

PROJECT SUMMARY

The "Internet Satellite Project" will develop and deploy advanced Internet services and technologies over satellite infrastructure for purposes of enhancing research, instruction and learning in a diverse set of institutions of higher education.

A combined effort by the American Distance Education Consortium (ADEC) and Tachyon, Inc. will extend the benefits of Internet2 to a broader set of institutions and provide experience with advanced satellite-based Internet technology. The project will be managed by ADEC and led by a core set of ADEC member institutions engaged in the Internet2 project. ADEC bridges the Internet2 community to an extended set of diverse institutions of higher education. Tachyon provides technology capable of connecting the Internet2 community to institutions unable to access the Internet2 backbone network because of geographic disadvantage.

This project focuses on bringing advanced networking applications to geographically remote campuses. These capabilities will be applied to the areas of research, instruction and learning. By engaging previously unreachable campuses or parts of campuses and remote learning centers, this will enable a broader community of scholars to engage in research; greater access by scholars both at Internet1 institutions as well as at the previously unreachable institutions to remote instruments and data sources; the increased availability of instructional and learning resources shared among a more diverse student population; and access by the research university community to cultural and human resources from otherwise inaccessible institutions and extension offices.

The main objectives of the project are to:

1. Explore the use of satellite technology to deliver Internet services so as to determine the compatibility of this new technology with services and applications being developed within the Internet2 project
2. Explore the deployment and integration of distance education applications, including collaborative applications at rural, remote institutions and extension learning centers that have previously been unable to access such technologies.

Research objectives of the project will include but not be limited to:

1. Establishment of what constitutes "pretty good Internet" for remote locations
2. How to establish, build and support a satellite based IP network
3. Connect the Tachyon satellite gateway to the San Diego NAP (commodity and Internet2 service providers)
4. Provide Tachyon Access Points to selected ADEC members not accessible via the traditional Internet infrastructure
5. Investigate QOS utilizing Tachyon/Internet2 Quality of Service capabilities to enable distance

education applications

6. Working with NLANR and CAIDA measurement teams to study network performance
7. How to use QOS to deliver through the Internet including satellite wireless last mile solution
8. Determine what is required to support this type of network
9. Determine the parameters for a sustainable business model

NSF funding is requested to support:

- engineering and technical support for design of network architecture, development and deployment of advanced network services.
- applications development support
- project management, communication and training support for over-all project
- a portion of equipment and fees associated with connecting the Tachyon gateway to commodity and Internet2 backbone networks
- a portion of equipment and fees at for each remote site using the Tachyon-based connectivity.

ADEC will cost share project management, administrative support systems, space, networking and other telecommunications services at the University of Nebraska-Lincoln and ADEC core implementing members will contribute a portion of coordination, installation, training, applications development and technical assistance.

Tachyon will cost-share:

- half of the cost of the Tachyon Access Points
- a discounted rate on bandwidth service fees
- engineering support for development of advanced networking services