A Strategic Plan for the Internet2 Community
2008-2013

Spring 2008

Preamble

In the 1980s the U.S. research and education community, with the support of the U.S. government, came together to create the NSFNET. The resulting investment and innovation led directly to today’s global Internet and the transformation of societies throughout the world.

In the 1990s a group of leading U.S. research universities joined together to address their research and education networking needs, which were no longer well-served by the commercial Internet providers. In meeting the advanced academic needs of this demanding community, Internet2’s shared vision was to again enable and support innovations that would enhance and transform the commercial Internet. This notion has been rapidly embraced internationally; international counterparts across the world work with Internet2 to apply advanced networking technologies toward the improvement of research, education and the overall human condition on our planet.

In the first decade of the new century it is again time for the U.S. advanced networking community to assess where we are and what we need to do, for ourselves and for the societies we serve. This document represents the beginning of that dialog by a community that has both successes to celebrate and challenges to overcome.

This is a plan to guide the entire Internet2 community on what we will do and how we will do it together. As the recommended actions make clear, delivering effective end-to-end services to our shared end-users will require all of us to work together with a shared commitment. To achieve our common objectives, it is not sufficient to identify what Internet2 management and staff might do on our behalf; our plan must guide us more broadly in what we can do together with and through the Internet2 organization we have created and continue to shape.
Vision
Internet2 is a member-led organization, united by a commitment to innovation, collaboration, and shared infrastructure. By focusing on the demanding requirements of the research community, we advance the state of the Internet-at-large and improve education, health-care, economic development, and the overall social condition of the communities we serve. We achieve our national successes by working as individual members, in regional partnerships, with corporate collaborators, with the U.S. government and with our international partners.

Mission
Internet2’s mission is to ensure that our scholars and researchers have access to the most advanced networking capabilities required for the next generation of cyberinfrastructure-enabled, collaborative discovery.

Goals
The Internet2 community has identified four goals necessary for the advancement of our mission.

I. Design, operate, and continually enhance the world’s leading research and education network.

II. Provide researchers and scholars with the tools and support they need to envision and execute the next generation of transformational cyberinfrastructure-enabled discovery.

III. Maintain vigorous partnership, outreach, and advocacy programs to jointly develop, promote, and share the benefits of cyberinfrastructure within the communities in which we work and live.

IV. Operate as an exemplary membership organization with financial transparency, engaged member participation at all levels, and a focus on achieving shared objectives articulated through participatory governance and continuous assessment.

Imagine a network-based collaboration environment that supports the nation’s leading educational and research institutions and:

• Allows researchers and students to collaborate in real time using high-definition audio and video that’s “as good as being there.”

• Supports collaborative use of a wide range of tools such as advanced telescopes on remote mountaintops, globally-distributed environmental sensor networks, digitally-rich performance environments, the world’s largest supercomputers, distributed databases, immersive virtual reality – all of which make it “better than being there.”

• Enhances rich asynchronous collaborations among workgroups, classes, collaborators and virtual organizations anywhere the world;

• Is powerful enough for the most demanding needs, flexible enough to support new modes of collaboration, extensible enough to adapt for new tools, reliable and secure enough for mission-critical uses, and so easy to use that on-site technicians are not required.

• Reaches not only around the world, but into corporate laboratories, health-care facilities and K-20 institutions in every corner of our nation, through partnerships with the private sector and governments.

Imagine that these rich capabilities compel our scholars and administrators alike to prefer to meet virtually rather than incur the substantial financial, human and environmental costs of air travel we tolerate today.

Imagine that Internet2 leads the way in providing and deploying this capability with our partners at the global, national, regional and campus levels.
Strategies

This plan identifies an initial set of strategies and tasks to achieve these goals during the 2008-2013 timeframe. While the tasks may be near term (next 18-24 months) or longer term, they may be overcome by events and will be reviewed annually. We expect that the strategies themselves will maintain reasonable stability over the 5-year period of this plan. Some strategies address more than one of our goals so a strict hierarchy is not used (though we recognize the need to link strategies and goals together when we assess our future progress). But each strategy addresses one or more of the goals and collectively, success at the strategies and tasks will achieve success in the goals that unite us.

Strategy 1.  Operate the national research & education backbone and provide world-class support services, all in partnership with Internet2 connectors, other regionals, and member institutions.

A. Operate a cost-effective network backbone that provides “production” research & education network services and operational data to the members while simultaneously offering “breakable” testbed capability for network researchers inventing the future Internet.

B. Work with end-users through their disciplinary communities, connectors, other regionals, and individual member institutions to articulate and deploy a comprehensive set of technical and human interfaces for operations, services and personnel, recognizing keys roles at the campus, regional, national, and international tiers, tied to clearly-articulated financial models.

C. With regional, national, and international partners, develop and deploy dynamic circuits with bandwidth guarantees coupled to advanced user tools for high-throughput applications; engage in ongoing research into alternative architectures for networked cyberinfrastructure.

D. Develop a consensus view among researchers, connectors, other regionals, campuses, and other stakeholders on future Internet2 network architectures, including a plan for where Internet2 must be by the end of the current Level3 contract (which is not that far away!) and how to rationally implement international connections.

Strategy 2.  Ensure that our end users, the ultimate “customers” of Internet2 resources, have access to tools and services above the network layer to effectively use advanced networks for the transformation of research, teaching, learning and service.

E. Identify/integrate/develop/deploy a standard, middleware-enabled, interoperable collaboration suite that can be used across our membership and beyond to enhance the capability of our user community to collaborate without insurmountable complexity in order to achieve their own strategic priorities.

F. Establish and promote a catalog of exemplary academic applications of advanced cyberinfrastructure that spans all disciplines and methodologies.
G. Articulate the technical, operational, fiscal and other barriers to coordination, adoption and deployment of advanced applications and work together with connectors, other regionals, and member institutions to overcome those barriers.

H. Focus on improving end-to-end application performance using real performance data and by combining national, regional, campus and individual project resources.

**Strategy 3.** Leverage our position of national and international leadership in the Internet2 Middleware and Security program by stabilizing support for development efforts and aggressively promoting deployment throughout the academic community.

I. Develop a clear strategy and funding model for Internet2 middleware research and deployment that rationalizes the investments by and on behalf of the community.

J. Middleware-enable all Internet2 applications and services, and engage community-source and commercial software developers to deploy Internet2 middleware capabilities in enterprise applications.

K. Work with Educause and other partners to address the security challenges unique to advanced networks and higher education.

**Strategy 4.** Develop a clear and well-communicated model for enabling network research that informs both network architecture and national policy.

L. Ensure researcher access to rich network-based information through straightforward, appropriate and well-vetted policies and processes, ensuring that privacy-related issues are aggressively addressed through a formal process that informs the network design and data-collection procedures.

M. Position Internet2 as a partner and/or provider in the key projects creating the future Internet (GENI, etc.).

N. Articulate with the networking research community a thoughtful strategy for the Internet2 network research agenda and develop a plan that addresses: (a) resources that the Internet2 community will commit; (b) resources that require external funding and a community-led strategy to acquire that funding; and (c) elements that will support effective telecommunications policy advocacy.

**Strategy 5.** Position Internet2 as the U.S. academic community’s primary “voice” for network- and middleware-enabled cyberinfrastructure in our national research agenda.

O. With leadership from researchers and scholars active with Internet2, engage disciplinary communities at their meetings and forums to ensure alignment of Internet2 and disciplinary needs and objectives.
P. In collaboration with researchers and scholars as well as the Teragrid, Open Science Grid, and other enablers of national cyberinfrastructure, develop a priority-based list of major national-scale research initiatives (“grand challenges of CI”) that critically depend on advanced networking and cyberinfrastructure, which the Internet2 community is committed to support, and which leverages (wherever possible) domestic and international partnerships.

Q. Develop a plan for the practical use of cyberinfrastructure to demonstrably reduce the carbon footprint of higher education as a model for the nation.

R. Develop a financially self-sustaining plan for Internet2’s role in the developing national health-care network.

S. Develop outreach programs with/or senior executives (Presidents, Chancellors, Provosts, Chief Research Officers) at their meetings and organizations (ACE, NASULGC, AAU, and others).

**Strategy 6. Develop an effective member-driven advocacy program to advance national cyberinfrastructure in support of our members' missions.**

Internet2 aspires to have the lack of federal interest and investment in networking reversed; policymakers turn to Internet2 for expert advice, and the Internet2 membership views their participation in Internet2 as a critical means of influencing public policy around advanced networking.

T. Work with EDUCAUSE, ACE, NASULGC, ACUTA, and other higher education organizations to establish a comprehensive national capability for networking and information technology advocacy; support local and state advocacy that is aligned with national and community concerns; complement and coordinate with corresponding international initiatives.

U. Ensure that NSF, DOE, NIH, DoD and other federal agencies understand the criticality of networking for advanced cyberinfrastructure and the importance of federal investment, as takes place in all other advanced economies.

V. Promote and support the extension of the advanced networking capabilities Internet2 is pioneering to all businesses and homes, e.g., through the Educause “Big Broadband” initiative.

**Strategy 7. Bridge to the Corporate Sector: Develop joint programs with industry partners to promote networking innovation and technology transfer.**

Internet2 aspires to have every major corporation involved in networking as a member of Internet2; corporations view their participation in our community as critical to their futures.

W. Create a strong value proposition for corporate membership and participation in Internet2 that highlights the open AUP, network testbed capabilities and the opportunities for engagement with academia around development of standards and tools for advanced networking, Internet2 middleware and applications.

X. Create a corporate-friendly forum that leverages the intellectual capital of the Internet2 membership and, with our corporate members, works to accelerate resolution of business issues, leverage advanced networking for technology and applications, and discover advanced networking applications.
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**Strategy 8. Ensure that members work effectively and rewardingly with the Internet2 organization and with each other.**

Internet2 aspires to have its members recognize that they “own” the organization and actively contributing to our shared successes.

Y. Monitor outcomes of GNC recommendations and make course corrections as necessary.

Z. Meaningfully engage with the membership on all key organizational and technical directions and decisions through forums, meetings and online methods (Ref: GNC Report section on communications).

AA. Maintain continual awareness of the criticality of open collaboration with connectors, other regionals and member institutions in all decisions regarding networks and services.

BB. Support the role of Internet2 as a “big tent” for communities of interest through low-cost mechanisms such as special interest groups (SIGs) and working groups (WGs) that let members work together in areas of interest through use of Internet2’s online community tools, provision of space at Internet2 meetings and provision of facilitation services.

CC. Grow Internet2 membership in strategic directions in partnership with connectors and other regionals in order to improve financial capacity, economies of scale, and the value of membership collaboration.

DD. Explicitly adopt a community source strategy—through direct initiatives, new investments by community participants, and strategic collaborations—when developing new tools and capabilities.

EE. Monitor this plan and progress, on at least an annual basis, through a community-based assessment process led by the Advisory Councils.

**Next Steps: A Strategy for Community Leadership**

This Strategic Plan began with a vision from the Internet2 community, instantiated in a widely embraced proposal from the Internet2 Governance and Nominations Committee (GNC) for a strong, member-led revitalization of Internet2. Once this Plan reaches its final form, based on the consensus of the membership, it will be presented to the Internet2 Board for adoption. Adoption of this plan is just one step. The Internet2 management and staff must embrace this plan as the basis for organizational budgets and operations, and the Internet2 Advisory Councils (ACs) and GNC, through the Inter-Council Chairs group, must monitor progress and adapt as necessary the key strategies. Finally, the ACs and the GNC must take responsibility with the Board to engage and communicate on a regular basis with the membership as part of a transparent and open assessment of the progress and impact of the operational plans and their benefit to the community. A strategic plan’s true value is in guiding a strong community-driven process of planning, consensus-building, and continuous re-assessment.
### Appendix A: Strategic Planning Steps At a Glance

<table>
<thead>
<tr>
<th>Date</th>
<th>Step</th>
<th>Status</th>
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<tbody>
<tr>
<td>Oct 2007</td>
<td>Internet2’s newly-elected Advisory Council (AC) members meet</td>
<td>Complete</td>
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<tr>
<td>Dec 6-7, 2007</td>
<td>Advisory Council Chairs plan planning process with GNC, with board approval subsequent (Dec 17)</td>
<td>Complete</td>
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<tr>
<td>Dec 10, 2007 – Feb 5, 2008</td>
<td>AC Chairs launch strategic planning process with all advisory councils; Internet2 shared information on process via member contacts and web</td>
<td>Complete</td>
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<tr>
<td>Feb 8-14, 2008</td>
<td>NET@EDU Focus Groups and Strategic Planning meetings</td>
<td>Complete</td>
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<tr>
<td>Feb 26, 2008</td>
<td>Members of SPSC meet with I2 staff to share ideas on the Strategic Planning Process</td>
<td>Complete</td>
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<tr>
<td>Feb 28, 2008</td>
<td>Draft strategic planning document shared with Advisory Council members</td>
<td>Complete</td>
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<tr>
<td>Mar 2-4, 2008</td>
<td>Internet2 Advisory Council members meet in Dallas to review first draft</td>
<td>Complete</td>
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<tr>
<td>Mar 14, 2008</td>
<td>Release draft to Strategic Planning Leadership Team</td>
<td>March 14</td>
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<tr>
<td>Mar 28 – Apr 5, 2008</td>
<td>Based on input to date, release revised draft to AC members and then to I2 community</td>
<td>Ongoing</td>
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<tr>
<td>Apr 21-23, 2008</td>
<td>Conduct presentations, focus groups and forums at Member Meeting to obtain broad input</td>
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<tr>
<td>Summer 2008</td>
<td>Release final draft for Board review and approval at Summer Board meeting</td>
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<td>Fall 2008 –</td>
<td>Formal yearly planning and review of Internet2 Operational Plans by Management/Staff, ACs and GNC</td>
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Appendix B: Guiding Principles for the Internet2 Community

In our community-governed membership organization, transparency in everything we do is the core guiding principle in achieving our common vision. Within that, we can together define a number of specific additional principles:

- Our primary measures of success are the successes of our member communities;
- We strive to ensure that Internet2 as an organization is synergistic with its members; where different interests exist, decisions, e.g. to compete or take potentially divergent paths, will be made by the community in a highly consultative and transparent way;
- Excellent communications among staff, membership, councils, board, stakeholders, and the broader community are a core commitment;
- Innovation and production services are intertwined: applications inform the need for innovations and innovations enable new applications;
- We will demonstrate bold leadership in advancing the missions of our members in measurable ways;
- Internet2 brings the community together to accomplish goals that members might not be able to accomplish separately as effectively, if at all.
Appendix C: The Internet2 Community - Who We Are

When we talk about the Internet2 community, we note the following elaborations:

- Members are the entities that pay Internet2 dues and have a governance voice. These include universities, corporations, R&E Network members and affiliates.
- A “regional” or “regional network” is the general term used for an aggregator of connections. Regional networks may or may not be Internet2 connectors and Internet2 connectors may or may not be regionals. If a regional is not an Internet2 connector, it may or may not choose to be an Internet2 member.
- Provision of the end-to-end services our ultimate end-users need requires collaboration among numerous entities in the connectivity chain. This may well include entities that are not formally Internet2 members, such as a regional network that connects members to a connector or one of our international partners.
- While it is common to refer to a “3-tier” model, reality is often quite complex. In order to reach a collaborator for a particular project, an end-user of Internet2 (for example at a high school in a SEGP state) may well go through a multi-building campus network, a K12 education network, a state network, an Internet2 connector, the Internet2 backbone and an international partner network.