

## **Broadband for Education: The National Internet2 K20 Initiative's and WICHE's Recommendations to the FCC**

### **Who are we?**

Internet2: We bring together Internet2's world-class network and research community members with innovators from colleges and universities, primary and secondary schools, libraries, museums and other educational institutions, the full spectrum of America's education community, including both formal and informal education. The National K20 Initiative extends new technologies, applications, and rich educational content to *all students, their families and communities* – no matter where they're located. We have had immense success connecting the institutions above – in fact, over 65,000 institutions are now connected to the National Internet2 network – but to realize fully the potential of Internet2 **all** institutions must have adequate bandwidth. What follows are principles we endorse and urge the FCC to adopt. We divide our recommendations into two interrelated categories: connectivity and e-rate support.

Western Interstate Commission for Higher Education (WICHE): WICHE and its 15 member states work to improve access to higher education and ensure student success. Our student exchange programs, regional initiatives, and our research and policy work allow us to assist constituents in the West and beyond. Equitable access to broadband technology and, in particular, technology-enabled education, is among our strategies. At present much of the West, particularly the “frontier West,” has little or no access to adequate bandwidth. Many of our institutions are not among those connected by and participating in the Internet2 K20 Initiative. The principles and recommendations below would remedy this situation.

### **Our recommendations:**

#### (1) Connectivity

- Elementary schools, secondary schools, and branch libraries should be connected at 100 Mbps to 10 Gbps.
- Two-year higher education institutions, central libraries, museums, science and cultural centers should be connected at 100 Mbps to 10 Gbps.
- Colleges and universities, with particular attention paid to minority-serving institutions and rural/remote institutions, should be connected at 1 to 10 Gbps.

#### (2) E-rate support

- Should be extended to all institutions listed above, broadening beyond K12 and libraries to include support to include museums, science and cultural centers, two-year higher education institutions, colleges and universities, with a particular focus on minority-serving and rural/remote institutions. An expansion of the sort we are recommending would necessitate additional e-rate funding.
- Should support connections to Research & Education Networks, including state networks, Regional Optical Networks, Internet2, National Lambda Rail, and any other R&E networks, extending e-rate support to middle mile as well as last mile subsidies.
- Establish a policy permitting the use of e-rate funds to be designated as matching funds for other federal funding programs – for example, ARRA broadband programs.
- Broaden the definition of “telecommunications services” to be technology-neutral, and eliminate the restriction that only “telecommunications carriers” can provide

- telecommunication services. Funding should support the most affordable and effective solution, which in parts of the country may be lease-to-own fiber, dark fiber, or wireless purchased by a school, library, college or museum.
- Broaden the definition of “eligible use.” Specifically, (1) rules should not regulate who uses a school network as in many communities schools could/should be a center for community education, and (2) rules should not limit the use of broadband as solely “conduit to the Internet.”

### **Who’s connected via the Internet2 K20 Initiative?**

**State education networks in 39 states that comprise:**

59880 K–12 Schools

4356 Libraries

695 Colleges and Universities

674 Community or Vocational Colleges

234 Health Care Organizations

77 Museums

30 Science Centers

31 Public Radio, TV or Streaming Media

13 Performing Arts Organizations

14 Zoos, Aquariums, Parks and Reserves

**66083 total institutions connected as of 19 November 2009**

### **Closing the Digital Divide: What real broadband connections will enable:**

Bringing together Internet2’s world class network and membership with innovators from colleges and universities, primary and secondary schools, libraries, museums and other educational institutions, the K20 Initiative extends new technologies, applications and rich educational content to *everyone*—no matter where they’re located. K20 participants can:

**Access rich media libraries** – Super fast connections bring unique, engaging content as close as a click—such as the growing number of streaming media programs offered by the ResearchChannel consortium.

**Use sophisticated scientific instruments remotely in real time** – Electron microscopes, radio telescopes and vast networks of undersea sensors—like those used in the Neptune project—are no longer reserved for researchers with doctorate degrees. K20 participants around the country can visualize and manipulate real-time data from NASA satellites overhead or NOAA oceanography instruments on the ocean floor.

**Experience virtual classes and journeys of discovery** – High speed, high definition video-conferencing expands the curriculum for schools with limited staff, delivers in-service education to those who can’t travel to get it and exposes explorers of all ages to exotic worlds they could never otherwise touch.

**Interact with the experts** – Write songs with a New York musician, observe doctors in an operating room, ask an oceanographer if he’s afraid of sharks, learn Mandarin Chinese from a native speaker, or hold a live forum with your Congressional Representative in far away Washington D.C.

**Share ideas and friendship all around the world** – Connect with fellow learners

around the globe, hold an international conference without a travel budget, share favorite songs in different languages, or trade ideas with a third grade class on how to build a monster.

**Take advantage of a array of online education opportunities**, especially those that are highly interactive, make use of rich multimedia resources, and involve simulations, virtual laboratories, and other bandwidth-intensive applications.

**What's missing?**

The National Internet2 K20 Initiative helps Internet2 reach its goals for rapid technology creation, dissemination and evolution. Internet2 members believe big payoffs come from getting tomorrow's technologies into the hands of as many innovators and educators as quickly as possible. As one initiative leader put it, "the killer application here is the network itself—the people network and the physical network, and the opportunities they enable."

The local, isolated schoolhouse of yesterday is being replaced by a global, accessible one that opens the whole wide world to students of all ages. We have the community and the national backbone network. We have many excellent state and regional networks. All that is missing now for many of America's schools, colleges, libraries and museums is real broadband connectivity (from 100 Mbps to 10 Gbps) and e-rate support to take advantage of this global schoolhouse.

Respectfully submitted on behalf of the National Internet2 K20 Initiative by the K20 Executive Committee:

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