POSITION STATEMENT

HIGH-SPEED BROADBAND NETWORKS

Adopted by the IEEE-USA
Board of Directors, 17 Nov. 2006

IEEE-USA urges the U.S. Congress, the Executive Branch and industry, in coordination, to create legislative, regulatory and promotional incentives for high-speed broadband network deployment, as a key to the nation's economic and social future.

Widespread, affordable and available access to high-speed broadband networks[1] is necessary for attaining and sustaining U.S. technological and competitive advantage in the global economy. Instead, the United States is falling behind many other countries in broadband deployment, user penetration, network performance, and price. These factors are critical enablers of a pervasive Internet, which in turn is a key component of productivity, innovation and competitiveness.

Therefore, IEEE-USA recommends that the U.S. Government and industry take the following actions:

- Congress should guarantee unrestricted deployment of standards-based networks by municipalities, communities and other entities to provide capability in the absence of adequate, cost-effective or timely commercial services.

- The Federal Communications Commission (FCC) should designate ample licensed and unlicensed spectrum bands, including unused portions of television bands, for high-speed wireless networks, to provide mobile and nomadic services and to augment access to the wired infrastructure.

- The National Science Foundation, other funding agencies, and industry should increase research levels for hardware, software, applications and standards, to spur continuing technological development.

IEEE-USA concludes that high-speed broadband network deployment is a national necessity, and that it is attainable through legislation, regulation, example and research that encourages proactive market forces in the industry. And once reached, it will empower productivity and innovation to the benefit of all areas of national life.

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This statement was developed by the Committee on Communications and Information Policy of the IEEE-United States of America (IEEE-USA) and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA is an organizational unit of The Institute of Electrical and Electronics Engineers, Inc., created in 1973 to advance the public good and promote the careers and public-policy interests of the more than 220,000 electrical, electronics, computer and software engineers who are U.S. members of the IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of IEEE or its other organizational units.

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BACKGROUND

Key problems with high-speed broadband networks lie in an outdated legislative and regulatory environment coupled with the lack of a visionary national policy. That outdated environment stems from the historic separation of telecommunications, cable and satellite television, each of which offers different services and content. The separate regulation of independent "stovepipe" services of voice, data, cable and broadcast inhibits competition within each technology and across technologies. That situation no longer serves the Internet-based convergence of voice, data, image, and video, which thrives on unlimited entry by new competitors in access and content, and supports the new layered communications structure of digital transport, applications and content. The regulatory problems are compounded by an absence of proactive national policy.

The solution lies in the U.S. excellence in technology, pervasive entrepreneurship, and potential for unfettered competition. These qualities created the Internet with its impressive past successes in catalyzing many previously unforeseen activities and marketplaces. Encouraging broadband availability and affordability, and legislative and regulatory changes well beyond the specific recommendations above, should remove restrictions on competition in broadband deployment, access, usage and content provision. Beyond regulatory reform, high-speed broadband deployment also calls for national goal-setting leadership. Success also requires the Executive Branch and industry to set policies and take actions to encourage research and investment.[2]

In the digital age, voice, data, image and video are converging into bit streams. This trend creates a need for high-capacity networks to carry traffic as diverse as phone calls, data look-up, pictures, entertainment and emergency alerts at low cost and without congestion.

Today’s wireless technologies deliver such multiple, digital applications, as well as permit and require establishing open, broadband networks. Such networks uniquely provide for ubiquitous connectivity and for mobile and nomadic services. Together, these characteristics make possible fulfilling the bandwidth needs of many network users, thus greatly narrowing the “digital divide.”

Similarly, wireline technologies can provide an array of converged digital applications. At the high end, current wireline technologies do so over each optical wavelength ~~(or lambda)~~ at speeds of one gigabit-(1000 megabits) per-second to 10 gigabits-per-second, with ongoing progress

toward 40 gigabits-per-second. By offering such capabilities, networks can and do remove the likelihood of congestion, and provide near-limitless bandwidth for the user -- signaling the potential for a wide-spread revolution in network design and use.

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Competitor regions, such as densely populated South Korea, Japan and Hong Kong, already provide communications with networks that far surpass ours in capability and pricing. Canada provides its rural areas (even less populous than ours) with networks that are likewise superior to ours.[3] France achieves highly favorable prices by unbundling its broadband services. The advanced networks of all these regions are providing benefits necessary to leadership and advances in knowledge-based goods and services. Economically, they are spurring productivity, research and growth. Socially, they are enhancing education, supporting health care delivery, and fostering digital literacy. South Korea is even exporting its broadband strategy to other countries. By comparison, the United States faces a critical deficiency in the speed and deployment of its broadband networks that needs remedy.

In sum, removing legislative and regulatory impediments, together with a forward-looking policy favoring high-speed broadband deployment, will release innate U.S. strength in technology, services and applications that encourage competition and capital formation within and across facilities and services. In implementing such measures, the United States would be well capable of a sustained progression to superior high-speed broadband networks.

For additional information, see the IEEE-USA Communications and Information Policy Committee's informational whitepaper on "Providing Ubiquitious Gigabet Networks in the United States" (14 March 2005), available on-line at: http://ieeeusa.org/volunteers/committees/ccip/docs/Gigabit-WP.pdf.

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[1] *High-speed* is a relative term, and changes with improvements in technology. The purpose of this position statement is not to define *high-speed*, but rather to stress that high speed is necessary to sustain the U.S. competitive edge. The *1996 Telecom Act* mandates the FCC to ensure broadband deployment "that enables users to originate and receive high-quality voice, data, graphics and video telecommunications."

[2] The National Academy of Sciences (NAS), in its seminal report *Rising above the Gathering Storm*, concurs. Recommended Action D-4 says, "Congress and the administration should take action --mainly in the regulatory arena and in spectrum management --to ensure widespread affordable broadband access in the near future. In another NAS report, on telecommunications R&D, *Renewing U.S. Telecommunications Research*, one of the recommendations is that: "Without a renewed and sustained investment in telecommunications research, the United States risks losing global leadership in telecommunications and related industries, with significant consequences for the U.S. economy and society." (See http://newton.nap.edu to download the reports).

[3] According to the International Telecommunication Union, the United States ranks 16th in broadband penetration globally, a position that sank from 13th in 2004. Defined as broadband subscribers per 100 inhabitants, penetration reached 24.9 in South Korea, 20.9 in Hong Kong, 19.4 in Denmark, and 17.6 in Canada. In the United States, the rate is 11.4.