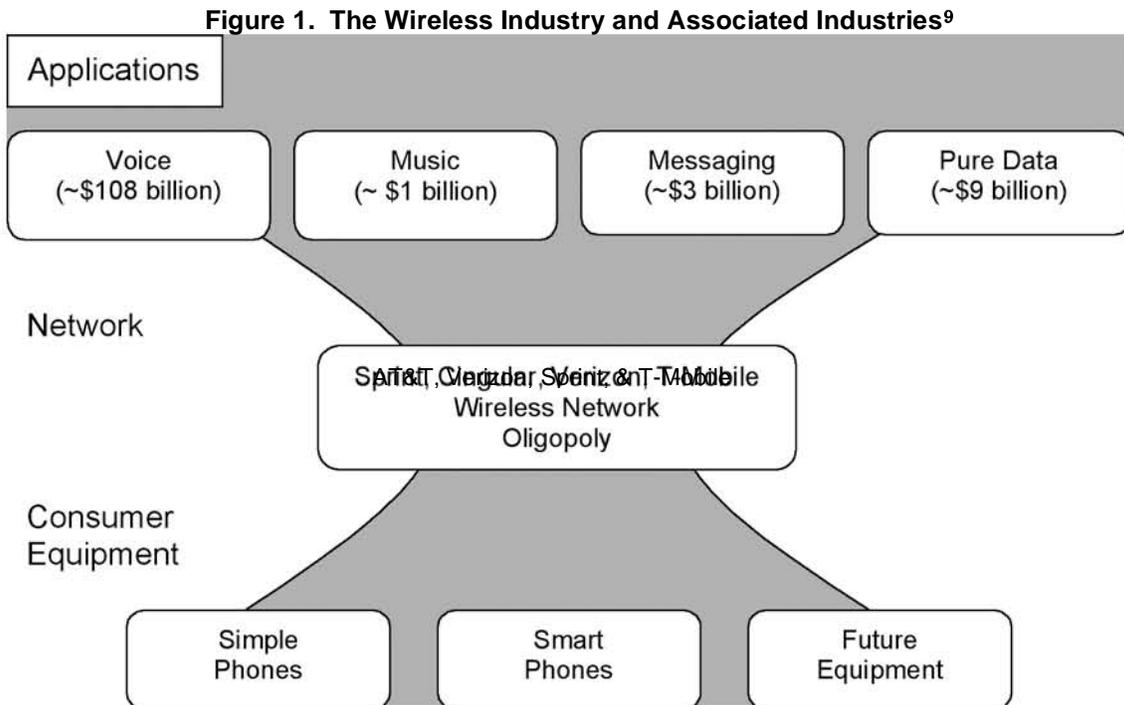
That suggests two other explanations. First, the carriers may be acting to protect existing revenue streams. If a feature like Wi-Fi might endanger 3G or voice revenue, the carrier may block it to protect its income, or in industry jargon, “prevent revenue leakage.” That behavior is an example of a *negative spillover* or *externality*: behavior that helps the carrier, but hurts society.

Second, in some instances the carriers may simply be making the wrong decisions. For example, when it comes to software development, the carriers and some equipment manufacturers have pursued a quixotic strategy. They have failed to standardize, and have placed controls on software development that reflect an interest in maximizing control over any new services that may arise. That strategy, according to many developers, has inhibited the growth of a strong mobile software market. Companies and industries do make mistakes, and the carriers’ current application strategy may simply be an error.

One point should be clear. This paper is written to examine what carrier practices may be harmful for consumers or society. It is intended to shed light on practices that might, for one thing, be dissipated by consumer pressure and competition, and to raise questions for the carriers themselves. It is absolutely not a call for comprehensive regulation or nationalization of the wireless industry. The perspective is that regulation, if necessary, should be a last resort.

2. Competition Model

The American wireless industry is a classic example of an information platform economy.



Today, most discussion of the wireless industry is focused on the degree of competition between carriers—the horizontal competition within the carrier market, represented as the “Network” layer in Figure 1 above. The FCC has done important work in this area since the 1990s. The rise of spectrum auctions, the initial imposition of spectrum caps (since repealed), and the number portability rules are important landmarks that have intensified intra-industry competition.¹⁰

Much less attention has been paid to a different issue: the impact of carrier practices on the vertical markets touched by the wireless industry and its spectrum-based oligopoly—in other words, the effects of the wireless oligopoly on the equipment and application markets, and consequently on consumers.

Part II: Carrier Practices

For various reasons, discussed in Part IV, the oligopoly of carriers, using their power over the public spectrum, are disabling features or paths of development that might be attractive to consumers. We now turn to a more detailed look at carrier practices. We examine four areas: (1) network attachments, (2) product design and feature crippling, (3) data-service discrimination, and (4) application development.

1. The Right to Attach – *Carterfone* Principles

In early 2007, Apple launched the iPhone—its first foray into the world of wireless voice. The iPhone (Figure 2) is beautiful and innovative in design. But it also came with many surprising limitations. Most importantly, to the surprise of many, the iPhone only works on the network of a single carrier, AT&T Wireless. The hundreds of millions of consumers who are not AT&T Wireless customers cannot make use of the iPhone unless they become AT&T Wireless customers. The question is, why? Why can't you just buy a cell phone and use it on any network, like a normal phone?



Fig.2
Apple's iPhone

The main reason is the lack, in the wireless world, of basic network attachment rules. Thanks to FCC rules dating from the 1960s and 1970s, usually referred to as *Carterfone* rules, when it comes to wireline telephones, consumers have the right to attach whichever devices they want to their phone lines. That right is made possible by the standard “telephone jack.” 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.

The standardized telephone jack has proved essential to competition in the wireline space. To understand its importance, we must examine where it came from. For much of the 20th century until the 1970s, the AT&T monopoly barred consumers from attaching anything but a Bell telephone to their network. AT&T had a rule (a tariff*), which stated,

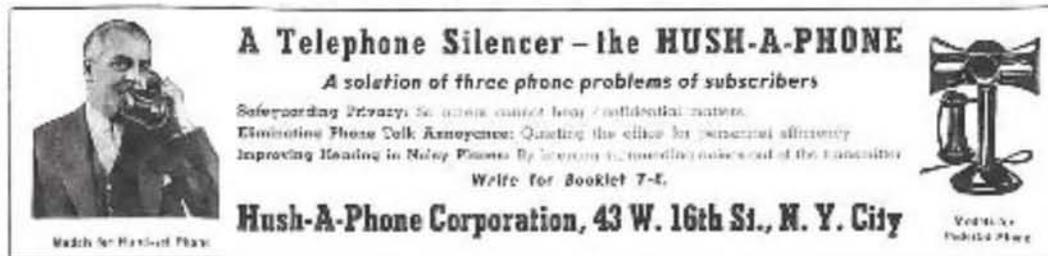
No equipment, apparatus, circuit, or device not furnished by the telephone company shall be attached to or connected with the facilities

* Pursuant to §203(a) of the 1934 Telecommunications Act, AT&T had the right to file tariffs showing charges for its phone service, and also “classifications, practices, and regulations affecting” its phone service.

furnished by the telephone company, physically, by induction or otherwise.¹¹

That rule, unsurprisingly, suppressed all competition and most innovation in the making of telephones. A slow change began in 1948, when a company named “Hush-a-Phone” challenged AT&T’s rule. AT&T had banned the use of a small device (shown in Figure 3 below) designed to keep phone calls quiet and private. Hush-a-Phone challenged the tariff at the FCC as “unreasonable.”

Figure 3. Hush-a-Phone Advertisement



In litigation, AT&T argued that

It would be extremely difficult to furnish ‘good’ telephone service if telephone users were free to attach to the equipment, or use with it, all of the numerous kinds of foreign attachments which are marketed by persons who have no responsibility for the quality of telephone service but are primarily interested in exploiting their products.¹²

After eight years of litigation, the D.C. Circuit Court of Appeals ordered AT&T to allow consumers to attach the Hush-A-Phone to their handsets. The court said that the subscriber has the “right reasonably to use his telephone in ways which are privately beneficial without being publicly detrimental.”¹³ Subsequent to this ruling, through the 1960s and 1970s, the FCC progressively deregulated network attachments—ordering the local phone companies to allow users to connect any devices that complied with a set of basic rules. These principles are often referred to as the *Carterfone* principles, after the 1968 case by that name.



In the *Carterfone* case, AT&T wanted to prohibit the use of the “Carterfone,” a device that facilitated communication between a mobile radio and a telephone. AT&T again argued that control over all equipment on the network was necessary for the

telephone system to function properly. As AT&T described in an advertisement, “It takes a totally unified system to make it all work. One system. AT&T.”

Despite these arguments, the FCC in *Carterfone* struck down AT&T’s rule as “unduly discriminatory.” Importantly, the FCC rejected arguments made by AT&T that suggested control over all equipment on the network was necessary for the telephone system to function properly.¹⁴ Full realization of the modularity rule implicit in *Carterfone* took until the late-1970s, but few doubt the historic importance of the decision.¹⁵

The 1968 *Carterfone* right to attach devices to home networks is perhaps the fundamental consumer right in telecom, and indeed its consequences have been historic. The attachment right is broadly celebrated by policy analysts of every ideological persuasion, who recognize the *Carterfone* principle as a central tenet of a competitive telecommunications policy. However, as described below, AT&T’s wireless descendants have shown an interest in resurrecting, one way or another, the pre-*Carterfone* rule.

The *Carterfone* principle has had enormous consequences not only in telecommunications policy, but for the economic prosperity of the United States. The ability to build a device to a standardized network interface (the phone plug, known as an RJ-11) gave birth to a new market in home and business telecommunications equipment. That led, predictably, to competition in the phone market. But it also led, unpredictably, to other innovations. Those have included mass consumer versions of the fax machine, the answering machine, and, perhaps most importantly, the modem. Arguably, the FCC’s rules on network attachments—now known as the Part 68 rules—have been the most successful in its history. The freedom to buy and attach a modem became the anchor of the mass popularization of the Internet in the 1990s. As one observer put it, without *Carterfone*, “the development and broad popularization of the Internet also would not have occurred as it did. The key point of *Carterfone* is that it eliminated an innovation bottleneck in the form of the phone company.”¹⁶

Carterfone is an important innovation policy. It drives decentralized innovation: any company or even individual can build to the standardized telephone jack, without gaining the permission of the phone company.¹⁷ *Carterfone* freed innovators to invent the personal modem, and then ever-faster versions of the personal modem, without seeking approval from the owners of the telephone lines. In the wireless world, the *Carterfone* rule does not exist. Instead, like in the pre-*Carterfone* world, innovative companies must seek the permission and cooperation of the carrier oligopoly.

Consequently, the market for consumer devices is unusual and distorted. As one developer put it, “You just can’t sell in this market like you do in others. The carriers have ultimate control over what products reach the market. If they don’t like what you’re doing, that’s too bad.”[†]

Current Barriers to Attachment and Marketing

American equipment manufacturers are used to Internet connections and telephone lines that are “plug and play.” A firm can design equipment, create whatever features it thinks best, and sell to consumers directly.

In contrast, today, it is *de facto* necessary to obtain the permission of the carrier to market a wireless device in the United States. That fact creates an important bottleneck on innovation and product diversity. To make it to market, any device must “fit” with the business plans of the major carriers.

That has two main consequences. First, the cellular phones widely available in the United States are just a small fraction of the phones available in the world. As Marguerite Reardon of C-Net points out, “even though Nokia introduced roughly 50 new products into the market last year, only a handful were offered by operators in the U.S.”¹⁸

Second, as discussed in subsequent sections, control over attachments has given carriers enormous power over equipment design and over application markets. First, we examine how the carriers control network attachment in the first place.

Retail Barriers

The major carriers have a near-lock on the retailing of mobile wireless devices in the United States. According to analyst estimates, between 90 percent and 95 percent of cell phones in the United States are sold by the carriers. That is nearly the opposite of other markets: in some markets in Asia, for example, about 80 percent of cell phones are sold independently of a carrier.¹⁹

The primary reason is very well known, and even beloved by consumers: the practice of subsidizing equipment purchases with subscription fees. As Elliot Drucker writes in *Wireless Week*, “by far the biggest impediment to commercialization of innovative wireless data products and services lies in the way mobile handsets are distributed in the U.S. market.”²⁰

[†] Many of the application and equipment developers interviewed for this report requested anonymity, for fear of retaliation. For that reason, some of the sources relied upon cannot be disclosed.

As the main carriers collect a monthly fee from consumers, they are in a unique position to collect the price of the telephone or smartphone over a long period. In effect, they can sell telephones on a “buy-now-pay-later” basis, like an installment plan, as opposed to a lump sum purchase. Typically, a provider like T-Mobile or AT&T will advertise and sell a phone for \$99-\$199 that retails without subsidies for \$300-\$600. They consequently collect the full cost of the telephone through higher monthly billing, spread over their entire customer base. The higher fees charged to recover the price of the telephone subsidy program are not indicated on phone bills. Since many consumers spend over \$1,000 a year for mobile service, collecting the wholesale price of the telephones through subscription fees is practical.

As many sources we interviewed suggest, the subsidy makes trying to sell phones through non-affiliated retailers a losing proposition. As one equipment developer explained, “we always hated it, but if you want to move the needle, you have one choice, and that’s selling through the carriers.” It is possible to buy handsets from unaffiliated vendors in the United States, but they cost far more because of the lack of the subsidy.

Whether the phone subsidies and other barriers to network attachments are ultimately a pro- or anti-consumer practice we do not address in this paper.[‡] However, their effect on innovation, equipment markets and application markets is undeniable. As the only significant channel for the purchase of mobile devices, the carriers can and do reserve the power to decide what devices will operate on their network.

Technical Barriers

In the United States, carriers rely on two distinct main standards—GSM and CDMA.[§] The CDMA carriers (Verizon and Sprint) have different means of restricting network attachments than the GSM carriers (T-Mobile and AT&T). We shall examine each briefly.

Approved Phones Only. “We only allow devices on our network that have been approved,” said Jeffrey Nelson, a spokesman for Verizon Wireless.²¹ As Nelson confirms, for Verizon Wireless, the largest CDMA carrier in the United States, only devices specifically approved by the company work on its networks. Technically, how is this accomplished? For CDMA carriers, every

[‡] Notably, if the current low upfront prices made possible by subsidies are important to ensure the affordability of phones for consumers, telephones could be sold on an installment plan, with repayment processed automatically through billing.

[§] GSM stands for the Global System for Mobile Communications and is the world’s most popular standard. CDMA stands for Code Division Multiple Access and is used mainly in the United States, South America and Korea.

device that connects to the network must have an approved ID number—an ESN (electronic serial number) or, more recently, an MEID (mobile equipment ID). The practice of Verizon Wireless is to block telephones that are not sold by Verizon itself.²² As one Verizon customer representative put it, “all the phones that work are already in our system.”

The method of exclusion is a “whitelist” of Verizon phones which, by implication, prevents others from working. Without an approved ID number, telephones not sold by Verizon will not be recognized and cannot be used on the network. This effectively makes Verizon Wireless the gatekeeper of market entry for telephones on their network, like the AT&T of old.

The whitelist is not a matter of technological necessity. Sprint is also a CDMA carrier and its practice is slightly different. Sprint keeps a list of customer ESNs and bars the use of existing ESNs—which can be evidence of a “cloned” or stolen telephone. While Sprint “discourages” the use of non-Sprint phones on its network, and will not offer technical support for such phones, it does not block the use of phones on its network as Verizon does. In other words, a consumer who owns his own phone can call Sprint customer service and have his phone activated on the network.

Phone Locks. The GSM wireless providers (AT&T and T-Mobile) limit network attachments using a different means: “locking” cell phones, or making them incapable of operating on any network other than theirs. It would be strange to have a car that worked on some roads but not others. However, much of the mobile wireless equipment sold in the United States today, unless modified, will only work on one network, for reasons unrelated to technological necessity.

Locking works as follows. The GSM standard envisions a standardized interface between the phone and wireless service. For that reason, GSM phones carry a Subscriber Identity Module, or SIM card, designed to make it easy for one phone to be used on various networks simply by plugging in new SIM cards. In addition, the SIM system allows consumers to easily switch telephones by moving the SIM card from one phone to another.



The mobile device itself, however, can be designed to recognize and reject certain types of SIM cards based on information carried on the SIM, creating a “lock.” There are several varieties of lock: a “service provider lock” simply prevents the phone from being used on anything but the SIM cards of one service provider. A “full lock” prevents the phone from being used with any other SIM card, period. Most, if not all, of the American GSM phones sold by carriers are locked, disabling the utility of the SIM system.

Just as it is possible to lock phones, it is possible to unlock them. Typically, unlocking a phone requires entering a series of codes, and there are companies that specialize in unlocking telephones and reselling them. The U.S. Copyright Office announced in 2006 that telephones may be unlocked without violating the anti-circumvention provisions of the copyright laws, though of course the rule does not prevent carriers from locking phones to begin with.²³ The GSM carriers, T-Mobile and AT&T, have been careful not to go too far in absolutely preventing the unlocking of phones, perhaps for fear of regulation. Both firms appear to have a policy of agreeing to unlock telephones, on request, so long as the phone has been owned for three months.

What is important, however, is the status quo. Most consumers have no idea what a phone lock is, let alone know how to unlock a phone themselves. New products, like the Apple iPhone, are sent to consumers locked to one network (AT&T, in Apple's case). Consequently, unlike in most of the rest of the world, American devices are usually locked absent user expertise or knowledge.

* * *

Two sets of consequences flow from the control that carriers exert on the marketing and attaching of mobile devices in the United States. One is a loss of *product diversity*. Of the many mobile devices sold even by major providers like Nokia and Motorola, only a fraction effectively make it to the U.S. market. The bottleneck also deters other potential market entrants.

The second set of consequences of the carrier bottleneck on the device market is in product design, an issue to which we now turn.

2. Coercive Product Design and Crippled Phones

As a condition of network access, American wireless carriers are wielding a heavy hand in the design of mobile devices. "We were used to selling PDAs (personal digital assistants). But the wireless market was like night and day. Basically, the carriers have all the power," said the former wireless marketing director of a PDA manufacturer. While they accept that some level of cooperation is necessary, equipment developers complain about two problems: (1) being forced to disable services or features that might be useful to consumers, and (2) being forced to add elements to telephones that the designers do not think are what consumers want.

Call Timers. Developers report that carriers have often forced them to remove or limit "call timers" from their phones. Call timers can keep track of the length of individual phone calls, and can also keep track by month, year, or in total. The carriers, reportedly, are concerned that consumers might

easily develop an independent and possibly different record of their mobile phone usage. While it is clear that destroying an independent record simplifies billing practices for carriers, it is less clear how that serves the interests of consumers.

Photo Sharing. As one developer said, “The first thing you want to do with a photo is get it off your phone [and] email it, right? But the carriers wouldn’t let us make it that easy.” In the early 2000s, when camera capabilities began appearing in telephones, equipment developers and carriers came into conflict.

Developers wanted to make it relatively easy to send a photo to an existing email account, as a product feature. Carriers, conversely, wanted to channel consumers to paid “photo sharing” sites where, for a monthly fee, consumers could upload their photos and then download them to their computers. While results now depend on the device and carrier, many carriers successfully forced equipment developers to make photo-sharing services the only way to get photos off of a camera-equipped phone.

For example, Sprint’s “Picture Mail,” Verizon’s “Pix Place” and AT&T’s MediaNet/MMS services, for prices typically ranging from \$60-\$240 per year, allow consumers to get photos off of their phones and onto a Web “album.” An AT&T customer, for example, who wants to get photos off of her phone must sign up for three packages: “MediaNet,” “Text Messaging” and “Multi-Media Messaging,” each of which has affiliated charges. On many phones, the carriers have made it difficult (or sometimes near-impossible) to get the pictures off of the phones otherwise. That has prompted numerous consumer complaints. As one consumer wrote about Sprint’s offering:

so.. wtf i pay \$5/month just for the service
and i also the .2/.3 cents/kb for a data transfer?? for every single
picture??
wtf kind of bull**** is this?²⁴

Consumers also report that Verizon has placed limits on the maximum size of photos that can be uploaded from its phones (300 KB), for reasons that are not always clear. In the words of a Verizon customer:

Verizon's greed hurts its customers...One phone call to Motorola's dedicated V3C support line (800-657-8909, for those who want that number) verified that the problem was Verizon's own limit of 300 Kb on MMS and email attachments — and led to the Motorola tech expressing extreme exasperation that his company was willing to put its products in the hands of customers via a middleman (Verizon) who crippled those products before passing them on...²⁵

Whatever the benefits of a photo-sharing service may be generally, it seems hard to see how consumer interests are served by making it harder for consumers to send photos to themselves.

Web Access. During the early development of wireless-capable PDAs, also known as smartphones, the potential use of phones to access the Web became obvious. However, various carriers strongly opposed the availability of “full” Internet browsers on the devices. Instead, the carriers pushed the development of an alternative to the standard Internet through the “Wireless Application Protocol,” or WAP.

There are two ways to approach the challenge of providing access to the Web using a cell phone. The first is to provide access to the existing Internet and simplify sites to reflect the limits of the mobile platform. That was, for example, the approach of the “Blazer” browser developed by Palm systems. The Blazer worked by simplifying normal Web pages to make them appear on a phone, consequently allowing consumers to reach a full, albeit simplified, range of Web content.

The carriers, however, supported a different approach, embodied in the WAP protocol. As opposed to adapting the Internet to the technical constraints of mobile phones, WAP created an entirely new set of protocols, and contemplated, in essence, the creation of an alternative, cell-phone only Web. The carriers pressured manufacturers to offer WAP-compatible browsers only, and then, at least initially, a “walled garden” of WAP-compatible sites. As one developer said, “we thought Blazer was pretty good, while we knew WAP was terrible. But the carriers had to have WAP.”

As one critic wrote of WAP:

They [the WAP Forum] have developed an entire stack of network protocols analogous to, but largely incompatible with, the existing Internet architecture. Not only has this approach required an enormous engineering effort on the part of the protocol designers and implementers, it has also given rise to a number of fundamental design errors. The deficiencies in the WAP specification are glaring, obvious, and readily apparent to any competent data communications professional.²⁶

Eventually the carriers relented, demanding only that their site be the first site available on any browser. Ultimately, WAP proved a commercial failure and has been abandoned in the United States.

Bluetooth. The disabling of Bluetooth functionality has been a major sticking point for many consumers and has even prompted a lawsuit. Bluetooth is a protocol designed for very short-range personal communications—to allow communications between devices such as PCs, printers, wireless headsets, etc.** Obvious uses of the technology might include transferring photos off of camera-phones, printing information from a telephone, or backing up address books.



Figure 6. Verizon's modified Motorola V710

In 2004, Verizon Wireless released the Motorola V710 cell phone, advertising “full” Bluetooth capabilities. However, most of the Bluetooth capabilities were, in fact, disabled. The phone was capable only of recognizing headsets and cooperating with a modem to make dialup calls. In statements and interviews, Verizon Wireless stated that the crippling was necessary for “security” reasons.²⁷ It later defended the crippling as necessitated by its contracts with various content partners. In response, in 2005, subscribers filed a class action lawsuit in California. Verizon Wireless eventually settled the lawsuit.²⁸

Since then, while it hasn’t stopped crippling Bluetooth, Verizon and Motorola more clearly indicate the limits of the Bluetooth features on phones. For example, Motorola’s “Phone Tools” website states:

if you are a Verizon customer, all multimedia and internet connection features in this software will be disabled due to carrier request. Please contact your service provider for further information.²⁹

In addition to Verizon’s practices, which are notable, Sprint and AT&T have also, at various times, disabled various Bluetooth capabilities—particularly on smartphones like the *Treo* line.

It is important to understand the consequences of Bluetooth crippling. Generally speaking, the treatment of Bluetooth features by carriers is inconsistent and mixed, uncertainty which makes it difficult or impossible for developers to create secondary markets based on full Bluetooth capabilities. For example, it would be easy for mobile phones to communicate better with printers so that users can print phone numbers, addresses or photos. However, the unpredictability of Bluetooth capabilities has inhibited the growth of that or similar markets.

** Bluetooth is specified in the IEEE 802.15.1 Personal Area Network Standard.

Wi-Fi. Technologically, cellular phones can incorporate Wi-Fi (802.11b) capabilities for a range of potential uses, from email, to web access, to VoIP, to communicating directly with other devices. However, over the last five years, American wireless carriers have strongly resisted and blocked the installation of Wi-Fi capabilities in cellular phones. In some cases, they have forced equipment manufacturers to manufacture specialized American versions of telephones with all Wi-Fi capabilities crippled.



Figure 7. Nokia U.S. e62 (e61 sans Wi-Fi)

The Nokia e62/e61 is one example. The Nokia e61 phone is the company’s flagship “smartphone”—widely known as its “Blackberry killer.” It was released in Europe in the summer of 2006 to enthusiastic reviews. However, in the United States, AT&T is the exclusive vendor of the e62—a crippled version of the e61 that has Wi-Fi and other features removed. In the words of MSN columnist Gary Krakow: “What some carriers fear most is the e61’s ability to handle VoIP calls when you’re near a friendly wireless network. That’s why we won’t see Wi-Fi on the e62.”³⁰



Figure 8. Netgear SPH101

As of 2006, there are “pure” Wi-Fi phones being sold in the United States, such as the Netgear SPH101. But these phones do not work on the cellular networks operated by the commercial wireless carriers. They are Wi-Fi phones only—typically only allowing a user to make phone calls using Skype or other VoIP providers within range of a local area or public Wi-Fi network.

In the United States, with a few notable exceptions, it is difficult today to find a Wi-Fi capable cell phone.^{††} It is difficult to see how the practice of blocking Wi-Fi in mobile devices is helpful to the American consumer.

3. Discrimination in 3G Broadband Services

Under the general banner of 3G (“Third Generation”) services, wireless carriers have begun offering various types of broadband data services using their wireless spectrum. These data services are designed to be used both for

^{††} AT&T will soon offer the Apple iPhone, which has Wi-Fi capabilities. Also, since October 2006, T-Mobile has offered a plan in the city of Seattle whereby consumers can use a hybrid telephone, sold by T-Mobile, in T-Mobile’s “hotspots,” although this feature also entails an extra monthly fee. In addition, also in October 2006, T-Mobile began to make available the “Dash” smartphone with Wi-Fi capabilities. Users can also buy Wi-Fi phones in Europe or Asia and import them.

smart telephones and personal computers (presumably laptops) through a data-card (typically a modem card with an embedded antenna that plugs into the computer). GSM and CDMA telephones use different protocols for these data services (such as EVDO and HSDPA). While there are important technical differences, we shall refer to all as 3G wireless broadband services.

Verizon, Sprint-Nextel, AT&T and T-Mobile now all offer wireless broadband services of various kinds. These data services, based on licensed spectrum, compete with commercial and public Wi-Fi providers, who offer services for free or for a fee in cafes, airports, and other public facilities, at designated hot spots or hot zones, and in some cases throughout cities.³¹

Wi-Fi is faster than 3G. Under current technologies, Wi-Fi has a capacity between 11 Mbps to 54 Mbps, which means that Wi-Fi usually operates at the maximum speed of the underlying Internet connection (often a home DSL or cable connection), minus whatever is lost through interference or sharing. As for 3G, Verizon and Sprint have claimed average downstream speeds between 500-600 kbps, though some in the industry contest these claims. One independent test of AT&T's broadband network found downstream speeds between 100-300 kbps, and upstream speeds under 100 kbps.³²

The major advantage of 3G broadband data services over Wi-Fi is not speed but coverage—Wi-Fi networks tend to be offered sporadically, by various providers (or neighbors), while cellular data services are available anywhere that the carrier's network reaches.

In a manner similar to early broadband services, Verizon and AT&T have offered their services pursuant to discriminatory conditions of various kinds.

Blocks and Bans



Figure 9. Verizon EVDO Advertisement

The practices of Verizon & AT&T with respect to their data services are most notable. Verizon widely advertises an “unlimited broadband access” offering (see Figure 9 below).³³

However, in practice, Verizon imposes limits on its “unlimited service”—namely by restricting bandwidth and designating certain applications as “forbidden.”. AT&T and Verizon have virtually identical Terms of Service contracts.

They ban their users from using their broadband connections for any purpose other than:

1. Internet browsing;
2. E-mail; and
3. Corporate intranet access (including access to corporate email, customer relationship management, sales force automation, and field service automation applications).

Verizon limits its “unlimited” brand service as follows:

Unlimited NationalAccess/BroadbandAccess services cannot be used (1) for uploading, downloading or streaming of movies, music or games, (2) with server devices or with host computer applications, including, but not limited to, Web camera posts or broadcasts, automatic data feeds, Voice over IP (VoIP), automated machine-to-machine connections, or peer-to-peer (P2P) file sharing, or (3) as a substitute or backup for private lines or dedicated data connections.³⁴

AT&T takes its restrictions even further:

Prohibited uses include, but are not limited to, using Services: (i) with server devices or with host computer applications, including, without limitation, Web camera posts or broadcasts, continuous jpeg file transfers, automatic data feeds, telemetry applications, automated functions or any other machine-to-machine applications; (ii) as substitute or backup for private lines or dedicated data connections; (iii) for Voice over IP; (iv) in conjunction with WWAN or other applications or devices which aggregate usage from multiple sources prior to transmission; ... except for CONTENT formatted in accordance with AT&T’s CONTENT standards, Unlimited plans cannot be used for uploading, downloading or streaming of video content (e.g. movies, TV), music or games. Furthermore, unlimited plans (except for DataConnect and Blackberry Tethered) cannot be used for any applications that tether the device (through use of, including without limitation, connection kits, other phone/PDA-to-computer accessories, Bluetooth® or any other wireless technology) to laptops, PCs, or other equipment for any purpose.³⁵

Under these contracts, a computer user who subscribes to Verizon’s “unlimited broadband access” is contractually barred from many of the most popular uses of the Internet. The provisions ban, for example, a computer user from downloading episodes of the television show *Lost*, or even music, from Apple iTunes. They also bar downloading user-created content on YouTube, or using VoIP providers like Skype or Vonage.

How are these rules enforced? First, while this is not possible to verify, Verizon or AT&T may be blocking or degrading applications that fall outside

its list of “permitted” uses. The limits of this study preclude monitoring any active blocking or degrading.

Second, over the last two years, Verizon has shut down the accounts of people who use banned applications or too much bandwidth. Numerous people have complained about being shut down by Verizon for such reasons.³⁶ Victims identify two patterns of termination. In the first, users are notified through a letter that they are using too much bandwidth and asked to call a number. When they call, they are asked whether they are downloading games or songs. If the answer is “yes,” the user is terminated, and charged a \$175 termination fee. In a second reported pattern, the appeal stage is skipped: customers who, according to Verizon, use too much bandwidth, are terminated and charged the termination fee.

An excerpt from a termination letter is below:

As you know, the terms and conditions that govern your NationalAccess and/or BroadbandAccess account, which were provided to you at the time of service activation and which are posted on VerizonWireless.com, only permit Internet browsing, email and intranet access. All other activities, such as streaming and/or downloading movies and video, are expressly prohibited by the terms and conditions. A copy of the terms and conditions is enclosed.

We recently reviewed your Verizon Wireless NationalAccess and/or Broadband Access account and found that your usage over the past 30 days exceeded 10 Gigabytes. Your usage was more than 40 times that of a typical user. This level of usage is so extraordinarily high that it could only have been attained by activities, such as streaming and/or downloading movies and video, prohibited by the terms and conditions. Based on these facts, your extraordinarily high levels of usage conclusively demonstrate a violation of the terms and conditions, and your account will be terminated on 9/20/2006.³⁷

One anonymous user who was terminated documented his complaint as follows:

I would not object to being billed monthly per gigabyte, or even to being billed at a usurious rate for usage over a prespecified threshold. But in their advertising, ‘unlimited’ is the big selling point. Nowhere do they reveal the daily usage quota—which with great difficulty I finally discovered to be 166M [Megabits] per day—or any limit of any kind. They kick anyone off who uses more than that and pretend it's because they caught you streaming kiddie porn or something.³⁸

In the summer of 2006, the group Consumer Affairs ran tests of the 3G limits and were terminated for using too much bandwidth, despite the fact that they did not violate any contractual limitations.³⁹ When contacted by Consumer Affairs, a Verizon spokesman, Jeffrey Nelson, maintained that advertising the service as “unlimited” is not misleading to consumers. “[The limits are] very clear,” he insisted, “in all the legal materials we put out.”⁴⁰

4. Application Stall

In the words of Michael Mace, an observer of the mobile application world:

There's a collision coming between the wireless world and the Web, and I think it won't be pretty... The river is the torrent of innovation happening in Web apps right now. The dam is the carriers who won't allow that innovation to run freely on their networks. They haven't figured out how to set up spillways and generators, let alone operate them, so the pressure of the water keeps growing as Web innovation gets further and further in front of what you can do on the wireless networks.⁴¹

In the words of another commentator:

Developing any kind of mobile application is a tarpit. A tarpit of misery, pain and destruction.⁴²

As these comments suggest, all is not well in the world of mobile software development.

Software Development on the Web and PC

The hallmarks of the software development environment for personal computers and Web applications are (1) permissionless market entry, (2) relatively low costs of market entry, and (3) open development standards that make it possible to write to many platforms. It is important to examine how these features work together. Today, a Web or PC developer can develop a new application without seeking the permission of any carrier, the World Wide Web, or any operating system owner. A new Web-based firm can be launched without “clearance” from anyone. Similarly, applications for the major operating systems—Linux, Apple, UNIX and Microsoft Windows—can be written without the permissions of the companies or authors of those systems.

The costs of developing software for these markets, while not zero, have been relatively low. Obviously, a developer needs a degree of computer expertise and computer equipment to write a new application. However, that has not prevented hobbies from becoming multi-national corporations. eBay, for example, was run as a hobby site before becoming a multi-billion dollar

concern. The amount of start-up capital required was sufficiently low that the business could be launched as a part-time job. eBay is an extreme example, but the history of the personal computer and the Internet is full of examples of low-cost market entry. Microsoft was a tiny concern when it began to market MS-DOS. Yahoo! was a graduate-student project. Similar examples are legion.

The importance of these facts for software development cannot be overstated. They allow developers to discover, or try to discover, entirely new markets at very low cost, and they give consumers more choice and value. Few in the 1980s would have ever predicted the existence of large markets for search engines, auction goods, online media, and other markets that have been discovered in the software/Web development environment. Not every market that people thought might exist has worked out—consider, for example, the “push” application craze of the mid-1990s. But through trial and error, many new markets have been discovered. In addition, cheap entry for developers creates iterative product development—rapid advances and improvements on products, based on what works and what does not. As it becomes more expensive to roll out a software product, the rate of improvement slows.

Difficulties for Developers

Many application developers believe that the mobile applications market is stalled, or much less active than it might be. Developers describe many reasons, though three are dominant: (1) access to phone capabilities, (2) extensive qualification and approval procedures, and (3) pervasive lack of standards in many areas.

Access to Phone Capabilities. Says one developer, “the bleeding from the neck problem is this: you cannot do anything if you cannot access the power of the hardware. Right now, you just can’t get at the phone’s capabilities, so you really can’t do much.” Today, in the mobile device world, there are two dominant development platforms: Java and BREW. Both create a virtual machine that runs on top of the telephone’s capabilities. Neither offers application developers full access to the technological capabilities of the telephone.

Developers complain that carriers and even equipment makers do not make available many of the most useful application programming interfaces (APIs), or reserve them for some developers over others. In the words of one developer, “If you are a J2ME [Java] developer you'd be shocked at the number of capabilities that get locked down for no fucking reason. Serial port access, Bluetooth access, location, Internet access with encryption, the list goes on...”

Simple evidence of this problem can be clearly verified by anyone who owns a cell phone. Available applications, if they need processing power, tend to perform very badly. On the Motorola Razr, even simple computer games run at a snail's pace, and can take a long time simply to render graphics on the screen.^{‡‡} As one developer explained, "the guys who work at Verizon or Motorola aren't software developers, so they're just struggling to make things work. And thanks to lack of access for everyone else, the applications on phones are mostly a joke."

Screening Developers. A second problem is the carriers' qualification and approval requirements. Each of the carriers has extensive qualification procedures to become a developer for their cell phone platforms. Becoming a registered developer is expensive, which can obviously impede development by very small or hobbyist developers. While hobbyist developers may not sound important, the history of the computer industry shows how important small developers can be. The work of economists like MIT's Eric von Hippel show how important user-driven innovation can be in fields as diverse as software through surfing. Qualification procedures that make user-driven improvements impossible sacrifice that potential.⁴³

For example, most of Verizon Wireless's telephones run the BREW development environment, one of two used commonly for mobile telephones. BREW, as implemented, requires an extensive and expensive three-stage process to develop applications. It requires (1) pre-qualification of individual developers, (2) a rigorous process of testing for all applications, and (3) individual submission of each application to Verizon for approval and a potential contract. In taking this approach, BREW is notable for its apparent rejection of the value of an open development environment. As BREW's promotional materials, directed to carriers, state:

BREW equals REVENUE... With BREW, your needs come first: You own the relationship with your subscribers, you decide which apps to offer, and you determine the level of interaction you want with publishers and developers.⁴⁴

The consequence of this level of control is much less development of applications for BREW telephones. As David Passmore writes, "software can't be installed in Verizon BREW phones without permission of the operator, who gets to determine whether the resulting services are compatible with its walled garden business model, and then insist on collecting a percentage of the revenues."⁴⁵

^{‡‡} For example, Iomo's "Gold Club" title takes between 20-22 seconds to render a screen on a Motorola Razr mobile phone.

Lack of Standards. A third major problem is the costs created by the sheer number of mobile platforms—the variety of cell phones, each with varying operating systems and different implementations of Java and BREW, the main development environments. The lack of standards raises development costs, as developers need to spend considerable resources making sure that even a simple wireless application works on a reasonable portion of the cell phone platforms.

The following diagram (Figure 10), based on the work of Henry Holtzman of the MIT Media Lab, highlights some of the differences between the PC and mobile phone environment:

Figure 10. Differences Between PC and Mobile Phone Development Environments

	PC	Mobile Phone
Service	Google, Yahoo, AOL, Windows Live, YouTube	
Apps	Web browser. All kinds of vertical niche applications.	No Solution
GUI	Common “desktop” paradigm	
Input	Generic: usually keyboard, mouse, and monitor	Specialized: keypad, buttons, and inconsistent (and often limited) screen space
HW	x86 (Intel, AMD, VIA)	Lots of different platforms

As this diagram shows, while developers would like to write software for phones and smartphones, both the variety of standards in some cases, and the lack of a standard in other cases, can be a major impediment.⁵⁸ Some large developers overcome these difficulties, but not without cost. As one developer commented, “yes you can download Google Maps for your Blackberry. But that’s because at Google they have a huge team who spends all their time just trying to get a weak version of Google Maps working on all those different platforms. That’s about the best they can do, and that’s Google we’re talking about.”

This is not to completely discount the existing efforts to provide a uniform development platform. Sun Microsystems’ Java Micro Edition is probably the best known effort to standardize development across mobile platforms, though developers report that it remains inconsistent across platforms and underpowered.

* * *

We now consider several specific areas that, despite great potential, have experienced delayed development, for some of the reasons discussed above.

SMS Crippling

SMS, or short message service, is available on most American mobile phones, and is usually used for sending messages between friends. However, developers point out that SMS could be adopted to a far broader range of innovative and interesting uses. For example, many firms have been interested in using SMS as a means of payment, or, for example, as a means for charities to raise funds. Unfortunately, the carriers have imposed complex controls on the usage of the SMS system that have all but crippled many uses other than the most basic ones.

The following anonymous testimony from a developer describes vividly the challenges in developing an SMS application:

Almost all cell phones sold in the developed world have the ability to send and receive SMS (short message service) text messages. SMS is gaining popularity in the US, but only as a way to send quick messages to friends. So why aren't there a wealth of amazing and interactive services available for mobile devices? Why is there no MySpace, Craigslist, Amazon, Flickr, or eBay accessible through this network? Why are cell phone payment systems and email systems nearly nonexistent? Why haven't charities raised money or awareness of their causes through this system?

It's simple. Because the cell phone carriers control what services are allowed to use their networks. There is no net neutrality on the cell phone network.

Imagine you want to create a user-moderated news service like digg.com that operates on SMS. On the neutral Internet, you rent a Web server (\$7-\$100 per month to start), register your name, and start programming. Total time required: less than two hours in most cases. But getting a service on the non-neutral US cell phone network would be a little different:

The first step would be to contact a company known as an aggregator. This company manages your relationships with the cell phone carriers -- and that's carriers, plural, because making an agreement with just one carrier ensures that your service will fail because it cannot effectively spread via word of mouth. The first requirement from an aggregator is a service charge, which starts at \$1,000 per month. Then,

you must buy a shortcode (which kind of serves as your Web site name) for an additional \$500-\$1,000 per month. But you're not done.

The next step is satisfying the requirements of the cell phone companies. Many of these steps, such as requiring affirmative opt-in before a subscription can start, are not burdensome, and serve to protect the carriers' customers. Others, however, border on ludicrous. Requirements vary by carrier, but some prohibit operators from offering games or sweepstakes, or require that subscription periods can only be monthly—not daily, weekly, or yearly. Others require that content, such as ringtones, be locked so users can't forward them from their phones to their friends' phones.

Other requirements are outright offensive: as of this writing, Cingular, Sprint/Nextel, T-Mobile and Verizon all prohibit charities from raising money through their Premium SMS services. Too bad for the United Way, Greenpeace, and the Red Cross.

Some carriers also have "decency" restrictions that are so silly and restrictive that they make the production code that governed movies between 1934 and 1967 seem quaint. Verizon is the worst offender in this case: It prohibits dating services, images that are suggestive (the same images would be acceptable if aired on prime-time network TV), and any use of "crude" words, including such shockers as "fornicate" and "genital."

After you make your application compliant to the carriers' requirements, you wait weeks or months for the carriers to approve it, and jump through more hoops if they reject your application, which they can do for any or no reason.

In practical terms, you'd never get approval for your brand new peer-mediated news service. Even if you were able to set up filters to block images and bad words, you'd still be sunk: Verizon prohibits "unmoderated chatting, flirting and/or peer-to-peer communication services."

Even if you could slip your service past the censors, you would already have been set back eight weeks and many thousands of dollars -- and this is just the beginning. Next, the carrier will charge you a fee (a few cents, typically) for every message you send to your users, and charge your users to receive your messages -- and charge them to send you messages. Just imagine where craigslist.org would be if it had to pay a few cents every time someone browsed an ad, and you had to pay as

well. It's no wonder SMS services are overpriced and haven't grown beyond a niche market for ringtones and horoscopes.⁴⁶

As the anecdote suggests, the challenges surrounding the development of an SMS-based application are formidable.

Geolocation & Mobile Social Software (MoSoSo)

Thanks to the government's "Enhanced 911" (e911) mandate, all American mobile phones are required to have basic geolocation capabilities, while some have more advanced, full GPS capabilities. This feature can be utilized along with tools like SMS, to create innovative location-based applications—from finding friends to locating lost items or restaurants. So far, such applications have not been developed, to any significant degree, in the U.S.

An example is the effort to develop "Mobile Social Software," or MoSoSo, modeled on successful social networking sites like Friendster and MySpace. The concept behind mobile social networking software is the ability to use your mobile device to find out where your friends are, and to tell them where you are. For example, you might use the software to figure out whether any of your friends are at the café or bar to which you are headed.

Unfortunately, despite the promise of MoSoSo, it has yet to become a widespread phenomenon. It may be that the services simply aren't popular, or haven't yet reached a critical mass of people. But the development challenges just described have certainly held things back. As commentator danah boyd explains:

The next step in social technologies is mobile... Yet, a set of factors have made innovation in this space near impossible. First, carriers want to control everything. They control what goes on a handset, how much you pay for it and who else you can communicate with. Next, you have hella diverse handsets. Even if you can put an application on a phone, there's no standard. Developers have to make a bazillion different versions of an app. To make matters worse, installing [outside applications] on a phone sucks and most users don't want to do it... All around, it's a terrible experience for innovators, designers and users.⁴⁷

Boyd's concerns reflect general problems in this area. Other developers discuss the difficulty of accessing the GPS capabilities of phones. It stands to reason that, without the power to harness the relevant hardware capabilities, the development of useful GPS applications will continue to be delayed.

The OpenMoko Model

One model for how to solve many of these application development problems is something called the "OpenMoko" model. The OpenMoko is a project,

backed by various firms and developers, to produce mobile platforms that are as open to development as the Web and major operating systems.

In early 2007, a Taiwanese firm, FIC, Inc., announced the release of a phone called the OpenMoko Neo1973. The phone works on GSM networks, and its distinctive feature is that it runs a standard operating system (Linux) and is completely open to installation of third-party applications. In other words, the OpenMoko telephone comes with basic voice services, and allows a user to install any application she is interested in, downloadable from the Internet.



Figure 11.
FIC's
Neo1973

As Sean Moss-Pultz, who works for FIC, Inc. and is a leader of the OpenMoko project, explains, “we want to build the first product that actually gets better the longer you own it.”

According to Moss-Pultz, the essence of OpenMoko is giving developers full access to the capabilities of the telephone. “If you don’t have access to the hardware, you really can’t do anything.”

Whether the OpenMoko model will take off is far too soon to tell. The model depends both on the willingness of consumers to buy an unsubsidized phone and the willingness of third-party developers to write software for a telephone which will, at first, have a small user base. But what the OpenMoko model shows is that the current model of cell phone development is not the only way. Most industry observers bemoan the stagnant nature of mobile phone application development, but there are solutions.

* * *

It is interesting to contrast the present mobile development environment with that of early computer platforms, such as the Apple II. The Apple II of the late 1970s was, like today’s mobile phone, a platform with some serious technical limits. However, in many ways, the Apple was better for development than today’s mobile devices. It gave its users a native development environment (BASIC and Assembler) that had full access to the (albeit limited) power of the underlying hardware. The Apple II, furthermore, had no particular pre-qualification or approval rules for developers.

It seems strange that today’s mobile phones should be a more closed and limited development platform than a computer released in 1977. We might put things this way: if mobile devices are to become a major platform for software innovation, like the personal computer and web, they must become at least as hospitable to innovation as the humble Apple II.

Part III: Analysis & Recommendations

1. Rating the Carriers

Based on the investigation undertaken here, it is easy to rate the carriers on the degree to which they respect *Carterfone*, network neutrality, and open platform development principles. Broadly speaking, Verizon Wireless scores the most poorly across every category, while T-Mobile scores the best. AT&T and Sprint are in the middle.

Verizon Wireless

As documented, Verizon Wireless engages in the broadest range of discrimination and misrepresentational behavior. It violates *Carterfone* by blocking unaffiliated network equipment. It imposes what appears to be the most restrictive crippling of telephones in the industry, crippling Bluetooth and blocking Wi-Fi capable phones, practices for which it has been sued. Its preferred development environment, BREW, is strictly limited. Its wireless broadband services, advertised as “unlimited,” come with extensive and sometimes undisclosed usage limitations, violating both consumer protection norms and core network neutrality principles.

AT&T

AT&T is a GSM carrier, and locks its phones to the AT&T network. AT&T’s broadband data service is provided with severe restrictions similar to those of Verizon. However, accounts of enforcement are not as common with AT&T as with Verizon. AT&T also cripples its products in various ways. It disables Bluetooth features on its Treo smartphones and, in the case of the Nokia E61, forced the manufacturer to remove Wi-Fi capabilities. On the Apple iPhone, while unconfirmed, many believe that AT&T’s pressure led to the iPhone’s inability to run third-party applications. It’s also too early to tell if the iPhone will have true or crippled Wi-Fi capabilities.

Sprint

Sprint’s wireless broadband data services are provided with fairly reasonable restrictions, similar to those historically imposed by dial-up ISP operators. Historically, Sprint has taken chances on new and innovative platforms, like the Handspring Treo. Sprint, however, has led efforts to cripple Bluetooth on various platforms, and has generally consented to the blocking of Wi-Fi.

T-Mobile

T-Mobile, the smallest U.S. carrier (other than regional carriers like AllTel), offers the least restrictions. It, like AT&T, locks its telephones. It will allow customers who are aware of what “locking” is to request unlocking after

owning their phones for three months. T-Mobile is not a major player in the broadband wireless market, so its practices in that area are not easy to assess. T-Mobile seems to offer the most open Bluetooth capabilities in the industry. Along with AT&T's Apple iPhone, T-Mobile is also the only known carrier, as of January 2007, to have publicly made available Wi-Fi-capable telephones, although (as noted above) this comes at an extra cost to the consumer.

2. RECOMMENDATIONS

Recommendation 1: *Cellular Carterfone*

As described above, *Carterfone* was and still is among the most fundamental rules in telecommunications policy—the *Magna Carta* of telecommunications competition. Of the various potential actions, adapting *Carterfone* to the mobile world is likely to have the greatest positive consequences and the minimum negative side-effects.

In light of existing practices, what *Carterfone* means for the mobile industry is fairly clear. It means, first, that two existing carrier practices must stop:

- on CDMA networks, blocking the registration of non-carrier-affiliated telephones; and
- on GSM networks, “locking” of equipment to single networks.

A second reform is more ambitious yet more important. The industry or the FCC should, as in the Part 68 rules, define a basic interface to which any equipment manufacturer could build a mobile device and sell to consumers. As Eli Noam put it, “while the carrier could still offer and market its preferred equipment, it could not exclude other equipment, as long as it conforms to certain technical specifications pertaining to the RF transceiving function and non-discriminatory industry specifications for air interfaces standards. These specifications could not close equipment third-party applications or access to other network protocols offered by other types of providers, as long as it conforms to the FCC’s software defined radio rules.”⁴⁸

Some may argue that a standard interface for mobile networks would be highly complex or impossible. This report, obviously, cannot address the full set of technical issues involved. However, there are reasons to think that impossibility is an over-statement. The wireless world already has standardized interfaces—for example, the GSM standard contains the standardized SIM card (though its function is usually crippled by U.S. carriers). A standardized interface would work like any other in the phone or electric industry. Spectrum bandwidth is a commodity, and the interface would provide the user with a fixed maximum bandwidth and, like an electric meter, bill the consumer for the amount of bandwidth actually used.

The ramifications of such a rule are extremely important. Today, the mobile world is fixated on telephones, and to a lesser extent, messaging. However, given a standard interface, and the ingenuity of the electronics industry, we might expect major leaps forward in:

* ***Mobile video.*** Right now, large-scale deployment of mobile TV or video services, especially independent of the cell phone model, is perpetually stalled in “carrier trials.” Companies in this sector are completely subject to the carrier’s plans for mobile TV. To take one example, Crown Castle International’s *Modeo* product has been thrown into jeopardy for want of carrier cooperation with its plans.⁴⁹ A consumer’s ability to buy a hybrid device, or even a “pure” IP device, that could simultaneously access other services on other frequencies could drive further innovation and development—and not just for video.

* ***Mobile geolocation tools.*** Presently, the technical possibilities of geolocation are highly underutilized. For example, an electronics company could sell a small device, using a tiny amount of wireless bandwidth, that could broadcast its location, making it possible and cheap to keep track of pets, vehicles and other highly mobile entities on a global scale. The limits on developing both devices and software that might inter-operate with wireless networks have so far made such products scarce in the market.

* ***Mobile functions built into more devices.*** There are telephones with cameras, yet it is hard to find a camera with mobile functions—that is, a camera that can download location-specific information, or upload photos it has taken. Cameras are one example, but given a standardized mobile interface, wireless communications might be built into cameras, refrigerators, e-Books, and other devices. In the 1990s, many spoke of the refrigerator that might call the grocery store to order more milk. Access to even tiny amounts of low-frequency wireless spectrum could make that a possibility, yet the ability of devices to inter-connect between these applications and commercial networks is a critical limiting factor.

* ***Phone variety.*** While the carriers do carry a wide variety of telephones, if phones were generally unlocked, we could expect see even greater product diversity. As detailed above, major companies introduce dozens of cell phones each year, only a handful of which are sold in U.S. markets. Devices like the Danger “Sidekick” barely made it to market under current conditions—and are sold by one carrier only (T-Mobile). We know that a better variety of phones is available outside of the United States. But we have no idea how many devices are dying on the drawing board for want of carrier approval in the United States.

The full implementation of *Carterfone*, would, over time, transform the wireless industry. Rule 68 is arguably the most successful rule created by the FCC. Its success should be exported, for it could create the same explosion of innovation that the wireline industries experienced in the 1970s and 1980s.

Recommendation 2: *Network Neutrality*

Wireless carriers should be subject to the same core network neutrality principles under which the cable and DSL industries currently operate.

In the early 2000s, the use of discriminatory terms of service and blocking of applications were strongly condemned by Chairman Michael Powell and the Federal Communications Commission. In a 2003 speech, Powell outlined the following “four network freedoms”:

1. ***Freedom to Access Content.*** First, consumers should have access to their choice of legal content.
2. ***Freedom to Use Applications.*** Second, consumers should be able to run applications of their choice.
3. ***Freedom to Attach Personal Devices.*** Third, consumers should be permitted to attach any devices they choose to the connection in their homes.
4. ***Freedom to Obtain Service Plan Information.*** Fourth, consumers should receive meaningful information regarding their service plans.⁵⁰

At a minimum, regulators should use the same basic general scrutiny for the broadband services of wireless carriers. At issue, in particular, are the contractual bans on the use of wireless connections for perfectly legitimate purposes, such as buying music from iTunes or downloading videos from YouTube. Such restrictions, even if enforced unevenly, risk warping application development by discouraging the use of some applications over others. If the carriers’ true goal is managing bandwidth, they should make that goal explicit. Metering of bandwidth is far more conducive to innovation, competition and consumer choice than is blocking.

Recommendation 3: *More Disclosure Rules*

Competition depends on information to work. Consumers cannot make wise decisions unless they know, for example, the daily or monthly bandwidth limits on wireless broadband services. Advertising “unlimited bandwidth” while maintaining secret limits is not acceptable. Consumers must receive truthful and meaningful information about their service plan.

Today, under agreements with states, the carriers have agreed to disclose information relevant to billing and coverage. However, much relevant information remains missing or buried. Wireless carriers should be required to disclose the following limits placed on devices and services:

- Locks placed on devices, and how to remove them, if possible;
- The disabling of standardized protocols, such as Bluetooth; and,
- If Internet access is provided, accurate and prominent information on bandwidth limits, if any; and prominent disclosure of any limits placed on Internet services.

Recommendation 4: *A Standardized Development Environment*

It is clear that the mobile application environment is not what it could be. Calling it “a tarpit of misery, pain and destruction” may be a little strong, but it captures the sentiments of many developers.

The problems include failure to give developers access to phone resources, over-demanding developer qualification requirements, too much inconsistency among platforms, inconsistent operating systems, and overly restrictive controls on developers. The combination of these factors has made what might be a flourishing jungle of mobile applications much more of a desert.

It is doubtful that government can play a useful role in this area. Instead, this report recommends that mobile carriers and equipment manufacturers should fundamentally rethink their approach to the development of software and applications for mobile platforms. Working with developers to liberate and standardize mobile application development may well yield great dividends for all parties involved, including both carriers and consumers.

In addition to the OpenMoko model already discussed, there are many existing models for better industry cooperation in this area. They include the Internet Engineering Task Force and IEEE for major Internet and communications protocols, and the CableLabs initiatives for cable Internet standardization. The emphasis must be on giving developers access to the power of mobile platforms in a standardized way. Given tools, the potential for new and innovative applications for mobile platforms is hard to estimate.

Part IV: Economic Analysis

This final section addresses several difficult economic questions that are implicated by this paper. First, given many instances of product crippling, we must ask what motivates such behavior and whether crippling products might, in fact, ultimately serve consumer interests. Second, many may argue

that the competitive nature of the wireless industry makes the scrutiny of the industry in this paper unnecessary. Third, some of the recommendations in this paper, particularly the *Carterfone* recommendation, will yield important objections based on scarcity and network security. We address each issue in turn.

1. Why Cripple Products?

Some of the behavior described in this report presents a paradox. Why would carriers disable functions, or block development, that might be useful for consumers? Does crippling ultimately serve consumer interests?

A familiar framework for understanding the behavior discussed in this paper is to view it as an *infrastructure* problem, or as a problem of *vertical integration*.⁵¹ The carrier oligopoly controls an important part of the national infrastructure, namely the public's licensed spectrum that carries digital wireless signals. The relevant question is how the spectrum caretakers interact with related vertical markets: namely, the equipment and application markets which depend on the wireless spectrum.

Given these premises, the wireless carriers have an obvious interest in exercising control over vertical markets: maximization of revenue. Usually, but not always, maximizing revenue is a useful motive, for it suggests making the wireless networks and wireless services as useful to consumers as possible. Vertical integration or controls placed on the equipment and applications markets may represent efforts to maximize the utility of the overall platform for consumers. For example, in some instances, careful "hand-in-glove" cooperation between the carrier and equipment may yield a better product or service. That's arguably the case, for example, for the voice services that are the carriers' main offering. Each carrier works carefully with handset manufacturers to make sure its voice service is carried efficiently on the spectrum it controls.

In other instances, however, what the carriers want can be at odds with what is good for consumers. As we have seen in this report, the carriers often control or cripple product features that might be useful for consumers. At various times, different carriers have, as detailed above, blocked, delayed or conditioned the following features on mobile platforms:

- Wi-Fi technology,
- Bluetooth technology,
- Call timers on telephones,
- Photo transfer capabilities,
- Sound transfer capabilities,
- Email clients, and
- Internet Browsers.

Why do so, if, for example, Wi-Fi capabilities might make a smartphone more useful? Logically, a more useful platform, if better for consumers and developers, should ultimately be good for the carrier too. Here we develop three explanations for this behavior—one that suggests that crippling serves consumer interests, and two suggesting it does not.

Price Discrimination. Crippled products can sometimes form part of a price discrimination (or market segmentation) strategy that in some instances can, on the whole, be socially beneficial. Companies will sometimes cripple a product so as to sell it at a lower price to those with less money. Industries routinely segment markets, by quality and by price, a practice that generally enhances overall consumer welfare. For example, the IBM Series E Laser Printer was a fast printer that was deliberately slowed down and sold for less to home users. Similarly, Microsoft in 2004 released a crippled version of Windows, named “Windows Starter XP,” that was substantially less capable than Windows XP—for example, capable of only running three applications at any time.⁵² The idea was to produce a weaker version of Windows to sell in developing countries and sell it for less, thereby serving consumers who cannot afford the full Windows XP.

Some of the behavior described in this paper looks like a partially-implemented price discrimination strategy. For example, if AT&T prevents Nokia from marketing the Wi-Fi capable e61 Smartphone in the United States, it may be crippling the product so as to be able to sell it cheaper.⁵³ Similarly, if 3G broadband services are limited to web browsing only, it may represent an effort to offer less capable products for poorer consumers.

Whether price discrimination in high-tech markets is on balance socially beneficial remains an open question. But the oddity of the facts discussed here is that while the crippled product is made available, no full-featured and higher priced version of the product is made available. Verizon will sell a Bluetooth-crippled phone, but not a Bluetooth-capable phone. Most carriers will not sell a Wi-Fi phone at any price. In other words, the other half of the price discrimination strategy is missing. Out of Superman is made Clark Kent, but without retaining Superman. That fact seems to raise doubts as to whether what the carriers are engaged in what can properly be called a price discrimination strategy.

Protecting Revenue Sources. A more plausible explanation for the behavior seen here is this: carriers believe it makes sense to block a feature to protect an existing revenue source, or to keep their own costs low, even if that behavior is bad for actors in the equipment and application markets and hurts innovation. For example, again, many carriers cripple Bluetooth’s media transfer capabilities. Bluetooth makes it easy to communicate between a computer and cell phone, so blocking helps preserve an existing

revenue source—the prices the companies can charge for songs, ringtones, wallpapers, and other content. In other words, with a more open system, a consumer could get what she wanted without passing the carrier’s “tollbooth.”

Unfortunately, protecting such tollbooths comes at a price. Crippling Bluetooth also retards any market for Bluetooth-compatible devices, and makes it much more difficult for users of cell phones to move data between their phones and computers. This kind of problem is a *spillover*, or *externality* problem. It may be that the money a carrier makes on ringtone downloads is more than it can expect to make from providing consumers with fully functioning Bluetooth. For that reason, it may narrowly make sense for a wireless carrier to block Bluetooth. But the carrier will not be taking into account the externalized costs of such action—the costs to consumers and equipment manufacturers who would like to make Bluetooth-compatible devices other than headsets.

Cultural Explanations—the Bell Model. A different explanation for the behavior seen here is that the carriers are simply acting to maximize their control and power over their networks. They have adopted a strategy that prevents the development of business models or revenue streams that depend on their network, yet over which they would lack significant control. We can call this the Bell model, after the same patterns of behavior exhibited by the pre-breakup Bell Company.⁵⁴

Interestingly, the strategy may be a mistake. The carriers may, in some cases, block the development of services that might make the cell phone platform more valuable, and therefore are ultimately good for the carrier. The industry sometimes appears to prefer that a new service or application not exist at all rather than develop into a lucrative industry whose pricing and conduct it might not be able to control.

The major example of this kind of behavior is the strategy adopted in the area of mobile software development. Given standardization and more openness, software developers might develop a range of applications at the rate seen in Web development. But the carriers seem hesitant to allow such development to occur, possibly out of the idea that if any new services come into existence, the services should be “theirs.” Analyst Andrei Jeziarski describes the carriers’ behavior as follows: “It’s not clear if the carriers will make money from these value-added services. So if the economic model is still unclear, why give away more control earlier than you have to?”

While this strategy makes a certain amount of intuitive sense, it may be a mistake. The industry, or parts of it, appears obsessed with the fear of becoming “just a pipe” or selling “a commodity,” and thereby giving up control

over what happens on the pipe. But obsessions come at a cost, and may lead, in some instances, to outcomes contrary to the interests of the carrier.

2. Regulating Under Conditions of Oligopoly?

Some of the recommendations in this report, particularly the *Carterfone* recommendation, may lead to the response that the wireless industry is generally unsuited for *Carterfone*-style rules. There are two main reasons. The first is based on the argument that the wireless industry is highly competitive, unlike AT&T in the 1950s.

The AT&T monopoly in the 20th century was accepted and even maintained by government action. By contrast, it is often said that the wireless mobile market is “fiercely competitive,” as if a competitive cell phone company were as easy to start as a hot dog stand. That claim, oft repeated, does not stand up to closer examination.

Structurally, the mobile wireless industry has a natural and major barrier to entry—acquisition of sufficient spectrum. Under today’s conditions, that means spending hundred of millions at a minimum—and more likely billions or perhaps even tens of billions of dollars—to acquire sufficient spectrum to enter the market. For example, T-Mobile announced in 2006 that it would enter the 3G broadband wireless market. It also announced it would use \$4.2 billion of spectrum to do so. The oldest fact in broadcast, spectrum scarcity, is a physical fact that cannot help but affect the conditions of competition in the wireless world.

It is important to point out that, in one respect, the justifications for regulating AT&T were, to some degree, on weaker theoretical ground than in today’s wireless environment. The basis was a theory of natural monopoly in the local loop, which has subsequently undergone much criticism.⁵⁵ On the contrary, there is less doubt that, using today’s technologies and the federal government’s outdated spectrum allocation policies, spectrum suitable to support a wireless mobile phone company is scarce. That scarcity, in turn, has obvious market effects.

The future of the industry, of course, is hard to predict. There is a chance that ongoing spectrum auctions may lead to greater market entry. Smaller firms, like Clearwire Communications, which offers wireless broadband services in some markets, may attempt to provide services that compete with the major carriers. Yet the current trend is in the opposite direction. The industry is a textbook oligopoly—premised on a bottleneck resource—with four major players. While no one should discount the possibility of new entrants, we must also look at the facts as they are, not as how we might imagine them to be.

Whatever we might expect from oligopoly competition, there are also some reasons to believe that even competition between the carriers may not eliminate certain anticompetitive practices. Many of the practices described in this report are beneficial for an individual company to pursue, yet impose negative spillovers on adjacent markets or society at large.⁵⁶ Those practices will not necessarily be eliminated by oligopolistic competition.

That may particularly be the case where the feature in question is not well understood by consumers, and not often a relevant decisional factor. For example, say a wireless firm can narrowly make more profit by crippling Bluetooth and protecting some of its ringtone revenue. Unless consumers are aware of the crippling and its implications, it will be difficult for a firm to differentially compete by *not* crippling Bluetooth. It is relatively easy for consumers to compare firms by metrics like price and network coverage. But taking the time to do comparisons on the basis of whether the carrier cripples technological feature sets is something only a select group of consumers have the time or expertise to do.

That leads to a final reason that the existence of competition cannot be a reason not to examine carrier practices. As just described, for competition to work, consumers must know what is going on. To say that competition can then be a reason not to examine industry practices and mandate as much disclosure as possible is exactly backward. For it is such information that is necessary to make competition work in the first place.

3. Spectrum Scarcity, Network Security and Other Arguments

A different objection to *Carterfone* rules is the argument that the scarcity of wireless spectrum and network security make any such rules infeasible.

Spectrum Scarcity. While spectrum scarcity affects market structure, it also may affect the kind of rules that can be effectively maintained in the wireless space. To take *Carterfone*, for instance, how can carriers allow devices they have not approved on a network of scarce spectrum?

The problem with this argument is that scarcity is an economic feature of not just wireless networks, but wireline networks as well. Both wireless and the local loop are last-mile networks of limited available bandwidth, and, in fact, the bandwidth available on a copper local loop is considerably less than on some of today's wireless networks. For both products, it can be claimed that third parties cannot be trusted to make products that respect the shared needs of the network. In the *Hush-a-Phone* case, for example, AT&T claimed that third parties would bear "no responsibility for the quality of telephone service, but [be] primarily interested in exploiting their products." Similarly, local carriers for years complained that modems abused the scarce resources of the phone network (by maintaining long connections). But as Judge

Robert Bork argued in another context: “All economic goods are scarce... since scarcity is a universal fact, it can hardly explain regulation in one context and not another. The attempt to use a universal fact as a distinguishing principle necessarily leads to analytical confusion.”⁵⁷

Does the fact that the local loop is reserved bandwidth (about 64 kbps), while wireless users share a far larger pool of bandwidth, make a difference? Yes, to a degree. You can leave your phone off the hook all day with little effect on the telephone network as a whole. However, a wireless connection left open would affect other customers.

The fact of shared bandwidth is important and true of wireless mobile networks. However, that is also true of most networks, including all Ethernet networks, the cable broadband networks, Wi-Fi networks, and other network designs. One advance over the last forty years of telecommunications technology and policy is a better understanding of what is possible using shared-bandwidth networks, and in fact many of the pieces of handling shared spectrum are already very well understood.

What is needed are private and sometimes government standards that allow a network to be shared. That’s how, for example, Ethernet and DOCSIS cable networks work. That is also, crucially, how many of the cell phone networks *already* work, through the GSM and CDMA standards. These standards already control and standardize how individual devices make use of scarce spectrum—making strange the argument that scarcity is unmanageable as a technological issue. The second necessary element for addressing scarcity is pricing that reflects the scarcity of the resource, which is also already partially implemented by current cell phone pricing.

One thing should be clear from this. The answer to scarcity that has been rejected is the insistence that one party need to have total control over all aspects of the network to make possible usage of shared and scarce bandwidth. The issue of scarcity is not, by first principles, as completely different on wireless and wireline networks as is often maintained. For that reason, the thinking on network attachments from the wireline world is properly considered here.

Network Security. Customer representatives for the various companies defended practices as varied as phone locking, whitelisting, Bluetooth crippling, and other practices as necessitated by the demands of scarcity or to protect network security. For example, Verizon Wireless originally justified crippling Bluetooth on its telephones as a means of preventing “fraud” and virus infections. AT&T made similar claims in opposing the *Carterfone* principles.

There are valid and important security concerns on wireless networks.⁵⁸ The point here is similar to the point just made about bandwidth scarcity. The question that must be asked is whether the issues of network security on wireless networks are fundamentally different from similar concerns on other networks. Jonathan Zittrain's work is the starting place for the debate over network security and what it should and should not justify.⁵⁹ As he points out, any allowance of open entry and competition is likely to lead to greater abuses. Yet it is also essential to remember that the abuses are a cost that comes with a benefit: innovation, flexibility and diverse social function.

Spam, viruses, junk mail and telemarketing are different names for problems that every information network faces. What this suggests is that network security must be taken seriously, but also cannot become a blanket answer to any scrutiny of carrier practices.

All Regulation of Access is Doomed. A final argument is that any public effort and perhaps any private effort to promote greater access to wireless networks is a bad idea. Drawing a comparison with UNE-P line sharing, Scott Wallsten of the Progress and Freedom Foundation writes that "regulating how wireless carriers allow their networks to be used would represent another version of regulating network access, and the history of such regulation does not bode well for its impact."⁶⁰ Oddly, most believe that the *Carterfone* rules, which "regulate network access," are among the successful in the history the FCC. Before *Carterfone*, the interconnection requirements of the early 20th century, critical to the growth of a national phone network, were also the "regulation of network access." In fact, nearly all telecommunications regulation is some version of regulating network access. The important question is not whether access is regulated, but whether it is done well. The line-sharing rules were a failure, while *Carterfone* was a smashing success.

The comparison of the *Cellphone Carterfone* proposal with the line-sharing rules of the 1990s is the wrong one. The rules urged here are, as the name suggests, a version of *Carterfone* rules. They were never an effort to provide a price-fixed access to the Bells' phone lines. Instead, they center on a consumer's right to attach the devices of his choosing to the Bell network, and their time has come in the wireless world.

Conclusion

In many respects, the mobile market is and remains a wonder. But the infancy of the wireless market is now passing, making greater public scrutiny of industry practices more appropriate and important. In the words of analyst David Passmore, "At some point, I think Americans are going to put their foot down and say, 'We won't tolerate this anymore.'"

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Endnotes

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- ¹ “Obstacles in the Mobile Platform: A Panel Discussion,” IT Conversations, June 30, 2005, available at: <http://www.itconversations.com/shows/detail810.html>.
- ² The first academic to suggest “Carterfone” for wireless was Eli Noam, in Eli M. Noam, “The Next Frontier for Openness: Wireless Communications,” Telecommunications Policy Research Conference, 2001.
- ³ <http://www.consumersunion.org/campaigns/escapecellhell/learn.html>.
- ⁴ See Jonathan Nuechterlein & Phil Weiser, *Digital Crossroads*, Ch. 8, 2005.
- ⁵ Mark Siegel quoted in Charles Babbington, “A Call to Let Your Phone Loose— Telecom’s New Battleground: Carriers’ Proprietary Controls,” *Washington Post*, February 9, 2007, available at: <http://www.washingtonpost.com/wp-dyn/content/article/2007/02/08/AR2007020802169.html>.
- ⁶ It is impossible to summarize the vast field of work on imperfect competition under conditions of oligopoly. For a recent work summarizing many of the main ideas, see: Xavier Vives, *Oligopoly Pricing: Old Ideas and New Tools*, MIT Press, 2000.
- ⁷ Jonathan Zittrain, *The Future of the Internet and How to Stop It*, forthcoming from Penguin and Yale University Press, 2007.
- ⁸ Noam, *supra* note 2.
- ⁹ The sources of the revenues in the diagram are approximate, and come from multiple sources, including eMarketer, September 2006, and the CTIA-Wireless Association website (www.ctia.org).
- ¹⁰ See Nuechterlein & Weiser, *supra* note 4, Ch. 8.
- ¹¹ See “Use of the Carterfone Device in Message Toll Tel. Serv.,” 13 F.C.C.2d 420, 1968.
- ¹² See “In the Matter of Hush-A-Phone Corp. et al., Decision,” 20 FCC 391, 415, 1955.
- ¹³ *Hush-a-Phone v. United States*, 238 F.2d 266, 1956.
- ¹⁴ See “Use of the Carterfone Device in Message Toll Tel. Serv.,” 13 F.C.C.2d 420.
- ¹⁵ For more on the process from “Carterfone” to a full network attachment right, see Glen Robinson, “The Titanic Remembered: AT&T and The Changing World Of Telecommunications” 5 *Yale J. on Reg.* 517, 521-23, 1988.
- ¹⁶ Comments of the Center for Technology and Democracy, “In re: Joint Petition for Rulemaking to Resolve Various Outstanding Issues Concerning the Implementation of the Communications Assistance for Law Enforcement,” April 12, 2004.
- ¹⁷ See Mark Lemley & Lawrence Lessig, “The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era,” 48 *UCLA L. Rev.* 925, 2001.
- ¹⁸ Marguerite Reardon, “Will ‘unlocked cell phones’ free consumers?” *CNET News.com*, January 24, 2007, available at: http://news.com.com/Will+unlocked+cell+phones+free+consumers/2100-1039_3-6152735.html?tag=st.prev.
- ¹⁹ *Ibid.*
- ²⁰ Elliott Drucker, “Handset Distribution: The Technology “Gatekeeper,” *Wireless Week*, July 15, 2005.
- ²¹ Reardon, *supra* note 18.
- ²² Verizon Customer Service, October 5, 2006.
- ²³ Library of Congress, Copyright Office, “Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies,” 71 Federal Register 68472, November 27, 2006.
- ²⁴ See post at <http://cellphoneforums.net/sprint-pcs/t235449-picture-messaging-wit-sprint.html>.
- ²⁵ See Q Daily News, “Verizon’s Greed Hurts its Customers,” April 20, 2006, available at: <http://q.queso.com/archives/001903>.
- ²⁶ “WAP – A Technical Failure,” available at: <http://www.freeprotocols.org/wapTrap/split/node4.html>.
- ²⁷ See “The Motorola v710: Verizon’s New Crippled Phone,” interview with Brenda Raney by Jonathan A. Zdziarski, reported at: <http://www.pencomputing.com/wireless/motorolav710.html>.
- ²⁸ *Opperman v. Cellco Partnership*, LOS ANGELES SUPERIOR COURT, Case No. BC 326764 NOTICE OF CLASS ACTION SETTLEMENT AND APPROVAL HEARING, Jan. 6, 2005, available at: <http://www.verizonwireless.com/pdfs/v710settlement/Second%20Notice%201-4-06%20FINAL.pdf>.
- ²⁹ www.hellomoto.com.
- ³⁰ Gary Krakow, “Nokia e62: The best smartphone ever?” *MSNBC.com*, August 24, 2006, available at: <http://www.msnbc.msn.com/id/14456766/>.
- ³¹ For a comparison of different approaches to using spectrum as implied by the 3G/WiFi comparison, see: Yochai Benkler, “Some Economics of Wireless Communications,” 16 *Harvard Journal of Law & Technology* 25, 2002.

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- ³² http://telephonyonline.com/mag/telecom_speed_trials_umts_2/.
- ³³ Note that in other versions of the Verizon advertisement, it advises, in small type, that “unlimited” refers only to email and Web-surfing.
- ³⁴ Verizon Terms of Service, available at: <http://www.verizonwireless.com/b2c/store/controller?item=planFirst&action=viewPlanDetail&catId=409>, accessed October 21, 2006.
- ³⁵ See AT&T Terms of Service, available at: http://onlinestorez.AT&T.com/cell-phone-service/wireless-phone-plans/cell-phone-plans.jsp?WT.svl=2206800007&q_catid=2206800007, accessed October 21, 2006.
- ³⁶ See, e.g., Glenn Fleishman, “Why 3G Isn’t Wi-Fi: Bandwidth Limits,” available at: <http://www.Wi-Finetnews.com/archives/006562.html>.
- ³⁷ Ed Foster, “Verizon Sneakwrap Tactics Channel the Ghost of @Home,” *Infoworld*, October 17, 2006.
- ³⁸ *Ibid.*
- ³⁹ Joseph S. Enoch, “Verizon Limits its Unlimited Broadband Service,” *ConsumerAffairs.com*, July 25, 2006, available at: http://www.consumeraffairs.com/news04/2006/07/verizon_unlimited.html.
- ⁴⁰ *Ibid.*
- ⁴¹ Michael Mace, “The River and the Dam: CTIA and the Future of Web Apps,” *Mobile Opportunity*, available at: <http://mobileopportunity.blogspot.com/2006/09/river-and-dam-ctia-and-future-of-web.html>.
- ⁴² IT Conversations, *supra* note 1.
- ⁴³ Eric von Hippel, *Democratizing Innovation*, MIT Press, 2005.
- ⁴⁴ BREW website, <http://brew.qualcomm.com/brew/en/operator/operator.html>.
- ⁴⁵ David Passmore, “(Un)acceptable Use,” *Business Communications Review*, August 1, 2006, available at: http://www.bcr.com/opinion/next_generation_networks/unacceptable_use_200608011134.htm.
- ⁴⁶ “Today’s cell phone system argues for retaining network neutrality,” *News Forge*, July 21, 2006, available at: <http://business.newsforge.com/business/06/07/19/206209.shtml?tid=138&tid=3>.
- ⁴⁷ Danah Boyd, “Innovating Mobile Social Technologies (damn you Helio),” *Apopenia*, May 3, 2006, available at: http://www.zephoria.org/thoughts/archives/2006/05/03/innovating_mobi.html.
- ⁴⁸ See Noam, *supra* note 2.
- ⁴⁹ Junko Yoshida, “Modeo’s CEO quits as mobile TV struggles in U.S.,” *EE Times*, December 11, 2006.
- ⁵⁰ See Michael K. Powell, “Preserving Internet Freedom: Guiding Principles for The Industry,” 3 *J. ON TELECOMM. & HIGH TECH L.* 5, 2004.
- ⁵¹ See generally, Joseph Farrell & Phillip Weiser, “Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age,” 17 *Harvard J. of L & Tech.* 85, 2003; Christopher S. Yoo, “Vertical Integration and Media Regulation in the New Economy,” 19 *Yale. J. Reg.* 171, 2002; Tim Wu, “Why Have a Telecommunications Law?” 5 *J. Telecommunication & High Tech. L.* 15, 2006.
- ⁵² “Microsoft Announces Windows XP Starter Edition Pilot Program,” August 11, 2004, available at: <http://www.microsoft.com/presspass/press/2004/aug04/08-11WinXPStarterPilotPR.mspx>.
- ⁵³ This issue was discussed by Randy Picker at http://uchicagolaw.typepad.com/faculty/2006/08/the_Wi-Fi_cell_p.html.
- ⁵⁴ More speculation on the “mental models” and their influence over decisions in telecommunications can be found in the work of Jeffrey Funk, particularly in his comparison of Japanese and U.S. developments. See, e.g., Jeffrey L. Funk, “Solving the Startup Problem in Western mobile Internet markets,” *Telecommunications Policy*, 2006 doi:10.1016/j.telpol.2006.11.003.
- ⁵⁵ See, e.g., Gerald R. Faulhaber, “Bottlenecks And Bandwagons: Access Policy In The New Telecommunications,” *Handbook of Telecommunications Economics*, Vogelsang and Cave, eds., 2004 (criticizing natural monopoly assumptions and noting that multiple local loops existed in the 1890s).
- ⁵⁶ See Brett M. Frischmann & Mark A. Lemley, “Spillovers,” 107 *Columbia L. Rev.* 257, 2007.
- ⁵⁷ *Telecommunication Research & Action Ctr. v. FCC, District of Columbia Circuit Court of Appeals*, 801 F.2d 501, 5081986.
- ⁵⁸ Tom Lookabaugh & Douglas Sicker, “Multimedia Quality of Service and Net Neutrality on Wireless Networks,” Presentation to International Advanced Symposium on Radio Technologies (ISART), 2006, available at: http://www.its.blrdoc.gov/isart/art06/slides06/sic_d/sic_d_slides.pdf.
- ⁵⁹ See Zittrain, *supra* note 7.
- ⁶⁰ Scott Wallsten, “Wireless Net Neutrality?” *PFF Blog*, February 11, 2007, available at: http://blog.pff.org/archives/2007/02/wireless_net_ne.html.

Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

FILE COPY

In the Matter of)
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Skype Communications S.A.R.L.)
)
Petition to Confirm A Consumer's Right)
to Use Internet Communications Software)
and Attach Devices to Wireless Networks)
)
)

RM - _____

FILED/ACCEPTED

FEB 20 2007

Federal Communications Commission
Office of the Secretary

**PETITION TO CONFIRM A CONSUMER'S RIGHT TO USE INTERNET
COMMUNICATIONS SOFTWARE AND ATTACH DEVICES TO WIRELESS
NETWORKS**

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Dated: February 20, 2007

SUMMARY

As the wireless industry matures, consolidation and the relationship between handset manufacturers and carriers are producing market practices that raise substantial questions about whether consumers are receiving the maximum benefits of wireless competition. For example, carriers are beginning aggressively to influence software and product design to the detriment of consumers.

As the wireless market has matured and wireless handsets have become an integral part of most Americans' lives, carriers are using their considerable influence over handset design and usage to maintain control over and limit subscribers' right to run software communications applications of their choosing. Instead of carrying the subscribers' messages indifferent to content, carriers have exerted more and more control over the way consumers access the mobile Internet. In an effort to prefer their own affiliated services and exclude rivals, carriers have disabled or crippled consumer-friendly features of mobile devices. Carriers are doing so, moreover, in violation of the Commission's *Carterfone* principle and the strictures of the Commission's original order permitting the bundling of consumer equipment and wireless service. The Commission should act now to enforce *Carterfone* and unlock the full benefits of wireless price competition and innovation.

In light of these developments, Skype respectfully requests that the Commission make unmistakably clear that *Carterfone* will be enforced in the wireless industry, to initiate a proceeding to evaluate wireless carrier practices in light of *Carterfone*, and to create an industry-led mechanism to ensure the openness of wireless networks. Doing so will ensure both that consumers retain a right to run the applications of their choosing and attach all non-harmful devices to the wireless network. Finally, Commission involvement will ensure that carriers cannot use illegitimate network management practices as an excuse for otherwise anti-consumer behavior.

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Software Of Their Choice and Attach)
Non-Harmful Devices to Wireless)
Networks)

**PETITION TO CONFIRM A CONSUMER'S RIGHT TO USE INTERNET
COMMUNICATIONS SOFTWARE AND ATTACH NON-HARMFUL
DEVICES TO WIRELESS NETWORKS**

Skype Communications S.A.R.L. hereby submits this Petition to request enforcement of the Commission's *Carterfone* principle in the market for wireless communications and Internet access.

Wireless companies have succeeded in bringing a wide range of telephony services to market and have made commendable strides since the FCC first allocated spectrum to their use. Yet, as the wireless industry matures, carriers are beginning aggressively to influence software and product design to the detriment of consumers. Consolidation and the relationship between handset manufacturers and carriers are producing market practices that raise substantial questions about whether consumers are receiving the maximum benefits of wireless competition.

At the same time wireless carriers were building out their networks, the software industry was building out its capabilities by inventing applications that run on broadband platforms of every variety, including wireless. Whereas in the past services were inextricably tied to a particular transmission medium, applications like Skype have been uncoupled from the underlying Internet access network and can operate across heterogeneous broadband platforms.

In the wireless arena, however, carriers are using their considerable influence over handset design and usage to maintain an inextricable tying of applications to their transmission networks and are limiting subscribers' rights to run applications of their choosing. Carriers are doing so, moreover, in violation of the Commission's *Carterfone* principle and the strictures of the Commission's original order permitting the bundling of consumer equipment and wireless service.

In light of these developments, Skype respectfully requests that the Commission declare that *Carterfone* applies fully to wireless networks, to initiate a rulemaking proceeding to evaluate wireless carrier practices in light of *Carterfone* and to enforce *Carterfone*, and to create an industry-led mechanism to ensure the openness of wireless networks. Doing so will ensure both that consumers retain a right to run the applications of their choosing and a right to attach all non-harmful devices to the wireless network. These essential rights will prevent carriers from using illegitimate network management practices as an excuse for otherwise anti-consumer behavior.

The Commission should act now to enforce *Carterfone* and the requirement to maintain an open network to unlock the full benefits of wireless price competition and innovation. It has been almost 15 years since the Commission last took a comprehensive look at the wireless industry and its practices that impact the Commission's *Carterfone* rule. It is an understatement to say that much has changed in the interim; it is time for another look.

I. INTRODUCTION AND SUMMARY

Consumers' access to wireless services has come a long way since the Commission's decision to allocate spectrum to mobile telephony in 1968.¹ Today, almost forty years later, and some twenty-five years since the first commercial cellular networks were authorized,² wireless telecommunications are an unquestioned success, providing mobile telephone service to well over 200 million subscribers.³ Within the last few years, the number of wireless subscribers surpassed the number of subscribers of traditional, wireline

¹ *An Inquiry Relative to the Future Use of the Frequency Band 806-960 MHz; and Amendment of Parts 2, 18, 21, 73, 74, 89, 91 and 93 of the Rules Relative to Operations in the Land Mobile Service Between 806 and 960 MHz*, Notice of Inquiry and Notice of Proposed Rulemaking, Docket No. 18262, 14 FCC 2d 311 (1968).

² *An Inquiry Into the Use of the Bands 825-845 MHz and 870-890 MHz for Cellular Communications Systems; and Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems*, Report and Order, CC Docket No. 79-318, FCC 81-161, 86 FCC 2d 469 (1981).

³ *Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, Eleventh Report, WT Docket No. 06-17, FCC 06-142, at 96 (rel. Sep. 29, 2006) (Table 1, showing CTIA's estimate of the number of wireless subscribers nationwide) ("*Eleventh CMRS Competition Report*").

telephone service.⁴ For many Americans, the wireless handset has become indispensable.⁵ Increasingly, consumers are using wireless handsets not only for mobile voice service but for a range of Internet applications that have been customized to run on 3G handsets. These capabilities include mobile Internet calling, such as Skype, and an expanded array of mobile communications applications.

As the wireless market has matured and wireless handsets have become an integral part of most Americans' lives, the nature of the wireless carriers' relationship to their subscribers has changed, and not always for the better. Instead of carrying the subscribers' messages indifferent to content, carriers have exerted more and more control over the way consumers access the mobile Internet. In an effort to prefer their own affiliated services and exclude rivals, carriers have disabled or crippled consumer-friendly features of mobile devices, maximizing their financial advantage at consumers' expense.

The public interest policy issues presented by these carrier practices are not new. In its celebrated *Carterfone* decision, and in later proceedings to oversee wireless carrier consumer equipment bundling practices, the Commission evaluated whether wireless carriers might frustrate innovation or price

⁴ *Local Telephone Competition: Status as of June 30, 2006*, at 1 (Jan. 2007), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-270133A1.pdf (listing number of wireline and wireless telephone subscribers as of June 30, 2006 as 172 million and 217.4 million, respectively).

⁵ See Roger Cheng, *Telecom Companies Pin Hopes on Developing Mobile Commerce*, Wall St. J. Apr. 17, 2006, at B6 (quoting the Chief Operating Officer of Sprint Nextel as saying "there are only three forgotten things consumers will return home for: a cellphone, a wallet or purse and keys.").

competition. A new inquiry into the carriers' restrictive practices is particularly relevant today, as carriers roll-out a third generation of wireless service. If policy is set correctly, the arrival of 3G services could offer tremendous new sources of price competition provided by entities such as Skype, which offer free or affordable voice calling through applications customized to run on mobile devices. Before anti-consumer practices take root and innovation suffers, the Commission should examine the policies that have guided the industry to date and determine if changes are required to keep wireless communications open to innovation and competition.

The relationship between wireless carriers and handset manufacturers is of increasing concern because a growing number of communications services are going mobile. Just as a growing number of consumers are cutting the cord,⁶ we can expect that over time, some consumers will substitute 3G wireless Internet access for wired Internet access. Therefore, the time is right to set the basic rules of the road for that transition to ensure that the *Carterfone* principle is honored in the market for mobile communications and Internet access.

Skype requests that the Commission initiate a proceeding explicitly to enforce its *Carterfone* policy in the mobile communications and Internet age. The Commission's *Carterfone* policy allowed consumers to attach any device to the

⁶ See *Eleventh CMRS Competition Report* at 89-90, paras. 205-07 (citing various studies estimating that, in late 2005, approximately eight percent of U.S. households had given up their landlines in favor of wireless phones, twelve percent of wireless phone subscribers use their mobile phone as their only phone, and nearly twenty percent of recent wireless phone purchasers did not subscribe to landline service).

wireline network as long as it did not harm the network.⁷ This led to an explosion of innovation in the market for customer premises equipment (CPE). That same principle, applied to Internet applications and other wireless devices, would liberate software innovation and free equipment manufacturers from unreasonable control by carriers, enabling them to incorporate a variety of features in handset. Most importantly, it would stand as an explicit endorsement that consumers have an unfettered right to run applications of their choosing. It would also be an explicit elaboration of the Commission's broadband policy, which establishes that consumers "are entitled to connect their choice of legal devices that do not harm the network" and that "consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement."⁸

As part of such review, the Commission should create a mechanism to increase wireless industry transparency. Doing so will help ensure that the Commission protects users' rights to run the Internet applications of their choosing.

In submitting this Petition, Skype recognizes that software applications such as Skype are part of an interdependent ecosystem of wireless carriers, mobile operating system (OS) developers and device manufacturers. These relationships are fast-moving and multi-dimensional. This Petition urges the

⁷ *Use of the Carterfone Device in Message Toll Telephone Service*, 13 FCC 2d 420, 424-25 (1968).

⁸ *Broadband Policy Statement*, FCC 05-151, at 3. It should be noted that the Commission specifically cited *Carterfone* as support for the "attachment" principle of its broadband policy. *Id.* at n. 13.

Commission to act as it has done in similar situations,⁹ in a manner that balances marketplace competition with meaningful government oversight.

Section II below discusses the background, the current market structure, and the need for action by the Commission. Section II.A discusses the history of the *Carterfone* principle and how it has fostered innovation in various contexts. Section II.B describes several restrictive practices by wireless carriers that raise questions about the nature of carriers' control over the market for wireless devices. Section II.C discusses the significant changes in the wireless marketplace since the Commission last examined the effect of carrier practices on the development of the handset market.

After establishing the need for Commission action, Section III requests the Commission to declare that wireless carrier services are subject to the *Carterfone* principle that consumers have the right to attach any non-harmful device of their choosing to the network and that this, by necessity, includes users' rights to run Internet applications of their choosing.

Having clarified that the principle of *Carterfone* applies to wireless carriers, Section IV asks the Commission enforce it by initiating a rulemaking proceeding to determine whether the wireless carriers' restrictive practices described in Section II.B are consistent with the carriers' full *Carterfone* obligations, including consumers' rights to use Internet communications software of their choosing. As

⁹ For example, the Commission has followed a model of industry standard-setting along with regulatory oversight in establishing compatibility between Cable TV and DTV receivers ("plug-and-play").

part of this proceeding, the Commission also should create an industry-led mechanism, discussed in Section V, to ensure the openness of wireless networks through transparent and neutral technical standards.

II. MARKET STRUCTURE AND THE NEED FOR COMMISSION ACTION

The wireless industry remains the only widely-used communications network in which the network operators exercise effective control over the devices used by consumers. In other contexts, the Commission has applied a basic connectivity principle that limits the ability of network operators to leverage their control over the transmission network into the adjacent market for equipment and the software that runs on that equipment. This principle has led to innovative equipment markets as equipment manufacturers proceed with the assurance that any network-compatible device can compete in the marketplace based on its acceptance by consumers rather than the ability of manufacturers to strike deals with network operators. Likewise, software developers such as Skype are more able to offer innovative products because there is some level of assurance that applications will run as they have been designed. This principle of “innovation without permission” has enabled the Internet software industry to thrive.

A. The Commission Has Consistently Applied A Policy of Enabling Consumers to Choose What Devices They Attach to the Network

The basic connectivity principle discussed above was expressed almost forty years ago in the wireline telephone context in the Commission's *Carterfone* decision, which ended telephone carriers' exclusive control over the devices that consumers were allowed to "attach" to the network.¹⁰ In the wired world, since *Carterfone*, consumers have the freedom to attach whatever devices they choose to their phone lines, as long as the device does no harm to the network. This is made possible by technical standards such as those of the RJ-11 telephone jack.

The freedom to attach non-harmful devices to the network was first at issue in the *Hush-a-Phone* case, filed almost six decades ago. In this case, the plaintiff challenged AT&T and other local phone company tariffs that "forbid attachment to the telephone of any device 'not furnished by the telephone company.'"¹¹ AT&T argued that in order to provide quality telephone service to the public, it needed to provide all equipment itself and prohibit any "foreign attachments." After eight years of litigation, the D.C. Circuit ordered that a telephone subscriber has the "right reasonably to use his telephone in ways which are privately beneficial without being publicly detrimental."¹²

The Commission later followed the precedent of *Hush-a-Phone* in the seminal *Carterfone* case, finding invalid a tariff that prohibited "the use of

¹⁰ 13 FCC 2d at 424-25.

¹¹ *Hush-a-Phone Corp. v. U.S.*, 238 F.2d 266, 267 (D.C. Cir. 1956).

¹² *Id.* at 269.

interconnected devices which do not adversely affect the telephone system.”¹³ Following *Carterfone*, the Commission progressively deregulated network attachments to allow users to connect any device that complied with a basic set of rules outlined in Part 68 of the Commission’s rules.

In the *Second Computer Inquiry* proceeding, the Commission extended the basic principle of *Carterfone* into the market for enhanced services, requiring that common carriers sell or lease CPE separate and apart from the carrier’s services.¹⁴ In doing so, the Commission wanted to maximize consumer choice by ensuring that they have the ability to choose their own equipment and service packages to meet their needs.¹⁵ The Commission noted that its reasoning “was an outgrowth of [its] *Hush-a-Phone* and *Carterfone* decisions which confirmed the existence of broad consumer rights under Section 201(b) and 202(a) of the Act.”¹⁶ This decision, coupled with the technical standards of Part 68, left equipment manufacturers free to develop such things as the personal modem and then increasingly faster versions of the “Hayes compatible” modem, which in turn led to growing numbers of consumers accessing the Internet via dial-up ISPs.

¹³ 13 FCC 2d at 423. The Commission noted the “[t]he principle of *Hush-a-Phone* is directly applicable here, there being no material distinction between a foreign attachment such as *Hush-a-Phone* and an interconnection device such as the *Carterfone*, so far as the present problem is concerned.” *Id.* at 423-24.

¹⁴ *Amendment of Section 64.702 of the Commission’s Rules and Regulations (Second Computer Inquiry)*, Final Decision, 77 FCC 2d 384; *modified on recon.*, 84 FCC 2d 50 (1980); *further modified* 88 FCC 2d 512 (1981), *aff’d sub nom.*, *Computer and Communications Industry Ass’n v. FCC*, 693 F.2d 198 (D.C. Cir. 1982), cert. denied, 461 U.S. 938 (1983), *aff’d on second further recon.*, FCC 84-190 (rel. May 4, 1984).

¹⁵ 77 FCC 2d at 443, para. 149.

¹⁶ *Id.* at 440, para. 142.

Given the positive effects of the *Carterfone* principle, Congress extended it beyond its original application in the telephone market. For example, as part of the Telecommunications Act of 1996, Congress established a policy of consumer choice in the market for set-top boxes or navigation devices. In passing Section 629 of the Communications Act, Congress required the Commission to work with industry standard-setting organizations to adopt regulations that ensured the competitive availability of set-top boxes and other equipment used to access video programming. The Commission was to ensure that equipment was to be made available from “manufacturers, retailers, and other vendors not affiliated with” the network operators.¹⁷ In implementing Section 629, the Commission required network operators to cease integrating security and non-security functions in a single device, noting that such a rule would “facilitate the development and commercial availability of navigation devices by permitting a larger measure of portability among them, increasing the market base and facilitating volume production and hence lower costs”¹⁸ and would “allow[] manufacturers to provide a diverse array of equipment.”¹⁹ The context was different but the principle was pure *Carterfone*.²⁰

¹⁷ 47 U.S.C. 549(a).

¹⁸ *Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices*, Report and Order, CS Docket No. 97-80, FCC 98-116, para. 49 (rel. June 24, 1998).

¹⁹ *Id.*, para. 61.

²⁰ See *FCC Sets “Aggressive” Schedule for Interoperable Cable Set-top Boxes*, Comm. Daily (June 12, 1998) (“Acting [FCC] Cable Bureau Chief John Logan compared [the Commission’s set-top box] rules with the FCC’s ‘Carterfone’ principle, which said that any consumer telephone can be connected to the network as long as it doesn’t harm the

The innovation principle that is the foundation of the *Carterfone* rule can be described as “modularity” or the “end-to-end” principle – that is, any software designer or manufacturer can build a component of a finished service without seeking the permission of the network operator. In this environment, equipment manufacturers’ incentives are protected because they know they can reach consumers without worrying about whether the network operators will support their devices. This principle is widely recognized as enhancing competition, innovation, and consumer welfare.²¹ Whereas in the past services were inextricably tied to the transmission medium, using an end-to-end architecture, applications like Skype have been uncoupled from the underlying Internet access medium. This paradigm shift requires the Commission to likewise shift its *Carterfone* principle to ensure that consumers have an unfettered right to run applications of their choosing.

network.”)

²¹ See, e.g., Ex Parte Submission by Prof. Lawrence Lessig & Prof. Timothy Wu, CS Docket No. 02-52 (Aug. 22, 2003) (discussing the benefits of the “end-to-end” principle and the crucial role the principle has played in the growth of the Internet); Mark A. Lemley & Lawrence Lessig, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 UCLA L. Rev. 925 (2001); J.H. Saltzer et al., *End-to-End Arguments in System Design*, in *Innovations in Internetworking* 195 (Craig Partridge ed., 1988) (available at <http://web.mit.edu/Saltzer/www/publications/endtoend/endtoend.pdf>).

B. Wireless Carriers are Engaging in Restrictive Practices That Are Not in the Public Interest²²

1. Consumer Harm at the Device Layer

Skype's device partners depend largely on carriers to sell their devices. For the vast majority of U.S. wireless consumers, carriers sell phones that are highly subsidized and mask the true cost of the device.²³ Consequently, the market for wireless devices is unusual and distorted. This market distortion is of increasing concern as handsets become more versatile and are used to access a broader array of functions and services. As long as consumers used wireless service only for simple voice calls, the fact that they were largely confined to using carrier-supplied equipment resulted in limited harm.

However, as innovative "smart phones" marry the versatility of computers with the convenience of mobile equipment, manufacturers are poised to equip handsets with Skype features but are reluctant to do so if such features threaten wireless carriers' established business model. Such a "permission-based" approach to innovation creates an innovation bottleneck, as equipment manufacturers are forced to design equipment based on what carriers will allow, not necessarily what consumers want and the state-of-the-art will permit.

²² Professor Tim Wu, of Columbia University Law School, has recently completed a comprehensive study of this issue in a paper entitled, "Wireless Net Neutrality: Cellular Carterfone and Consumer Choice in Mobile Broadband," available at http://www.newamerica.net/programs/wireless_future

²³ The existence of substantial handset subsidies is used by the industry to justify exorbitant early termination fees (ETFs). The industry seeks to justify ETFs largely by the need to recoup the initial handset subsidy. See Petition of the Cellular Telecommunications & Internet Association, filed March 15, 2005. ETFs are one more way in which the wireless industry restricts the ability consumers to choose among available wireless services, including those based upon Wi-Fi connectivity.

a. **Product Design and Feature Crippling**

A clear example of the problem of wireless carrier control of the device market was the marketing of the Nokia E62/E61 smartphone. The Nokia E61, a high-end e-mail device and phone seen as a competitor to the BlackBerry and Palm's Treo, was released in Europe in the summer of 2006 and received favorable reviews. In the United States, however, Cingular (now AT&T) was the exclusive vendor of a stripped-down model known as the E62 — a crippled model which lacked, among other features, Wi-Fi connectivity, a feature that is increasingly popular among on-the-go consumers. One reviewer described the difference between the E62 and the E61 as follows:

The E61 also can do Wi-Fi. That means it can do lots of things without having to connect to a cellular phone network. What some carriers fear most is the E61's ability to handle VoIP calls when you're near a friendly wireless network. That's why we won't see Wi-Fi on the E62.²⁴

The Nokia smartphone marketed in the United States was stripped of a consumer-friendly feature for reasons that are unrelated to any harm that may be caused to the network. Intentionally removing Wi-Fi functionality from the Nokia E62 interferes with a consumer's ability to place Internet calls, thereby harming innovation and price competition.

The Nokia E61/E62 is only one example of a wireless carrier exercising control over the equipment market to disable handset features. Unfortunately,

²⁴ Gary Krakow, *The Nokia E62: The Best Smartphone Ever?* (Aug. 24, 2006), available at <http://www.msnbc.msn.com/id/14456766/>.

all carriers appear to engage in such restrictive practices to varying degrees. For example, Verizon typically disables Bluetooth data transfer functionality in handsets so as to require customers to use the carrier's paid services instead of utilizing Bluetooth to accomplish the same goals.²⁵ A disclaimer on Nokia's website sums up the state of the market for wireless handsets:

Some networks have limitations that affect how you can use phone features. Your service provider also may have requested that certain features not be activated in a phone. If so, they may not appear in the phone's menu. Contact your service provider about feature support and availability.²⁶

This disclaimer is merely one expression of the barriers that innovative equipment manufacturers have in satisfying consumer demands.²⁷

²⁵ Charles Babington, *A Call To Let Your Phone Loose – Telecom's New Battleground: Carriers' Proprietary Controls*, Wash. Post, Feb. 9, 2007, at D1, D3; Shelley Solheim, *Verizon Wireless Users Sue Over Disabled Bluetooth Features* (Jan. 14, 2005), available at <http://www.eweek.com/article2/0,1759,1751567,00.asp>. See also David Berlind, *Buyer Beware: Verizon Wireless and [Sprint Nextel] Disabling Features on Handsets They Sell*, ZDNet Blog Between The Lines (Aug. 2, 2006), available at <http://blogs.zdnet.com/BTL/?p=3415> (describing how some carriers disable a Motorola handset software feature that permits pictures to be transferred from the handset to a PC, and noting that "phone manufacturers are putting cool technologies into their phones (technologies that might cause you to buy them) only to have wireless carriers disable those technologies.").

²⁶ <http://www.nokiausa.com/phones/comparephones> (last visited Feb. 8, 2007).

²⁷ See Phil Carson, *Rattling the Cage: Handset Vendors Aim to Satisfy Carriers, But Also Explore Alternative Channels*, RCR Wireless News (Jan. 15, 2007) ("The single thread that emerged unbidden from conversations with the top-tier handset vendors at CES was — in so many carefully chosen words — the issue of carrier dominance in the U.S. market."); Kevin Maney, *FCC Ruling Changed Phone Industry in 1968; It Could Happen Again Today*, USA Today (Jan. 30, 2007), available at http://www.usatoday.com/money/industries/technology/maney/2007-01-30-carterfone_x.htm ("Cellphone makers want [handsets and service to be unbundled], though they don't like to say so and risk offending their wireless carrier partners.").

b. Locking of Handsets to Particular Operators

Another common practice used by wireless carriers is the locking of handsets so that they may not be used on any network.²⁸ While some carriers permit customers to unlock their phone upon request provided they have been used for a certain amount of time, “most consumers have no idea what a phone lock is” and so are not aware of this option.²⁹ Locking handsets acts as a barrier for consumers who may wish to switch carriers, or results in additional, unwanted equipment purchases by consumers who are not aware they can use their old handset with a new service. Handset locking is an increasing concern as handsets become more advanced, since consumers who make significant financial investments in their handsets are likely to want to retain their handsets from one service to another.³⁰

²⁸ To be sure, not all handsets will work on all networks because of technical differences between networks (*e.g.*, CDMA vs. GSM). The principle of *Carterfone* is not blind to such issues of technical feasibility. However, the locking of handsets by carriers goes well beyond the question of technical compatibility by limiting handsets to a particular network even when the handset could otherwise work on the network of a competing carrier.

²⁹ Babington, *supra* note 22, at D3 (quoting Columbia Law Professor Timothy Wu).

³⁰ Handset locking is only one way in which wireless carriers prevent or at best discourage consumers from “porting” their handsets to a different service. Other tactics include exclusive deals with equipment manufacturers and early termination fees (ETFs). See Babington, *supra* note 22, at D3 (“Some hold up Apple’s iPhone as another example of the industry’s restrictive practices, because it will operate only on AT&T’s mobile service when it goes on sale this summer.”); Maney, *supra* note 24 (“Millions of customers of Verizon Wireless or Sprint or T-Mobile would probably like to buy an Apple iPhone to replace their current phones, and just plug in a little chip and make it work on their existing calling plans. Can’t happen. The iPhone will work only on AT&T’s Cingular wireless network.”). See also Wall Street Journal, February 17, 2007, p. A1, for a description of the extraordinary effort that Apple made to break the hold of the wireless carriers in order to develop the iPhone (“Apple bucked the rules of the cellphone

It should be noted that the phone locking practices of U.S.-based wireless carriers are at odds with those of wireless carriers in most other countries. For example, in most European and Asian countries, consumers can readily purchase unlocked handsets that they can use with separately-purchased SIM cards. As frequent travelers to Europe may know, this enables European consumers to swap SIM cards as they travel from country to country, giving them a domestic phone number and enabling them to make domestic calls in each country. The same is true in most Asian countries. While regulators in most countries do not prohibit handset locking outright, they typically ensure that locking is done for legitimate purposes only – such as to prohibit theft or fraud and the enforcement of a rental or installment contract, rather than for anti-competitive reasons – and that consumers are made aware of handset locks and how to unlock them.³¹

2. Consumer Harm at the Application Layer

The issues presented by this Petition address the interaction between device manufacturers and wireless carriers, but the issue of paramount concern

industry by wresting control away from the normally powerful wireless carriers. These service providers usually hold enormous sway over how phones are developed and marketed – controlling every detail from processing power to the various features that come with the phone.”).

³¹ See, e.g., *The Commission Takes Action to Prevent Anti-Competitive Practices in the Mobile Phones Sector*, Reference IP/96/791, Aug. 08, 1996 (describing European Commission efforts, including warning letters to wireless carriers, to ensure that SIM card locks are not used for anti-competitive purposes); *Way Forward of “SIM Lock,”* Statement by the Telecommunications Authority of Hong Kong, Feb. 20, 1997, available at <http://www.ofta.gov.hk/en/tas/mobile/ta970220-content.html>.

for Skype is establishing a consumer's right to use Internet communications software that does not harm the network. Wireless carriers have inhibited the development of application-layer competition by insisting on a closed or "walled garden" approach toward 3G networks, shutting out device features and applications for reasons that appear unrelated to any "harm to the network." Wireless carriers also restrict consumers' ability to access innovative applications and services that they perceive as competing with their own (or their favored) applications and services.

a. Terms of Service Limitations

Today, the major U.S. wireless carriers offer, or will soon offer, some form of 3G Internet access. However, the largest wireless operators include in their terms of service explicit limitations that make it impossible for consumers to use the full features of 3G devices to access and utilize applications and services of their choosing.³² These terms of service typically prohibit the use of the 3G service for VoIP applications such as Skype. While advertised as "unlimited" services, a closer inspection reveals the real limitations of these services:

Verizon: "Unlimited Data Plans and Features . . . may ONLY be used with wireless devices for the following purposes: (i) Internet browsing; (ii) email; and (iii) intranet access *The Unlimited Data Plans and Features MAY NOT be used for any other purpose.* Examples of prohibited uses include, without limitation, the following: (i) continuous uploading, downloading or streaming of audio or video programming or games; (ii)

³² In the case of Sprint, the Terms of Service withdraw from consumers the right to an ill-defined category of "heavy" or "continuous" services. See *Sprint Terms and Conditions*, available at <http://www.sprintpcs.com/common/popups/popLegalTermsPrivacy.html> (last visited Feb. 12, 2007).

server devices or host computer applications, including, but not limited to, Web camera posts or broadcasts, automatic data feeds, automated machine-to-machine connections or peer-to-peer (P2P) file sharing”³³

AT&T/Cingular: “Prohibited uses include, but are not limited to . . . (iii) for Voice over IP.”³⁴

As with the practice of disabling handset features and handset locking, the terms of service appear to go well beyond prohibiting activities that might harm the network; instead, they are designed to prevent the use of applications and services for competitive reasons. Such restrictions on the services that a subscriber’s handset can access go beyond a carrier’s reasonable business interests and impinge upon the right of consumers to make full use of the equipment and service they have purchased.

b. Lack of Open Development Platforms

In stark contrast to open development standards that exist on the Internet, wireless carriers have exerted control over devices as well as the mobile operating systems upon which they run. Many have instituted an elaborate set of application locks that make running unaffiliated applications like Skype difficult if not impossible. In the market for 3G-enabled devices carriers’ qualification and approval – or whitelisting – requirements are opaque and shifting. The lack of clarity around these standards acts as a significant barrier to

³³ <http://www.verizonwireless.com/b2c/store/controller?item=planFirst&action=viewPlanDetail&catId=409> (last visited Feb. 12, 2007) (emphasis added).

³⁴ http://www.cingular.com/b2b/downloads/terms_wirelessDataService.pdf (last visited Feb. 12, 2007).

the nearly unlimited number of application developers writing software for the mobile Internet.

For example, BREW and JAVA development environments require Skype to obtain the permission of the device manufacturers and the particular underlying carrier before our software can pass through various locks installed in these development environments. Of course, Skype recognizes that some level of cooperation is required among carriers, device manufacturers, mobile OS developers, and application developers. However, such cooperation should be based on transparent technical standards designed to (1) protect the integrity of the network, and (2) otherwise enable consumers to run applications like Skype as they have been designed. Transparency and clarity around these two issues will expand the range of innovative services that U.S. wireless consumers can choose from and enable new modes of price competition.³⁵

C. There Have Been Substantial Changes Since the Commission Last Examined the Effect of Carrier Practices on The Mobile Device Market

It has been almost fifteen years since the Commission examined the influence of wireless carriers on the wireless handset marketplace, when it addressed the distinct issue of whether wireless carriers should be permitted to bundle together handsets and service.

³⁵ See Babington, *supra* note 22, at D3 (quoting Art Brodsky of Public Knowledge as saying “[p]eople now don’t understand how limited they are in what they can do with their cellphones.”).

In a 1992 *Report and Order*, the Commission permitted “cellular CPE and cellular service to be offered on a bundled basis, provided that cellular service is also offered separately on a nondiscriminatory basis.”³⁶ The risks of bundling wireless service with handsets would not have been accepted without the safety valve of the unfettered availability of wireless service only. Many factual and competitive characteristics underlay the Commission’s decision. Since 1992, however, most of those characteristics have changed in a way that calls the Commission’s analysis into question.

There are, moreover, additional aspects of today’s wireless marketplace that have a strong bearing on the Commission’s decision. In particular, the incentives and practices of the wireless carrier described above raise the question of whether carriers are complying with the critical proviso of offering unfettered, nondiscriminatory service to consumers irrespective of their equipment.

One basic change has been in the structure of the wireless marketplace; following consolidation, there are a smaller number of carriers in the market, a market many regard as oligopolistic. For example, the average Herfindahl-Hirschman Index values in the mobile telephony market are 2706, well above 1800 which the FTC and DOJ consider “highly concentrated.”³⁷

³⁶ *Bundling of Cellular Customer Premises Equipment and Cellular Service*, Report and Order, CC Docket No. 91-34, FCC 92-207, 7 FCC Rcd 4028, 4028 (1992) (“CPE Bundling Order”).

³⁷ *Eleventh CMRS Competition Report* at 21, para. 45 (noting average HHI); U.S. Dept. of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, Apr. 8, 1997, at 15, Section 1.5, available at <http://www.usdoj.gov/atr/public/guidelines/hmg.pdf> (noting that markets with HHIs above 1800 are characterized as “highly concentrated”).

In permitting carriers to bundle cellular service and handsets in 1992, the Commission observed a market in which most wireless carriers were smaller and operated in local markets, making it unlikely that they could “possess market power that could impact the numerous CPE manufacturers operating on a national... basis.”³⁸ This situation has changed dramatically, as the market is now dominated by four, large nationwide carriers with large enough subscriber bases to exert significant influence on handset manufacturers.³⁹ The simple truth is that manufacturers depend upon carriers to market their devices, and no manufacturer can afford not to “play ball” with the largest wireless carriers.

Furthermore, the Commission’s analysis in 1992 focused almost exclusively on the pricing of handsets within a market limited to voice services. However, as discussed above, many new 3G handsets do much more than mobile voice communications, and many support running Skype. Accordingly, the issue today is not simply whether wireless carriers can control the market for basic wireless voice telephony, but whether they can control the adjacent markets for applications and services that use the carriers’ 3G platform. In such a market, the Commission should be concerned not only with anticompetitive effects *vis-à-vis* other wireless carriers but also with the effect on device innovation and the possibility that entities will frustrate new sources of price competition to

³⁸ *CPE Bundling Order* at 4029-30.

³⁹ AT&T/Cingular, Verizon, and Sprint Nextel are clearly the three largest carriers, and each possess enough market share — approximately 25 percent each — to exert effective control over equipment manufacturer practices. See *Eleventh CMRS Competition Report* at 102 (Table 4).

traditional voice services. Thus, when a carrier requests that a manufacturer disable a handset's Wi-Fi functionality, this act may have little competitive impact on other wireless carriers, but it will adversely impact consumers who could benefit from new forms of price competition from applications such as Skype.

Similar concerns arise when carriers disable features such as Bluetooth functionality, as carriers once again are favoring their own "additional" services — music and video downloads, photograph and other file transfer, etc. — over those offered by unaffiliated third-parties. In each instance, consumers are worse off as competition — broadly defined as competition for services the consumer desires irrespective of the particular technology used — is diminished.

In light of these and similar practices, the Commission has sufficient cause to examine whether carriers are true to the nondiscriminatory unbundled service condition that permitted them to bundle handsets and service in the first place.⁴⁰ By locking handsets, entering into exclusive distribution agreements, and imposing early termination fees, wireless carriers are discouraging — and in some instances obstructing — consumers from accessing the carrier's service with their own fully-functioning, fully-capable handsets.

In any such examination, the Commission should consider whether there is sufficient competitive discipline in the marketplace to avoid the need for a regulatory corrective. In so doing, there is an understandable impulse for

⁴⁰ *CPE Bundling Order* at 4030, 4032.

regulators to rely on markets to self-correct and solve problems in advance of government solutions, which may be perceived as intrusive and clumsy.

However, even with the presence of a number of facilities-based wireless competitors, there is cause for concern. While competition among wireless carriers may be sufficient to act as a check on the pricing of services, the four large national wireless carriers have the same incentive to avoid commoditizing their voice service; and thus the same need to control subscribers' handsets and the applications and software that run on them.

For example, with respect to the restrictive practices described above, no single carrier is likely to change its ways on its own because doing so would only make it easier for its customers to use competitive services. In this respect, the marketplace inertia that is keeping carriers from adopting better practices — *e.g.*, unlocking consumer handsets and making them “portable” — is closely analogous to the inertia that the Commission recognized when it required wireless local number portability (“LNP”). As the Commission explained when it rejected a petition for permanent forbearance from the wireless LNP rules:

[W]e are not convinced that market forces would ensure implementation of LNP. Although certain carriers may want all wireless carriers to implement LNP because they believe it will result in a net gain of subscribers, other carriers may feel differently and will not have any incentive to implement LNP because they may be convinced that industry-wide LNP will only serve to make it easier for their subscribers to leave them. Consequently, it is unlikely for the entire industry to agree to move to wireless LNP voluntarily. In addition, there may be economic disincentives for any individual carrier to be the first to voluntarily adopt full LNP, which would provide its subscribers the flexibility to switch to a

different carrier while retaining their current phone numbers. This is because, absent the implementation of full LNP by other wireless carriers, that carrier could not gain any new wireless customers from the non-participating wireless carriers.⁴¹

This analysis applies just as well to the issues presented by this Petition.

Skype would be in a position to know whether any 3G wireless carrier has adopted a “maverick” approach to this market, but regrettably, none has emerged. Skype understands that there is a natural impulse on behalf of regulators to assume that the anti-consumer practices of wireless providers will naturally self-correct through such “maverick” behavior. The fact that no “maverick” has emerged may say more about the business models of the leading four wireless carriers and their reliance upon selling minutes or buckets of minutes than any technological impediment to enhanced innovation and price competition from software-defined services.

III. THE COMMISSION SHOULD DECLARE THAT WIRELESS CARRIER SERVICES ARE FULLY SUBJECT TO *CARTERFONE*

In light of the changes in the wireless market and the restrictive carrier practices described above, the Commission should make clear that subscribers have the right to attach non-harmful devices to their wireless networks and run applications of their choosing. Such a consumer right flows directly from both the Commission’s *Carterfone* decision and the 1992 *CPE Bundling Order*’s

⁴¹ *Verizon Wireless’s Petition for Partial Forbearance from the Commercial Mobile Radio Services Number Portability Obligation*, WT Docket No. 01-184, FCC 02-215, para. 21 (rel. July 26, 2002).

requirement that “that cellular service is also offered separately [from bundled equipment] on a nondiscriminatory basis.”⁴²

The Commission should issue a declaratory ruling stating that the *Carterfone* right to attach fully-capable, non-harmful devices applies to all services offered by wireless carriers. The principle of *Carterfone* derives from Sections 201 and 202 of the Communications Act, as preventing consumers from attaching devices of their choosing was found to be unjust and unreasonable under Section 201(b) of the Act and unduly discriminatory under Section 202(a) of the Act.⁴³ While the Commission has forbore from applying several sections of Title II to wireless carriers, it has made clear that such carriers remain subject to Sections 201 and 202.⁴⁴ The Commission has also made clear that the “bedrock consumer protection obligations”⁴⁵ of Sections 201 and 202 apply “even when competition exists in a market.”⁴⁶ Moreover, with respect to the *Carterfone* principle, the Commission has acknowledged wireless consumers’ existing *Carterfone* right to attach CPE of their choice when it noted that “current

⁴² *CPE Bundling Order* at 4029.

⁴³ *Carterfone*, 13 FCC 2d at 423.

⁴⁴ *Personal Communications Industry Association’s Broadband Personal Communications Services Alliance’s Petition for Forbearance For Broadband Personal Communications Services; Forbearance from Applying Provisions of the Communications Act to Wireless Telecommunications Carriers*, Memorandum Opinion and Order and Notice of Proposed Rulemaking, WT Docket No. 98-100, FCC 98-134, 13 FCC Rcd 16,857, 16,865-66, paras. 15-18 (rel. July 2, 1998) (noting that Sections 201 and 202 codify “the bedrock consumer protection obligations” and that their existence “gives the Commission the power to protect consumers by defining forbidden practices and enforcing compliance.”) (“*PCIA Forbearance Order*”).

⁴⁵ *Id.* at 16,865, para. 15.

⁴⁶ *Id.* at 16,866, para. 17.

nondiscrimination requirements preclude a cellular carrier from refusing to provide service to a customer on the basis of what CPE the customer owns.”⁴⁷

Furthermore, to the extent that some services offered by wireless carriers, now or with respect to a future regulatory classification, do not fall under Title II,⁴⁸ the Commission should declare that consumers have the right to attach non-harmful devices to wireless networks, regardless of whether such networks provide services classified under Title I or Title II. Such a declaration can be made either as an exercise of the Commission’s ancillary jurisdiction or directly through Title II. Wireless handsets that are subject to a *Carterfone*-based right to attach typically are used to access both voice services (regulated under Title II) and non-voice services such as 3G/broadband Internet access (which may be classified as under either Title I or Title II). Indeed, as stated above, the Commission has found that *Carterfone*’s basic nondiscrimination principle – as to both “attachments” and applications – applies to wireline broadband services regulated under Title I.⁴⁹

Thus, wireline broadband services – where service providers exercise virtually no control over the equipment used by consumers to access the network

⁴⁷ *CPE Bundling Order* at 4030.

⁴⁸ Statement of Hon. Kevin J. Martin Before the Committee On Commerce, Science & Transportation, U.S. Senate, Feb. 1, 2007, at 7 (“The Commission is also considering an order that would classify wireless broadband Internet access as an information service.”).

⁴⁹ *Broadband Policy Statement*, FCC 05-151, at 3. The Commission has also made clear that, even though such services were regulated under Title I, it has the “jurisdiction necessary to ensure that providers of telecommunications for Internet access or [IP-enabled] services are operated in a neutral manner.” *Id.*

— are subject to consumers’ entitlement to “connect their choice of legal devices that do not harm the network.”⁵⁰ Wireless broadband services regulated under Title I also should be subject to this same right to “attach” and right to run applications and use services of their choice. This is particularly the case since, as discussed above, wireless carriers exert far more control over the development of equipment used to access their services than do wireline providers exert over their broadband networks. Over time, consumers will roam seamlessly between 3G, Wi-Fi and traditional wired phone networks. It makes little sense for a consumer to surrender her right to attach any non-harmful device as soon as she leaves her home, even though a voice session could technically interoperate between all three networks.

IV. THE COMMISSION SHOULD INITIATE A RULEMAKING PROCEEDING TO ENFORCE THE MANDATE OF *CARTERPHONE* IN THE WIRELESS INDUSTRY.

Once the Commission issues the declaratory ruling requested above, it should enforce the mandate of *Carterfone* by initiating a rulemaking proceeding to determine whether the wireless carriers restrictive practices outlined in this Petition comport with the carriers’ obligations under the *Carterfone* principle and the open network proviso of the 1992 *Bundled CPE Order*. As discussed in Section II. C. of this Petition, it has been almost 15 years since the *Bundled CPE Order* was adopted. It is now time for the Commission to reexamine the effect of wireless

⁵⁰ *Id.* at 3 (citing *Hush-a-Phone* and *Carterfone*).

carrier practices on the full availability and application/software functionality of wireless CPE.

The structure of the wireless personal communications industry has changed dramatically since 1992, with four national carriers dominating a national market and able to exert significant influence on handset manufacturers. Restrictive carrier practices call into question whether wireless carriers are complying with the critical proviso that they provide unfettered, nondiscriminatory service to consumers irrespective of their equipment and what applications and software are running on that equipment. A consumer's right to attach a non-harmful device of his choosing to the network means little if the only devices that are available to consumers have applications and software controlled by the network operator.

The Commission should initiate a rulemaking proceeding in which it examines carrier practices with respect to the wireless handset industry and software marketplace. In addition to reexamining the structure of the market and such relationships, the Commission should examine whether carrier practices such as device whitelisting, feature crippling, handset locking, exclusive equipment deals, terms of service limitations, and the lack of open platforms are consistent with the "bedrock consumer protection obligations" of Sections 201 and 202 of the Act and expressed in *Carterfone*.

It is important to emphasize that nothing about the relief requested in this Petition would entangle the FCC in policing intricate or difficult to identify anti-consumer behavior. Instead, through enforcement of a straightforward attachment principle, the Commission will have succeeded in unlocking a vast new source of price competition and innovation for wireless users.

V. THE RULEMAKING PROCEEDING ALSO SHOULD CREATE A MECHANISM TO PROTECT CONSUMERS' RIGHTS TO USE THE INTERNET COMMUNICATIONS SOFTWARE OF THEIR CHOICE

Following its *Carterfone* decision, the Commission established a set of technical standards, codified in Part 68, which enabled users to connect any device that complied with a basic set of rules. Concurrent with the notice of inquiry described above, the Commission should create a mechanism to establish similar technical standards updated to take into account the unique environment of the mobile Internet. The goal should be to create transparent and neutral standards under which consumers can exercise their right to run the Internet communications applications of their choice.⁵¹

Skype recognizes the critical need for broad industry involvement and cooperation in this effort. Skype approaches these issues with humility, recognizing that application-layer competition depends in part upon the 3G deployment efforts of wireless carriers. However, it is equally true that maximizing consumer benefits also depends upon innovation by third-party

⁵¹ In this regard, the Commission may wish to pattern its procedures upon those found in Section 68.201 of the Commission's rules.

application developers, as well as some level of oversight over carrier implementation of technical standards. The Commission can provide an essential mechanism that will facilitate the goal of device connectivity.

In this regard, the Commission should establish a mechanism to create technical standards that protect the *Carterfone* principle with respect to the market for applications that run on 3G Internet access networks. The technical standards should: 1) enhance consumer choice; 2) increase price competition from software-defined services; 3) forward innovation; and 4) preserve network integrity. Skype suggests that this mechanism should include an industry-led forum having the following clearly-defined elements:

- All interested parties – carriers, device manufacturers, mobile OS developers, consumer groups and application developers – should be allowed to participate.
- Representatives from the FCC's Office of Engineering and Technology should oversee these industry efforts.
- The forum should be empowered to solicit the advice of academics and other experts to support the FAC's work.
- The forum should complete its work by a specified date and issue interim reports as necessary.
- The Commission should express its intention to implement the group's findings.

The goal of this forum would be to protect the *Carterfone* principle as applied to 3G Internet access networks so that: "no entity can enforce techniques such as blocking, locking, or certification requirements that have the intention of preventing consumers from modifying or installing software unless it is

reasonably proven that such software harms the network.” Clarity around this issue will ensure that carrier’s network management techniques are respected but will never become a pretext for activity that is anti-consumer or anticompetitive.

In the end, updating this Commission’s *Carterfone* principle for an era of software-defined services would unlock tremendous new forms of price competition and innovation for consumers. We therefore respectfully request that the Commission grant the Petition to the extent described herein.

Respectfully submitted,

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Dated: February 20, 2007

**Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
)	
Skype Communications S.A.R.L.)	
Petition to Confirm A Consumer's Right)	
To Use Internet Communications)	RM-11361
Software and Attach Devices to Wireless)	
Networks)	
)	
)	

REPLY COMMENTS OF SKYPE COMMUNICATIONS S.A.R.L.

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SUMMARY

The record in this proceeding establishes that consumers will be better off if the Commission grants the above-referenced Petition. The comments further confirm that control over handset design and the applications that run on wireless handsets has shifted too far in the direction of the wireless carriers. To redress that imbalance, Skype recommended that the *Carterfone* “attachment” principle, and the right of a consumer to run applications of their choice – both of which are reflected in the Commission’s *Broadband Policy Statement* – should be affirmed by the Commission and applied to the carrier practices that gave rise to Skype’s and other’s concerns.

As several commenters pointed out, the Internet communications marketplace is poised to unlock new sources of price competition and innovation – if the Commission moves to place consumers at the center of its wireless competition policy framework. The sources of innovation in wireless devices and applications need not be bounded by a universe consisting only of facilities-based carriers. Skype, for example, offers consumers a way to reduce the costs of their conversations and in so doing, stimulates demand for wireless networks. Applying the Commission’s *Broadband Policy Statement* to wireless will encourage a virtuous cycle of network and software investments that fully support the Commission’s broadband goals.

It is wrong to conclude that the Commission’s only choices are either to do

nothing to foster consumers' interests or to impose detailed and burdensome regulation on the wireless industry. There is a responsible middle ground. By affirming the applicability of the *Broadband Policy Statement*, the Commission will take an important first step in ensuring that consumer choice is promoted — all without saddling the wireless industry with unnecessary regulation.

The comments filed by consumers, consumer groups, high-tech industry trade associations, and others support the application to wireless networks of the principles in the Commission's *Broadband Policy Statement* and show that consumers are not enjoying the full benefits of innovation in the market for wireless handsets and applications. The carriers' comments defend current blocking practices and concede that they disable features and presumably will continue to do so. On this record, the Commission has sufficient basis to grant Skype's Petition.

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REPLY COMMENTS OF SKYPE COMMUNICATIONS S.A.R.L.

The record in this proceeding establishes that consumers will be better off if the Commission grants the above-referenced Petition (“Petition”) filed by Skype Communications (S.A.R.L.).¹ As several commenters pointed out, the Internet communications marketplace is poised to unlock new sources of price competition and innovation – if the Commission moves to place consumers at the center of its wireless competition policy framework. Furthermore, granting the Petition will encourage a virtuous cycle of network and software investments that fully support the Commission’s broadband goals.

A number of interested parties and a large number of actual consumers responded to the issues raised in Skype’s Petition. We view this as a first step in our requested dialogue among the wireless industry, the technology industry and consumer groups, to strike the appropriate balance between wireless

¹ Skype Communications S.A.R.L., *Petition to Confirm A Consumer’s Right To Use Internet Software and Attach Devices to Wireless Networks* (filed Feb. 20, 2007).

industry requirements and consumer rights – a balance that, today, has shifted too far in the direction of the network operators. By fostering such a dialogue, the Commission will ensure not only that wireless networks are protected and that network operators will have sufficient incentives to invest in their networks, but also that software applications developers and equipment manufacturers will have sufficient incentives to create new and innovative products and services.² We are confident that the outcome of this proceeding will assure that wireless broadband networks and applications are second to none – with consumers being the ultimate winners.

I. THE WIRELESS CARRIERS MISCONSTRUED SKYPE’S POSITION AND OBJECTIVES.

An array of trade associations,³ business interests,⁴ and consumer groups,⁵

² Cf. Remarks of FCC Chairman Kevin J. Martin to the National Cable & Telecommunications Association, Las Vegas, NV, May 7, 2007, at 4 (“Fundamentally, I am for innovation. It leads to new and improved services, and ultimately lower prices. When someone is innovating with voice competition, I am on their side.”).

³ Comments of the Information Technology Industry Council (Apr. 30, 2007) (“ITI Comments”) (supporting the application of the Commission’s *Broadband Policy Statement*, FCC 05-151, to wireless networks); Comments of the Consumer Electronics Association (Apr. 30, 2007) (“CEA Comments”) (same); Comments of the VON Coalition (Apr. 30, 2007) (“VON Comments”) (same).

⁴ Comments of the American Petroleum Institute (Apr 30, 2007) (“API Comments”) (requesting the Commission to declare that *Carterfone* applies to wireless networks and to initiate a rulemaking proceeding to examine wireless carrier practices in light of *Carterfone*); Comments of Mobile Industry Executives (May 1, 2007) (“Mobile Industry Executives Comments”) (comments from two CEOs of mobile software applications and services companies, urging enforcement of the Commission’s broadband principles in the wireless handset marketplace).

⁵ Comments of the National Association of State Utility Consumer Advocates (Apr. 30, 2007) (“NASUCA Comments”); Comments of Consumers Union, Consumer Federation of America and Free Press (Apr. 30, 2007) (“Consumers Union et al. Comments”); Comments of the Ad Hoc Public Interest Spectrum Coalition (Apr. 30, 2007) (“Ad Hoc Public Interest Spectrum Coalition Comments”); Comments of People’s Production

in addition to thousands of individual consumers,⁶ support the essential thrust of the Petition – which is to affirm that consumers are entitled to attach nonharmful devices to wireless networks and use applications of their choice with those devices. The wireless network operators⁷ and certain of their suppliers⁸ oppose the Petition. Their submissions were substantive and largely constructive. As such, the comments are an important first step in the process of dialogue among interested parties. Moreover, many of their objections to the Petition stemmed largely from their misconstructions of Skype’s position and objectives. Accordingly, in this Section, Skype restates and clarifies the purpose and objectives of its Petition.

A. Granting the Skype Petition Does Not Require Detailed Regulation of Wireless Networks.

At the center of the Petition is Skype’s request to affirm that the principles contained in the Commission’s *Broadband Policy Statement* apply to wireless networks.⁹ The wireless incumbents who oppose the Petition rely heavily on

House (Apr. 30, 2007).

⁶ As of May 15, 2007, over 4,500 comments had been filed by individual consumers in support of all or part of the Petition.

⁷ See Comments of AT&T Inc. (Apr. 30, 2007) (“AT&T Comments”); Opposition of CTIA – The Wireless Association (Apr. 30, 2007) (“CTIA Opposition”); Comments of Sprint Nextel Corp. (Apr. 30, 2007) (“Sprint Nextel Comments”); Comments of T-Mobile USA, Inc. (Apr. 30, 2007) (“T-Mobile Comments”); Comments of Verizon Wireless (Apr. 30, 2007) (“Verizon Wireless Comments”).

⁸ Comments of Motorola, Inc. (Apr. 30, 2007) (“Motorola Comments”); Comments of LG Electronics MobileComm USA (Apr. 30, 2007) (“LG Comments”); Opposition of QUALCOMM Inc. (Apr. 30, 2007) (“QUALCOMM Comments”).

⁹ *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Docket No. 02-33, *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, CS Docket No. 02-52, Policy Statement, FCC 05-151, at 3 (rel. Sep. 23, 2005) (“Broadband Policy Statement”). Note that the *Policy Statement’s* attachment

assertions that marketplace conditions are so perfectly competitive that there is no present or future risk of consumer harm. The real state of competition in the industry, however, is not quite so perfect. Yet, in requesting that the *Carterfone* principle apply to wireless networks, Skype recognizes that today's wireless industry indeed is different from the wireline industry of 1968, and that detailed regulation of wireless networks could well be counterproductive. However, it is wrong to conclude that the Commission's only choices are either to do nothing to foster consumers' interests or to impose detailed and burdensome regulation. There is a responsible middle ground. By affirming the applicability of the *Broadband Policy Statement*, the Commission will take an important first step in ensuring that consumer choice is promoted – all without saddling the wireless industry with unnecessary regulation.

B. Consumers Should Have a Meaningful Choice Between Subsidized and Non-Subsidized Handset Purchases.

If the Commission protects a free market for devices by granting Skype's Petition, consumers will be empowered to choose between subsidized and non-subsidized handsets. Skype is not seeking to overturn the carrier practice of subsidizing handsets and bundling their sale with that of wireless service; these practices have had much to do with the widespread consumer uptake of wireless services. We do believe, however, that the Commission would be warranted, in light of today's wireless industry, to examine whether carriers are living up to

principle cites to *Carterfone* as its genesis.

the requirement of the 1992 *CPE Bundling Order* that they give subscribers a meaningful opportunity to use an unbundled handset on the carriers' networks.¹⁰ This requirement also is contained in the consumer's attachment right as expressed in the *Broadband Policy Statement*.

C. Current Wireless Industry Practices Do Not Maximize Consumer Choice for Applications and Devices.

The record in this proceeding confirms Skype's concern that the major wireless carriers do not compete on the basis of the openness of their Internet offerings or their friendliness to unlocked smart phones. Skype agrees that wireless network operators face competition at some level and compete on price, coverage and quality of service, as well as on the availability of and the variety of handsets. However, Skype questions the level of competition with respect to handsets and mobile applications, in particular whether carriers exert inordinate control in those markets to the detriment of consumers.

As explained in the Petition,¹¹ all wireless network operators have a similar interest in maintaining a closed ecosystem with respect to the wireless CPE and applications available to subscribers. As was the case with number portability, the tendency of carriers to control the market for handsets and mobile applications may not be susceptible to marketplace correctives — despite the presence of several competitors — and requires some regulatory oversight. However, the Commission can exercise such oversight without resorting to

¹⁰ *Bundling of Cellular Customer Premises Equipment and Cellular Service*, Report and Order, CC Docket No. 91-34, FCC 92-207, 7 FCC Rcd 4028, 4028 (1992) ("*CPE Bundling Order*").

¹¹ Petition at 22-25.

detailed regulation or “one size fits all” government technical standards.

D. The Petition Acknowledges a Carrier’s Need to Manage and Prevent Harm to Its Network.

As made clear in its Petition, Skype recognizes the need for wireless carriers to manage their networks, and in fact has the same incentives as the carriers to produce software that performs efficiently in bandwidth-constrained environments. Skype also recognizes that wireless network management, including what is required to prevent “harm to the network,” may well be different from network management in wireline networks. Moreover, the existence of regulatory mandates in the wireless industry, such as E911, accessibility for the disabled, and hearing aid compatibility, also distinguishes the wireless carriers’ network management needs from those of wireline networks. Nonetheless, these technical differences can be accommodated while still protecting the critical rights of consumers to attach nonharmful devices to and run applications of one’s choice on wireless networks. A better balance than exists now is required between these competing objectives. Obviously, Skype does not want to impair the integrity of the wireless networks or carriers’ ability to comply with their regulatory obligations, but, as discussed in more detail below,¹² Skype believes that the parties, working together with the Commission, can achieve a better balance.

¹² See Section IV, *infra*.

II. THE RECORD SUPPORTS THE NEED FOR THE COMMISSION TO ASSESS WHETHER CONSUMERS ARE ENJOYING THE FULL BENEFITS OF INNOVATION IN THE MARKET FOR WIRELESS HANDSETS AND APPLICATIONS.

The comments filed by consumers, consumer groups, high-tech industry trade associations, and others support the application to wireless networks of the principles in the Commission's *Broadband Policy Statement* and show that consumers are not enjoying the full benefits of innovation in the market for wireless handsets and applications.¹³ The carriers' comments defend current blocking practices and concede that they intentionally disable features and will presumably continue to do so.¹⁴ The Commission should now assess whether, in view of the carriers' current practices, consumers are being deprived of lower cost and more innovative applications, devices, and services.

With respect to the disabling of certain handset features, the Commission has a basis to question the carriers' assurances that they do not have undue influence over their handset suppliers and that consumers are getting the full benefit of competition in the handset industry. It is telling that handset manufacturers have very little retail presence in the U.S. independent of carrier-controlled outlets, but those same companies sell directly to consumers in other

¹³ Mobile Industry Executives Comments at 3-9; Consumers Union et al. Comments at 2-6; Ad Hoc Public Interest Spectrum Coalition Comments at 2-7; NASUCA Comments at 2-9; API Comments at 2-7; VON Comments at 6-8; ITI Comments at 4-5; CEA Comments at 2.

¹⁴ See, e.g., AT&T Comments at 48-55 (defending disabling of handset features on network management grounds); CTIA Comments at 24-30 (same); Verizon Wireless Comments at 23-28, 33-35 (same).

parts of the world.¹⁵ The Commission may take notice of the fact that handset manufacturers paint a different picture of their relationship to their carrier “customers” when they speak to the press or Wall Street.¹⁶

¹⁵ See, e.g., Howard Wolinsky, *Motorola Takes Its Show on the Road – To China: First of Global Stores Launches in Shanghai, But Won’t Land In U.S.*, Chicago Sun-Times, July 13, 2006, at 57 (describing Motorola’s plans to open independent stores in China and other parts of Asia and the rest of the world, but not in the United States). The difference between Motorola’s global strategy and its practices in the U.S. market is worth noting:

Jeremy Dale, Motorola vice president of global retail and channel marketing, said in a phone interview from China, “The Shanghai store will be the first permanent Motorola-branded flagship store. We plan to transform the way mobile devices are sold.”

He said Motorola has no plans to open a flagship store in the United States, where sales are dominated by wireless carriers, in contrast with China and many other markets where independent retailers are the dominant outlet for selling phones.

Id.

¹⁶ See Christopher Rhoads & Li Yuan, *Dropped Call: How Motorola Fell A Giant Step Behind*, Wall St. J., Apr. 27, 2007, at A1 (“[Motorola CEO Ed] Zander began to resent the notion that wireless carriers, rather than consumers, were his primary customers This meant he had little control over pricing and distribution to the people who ultimately use the product. . . . Executives told him that carriers decide the price, and would go elsewhere if Motorola didn’t want to lower its prices. ‘I love my job. I hate my customers,’ Mr. Zander shouted, according to people present.”); Phil Carson, *Nokia Expands in U.S. With ‘Imminent’ Delivery of N75 to AT&T*, RCR Wireless News (May 1, 2007) (quoting Nokia CEO Olli-Pekka Kallasvuo as saying that his company has “about 1.3 billion customers” in China, but only four, “the top tier network operators,” in the U.S.); Phil Carson, *Rattling the Cage: Handset Vendors Aim to Satisfy Carriers, But Also Explore Alternative Channels*, RCR Wireless News (Jan. 15, 2007) (“The single thread that emerged unbidden from conversations with the top-tier handset vendors at CES was – in so many carefully chosen words – the issue of carrier dominance in the U.S. market.”); Kevin Maney, *FCC Ruling Changed Phone Industry in 1968; It Could Happen Again Today*, USA Today (Jan. 30, 2007), available at http://www.usatoday.com/money/industries/technology/maney/2007-01-30-carterfone_x.htm (“Cellphone makers want [handsets and service to be unbundled], though they don’t like to say so and risk offending their wireless carrier partners.”). See also *Fear Factor? Handset Makers Oppose Carterfone Rules for Wireless*, Comm. Daily, May 2, 2007 (quoting a wireline industry source as noting that equipment manufacturers with ties to network operators supported them in the wireline broadband classification

In addition to the examples cited by Skype in the Petition, as well as by others in the academic community, the Commission now has a record of over 4500 individual consumers who have participated in this proceeding, as well as the country's leading consumer groups¹⁷ and representatives of the "high tech" industries,¹⁸ pointing to consumer welfare problems in the wireless industry. These problems are expressed both as the inability to attach nonharmful devices to the network and/or the inability to use certain applications with the network. This substantial record belies the carriers' assurances that consumers are getting a full range of choice and opportunity with respect to attachments and applications.

In contrast to the views of consumer groups and others discussed above, the carriers claim that consumers already have sufficient choice among handsets. Carriers claim that while, for example, the Nokia E62 may have been stripped of

proceeding and saying that "[m]ost of handset manufacturers have relationships with the major wireless providers Rather than harm that relationship, in the short term it's in their economic interest to maintain that relationship."); *id.* (quoting a wireless industry source as saying that "[c]arriers control 95% of the handset market and, clearly, opposing them is a complicated thing."); Amol Sharma et al., *Apple Coup: How Steve Jobs Played Hardball In iPhone Birth*, Wall St. J., Feb. 17, 2007, at A1 ("Apple bucked the rules of the cellphone industry by wresting control away from the normally powerful wireless carriers. These service providers usually hold enormous sway over how phones are developed and marketed – controlling every detail from processing power to the various features that come with the phone.").

¹⁷ NASUCA Comments at 2-4; Consumers Union et al. Comments at 2-4; Ad Hoc Public Interest Spectrum Coalition Comments at 2-4.

¹⁸ See, e.g., Mobile Industry Executives Comments at 3-5; see also API Comments at 3-4 (discussing large business customers need for flexibility and noting the deficiencies in today's wireless marketplace).

Wi-Fi functionality, consumers may purchase other Wi-Fi-enabled phones.¹⁹ First, it is telling that the carriers do not deny shaping handset design by disabling certain features. Moreover, consumers, not wireless carriers, should decide which handsets and handset features succeed or fail in the marketplace — as they do in other robustly competitive consumer electronics industries.²⁰ In contrast with the wireless industry, DSL and cable broadband operators have not constrained the development of devices and applications that are used on their networks; as a result, consumers in the computing industry have seen the full benefits of unconstrained innovation.

Wireless carriers and their partners are but a small subset of the vast numbers of technology and software innovators around the world who would be prepared to offer their wares in the U.S. wireless market.²¹ What such innovators need is some expectation, if not assurance, that the equipment and applications that they invest in will not be blocked absent legitimate network management and security reasons. By affirming “attachment” and “no blocking” principles and examining the extent of the wireless carriers’ control over the mobile

¹⁹ See, e.g., AT&T Comments at 48-50.

²⁰ See *supra* note 16 for statements from handset manufacturers that suggest that they are constrained from meeting consumer demands.

²¹ See, e.g., Mobile Industry Executives Comments at 1, 6-7. The vast majority of companies innovating in the mobile software space do not have the resources to lobby the Commission. Cf. *id.* (noting that the mobile industry executives who filed these comments had never before participated in a proceeding before the Commission). See also Louis Trager, *Silicon Valley Gives Martin Earful on Carterfone Questions*, Comm. Daily, May 4, 2007, at 3 (“FCC Chmn. Martin said Silicon Valley pelted him with ‘lots of concerns’ about the wireless industry ‘stifling’ innovation in handsets and applications [at a Churchill Club technology-business forum in Mountain View, CA].”).

handset and applications markets, the Commission would provide such assurances to innovators without subjecting carriers to burdensome regulation. In seeking an appropriate balancing of consumer and industry interests, the sources of innovation need not be bounded by a universe consisting only of carriers and those who are chosen as partners by carriers.²²

As explained in the Petition, the Commission's policy always has been to maximize choice in consumer CPE, short of harming the network.²³ Skype filed its Petition because of its sense that there is now a lot more room for consumer choice and that providing for more choice would yield enormous benefits.

III. THE COMMISSION SHOULD AFFIRM THAT THE PRINCIPLES OF ITS BROADBAND POLICY STATEMENT APPLY TO WIRELESS NETWORKS AND SHOULD DETERMINE WHETHER THOSE PRINCIPLES ARE BEING HONORED.

The Commission should affirm that its broadband principles, including the "right to attach"²⁴ and "no blocking" principles, apply regardless of the

²² Along similar lines, several carriers and their partners complain that if Skype wants mobile broadband users to use Skype, it should buy spectrum at auction and become a facilities-based competitor. *See, e.g.,* Verizon Wireless Comments at 1-4; Comments of MetroPCS Communications at 9-10 (Apr. 30, 2007). While Skype agrees that more facilities-based broadband network competitors would be beneficial, it rejects any suggestion that the only companies that should be welcome as innovators on wireless networks are those that invest in purchasing spectrum and building out networks. Consumers benefit the most when firms are permitted to develop their core competencies and freely interact with each other in complementary ways to produce products and services that benefit consumers. For example, computer hardware and software companies interact with Internet companies in a manner that enhances the value of all their products and services and contributes immeasurably to consumer welfare. The same can be true in broadband wireless networks.

²³ Petition at 9-12 (discussing the Commission's support for the "attachment" principle in various markets, from telephone CPE to cable set-top boxes).

²⁴ *See* API Comments at 3 ("Large business customers clearly desire the flexibility to maintain the use of wireless devices as they migrate from one wireless carrier to

technology used to provide broadband services. At the same time, the Commission should examine the state of the wireless CPE and applications market to ensure that such principles are being honored.²⁵

In the time since the Petition was filed, the Commission has declared that wireless broadband services are classified as Title I “information services.”²⁶ In classifying wireless broadband services in the same regulatory category as DSL, cable modem, and broadband over power line, the Commission noted that such a classification “furthers [the Commission’s] efforts to establish a consistent regulatory framework across broadband platforms by regulating like services in a similar manner.”²⁷ By affirming that the principles of the *Broadband Policy Statement* apply to wireless networks, the Commission would further this important policy of technological neutrality and regulatory parity.

A. Consumers Are Entitled to Attach Nonharmful Devices to Wireless Networks.

Skype has every interest in the technical integrity of wireless networks and has the same incentives as network operators to ensure that the network harms feared by the carriers do not occur.²⁸ Skype commends the carriers for

another For many customers, device portability is becoming the ‘other side of the coin’ to wireless number portability.”).

²⁵ NASUCA Comments at 8; Consumers Union Comments at 5-6; VON Comments at 8-9; ITI Comments at 6-7; Ad Hoc Public Interest Spectrum Coalition Comments at 5-6.

²⁶ *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, Declaratory Ruling, WT Docket No. 07-53, FCC 07-30, at 2, ¶ 2 (rel. Mar. 23, 2007) (“Wireless Broadband Order”).

²⁷ *Id.*

²⁸ See, e.g., Verizon Wireless Comments at 33-35; AT&T Comments at 41-44, 52-56; Sprint Nextel Comments at 21-24.

beginning this process by providing information on the technical considerations underpinning their attachment and application decisions and handset certification programs.

Nonetheless, as explained in further detail below, Skype believes that the carriers exaggerate the harm that may befall wireless networks should unaffiliated devices be attached to their networks. Software applications developers and equipment manufacturers have every incentive to ensure that their applications and devices serve their users' needs and do not harm wireless networks. Moreover, carriers themselves suggest that consumers may purchase handsets independently and use them with their wireless services (consistent with the terms of the 1992 *CPE Bundling Order*), suggesting that the attachment of independent nonharmful devices will not cause harm to their networks.²⁹

B. Consumers Are Entitled to Run Applications of Their Choice on Wireless Networks.

As explained in the Petition, carriers employ a range of restrictions on applications via Terms of Service limitations.³⁰ Though carriers attempt to justify restrictions on certain applications based on the need to manage their networks, many of their restrictions are overbroad and apply even to applications such as Skype that do not use excessive amounts of bandwidth.

As mobile telephones become similar to computer platforms — capable of supporting applications developed independent of the device manufacturer or

²⁹ See, e.g., T-Mobile Comments at 11 & n.41; AT&T Comments at 11-12.

³⁰ Petition at 18-19.

the distribution channel – the greater good is best served by ensuring that the same dynamic that pertains in the Internet environment is present as the Internet goes wireless. The time to act is now, before restrictive practices become entrenched. As noted above, the universe of innovation in wireless applications is not defined only by carriers and the partners with whom they choose to do business. On all computing platforms, both the industry and consumers have benefited from the consumers’ right to use applications of their own choosing, without ISPs, carriers, PC manufacturers or others determining that certain applications should be prohibited.

Wireless carriers’ present restrictive practices are more a matter of their incumbent business models rather than an effort to prevent harm to their networks.³¹ Moreover, some carriers suggest that Skype software can be used today on wireless networks, which belies the carriers’ concerns that VoIP applications will harm their networks. The wireless operators cannot have it both ways: they cannot simultaneously argue that regulatory review of their practices is not warranted because, for example, Skype is being used on wireless networks, while at the same time defend a blanket VoIP blocking policy that

³¹ Some carriers appear to recognize the limitations of closed business models. *See A World of Connections: Overcoming Hang-Ups*, *The Economist*, April 21, 2007, at 8 (“Yet some mobile operators are trying to change their business models. Sprint Nextel’s chief technology officer, Barry West, imagines a world in which someone who buys a television or washing machine from any shop and plugs it in can connect it to Sprint’s network. The network itself will be open to the internet and users will be able to do what they like, rather than being funneled to content providers with which the operator has a business relationship, as happens with most mobiles today.”).

threatens the very existence of VoIP-based competition.³²

To the extent that carriers must restrict certain applications, such restrictions should be tied to the specific technical characteristics of the applications and should not be broadly applied to restrict all uses of particular applications irrespective of their technical impact on the network.

IV. THE TECHNICAL CONCERNS EXPRESSED BY THE WIRELESS NETWORK OPERATORS ARE OVERSTATED.

Skype recognizes that there are technical differences between applying the Commission's *Broadband Policy Statement* to wireless networks and applying it to wireline networks. Skype, however, believes that the carriers and their suppliers overstate or misstate the nature of the potential harm to their networks. The concerns raised can be resolved through cooperation among the affected parties and oversight by the Commission. Skype has addressed those concerns with wireless operators in Europe and Asia, proving in the marketplace that applications such as Skype can operate in a mobile environment if carriers adopt a progressive approach to Internet services.

A. Skype Does Not Consume An Excessive Amount Of Bandwidth.

Contrary to the assertions of some wireless carriers,³³ Skype does not consume an excessive amount of bandwidth. Skype has mobile versions of its software that are optimized for wireless networks. In particular, Skype

³² It is likely that, given a meaningful choice, wireless subscribers would opt for having access to a variety of VoIP providers, as they do on the wired Internet. *See id.* (“[A]ll operators are feeling the pressure of the internet. There is plenty of evidence that customers want to control their phones as they do their PCs . . .”).

³³ *See, e.g.,* CTIA Comments at 40-41; AT&T Comments at 53-55.

engineers have worked to ensure that the amount of bandwidth consumed by the application is trivial, particularly where operators have engaged the company in a collaborative model.³⁴ Recognizing the bandwidth constraints of wireless networks, Skype's mobile software does not engage in any of the "unfriendly" behavior during dormant periods that some carriers appear to fear. For example, the editions of Skype built for Windows Mobile, for our carrier-collaborative model and for embedded devices such as Wi-Fi phones, can never serve as a supernode, regardless of the device's network or other characteristics. This is in part due to Skype's recognition that these devices have limited processing power and a finite battery life.

In addition, Skype's mobile software is optimized in much the same way wireless carriers discuss optimizing mobile applications, by, for example, using efficient vocoders and power supplies. Skype's mobile software also disables more bandwidth-intensive features, such as video and conference calling, found on the regular Skype software. What this illustrates is that applications developers such as Skype have the same incentives and objectives – to provide a software product that enables its users to function in bandwidth constrained environments while preserving battery life.

³⁴ See *Skype and Hutchinson 3 Group Join Forces to Offer Skype on Mobile Devices*, Press Release (Feb. 14, 2006), available at http://about.skype.com/2006/02/skype_and_hutchison_3_group_jo.html. The collaboration between Skype and Hutchinson 3 illustrates how Skype can work together with carriers to transfer voice traffic to their circuit-switched networks, thereby further alleviating any concerns regarding congestion of their broadband networks.

B. Affirming the Attachment and “No Blocking” Principles for Wireless Networks Need Not Interfere With Carriers’ Regulatory Obligations.

Skype believes that equipment and applications can be designed so as not to threaten network operators’ regulatory requirements such as E911, disabilities access, hearing aid compatibility, CALEA, and local number portability.

Applications used on a mobile handset will not undermine the existing functionality of wireless handsets that enables them to comply with applicable regulatory requirements.

With respect to wireless handsets, such devices will still be subject to the Commission’s equipment authorization process, which can ensure that they do not interfere with wireless carriers’ regulatory obligations. Moreover, wireless carriers already support E911 calling for subscribers who use unlocked phones and for roaming users, which suggests that there is no technical reason why carriers could not also support such services for third party handsets that are attached to the network.

C. Network Security Can Be Protected Without Categorically Excluding Certain Applications or Devices.

Skype recognizes the need for network operators to ensure network security, but believes this is possible without categorically blocking certain applications. While carriers point to comments by Skype founder Niklas Zennstrom as evidence that closed systems are necessary to protect security,³⁵ his comments demonstrate that Skype and wireless operators each have marketplace

³⁵ See CTIA Comments at 24.

incentives to ensure a consumer's high-quality, secure experience using the application, the wireless network, and both in combination. To claim that the only way to protect against security risks is to operate an entirely closed network recalls arguments made by AT&T in *Carterfone* in 1968. Just as the incumbents were wrong then, they are wrong now.

V. CONCLUSION

Skype respectfully requests that the Commission grant the relief requested in its Petition and described above. We stand ready to answer any additional questions that the Commission may have in this matter.

Respectfully submitted,

SKYPE COMMUNICATIONS S.A.R.L.

/s/

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Of Counsel

Dated: May 15, 2007



July 10, 2007

ELECTRONIC FILING

Chairman Kevin J. Martin
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: *Service Rules for the 690-746, 747-762, and 777-792 MHz Bands, WC Docket No. 06-150, WC Docket No. 06-129; PS Docket No. 06-229; WT Docket No. 96-86*
Ex Parte

Dear Chairman Martin:

The promise of an open, mobile Internet stirs up the entrepreneurial spirit. Skype Communications Sarl (“Skype”), on behalf of its users, believes that this entrepreneurship lies in the hands of a community of developers, consumers and technologists; it is not the exclusive preserve of the network operators. This community is ready to deliver an explosion of new mobile products if the Commission sets its policy correctly. In our view, the best course for the Commission is to adopt 700 MHz auction rules that balance the interests of network operators *and* innovative software developers like Skype. Such a policy will maximize the value of the 700 MHz spectrum and is in the best interest of consumers. To that end, Skype appreciates the Commission’s willingness to consider issues related to device competition and Internet openness in the context of its upcoming 700 MHz auction – a policy discussion in which Skype has been an active participant.¹ This letter follows up on that discussion and further explains Skype’s interest in this proceeding.

¹ Skype is a member of the Coalition for 4G in America. *See* Comments of the Coalition for 4G in America, WT Docket No. 06-150 (May 23, 2007). *See also* Skype Communications S.A.R.L., Petition to Confirm a Consumer’s Right to Use Internet Communications Software and Attach Devices to Wireless Networks, RM-11361 (filed Feb. 20, 2007) (“Skype Petition”); Reply Comments of Skype Communications S.A.R.L., RM-11361 (May 15, 2007) (“Skype Reply Comments”).

As the Commission knows, Skype is a software company, not a telecommunications carrier. Skype does not own or control any telecommunications facilities. Instead, Skype relies upon network partners who themselves are telecommunications carriers, to enable Skype users to communicate over the Internet, share ‘presence’ information online, make video calls, transfer money between users or call ordinary phones.² Like many other Internet companies, Skype collaborates with an ecosystem of software and hardware partners to maximize the capabilities of our software. At the access layer, for example, Skype has joined forces with wireless operators in Europe and Asia who extend Skype into a mobile environment.³

I. Competition Among Wireless Networks

Consistent with this business model, Skype does not intend to transform itself into a telecommunications carrier by bidding for spectrum in the 700 MHz auction. In our view, consumer benefits are advanced when each ecosystem partner performs a function it does best. Our European and Asian wireless carrier partners specialize in building and operating networks, enabling Skype to focus on what it does best: innovating and building software that enables the world’s conversations. Skype is therefore participating in this proceeding on behalf of our users, who might subscribe to the Internet access services provided in the 700 MHz band.

New technologies enable new applications, and in our experience, new entrants are more likely to deploy new technologies. Skype is a member of the Coalition for 4G in America because we believe that new entry is a necessary but not sufficient precondition to promote innovation and lower prices for consumers.⁴ We urge the Commission to avoid defining the objectives of the 700 MHz proceeding too narrowly. Multiple providers of facilities-based wireless services, at least in theory, increase the possibility that competition will spur carriers to innovate with new business models. However, at present the wireless market is dominated by a few large players, and competition between incumbent network providers — all of whom have mixed incentives to encourage VoIP-based competition — is insufficient to maximize consumer benefits in the mobile market. The Commission’s goal for the 700 MHz proceeding should not be simply to introduce additional competitors who have the same incentives to thwart device and application competition. Seen in this light, an increased number of intermodal competitors is a necessary but not sufficient condition to maximize consumer welfare in wireless.⁵

² When a Skype user purchases paid services, these carrier partners allow a communication that might remain completely online to terminate to an ordinary mobile or fixed-line telephone.

³ For a description of the mobile collaboration between Skype and Hutchinson “3”, see <http://xseries.three.com/index.shtml>.

⁴ Skype Petition at 24-25.

⁵ See Barbara van Schewick, *Toward and Economic Framework for Network Neutrality Regulation*, 5 J. on Telecomm. & High Tech. L. 329, 368-78 (2007).

A better, more balanced policy outcome is one that encourages a cycle of investment in networks *and* in applications that consumers use on those networks. This is best achieved through *Carterfone* principles — permitting consumers to use wireless devices and applications of their choice — and wholesale alternatives throughout the wireless industry. To achieve this qualitative shift in the wireless marketplace, the Commission should design its 700 MHz auction to better balance the interests of carriers, their subscribers and the myriad of device and application enterprises that hold the promise of offering new products and content.

Specifically, the record demonstrates that large license blocks, such as a 22 MHz REAG Block in the Upper 700 MHz band proposed by the Coalition for 4G in America, can facilitate new entry without denying smaller carriers spectrum — if those large spectrum blocks carry appropriate conditions to facilitate competitive bidders. In Skype’s view, the surest way to promote wireless competition would be to ensure that all of the 700 MHz spectrum — or, at minimum, the 22 MHz REAG block — is auctioned under both “open access” rules and the “openness” principles described in the following section. There are also a number of additional steps the Commission can take to prevent the largest incumbents from winning the REAG licenses, thereby promoting network-level competition. These include adoption of anonymous bidding and the application of spectrum caps to the largest licenses. Should the Commission not adopt a spectrum cap, the Commission should opt for a band plan that maximizes the number of potential new-entrant bidders — or face the risk of losing any chance at robust competition resulting from this auction.

II. Competition Among Devices and Applications

Skype recently filed a petition — commonly known as the “*Carterfone*” Petition — seeking application of the Commission’s Broadband Policy principles to wireless broadband operators in order to bring the full benefit of competition and innovation to consumers of wireless broadband devices and software applications. As we made clear in our Petition, there is a growing list of discriminatory and anticompetitive practices occurring in the wireless world, whereby users are denied the opportunity to use desired applications.⁶ These carrier practices are stifling innovation by depriving entrepreneurs of incentives to build creative new applications and content. With regard to the 700 MHz auction, however, the Commission has a unique opportunity to inject some needed competition into the wireless market.

That is why Skype has urged the Commission to apply its time-honored *Carterfone* principles to all wireless networks operating in the CMRS bands.⁷ Doing so will maximize consumer benefits and unlock new sources of innovation and price competition. A number of parties in this proceeding have submitted comments arguing for various device and application layer “openness” principles. In our view, the *Carterfone* “openness” principle is captured by the Commission’s *Broadband Policy*

⁶ Skype Petition at 17-20.

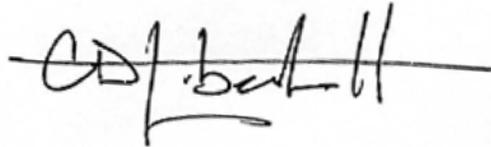
⁷ Skype Reply Comments at 11-15.

Statement. If the Commission decides to diverge from that *Policy Statement*, we urge the FCC to adopt an “openness” principle that protects both a consumer’s right to attach unlocked devices and run applications of their choosing.⁸ An enforceable *Broadband Policy Statement* applied to wireless networks is a necessary pre-requisite to a wireless Internet ecosystem that maximizes the value of the 700 MHz bands and CMRS services in general.

We will not repeat the importance of this proceeding to the Commission’s broadband policy and to the interests of innovators such as Skype. We understand that you share this view with us. For our part, we are committed to developing new software applications that delight our users. It is our hope that when the 700 MHz auction concludes and these networks are built, Skype users will have an additional choice for their Internet access services and the applications that run atop increasingly powerful mobile computing devices.

* * *

Please do not hesitate to contact me if you have any further questions or if Skype can be of any further assistance in this proceeding.

A handwritten signature in black ink, appearing to read "C. Libertelli", with a horizontal line extending to the right from the end of the signature.

Christopher Libertelli
Senior Director
Government and Regulatory Affairs
Skype Communications Sarl

⁸ *Id.*

Skype Communications Sarl
15 rue Notre Dame,
L-2240 Luxembourg



www.skype.com

July 24, 2007

ELECTRONIC FILING

Chairman Kevin J. Martin
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: *Service Rules for the 690-746, 747-762, and 777-792 MHz Bands, WT
Docket Nos. 06-150, 06-129, 96-86; PS Docket No. 06-229
Ex Parte***

Dear Chairman Martin:

The press has reported that the Commission is considering a draft order in the 700 MHz auction proceeding that will include a *Carterfone*-type “device and application neutrality” provision. As you said today before the House Commerce Committee, “a network more open to devices and applications can help ensure that the fruits of innovation on the edges of the network swiftly pass into the hands of consumers.” Skype not only agrees completely with your statement, it commends you for leading the way on this critically important consumer issue.

To protect the innovation that device and application neutrality will bring, the license conditions relating to device and application openness should be enforceable through a clear and efficient process. Any aggrieved party — whether a consumer, a handset manufacturer, or an applications developer — should have the right to seek to enforce the license conditions. Such parties could avail themselves of existing complaint procedures pursuant to Part 1 of the Commission’s rules, with some modifications to ensure prompt resolution of disputes and to account for the disparity in information regarding network management practices available to potential complainants *vis-à-vis* carriers.

Given this information disparity, complainants should be required to provide only sufficient details regarding the specific carrier practices at issue and to allege a *prima facie* case that the carrier has violated the license conditions. Complaints should be made public and the usual Part 1 procedures regarding pleadings, evidentiary sufficiency, confidentiality, and enforcement sanctions should apply. The Wireless

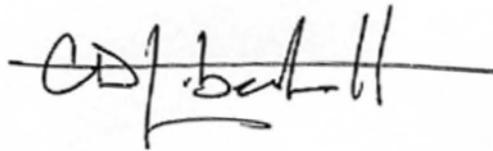
Telecommunications Bureau should resolve all complaints within 180 days of the filing of the complaint and such decisions should be subject to the Commission's normal appeals/review process.

In addition, the relevant 700 MHz license conditions should require the licensee to file, within a reasonable time of acquiring the license, information regarding its proposed network management practices. Such information should be subject to public comment and should be updated routinely. This process will provide carriers with greater assurance that their network management practices are acceptable, while the public will have greater assurances regarding applications and devices that can be used on the carrier's 700 MHz spectrum.

This enforcement process would reduce the need for detailed technical regulation of the 700 MHz licensee's service offerings. Should the Commission later find that the procedures outlined above are insufficient to implement the device and application openness license conditions, it could initiate a proceeding to establish basic technical standards to implement such openness similar to those of Part 68 of the Commission's rules.

* * *

Please do not hesitate to contact me if you have any further questions or if Skype can be of any further assistance in this proceeding.

A handwritten signature in black ink, appearing to read "C. Libertelli", with a horizontal line extending to the right across the end of the signature.

Christopher Libertelli
Senior Director
Government and Regulatory Affairs
Skype Communications Sarl

REMARKS OF COMMISSIONER MICHAEL J. COPPS
“FREE MY PHONE”
NEW AMERICA FOUNDATION FORUM
WASHINGTON, DC
JANUARY 22, 2008

Good Morning and thanks to my friend Michael Calabrese and the New America Foundation for holding another of its forums that have done so much to serve the public interest. It’s an honor, and somewhat humbling, to speak before this distinguished panel and what is obviously an expert audience. I’ll try to be brief because I’m just as eager to hear from the luminaries gathered here as you are.

Over the week-end, I was remembering back to 1970 when I first went to work in the United States Senate. Our fanciest piece of work-saving equipment was an old robo machine that cranked out pretty awful-looking mass mailings. Everything else was typed by hand and when Selectric typewriters came along, we all fought tooth-and-nail to be one of the lucky few to get one. When the Senator dictated even a minor change to a speech draft, his personal secretary had to retype the entire text. When we needed to phone back to the state, we had a WATS line, but initially we shared it with a more senior Senator, I think Richard Russell from Georgia, and when he wanted on, Senator Hollings had to get off. I started out doing research and when Senator Hollings wanted information—which was usually instantaneously—I had to call around, beg for help from a small and over-worked Congressional Research Service, or otherwise figure out how to get it Lone Ranger style. It was truly antediluvian—before the technology flood and the knowledge tools that have transformed everything.

Four years ago, New America hosted a forum on cyberspace (as we called it then, for you young folks out there), giving me a chance to think out loud about the challenges regulators and legislators would face in maintaining the Internet’s openness. Looking back, it’s been every bit as challenging as I predicted. But well worth the effort, I think, because the Internet today *is*—for the most part—the fertile field for innovation, democracy, and self-expression that many of us hoped it would be. That’s today, of course—but today never comes with guarantees for tomorrow, does it?

So I am grateful that New America is always pushing us in Washington to think about how to keep technology open and free. Today it is pushing us to think about openness in the wireless world. Just about a year ago, New America brought a paper by Professor Tim Wu to Washington’s attention. Tim explained why the time has come to apply the *Carterfone* and Internet Openness principles from the *wireline* to the *wireless* world. The idea is simple: wireless customers should be able to use *any* device or application they want, to reach *any* legal content they want, so long as they don’t cause harm to the network. It sounded right to me, and in March of last year I called for an FCC rulemaking on the issue.

Note that I said it’s a simple idea—I didn’t say it was uncontroversial. Quite the opposite. Critics rushed to tell me that third-party handsets just wouldn’t work for wireless—they would lead to more dropped calls, less spectral efficiency, and maybe even bring down whole cellular networks. (Sound familiar? These are variations on the very arguments raised 40 years ago to *Carterfone* itself.) Critics also argued consumers

didn't want network openness—they were more than happy with the services they had, and additional choices would just confuse them.

That didn't sound quite right to me and, as it turns out, it didn't sound right to some of the nation's leading consumer technology columnists either. Even though we inhabit very different ecosystems, they were—quite separately—concluding that the cell phone market looks a lot worse than other parts of the personal electronics market. And, boy, were they right! When I buy a new computer, I get to choose exactly what I want: a personalized bundle of processor, hard drive, video card, display, networking device and so forth, plus whatever software I wish to load. Wherever I can get a Wi-Fi or Ethernet connection, I can reach the content I want: *Business Week*, the *Wall Street Journal*, the FCC's homepage, or the millions of videos on YouTube. It's a fantastic world of choice—and we need to keep it this way.

Now let's look at the cell phone market. For the most part, we're limited to the handful of phones that our particular carriers have selected for us. Most of those devices offer precious little choice over applications or content. And, even more amazing, though my device may be branded Nokia, Motorola, LG or whatever—it's the *carrier* (not the handset manufacturer) that has the final say on its features. That is why, as Chairman Martin demonstrated at an FCC open meeting, the European version of a leading manufacturer's popular phone comes *with* Wi-Fi, yet the identical model here in the U.S. comes *without* Wi-Fi—simply because the U.S. carrier wanted to protect its business model. How on earth do American consumers benefit when a perfectly good feature is disabled so their carrier can protect its revenue stream?

In addition to the downsides for consumers, the carrier veto handicaps entrepreneurs (which then in turn further harms consumers). When Google's founders had an idea about how to build a search engine, they bought some server space literally using their credit cards (this was in 1998), put their product on the Web, and you all know the rest. When a wireless entrepreneur has a great idea, he or she has to pitch it to the handful of carriers—and if they say no, it never leaves the ground. The *New York Times* reports that European wireless designers think our system is nuts. Maybe they're right.

Now let's fast forward a few months from early 2007, when talk of wireless *Carterfone* first hit Washington. All of a sudden, the rhetoric shifted 180 degrees. It was downright seismic. In Congressional hearings, the FCC's own 700 MHz auction rules, and the front pages of many of the nation's leading newspapers—all the talk was about a new wireless *Carterfone* world. And the latest shoe to drop is that most major carriers have publicly stated that open platforms and open access are, in fact, the models of the future. No longer do we hear about awful harms to networks, gone are the predictions of consumer indifference. Instead, we now have industry-led efforts to create open platform standards. We have leading carriers adopting open access programs—and even asserting that they have been pro-open access for years.

Sounds good. I hope it is as good as it sounds. But we have to ask: has the reality shifted as much as the rhetoric? In 2009, we will start doing case-by-case review of complaints about the 22 MHz of “open platform” 700 MHz spectrum. That will be a good opportunity for the FCC to start looking at the details of these issues. Better yet, we

could also act at any time to declare general principles for open wireless platforms in response to a petition for rulemaking pending at the Commission right now—something I would enthusiastically support. But if we're talking real-world and what is most likely for 2008, it's that most of the action will be in voluntary industry-led initiatives.

And I won't object strongly to that—at least for now. We've seen with Wi-Fi, for example, that enlightened FCC spectrum policies and industry-led product development can deliver enormous benefits to consumers without too much regulation. But I (and I hope others) will certainly be watching carefully to see how the market develops. I would also like to see the FCC staff watching closely—monitoring is a better word. Not many people categorize me as a Reaganite, but I always liked the sage counsel he gave us when he said, "Trust but verify." The real proof will be in the pudding. If voluntary initiatives bring consumers the kind of choice and freedom that they've come to expect in other parts of the technology marketplace, then I will be fully supportive. If not, then I see and will push for a greater Commission role in protecting consumers and entrepreneurs from the power of the giant telecom providers that now dominate the wireless market.

In particular, I will be looking at a few key areas.

First is price. There are a thousand different ways that a carrier can use pricing plans to discourage consumers from using third-party devices and software. The only limit is the creativity of its marketing department. The simplest example is, of course, a connection charge for bringing your own handset to the carrier. But there are also more subtle ways. If I want a data-only plan because I intend to use VoIP, I shouldn't have to pay a price close to that for traditional voice-plus-data. That's what happened at times in the wireline world with standalone DSL—and we must not let this anti-consumer tactic infect the wireless world.

And then there's the issue of handset subsidization. If a carrier charges \$50 per month for service (based on a 2 year contract with a huge early termination fee) to recover the cost of subsidizing a handset, then I should get a *better* rate if I bring my own phone. And I shouldn't have to accept an early termination fee, either. While I certainly cannot enumerate today every pricing tactic that would cause me concern, I hope these examples give an idea of how I will approach this issue.

Second is consumers' freedom to take the phone from carrier to carrier and to access the applications and legal content of their choosing. This is especially important as mobile handsets become platforms for all sorts of IP-based services. At home, using my PC, I get to choose between iTunes and Amazon.com, Google Maps and Mapquest, and Flickr and Shutterfly. I should have that same freedom of choice on my wireless handset, too—that's good for consumers and good for entrepreneurs. In fact, it is precisely this layered model that has made the Internet so great. When I switch my broadband provider at home, I don't have to buy a new computer. I get to use all my old software, and I can still access the same content on the Internet. It is high time wireless users and entrepreneurs get to take advantage of this freedom, too.

In other words: no blocking, no locking, and no discriminatory degradation of service. This last point is worth emphasizing. It's easy to see why blocking a particular application is bad for consumers, but carriers can also achieve the same result more

stealthily, *i.e.*, by using their control over the network to selectively degrade the consumer experience for particular applications. If carriers start unreasonably discriminating between IP packets in order to steer me towards or away from a particular VoIP, mapping or photosharing application, for example, that would be a serious departure from my definition of openness. Carriers can't reduce the sound quality of my voice call to L. L. Bean as opposed to Land's End right now, and I see no reason why they should gain a comparable ability as we move to an IP-based world.

Third is the question of equipment and software certification and industry standard-setting. Entrepreneurs need freedom to innovate without permission. Certification should be quick, inexpensive and preferably performed by an independent lab—no one carrier or manufacturer should have undue influence over the process. That's how Wi-Fi works, and it's been a big success. Carriers and manufacturers should also strive to avoid proprietary formats and interfaces, in favor of using industry-wide standards. I recognize, of course, that there may be other models for making the process work well. But the further you get from the independent, standards-based model—which we know works—the more concern there is likely to be, and more scrutiny, too.

Fourth is the wholesale market. As many of you know, I would have favored a condition in the 700 MHz auction to mandate wholesale access. This would allow entrepreneurs to sell wireless devices *and* service directly to the public, without first requiring customers to “bring their own access.” I believe that a mandate in this direction could have kick-started a more vigorous wholesale model, with great benefits for consumers and entrepreneurs alike. I was told in response that carriers could, and would, do so on their own. Well, in 2008, I'd like to see that happen. Already, with Amazon.com's Kindle device, we may be seeing movement in that direction. I'd like to see more. And I would also like to see some rigorous FCC investigation of just how well the wholesale market is functioning.

This is an exciting time in the wireless market and consumers have a lot to be looking forward to in 2008. Cell phones allow us to leave our offices and our homes and still be in voice contact with people who need us. The next generation of wireless handsets should let us put the entire functionality of the modern office or home office in our pockets. I really hope that, when I open my *Wall Street Journal* and *Business Week* in 2009, our next panelists will be telling me that the wireless marketplace is every bit as vibrant as the rest of the consumer electronics marketplace. But it will take work from all of us here—industry, legislators, government, academics, and journalists—to reach that happy place. Like all of you, I am excited to be part of the journey

Thank you.



May 22, 2008

ELECTRONIC FILING

Chairman Kevin J. Martin
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: *Ex Parte*, RM-11361

Dear Chairman Martin:

In recent weeks, representatives of the wireless industry have met with Commission staff and urged the dismissal of the Petition filed by Skype Communications S.A.R.L. ("Skype") in the above-captioned proceeding ("Skype Petition").¹ This lobbying includes a number of mischaracterizations of the relief requested by Skype. Skype therefore takes this opportunity to clarify the record on several issues central to the policy environment for the wireless Internet.

There are now several, interrelated proceedings at the Commission, and an appeal of the Commission's decision in the 700 MHz Auction proceeding, that will determine the level of openness in the wireless market. Skype's pending Petition, The Rural Cellular Association's handset exclusivity Petition, CTIA's DC Circuit appeal of the Commission's C-block openness rules, and Google's request that Verizon Wireless acknowledge and agree to abide by the scope of the C-block rules are each active. Skype respectfully submits that in each of these matters, the wireless industry's opposition to the Commission's openness policy raises questions about whether the industry will faithfully implement the Commission's rules and policies.

¹ Skype Communications S.A.R.L., *Petition to Confirm A Consumer's Right To Use Internet Software and Attach Devices to Wireless Networks*, RM-11361 (filed Feb. 20, 2007).

In this letter, Skype focuses on the essence of its Petition and urges the Commission to grant the grant the Petition consistent with the approach set forth in this letter. If, however, the Commission decides to dismiss the Petition, it should do so without prejudice and should reaffirm – in the strongest language possible – the Commission’s intention to monitor the wireless carriers’ practices and measure them against the standards set out in the Commission’s *Broadband Policy Statement*.²

In its lobbying efforts, the wireless industry invariably mischaracterizes the relief Skype requested in the Petition in an effort to establish that such relief is not needed, hence justifying a dismissal. Skype, therefore, takes this opportunity to repeat the essence of its Petition, which was to have the Commission protect wireless consumers by affirming that the Commission’s *Broadband Policy Statement* applies to wireless broadband networks. The requested relief is a measured response to the dynamics of the wireless market and is a view apparently shared by a majority of Commissioners. As such, it is a consensus position that should now be expressed in a formal statement in order to send a message to an evasive wireless industry and to encourage those, like Skype, who have reasonable expectations that wireless broadband platforms will be open to applications and devices.³

As we made clear in our Reply Comments in the above-captioned proceeding, the Skype Petition merely asks the Commission to affirm that wireless broadband networks are subject to the principles of the *Broadband Policy Statement*.⁴ Skype focused on the two principles most important to protect wireless consumers – their right to attach devices of their choosing to wireless

² *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Docket No. 02-33, *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, CS Docket No. 02-52, Policy Statement, FCC 05-151 (rel. Sep. 23, 2005) (“Broadband Policy Statement”).

³ A wide array of industry and consumer groups agree that the *Broadband Policy Statement* should apply to wireless broadband networks. See, e.g., Comments of the Information Technology Industry Council, RM-11361, at 1 (Apr. 30, 2007); Comments of the Consumer Electronics Association, RM-11361, at 2 (Apr. 30, 2007); Comments of the VON Coalition, RM-11361, at 2 (Apr. 30, 2007); Comments of Mobile Industry Executives, RM-11361, at 6 (May 1, 2007); Comments of Consumers Union, Consumer Federation of America and Free Press, RM-11361 (Apr. 30, 2007); Comments of the Ad Hoc Public Interest Spectrum Coalition, RM-11361 (Apr. 30, 2007).

⁴ Reply Comments of Skype Communications S.A.R.L., RM-11361, at 3-4, 11-15 (May 15, 2007).

networks,⁵ and their right to use applications of their choice on wireless broadband networks.

Skype referred to the seminal *Carterfone* case, which first established consumers' attachment rights as long as they did not cause harm to the network, to highlight a basic principle and not to have detailed *Carterfone* rules applied in today's wireless marketplace. *Carterfone* is cited in the *Broadband Policy Statement* for the very same reason.⁶ Indeed, consumers will experience the relief Skype sought in its Petition if the Commission clarifies that the *Broadband Policy Statement* applies to Internet access services supplied by wireless broadband networks and that it will address any violations of the *Broadband Policy Statement* on a case-by-case basis.

Affirming that the *Broadband Policy Statement* applies to wireless broadband networks is consistent with your recent testimony on Capitol Hill and is the logical conclusion of the Commission's declaration in March, 2007, that wireless broadband networks are classified as Title I "information services."⁷ In classifying wireless broadband services in the same regulatory category as DSL, cable modem and broadband over power line, the Commission noted that such a classification "furthers [the Commission's] efforts to establish a consistent regulatory framework across broadband platforms by regulating like services in a similar manner."⁸ By stating formally that the principles of the *Broadband Policy Statement* apply to wireless networks, the Commission would firmly establish an essential policy of technological neutrality and regulatory parity.⁹

⁵ As noted above, earlier this week the Rural Cellular Association filed with the Commission a Petition for Rulemaking in which it explains that exclusive arrangements between wireless carriers and handset manufacturers deny rural users the ability to use handsets of their choice. Rural Cellular Association, *Petition for Rulemaking Regarding Exclusivity Arrangements Between Commercial Wireless Carriers and Handset Manufacturers*, RM-_____ (filed May 20, 2008).

⁶ *Broadband Policy Statement* at 3, n. 13.

⁷ *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, Declaratory Ruling, WT Docket No. 07-53, FCC 07-30, at 2, ¶ 2 (rel. Mar. 23, 2007) ("Wireless Broadband Order").

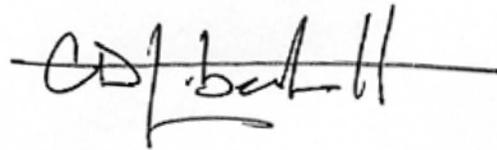
⁸ *Id.*

⁹ In clarifying that the principles of the *Broadband Policy Statement* apply to all broadband networks irrespective of technology, and in enforcing such principles on a case-by-case basis, the Commission would not be precluded from recognizing that "reasonable network management" may be different for different technologies. The consumer rights expressed in the *Policy Statement*, including the right to attach devices and use applications of one's choice, would be viewed in light of the particular technical characteristics and network topology of wireless, cable and telco networks.

In doing so, the Commission could also make clear that traditional CMRS voice services are not subject to the *Policy Statement*, which is consistent with the settled expectations of CMRS providers whose services will remain under Title II and any other applicable statutes and rules.¹⁰ There is an intrinsic bright line test that is easily implemented: if the wireless “smartphone” or other device can be used by the consumer to reach the Internet, the protective principles of the *Policy Statement* will apply pursuant to Title I of the Communications Act – just as they applied to DSL and cable modem services when such services were classified as Title I information services.

By affirming that wireless broadband services are subject to the *Broadband Policy Statement* and that it will address any violations of the *Policy Statement* on a case-by-case basis, the Commission will protect vital consumer rights with a policy environment that serves the interests of wireless consumers.

Respectfully submitted,



Christopher Libertelli
*Senior Director, Government and
Regulatory Affairs – North America*
SKYPE COMMUNICATIONS S.A.R.L.
1250 Eye Street, NW, Suite 1002
Washington, DC 20005

cc: Commissioner Michael J. Copps
Commissioner Jonathan S. Adelstein
Commissioner Deborah Taylor Tate
Commissioner Robert M. McDowell

¹⁰ It should be noted that the classification of some services offered by wireless carriers is disputed and is the subject of ongoing proceedings before the Commission. In clarifying that the *Broadband Policy Statement* applies to Title I wireless broadband services but not Title II CMRS services, the Commission should not prejudge in any way the Petition filed by Public Knowledge et al. addressing text messages and short codes – a Petition which Skype strongly supports.



September 12, 2008

ELECTRONIC FILING

Chairman Kevin J. Martin
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Ex Parte, RM-11361

Dear Chairman Martin:

Skype Communications S.A.R.L. ("Skype") writes to respond to various statements made at CTIA's Wireless I.T. & Entertainment conference in San Francisco. Attached to this letter is a Reuters report on what seems to be a wireless industry theme at the CTIA meeting. Instead of broadly carrying forward the Commission's tremendous strides toward open networks, the word coming from the CTIA gathering is that open networks present a multitude of problems for the carriers, and that to protect consumers from too many choices, network operators must be the gatekeepers of the consumer experience. This is inconsistent with the Commission's *Broadband Policy Statement* and a market structure that maximizes choice and innovation.

Skype disputes the need for wireless carriers to maintain their closed networks not only in the face of consumer preferences but contrary to their assurances to the Commission¹ that the industry had adopted a policy of openness such as to obviate the need for the relief that Skype sought in its Petition in the above-captioned proceeding ("Skype Petition").² Apparently,

¹ Ex Parte filing by CTIA – The Wireless Association, RM-11361, April 14, 2008, at 1 ("Wireless carriers, reacting to the demands of consumers in the competitive market, already have begun implementing a variety of openness initiatives designed to expand consumer access to new and innovative wireless devices and applications. . . . Because both Commission action and the wireless marketplace have addressed the concerns raised by Skype, the Petition should be dismissed.").

² Skype Communications S.A.R.L., *Petition to Confirm A Consumer's Right To Use Internet Software and Attach Devices to Wireless Networks*, RM-11361 (filed Feb. 20, 2007).

these assurances of openness led some at the Commission to believe that there was no present need for Commission action. In this regard, the carriers' apparent change of heart should be a cause for concern.

Despite the carriers' assurances, when lip service to the goals of open networks is translated into their terms of service, they continue to require their subscribers to limit the applications and devices that can be used on their networks. The attitude of the wireless carriers was perhaps best summed up in Sprint Nextel Corp. CEO Dan Hesse's recent comment: "The big Internet can be daunting There can be too much choice."³ This stands in stark contrast to the Commission's wise policies designed to promote as much consumer choice as possible.

Skype respectfully submits that the wireless carriers continued opposition to open networks – including their restrictive terms of service – raises questions about whether the industry will faithfully implement the Commission's rules and policies, including the standards set out in the Commission's *Broadband Policy Statement*.⁴ Skype is mindful of the challenges that wireless operators face moving from a close model to an open, Internet-friendly business. As noted, despite some recent steps to modify terms of service toward openness, carriers continue to prohibit voice applications that compete with their core business.⁵ Consumer choice, competition and free markets, not carriers acting to block competition, should win the day in wireless – now, not later. If the Commission believed that the transition to more open networks was going to proceed quickly, statements out of CTIA's convention suggest just the opposite.

Skype repeats that the best way for the Commission to maintain the vigilance that is necessary to protect consumers' interest in open wireless networks is to for the Commission to affirm that the Commission's *Broadband Policy Statement* applies to wireless broadband networks. This would be a measured response to the dynamics of the wireless market and would send the correct message to an evasive wireless industry. It would also encourage those in the application development community, like Skype, who have reasonable

³ Allie Winter, *Embracing an Open Network*, RCR Wireless News, Sep. 10, 2008.

⁴ *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Docket No. 02-33, *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, CS Docket No. 02-52, Policy Statement, FCC 05-151 (rel. Sep. 23, 2005) ("Broadband Policy Statement").

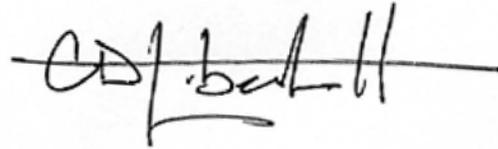
⁵ See Letter from Robert W. Quinn, Jr., Senior Vice President-Federal Regulatory, AT&T, to Commissioner Robert M. McDowell, WC Docket No. 07-52, July 25, 2008, at 1, n.1 (noting that all major wireless carriers do not permit the use of peer-to-peer VoIP applications like Skype).

expectations that applications will run as they were designed on wireless broadband platforms.⁶

Affirming that the Commission will enforce the *Broadband Policy Statement* and address any violations of the *Policy Statement* on a case-by-case basis is fully consistent with the Commission approach to constraining Comcast's abusive practices.⁷ In this way, the Commission will maintain a policy environment that serves the interests of consumers, carriers and innovative providers of wireless devices and software applications.

Thank you for your continued vigilance in this matter. Please do not hesitate to contact me if you have any questions or concerns.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'C. Libertelli', written over a horizontal line.

Christopher Libertelli
Senior Director, Government and
Regulatory Affairs - North America
SKYPE COMMUNICATIONS S.A.R.L.
6e etage, 22/24 boulevard Royal,
Luxembourg, L-2449 LUXEMBOURG

Attachment

⁶ A wide array of industry and consumer groups agree that the *Broadband Policy Statement* should apply to wireless broadband networks. See, e.g., Comments of the Information Technology Industry Council, RM-11361, at 1 (Apr. 30, 2007); Comments of the Consumer Electronics Association, RM-11361, at 2 (Apr. 30, 2007); Comments of the VON Coalition, RM-11361, at 2 (Apr. 30, 2007); Comments of Mobile Industry Executives, RM-11361, at 6 (May 1, 2007); Comments of Consumers Union, Consumer Federation of America and Free Press, RM-11361 (Apr. 30, 2007); Comments of the Ad Hoc Public Interest Spectrum Coalition, RM-11361 (Apr. 30, 2007).

⁷ *Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications*, Memorandum Opinion and Order, File No. EB-08-IH-1518, WC Docket No. 07-52, FCC 08-183 (rel. Aug. 20, 2008).



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Mobile firms like cash from data, but worry about devices

Thu Sep 11, 2008 10:09am EDT

By David Lawsky

SAN FRANCISCO (Reuters) - U.S. mobile phone companies have begun to see substantial returns from delivering data and not just voice, fueled by greater openness on their networks, industry leaders said on Wednesday.

But top executives of three of the nation's four largest mobile carriers also said they are still worried by consumer demands for unfettered freedom to use untested devices or software applications to connect to their networks.

"You are seeing the bulk of our opportunities really coming out of non-voice activities," Robert Dobson, chairman and president of T-Mobile's USA unit, said during a panel at a wireless industry trade show in San Francisco.

"Unfettered access would be a pretty bad experiment," Dobson said. "There needs to be some stewardship or control."

Industry trade group Cellular Telecommunications Industry Association (CTIA), the organizers of the conference, released new statistics showing that \$14.8 billion of U.S. wireless revenue came from non-voice services in the first half of 2008. That's 20 percent of total U.S. wireless service revenue and a 40 percent increase over the first half of 2007, CTIA said.

The rapid growth in data services has been fueled by the success of Apple's iPhone with AT&T Inc and a race by rival carriers such as Verizon and Sprint to offer competing phones and data services with touchscreens and hot software.

Others expressed concern that if there was too much freedom interoperability would suffer.

At the same time, Dobson said networks would be "most productive with stewardship and control."

But consumers have a different opinion.

"Let's take a poll of the audience," said Lowell McAdam, the chief executive and president of Verizon Wireless. "Would any of you like to put any device and any application on any network?"

McAdam was caught off guard as the audience erupted into cheers, applause and a significant number raised their hands.

"I think we have to be careful to not all run to one side of the ship," he said, and then painted a picture of a "Wild West" frontier with unbridled open access.

Consumers have become accustomed to phones that are essentially very expensive computers for which they pay little, McAdam said. And he said customers count on the option for "when things go wrong, to walk into a T-Mobile store, a Sprint store, a Verizon Wireless store, an AT&T store."

But Verizon's chief executive said that the freedom to hook up devices willy-nilly would mean an end to that.

"In an open environment that's going to change. You're going to have to pay more for the devices, just like the PC world. When an application crashes on your Dell laptop you don't call your cable modem provider," McAdam explained.

The picture he painted describes the situation in some countries in western

Europe, where customers go to stores and purchase phones that are never "locked" to one provider, but can easily transfer from network to another. Customers who need support call their wireless companies, which compete head-to-head through price and service for their business.

Josh Silverman, chief executive of Skype, the Web-based telephone calling unit that is the world's largest Internet phone carrier, said he was skeptical about how open conventional U.S. mobile phone operators can be.

"I'm not speaking (of) Verizon specifically, but we've certainly seen from carriers that they often say one thing and in practice do something else," he told Reuters in an interview on Tuesday.

The Skype executive argued that consumers should be able to pick whatever combination of networks or devices they like, along the lines of the computer and Internet industries.

(Additional reporting by Eric Auchard in San Francisco and Sinead Carew in New York; Editing by Bernard Orr)

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October 8, 2008

Electronic Filing

Chairman Kevin J. Martin
Federal Communications Commission
445 12th Street, SW
12th Street Lobby, TW-A325
Washington, D.C. 20554

Re: *Ex Parte Presentation*; RM-11361

Dear Chairman Martin:

Skype Communications S.A.R.L. ("Skype") responds briefly to CTIA's letter of September 24th and Sprint Nextel's letter of September 26th, both of which take issue with Skype's earlier letter to you regarding the lack of openness of wireless networks. CTIA and Sprint go to great lengths to rebut Skype's characterization of remarks made at a CTIA conference earlier this month, which Skype viewed as indicative of a hesitant, closed network mentality among wireless operators.

Rather than prolong an empty debate about whose characterization of remarks at the conference is correct, let me point out that Skype's application is forbidden, blocked and otherwise interfered with by the largest CTIA members.¹ When CTIA members claim that "the entire Internet is open," the intended implication is that the entire Internet is open, including to multi-modal Internet communications applications like Skype. The truth of the matter, however, is that, despite their representations to the contrary, applications are blocked even on the most recently-announced advanced handsets.² The proof of Skype's argument is in the conduct of CTIA members, no

¹ Most network operators continue to restrict VoIP and or P2P applications on their network in apparent violation of the protocol-agnostic network management techniques employed by other operators, including Comcast.

² See, e.g., Daniel Roth, *Android: No VOIP for You -- and Other Oddities With the Google Phone*, <http://blog.wired.com/business/2008/09/three-years-and.html>. Sep. 23, 2008. In addition,

matter what speeches are made at conferences. If Skype is blocked, the network is not open.

I also would like to take this opportunity to remind you that CTIA is currently suing the Commission to overturn the very openness rule they now claim to embrace. If the wireless industry is serious about openness, CTIA would immediately withdraw that litigation.

CTIA attempts to sidestep the fact that its members' networks are not open by arguing that Skype itself is closed and, apparently, therefore cannot advocate consumer empowerment principles and network openness. To make this point, they cite a blog post by Mr. Michael Robertson, CEO of Gizmo Project, a VOIP application. Fundamentally, Mr. Robertson is wrong. Mr. Robertson confuses open networks with open platforms. Skype is an open platform. Anyone, anywhere on the planet can download Skype for free, and he or she will be able to use Skype. Skype's software is open to any application developer through our public Application Programming Interface ('API') program. Over 10,000 developers have taken advantage of this API and are part of Skype's developer program. In fact there are many applications that use Skype's APIs to send calls to/from Skype users and SIP endpoints, including VoSky, Fring, etc. Skype also recently collaborated with Digium/Asterisk, which will now bring Skype into "soft PBXs" for millions of users and allow many forms of applications and services to connect to Skype seamlessly.

Mr. Robertson is also wrong on the law. He rehashes the incumbent wireless operators' various arguments against network neutrality and confuses to whom the *Internet Policy Statement* applies. Openness rules are properly targeted at network operators because of the limited intermodal choices available to US consumers in a wireless market dominated by the top three operators. Conversely, there is nearly limitless choice in Internet applications, with fierce competition and few or no barriers to entry. Quite properly, therefore, the *Internet Policy Statement* applies to networks and not to applications. Its aim is to assure an open Internet so that consumers can choose from the limitless number of applications available to Internet users, absent discrimination by network operators. To apply it to Internet applications would flout the *Internet Policy statement* on its head. What the network operators are doing is very different. They restrict consumer choice by blocking Skype and other applications to

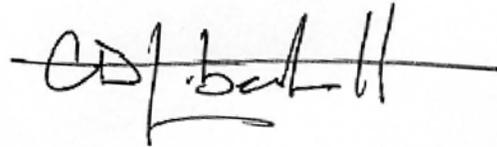
commenting on the iPhone's closed operating system, Steve Wozniak, co-founder of Apple Computer, said "Consumers aren't getting all they want when companies are very proprietary and lock their products down...I would like to write some more powerful apps than what you're allowed." /<http://www.telegraph.co.uk/finance/newsbysector/mediatechnologyandtelecoms/3145691/Steve-Wozniak-interview-iconic-co-founder-on-the-iPod-iPhone-and-future-for-Apple.html>. Oct 8, 2008

which consumers would like to have access. To apply the *Internet Policy Statement* to Internet applications would flip the *Policy Statement* on its head.

We greatly appreciate CTIA's invitation to attend the April show in Las Vegas. If CTIA members would like to prove their openness once and for all, Skype's top executives will be available to attend the conference. When a Skype user can legally call the Chairman of the FCC on the mobile broadband networks of each of the top three wireless networks, we will know that their conduct is consistent with the consumer empowerment principles of the Internet Policy Statement.

We look forward to working with the Commission and CTIA members to ensure that the whole Internet - including multimodal applications such as Skype - is available to consumers.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "C. Libertelli", with a horizontal line extending to the right from the end of the signature.

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December 9, 2008

ELECTRONIC FILING

Chairman Kevin Martin
Federal Communications Commission
445 12th Street, SW
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Re: *Ex Parte*, RM-11361

Dear Chairman Martin:

It's the holiday season and it appears that CTIA has developed its wish list of regulatory presents that it would like the FCC to place under its tree. In a last-ditch effort to defend their closed business practices, CTIA, has, once again, met with your office to urge the dismissal of the Petition filed by Skype Communications S.A.R.L. ("Skype") in the above-captioned proceeding ("Skype Petition").¹

Instead of granting the carriers request and clouding the agency's impressive legacy in the area of wireless openness, the Commission should instead grant Skype's Petition and set the market on a more aggressive trajectory toward openness.

CTIA claimed that the wireless industry has made "enormous strides" in committing to openness in wireless networks and handsets, which, they stated, justifies dismissal of the Skype Petition. We respectfully urge you to reject

¹ See *ex parte* letter filed by Christopher Guttman-McCabe dated December 3, 2008.

Chairman Kevin J. Martin

December 9, 2008

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CTIA's request and, grant the Skype Petition thereby affirming the fundamental premise of the Petition, which is the application of the Commission's *Broadband Policy Statement* to wireless broadband networks.

As I stated in an earlier letter to you, despite CTIA's claims of having made "enormous strides" toward openness, they still have a very long way to go. Skype's application is forbidden, blocked and otherwise interfered with by the largest CTIA members. If Skype is blocked, how can their networks be open?

Therefore, dismissal of the Skype Petition at this time would send precisely the wrong message to a wireless industry that is, at best, equivocal on the principle of openness. It would also undo the progress that you and your colleagues have made in setting a benchmark for openness for use of the 700 MHz C-block frequencies and would be inconsistent with the action that the Commission took to stop Comcast from blocking lawful applications that its subscribers wish to use.

Increasingly, conversations are occurring across platforms – they might begin on a wireless phone, continue on a WiFi network, transit to a fiber connection and end up on a set-top box. Yet, without application of the *Broadband Policy Statement*, the Commission's pro-consumer protection would apply to only one part of the conversation. This makes no sense and returns us to the arbitrary silos of the 1996 Telecommunications Act at a time when the technology is increasingly crossing those boundaries.

In dismissing the Skype Petition, the Commission would undermine its own *Broadband Policy Statement*, which would be a major policy shift and not a routine housekeeping matter. At bottom, Skype merely requested that the Commission affirm that wireless broadband networks are subject to the *Statement's* two principles most important to protect consumers – their right to attach devices that present no risk of technical harm and their right to use applications of their choice on wireless broadband networks.

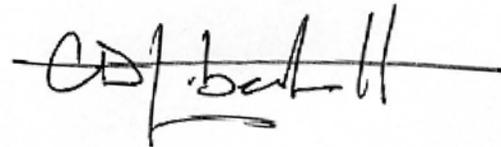
Chairman Kevin J. Martin

December 9, 2008

Page 3

The public, Congressional policymakers, European competition authorities, and the new Administration all have spoken in support of open wireless broadband networks as envisioned by the Commission's *Broadband Policy Statement*. The Commission can do no less.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "C. Libertelli", with a horizontal line extending to the right from the end of the signature.

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Acting Chairman Michael J. Copps
Federal Communications Commission
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April 3, 2009

RE: WC Docket No. 07-52

Dear Chairman Copps,

Free Press submits this written *ex parte* filing to highlight again an issue in the Commission's open docket on broadband industry practices, WC Docket No. 07-52. For two years, we have followed your leadership in raising concerns that wireless service providers appear to be engaging in activities that go against the Commission's Internet Policy Statement by violating consumers' right to run applications, use services, or attach devices of their choice over their broadband connections.¹ Recent reports about application blocking again raise these questions. Regardless of whether any particular incident would be found in violation of the law, the lingering uncertainty surrounding consumer rights on the Internet indicates the need for the Commission to clarify its rules. To resolve any alleged ambiguity raised by parties in earlier proceedings,² the Commission should confirm that the Internet Policy Statement applies to wireless service providers that offer broadband Internet access service, as has been acknowledged in prior proceedings and statements of sitting Commissioners. Furthermore, the Commission should request more information on the extent of the wireless providers' role in and their justifications for these widely-reported behaviors.

Wireless networks demonstrate numerous anti-consumer practices that may be violations of the Commission's Internet Policy Statement. In some cases, these appear to be outright restrictions on applications, services or devices imposed by the carrier. In other cases, there appears to be a business relationship between carriers and equipment vendors designed to cripple applications or hinder consumer choice for anticompetitive purposes. Most notable among recent reports, the Skype Voice over IP (VoIP) application on the Apple iPhone can make and receive calls over a Wi-Fi connection, but cannot make or receive calls over AT&T's 3G network.³ Although this limitation is formally imposed by Apple as part of the rules for its application store, a senior official at AT&T was quoted in *USA Today* as saying, "We absolutely expect our vendors" – in this case, Apple – "not to facilitate the services of our competitors."⁴ This statement suggests that AT&T may be playing a role in restricting consumers' access to an application that competes with the carrier's own voice service. Similarly, applications to allow tethering of the Google Android phone are unavailable on Google's Android Marketplace for all T-Mobile customers.⁵ The Android user community reports that Google's distribution agreements require Google to remove applications that violate the device manufacturer or carrier's terms of service.⁶ These two cases suggest that the future of wireless innovation will be determined first and foremost not by developers of the devices, but by wireless carriers through restrictive language used to control consumers' use of applications and services on their

networks. Instances like these crop up so routinely in the wireless market that we believe they merit attention from the Commission – the consumer’s cop on the beat for protecting access rights.

Wireless terms of service make clear the wireless providers’ intent to violate the Internet Policy Statement. The terms imposed by most major wireless carriers purport to prohibit the use of, at minimum: peer-to-peer applications, either in general⁷ or when transmitting to multiple recipients;⁸ Web broadcasts;⁹ server or host applications;¹⁰ tethering;¹¹ and the use of wireless as a substitute for wired broadband.¹² AT&T states specifically that “customer initiated redirection of television or other video or audio signals via any technology from a fixed location to a mobile device” is prohibited,¹³ a rule that would seem to prohibit innovative and consumer-friendly technologies such as Sling Media’s mobile player.¹⁴ AT&T claims that its service limitations are justified because the prohibited uses “cause extreme network capacity issues and interference with the network.”¹⁵ However, explicitly permitted uses such as “downloading legally acquired songs” and the default and non-removable YouTube application on the iPhone also consume substantial amounts of bandwidth, and thus call into question any claims of network limitations. In any event, if there are legitimate issues of network management, they are covered under exemptions from the Internet Policy Statement and would also benefit from legal clarity.

These limitations fly in the face of the consumer rights contained in the Internet Policy Statement, and the Commission should reaffirm that the Internet Policy Statement applies to wireless networks. Text and history demonstrate that the Internet Policy Statement has always applied to all broadband technologies, including wireless networks. The text of the Internet Policy Statement is technology neutral on its face, discussing the Internet and “broadband networks,” not the wireline network or any other specific technologies.¹⁶ Wireless data services offer connections over broadband networks to the Internet, and are thus included within the plain language of the Policy Statement. The history of broadband deregulation also confirms the importance of treating all technologies alike – the Commission emphasized technological neutrality and regulatory parity in the 2002 *Cable Modem Order*,¹⁷ the 2005 *Wireline Broadband Order*,¹⁸ the 2006 *Broadband over Power Lines Order*,¹⁹ and, most recently, the 2007 *Wireless Broadband Declaratory Ruling*.²⁰ We applaud your commitment to this application of the law, which you have affirmed ever since the 2007 order, in which you stated, “[T]he right to attach network devices—as well as the three other principles of our policy statement—now applies to wireless broadband services.”²¹

The Commission’s August 2008 *Comcast Order* further confirms that wireless networks are included in the Commission’s case-by-case approach for protecting the rights enumerated in the Internet Policy Statement.²² The Commission chose to adopt a case-by-case approach in large part because case-by-case adjudication is more appropriate for “complex and variegated” networks – mentioning wireless networks specifically.²³ Similarly, the Commission stated that its order did not need to address practices of wireless networks specifically, because the case-by-case approach permitted the Commission to address wireless networks in the future.²⁴

Clarifying the text and tradition of the applicability of the Internet Policy Statement to wireless networks is particularly important now, given AT&T’s announcement of its intent to sell discounted laptops along with wireless broadband connections.²⁵ AT&T’s wireless terms of

service will apply to these computers and computer users as well. Clarity for consumer protections in this nascent market would be valuable for buyers and sellers alike.

Consistent with your long-standing view, the Commission should officially confirm that the Internet Policy Statement applies to wireless broadband service providers, and should investigate the practices of wireless carriers engaging in what may be violations of the Internet Policy Statement, including in particular the imposition of direct or indirect limits on consumers' right to run the applications and use the services of their choice.

Sincerely,



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CC:

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Angela Giancarlo

¹*Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings; Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review—Review of Computer III and ONA Safeguards and Requirements; Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities; Internet Over Cable Declaratory Ruling; Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, CC Docket Nos. 02-33, 01-337, 98-10, 95-20, GN Docket No. 00-185, CS Docket No. 02-52, Policy Statement, 20 FCC Rcd 14986 (2005) (*Internet Policy Statement*).

² *Compare* Public Interest Spectrum Coalition, *Petition to Dismiss or Deny*, WT Docket No. 08-95 (filed Aug. 11, 2008), at 17-18, with Verizon Wireless, Altantis Holdings LLC, *Joint Opposition to Petitions to Deny and Comments*, WT Docket No. 08-95 (filed Aug. 19, 2008) (*Joint Opposition*), at 69-71.

³ See, e.g., Geoffrey A. Fowler and Amol Sharma, "Skype to Launch iPhone Software," *Wall Street Journal* (Mar. 30, 2009), available at <http://online.wsj.com/article/SB123836849558067525.html>.

⁴ Leslie Cauley, "Skype's iPhone limits irk some consumer advocates," *USAToday.com* (Apr. 2, 2009), available at http://www.usatoday.com/tech/news/2009-04-01-att-skype-iphone_N.htm ("Jim Cicconi, AT&T's top public policy executive, says AT&T has 'every right' not to promote the services of a wireless rival. 'We absolutely expect our vendors' — Apple, in this case — 'not to facilitate the services of our competitors,' he says.>").

⁵ Karl Bode, "Google Android Not Quite So Open," *DSLReports.com* (Apr. 2, 2009), available at <http://www.dslreports.com/shownews/Google-Android-Not-Quite-So-Open-101689>.

⁶ Chris Davies, “Android tethering apps pulled from Market,” *Android Community* (Mar. 31, 2009), available at <http://androidcommunity.com/android-tethering-apps-pulled-from-market-20090331/>.

⁷ “Plan Terms,” AT&T, at <http://www.wireless.att.com/cell-phone-service/legal/plan-terms.jsp> (AT&T TOS).

⁸ “Terms & Conditions,” Verizon Wireless, at http://support.vzw.com/terms/products/broadbandaccess_nationalaccess.html (Verizon TOS); “T-Mobile Terms and Conditions,” T-Mobile, at http://www.t-mobile.com/Templates/Popup.aspx?PAsset=Ftr_Ftr_TermsAndConditions&print=true (T-Mobile TOS).

⁹ AT&T TOS, *supra* note 4; Verizon TOS, *supra* note 5.

¹⁰ “PCS Terms & Conditions,” Sprint, at <http://www.sprintpcs.com/common/popups/popLegalTermsPrivacy.html> (Sprint TOS); AT&T TOS, *supra* note 4; Verizon TOS, *supra* note 5; T-Mobile TOS, *supra* note 5.

¹¹ AT&T TOS, *supra* note 4; T-Mobile, *supra* note 5.

¹² AT&T TOS, *supra* note 4; Verizon TOS, *supra* note 5; T-Mobile, *supra* note 5.

¹³ AT&T TOS, *supra* note 4.

¹⁴ “SlingPlayer Mobile Overview,” Sling Media, at <http://www.slingmedia.com/go/spm>.

¹⁵ AT&T TOS, *supra* note 4.

¹⁶ *Internet Policy Statement*, 20 FCC Rcd at 14986-88, paras. 1, 4.

¹⁷ *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, Internet Over Cable Declaratory Ruling, Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, 17 FCC Rcd 4798, 4840, para. 73 (2002) (citing sections 706 and 230 of the Communications Act to support the importance of promoting competition across multiple platforms).

¹⁸ *Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review—Review of Computer III and ONA Safeguards and Requirements; Conditional Petition of the Verizon Telephone Companies for Forbearance Under 47 U.S.C. §160(c) with regard to Broadband Services Provided via Fiber to the Premises; Petition of the Verizon Telephone Companies for Declaratory Ruling or, Alternatively, for Interim Waiver with Regard to Broadband Services Provided via Fiber to the Premises; Consumer Protection in the Broadband Era*, WC Docket No. 04-242, 05-271, CC Docket Nos. 95-20, 98-10, 01-337, 02-33, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853, 14878, at para. 49 (2005) (*Wireline Broadband Order*), *petitions for review denied, Time Warner Telecom, Inc. v. FCC*, 507 F.3d 205 (3d Cir. 2007) (“[W]e believe that we should regulate like services in a similar manner so that all potential investors in broadband network platforms, and not just a particular group of investors, are able to make market-based, rather than regulatory-driven, investment and deployment decisions.”).

¹⁹ *United Power Line Council’s Petition for Declaratory Ruling Regarding the Classification of Broadband over Power Line Internet Access Service as an Information Service*, WC Docket No. 06-10, Memorandum Opinion and Order, 21 FCC Rcd 13281, 13293 (2006) (statement of Kevin Martin, Chairman) (“I believe that it is the Commission’s responsibility to help ensure technological and competitive neutrality in communications markets.”).

²⁰ *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, WT Docket No. 07-53, Declaratory Ruling, 22 FCC Rcd 5901, 5925, paras. 55,70 (2007) (*Wireless Broadband Declaratory Ruling*).

²¹ *Id.* at p. 27 (Concurring Statement of Commissioner Michael J. Copps) (“Now that IP-based wireless services are classified as Title I information services, the inescapable logical implication of our 2005 decision is that the right to attach network devices—as well as the three other principles of our policy statement—now applies to wireless broadband services.”).

²² *In re Formal Complaint of Free Press & Pub. Knowledge Against Comcast Corp. for Secretly Degrading Peer-to-Peer Applications; Broadband Industry Practices; Petition of Free Press et al. for Declaratory Ruling That Degrading an Internet Application Violates the FCC’s Internet Policy Statement & Does Not Meet an Exception for “Reasonable Network Management,”* WC Docket No. 07-52, Memorandum Opinion and Order, FCC 08-183 (Aug. 20, 2008) (*Comcast Order*).

²³ *Id.* at para. 31.

²⁴ *Id.* at para. 50, n.234 (citing Robert M. Quinn, Senior Vice President-Federal Regulatory, AT&T, concerning technological characteristics of mobile wireless networks, and then stating “Given the case-by-case approach we set forth in this item, we do not (and need not) opine here on other policies and practices.”).

²⁵ Peter Svensson, “AT&T to try selling wireless broadband laptops,” *Associated Press* (Apr. 1, 2009), available at http://www.google.com/hostednews/ap/article/ALeqM5gw7NFO7S4FQOu3g8oVi_BJ38slpwD979T1C00. It is unclear how these discounts relate to AT&T’s ostensible prohibition on the use of wireless service as a substitute for wired broadband connections.

Mobile Openness Advocacy Briefing Book



Notable Media Coverage



February 21, 2007 1:19 PM CT

Skype asks FCC to open up cellular networks

Only weeks after the appearance of an influential paper arguing for the principle of wireless network neutrality, Skype has asked the FCC to more stringently apply the 1968 Carterfone decision and force wireless operators to open their networks.

By Nate Anderson

<http://arstechnica.com/business/news/2007/02/8895.ars>

Skype yesterday petitioned the FCC to lay the smack down on wireless phone carriers who "limit subscribers' right to run software communications applications of their choosing" (read: Skype software). Skype wants the agency to more stringently apply the famous 1968 Carterfone decision that allowed consumers to hook any device up to the phone network, so long as it did not harm the network. In Skype's eyes, that means allowing any software or applications to run on any devices that access the network.

The reason for Skype's interest in the issue is obvious: they want to force network operators to allow Skype-enabled calling across their networks, something currently prohibited on wireless data plans. In its filing, Skype argues that this capability would offer "tremendous new sources of price competition provided by entities such as Skype," and that's exactly why wireless operators will fight the plan tooth and nail.

Something similar has happened before. In the early days of the wired telephone network, the phone company provided not only network service, but also the equipment, and routinely took firms to court if they sold products meant to be attached to consumer telephones (which were still owned by the phone company). In 1956, a court ruled that a device called the Hush-a-Phone was allowed to be fitted onto the telephone so long as it was "privately beneficial without being publicly detrimental."

In 1968, the FCC endorsed this principle in the Carterfone case. The Carterfone was an early attempt at building a wireless phone. It used a two-way radio and an acoustic coupler to patch a person's voice into the telephone network, and the FCC again ruled that this was allowed so long as the network itself was not harmed. The principle is still in place today, and wired phone networks now stop at a small termination box usually located on the outside of homes; anything past that point is the homeowner's responsibility, but phones, modems, and faxes can all be hooked up to the network without requiring phone company permission.

This principle currently affects the wired telephone network, the cable TV network (any set-top box can be hooked up to any cable system, at least in theory, once the "integration ban" goes into effect later this year), and the data networks offered by both services (DSL and cable, which can be hooked up to any device inside the home). Wireless phone networks are a different story. Defenders of the status quo argue that this isn't a problem, since plenty of competition already exists in the market, and the invisible hand of the market will

inevitably provide that which consumers want better than any government regulation can do.

Unfortunately, the "invisible hand" has been a little too invisible here, and no operator actually offers a wide-open network. Skype thinks a smidgen of government regulation could actually help out quite a bit, and they cite Dr. Tim Wu's recent paper on wireless network neutrality for support. Skype (and Wu's paper) point out the various ways that the wireless phone companies block consumer choice: crippling features on phones, locking handsets to operators, limiting consumers' ability to install third-party applications, and limiting the terms of service with bandwidth caps and restrictions on what content can be accessed through the network (Skype calls are forbidden, for instance).

Skype essentially wants to turn the wireless phone companies into just another network of the kind currently operated on the ground. This would require carriers to allow any phone to be used on their networks, and for any application. Users would simply purchase a voice or data plan (though these could easily converge into a data plan if VoIP calling is used) and then use the device of their choice to access the network of their choice. Verizon, Cingular, et al. hate this and would love to keep crippling WiFi and Bluetooth access on their phones in order to keep traffic flowing through their network, using their (high-priced) services.

Recognizing that its proposal would pose some thorny technical problems, Skype "approaches these issues with humility, recognizing that application-layer competition depends in part upon the 3G deployment efforts of wireless carriers." They suggest the creation of an FCC-guided forum to handle technical specifications, one that would operate transparently and would involve all stakeholders in the issue. The forum, in Skype's view, would ensure that "no entity can enforce techniques such as blocking, locking, or certification requirements that have the intention of preventing consumers from modifying or installing software unless it is reasonably proven that such software harms the network."

The wireless operators don't have any intention of being reduced to mere commodity providers of network services if they can help it, and this recent filing certainly won't raise Skype's reputation within the industry. Of course, since that industry already restricts Skype from running on its network, this is no big loss.



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February 23, 2007

HIGHLIGHTS

- **USF PANEL WEIGHS (WIRELESS?) CAP AS FIX; AUCTIONS STILL CONCEPTUAL.** A federal-state panel appears interested in recommending the FCC impose a new cap to curb growth in the universal service fund (USF). While the details and ultimate FCC action remain in play, we believe a cap poses the most risk for wireless carriers hoping to increase support, though RLECs are not immune to funding pressures over the long term. At a hearing this week, the panel also explored the use of reverse auctions, mapping and modeling, and disaggregation techniques to distribute and target funding flows, but our sense is such proposals remain on the drawing board and will take considerable time and effort to craft. And if Congress doesn't like the policy course, it could always move to block the FCC.
- **SKYPE ASKS FCC FOR CARTERPHONE TREATMENT OF WIRELESS DEVICES.** Skype petitioned the FCC this week to expand the Carterfone principle and find that consumers have the right to use Internet communications software and attach devices to wireless networks. Skype believes wireless carriers have too much leverage over product design and are slowing innovation and consumer benefits, while garnering most of the revenue in the value chain.
- **TRIAL BEGINS IN VERIZON PATENT SUIT AGAINST VONAGE.** The same day that two titans — Microsoft and AT&T — faced off at the Supreme Court in a patent dispute, David met Goliath in the Eastern District of Virginia, as a jury trial began in Verizon's patent infringement suit against Vonage over VoIP patents. The outcome of the case, particularly if Verizon wins, could spill over to the larger VoIP industry. Meanwhile, a U.S. federal jury found Microsoft infringed on an Alcatel-Lucent digital audio patent and should pay \$1.5 billion in damages.
- **ALSO:** Items on **FCC Opens Review of Cable Program-Access Rules; FCC to Probe DirecTV-Baseball Package.**

UNIVERSAL SERVICE

Joint Board Eyes Cap to Curb Wireless USF Growth; Auctions, Other Proposed Fixes Likely to Take Longer

Federal and state officials this week appeared intent on taking incremental steps to control growing universal service funding for carriers serving rural areas, though more sweeping proposals to revamp and redirect how support is distributed appear likely to take considerably more time. We believe an advisory panel will likely recommend the Federal Communications Commission impose some sort of new cap to constrain growth in the high-cost universal service fund (USF). The details and ultimate FCC implementation remain in play, but such a cap would appear to create the most risk for wireless carriers seeking further support, given the USF trends and policy direction.

Wireless carriers currently receive about \$1 billion in annual support, and growing. AT&T (**T**) is the largest wireless recipient, through its legacy AT&T Wireless operations (AT&T/Cingular recently asked to be made eligible in two states). Alltel (**AT**) and Sprint Nextel (**S**) are also top recipients, with smaller wireless carriers receiving the rest. While the larger carriers receive more support, that funding is a much smaller percentage of their total revenues than it is for the smaller carriers.

Wireline telcos receive a little over \$3 billion in annual aggregate USF support, most of which goes to rural local exchange carriers (RLECs), but their funding has leveled off and they have strong political backing; so we believe they have less short-term risk from a cap. Longer term, they are not immune to the funding pressures.

The Federal-State Joint Board on Universal Service is also looking at whether to recommend the use of reverse auctions to lower funding and other proposals to target indi-

All relevant disclosures and certifications appear on p. 8 of this report.

ON DECK

Today: FCC field hearing on media ownership in Harrisburg, PA.

Feb. 28: House Judiciary Committee to hold hearing on planned XM-Sirius merger.

March 1: Senate Commerce Committee hearing on universal service.

Looming:

- Eighth Circuit ruling on FCC finding Vonage VoIP interstate (cable VoIP in play too).
- Court actions in Tunney Act review of SBC-AT&T and Verizon-MCI deals.
- FCC actions on Time Warner Cable's request for VoIP interconnection guarantees, Univision sale, CPNI/privacy, and Verizon and cable requests for waivers from July ban on integrated cable boxes.

various degrees of skepticism, including Vermont Commissioner John Burke and FCC Commissioner Copps, who didn't see how rewarding low bidders would promote broadband technology and innovation. Indiana Commissioner Larry Landis didn't oppose auctions, but did appear concerned about the law of unintended consequences, as he asked whether a wireless-focused auction might give one competitor a revenue "floor" and advantage, discouraging market entry by others.

Cap Gains Traction. Despite the announced auction focus, a fair amount of discussion veered toward the possibility of imposing a new cap on funding, probably by carrier study area (usually the territory served by a carrier in a state). West Virginia's Gregg said funding had to be brought under control. He noted that there were already various USF caps, including on the high-cost loop fund for smaller carriers, the interstate access-support mechanism targeting larger carriers (with some wiggle room), and the schools and library E-rate program. He said the question was whether there should be a cap focused on wireless carriers, a cap encompassing both wireless and wireline carriers (as he had suggested), or separate wireless and wireline caps (as proposed by Verizon).

Chairman Martin appears to be particularly interested in controlling the wireless growth and at one point prodded the NTCA representative to clarify that he would prefer a CETC-only cap. Vermont Commissioner Burke said he didn't think a cap on the incumbent RLECs was needed. The CTIA representative said it would be better to have one cap that would apply to both wireless and wireline recipients. RLECs are concerned, however, that funding could gradually shift from wireline to wireless under a single comprehensive cap as wireless continues to grow and wireline subscribership continues to erode.

While there was no clear consensus expressed by panel members, we believe that the wireless carriers are at greater risk in the nearer term, as it is their growth that is most likely to be curbed. Longer term, the RLECs also have risk, as the more lines they lose to wireless, the harder it will probably become to justify their support levels.

Models, Disaggregation. The Joint Board also heard from a separate group of witnesses that discussed proposals to use "geographic information systems and mapping techniques" to better approximate network costs. Witnesses acknowledged that previous cost models had various weaknesses, but they said the methods had improved greatly. A representative of Embarq (EQ) discussed a plan to "disaggregate" funding — shifting from state study areas to a more granular wire-center approach — so that more of it would target truly high-cost areas.

Oregon Commissioner Baum noted criticism that disaggregation would cause overall funding to rise even more. One witness acknowledged that increased funding would be the "natural tendency," all other things being equal, but the Embarq representative said it would depend, because in some cases support would just shift from lower-cost to higher-cost areas, and savings could even occur, if combined with auctions, for example.

At the end, Joint Board Chairperson Tate said she was en-

couraged by the amount of agreement and said the time was ripe to act. She acknowledged there would have to be transitions, with some actions to be taken in the near term and others in the intermediate to long term.

Going Forward. We believe the Joint Board has enough will and cohesion to recommend steps to control funding, most likely some sort of cap. While we think the Joint Board will probably look to explore auctions, mapping/modeling, and disaggregation proposals further, we doubt that a majority of the panel is close to recommending a comprehensive overhaul at this time. The more incremental the approach, the quicker the Joint Board can make a recommendation, in our opinion, while the more ambitious the approach, the longer it will likely take, and the greater the risk that the proceedings could bog down in divisions and complexities.

We note that the other two FCC commissioners not on the Joint Board, Robert McDowell and Jonathan Adelstein, have substantial interest in USF. Mr. McDowell recently said that "fundamental reform" was needed to fix a "broken" system, and that he would look to slow the growth, broaden the contribution base, and ensure competitive neutrality, among other objectives. Mr. Adelstein is known as a strong supporter of rural interests.

Beyond the usual industry and internal wrangling, one of the complications for the FCC is that even if it can coalesce around certain reforms, USF can become a hot-button issue in Congress. If they don't like the policy direction, lawmakers could always step in and move legislation to block FCC action (as they did a few years ago in heading off a "primary-line restriction") or apply so much political heat that the agency has to retreat. Sen. Ted Stevens (R-AK), ranking member of the Commerce Committee, last September urged Mr. Martin to back away from the auction idea. That committee plans to hold a hearing on universal service next Friday, which should offer a further sense of congressional sentiments.

However, the funding pressures appear likely to continue to mount, so we expect some sort of changes are coming, whether adopted by the FCC or legislated by Congress.

WIRELESS

Skype Asks FCC to Extend Carterfone Rights To Wireless Devices, Lower Carrier Leverage

As we noted in our recent Top 10 questions and answers, the iPhone is not a revolutionary device for the voice world; the revolutionary device would be a phone-like device that connected to any broadband service and which had an embedded ability to offer VoIP. It doesn't exist today. But a prime beneficiary of such a device would be Skype (part of EBAY) or any peer-to-peer voice service provider, as it would strengthen their ability to challenge the current business model. Device manufacturers compete on style and functions, and sell their products through wireless voice service providers, which subsidize the devices but garner most of the revenue in the value chain through monthly subscriptions.

This week Skype took a step in an effort to turn that vision

into reality by petitioning the FCC “to confirm a consumer’s right to use Internet communications software and attach devices to wireless networks.” Almost four decades ago, the FCC adopted the Carterfone principle: that consumers can attach any device to the wireline network as long as it did not harm the network. In essence, Skype is asking the Commission to enforce a similar principle for the wireless network.

Skype argues that this is necessary because wireless industry consolidation has led to carriers having too much leverage over product design, allowing them to disable or cripple pro-consumer features and thereby depriving consumers of the maximum benefits of wireless competition. Skype points to the practice of selling “locked” phones that can only be used on one network, and it characterizes events, such as AT&T (T) crippling WiFi connectivity on a Nokia (NOK) smartphone or Verizon (VZ) disabling Bluetooth data-transfer functionality, as examples of carriers exerting anti-competitive leverage over devices.

The wireless industry has already begun to vociferously oppose the petition. It will point out, among other things, that Carterfone was adopted for a one-network, one equipment-provider world, which is very different than the environment that characterizes today’s wireless world; that one can buy unlocked phones today but as such phones are unsubsidized and cost consumers more, few consumers choose them; that a Carterfone rule could lead to increased security problems; and that the device innovations (such as those in the iPhone) demonstrate that today’s market is working well. The wireless companies will also contend that the facts surrounding the alleged anti-competitive practices are misstated and that the companies had legitimate business reasons for the actions they took.

The Skype petition should be seen both as part of and separate from the ongoing network neutrality debate. It is a subset of the debate in the sense that one of the so-called “Internet freedoms” being debated is the freedom of consumers to attach devices of their choosing to a broadband service. In the context of wireline broadband, there appears to be a consensus that such a rule is appropriate. But the rule has not been applied to wireless.

Seen this way, one would not give the petition much chance of passage. After all, there are three FCC Republicans generally opposed to network neutrality, and it would be safe to assume that they would not want to extend a policy they oppose to wireless, where there is more facilities-based competition and, therefore, arguably less justification for it.

But the petition can also be seen as separate from the broader network neutrality debate, with its focus on discrimination in how bits are delivered; rather, it is about the principle of device connectivity in order to facilitate device competition and innovation, a principle that has proved popular since the Carterfone decision. Thus, we think this petition could get some traction over the next few years and into the next FCC.

Further we think the debate over wireless devices will bleed over into other wireless debates. For example, FCC Chairman Kevin Martin recently suggested that wireless broadband be reclassified as an “information service.” As

with the prior debates on how to classify cable and telco broadband service, there is general agreement on a deregulatory direction but significant disagreement on the details.

In the case of Chairman Martin’s proposal, we expect the Skype petition to raise questions as to the extent to which a wireless broadband carrier can dictate the terms of the devices attached to its network. In addition, we could also see the issue being raised in the ongoing debates concerning wireless use of broadcast “white spaces” spectrum and the upcoming 700 MHz auction. Given the ability of software in a broadband-connected device to essentially replace the intelligence that used to reside in the network, and how such devices could affect the wireless value chain, this proceeding could have significant implications for the industry.

INTELLECTUAL PROPERTY

David Meets Goliath in Federal Patent Case; Vonage, Verizon Make Opening Statements

Trial began this week in Verizon’s (VZ) patent infringement suit against VoIP provider Vonage (VG). Verizon seeks damages and, as is common in patent infringement cases, a permanent injunction. Vonage is against the ropes in the early stages of the litigation, with the judge, in the pre-trial “Markman hearing” (which is held in a patent case to determine the scope of the claims included in the allegedly infringed patents) having construed Verizon’s patent terms or “claims” very broadly to cover virtually everything that Vonage does. If the jury finds that Vonage has infringed Verizon’s patents, we believe that the judge’s broad construction of the patent claims would make a “work-around” difficult for Vonage.

Verizon filed suit against Vonage last June in the Eastern District of Virginia, one of the fastest-acting courts in the country and the same court that heard the RIM-NTP patent suit last year. Verizon claimed that Vonage infringed several Verizon VoIP patents, including those relating to call forwarding, fraud detection, and, we believe, their wireless VoIP service. A two-week jury trial began this week, with both sides making their opening statements.

Verizon, relying in part on information contained in Vonage’s IPO, claims that Vonage is luring away Verizon’s customers with service that relies on Verizon’s own VoIP patents. Vonage charges Verizon with trying to stifle competition and claims that it relies upon open interfaces and its own proprietary technology and technology it has licensed from third parties. Verizon has subpoenaed Vonage CEO Jeffrey Citron to testify at trial, and the judge rejected Vonage’s objections and ruled yesterday that he must appear next week.

The jury will rule on whether Verizon’s patents are valid and whether Vonage violated the patents, and if so, will also determine the monetary damages. (Verizon has asked for \$197 million in damages.) The judge will decide whether to issue a permanent injunction. Traditionally, such injunctions were virtually automatic once the jury had determined that a valid patent was infringed. The Supreme Court’s decision last



Carrier control of networks in cross hairs

Skype argues carriers must heed to 1960s Carterfone decision

Jeffrey Silva

Story posted: February 24, 2007 - 5:59 am ET

THE MOBILE-PHONE INDUSTRY INCREASINGLY finds itself confronted with disruptive digital technologies, a phenomenon that is challenging carriers' tight control of wireless networks and forcing policy-makers to grapple with how to promote consumer choice without unduly interfering with companies' ability to manage their businesses.

The issue has played out most prominently in the net neutrality debate, which until recently largely centered on fears by Google Inc., Yahoo Inc. and other Internet-based companies that

cable television and Bell telephone giants will leverage their broadband duopoly to block, degrade or charge extra for outside content. The debate has now bled into the wireless space, but it remains to be seen whether Congress will sign on.

A spokesman for Sen. Byron Dorgan (D-N.D.), who's working with Sen. Olympia Snowe (R-Maine) on net neutrality legislation, said the lawmaker has not spoken publicly on how wireless fits into the picture. But, he added, that does not mean the lawmaker is not thinking about it. Aides to Snowe and House telecom and Internet subcommittee Chairman Edward Markey (D-Mass.)—another top net neutrality proponent—could not be reached for comment.

The challenge for the wireless industry goes beyond net neutrality, however. It's also about creative disruption itself, about how Apple Inc.'s Steve Jobs reportedly persuaded Cingular Wireless L.L.C. CEO Stan Sigman to market the iPhone to the former's liking. Verizon Wireless, ranked right behind No. 1 Cingular, apparently was not ready to let Jobs call the shots.

Skype challenge

Last week, Voice over Internet Protocol phone company Skype asked the Federal Communications Commission to rule that consumers can load third-party Internet communications software onto cellphones and attach whatever devices they want to mobile-phone networks.

“As the wireless market has matured and wireless handsets have become an integral part of most Americans' lives, carriers are using their considerable influence over handset design and usage to maintain control over and limit subscribers' right to run software communications applications of their choosing,” Skype's petition stated. “Instead of carrying the subscribers' messages indifferent to content, carriers have exerted more and more control over the way consumers access the mobile Internet.”

Skype wants the FCC to declare that wireless carriers are subject to the agency's 1968 Carterfone decision, which allowed two-way mobile radios and other devices to connect directly to the old AT&T monopoly network so long as no harm was caused to the telephone system. Skype also asked the FCC to launch a rulemaking to enforce the Carterfone mandate on the wireless industry.

Cellphone association CTIA fired back at Skype in a statement.

"Skype's self-interested filing contains glaring legal flaws and a complete disregard for the vast consumer benefits provided by the competitive marketplace. Skype's 'recommendations' will freeze the innovation and choice hundreds of millions of consumers enjoy today. The call for imposing monopoly-era Carterfone rules to today's vibrant market is unmistakably the wrong number," said Steve Largent, president of CTIA.

VoIP pioneer Jeff Pulver weighed in on his blog page.

"I think this petition should have important ramifications for all those that wish to attach devices or provide Internet-based voice and video applications over wireless networks," said Pulver. "As things stand now, users are beholden to the wireless gatekeepers who unilaterally determine what devices, what functions, what applications may attach or ride or be accessed from the wireless networks. ... I ask our friends who care about innovation in the wireless space, edge devices and Internet applications to take this petition seriously, shine a spotlight on the issue and help move the FCC in the right direction."

The Skype filing followed on the heels of Columbia University law Professor Timothy Wu's harsh criticism of the cellphone industry over carrier control of content and features and his call for wireless net neutrality.

Skype longs for wireless

Skype, which offers free Internet calling software, has been working for years to enter the wireless space. Indeed, the company has signed agreements with several overseas carriers. Internet auction company eBay Inc. purchased Skype in 2005 for \$2.6 billion.

"Part of what we're doing is telling our story," said Christopher Libertelli, senior director for government and regulatory affairs at Skype. Libertelli said he plans to meet with CTIA officials in March to discuss the Skype proposal.

Libertelli, who was a top adviser to former FCC chairman Michael Powell, said Skype's efforts to engage U.S. cellular carriers the past two years were largely rebuffed. He said mobile-phone carriers have legitimate concerns about wanting to be masters of their networks—wireless pipes of limited bandwidth—but he said that should not be used as an excuse for anti-consumer behavior.

While Libertelli is familiar with Wu's work, he said Skype's proposal does not necessarily fit within the Columbia University law professor's argument.

"This is more about blocking than net neutrality," said Libertelli.

Another little wrinkle in the cellular business model equation is last November's Library of Congress ruling that exempts mobile-phone locking software from U.S. copyright law. The new policy makes it easier for consumers to take their cellphones with them when they switch wireless carriers, while not forbidding the carrier practice of handset-locking itself. Whether the rule will impact the dominant

industry practices of bundling service and heavily subsidized phones remains to be seen. With new features and functionalities being introduced on a regular basis, cellular subscribers in the process of changing carriers may prefer upgrading their handsets to keeping old ones.

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March 5, 2007

Futurist: Wireless Without Strings

By Mike Mills, CQ Columnist

<http://public.cq.com/docs/cqw/weeklyreport110-000002461860.html>

Behold the wonder of that little device in your pocket. Cell phones have become such a crucial part of our lives, we may forget there was a time — not even 10 years ago — when most of us were dropping quarters in pay phones or waiting until we got back to our desks to check our voice mail.

Still, if you compare your cell phone with that other wonder of our day — the Internet — you must ask the U.S. wireless telephone industry (using your best Peggy Lee voice): “Is that all there is?” Will our little phones never become devices that we can buy anywhere and use with any network, like our laptops? Will we ever be able to update them ourselves with the hottest new applications, downloaded from the Web? Or will our mobile devices forever be controlled by one of the four big wireless carriers, who intentionally cripple features to make sure we don’t use up too much of their precious bandwidth?

The wireless industry deserves all the credit in the world for its successes. After investing billions building their networks with the public’s airwaves, today they have 219 million customers and \$100 billion in annual revenue. But now people are beginning to ask whether the resulting giant wireless carriers — AT&T, Sprint, T-Mobile and Verizon — are harming innovation and consumer choice by so tightly controlling the cell phone hardware and applications that use their networks.

“In the wired world, their policies would, in some cases, be considered simply misguided, and in other cases be considered outrageous and perhaps illegal,” Columbia University law professor Tim Wu wrote in a report released last month.

In Europe, for example, consumers can buy a mobile phone and use it with any carrier. And the phones that use broadband service have such features as Wi-Fi access and unlimited Web browsing that no U.S. wireless carrier in the United States will allow. In fact, AT&T disabled the Wi-Fi functionality in the new Nokia E62, although it agreed to allow it on the new Apple iPhone (which, of course, you’ll be able to use only on the AT&T network). Elsewhere around the world, software developers are busy writing cool new applications for mobile devices, but not here. A highly restrictive development environment among U.S. carriers means “the applications on phones are mostly a joke,” according to one developer quoted in Wu’s report.

Two weeks ago Skype Communications — the leading provider of free, Web-based phone services — asked the Federal Communications Commission (FCC) to confirm that consumers have a right to use applications and devices of their choosing on any wireless network, so long as doing so does not harm the network.

Skype contends that the FCC should apply the same rules to wireless networks that it has applied to wired telephone systems since a landmark 1968 ruling known as the Carterfone decision. Back then, the agency decided that the old AT&T monopoly could not prevent consumers from attaching a device known as the Carterfone (a coupler that linked a mobile radio to a telephone) to their handsets. The ruling paved the way for such innovations as the fax machine, the answering machine and (drum roll) the modem. In other words, Al Gore didn't invent the Internet. The Carterfone ruling did.

Challenging the Carriers

Today's wireless carriers are sounding a lot like the old Ma Bell. Between 90 percent and 95 percent of phones in the United States are sold by the carriers; in other countries that figure is just about reversed. Buy a Motorola V710 through Verizon and you'll learn this from the Motorola Web site: "If you are a Verizon customer, all multimedia and Internet connection features in this software will be disabled due to carrier request." Wu's report further shows that AT&T limits its "unlimited" mobile broadband service to exclude movies, music, games, voice-over-IP and other Web-based uses.

Such tight control allows the Big Four to erect tollbooths that charge users for features, beyond simple data transmission, that are otherwise easily available elsewhere for free, and with higher quality.

Now the hardware and software makers are joining with consumer groups to challenge the carriers' control. Democratic lawmakers will probably be a receptive audience to their complaints, which means the FCC may be under pressure to at least consider Skype's petition to apply the Carterfone ruling to the wireless world.

A smart, forward-looking carrier would be the first in the market to voluntarily open its network to all compatible devices and software that did not harm its network. I'd bet the positive PR, in addition to selling more access, would give it quite a revenue boost.

But that network would also have to adopt some sort of metered pricing for bandwidth usage, rather than the current inexplicable practice of selling minutes of airtime. Carriers have long resisted metered pricing, which they believe would certify that they are merely conduits — or "dumb pipes," as they derisively put it — rather than providers of content and "value-added services" in addition to access.

No such carriers exist, though, and the FCC isn't about to force such a change. So rather than being the best dumb pipes money can buy, wireless networks will remain the clunkiest software developers and biggest bottlenecks in an era of otherwise incredible innovation.

Mike Mills is CQ's executive editor for electronic publishing.



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FEATURE: Net Neutrality's threat to wireless

By admin

Created Mar 8 2007 - 7:01pm

Net Neutrality issues loom for wireless carriers

By **Brian Dolan**

There's a growing debate over whether or not basic net neutrality rules apply to wireless networks. Earlier this week the New America Foundation organized a panel debate on this topic that drew a crowd of more than a hundred attendees.



Brian Dolan

The wireless net neutrality issue is gaining traction, thanks to a petition filed with the FCC on Feb. 21 by eBay subsidiary and VOIP provider Skype. The petition asked the FCC to confirm that basic net neutrality rules apply to wireless networks. It also questions whether Carterphone rules also should apply. Skype's petition is a derivative of a white paper written by Columbia University Law School Professor Timothy Wu and published by the New America Foundation in January. The paper claims that the wireless carriers' control over which handsets can connect to wireless networks has stymied innovation in the industry and has even led to some cases of alleged consumer fraud.

The CTIA, of course, disagrees with Wu and Skype. CTIA President and CEO Steve Largent says that Skype's filing contains glaring legal flaws and a complete disregard for the vast consumer benefits provided by the competitive marketplace.

During the panel, Wu said that the debate about wireless net neutrality does not center on horizontal competition within the industry, but with vertical competition and the effects of the "carrier oligopoly" on the handset market. Those effects include difficulty in entering the equipment market, feature crippling on handsets, consumer fraud over false promises for 3G services and data plans as well as issues surrounding application development.

CTIA's head counsel Michael Altschul countered Wu by saying that three of the four wireless carriers in the U.S. are offering 3G services that match DSL speeds, which means in some markets there are as many as 12 broadband service providers.

Skype's director of government and regulatory affairs, Chris Libertelli, however, argued that worldwide the mobile device market has a split of about 50-50 when it comes to where consumers get their phones from: carriers or independent channels. In Asia about 80 percent of phones are sold through third parties. In Europe about 70 percent are sold through independent channels. In the U.S., 90 percent to 95 percent of phones are sold through carriers. "We think the consumer should have that meaningful right to attach any non-harmful device to a wireless network, just like Carterphone allows in the wireline space," Libertelli says.

Stifel Nicolaus' investment banker Blair Levinson said that a service provider agnostic device in the U.S.

would be a revolutionary move for the industry--much more revolutionary than the launch of Apple's iPhone, expected later this year. However, he believes that Skype needs to demonstrate harm in a marketplace that most people think is fairly robust. CTIA's burden is proving that wireless carriers' practices with handsets are really in the consumers' best interests.

Consumer Union's Jeannine Kenney argued that mobile broadband is not a substitute service. And while there are choices for mobile broadband services, it doesn't make sense for a consumer to switch providers when all the providers are discriminating. In addition, she noted that consumers are increasingly locked into contracts for bundled services.

The impromptu discussion at The New America Foundation framed the growing debate over wireless net neutrality, but this is a discussion that has just begun. This issue will have a serious impact on the wireless industry and wireless carriers, in particular, if it continues to gain traction.

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Wireless broadband is 'information service'

FCC's Copps says decision begs answers to other questions

[Jeffrey Silva](#)

Story posted: March 24, 2007 - 5:59 am ET

The wireless industry cheered the Federal Communications Commission's decision to classify wireless broadband as an information service, while Commissioner Michael Copps said the agency needs to delve further into the policy implications of Internet-enabled wireless devices and in particular to examine whether the landmark Carterfone decision of 1968 should apply to cellphone carriers.

"It is critical that the FCC ensure that regulations are technology neutral and this decision is a welcome step in that direction," said Steve Largent, president of national cellphone association CTIA. "Today wireless is a legitimate competitor in the broadband marketplace offering capabilities and speeds comparable to cable and (digital subscriber line) service, and today's order recognizes this important fact. As the commission notes, wireless broadband provides particular benefits in rural and other underserved areas. Because of forward-looking policies like this one, wireless broadband will continue to spur revolutionary advances in public safety, medicine, homeland security, education and business."

The wireless broadband industry agreed, adding that the move levels the playing field in a way that promotes competition in the high-speed Internet service market.

"The commission has already provided such relief for cable modem and DSL services, and it is both appropriate and necessary that wireless broadband providers be afforded similar deregulatory treatment," said Andrew Kreig, president of the Wireless Communications Association International.

Copps, who reluctantly agreed to approve regulating wireless broadband as a deregulated information service, chided the FCC for failing to address other unresolved issues including privacy and disability access.

"Now that IP-based wireless services are classified as Title I information services, the inescapable logical implication of our 2005 decision is that the right to attach network devices—as well as the three other principles of our policy statement—now applies to wireless broadband services," said Copps. "I believe the commission accordingly has a clear and pressing responsibility to open a rulemaking that will clarify how these Title I principles should be applied in the wireless context. I also believe we should include questions about how and whether the classification of CMRS (commercial mobile radio services) as Title II services incorporates the principle of the seminal 1968 Carterfone decision. I believe that our answers to these questions—or our failure to answer them—will have a direct impact on the pace of technological innovation in the years ahead and on the extent to which consumers can take full advantage of that innovation."

The FCC last month put on public notice a petition by Skype Communications to confirm a consumer's right to use Internet communications software and attach devices to wireless networks.

Skype wants the FCC to declare that wireless carriers are subject to the agency's Carterfone decision, which allowed two-way mobile radios and other devices to connect directly to the old AT&T monopoly network so long as no harm was caused to the telephone system. Skype also asked the FCC to launch a rulemaking to enforce the Carterfone mandate on the wireless industry.

The mobile-phone industry opposes the Skype petition.

Skype, which offers free Internet calling software, has been working for years to enter the wireless space. Indeed, the company has signed agreements with several overseas carriers. Internet auction company eBay Inc. purchased Skype in 2005 for \$2.6 billion.

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ReadWriteWeb

June 6, 2007

Internet Companies Push For Mobile Phone Carriers to Open Up

by Josh Catone

http://www.readwriteweb.com/archives/skype_mobile_phone_fcc.php



In the US mobile phone carriers run closed networks: my Samsung phone will only run on the Verizon network, and if I switch to another carrier, the applications I bought over Verizon's service won't come with me. This set up has big Internet companies up in arms. Last March, for example, Google CEO Eric Schmidt accused the carriers of creating "walled gardens" that kept Internet companies out. The carriers, however, say that they spend billions of dollars on their networks and shouldn't be forced to open them up. In March 2005, then-AT&T CEO Edward Whitacre (though it was SBC at the time) told *BusinessWeek* that the big telecom companies spent billions laying fiber optic line and it was unfair for Internet companies to have free access. "They use my lines for free -- and that's bull. For a Google or a Yahoo! or a Vonage or anybody to expect to use these pipes for free is nuts!" he said.

It wasn't always this way, however. In 2001 SBC signed a deal that paid Yahoo! in exchange for the right to a co-branded portal and access to other Yahoo! apps. Now, reports Mercury News, SBC is part of AT&T, the biggest phone carrier in the US, and is not so desperate. They plan to use their position of dominance over the mobile web to control it in a way the failed to do with the traditional web.

"As mobile use of the Internet takes off, AT&T and other wireless carriers are poised to exert tight control over the mobile Web, putting search giants like Yahoo in an uncharacteristically weak negotiating position. That's because unlike the regular phone network, the wireless networks are closed. Indeed, neither Google's nor Yahoo's showcase applications for mobile phones are available to Verizon subscribers, the second-biggest wireless company in the United States."

But not everyone is taking it lying down. Skype, a VoIP company that has drawn the ire of big telecom companies in the past who accuse it of using their infrastructure to undercut their prices, has filed a complaint with the US Federal Communications Commission accusing the phone companies of violating laws by creating closed networks.

"Carriers are using their considerable influence over handset design and usage to maintain control over and limit subscribers' right to run software communications applications of their choosing," said Skype in their FCC filing.

In the US, the phone above won't work on every network.

According to Skype, wireless carriers should be forced to follow a 1968 FCC rule, which stipulates that any device must be able to connect to any US phone carrier. Skype's ulterior motive, of course, is for its customers to be able to purchase an unlimited data plan on any wireless network and then make calls over the Skype software. There is a technical problem with Skype's vision, however.

In most non-US markets carriers use the GSM standard, but in America carriers use a variety of technical standards. That means that some phones simply can't function on multiple networks with the current set up. In order for Skype's proposal to work, mobile phone carriers would either need to spend billions updating their networks to conform to a single standard, or all handsets would need to support multiple standards.

Still, as a frustrated US mobile customer myself, it would be great if carriers were forced to tear down their walled gardens and the mobile web could become as open as the traditional Internet. Some analysts predict that is what will happen eventually anyway. "If you think about AOL in 1995, they were in a similar position of power," says Charles Golvin from Forrester Research. "That broke down because consumers wanted access to the open Internet. I would argue that the same will happen in mobile."

And of course, if Skype gets its way, it will mean an iPhone that works on any network.

Sunday Business

W/C

Section 3

July 22, 2007

BRIGHT IDEAS

DIGITAL DOMAIN
RANDALL STROSS

When Mobile Phones Aren't Truly Mobile

WIRELESS carriers in the United States are spiritual descendants of dear Ma Bell: they view total control over customers as their inherited birthright.

The younger generation — Verizon Wireless, Sprint Nextel, T-Mobile and the namesake child AT&T — would make their hallowed grandfather proud. They do everything they can to keep power firmly in their own hands. It is hardly at the carriers' discretion to permit, or dilute, the features that a factory loads into the newest phones. They also decide which software can be installed and how it may be used. Many wireless subscribers have fearfully become acquainted with gacha clauses in their contracts.

In most European and Asian countries, a customer can switch carriers in a few seconds by removing a smart card from a cellphone and inserting a different one from a new provider. In the United States, wireless carriers have deliberately hobbled their phones to make flight to a competitor difficult, if not impossible.

If you, the long-suffering subscriber, decide that you have had enough and wish to try your luck with another company, you're free to pay your early-termination fee and go. But you most likely will have to abandon the phone you've already paid for, even when the technology is shared by the two carriers. (Sprint, for example, whose network is based on the CDMA standard, forbids the use of CDMA-based cellphones obtained from Verizon.) The odds are better than even that your cellphone is either locked by your incumbent carrier or forbidden for use on the network by your new one.

In the days when cellphones were inexpensive and could perform only one or two functions, they could be treated as disposable. When smart phones like the Palm Treo arrived, however, the cellphones became too precious to abandon lightly when switching companies. Now the iPhone is here — if you're willing to pony up \$500 or \$600, AT&T has received an exclusive contract from Apple, so iPhone buyers have no alternative carrier. But the lack of choices franks and is drawing more scrutiny than ever.

Two weeks ago, Representative Edward J. Markey, Democrat of Massachusetts, led a House hearing on "wireless innovation and consumer protection" and had up an iPhone as Exhibit A. In his assessment that the industry exerted "far too much control over the features, functions and applications that wireless gadget makers and content entrepreneurs can offer directly to consumers. Why is it, he asked, that AT&T imposes a two-year contract with a \$175 early-termination fee, even though the phone cost less than a subsidized and a consumer can't even take it to use with another network provider?"

Wireless customers may soon have a few more options. In a coming auction for wireless spectrum that will be available in 2009, the Federal Communications Commission is preparing to set aside a third of the new capacity for bidders who agree to operate wireless service in a more open fashion.

Kevin J. Martin, the F.C.C. chairman, said in an interview last week that he had circulated a draft proposal among his fellow commissioners that would require the winning bidders to be receptive "to all kinds of devices and applications" provided by independent consumer electronics makers and third-party software providers.

Subscribers of the new services would even be permitted to take their phones with them, freely, from one carrier to another. Imagine a genuinely mobile cellphone and software choices like new building for some time. In January, the F.C.C. took another step to loosen the exclusive grip of the cable operators' control over the set-top box that feeds the cable signal to the TV, a

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Left: Photo for The New York Times

move that showed that the commission is open to changes that give consumers more equipment choices.

Then, in February, Timothy Wu, a law professor at Columbia University, published an influential paper, "Wireless Net Neutrality," which made a well-supported case that the government should compel wireless carriers to open their networks to equipment and software applications that the carriers did not control. Mr. Wu called his proposition a call for "Calculus Cartefone," referring to the 1988 Cartefone ruling by the F.C.C. The Cartefone was a speakerphone-like gadget that permitted a phone sitting in a cradle to be connected with a two-way radio. Over the objections of AT&T, the F.C.C. ruled that consumers could plug it or any phone or accessory into the network so long as doing so did no harm to the network. The ruling set in motion the changes that provided consumers with a cornucopia of equipment choices like answering machines, fax machines, modems and cordless phones. Among Mr. Wu's readers was Mr. Martin of the F.C.C.

The wireless carriers are fighting a cellular version of the Cartefone decision. They contend that they must

exert control over all equipment used on their networks in order to protect the networks' operations. AT&T says in an F.C.C. filing that only the carrier has the incentive to oversee "the integrity, security and efficient and economical use" of the network.

MR. WU'S paper, however, shows that the landline telephone industry used identical arguments, predicting dire consequences were its customers permitted to use equipment from unknown sources. In 1955, when AT&T was fighting to exclude a gadget called the Hush-A-Phone, the company solemnly argued, "It would be extremely difficult to furnish 'good' telephone service if telephone users were free to attach to the equipment, or use with it, all of the numerous kinds of foreign attachments, which are marketed by persons who have no responsibility for the quality of telephone service."

As a proscript to the landline industry's resistance to opening its network, Mr. Wu said in an interview last week, "Things turned out not just O.K., but great." Companies like Google and Skype have called on

the F.C.C. to open up more equipment and software options in the wireless industry. Google said on Friday that it would participate in the spectrum auction, committing a minimum of \$4.9 billion. If the F.C.C. put into effect its "open access" proposals submitted earlier, Verizon Wireless, however, contended that Google's proposals would open its network to phones that Verizon had not approved and "that cannot reliably communicate with law enforcement," a grave problem "in an era of heightened national security concerns."

In other words, stick with Verizon-certified phones, or the terrorists win.

The wireless industry is being dragged, ever so slowly and gently, into a scary new age — one that began in 1988 with Cartefone — that will require adjustment to reduced control. The industry can never creditably contend that its business practices foster competition and innovation as long as its customers are prevented from moving easily from one carrier to another. Last week, Representative Markey said, "How crazy is this? You can take your number with you, but you can't take your new \$500 phone with you."

□



salon.com

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Google and eBay fight the phone companies

Internet companies are lobbying the FCC to open up wireless networks to new applications and devices. If they win, we could all have cheaper, better, more wonderful cellphones.

By Farhad Manjoo

http://machinist.salon.com/feature/2007/07/25/wireless_carterfone



In 1921, a small company in New York -- you might call it a tech start-up -- invented a solid-state device to ease the social discomfort occasioned by the advent of the telephone. The earliest phones had poor microphones, and people were forced to bark into them rather than talk; because phone lines were beginning to show up in drugstores, saloons, hotels and offices, all the yelling posed a challenge to privacy (of the callers) and peace (of everyone else). The start-up firm came up with a solution that engineers today would label a kludge -- an inelegant quick fix, but hey, it worked. It was a portable bell-shaped cup that fit over the phone's mouthpiece, a fixed version of the shield you'd make with your hands around your mouth if you were trying to keep your business on the D.L. Hence the device's inspired name: the Hush-A-Phone.

Over the next few decades, the Hush-A-Phone Corp. of New York saw its kludge become a big hit, selling more than 125,000 units to a phone-crazy public. But not everyone was happy about its success. In the late 1940s, AT&T, the monopoly that controlled the nation's phone system, charged Hush-A-Phone and its users with violating a rule: Only devices "furnished by the telephone company" could be used on the telephone network. The phone company threatened to close Hush-A-Phone users' phone lines and shut down the stores that sold them. An epic legal fight ensued, stretching on for eight years and involving the Federal Communications

Commission and several levels of the federal courts. When it was over, in 1956, tiny Hush-A-Phone had prevailed -- and so too every telecom start-up since.

The Hush-A-Phone court decision inspired a more far-ranging rule known as Carterfone, a 1968 FCC judgment that undid AT&T's control of the "edge" of the network. The Carterfone rule prohibited the phone company from dictating how people could use the lines coming into their homes and offices. It presaged a new age of innovation in communications technology. Just about every amazing thing we now use on the phone network -- cordless phones, answering machines, TiVos, home security systems, fax machines, dial-up modems, DSL modems (the Internet itself, you could say) -- is a direct consequence of Hush-A-Phone and Carterfone decisions. But consider this: The rules do not apply to cellular networks.

Though wireless carriers depend on public radio space for their fortunes, they're currently free to proscribe public freedom on the networks they run. AT&T, Verizon, Sprint and T-Mobile decide which phones customers can use on their systems; which programs and features they'll allow on those phones; and in what manner people are allowed to use those devices. The technology of 2007 is flashier than that of 1921, but the networks operate in roughly the same manner as the pre-Hush-A-Phone landline system -- if you use your phone in a way not sanctioned by the phone company, they're free to shut you down.

Last week Google announced that it would bid \$4.6 billion for a slice of the public airwaves that the FCC plans to put up for auction next year. The radio space being sold -- known as the 700 MHz band -- could provide faster, more reliable wireless Internet connections throughout the nation, and large telecom firms are setting aside huge sums to snap it up. But Google, which is acting in concert with a host of Internet companies, has lobbied the FCC to make the waves open -- to force any firm that purchases the radio spectrum to follow the Carterfone rule, among several other principles of openness. Google says it will participate in the auction only if the FCC agrees to moves its way.

The fight may seem like an obscure regulatory tangle between large corporations, and telecom firms -- which oppose Google's bid -- are already accusing it of seeking corporate welfare. But the decision could prove no less profound than the Hush-A-Phone ruling. If the FCC comes down on the side of openness, proponents of a wireless Carterfone rule say, customers would see a host of new technologies pop up on their phones, and they'd likely see prices come down, too.

For instance, every major cellphone company currently prohibits customers from using non-sanctioned Internet phone services on their cellphones, says Chris Libertelli, the head of government affairs for Skype, which recently called on the FCC to expand the Carterfone decision to wireless networks. (Here's the PDF of Skype's petition.)

Skype makes one such voice-over-Internet-protocol (or VoIP) phone system. If you had Skype on your cell, you could make voice calls to other Skype users -- whether in Illinois or Iraq -- for only the cost of sending Web data over your phone (essentially for the cost of an unlimited data plan on your cell). Skype's software -- like the Hush-A-Phone -- poses no harm to the phone companies' networks; Skype has produced a cellphone version of its application that is widely in use in Europe and Asia, Libertelli says. But American wireless companies have a financial motive to block it: If you're using Skype, you're not using regular cell minutes, after all.

Skype's not the only thing you can't get on a cellphone. As the law professor Tim Wu has pointed out, phone networks have blocked handset manufacturers from adding GPS services, Wi-Fi, Web browser and e-mail software, file-transfer applications, and a host of other software and hardware capabilities that could potentially eat into carriers' profits. The Wall Street Journal reported that RIM, the company that makes BlackBerry phones, wanted to add a free maps program on their devices; AT&T prohibited it because it had a \$10-a-month mapping service to sell to users. RIM also built a phone capable of seamlessly switching between networks in Europe and networks in America -- handy for international travelers. But Verizon, the Journal reported, locked down that capability to anyone who didn't pay a fee.

I asked Verizon -- which has been the most vocal of all carriers in its opposition to openness principles -- to explain its rationale to me. A spokesman declined, pointing me to the company's regulatory filings with the FCC on the matter. Verizon, like other cell firms, generally argue that government regulation over its businesses would harm American economic vitality. The wireless market, unlike the old land-line system, isn't a monopoly, Verizon points out. Four companies fiercely compete with each other for customers -- and if customers (that is, "the marketplace") really demanded open networks, companies would surely see it in their interest to provide it.

Libertelli, though, argues that the phone companies have a narrow definition of "free market." They compete with each other, but they don't want to compete against the Skypes, Googles, and other Internet innovators of the world. "There's a whole new Internet model out there, and it's nothing like what the telecom world has seen. In some ways it's a clash of worldviews. We're trying to build a free market for devices and applications," Libertelli says. "Carterfone is the way to bring the innovation of the Internet to the wireless market."

Fortunately, Kevin Martin, the Republican chairman of the FCC, seems to be listening. He has proposed adopting a wireless Carterfone rule for the 700 MHz band, and according to lobbyists who've spoken to him, he seems to be genuinely considering adopting a model to make wireless networks fully open. Gigi Sohn, who heads the public policy group Public Knowledge, says Martin understands the weight of his ruling -- that, like the Hush-A-Phone decision, it could change everything. "He knows that this is his legacy," Sohn says.

THE WALL STREET JOURNAL.

AUGUST 8, 2007

FCC Auction May Expand Cellphone Options, Services

By COREY BOLES

<http://online.wsj.com/article/SB118653747800791296.html>

WASHINGTON -- The Federal Communications Commission's next airwaves auction, expected in January, could give consumers more services delivered on their cellphones and more options when it comes to picking service providers.

The FCC last week set aside a third of the airwaves under auction for wireless networks that would let customers use whichever cellphone or wireless device they want. Not only will consumers be able to buy any cellphone and then choose a provider, the types of products and services offered by wireless companies could expand greatly -- although the degree of change will depend on who buys the bulk of the spectrum being offered.

Analysts expect to see much easier cellphone access to online banking, stock trading, mobile video, Web search engines and anywhere-anytime music downloading, as well as new versions of email. The new rules also open the door to cellphone use of wireless-Internet services such as eBay Inc.'s Skype.

The U.S. wireless industry is dominated by a few large players, led by AT&T Inc. and Verizon Wireless, jointly owned by Verizon Communications Inc. and Vodafone PLC of the United Kingdom. The auction could set the stage for another company to enter the market, and even if one of the big incumbents does win the bulk of the airwaves being sold, it will have to change how it offers service and phone handsets.

The changes won't happen overnight. The 62-megahertz span of radio spectrum is coming to market because television broadcasters are converting to digital signals from their current ones. But TV broadcasters don't have to vacate the spectrum until early 2009, and successful bidders will still have to construct their cellular networks.

That hasn't damped the excitement generated by the agency's open-access requirements for one of the wireless licenses coming available in the auction. Today, most cellular companies limit the services that customers can access using their wireless devices -- in effect keeping them on a private network rather than allowing them to access the entire Internet over their phones.

"The difference in how we communicate could be as dramatic as how the Internet changed communication when it first started to be used for commercial purposes," said Bill Belt, a senior director with the Consumer Electronics Association, an industry trade group. Mr. Belt says the change will likely start with large content providers such as Google Inc., Yahoo Inc. and eBay making portable versions of their services more widely available. But before too long, he says, a wide variety of currently unimagineable services will be available.

Google is in talks with a number of handset makers about making a phone that would support its Web applications. Currently, it would need to find a service-provider partner to bring the phone to market. But with the auction, either Google itself could buy the spectrum

and enter the wireless market or, at the very least, it could sell its phones with confidence that customers could use them to access wireless services.

It is also likely that more device makers will enter the market. Companies such as Finland's Nokia Corp., one of the world's largest handset makers, have at best a marginal presence in the U.S.

Eventually, all cellular companies are expected to be more consumer-friendly when it comes to signing up for service.

But if one of the existing cellphone companies wins the license, many think changes will be more marginal. Verizon has already said that if it buys the spectrum, it will comply with the rule but won't actively promote the use of new phones, sell them in its stores or offer much in the way of after-sales service. Verizon Wireless declined to comment for this article.

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August 23, 2007

Handcuffs chafe wireless users

Launch of 'locked' iPhone leads to new cries for freedom

By Leslie Cauley
USA TODAY

To many, the Apple iPhone is the ultimate wireless device — a seductive blend of technology, function and dead-on cool, all wrapped into a sleek package. To others, it's a glaring example of what's wrong with the U.S. wireless industry in general.

"The iPhone offers superior technology, but public policies in this country allow (Apple) to chain that technology to one massive company, AT&T, rather than allow consumers to make the choices they want," charges Josh Silver, co-founder of Free Press, a consumer advocacy group. His latest campaign — "Free the iPhone" — promotes an open Internet and consumer-friendly public policies for mobile devices. The website (www.freetheiphone.org) has resulted in "tens of thousands of supporting petitions," he says.

Silver says his beef isn't with the iPhone per se. Other U.S. carriers do the same thing with the devices they sell. But the iPhone, he says, "is a great example of how badly broken our media system is in this country."

Cover story

For starters, he notes, would-be iPhone users must sign a two-year contract, or contract extension, with AT&T, the sole U.S. distributor. Owners can access the Internet only via AT&T's network, unless they happen to be in range of a Wi-Fi hot spot. And the iPhone works only with software sold by Apple and AT&T.

Though it is touted as a "global phone," the iPhone is locked, so using it overseas requires paying extra for an international calling plan with — you guessed it — AT&T.

Such handcuffs are common in the U.S. wireless industry. Other big carriers, including Verizon Wireless and Sprint, impose similar restrictions, says Chris

Please see COVER STORY next page ▶



2B • THURSDAY, AUGUST 23, 2007 • USA TODAY

Critics of U.S. wireless system like Europe's more open system better

Continued from 1B

Murphy of Consumers Union. "Consumers have no bargaining power against these wireless terms that carriers can dictate. It's a take-it-or-leave-it proposition."

Murphy says carriers use a variety of tricks to keep wireless subscribers on a short leash, including:

▶ **Restrictive service contracts.** Most contracts bar customers from sideloading third-party software applications from their PCs onto wireless devices. Carriers rarely enforce that

fine print, but they could, he says. Sideloading can also void the device's warranty.

▶ **Crippled phones.** Some carriers disable handset features — such as free Wi-Fi capability — that compete with their fee-based services. Handset makers are at the mercy of carriers, so they strip out features as requested.

▶ **Subsidized phones.** Carriers use discounts on most new cell phones to justify requiring long-term contracts. Early termination fees can run \$175 or more. Carriers say they need lengthy commitments to recoup their upfront costs.

▶ **Locked phones.** In the U.S., most cellphones are sold "locked," meaning a phone works only with the carrier that supplied it. If you switch carriers, you may have to just toss your handset — even if it's an unsubsidized \$599 iPhone — and buy a new one.

Asia, Europe have more options

The situation is different outside the U.S. In Asia and Europe, cellphones are routinely sold unlocked, so consumers can buy any device and load it up with as many software applications as they desire. Each carrier provides an electronic "SIM card" which, when slipped into a phone, configures it for that network. Changing wireless carriers requires inserting a new card — not buying a new phone.

On the plus side, the U.S. system gives Americans super-cheap phones. Contracts help stabilize carrier revenue; that, in turn, helps keep monthly service prices cheap. On the downside, U.S. cellphones are not as feature-rich as phones in other parts of the world, says Muzib Khan, vice president of management and engineering for phone maker Samsung.

To keep costs low, manufacturers tend to "build to the lowest common denominator" for the U.S. market. That's why there isn't much variety here, he says. To blur the lack of features on U.S. devices, carriers tout ringtones, face plates and slim design — "things that one could say probably aren't very useful," Kahn says.

Because U.S. consumers pay so little for their phones, Khan says, they aren't as "motivated" to learn how to use them properly. As a result, he says, they don't get all the benefits.

"It's an endless loop," Samsung's engineering chief says. "Until some changes are made, (U.S. consumers) will be in that loop forever."

In other countries, consumers tend to pay full retail — \$300 to \$500 — for the handset, but they also get high-octane phones: DSL-fast Internet browsing, downloading and real-time media streaming, to name just a few features. High-resolution cameras are common. Ditto for Google mapping and touch-screens.

Bill Plummer, a vice president with Nokia, the world's largest handset maker, says U.S. consumers are getting shortchanged. "American consumers have less choice in terms of the devices."

Plummer adds: "They also have less choice in terms of services and applications they can take advantage of with these devices" — a nod to U.S. carriers' tendency to block applications — such as Skype, a pioneer in Internet calling — that they don't approve or sell.

Europe's wireless free-for-all didn't happen by accident. National governments issued edicts that effectively forced carriers to adopt

Overseas, cellphones mostly 'unlocked'

By Leslie Cauley
USA TODAY

Are you unlocked? If you live in the USA, probably not. Wireless devices here are generally "locked" by carriers so that they work only with that carrier's network and software applications.

In Europe, the situation is just the opposite: Phones are typically "unlocked," enabling wireless customers to switch carriers and applications with ease.

Unlocked phones, by definition, are based on GSM technology. Why? Only GSM devices use SIM cards — tiny chips that relay user identification information to carriers.

Devices based on CDMA technology, the other major standard in the USA, don't have SIM cards. Instead, customer information is imbedded directly into the phone itself.

AT&T and T-Mobile are GSM

shops. Verizon Wireless and Sprint embrace CDMA. The two technologies are not compatible. GSM is used by about 85% of the world's wireless population, making it the most popular standard, by far.

Why unlock? If you have a favorite phone, you can take it with you when you switch carriers, says David Rowell, publisher of *The Travel Insider*, a free Web-based newsletter that tracks travel-related technology. U.S. carriers "never used to unlock phones, but that is changing," he says.

The biggest benefit of unlocking: cheap, overseas calling. By swapping out the local SIM card with an international one, Rowell says, U.S. wireless customers can enjoy free incoming calls, cheaper roaming and reduced per-minute rates.

"That's the key money issue" with unlocking, he says. Another benefit: freedom to

load any application.

Locked phones are limited to carrier-approved applications. Unlocked phones can be used to download a range of applications, though some limitations may apply depending on the network the device is being used with, notes Pete Skarzynski, a senior vice president at Samsung.

On the downside, he says, those who choose to load their own applications might miss out on software applications and other "goodies" that carriers offer.

Unlocking policies vary. T-Mobile will unlock a phone after 90 days, providing the account is in "good standing," says spokesman Peter Dobrow.

AT&T will unlock phones for customers once they have fulfilled their contracts, which typically run one to two years. One big exception: Apple's iPhone, distributed exclusively in the USA by AT&T. "That's different," says AT&T spokesman Mark Siegel.

consumer-friendly practices and a common technical standard (known as "GSM"). Consumers still have the option of subsidized phones by signing contracts — but it's not a requirement for service.

FCC should step in, many say

The Federal Communications Commission, which has broad sway over telecommunications regulation in the USA, so far has taken a hands-off approach to wireless. That made sense 20 years ago when cellphones were a niche market. Now that they are ubiquitous, however, the FCC should step in, say applications companies such as Skype and other groups including Consumers Union.

FCC Chairman Kevin Martin demurs on whether more regulation is needed, but he admits to some frustrations. "Some innovative ser-

vices are not becoming as available in the United States as they are abroad," Martin says. "That is a trend I am concerned about."

Take Wi-Fi. Martin says it could make faster mobile broadband mainstream — one reason it's being deployed fast around the world. U.S. carriers, however, have been slow to roll out the technology, which competes with their pricier broadband offerings. Wi-Fi "appears to be stultified in its deployment here," Martin says sternly.

To help address those issues, the FCC recently imposed an "open device" requirement on a choice chunk of broadband airwaves due to be auctioned off Jan. 16. This 700-megahertz spectrum is being vacated by TV broadcasters in their digital switchover. Signals in this range can penetrate walls and other obstacles, making them ideal for mobile broadband.

years," Tanabian says. "If they don't, they're out."

Less choice but lower rates

Jim Cicconi, an AT&T senior executive vice president, takes issue with the suggestion that Europe's wireless market is friendlier to consumers. In the USA, service fees "are one-half to one-third cheaper." Devices are also dirt cheap. Those who don't want to sign a contract can always sign up for a "prepaid" plan, he adds.

"You don't have to scratch your head a lot to figure out why the people prefer" the USA's wireless model, Cicconi says.

Once a contract has been fulfilled, Cicconi says AT&T will "gladly unlock" a customer's phone, if requested.

Plummer, the Nokia executive, says he can understand why U.S. carriers felt the need to control the customer experience in the early days of wireless. But not now.

"There was a point in time when we all needed training wheels for the fixed Internet," Plummer says. "We left that behind well over a decade ago. Consumers should have a choice of device, a choice of network that they want to attach to and the right to pick the applications and content that they want to benefit from."

Hoping to nudge that shift along, perhaps, Nokia now sells unlocked phones in its superstore in Chicago and is quickly expanding its unlocked line to independent retail outlets nationwide. (To use these phones, consumers must get a "SIM" card from every carrier they plan to use.)

Plummer says the move is a nod to the changing nature of wireless in general, and to the likely future of the business in the USA in particular.

"We think consumers should be able to make their own decisions" about devices and applications, he says flatly. "Nokia devices are developed for the global audience and the U.S. consumer is a member of that global audience."

THE WALL STREET JOURNAL.

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Free My Phone

Cellphone carriers tell us what phones we can use, and what software and services can be offered on those phones. Consumers deserve better.

By WALTER S. MOSSBERG

<http://online.wsj.com/article/SB119264941158362317.html>

Suppose you own a Dell computer, and you decide to replace it with a Sony. You don't have to get the permission of your Internet service provider to do so, or even tell the provider about it. You can just pack up the old machine and set up the new one.

Now, suppose your new computer came with a particular Web browser or online music service, but you'd prefer a different one. You can just download and install the new software, and uninstall the old one. You can sign up for a new music service and cancel the old one. And, once again, you don't need to even notify your Internet provider, let alone seek its permission.

Oh, and the developers of such computers, software and services can offer you their products directly, without going through the Internet provider, without getting the provider's approval, and without giving the provider a penny. The Internet provider gets paid simply for its contribution to the mix: providing your Internet connection. But, for all practical purposes, it doesn't control what is connected to the network, or carried over the network.

Personal Technology columnist Walt Mossberg discusses the features you can't choose for your cellphone the way you can for your computer. (Oct. 22)

This is the way digital capitalism should work, and, in the case of the mass-market personal-computer industry, and the modern Internet, it has created one of the greatest technological revolutions in human history, as well as one of the greatest spurts of wealth creation and of consumer empowerment.

So, it's intolerable that the same country that produced all this has trapped its citizens in a backward, stifling system when it comes to the next great technology platform, the cellphone.

A shortsighted and often just plain stupid federal government has allowed itself to be bullied and fooled by a handful of big wireless phone operators for decades now. And the result has been a mobile phone system that is the direct opposite of the PC model. It severely limits consumer choice, stifles innovation, crushes entrepreneurship, and has made the U.S. the laughingstock of the mobile-technology world, just as the cellphone is morphing into a powerful hand-held computer.

Whether you are a consumer, a hardware maker, a software developer or a provider of cool new services, it's hard to make a move in the American cellphone world without the permission of the companies that own the pipes. While power in other technology sectors flows to consumers and nimble entrepreneurs, in the cellphone arena it remains squarely in the hands of the giant carriers.

The Soviet Ministry Model

That's why I refer to the big cellphone carriers as the "Soviet ministries." Like the old bureaucracies of communism, they sit athwart the market, breaking the link between the producers of goods and services and the people who use them.

To some extent, they try to replace the market system, and, like the real Soviet ministries, they are a lousy substitute. They decide what phones can be used on their networks and what software and services can be offered on those phones. They require the hardware and software makers to tailor their products to meet the carriers' specifications, not just so they work properly on the network, but so they promote the carriers' brands and their various add-on services.

How would you rate your cellphone carrier? Cast your vote and join the discussion.

Let me be clear: Any company that spends billions to build and maintain a wireless network deserves to be paid for its use, and deserves to make a profit and a return for its shareholders. Not only that, but companies like Verizon Wireless or AT&T Inc. should be free to build or sell phones or software or services.

What Is Needed

But, in my view, they shouldn't be allowed to pick and choose what phones run on their networks, and what software and services run on those phones. We need a wireless mobile device ecosystem that mirrors the PC/Internet ecosystem, one where the consumers' purchase of network capacity is separate from their purchase of the hardware and software they use on that network. It will take government action, or some disruptive technology or business innovation, to get us there.

To my knowledge, only one phone maker, Apple Inc., has been permitted to introduce a cellphone with the cooperation of a U.S. carrier without that carrier having any say in the hardware and software design of the product. And that one example, the iPhone, was a special case, because Apple is currently the hottest digital brand on earth, with its own multibillion-dollar online and physical retail network.

Even so, Apple had to make a deal with the devil to gain the freedom to offer an unimpaired product directly to users. It gave AT&T exclusive rights to be the iPhone's U.S. network for an undisclosed period of years. It has locked and relocked the phone to make sure consumers can't override that restriction. This arrangement reportedly brings Apple regular fees from AT&T, but penalizes people who live in areas with poor AT&T coverage.

Apple has also, so far, barred users from installing third-party programs on the iPhone, though the company announced last week it will open the phone to such programs early next year. (Web-based iPhone programs -- those that run inside the Web browser -- have been available from day one.)

These restrictions have rubbed some of the luster off the best-designed hand-held computer ever made.

A few other "smart phones" sold primarily to businesses have been freer of carrier restrictions on third-party software and services than typical cellphones. But even these handsets, such as Palm Treos, Windows Mobile devices, and BlackBerrys, have been partly crippled by carriers in some cases.

As a technology reviewer, I have met with multiple small companies that had trouble getting their programs onto consumers' phones without the permission of the carriers; getting that permission often requires paying the carriers. Sure, there are some clumsy workarounds that can evade the carrier barrier, but it's nothing like the ability small software companies have had for decades to offer their products for installation on Windows or Macintosh computers.

We also need much greater portability of phone hardware. Because the federal government failed to set a standard for wireless phone technology years ago, we have two major, incompatible cellphone technologies in the U.S. Verizon Communications Inc. and Sprint Nextel Corp. use something called CDMA. AT&T and Deutsche Telekom AG's T-Mobile use something called GSM. Except for a couple of oddball models, phones built for one of these technologies can't work on the other. So that limits consumer choice and consumer power. If you want to switch from AT&T to Verizon, you have to swallow the cost of a new phone.

But the problem is even worse. The government didn't require the CDMA companies to include a removable account-information chip, called a SIM card, in their phones. So, unlike people with GSM phones, Sprint and Verizon customers can't keep their phones if they switch between the two carriers, even though they use the same basic technology. And, the government allows the GSM carriers to "lock" their phones, so a SIM card from a rival carrier won't work in them, at least for a period of time. Techies can sometimes figure out how to get around this, but average folks can't.

The carriers defend these restrictions partly by pointing out that they subsidize the cost of the phones in order to get you to use their networks. That's also, they say, why they require contracts and charge early-termination fees. Without the subsidies, they say, that \$99 phone might be \$299, so it's only fair to keep you from fleeing their networks, at least too quickly.

But this whole cellphone subsidy game is an archaic remnant of the days when mobile phones were costly novelties. Today, subsidies are a trap for consumers. If subsidies were removed, along with the restrictions that flow from them, the market would quickly produce cheap phones, just as it has produced cheap, unsubsidized versions of every other digital product, from \$399 computers to \$79 iPods.

The Federal Communications Commission is selling some new wireless spectrum that will supposedly lead to fewer restrictions for technology companies and consumers, but it's far from certain that the carriers, with their legions of lobbyists and lawyers, will allow such a new day to dawn. Google Inc. is making noises about trying to bust open the cellphone prison, with new software and services, but that's no sure bet either.

Remember Landlines?

We've been through this before in the U.S., though many younger readers may not recall it.

Up until the 1970s, when the federal government intervened, you weren't allowed to buy your own landline phone, and companies weren't able to innovate, on price or features, in making and selling phones to the public. All Americans were forced to rent clumsy phones made by a subsidiary of the monopoly phone company, AT&T, which claimed that, unless it controlled what was connected to its network, the network might suffer.

Well, the government pried that market open, and the wired phone network not only didn't collapse, it became more useful and versatile, allowing, among other things, cheap connections to online data services.

I suspect that if the government, or some disruptive innovation, breaks the crippling power that the wireless carriers exert today, the free market will deliver a similar happy ending.

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Skype's rallying cry

Jeffrey Silva

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Big things tend to start out small, or so the saying goes.

So it was that Voice over Internet Protocol provider Skype Ltd. came out of nowhere in February to petition the Federal Communications Commission to extend to the mobile-phone industry a landmark third-party connectivity mandate fittingly instigated decades earlier by a two-way radio dealer anxious to hook into the wireline telephone network.

Skype dusted off the FCC's 1968 Carterfone decision—allowing unaffiliated devices to attach to the public landline telephone system so long as they do no harm to the network—and asked why not in the U.S. wireless space, too. Timothy Wu, a Columbia University law professor, asked the same question and made the case for allowing wireless Carterfone at a roundtable at the Federal Trade Commission early this year. Wu was at once applauded and attacked for his academic paper on the subject.

The FCC has yet to rule on the Skype petition. No matter; the revolution has begun.

Five months after the fact—aided by a blockbuster bandwagon effect that attracted support from Google Inc., Frontline Wireless L.L.C., consumer advocates, public-interest groups, thousands of citizens and Democrats hoping to add the White House to a power base that already includes the House and Senate—open access has become the rallying cry for loosening the iron-clad grip of wireless networks that cellular carriers have had the past 25 years.

Before the \$120 billion cellular industry knew it, the ripple effect of the Skype petition had become a tsunami whose force was so great the Republican-controlled FCC—otherwise hoping for a clean, straightforward 700 MHz auction capable of ringing up \$15 billion for the U.S. Treasury—acquiesced to attaching open-access requirements to one-third of the spectrum to be bid on early next year.

Perhaps the most telling aspect of the revolution in its early stages was the reaction to the FCC's 700 MHz ruling by Skype, Google, Frontline and the many others disgruntled with what they see today as a walled wireless garden. They weren't jumping for joy. The open-access crowd—having catapulted net neutrality to high priority in Congress, but unsuccessful at securing legislation—knew they had started something big in the wireless space at the FCC. They want more: a wholesale mandate, an end to handset-locking, fairer early-termination fees and more.

Already Skype and various groups have begun to lay the groundwork for pursuing open-access and wholesale conditions in the 2155 MHz-2175 MHz spectrum band unsuccessfully sought by M2Z Networks Inc. and others. The open-access surge, begun with the still-pending Skype petition and bolstered by AT&T Inc.'s turnabout support for open access at 700 MHz—is not apt to abate anytime

soon, if ever. Every spectrum rulemaking going forward may well become a potential battle ground for open access and wholesale. There appears no turning back.

“I really did have a growing sense that after we explained our position ... they came to understand what was at stake,” said Christopher Libertelli, senior director of government and regulatory affairs for Skype. “They came to understand how reasonable the [wireless Carterfone] position was and that it was pro-consumer ... I wasn’t surprised.”

Beyond 700 MHz

Libertelli was senior legal adviser to former FCC chairman Michael Powell from July 2001 through March 2005, managing the agency’s broadband and competition policy agendas during that period. Libertelli said he believes the Skype petition rings true at the FCC because policymakers are generally interested in fostering competition and innovation. He said that regulatory philosophy has implications beyond the 700 MHz band.

“What it [the Skype petition] did was focus the commissioner’s attention not only on the 700 MHz band,” Libertelli stated. “The rationale for Carterfone in that band is equally applicable to the broad wireless industry. So as we describe the benefits at 700 MHz, I think you’re starting to see a growing recognition that, if it’s good for 700 MHz, it’s good for consumers in the broader market.”

While Democrats in Congress and at the FCC have been the strongest advocates of open access, wholesale and net neutrality generally, Libertelli said it likely will require bipartisan support to have those principles applied on a large scale to wireless spectrum as opposed to a slice of spectrum here and there.

Skype, bought by eBay Inc. in 2005 for \$2.6 billion, has made inroads in Europe and Asia, regions that it said are accommodating to third-party applications and devices on wireless networks and unlocked handsets. Skype underscored that point in its petition to the FCC.

Not so fast But Verizon Wireless—referring to a pair of studies—replied it is a mistake to conclude European wireless service is superior to that available to consumers in the United States.

“Verizon Wireless submits that attempting to impose Carterfone requirements on U.S. commercial mobile-phone services based on what is available to consumers in Europe would be factually unsupported and legally unsustainable, and would ignore the tremendous benefits that innovation in the U.S. wireless market has brought to wireless consumers,” Verizon Wireless told the FCC, referring to an internal study by Mark Lowenstein and a report by The American Consumer Institute.

Cellphone carriers want control over their networks, having to make business decisions on how to best allocate spectrum among voice, Internet access, video, music, texting and other services that occupy their ever-valuable bandwidth portfolios.

That is why the recent Skype worm may worry mobile operators. Skype was recently the target of a virus attack that used the company’s software to trick users into downloading the virus onto their computer. The virus did not appear to impact Skype’s service, but did impact users’ computers.

The open-access campaign begun by Skype could represent the start of a broader assault not only on networks that carriers have spent billions of dollars to build and operate, but also on the wireless business model itself.

Skype and the others see it differently. Indeed, they argue carriers are self-inflicted victims of mobile myopia, a narrow mindset that refuses to appreciate the monetary benefits of increasing traffic on cellular systems. Policymakers, fond of expounding the benefits of innovation, competition in the telecom industry, suddenly find themselves put on the spot as to whether they really mean what they say.

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On the Hot Seat with Skype's Christopher Libertelli

By

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Shortly after the C Block of spectrum in the 700 MHz auction hit its reserve price, which triggered the open access rules for that slice of spectrum, FierceWireless editor Brian Dolan spoke with one of the key figures in the open access debate: Christopher Libertelli, Skype's senior director of government and legal affairs. Libertelli teamed up with Google's lobbyists and a number of consumer groups to effectively lobby the FCC to implement the open access rules for the C Block but he says the open access fight is not over yet.



FierceWireless: The C Block of spectrum hit its reserve price of \$4.6 billion today, which means that the open access rules the FCC implemented will stick. Google, Skype and others were instrumental in getting the open access fight. Are you at all surprised by this outcome?

Libertelli: There was a question about whether the open access provisions would depress the value of the spectrum and I think this morning's activity showed that the markets had fewer reservations about the reserve than a lot of the critics who lobbied the FCC did. It was, I think, a very, very positive decision that the commission came up with last July in the face of some pretty stiff lobbying by wireless incumbents. This represents the best tradition of FCC decision-making. I'm not so surprised that the companies would eventually recognize that wireless Carterphone and open access is in the best interest of consumers and the network providers and companies like Skype that build applications for wireless networks, but maybe it was just a matter of the individual players thinking through business models and then coming up with things like the bid that we saw this morning.

FierceWireless: Currently the C Block has not garnered a bid after the one that pushed it over its \$4.6 billion reserve price. Do you think that indicates that there was just one bidder-like Google-since the company promised the FCC that it would drive the spectrum block's price tag up past that reserve price?

Libertelli: Well, it's really hard to know. People are reading the tea leaves on this left and right. Blair Levin suggests that through inference and the use of waivers that there are at least two companies in there bidding for the C Block. I can't say-I don't know. Nobody knows.

FierceWireless: If Verizon Wireless or AT&T wins the C Block, do you think they will interpret and implement the open access provisions in a different way than Google would if it wins?

Libertelli: I think there is a difference of opinions over what those open access provisions mean and ultimately it's for the FCC to decide what openness means and what the open access provisions means, but I take them at their word no matter which company is the ultimate licensee. As you know, Google has begun a development effort around the Android platform that would allow companies like Skype to innovate and reach our consumers so people can have conversations for free when they are on this spectrum.

At the same time, Verizon has announced that a business unit within their company is going to embrace the concept of openness and talk to the development community, including companies like Skype, and figure out the best way to implement the open access provisions, these Carterphone rules. So, while there are probably shades of grey in terms of the kind of openness companies would embrace-Google compared to Verizon-the core terms, the basic idea that the wireless Internet should really operate more like the wired Internet, is really something that the commission has taken ownership of and it's the commission that will enforce these rules. Today's auction result is that it's up to the agency to ensure that whoever it is who wins the spectrum adheres to their open access rules.

FierceWireless: When the FCC opened up the prospect of open access provisions on the C Block for public comment, Verizon Wireless referred to them as an "experiment" that the FCC wished to undertake. When the carrier made their "Any Device, Any App" announcement, Verizon Wireless couched it by saying it would probably only appeal to a small user segment within their subscriber base. Do you think the open access provisions are of interest to a small user segment or would it benefit all wireless users?

Libertelli: It is not for Verizon or AT&T to decide what consumers want, it is for consumers to decide what they want. So, for us, it's about giving them an alternative and providing them with the tools to take Skype with them wherever they want to go. It is our obligation to try to win our consumers attention and allow them to download Skype for Windows Mobile onto their device. It doesn't seem to us to be the right public policy to let Verizon be the one who makes that choice for consumers, and that is what's so brilliant about this open access provision is that it puts control over communications back into the hands of consumers. Nobody knows how consumers will ultimately end up using these openness provisions, but what we can say is that consumers will get to decide and not the network owners.

In addition, it's a signal to the developer community to go out and develop whatever you want that uses the 700 MHz spectrum and try to capture consumers' attention. People in our ecosystem who are building applications that hook into Skype, for example, they will be able to compete for user attention, and that's the way the market is suppose to work. The market is not supposed to work with a handful of companies making decisions for consumers.

FierceWireless: Shortly after Verizon made its "Any Device, Any App" announcement, AT&T came out and said it already had the most open network, and implied that much of this open access discussion didn't apply to them. In Skype's experience, does AT&T run an open network?

Libertelli: We know two things at least: The terms of service that AT&T has on the market today prohibits a Skype user from using a device or its Internet connection to use Skype. That's not open behavior and that's not consistent with the FCC's open access provisions. We also know that the iPhone is locked to AT&T's network and users can't take the iPhone and bring it to any network they want. Those two things combined suggest that there is still more work to do to open AT&T's network.

FierceWireless: When Google first proposed these open access provisions to the FCC, they actually had four provisions: Open devices, open applications, open services and open networks. Only open devices and open applications, however, were adopted in the final rules for the C Block. I assume that if Google wins the C Block they would still adopt the other two provisions, but should an incumbent win it, they would only implement the required two. Do you think open access would be fully realized without the third and fourth provisions: open services and open networks?

Libertelli: I have always understood the open services, that third provision for open access, to be sort of a subset of [open devices and open applications], but Rick Whitt over at Google is really the person to talk to explain the nuances between those provisions. We build an application that allows people to talk for free and use Skype in a mobile environment. We are fully supportive and engaged the commission on this "no

blocking, no locking" Carterphone rule early on, which would protect the device-level openness principle as well as the ability to use software applications like Skype. For us, those are the key pieces of a good open access policy at the agency. That isn't to say we didn't care about the wholesaling requirement, we did. It would provide our users with yet another alternative in the market. [Google] seemed to argue for [open access] more often than we did, but that's simply because we had one person doing the lobbying—namely myself—and they had a few more. It wasn't a question of not caring about it, but rather a need to put an emphasis on the things that we had put in our Carterphone petition in February of last year, which really had more to do with open devices and open applications.

FierceWireless: Finally, now that the open access provision looks to be implemented on the C Block, how will that affect Skype? What will Skype do to leverage it?

Libertelli: The [implementation of open access on the C Block] sends a very positive signal to Skype that this spectrum will be friendly to a Skype conversation-friendly to Skype applications that run on mobile devices. It's a very positive step forward. It's an incremental step forward. There is still more work to do. There is still a need to convince policymakers that if wireless is good in the 700 MHz context, then it is also good in the broader wireless market. We take this as a very positive step forward since it means users can now download Skype Mobile for Windows. It also signals to Skype and companies like Skype that this wireless space is moving in the right direction: moving toward more openness and not less. That's a shot in the arm for companies like mine who wake up everyday trying to build new applications to allow people to structure their communications and free up their conversations and allow people to free up their conversations and take Skype with them. The spirit of entrepreneurialism and experimentation that this open access provision represents is all very encouraging in particular to our mobile developers.

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Open access: Paradigm shift or an open question

Jeffrey Silva

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Change has never been easy for the cell-phone industry. And it's perfectly understandable. With the kind of wild success and wealth creation during its first three decades, cellular chieftains who collectively service more than 250 million subscribers have a history of being instinctively cautious about rocking the boat.

It is a well-worn pattern. First, there's the-sky-will-fall opposition and indignant outrage to the chance of change to the status quo. Later, calm and reasoned criticism in regulatory filings and congressional input. Finally, if political winds are blowing against it and public outcry is loud enough, operators will relent and even enthusiastically endorse the new order as if they had always been for it. Why? Because it's the right thing to do. Such was the case with local number portability, hearing-aid compatibility, wireless privacy and driver handheld cellphone bans. Now, open access.

Wu's wireless explosion

What a difference a year makes. Maybe. It was about this time last year that Columbia University law professor Timothy Wu let rip with a provocative paper claiming carriers' iron-clad control of networks was retarding innovation and hurting consumers.

"The wireless industry, over the last decade, has succeeded in bringing wireless telephony at competitive prices to the American public," stated Wu at the time in paper released by the New America Foundation. "Yet at the same time, we also find the wireless carriers aggressively controlling product design and innovation in the equipment and application markets, to the detriment of consumers. In the wired world, their policies would, in some cases, be considered simply misguided, and in other cases be considered outrageous and perhaps illegal."

Skype Ltd., the eBay Inc.-owned Internet phone software firm with mobile inroads in Europe and Asia, approached the Federal Communications Commission with a petition seeking to confirm the applicability of the 1968 landmark Carterfone decision -- prompted by small businessman wanting to connect his a two-way radio system to the landline telephone network -- to the wireless space.

"It has been 15 years since the commission last took a comprehensive look at the wireless industry and its practices that impact the commission's Carterfone rule. It is an understatement to say that much has changed in the interim; it is time for another look," Skype stated in its petition.

The iPhone and other hysteria

But the one-two punch of Wu and Skype might otherwise have lacked the sting and staying power it

boasts today without help ironically from the nation's largest mobile-phone carrier, AT&T Mobility, and its golden-boy wireless gadget, the iPhone. Apple Inc. put the iPhone on the street late last June, or about the time the open-access debate was reaching fever pitch. It was not long, however, until the hysterical hoopla turned sour in some quarters when consumers learned the paradigm-smashing wireless device they'd spent hundreds of dollars on was tethered to AT&T Mobility's network. On top of that, a two-year service contract with a \$175 early termination fee.

The Internet itself has played an insidious role in the ascendancy of the wireless open-access campaign. On the one hand, Web access capability has proved an incalculable, value-added feature for a \$120 billion cellular industry whose revenue has been long driven by voice traffic. The flip side is consumers accustomed to wired and cable broadband access are apt to be disappointed by equipment and content restrictions, data speeds and ease of use of Web-enabled cellphones. They want parity. Thus, the disparity of consumer experience between wired and wireless Internet access has fueled the flames of the wireless open access debate.

Those factors and others combined to make the push for wireless open access combustibly more effective than anyone could have ever imagined. The wireless Carterfone debate had caught fire. The cause quickly attracted support from consumer advocates, public-interest groups, Democratic policymakers and Internet search engine giant, Google Inc. That was Inside the Beltway. Eventually a grass-roots movement materialized and manifested itself in tens of thousands of public comments at the FCC supporting wireless open access. The issue got top billing on Capitol Hill, even to the point of eclipsing a related net neutrality firestorm focused on the content gate-keeping behavior of the Bell telephone-cable TV broadband duopoly.

Fighting back

The mobile-phone industry vigorously opposed the Skype proposal, arguing that appending third-party devices and applications to wireless networks would reduce competition, increase prices, degrade service quality, reduce service and device options, decrease investment and decrease innovation. In other words, according to cellular trade group CTIA, an awful idea that would drive industry to its knees.

A key caveat in Carterfone is third-party devices cannot cause harm to the network, which tended to undercut the wireless industry's fear that networks would come crashing down if it was subject to an open-access policy. Still, wireless networks have far less bandwidth to accommodate seemingly 'safe' third-party devices and applications than is the case with wired and cable broadband networks.

The FCC steps in

With wireless open access having gained significant momentum during the first half of the year and a major wireless auction on the horizon, the Federal Communications Commission late last July imposed an open-access condition on a third of the auction-bound spectrum as part of its 700 MHz ruling. A major victory for open access advocates, tempered with an escape clause for operators not fond of having strings attached to auctioned wireless licenses. If the \$4.6 billion reserve price is not collectively met for the C Block, the licenses would be promptly re-auctioned without the open access rule. That later led to speculation about 700 MHz bidding strategies of Google Inc., AT&T Mobility and Verizon Wireless.

"This auction provides an opportunity to have a significant impact on the next phase of wireless broadband innovation. A network that is more open to devices and applications can help foster innovation on the edges of the network," stated FCC Chairman Kevin Martin when 700 MHz rules were adopted. "As important, it will give consumers greater freedom to use the wireless devices and applications of their

choice when they purchase service from the new network owner." CTIA challenged the 700 MHz ruling in the U.S. Court of Appeals for the District of Columbia, entering the legal fray after Verizon Wireless withdrew its suit regarding the same decision.

Martin months later was quoted as saying the open-access controversy had "melted away" in view of AT&T Mobility's and Verizon Wireless' commitments to permitting third-party devices and applications on their networks and the inclusion of Sprint Nextel Corp. and T-Mobile USA Inc. in the Google-led Android Open Handset Alliance.

Others insist open access is an open question, saying FCC oversight is essential to ensure that open-access opportunities are not foreclosed as a result of discrimination in terms of pricing, equipment certification and portability or service quality.

"The real proof will be in the pudding. If voluntary initiatives bring consumers the kind of choice and freedom that they've come to expect in other parts of the technology marketplace, then I will be fully supportive," said Commissioner Michael Copps, a Democrat on the GOP-led FCC. "If not, then I see and will push for a greater commission role in protecting consumers and entrepreneurs from the power of the giant telecom providers that now dominate the wireless market."

Google-y eyes

Some observers pin the hopes for wireless open access on Google.

"The auction's major wild card is Google. Even if Google is outbid in the end, it could transform the wireless marketplace by bidding at least \$4.6 billion, the reserve price that triggers open access and consumer choice conditions that the FCC has imposed on the winner of the largest, nationwide block of spectrum [the C Block], said Michael Calabrese, director of the Wireless Future Program and VP at the New America Foundation, when the auction began Jan. 24. Google's bidding behavior will determine if this auction opens wireless networks so that consumers have a choice of devices, software and content in the future.

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San Francisco Chronicle

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FCC coming to Stanford Thursday to talk network management

By Ryan Kim

http://www.sfgate.com/cgi-bin/blogs/techchron/detail?blogid=19&entry_id=25727

The Federal Communications Commission's net neutrality road show comes to Stanford Thursday, giving the denizens of Silicon Valley a rare chance to weigh in on the topic face to face with commissioners. Expect a lively debate.

That this is a "road show" at all speaks to the debacle that was the first meeting at Harvard in February. The first hearing, which was meant to investigate charges of traffic throttling by Comcast, dissolved into a farce when Comcast hired seat warmers to hold the place of Comcast workers who never showed up. The result was many speakers didn't get a chance to sound off for lack of space in the auditorium.

It's unlikely we'll see a repeat of those shenanigans at the Stanford meeting, which some have called a do-over by the FCC. Chances are you should be able to comment on the issues, which have centered on what are reasonable network management techniques employed by operators.

But what exactly does the commission want to focus on this time around? They haven't released a list of panelists who will speak, so it's hard to know if this will be a straight extension of the Harvard discussion or a new debate.

I'm hearing that Ben Scott, policy director of media non-profit Free Press will speak. There will also likely be some content people in attendance, said Chris Libertelli, Skype's senior director of government and regulatory affairs. He said it will likely be to address suggestions by some providers like AT&T that network management tools should be used to filter out copyright infringement on the net.

Libertelli, for his part, said he hoped that the hearing would lead to a balanced open policy that benefits both application providers and network operators.

If you're looking to go, here are the details:

The hearing begins at 12 noon Thursday at the Dinkelspiel Auditorium (capacity 716) at 471 Lagunita Drive on the Stanford campus. There will be opening remarks and two panel discussions before public comment begins at 4:30 p.m. Public comment is scheduled for two hours. Come early if you want to secure a spot at the podium.



Open access

No one's sure of definitions in this new territory

[Jeffrey Silva](#)

Story posted: October 22, 2008 - 5:59 am ET

From early indications, the uncertain shift to open platforms in the wireless space will not take a linear path and instead is apt to evolve in zigzag fashion due to variances in unpredictable political, technological and market forces.

The answer to the question, 'What does open access mean?' has proved elusive. The definitional uncertainty about open access is likely to continue and may well become the norm. For now, open access means what key stakeholders — particularly wireless carriers, but also device makers, applications developers, policymakers and, yes, users — want it mean. In other words, open access is up for grabs. But only to a point. Cellphone operators remain highly protective of their networks, which — despite data revenue gains — still largely support voice traffic. They are the gatekeepers. But with growing demands to loosen their collective iron-clad grip on networks, wireless providers are inching toward a brave new world overflowing with the kind of third-party device and applications that have creatively disrupted the wired online universe.

The Federal Communications Commission next month is expected to grant a nationwide collection of C-Block open-access licenses, purchased for \$4.7 billion by Verizon Wireless in the 700 MHz auction earlier this year. It could be some time, though, before it can be determined whether openness on the C Block meets FCC standards. It's completely new territory.

The No. 2 wireless carrier is also pursuing an open development initiative. Device certification is moving along, but it's not just about smart phones. Verizon Wireless is intently focusing on the machine-to-machine market, with corporate strategy also extending to the business-to-business and business-to-customer markets.

T-Mobile USA Inc., the No. 4 wireless provider, is due this week to roll out the highly-anticipated G1 — a handset based on Google Inc.'s Android open-source operating system. But before a single G1 is fired up, there are indications the smartphone may be less than accommodating to all the applications subscribers might desire. It is an ironic twist in view of Google's highly public, aggressive lobbying at the FCC to incorporate open access in the 700 MHz band.

No turning back

One thing is certain, regardless of progress to date in the emerging wireless open-access arena: There is no turning back. Open access — at least as a policy issue — is here to stay. Public-interest groups and policymakers are fighting to making open access a component of more and more wireless rulemakings.

The real question is what will be the reach and breadth of wireless open access in concrete implementation.

The political backdrop to the open-access debate is not inconsequential. No matter who becomes the next president, the controversy over network control — the overarching net neutrality debate — will continue to rage. Republicans generally are not fond of seeing the government dictate to telecom companies how they should manage their fat pipes. In contrast, many Democrats favor net neutrality. If Democrats capture the White House and pad their majorities in the House and Senate, net neutrality could get a big boost that might bleed into the still simmering ‘wireless Carterfone’ controversy at the FCC.

At industry association CTIA’s trade show in Las Vegas in April, Martin drew thunderous cheers when he told a keynote audience he wanted the FCC to reject a potentially game-changing petition filed by Skype Ltd.

The software-based Internet phone company last year asked the FCC to apply to the wireless industry a requirement in the landmark 1968 Carterfone decision allowing third parties to attach devices to the public landline network.

“In light of the industry’s embrace of this more open approach, I think it’s premature for the commission to adopt any other requirements across the industry,” Martin said at the time. And thus ... I am going to circulate to my fellow commissioners an order dismissing a petition by Skype that would apply Carterfone requirements to the existing wireless networks.”

But six months later, the FCC has yet to act on the Skype petition. It is still alive, a matter of some anxiety and heartburn for cellular carriers.

Even if its wireless Carterfone campaign goes down in flames, Skype has signaled it will continue the fight. Indeed, the company appears to have already recalibrated its strategy to persuade telecom policymakers to ban cellular carriers from shutting the door on its product and those of other firms also anxious to reach the nation’s 265 million cellphone subscribers.

New sparks

Meantime, with the Skype petition remaining in play and Martin’s chairmanship nearing an end, sparks have begun to fly again.

The Phoenix Center, a think tank that focuses on telecom policy, concluded in a recent report that an open-access rule on the wireless industry would raise cellphone prices for consumers.

“It is ironic that proponents of wireless Carterfone tout the rules as being ‘pro-consumer’ because our analysis shows that such rules would likely drive up the cost of equipment with little, if any, reduction in wireless service prices,” said Lawrence Spiwak, president of the Phoenix Center and co-author of the report. “The pricing implications of wireless Carterfone are about as anti-consumer as you can get.”

In a September letter to Martin, Christopher Libertelli, senior director for government and regulatory affairs in North America at Skype, said remarks made by wireless executives that month at a San Francisco convention suggested the industry was really not serious about opening their networks.

CTIA accused Skype of taking wireless executives’ statements out of context.

“The truth is that wireless carriers, reacting to demands of consumers in the competitive marketplace, are implementing a variety of openness initiatives designed to expand consumer access to new and innovative wireless devices and applications,” CTIA told Martin.

Likewise, Sprint Nextel Corp. criticized Libertelli’s take on CEO Dan Hesse’s comment, “The big Internet can be daunting.” Sprint Nextel told the FCC Hesse had stated wireless smartphones and personal digital assistants are frequently returned after the Christmas season, a trend that prompted the No. 3 wireless provider to launch its Ready Now program to provide one-on-one assistance to customers in setting up and operating new wireless devices.

Libertelli responded with fervor to CTIA and Sprint Nextel. “Rather than prolong an empty debate about whose characterization of remarks at the conference is correct, let me point out that Skype’s application is forbidden, blocked and otherwise interfered with by the largest CTIA members,” he said in a letter this month to Martin. “When CTIA members claim that ‘the entire Internet is open,’ the intended implication is that the entire Internet is open, including multi-modal Internet communications applications like Skype. The truth of the matter, however, is that, despite their representations to the contrary, applications are blocked even on the most recently announced handsets.”

Indeed, open access is bound remain open to interpretation for some time to come.



The Carterfone: center of the open-access debate.

Photo credit:braddye.com

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CTIA 2009: Skyping The New FCC

by Elizabeth Woyke

<http://www.forbes.com/2009/04/01/skype-internet-mobile-technology-wireless-skype.html>

LAS VEGAS -- Those in Washington and the wireless industry know that Skype, the popular Internet communications service, wields influence beyond its size. In matters of policy, Skype's stance is constant: The Web should stay as open as possible to foster innovation.

Naturally, it's a position that benefits services like Skype, which depend on unfettered access to the Internet.

Under a new, reform-minded administration--and a new Federal Communications Commission chairman--Skype appears poised to shape future wireless policy more than ever before. Forbes caught up with Chris Libertelli, Skype's senior director of government and regulatory affairs, at the CTIA Wireless trade show to discuss how Skype could alter the industry.

Forbes: A year ago, former FCC Chairman Kevin Martin appeared at this conference and scoffed at Skype's so-called Carterfone proposal, which would allow consumers to use any device or application on wireless networks, provided they did no harm. Where do things stand now?

Chris Libertelli: We're seeing a realignment of tech policy. The president has spoken clearly about making openness and neutrality priorities. Consumers are waking up to what it means to have an open device. The emergence of app stores is helping with that. It shows that people want the gap to narrow between what a PC is and what a phone is.

The Carterfone petition is still pending. We believe it will get a new look from the new administration, [Acting FCC Chairman] Michael Copps and [FCC Chairman nominee] Julius Genachowski.

Skype President Josh Silverman recently wrote an op-ed about broadband stimulus grants for the San Jose Mercury News. How else are you trying to influence policy?

First, there's the lobbying component, which is what I do. We're also trying to establish a dialogue with policymakers. I talk to the government relations people at

all the carriers. And we blog about the issues to try to explain to our community why they should care. If you look at the millions of users on Skype, you can see there's potential in organizing them. We haven't done that before, but there's a kind of pressure that will build.

How involved is Skype in the federal broadband stimulus initiative?

We supported Congress's decision to include openness as a condition for getting government money for broadband build-outs. We want to carry that rule through the entire experience, across networks and devices. It's about giving the government tools to intervene if it's not seeing sufficient openness and making sure consumers have choices.

What do you expect from Julius Genachowski as FCC chairman?

Julius was a venture capitalist, so he gets that world. He understands that people are trying to develop innovative things on mobile platforms. Plus, he has political cover from President Obama. That said, he will have to define his priorities. We don't take anything for granted.

Carriers have talked a lot about opening their networks. Which carriers are truly embracing openness?

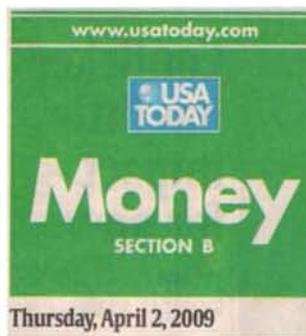
Verizon is one. It used to have terms that prohibited VoIP on its 3G network. Now it explicitly permits VoIP. It also has the Open Development Initiative [designed to make it easier for manufacturers and developers to offer devices and applications on its network]. For a company like ours that is petitioning for more openness, this is very positive.

Clearwire is also committed to the Carterfone principles and really building a network optimized for data. There is a spectrum of attitudes among carriers but most are building something more open than they had a year ago. We think it's in the carriers' economic self-interest to become more open.

We've talked before about the new administration possibly using Skype internally. Do you think that will happen?

As part of an effort to make the government more transparent, the Obama administration is trying to create a government-wide approach to using Web 2.0 services like Skype and Facebook. We've been reaching out to people in the White House to see if there's a way we can play a role.

The FCC has its own transparency project. Everything is in the beginning stages.



· THURSDAY, APRIL 2, 2009 · 3B

Skype's iPhone limits irk some

By Leslie Cauley
USA TODAY

Apple's unique treatment of the new Skype Internet calling feature on the iPhone — the free app works only on Wi-Fi, not the cellular or 3G network — is raising concern among public-policy makers and consumer advocates.

They say it's a clear example of AT&T, the sole carrier of the **Telecom** iPhone in the U.S., trying to handicap a direct competitor.

"Consumers will pay the price for AT&T's blocking," says Chris Murray, senior counsel to Consumers Union. By using Skype on the iPhone, consumers can sidestep AT&T, allowing them to get by, potentially, with cheaper voice plans that offer fewer minutes. Consumers can also save a bundle on international calls.

Technically, the limitation on Skype and other Internet phone companies is imposed by Apple, which has similar arrangements with other carriers.

Apple spokeswoman Jennifer Bowcock says the company "has always said" that Internet phone applications for the iPhone and iPod Touch would be limited to Wi-Fi but declined to elaborate.

Jim Cicconi, AT&T's top public policy executive, says AT&T has "every right" not to promote the services of a wireless rival.

"We absolutely expect our vendors" — Apple, in this case — "not to facilitate the services of our competitors," he says.

"Skype is a competitor, just like Verizon or Sprint or T-Mobile," he says, adding, Skype "has no obligation to market AT&T services. Why should the reverse be true?"

Murray says logic like that "highlights the urgent need for Congress and the Federal Communications Commission to clarify that the wireless Internet will be open just like the regular Internet." Unlike the land-line business, wireless is largely unregulated. The loophole owes to the origins of wireless, which began decades ago as a high-end business service.

Now that millions of consumers are cutting the cord and going wireless, it may be time to revisit some of those rules, says acting FCC Chairman Michael Copps. "In the fast-changing world of technology, you have to constantly revisit the rules and regulations to make sure they're in accord with the real world."

Skype, for its part, is glad to finally get a spot on the iPhone. Still, the company finds the Wi-Fi limitation "frustrating." If iPhone users wander too far from Wi-Fi, they'll lose the Skype connection.

"It would be a better experience, obviously, if we could go to wherever the network is strongest," says Scott Durchslag, Skype's chief operating officer.

Skype moves in on cellphone industry

HIAWATHA BRAY

TECH LAB

Technology has a way of eroding corporate empires; ask anybody in the newspaper business.

Now the cellular phone industry is getting a taste of the same medicine. By installing new software on their smartphones, consumers are hooking up to alternative phone services and bypassing their cell carriers.

It isn't an entirely new trend, but it may have reached a tipping point on March 31. That's when the Internet-based telephone service Skype introduced a version of its software that runs on the popular Apple iPhone.

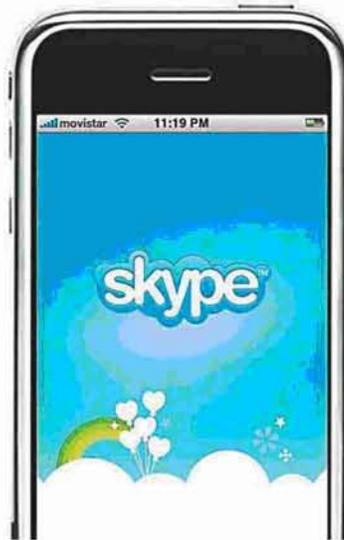
You've probably heard of Skype, a program written by Estonian hackers and later bought by Internet auction house eBay for \$2.6 billion. People around the world use it to talk to each other free of charge over their Internet-linked computers. Skype also offers connections to traditional phone services at dirt-cheap prices. For example, Skype calls to any phone number in the United States cost 2.1 cents per minute. But it's mainly a hit with international callers, because the service's prices for overseas calls beat standard phone company rates. My wife pays Skype about 21 cents a minute to chat with her

TECH LAB, Page B11

relatives in Congo, while AT&T charges 59 cents a minute.

But what good is Skype on a cellphone? Wouldn't you still have to burn cellular minutes to use it? Not if your phone has built-in Wi-Fi wireless networking. Then Skype could relay calls over the Internet, with no help from the phone company.

Skype makes software for Wi-Fi-equipped smartphones us-



ing Microsoft Corp.'s Windows Mobile operating system, but like Windows Mobile, the software has never caught fire. Two other iPhone programs, Nimbuzz and Fring, also enable Wi-Fi calls over the Skype network; neither has gained much traction. But since Skype unveiled its software for the Wi-Fi-capable iPhone nine days ago, customers have downloaded more than 2 million copies of the free program. That means about 12 percent of the world's 17 million iPhone users downloaded Skype in less than two weeks.

As with most iPhone programs, setting up Skype is a trivial matter. You'll need to create a user name and password, and use a credit card to buy calling minutes. And of course, you must be connected to an open Wi-Fi hotspot. Then, start dialing. I found call quality to be surprisingly clear, even when using a fairly weak Wi-Fi signal.

Nimbuzz and Fring didn't sound nearly as good to my ears,

even though both route phone calls over the Skype network. But while Skype software lets you send text chat messages to other Skype customers, Nimbuzz and Fring offer many other options. For instance, both let you make voice calls to a computer running Google Talk, while Nimbuzz will exchange text messages with your buddies on Facebook.

On the downside, the iPhone generally runs just one application at a time. So if you want to receive an incoming Skype call, it must be running on the iPhone at all times. No Web surfing for you. Fring promises to change this, with a new feature that's supposed to notify users of incoming calls or text messages even when the software is shut off. But try as I might, I couldn't get this feature to work.

Even if you could receive incoming calls, to do so requires purchasing a separate phone number from Skype for \$60 a year. Then there's the matter of voicemail. Traditional cell companies throw it in at no additional charge; with Skype, it's \$20 a year. You'll get voicemail free of charge and a phone number for half off if you buy a monthly Skype subscription, starting at \$2.95 a month for unlimited calls to any phone in the United States. Not bad.

But remember, you can only place your Skype calls when you have access to a Wi-Fi hotspot. And that could mean lots of headaches for Apple and AT&T Corp., the cellular carrier with exclusive US rights to offer the iPhone.

Remember, the iPhone uses AT&T's 3G cellular data network, which is easily capable of handling Skype phone calls, and is



available in most of the nation's major cities. iPhone users pay \$30 a month for unlimited use of the network for surfing the Internet or reading e-mail. But they could just as easily use it to place Skype calls at 2.1 cents per minute, instead of using the AT&T voice network, which charges up to four times as much.

So it's no surprise that AT&T and Apple bar Internet telephone software that uses the 3G network. Skype and other Internet-phone services must be Wi-Fi-only, a crippling limitation that has infuriated Internet activists.

The lobbying group Free Press argues that the iPhone policy violates the principle of network neutrality, which says all Internet-based services should be treated alike. If AT&T allows Web

surfing on its 3G network, they say, the company must also allow Skype calls. Free Press has petitioned the Federal Communications Commission to force AT&T's hand. It could happen; the Obama administration has proclaimed its support for network neutrality.

That means the explosive popularity of Skype for the iPhone, along with a hard shove from the FCC, could force the cellular industry to open its network to a host of rivals. Could Sprint Nextel Inc. offer a voice service over the AT&T 3G network, or vice versa? Why not? Sure, the cell companies will resist the idea, like newspaper publishers cursing Google. And look at how that's turned out.

Hiawatha Bray can be reached at bray@globe.com.



April 9, 2009

Open Mobile Internet Now!

By Ryan Singel

<http://www.wired.com/epicenter/2009/04/open-mobile-int/>

NEWS ANALYSIS — More than likely, your wireless carrier likes to advertise its data network as open, limitless and liberating. If so, those are lies told by companies more interested in wringing every last dollar from their customers than running a real mobile internet network.

Just ask Skype's government affairs director, Christopher Libertelli. His company's cheap calling application for the iPhone couldn't gain Apple's approval unless it crippled its own software to prevent its use on AT&T's data service. The app launched last week, but is only available over a WiFi connection.

"The future looks closed, where only the applications that conform to the dictates of the carriers get in the hands of consumers," Libertelli said.

Wireless companies are eager to portray a future when consumers will have internet access everywhere in their palms of their hands. But the rough mobile internet beast slouching towards us on these wireless networks shares few similarities with the wired internet most of us use in the office and at home.

Consumers and regulators would not stand for a DSL provider refusing to let a customer use an Apple laptop or stopping them from visiting YouTube or using low-cost calling services like Rebtel or Gizmo Project. But expectations aren't the same when it comes to mobile phones, in part because the carriers have almost always been in control of the devices, bundling them with service plans. As a result, carriers have the motive and opportunity to add only the apps they like and hobble features they can't control, such as WiFi chips.

This situation exists in large part because the Federal Communications Commission has never explicitly said whether its internet neutrality rules, known as the Broadband Policy Statement, apply to wireless networks. Those 1995 principles require cable and DSL internet providers to allow their customers to freely traverse the net, run whatever programs they like, attach whatever devices they'd like and have providers, app developers and content providers compete with each other.

Skype petitioned the FCC in 2007 to put the nation's wireless services on regulatory par with the phone network and cable and DSL broadband offerings. But then-FCC head Kevin Martin was not a fan of the proposal (.pdf), and the petition lingers unresolved to this day due to odd bureaucratic wrangling.

Now that the iPhone has shown the U.S. that the future will be both wireless and wired, regulators will only face increasing pressure to step in and end the uncertainty.

But until then, carriers will continue to lock their phones, prohibit users from using devices not sold by them, shut off users for violating unwritten bandwidth caps, stifle innovation by banning apps from their phones, cripple their phones' built in capabilities and outlaw services that compete with their own streaming media services.

Though Apple's iPhone application store is controlled by capricious and authoritarian rules, it nonetheless stands as the mobile world's best example of the value of openness. Apple initially locked out all third-party developers, but after its techie customers forced open the devices, the company finally released a software development tool kit. Now, Apple's own marketing points to the wide selection of third-party iPhone software as among the device's most valuable features.

This is a lesson in openness that the wireless companies have so far refused to learn.

Joe Costello, CEO of internet streaming start-up Orb, says carriers like Verizon have been "dogged" at stymieing his company's software, which lets user's access live TV, music and movies from their home computers on any device with a browser.

Costello speaks of technology competition like a typical Silicon Valley libertarian-leaning entrepreneur, and Orb has, like most tech start ups, stayed out of policy discussions in D.C. But Costello is of a different mind when it comes to forcing openness in wireless networks.

"I think it's a good place for the government to act," he said.

"It's not like a hundred start-ups will come in and change the game, so you have to ask what policy will fix this."

"You have this small set of guys that control every move you make," he added. "If the actual internet had been controlled like this, we would still be in bulletin board mode."

The carriers say that an open market and competition for subscriber dollars make regulation unnecessary.

At the same time, all four major U.S. carriers ban all peer-to-peer applications, and most prohibit the use of streaming media services not controlled by the carrier. All four also ban users from tethering their mobile devices to their laptops to feed the data connection to that device, though some allow that if a user pays an extra fee.

The wireless operators say they need the ability to constrain what apps run on their network and what devices connect in order to ensure smooth network operation.

The reasoning is eerily similar to the argument — long since proven false — that Ma Bell used in 1955 when it fought to prevent its customers from using phones it hadn't approved, or from plugging any non-approved device into a phone jack.

"It would be extremely difficult to furnish 'good' telephone service if telephone users were free to attach to the equipment, or use with it, all of the numerous kinds of foreign attachments that are marketed by persons who have no responsibility for the quality of telephone service but are primarily interested in exploiting their products,"

AT&T wrote at the time.

The rejection of that logic led to the football phone, the fax machine and, eventually, the modem — and thus the public internet.

Compare AT&T's thinking a half-century ago to what the wireless industry trade association CTIA wrote in opposing Skype's 2007 petition to apply those rules to wireless carriers.

"When one wireless user has a less efficient handset than the rest of the network, the entire network suffers. By subjecting all wireless users to the experimentation of the few subscribers interested in alternative devices, application of [such] connection rules to the wireless world acts to the detriment of all users."

The CTIA declined an interview for this story saying "we cannot comment on this issue at this time."

Verizon did not respond to inquiries for this article. T-Mobile, the carrier with perhaps the fewest limitations on network usage responded only to defend its tethering ban.

"Our goal is to provide an optimal wireless experience for our entire customer base, and if it's determined that a customer's use of a third-party application may lessen this experience for our other customers, we will take the necessary precautions to protect and maintain an excellent customer experience on our network," a company spokeswoman said by email.

AT&T, which has an exclusive deal to support Apple's iPhone in the U.S., declined comment saying it was preparing to file something official on the topic soon. The company has previously denied that it blocks VOIP calls, such as Skype's, saying that it only expects that Apple shouldn't allow any applications that compete with AT&T's offering. AT&T has also contended that consumers are free to choose one of their Windows Mobile phones, which runs Skype's app. Skype's WinMobile app has been downloaded more than 12 million times, according to the company.

While AT&T purports to offer consumers choice, its policy basically means that there won't be any VOIP on the nation's hottest phone, given that the iTunes store is the only simple way to load third-party iPhone apps.

Ben Scott, the policy director for the net neutrality group Free Press, doesn't buy AT&T's hair-splitting, and says no wireless network has ever acknowledged so collusive a relationship with a handset maker.

"This is really a baseline question of what the internet is going to be and that's a question of consumer expectation," he said.

Scott acknowledges that carriers have begun to market themselves as being open, but thinks not much more openness will come due to Verizon and AT&T's dominant market share and the lack of new spectrum to be licensed. "We have reached the high water mark of competition in the wireless market," he said.



May 7, 2009

Google, Apple and Microsoft Knuckle Under to Telcos

By Ryan Singel

<http://www.wired.com/epicenter/2009/05/google-apple-and-microsoft-knuckle-under-to-telcos/>

If you think Google, Microsoft and Apple are bad-ass, cutthroat, take-no-prisoner companies, you should meet the nation's wireless carriers, who have collectively convinced those intensively competitive software giants to cripple their products.

Need any more proof that the nation's four largest wireless carriers - AT&T, Verizon, Sprint and T-Mobile - have too much control over the airwaves, what phones you can use and what applications you can run on them?

Look no further than Microsoft's release this week of its 12 commandments for developers (.pdf) working on apps for the upcoming Windows Mobile 6.5 OS and for its Windows Mobile Marketplace — it's upcoming iPhone app store competitor. Number 4 rule? Don't make apps that let users make phone calls using the mobile phone carrier's data connection.

That restriction joins Microsoft to Google and Apple, all of which now all block true VOIP apps in their online marketplaces where users can quickly buy trusted apps from third-party developers. That means no Skype, or at least only Skype when your iPhone has a WiFi connection, or only Skype-Lite which uses your phone's minute plans.

Let's get this straight. Google won't sell more Android phones by crippling them. Nor will Win Mobile phones be more attractive because of Microsoft won't let a useful program for business users into its store. Oh, and Apple's iPhone certainly isn't more cool for having crippled Skype on behalf of AT&T.

Skype has hundreds of millions of registered users, and a very dedicated fan base. Why would the three of the largest software companies in the world intentionally cripple their products in the exact same way, when not crippling them would give them a competitive advantage.

Still, the nation's top carriers keep telling Congress and the FCC that there's plenty of competition in the mobile marketplace.

But, we've said it before, and we'll keep saying it: FCC, free the airwaves! Free the devices! Free the apps!

Today in a mobile competition hearing focused mostly on middle mile, Consumer Union's Chris Murray told Congress why some government force needs to step in:

If there is so much damn competition, why are [wireless carriers] profit margins creeping up in the middle of a recession? These guys are making gangbuster profits when the rest of the country is struggling it out. To me that says market power. And we have anti-competitive behavior, blocking applications, exclusive contracts on handsets... What more evidence do we need that this market needs some oversight?

Epicenter couldn't have said it any better.

See for yourself at 2 hours and 40 minutes into the hearing (http://energycommerce.house.gov/index.php?option=com_content&view=article&id=1611&catid=134&Itemid=74).



FTC chairman: Agency may enforce net neutrality

By Grant Gross

<http://www.computerworld.com/action/article.do?command=printArticleBasic&taxonomyName=Broadband&articleId=9132834&taxonomyId=171>

The US Federal Trade Commission (the US analogue to the ACCC) may start enforcing net-neutrality rules and take action against bad network management practices when broadband providers don't live up to the promises they make to consumers, the agency's chairman said.

Broadband providers need to inform consumers about the download speeds they're delivering and the types of network management practices they're deploying, FTC Chairman Jon Leibowitz said on the C-SPAN network's program, The Communicators, which aired Saturday.

If a broadband provider blocks Web content that competes with its own content or a partner's content, that could also raise "antitrust problems," potentially prompting FTC action, said Leibowitz, appointed chairman in March after for more than four years on the commission.

"We believe consumers need to have notice and consent about what they're getting," Leibowitz said. "It's very, very important that these providers tell consumers about the speed they're getting, and whether [providers] are making any types of management decisions in terms of the network that affect consumers."

Program host Peter Slen asked Leibowitz whether it was fair for broadband providers to charge customers more for higher speeds or charge more for high-bandwidth users. Leibowitz said those were fair practices, as long as providers gave customers notice.

"You can't surprise someone with a bill that's like 10 times as much as what they expected," he said.

Leibowitz's view on the FTC role on net neutrality and network management issues would mark a change for the agency. Until now, the Federal Communications Commission has handled any net-neutrality complaints, and in mid-2007, the FTC issued a report suggesting U.S. lawmakers should proceed with caution before passing new net-neutrality rules.

Asked about the change of attitude, Leibowitz said net neutrality is a consumer protection issue, and consumer protection is one of the main functions of the FTC.

“In a perfect marketplace where you had more competitors, you wouldn’t need the government necessarily to be terribly involved,” he said. “Particularly in the consumer protection area, we have a big roll to play. Broadband is a deregulated product. That’s good, we like deregulation generally. But when you have deregulation, you also [need] law enforcement to make sure people do the right thing.”

Leibowitz also said he hopes people on both sides of the net-neutrality debate can come to comprise agreement about consumers’ right to the Web content of their choosing. Groups on both sides seem to be “heading in the right direction,” he said.

A spokeswoman from Comcast, one of the largest broadband providers in the U.S., didn’t have a comment on Leibowitz’s statements on net neutrality. Spokespeople from Verizon and AT&T didn’t immediately respond to a request for comments. The FCC, in August 2008, ruled that Comcast could not slow some peer-to-peer traffic in the name of network management.

Comcast’s network management practices violated an FCC policy statement saying broadband customers had a right to access the legal Web content of their choice, the FCC ruled.

Mobile Openness Advocacy Briefing Book



History of Videophones

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WESTERN ELECTRIC TELEPHONES
(schematics, color charts, posters, etc.)

[Northern Electric History](#)[Historical Photos](#)[What Killed Ma Bell](#)[Odds & Ends](#)[The Eastland Disaster](#)

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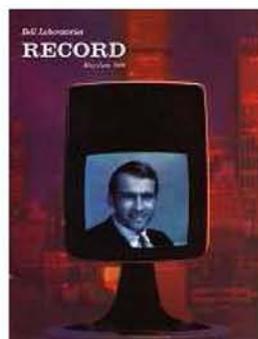
Bell System Memorial

WESTERN ELECTRIC TELEPHONES

PICTUREPHONE™ (VIDEO PHONE)

Ahead of it's time - Another Bell Labs innovation!

Tom Jezuit has contributed his personal copy of the special edition, Bell Laboratories "Record" magazine on the Picturephone® for this website! This issue was dated May/June 1969 and gives some great technical and historical information on the Picturephone®. Soon after he sent it to me, I scanned a total of 61 pages, converted the scans into one large PDF file using OmniPro Optical Character Recognition software and Adobe Acrobat to create the PDF file. I spent over 6 hours scanning and creating the PDF file and proof-reading but I make no guarantees as to its accuracy.



Cover of magazine

At Tom's request I have made this file available to download from this website. It is about nine megabytes in size so if you don't have ADSL or cable access to the Internet, you will be waiting a long time for it to download!

To download this **Bell Labs "Record" magazine file on the Picturephone®**, right click on **THIS LINK** and choose "Save target as . . ." (MS Internet Explorer). A big thanks to Tom for this contribution!

I've also found a pamphlet on the Picturephone that you can view by clicking [HERE](#).

More information and photos on the Picturephone® follow . . .

Please be patient while several large graphic images download.
Some of the images below go to related links by clicking on the image.

(Not) For Sale

Bell Logo
History

1957 AT&T
Annual Report

Trading Post -
Bell System stuff
wanted, for sale,
for trade, etc.

"The Day the
Bell System
Died"

The Rape of
Ma Bell

Life in the
Bell System

The Decision to
Divest

Bell System
Advertisements

Don Lively's
Essay and More

Miscellaneous

Retirees Info

Trademarks and
Copyrights

Visitors
Comments

Dew (Distant
Early Warning)
Line Project

"Yellow Pages"
for old phones
and parts

AT&T
Long Lines

"Bell Telephone
Magazine"
Articles

Western Electric
is crossing a telephone
with a TV set.

Someday you'll be
a star!

What you'll use is called, simply enough, a Picturephone® set. Someday it will let you see who you are talking to, and let them see you.

The Picturephone set is just one of the communications of the future. Western Electric is working on with Bell Telephone Laboratories.

Western Electric builds regular phones & equipment for your Bell telephone company. But we also build for the future.

JUN 1967

Western Electric
A BELL COMPANY

"Someday you'll be a star!" was one of the advertising slogans the Bell System used decades ago to try to promote this high tech and futuristic communications device called the "PicturePhone". But no matter how much the Bell System tried, it was one of the most visible flops in communications technology history.



A picture phone? Well here's a Bell Labs experimental model that works. As a home or office item, it's a ways in the future. However, telephone people have brought it to the point where it requires only one more ordinary telephone line in addition to the one that carries your voice. It's possible to get the picture of the person you're calling by dialing his number. Of course, the picture switches at both ends of the line must be turned on. If either one is off—no picture. The picture phone is still undergoing development as something for the future.

The Bell System (AT&T/Western Electric) PicturePhone (developed in Bell Labs as a prototype in 1956 (see *photo above*), but never test marketed until the early 1960's) never became popular after it was briefly offered commercially in Chicago. If it had, it is doubtful that it could have been implemented on a wide scale given the technology of the time. This was, after all, before the days of microprocessors and data compression. Digital telecommunications was in its infancy.

The PicturePhone was connected to the Central Office via 3 standard wire pairs (for comparison, a regular telephone line uses a single wire pair). One pair carried the 1 MHz PicturePhone video signal in one direction, the other carried video the in the opposite direction. These had to be specially equalized to carry the signal but were still otherwise just ordinary telephone wire. The third pair carried the normal 2-way voice call plus carried the TouchTone dialing to set up the call.

A PicturePhone Central Office had a second switch (an electromechanical "crossbar" switch in those days!) operating in parallel to the regular switch for those making PicturePhone calls. That takes care of local calls.

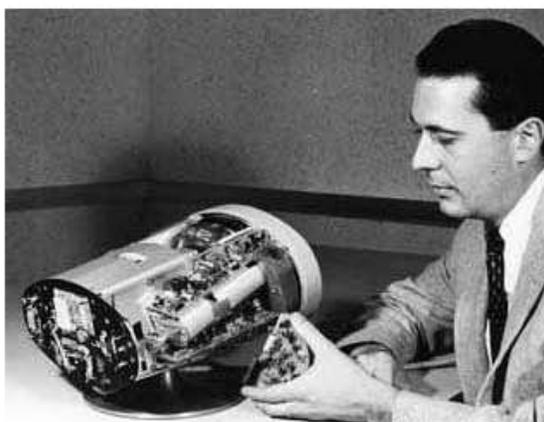
The fun comes when a call has to be connected to someone served via another Central Office. Telephone calls are multiplexed together to go from one office to

another. Many calls share the same communications system whether microwave, coaxial cable, or (nowadays) fiber optic is the medium. Even when offices are connected via ordinary wire pairs many calls share the same wires. A voice channel is allotted only 3000 Hz (this is after all telephony, not 20,000 Hz high-fidelity audio!) for each direction. But a PicturePhone video signal takes 1,000,000 Hz. That's 333 times the bandwidth! A few video calls would fill up all available bandwidth. How could they possibly have handled it? Necessity is the mother of invention so in all likelihood they would have invented video data compression in a big hurry! After all, Bell Labs was working on digital audio as far back as WWII. (You should see the electron beam CODEC tube of 1947!) - Quoted material (for the most part) from [Steve's Vacant Lot web page](#). Additional photos are found on his web page. By the way, he is looking for anyone who might have a PicturePhone to sell to him.

The Bell System estimated three million PicturePhone units would be operating in homes and offices by the mid-1980s, bringing in a combined revenue of \$5 billion a year. Initial reaction to PicturePhone had been very positive. However, these positive marketing reactions were soon dampened by the realities of cost and the hesitation of people to be accidentally seen by others in the private affairs of their homes. AT&T abandoned its plans to market the Mod II in 1973.

More historical information on the PicturePhone is found near the [end of this web page](#).

The next two images on this page and their original captions have been donated by Science Service and are presented to you as they appeared in period publications. The captions were written by Science Service journalists and have been transcribed exactly. Although these images are protected by copyright, we encourage you to use them for academic and non-commercial pursuits. - [The National Museum of American History](#).



PICTUREPHONE CIRCUIT PACKAGES

CD 1967085 E&MP130.011

(about 1962)

Joseph A. Mazzeo of Bell Telephone Laboratories removes one of the circuit packages in the experimental PICTUREPHONE system.

The comparatively small size of the visual telephone, the PICTUREPHONE is made possible by the development of modern circuits using transistors and other miniature components.

Original Caption by Science Service
©Bell Telephone Laboratories



VISUAL TELEPHONE SYSTEM

CD 1967053 E&MP130.016

about 1962

L.H. Meacham at his desk at Bell Telephone Laboratories in Holmdel, N.J. talks with and views A.D. Hall on the experimental PICTUREPHONE.

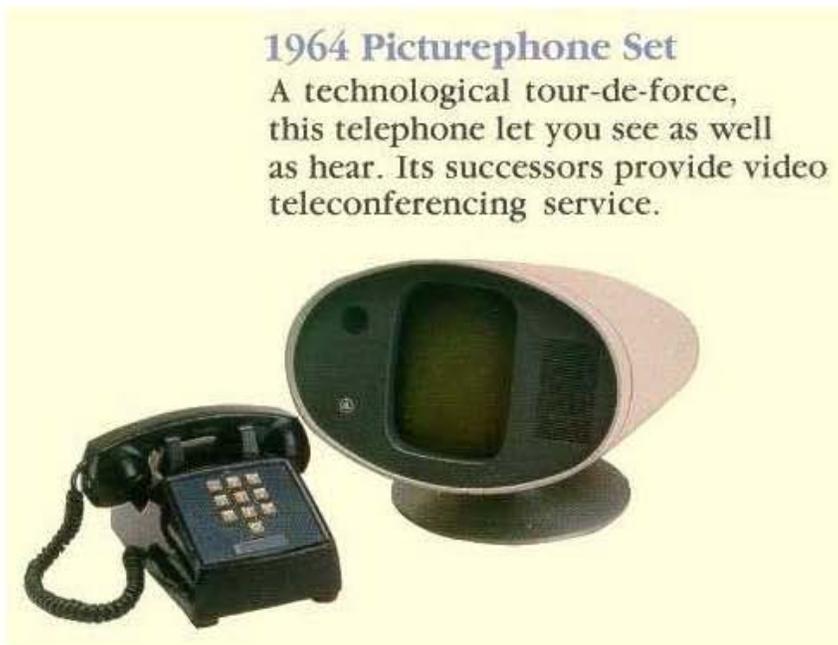
Both engineers helped develop the visual telephone system.

Mr. Meacham is using the hands-free Speakerphone while Mr. Hall at the Murray Hill, N.J. Laboratories uses the familiar handset for the call.

Original Caption by Science Service
© Bell Telephone Laboratories

Thomas Farley, webmaster of the **Private Line** web site, has recently found a picture of what he thinks is a NTT picture phone circa 1968, complete with rotary dial:

<http://www.privateline.com/TelephoneHistory4/History4.htm>.



From the 1993 Telephone Story Poster.



"A logical extension of today's telephone service...**BELL SYSTEM INTRODUCES**

PICTUREPHONE SERVICE... both ends of telephone conversation are pictures; people phone by appointment from family-type booths in attended centers. Bell System PICTUREPHONE service now lets callers see as well as talk on the telephone. And 'handsfree if they wish'. For the first time people can make a visual telephone call to another city-the latest example of the research, invention and development that are constantly providing the communications we provide. The new service is being offered in the cities listed at the left. Bell Systems attendants at each local center help callers enjoy prearranged face to face visits with friends and relatives in either of the other cities." *(the cities are New York, Chicago, Washington)*



MOD I (Model one) version - From the 1965 "The Telephone Story" poster



1969 **PICTUREPHONE® SET**
 See the person you're talking to? It's the newest step in telephone equipment. This is the Mod II Picturephone set now in pilot production at Western Electric. The picture unit has a "zoom" feature which permits individual or group viewing. Mod II includes a new 12 button Touch-Tone® telephone.

MOD II (Model two) version - From the 1969 "The Telephone Story" poster



1992 Videophone 2500

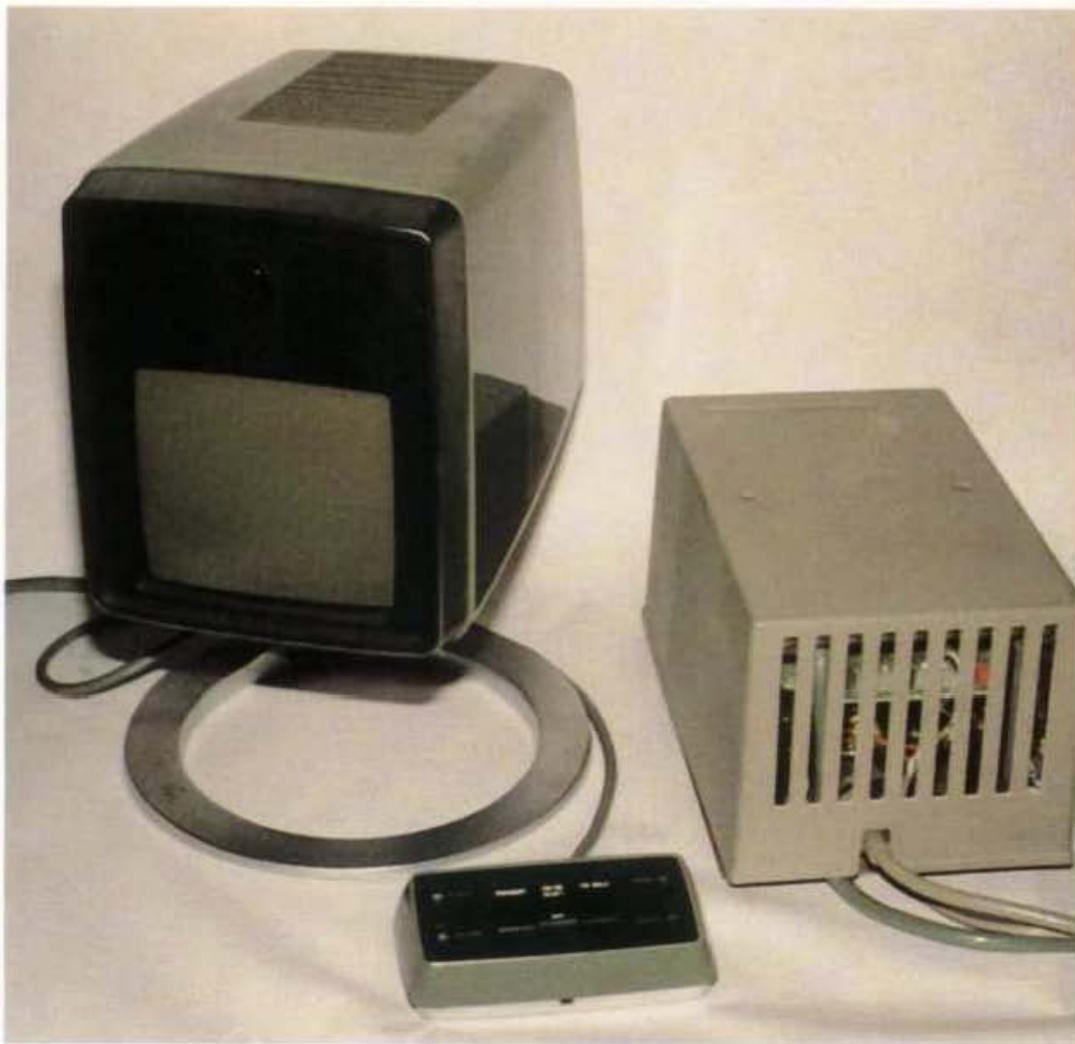
This is the world's first full-color, motion videophone that works over ordinary telephone lines. With it, callers can see and hear for the cost of a voice call.

Click [HERE](#) to read article in the February 1993 issue of

AT&T's FOCUS magazine on this VideoPhone model 2500.



Picturephone® installation showing Touch-Tone® control console.



The original "Picturephone", made by Western Electric in the early 1970s (with the "Jetsons" look), consisting of the 1A display unit, the 72A control unit, and the 1A service unit (*Richard Walsh*).

(From "100 Years of Bell Telephones" by Richard Mountjoy)



1964 World's Fair in New York - Visitors used "PicturePhone" instruments, developed by the Bell Telephone Laboratories, that transmitted voice and image between two nearby booths. Click on picture for link to Bell System's Pavilion info. People lined up to make PicturePhone calls to a corresponding exhibit at Disneyland. First Lady Ladybird Johnson even stopped by to try it out.



The Bell System Picturephone rang flat with consumers because it cost too much.

Courtesy of Photonics Spectra - January 2000

Here are some photos sent from [Bill Romanowski](#) of his Picturephones (possible Bell Lab prototypes).:







Pittsburgh Mayor Pete Flaherty made the world's first picture phone call.



Video phones finding niche after 40 years in development by Al Moyers

Air Force Communications Agency Office of History (<http://infosphere.safb.af.mil/~rmip/97dec/intercom.htm>)

Note: The original web link above is no longer valid. I managed to find a text file of this article on another server at:

<http://zia.hss.cmu.edu/miller/eep/news/video2.ne.txt>

The Air Force is testing video telephones at locations both in the United States and overseas to provide "video morale calls" for deployed members.

"I have never seen a better morale booster," was the report of one Air Force first sergeant during a recent test of video telephone technology at Incirlik AB, Turkey.

The video phone concept is actually more than four decades old, but new low-cost technologies are providing the Air Force a rare opportunity to permit families and deployed airmen to be able to see, as well as talk, to one another.

The idea behind the video telephone system presently being examined by the Air Force was succinctly stated in the 1960's print advertisement of Western Electric-"crossing a telephone with a TV set." The Western Electric advertisement showed the less-than-successful PicturePhone system which it produced in cooperation with AT&T's Bell Laboratories.

Years before, engineers at Bell Laboratories began discussing the concept of simultaneous transmission of video and voice over telephone lines in the 1920's.

In 1927, the Bell Telephone System sent live television images of Herbert Hoover, then Secretary of Commerce, over telephone lines from Washington, D.C. to an auditorium in Manhattan, N.Y. This was the first public demonstration in the United States of long-distance video transmission.

The first "PicturePhone" was completed by Bell Laboratory engineers in 1956. This first system was crude and cumbersome and required three standard wire pairs to operate: one pair to carry the video transmission, one pair to carry video reception, and the third to carry the audio signal. Requiring 1,000,000 Hertz of bandwidth, the PicturePhone video signal exceeded by more than 300 times the bandwidth allotted to a typical telephone voice signal.

By 1964, a somewhat improved version of the PicturePhone, dubbed the "Mod 1," had been developed and was debuted at the New York World's Fair. To test public reaction to the PicturePhone, visitors were invited to place calls between special exhibits of the PicturePhone at the World's Fair and Disneyland.

Survey results indicated that most people did not like PicturePhone. The controls were awkward and the picture was small. Moreover, most people were not comfortable with the idea of being seen during a phone conversation.

However, the system's developers at Bell Laboratories were convinced that PicturePhone was viable and could find a market. AT&T inaugurated commercial PicturePhone service between New York City, Chicago, and Washington, D.C., June 24, 1964, with a call from Lady Bird Johnson, wife of President Linden Johnson, in Washington; to Dr. Elizabeth A. Wood of Bell Laboratories in New York City.

A three-minute PicturePhone call from Washington to New York City cost \$16. The most expensive connection, between New York City and Chicago, cost \$27 for three minutes. This inaugural PicturePhone service never caught the attention of consumers.

AT&T continued to believe in the viability of PicturePhone. With the beginning of commercial PicturePhone service in Pittsburgh in 1970, AT&T executives predicted that Picturephones would be in use in more than a million settings by 1980. Their estimates were far off the mark. Consumers were still not ready for PicturePhone, finding it too big, too expensive, and, for many, too intrusive.

In January 1992, AT&T executives again predicted the success of a videophone system with the introduction of the AT&T VideoPhone 2500-the first full-color, home video phone system to use standard home telephone lines.

During the system's debut, Robert Kavner, AT&T group executive for AT&T Communications Products, said, "This is the way people want to communicate. The time is right. The price is right. The technology is right."

AT&T executives reported that the video phone would become as popular as cordless and cellular phones. Yet, a large market has yet to be found.

According to the calculations of telecommunications author Stephen J. Maudsley, the great decrease in the cost of video telephones is due to the continued development of silicon technology. Maudsley reports the cost of a video telephone in the 1960's

was nearly \$500,000. The AT&T VideoPhone 2500 was introduced in 1992 at a cost of approximately \$1500 and within a year was selling for less than \$1000. The video telephone system being tested by the Air Force sells for about \$500 for each unit. This dramatic increase in savings, according to Maudsley, comes from two areas-the integration of functions and the compression of images-associated with the continued decrease in the size of electronic devices.

The functions required for video phone operation have been integrated onto fewer pieces of silicon. This is a direct result of the decrease in the size of component transistors. During the early period of video telephone development, the smallest feature on a silicon chip was about 10 microns. Currently, silicon chips are being manufactured with features as small as .3 microns.

Video compression ratios have also improved to increase the rate of image transmission from PicturePhone's one frame every two seconds to the present state-of-the-art 20 frames per second. By comparison, broadcast television transmits at 30 frames per second.

Now, video telephones have taken two distinct venues. Seemingly, the larger share of the industry was concentrating its efforts in personal computer-based systems, or desktop video teleconferencing technology, which requires computer networks. The smaller effort was aimed at the video phone-through-your-television market which requires no more than a television, a video telephone, and POTS, the industry acronym for plain old telephone service.

The Air Force is testing the latter. According to Col. David L. Rakestraw, director of technology at the Air Force Communications Agency, "because they are so easy to set up and use, video phones are an excellent way for the Air Force to add a video dimension to phone calls home."

Moreover, the television-based systems cost no more for line transmission than a standard voice call.

Whether consumers on a large scale will finally be attracted to video telephone technology remains to be seen. The technology does seem to have found a niche among those Air Force members who have taken part in the Air Force trials.

After seeing and speaking to his wife in Hawaii from his deployed location in Turkey, SSgt. Lionel Price remarked, "I have been blessed to take part in this."

Sight Lines - Welcome back, PicturePhone?

by Jim Carroll

June 1999

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Not only that, it's morally reprehensible!

SIGHT LINES - Welcome back, PicturePhone?

The telephone probably ranks with television and the computer as one of the most significant devices of the 20th century - at least, in terms of its impact on the way we work and play. It's no surprise, then, that a good many articles have been written to assess the future of this device.

Most of them were remarkably correct - except when it came to one potential use they all predicted.

YESTERDAY

In the 1950s, when computer technology was first being integrated into telephone networks, all kinds of new possibilities were presented to the research scientists at organizations such as Bell Labs and Northern Telecom (formerly known as "Northern Electric" - editor).

Consider the August, 1958, Popular Mechanics article, "Miracles Ahead on Your Telephone." It suggested that telephones of the future would include "loudspeakers" (speakerphones), the ability to send calls automatically to another number (call forwarding) and a special "talk back" capability to let callers leave a message (voice mail.) The article also envisioned a "robot watchdog" linked to your telephone that would call the police, fire department or other contact should a problem be detected in the home - today's burglar alarm system.

Such accuracy in prediction was quite typical. In the mid-1950s, when telephones still used the rotary dial, there were widespread reports about the "push-button phone of the future." There were also many articles-- such as the one in Changing Times in May, 1960 ("What's Happening with the Telephone") -- predicting the day would come when most people would be able to dial telephone numbers anywhere in the world. Keep in mind that this was at a time when many calls, even to someone down the street, had to go through a switchboard operator. The same article also forecast that, one day, businesses would use telephones for "transmitting drawings, blueprints, balance sheets..." (today's fax machine). It even said that "the ultimate in phones will be the carry-it-with-you instrument" that could be answered from anywhere - the cellphone!

All these articles made one further prediction, and that was the one that gained the most attention - the concept of the videophone. The otherwise-accurate Changing Times piece said a small TV would soon be found in the typical telephone, so that "you won't have to guess who's calling - you'll be able to see for yourself."

The videophone wasn't just a concept. Demonstration models were built and gained a huge degree of attention. The 1964 World's Fair in New York saw the launch of AT&T's PicturePhone - a device consisting of a telephone handset and a small, matching TV. Suddenly, video telephones were to be real, and accessible to everyone.

That is, anyone with a deep pocket. AT&T first set up the phones in public buildings in New York, Washington and Chicago, charging people \$21 (about U.S.\$111 in 1999 dollars) to make a three-minute PicturePhone call. Soon, the company began to introduce it into the corporate world. In 1965, BusinessWeek reported on PicturePhone use at Union Carbide, predicting that company executives were "getting a taste of communicating the way the majority of executives may be doing it 10 or 15 years from now."

At the time, most people seemed to assume that broader use was imminent, and they imagined even more sophisticated devices to come. Science Digest in March, 1965, noted talk of an "ultimate telephone," the size of a pack of cigarettes, that would carry both voice and video and could be used anywhere. A cell-phone videophone!

TODAY

In fact, the PicturePhone died a quick death soon after its introduction, and video conferencing is still a marginal activity in the corporate world. Technology companies

have struggled for years to come up with some type of television-based telephone system but the results, until recently, have been disappointing or very expensive.

The biggest problem is quite simple -- global telecommunication systems just haven't been equipped to handle the huge volumes of data that such technology requires. The August, 1958, issue of Popular Mechanics was bang on when it noted: "one hurdle to practical TV phones is the amount of electronic information necessary for transmitting voice and picture..." To a degree, that hurdle is still with us today.

Yes, you can find video-conferencing equipment in the offices of many major corporations, but it's costly. Many of those companies have spent upwards of \$15,000 to equip their boardrooms with the cameras, audio equipment and high speed telecommunication lines necessary for video conferences. Certainly this technology is not yet widely available to the average citizen.

TOMORROW

Will we ever see the concept of the PicturePhone revived? Two factors suggest that it's possible.

First, expect technologies that will let us receive huge amounts of data in our home, a necessity for a crystal-clear PicturePhone call. It is said that researchers at Northern Telecom, AT&T and elsewhere have figured out how to send the entire Encyclopedia Britannica from coast to coast in three seconds. That type of telecommunication capability, available to the home at inexpensive rates, would make the PicturePhone a practical reality.

Second, there is constant innovation in Silicon Valley, with companies working on ways for people to use their existing telephones for video conferencing. Take InfoView, a small California firm. They've developed a small camera device that sits on top of your television. Plug it into your telephone and TV, and the long-lost promise of the PicturePhone has suddenly reappeared. Dial a friend who also has an InfoView, press a button and the two of you are doing a PicturePhone-type call. The most fascinating thing? The device costs U.S.\$399 - a fraction of the cost of any other telephone-based videoconferencing system available to individuals today.

Perhaps the PicturePhone itself will be revived, proving that the concept itself was right - just thirty or so years ahead of its time.

* * * * *

Jim Carroll is the author of the critically acclaimed book, *Surviving the Information Age*, which addresses issues of coping with technological change. He has co-authored 24 other books which have sold some 650,000 copies, including the national best-selling *Canadian Internet Handbook*. He can be reached on the Internet at jcarroll@jimcarroll.com, and has an on-line site containing many other articles concerning the Internet on the World Wide Web on the Internet at www.jimcarroll.com. He welcomes your comments.

Other Video Telephone Links:

<http://www.research.att.com/history/70picture.html> - AT&T's Train of Thought web page - 1970 - The Picturephone

[Networking - Video Conferencing - MicroTimes](#)

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