

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

In the Matter of

A National Broadband Plan for Our Future

GN Docket No. 09-51

**COMMENTS OF ERICSSON INC**

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## SUMMARY

In its comments, Ericsson shares the results of its *2020 Project* – its vision of future broadband applications and services. These feature-rich applications will not only drive demand for broadband but also offer tremendous efficiency improvements in service delivery and daily living. Applications like Doctor in a Box, Spider Passports, and Enhanced-IPTV all promise to facilitate commerce, improve access to health care, and bring educational opportunities to even the most remote communities.

Robust, high capacity broadband infrastructure and seamless mobility will be needed to ensure that these innovative applications, and others like them, are available all the time, everywhere. Mobility will also be critical in creating a more environmentally sensitive and sustainable future, a direct benefit of mobile broadband.

To lay the proper framework for growth and innovation, the Commission's National Broadband Plan must include provisions for:

- Facilitating mobility and creating a technology neutral environment;
- Evenhanded network oversight that recognizes providers' needs to manage their networks and does not overburden them with prescriptive nondiscrimination or openness regulations in the absence of any market failures;
- Evolving spectrum policies through wider bandwidth allocations, renewed focus on licensed spectrum, and maximizing international harmonization; and
- Using Universal Service Funds to support the broadband networks and applications that bring opportunities to more Americans, regardless of their economic status or their geographic location.

By addressing these considerations in its National Broadband Plan, the Commission will have a better chance of making the promise of broadband communications—economic growth, enhanced educational opportunities, and improved health care—a reality for all Americans.

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Ericsson Inc (“Ericsson”) submits these comments in response to the Federal Communications Commission’s (“Commission”) *Notice of Inquiry* released April 8, 2009, in the National Broadband Plan proceeding, GN Docket No. 09-51.<sup>1</sup>

**I. INTRODUCTION**

Ericsson was founded over 130 years ago on the principle that communications are a basic human need. From its inception, Ericsson has been at the center of telecommunications technology innovation and evolution across the globe in order to bring communications to everyone, everywhere. Today, Ericsson has a broad portfolio of both wireline and wireless infrastructure, and is a major supplier of managed services.

Ericsson’s success in the telecommunications field is attributable to its visionary approach to communications. It is strongly committed to research and development and strives to envision the possible and then works to make it a reality. Ericsson takes the long-term view and advances policies that lay the foundation for the future growth and sustainability of vibrant networks. For example, Ericsson was initially alone in advocating for the 3G spectrum allocations that the Commission ultimately adopted—the pairing of the 1710/2110 MHz bands— which earned \$13.7 billion at auction and opened

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<sup>1</sup> See *A National Broadband Plan for Our Future, Notice of Inquiry*, FCC 09-31, GN Docket No. 09-51, rel. Apr. 8, 2009 (“*Notice*”).

the door to advanced wireless services. It is from this perspective that Ericsson offers its comments on a National Broadband Plan.

In these comments, Ericsson shares with the Commission its views on the key drivers and influencers that will stimulate national broadband growth. In Section II., Ericsson offers a few examples of its vision of the future – the types of applications and uses that ubiquitous broadband will make possible. However, what *can be* is only one part of the Commission’s investigation. The Commission must also consider what it *must do* in order to facilitate these, and other future developments. In Section III., Ericsson discusses various policies the Commission should pursue to encourage the deployment of broadband technologies that will connect the un-connected.

Demand must be paramount in the Commission’s Plan because demand is the key to achieving broadband uptake. Ensuring an adequate supply of broadband access is, of course, still necessary to achieve the goals set by Congress and President Obama. But, broadband deployment merely for broadband’s sake should not be the ultimate policy objective. Broadband infrastructure alone is not what benefits society. Rather, it is what broadband access *enables* that is the true benefit: the applications, services, remote businesses, and transfer of ideas are what will improve the lives of people in the U.S. and around the world. Broadband applications and services are what will eliminate barriers to economic growth, education, healthcare, and other public services and make them more convenient, efficient, and accessible.

These promised benefits are only valuable if people actually *use* broadband applications and services. Congress clearly recognized the importance of demand for broadband when it told the Commission to focus not just on the supply side but also to

consider the:

use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety and homeland security, community development, healthcare delivery, energy independence and efficiency, education, worker training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes.<sup>2</sup>

Thus, first and foremost, the Commission must look at the demand side of the broadband equation and implement measures to properly train and equip Americans so that they can take full advantage of all that broadband can offer.

Indeed, recent history suggests that an “if you build it they will come” strategy of broadband deployment is not the best method to drive consumer adoption of broadband. This is clear from a quick review of the vastly different experiences of two Virginia towns—Lebanon and Rose Hill—that both received funding to build broadband to homes and businesses. In Lebanon, district planners engaged in a broadband training and promotion campaign. They converted a strip mall into an education center to help prepare residents for jobs as technicians and information technology workers, and then marketed this newly skilled workforce to entice businesses to the community. Lebanon residents were well prepared when two big industries came to the town and created 700 new jobs.

By contrast, in Rose Hill there was no community involvement, no broadband promotion, and no training programs. After two years of broadband availability, only one-third of households had signed up for broadband and only a handful of jobs were

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<sup>2</sup> American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009) at § 6001(k)(2)(D).

created.<sup>3</sup> Rose Hill illustrates that demand is needed to drive actual adoption of broadband.

Broadband adoption versus deployment in California shows a similar experience. Although California boasts a globally impressive 96% of households with access to high-speed Internet connections, only 55% of California residents use broadband in their homes.<sup>4</sup> Again, merely making broadband available is not enough, the Commission must ensure that its Plan also sets forth measures to ensure that broadband is wanted and effectively used.

## **II. THE FUTURE OF BROADBAND-ENABLED COMMUNICATIONS**

With an eye to the future, Ericsson gathered internal and external experts to analyze telecommunications trends and to imagine what broadband-enabled communications might look like by 2020 (the “2020 Project”).<sup>5</sup> The results were compelling and the possibilities diverse. Below, Ericsson highlights a sampling of the imagined applications enabled by ubiquitous wireline and wireless broadband networks: Doctor in a Box, Spider Passports, and Enhanced-IPTV.<sup>6</sup> These applications are the

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<sup>3</sup> See C. Kang, *Rural Riddle: Do Jobs Follow Broadband Access?*, WASHINGTON POST, April 23, 2009, at A1.

<sup>4</sup> See Steve Wiegand, *State Seeks \$1 Billion in Stimulus Funds to Bring Broadband Link to Every Household*, SACRAMENTO BEE, May 5, 2009, at A1.

<sup>5</sup> In its 2020 Project, Ericsson envisioned how the world will evolve, what peoples’ habits and needs will be and what kind of new technologies people will use to make their lives easier. The 2020 project took into consideration myriad factors that influence our evolution such as global trends, technological innovations, and resource concerns, among other things. The 2020 Project identified more than 25 futuristic broadband applications and services.

<sup>6</sup> Some initial IPTV capabilities are available today. In recent years, Americans have seen increasingly broad television offerings with hundreds of channels available at all times and extensive on-demand programming. Cable operators and wireline companies have devoted significant resources to building out their broadband networks to satisfy consumers’ ever increasing appetite for more, and better (e.g. HD)

types of applications that always accessible broadband connectivity will foster to improve both business and every day life. For this reason, they will drive adoption of broadband in the U.S.

### **A. Doctor in a Box**

Today, people often spend hours in doctors' offices and hospital waiting rooms for illnesses that could have been treated in a simpler and more cost effective way. Some patients must travel long distances or forgo treatment altogether because of other barriers to health care access. Doctor in a Box will not only remove these obstacles to medical care but also will reduce the pressure on our health care system by streamlining patient evaluation and treatment.

Doctor in a Box is a portable set of devices, which includes a 3D observation glass and other tools used for remote examination. (*See picture inset.*) Through video conferencing, it facilitates two-way interaction between doctors and patients.



Doctor in a Box is a dynamic tool. It can be used both for routine care such as daily/weekly check-ups, blood pressure readings, and medication monitoring and to evaluate more acute episodes of illness. For example, the magnifying glass can be used to allow a doctor to remotely examine a wound

and recommend a course of treatment.

With technologies like Doctor in a Box, both doctors and patients benefit.

Doctors can treat patients more efficiently, patients can be treated in the comfort of their

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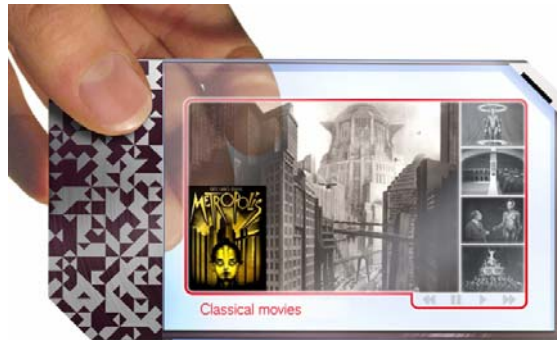
programming. These upgrades also increase broadband network capabilities. Enhanced-IPTV refers to the evolution of IPTV capabilities.

own homes, and health care outlets like hospitals and clinics are not overburdened. In short, this broadband application will not only make health care more accessible and cost efficient but also it will improve overall care.

## **B. Spider Passports**

A Spider Passport is a wireless broadband portable transparent screen. (See picture inset.) It serves as a window to the world, which provides real-time information about a user's surroundings. It is expandable and has a multitude of uses. For example, it will provide information tailored according to user established preferences about:

- Local clinics, hospitals, and pharmacies;
- Other community services like schools, libraries, and community centers with real-time course offering information;
- Museums, historic buildings, and other noteworthy sites in the area, including tour information;
- Restaurants, performance venues, and shops in the vicinity, with detailed information about their menus, show times, and/or special offerings; and
- Local businesses and their current employment listings.



Two Spider Passports, linked wirelessly, can:

- Create a larger screen, i.e. for displaying presentations and videos;
- Utilize a visual interface to synchronize two calendars and find available meeting times;
- Allow streamlined money transfers to facilitate commercial transactions, i.e. virtual debit card.

The Spider Passport will, no doubt, be a neat gadget. But its utility will not end there. Spider Passports will become *the* networking and time management tool of choice

because the integration and exchange of information will be rapid and seamless. Users will not just want Spider Passports, they will need them to stay connected with each other, the environment around them, and their employers. As a result, applications like the Spider Passport will drive broadband adoption and use.

### C. Enhanced - IPTV

Enhanced - IPTV promises a dramatic change in the way Americans experience television. Although Enhanced - IPTV can be used for distribution of broadcast TV services, the heart of Enhanced - IPTV is interactivity, or the ability to use fixed and mobile two-way connections to more fully engage viewers. With Enhanced - IPTV, consumers will no longer passively view television. Instead, consumers will actively participate in programming. Television will become more personalized, more relevant, more dynamic, and more educational.

Personalization will enable consumers to tailor TV and Video-on-Demand packages according to their individual preferences. Consumers will be able to customize their user interfaces to make their favorite features more easily accessible, much in the same way as bookmarks work in a web browser. Personalization will also enable



increased control over what is being watched, when, by whom and how often, an important feature for parents who want to restrict their children's access to inappropriate content.

Enhanced - IPTV will also be more educational and collaborative. (See picture inset.) Not only will consumers be able to get

more in-depth information about a specific topic during a program, but they will also be able to use Enhanced – IPTV as a platform for online learning. Viewers across the country will be able to attend and *participate* in otherwise inaccessible educational opportunities.

In addition, Enhanced – IPTV can be used to facilitate cost-efficient video conferencing that improves access to public resources like legal assistance programs, public offices and records, and city council meetings, among other things. Enhanced – IPTV will reduce barriers to community involvement and ensure that all members of a community can easily access community services.<sup>7</sup> These Enhanced - IPTV features—personalization, interactivity, multiple streams, high-definition offerings, and the integration of communication and video services—will drive consumers to want the broadband networks on which they rely.

### **III. IMPORTANT FEATURES OF A NATIONAL BROADBAND PLAN**

The broadband technologies and applications described above promise an interesting and exciting communications future. However, the Commission must lay the proper foundation for the growth of broadband networks to deliver this future. To create such an environment, the Commission’s National Broadband Plan must address four broad policy areas:

- Mobility is Essential - both mobility and speed are important features of broadband networks. The Commission must not advantage some technologies over others, purely based on speed considerations;

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<sup>7</sup> Enhanced- IPTV can also enable more entertainment-based social and economic interactions such as voting on programming (i.e. real-time American Idol-style voting), sending and receiving personal messages, dynamically selecting viewing angles from a series of available cameras, linking-in webcams or mobile phones, and purchasing products featured within a program.

- Pragmatic Network Oversight - network management is necessary to ensure network efficiency and Quality of Service. The Commission must only consider prescriptive network management, nondiscrimination or openness regulation to address market failures in specific cases;
- Spectrum Policy Evolution - as demand for mobile applications increases, the Commission's spectrum policies must enable future, high-bandwidth mobile services and international harmonization; and
- Universal Service Funding for the 21<sup>st</sup> Century - Universal Service reform should focus more on broadband networks and services.

By addressing these considerations in its National Broadband Plan, the Commission will achieve broadband-generated economic growth, enhanced educational opportunities, and improved health care for all Americans.

#### **A. Mobility is Essential**

When regulators and legislators talk about broadband, they often focus on speed as an easy benchmark for achievement. For example, the Commission has expressly asked whether it should define broadband in terms such as bandwidth, latency, capability to download a type of media in a certain amount of time, ability to access an online service or operate an application without depreciation in quality, or by some other metric.<sup>8</sup> Although speed is an important factor in a broadband plan, the view that consumers must have “high capacity,” “super fast” fixed networks everywhere to support broadband applications ignores how applications and services are being used. Mobility is a particularly important consideration because the world is increasingly mobile. Concentrating solely on measuring data rates ignores this fundamental fact.<sup>9</sup>

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<sup>8</sup> See Notice at ¶ 17.

<sup>9</sup> See Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Wireless Services, Thirteenth Report, DA 09-54, WT Dkt. No. 08-27, ¶ 197 rel. Jan. 16, 2009. (“Thirteenth

By “mobility,” Ericsson means consumer access to information and applications on a multitude of devices, where and when consumers want it. Mobility drives consumer use and adoption.<sup>10</sup> And, in an ever-increasingly mobile world, consumers will *need* to access information and applications on the go.

Right now, speed and mobility are frequently counter-balancing considerations, where the importance of each fluctuates depending on the location of the user and the type of application or service needed at the moment. However, the speed distinctions between fixed and mobile networks will be irrelevant in the long run. Wireless broadband speeds are already on par with some wireline service delivery methods such as cable or xDSL.<sup>11</sup> In fact, HSPA can provide higher maximum data speeds than some forms of xDSL today.

LTE will push the maximum wireless speed past the 100 Mbps barrier. Ericsson has demonstrated an LTE link at over 160 Mbps, and one industry test has shown that LTE is capable of delivering data at over 300 Mbps.<sup>12</sup> Accordingly, a short-term focus on speeds alone is taking too narrow a view of broadband consumers’ needs and of the

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*Report*”) (noting that as of December 2007, the nationwide mobile penetration rate was 86 percent and had increased 23 percent in the last two years); *See also id.* at ¶ 204 (noting that high-speed Internet-access connections using mobile wireless technology increased by more than 18 million in 2006 and that mobile wireless connections represented approximately 26 percent of the high-speed lines in the United States at the end of 2006).

<sup>10</sup> *See id.* at ¶ 205 rel. Jan. 16, 2009 (noting that the number of computers and other mobile devices using mobile broadband technology to access the Internet grew by 154 percent in 2007).

<sup>11</sup> WCDMA 3GPP Release 5, which incorporated the download portion of HSPA (*i.e.*, HSDPA), has a maximum download speed of 14 Mbps. Release 6 added an upload enhancement (HSUPA) that provides a maximum upload speed of 5.8 Mbps. Release 7, known as HSPA+ or HSPA Evolution, supports data rates of up to 42 Mbps downstream and 11.5 Mbps upstream.

<sup>12</sup> *See* Ericsson Press Backgrounder, *HSPA, LTE And Beyond – Delivering Rich Communication, Connectivity And Entertainment Over True Mobile Broadband*, at 2 (February 2009), available at [www.ericsson.com/ericsson/press/facts\\_figures/doc/hspa\\_lte.pdf](http://www.ericsson.com/ericsson/press/facts_figures/doc/hspa_lte.pdf); *See* Michelle Donegan, *LTE Hits 300 Mbps/s*, Heavy Reading, (Feb. 6, 2008), available at [http://www.heavyreading.com/document.asp?doc\\_id=145112&site=gsma](http://www.heavyreading.com/document.asp?doc_id=145112&site=gsma); *See* Light Reading, *LSTI Touts LTE Speeds* (Feb. 5, 2008), available at [http://www.lightreading.com/document.asp?doc\\_id=144980&site=gsma](http://www.lightreading.com/document.asp?doc_id=144980&site=gsma).

importance of mobility.

Moreover, in the future, both types of access will be critical for commerce and daily living. To address growing energy and climate issues, governments and businesses will rely more heavily on communications tools, such as teleworking and collaboration applications, to manage and preserve scarce resources. Devices will be designed to dynamically select the most efficient network, mobile or fixed, for a particular application at a particular time. Mobility will be an important component of these sustainable communications solutions. Ultimately, society will communicate across all types of borders, both physical and virtual. Therefore, the Commission must cultivate mobility in the National Broadband Plan and protect against creating a *de facto* technology preference by focusing only on one aspect of broadband networks – *i.e.* speed.

### **B. Pragmatic Network Oversight**

Network oversight, as opposed to network intervention, must be a cornerstone of the Commission's National Broadband Plan. The Commission should not impose explicit network management, nondiscrimination, or openness obligations. Rather, it must tread lightly in these areas. The marketplace is functioning well today without express requirements related to network management, nondiscrimination, or openness. In fact, consumers have a broad choice of devices, applications, and providers. And, when consumers want more, the market is responding. This is all occurring without government intervention. Consequently, the Commission should focus only on network oversight and resist the call by special interests to manipulate the evolution of networks.

### **i. Network management**

Ericsson generally endorses the Commission's Internet Policy Statement<sup>13</sup> and agrees that consumers should be able to access the content and applications of their choosing so long as doing so does not harm the networks they are using. Ericsson also supports the principle that providers, especially wireless providers, must be able to manage their networks to ensure the quality of service that users demand.

To date, the Commission has taken the right approach on network management. Oversight to ensure that network management is *reasonable* and requiring disclosure of management practices is the appropriate role for the Commission. When consumers are clearly advised of the terms and conditions under which they purchase service, they are empowered to take action and influence the market if they find them unacceptable. For example, in response to public apprehension about a potential network management technique, Time Warner suspended its proposed monthly gigabyte "cap" per subscription.<sup>14</sup>

The Time Warner experience illustrates that additional prescriptive management requirements are not necessary to protect consumers. There is no market failure in this area to address. Moreover, network dynamics and service conditions are constantly changing and evolving. Broadband providers are best positioned to understand which management tools are most appropriate given these fluid operational parameters. Accordingly, the Commission should not establish specific network management requirements.

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<sup>13</sup> See Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, *Policy Statement*, 20 FCC Rcd 14986 (2005) ("Internet Policy Statement").

<sup>14</sup> See Tim Clodfelter, *Internet Billing Plan is Off*, JOURNALNOW.COM (Apr. 17, 2009), available at <http://www2.journalnow.com/content/2009/apr/17/internet-billing-plan-is-put-off/news/>.

## ii. Nondiscrimination

Just as with network management, absent some demonstrable problem in the operation of the broadband market, the Commission must not impose nondiscrimination regulations on broadband services. Nondiscrimination provisions, such as those outlined in the 1996 Act, were designed to give competitors network element-level access to monopoly POTS facilities.<sup>15</sup> However, there is no broadband network monopoly. Broadband is offered by multiple operators across multiple platforms.<sup>16</sup> Consequently, a nondiscrimination principle that requires carriers to open their network to all comers is unnecessary and is counterproductive to the goal of fostering broadband deployment.

Similarly, a nondiscrimination principle for broadband traffic, or the idea that all bits should be treated equally, is not in the interest of consumers. All bits are *not* created equal. To maintain the quality of certain services, such as voice or IPTV, some type of traffic management (e.g. “discrimination”) is necessary. There is no legitimate reason to provide “equal treatment” for services, like e-mail, that do not see any particular benefit from high bandwidth and low latency - especially, when doing so detracts from the performance of those services, like video, for which high bandwidth and low latency are *essential*.

Furthermore, we tolerate and even support this type of discrimination in other contexts. For example, train systems have express lines that “discriminate” against those not served by the limited number of stops served and charge an extra fee for this discrimination. Highways have H.O.V. lanes, which “discriminate” against those without

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<sup>15</sup> The monopoly POTS network was characterized by tariffed services offered only by incumbents.

<sup>16</sup> For example, broadband service is provided by telephone companies and cable operators using fiber and cable facilities, by mobile and fixed wireless providers over terrestrial wireless networks, by satellite operators, and by utilities over powerline corridors.

the requisite number of people in a car. Toll roads can only be used for a fee. There is no reason that such discrimination should be declared intolerable simply because it relates to broadband traffic. Accordingly, the Commission should refuse calls to promulgate nondiscrimination provisions.

### **iii. Networks are open**

Communications networks are open and there is no cause for the Commission to impose any openness obligations at this time. The market has been very successful in innovating and delivering according to consumer demand in the absence of openness requirements. Recently, the Commission recognized that this strong competition has resulted in new mobile offerings and innovations, such as mobile TV services.<sup>17</sup>

There are numerous additional examples of innovation and openness in networks today, which has occurred without government intervention. For instance, the creation and adoption of Google's Android platform is a prime example of consumer-driven innovation and evolution in wireless network platforms. Google's Android platform, which is offered by T-Mobile and will soon be available from Verizon,<sup>18</sup> is an open framework allowing developers to access a wireless handset's features to the same degree that the carrier itself can.<sup>19</sup> Response to Android has been quite positive; at least 18 new models are expected on the worldwide market by the end of this year.<sup>20</sup>

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<sup>17</sup> See *Thirteenth Report* at ¶ 164.

<sup>18</sup> See Sascha Segan, *Pre, New Android, BlackBerry Phones on Verizon*, PCMAG.COM, May 28, 2009, available at <http://www.pcmag.com/article2/0,2817,2347797,00.asp> ("[W]e will in fact be bringing Android devices to the marketplace in the near future.").

<sup>19</sup> See <http://www.android.com/about/>.

<sup>20</sup> See Matt Richtel, *Google: Expect 18 Android Phones by Year's End*, N.Y. TIMES Bits, May 27, 2009, available at <http://bits.blogs.nytimes.com/2009/05/27/google-expect-18-android-phones-by-years-end/>.

In another example, Apple and AT&T worked with third parties to develop applications for the iPhone in response to their customers' demand for more choices and more applications on a faster network. There are now over 35,000 applications available on the iPhone and Apple recently announced that consumers downloaded over 1 billion applications in just nine months.<sup>21</sup> More recently, 3UK in Europe announced that it will allow free usage of Skype's VoIP service on its data network.<sup>22</sup>

These examples illustrate that networks are open and consumers have access to providers that allow the specific applications or content that they desire. Google's Android platform, the iPhone, and 3UK show that multiple ecosystems that allow portability, interoperability, and a rich array of applications and services are available today. The competitive market is working well and will continue to drive the success and sustainability of the best products and services. Therefore, there is no cause for the Commission to impose any openness obligations at this time.

### **C. Spectrum Policy Evolution**

As outlined above, mobility will be a key feature of future broadband networks and applications. The Commission must take steps, now, to evolve its spectrum policy to meet the needs of high-bandwidth mobile services. Specifically, the Commission must identify new spectrum, revise its regulatory framework in favor of wider bandwidth allocations, and rework its rules and policies so that they are not skewed in favor of certain technologies. The Commission's spectrum policies must not undermine the value

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<sup>21</sup> See Press Release, *Apple's Revolutionary App Store Downloads Top One Billion in Just Nine Months*, April 24, 2009. Third party applications are subject to approval to ensure AT&T's network is not overburdened. This approval is a minimally intrusive network protection mechanism that does not hinder innovation or competition.

<sup>22</sup> See *Free on 3. We're changing mobile forever.*, 3 UK, available at [http://www.three.co.uk/Company/3G\\_Network/Skype](http://www.three.co.uk/Company/3G_Network/Skype).

of licensed spectrum or compromise the performance of licensed operations. Last, the Commission must strive toward more international harmonization of spectrum, which provides the necessary clarity and confidence needed by industry to create the economies of scale that are critical to making technology more affordable for everyone, but especially for unserved and underserved markets.

**i. New and wider bandwidth allocations are needed**

Wireless innovations are deeply impacted by spectrum availability. Future services will require higher data rates and lower latency than those available today. The ability of wireless technology to provide high data rates *wirelessly* largely depends on the amount of spectrum that can be harnessed for use as a contiguous unit. However, based on the current limited and fragmented allocations, further evolution of wireless technologies and services is severely hampered. To allow for the future growth of mobile broadband, the Commission must identify new spectrum, allocate spectrum in wider bandwidths, and revise its current rules so that broadband technologies are on an equal footing with narrowband technologies.

The Commission cannot delay in identifying new spectrum for wireless services. At WRC2007, the ITU concluded that additional spectrum was needed by 2015.<sup>23</sup> And, the time needed to identify and allocate spectrum suitable for wireless services is on the order of 10 years. The Commission must act now so that mobile broadband is available to support the richer, more bandwidth-intensive applications of the future. Two immediate candidates for new mobile broadband allocations are: 1755-1770 MHz, which

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<sup>23</sup> See Press Release, International Telecommunication Union, *ITU World Radiocommunication Conference Concludes After Four Weeks: International Treaty Sets Future Course for Wireless*, (Nov. 16, 2007), available at [http://www.itu.int/newsroom/press\\_releases/2007/36.html](http://www.itu.int/newsroom/press_releases/2007/36.html).

is a regional allocation of 3G in Region 2; and 100 MHz FDD in the 3400-4200 MHz band for mobile service on a primary basis.

Moreover, the smaller spectrum blocks typical today (5-10 MHz or less) are not well suited for future data-intensive wireless broadband services. Smaller spectrum allocations directly limit the services that providers can offer, impede the growth of the user base, and may discourage the development and use of innovative applications that take advantage of high data rates, like the Doctor in a Box or Spider Passports previewed above. Fragmented spectrum allocations are also less spectrally efficient and make it more difficult to create a high-speed wireless channel. Wider bandwidth allocations, on the other hand, offer distinct performance advantages and are more efficient because they enable operators to provide more bandwidth to more users thereby allowing consumers to take full advantage of the benefits of advanced, content-rich technologies.

In addition to the challenges posed by fragmented and small spectrum allocations, the Commission's legacy rules can inadvertently hinder the evolution and operation of new technologies. For example, the Commission's out-of-band emissions ("OOBE") limits are skewed against broadband technologies.<sup>24</sup> Under the current rule, the OOBE for four 5 MHz blocks (the equivalent of a 20 MHz block) would be -13 dBm/50 kHz. However, the OOBE for a single 20 MHz block would be -19 dBm/50 kHz, or 6dB more stringent than a technology capable of transmitting on four 5 MHz bandwidths at the one MHz immediately outside the frequency block. This is because the OOBE limit in 1 MHz immediately outside the band edge is bandwidth dependent. There is no rational basis for this disparate treatment. Accordingly, the Commission must rework its rules to

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<sup>24</sup> See 47 C.F.R. § 27.53.

remove the bandwidth dependency for technologies greater than 5 MHz so that they are not an impediment to the deployment of wideband, and other emerging technologies.

**ii. Licensed spectrum is indispensable**

In addition to establishing wider bandwidth allocations, the Commission must also maintain its licensed spectrum regime and take into account the performance and propagation characteristics of spectrum when it decides whether to license it or allow its use on an unlicensed basis. Unlicensed radio transmitters can provide and enhance broadband connectivity in certain settings. However, unlicensed services are not a substitute for licensed services and unlicensed use of some spectrum bands is not the best, highest use of that spectrum.

For example, unlicensed services rely on low powered devices that operate on a non-interference basis in spectrum often shared with licensed devices. For this reason, unlicensed devices cannot ensure coverage over wide areas, data speeds or a particular quality of service. This can only be truly achieved via licensed spectrum. Because future generations of services will require more, not less, robust networks, the Commission's policies must continue to promote licensed use of spectrum, particularly when its propagation characteristics are better suited for licensed use.

In addition, the Commission must be cautious about allowing secondary use of licensed spectrum. Technologies that enable secondary use, like cognitive radios, are not an adequate substitute for dedicated spectrum. Moreover, such technologies can create issues for the primary users of the spectrum they are trying to share. For instance, signals from unlicensed devices can be difficult to distinguish from both general noise and collisions among autonomous communications systems. Techniques like signal analysis,

power measurement, and pulse timing help to distinguish these signals, yet their reliability is limited. Consequently, the Commission's efforts to foster innovations, like cognitive radios, should not divert it from updating its spectrum policy to support licensed broadband technologies, including wider bandwidth allocations and necessary rules changes.

Further, there must be more clarity in the Commission's licensing regime about spectrum clearing processes and the costs to clear spectrum prior to auction. By establishing *up front*, concrete timelines and disincentives to both clearing delays and attempts to modify technical specifications, the Commission can better support the rapid rollout of broadband wireless services. Such measures are critical to providing the regulatory certainty for investment, innovation, and high quality service in a broadband-based future.

### **iii. International harmonization**

As it evolves the Nation's spectrum policies, the Commission must seek to achieve international harmonization to the fullest extent possible. Creating spectrum arrangements that are unique to the U.S. and inconsistent with global arrangements can unnecessarily challenge equipment manufacturers and undermine the availability of innovative telecommunications technologies.

For instance, the band 2110–2170 MHz has been globally identified for 3G mobile use. In Region 2 (the Americas), the Inter-American Telecommunication Commission ("CITEL") of the Organization of American States has endorsed pairing of that band with the 1710–1770 MHz band as an option for North and South American

implementation.<sup>25</sup> Currently, the Commission is considering allowing two-way operations in a portion of this band (the AWS-3 band), which is not how this band is harmonized globally. An inconsistent U.S. allocation would disrupt the harmonization of spectrum use throughout Region 2. This could not only cause difficulties with respect to international roaming but also mean sacrificing the economies inherent in manufacturing devices and applications that use spectrum consistently from nation to nation throughout the Americas, and globally.

The band 2570-2620 MHz offers another opportunity for improving international harmonization. This band has been identified by 3GPP for mobile TDD access technologies, including WiMax and TD-LTE. In the U.S., this spectrum is being used by educators and institutions for programs such as distance-learning. In its reform of the Universal Service Fund, the Commission could authorize using USF funds for programs like distance-learning using broadband services to enrich the user experience. Transitioning these types of services to broadband networks will provide an opportunity to reallocate the 2.5 GHz center gap allocation for two-way services in line with international allocations. This reallocation would not negatively impact existing incumbents, who would retain their licenses and have the same advantages that they have in the remaining 2.5 GHz band, but would offer the 2.5 GHz center gap incumbents the added benefit of global harmonization.

International harmonization of spectrum provides the clarity and confidence needed for industry to invest on a global scale. Global investment creates economies of

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<sup>25</sup> See XXI Meeting of Permanent Consultative Committee III: Radiocommunications, CITEL, *Final Report*, OEA/Ser.I/XVII 4.3, PCC.3/doc. 2371/02 rev.2, at 21 (July 25, 2002) (Option 5, “Mobile transmit band 1 710–1 770 MHz, paired with the global base transmit band 2 110–2 170 MHz, consistent with a duplex separation of 400 MHz.”).

scale that keep costs down, which is critical to bringing service to unserved and underserved markets. Very simply, when spectrum is not harmonized, U.S. broadband consumers are disadvantaged. Therefore, the Commission must strive to adopt spectrum policies that achieve, rather than frustrate, international harmonization.

#### **D. Universal Service Funding for the 21<sup>st</sup> Century**

In addition to the suggestions regarding network management and spectrum policy set forth above, Ericsson urges the Commission to take a critical look at the Universal Service Fund to bring it in line with the goals of the National Broadband Plan. As AT&T has noted, with the speed at which broadband technology has transformed the nation's telecommunications infrastructure, supporting plain old telephone service cannot be the Commission's long-term universal service goal.<sup>26</sup> Universal service support mechanisms must be aimed at wireless and wireline broadband networks *and services*.

As stated above, Ericsson believes that focus on broadband demand is critical to the timely and full deployment and adoption of broadband services. Universal service funding should similarly begin to focus on broadband demand. There are numerous applications and services that the Universal Service Fund could reasonably support because of their benefits to society.

For example, a device like the broadband-enabled Spider Passport, could be used to support elementary school learning by enabling students' interactions with their environment. A teacher could direct his students to locate a particular species of tree on the school grounds. The Spider Passport could verify if the correct tree was located, and the student could then record a video clip of him or herself offering observations about

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<sup>26</sup> See Comments of AT&T, Inc., *High-Cost Universal Service Support*, WC Docket 05-337, filed May 8, 2009, at 5.

the tree. To facilitate such uses, the Commission should consider directing Universal Service Funding toward providing critical public service-oriented applications and devices as well as networks.

#### **IV. CONCLUSION**

As the Commission embarks on its effort to establish a concrete and achievable National Broadband Plan, Ericsson advises the Commission to keep demand at the forefront of its strategic planning efforts. Consumers have to want broadband and it is broadband applications like Doctor in a Box, Spider Passports, and IPTV that will make them do so.

To lay the proper regulatory foundation for the future growth of broadband networks, the Commission's National Broadband Plan must include provisions for:

- Facilitating mobility and creating a technology neutral environment;
- Evenhanded network oversight that recognizes providers' needs to manage their networks and does not overburden them with prescriptive nondiscrimination or openness regulations in the absence of any market failures;
- Evolving spectrum policies through wider bandwidth allocations, renewed focus on licensed spectrum, and maximizing international harmonization; and
- Using Universal Service Funds to support the broadband networks and applications that bring opportunities to more Americans, regardless of their economic status or their geographic location.

By addressing these considerations in its National Broadband Plan, the Commission will

have a better chance of making the promise of broadband communications a reality for all Americans.

Respectfully submitted,

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