

QUESTION 6: STATEMENT OF RESEARCH PROJECT

The Applicant

The applicant, Nortel Networks Kidz Online ("NNKOL"), is a nonprofit educational organization dedicated to preparing students and teachers to live and work in the information age through innovative peer-to-peer technology training distributed using advanced digital technologies. An appropriation in the FY2002 federal budget was awarded to this organization to create broadband, next generation content, which will be made available free over the Internet in September 2002.

Background

There are an increasing number of applications serving the content and information needs of the education sector, but few of the nation's 100,000 K-12 schools have the bandwidth to access this programming. For example, the 21st Century Community Learning Centers Program, a key component of President Bush's No Child Left Behind Act, aims to provide rich media learning resources to K-12 students. Congress has supported this initiative by appropriating \$1 billion for it in Fiscal Year (FY) 2002. About 6,800 rural and inner-city public schools in 1,420 communities are now participating in this program, most of which are located in public schools. Educational and entertaining technology training programming, targeting these kids is also underway at NNKOL's Digital Studio located at Virginia's Center for Innovative Technology in Herndon, Virginia. Creating this compelling, rich content, however, is for naught without an advanced delivery and management system capable of reaching the students.

The Proposed Experiment

This experiment will research and develop a model technology for delivering media-rich content over broadband-speed Internet to school systems. Conventional broadband technologies - fiber, cable, DSL, leased lines, etc. - all suffer from long provisioning cycles and have yet to deliver the promise of high-speed Internet access to the majority of our nation's classrooms. Fixed wireless, another medium for providing broadband access, does not have the long provisioning delays, yet is often constrained by requirements of a clear line-of-sight between the towers and the client-site.

To undertake this experiment, NNKOL has teamed with Nortel Networks, the world's largest telecommunications company; Spectrum Access, a leading broadband wireless ISP; Multispectral Solutions, the leading researcher for UWB communications, and the Monroe Technical Center and High School in Loudon County, Va.

The proposed experiment will deploy Ultra Wideband (UWB) technology to overcome the line-of-sight requirements which will also lower the cost structure of a network, thereby accelerating the penetration of high-speed Internet access to schools. Thus, this project will not only research and develop a solution, but also implement these technologies in a real-world test environment with a K-12 school district.

Once schools have broadband access, another application awaits the school systems — the ability to create internal wireless zones (hot-spots) serving the needs within the school environment. For example, students will need to be able to link with other students and with teachers, in order to receive and transmit data. Such education hotspots are expected to proliferate at a rapid pace as school systems get on the information superhighway. Nortel Networks' Content Delivery Networking equipment will be used to provide an on-site caching infrastructure to optimize the management, distribution, and delivery of media-rich, bandwidth-consuming content. This infrastructure will be tested in conjunction with the last mile UWB-transmitted data to reduce bandwidth usage by delivering content at the edge of the network; and optimize network and data center performance.

Summary

Grant of the requested experimental license will provide the data necessary to establish a national model for:

- Drastically lowering the costs for extending broadband networks to schools
- Significantly increasing the bandwidth which can be provided to schools
- Providing advanced tools for bandwidth management
- Ensure highest levels of security of the networks