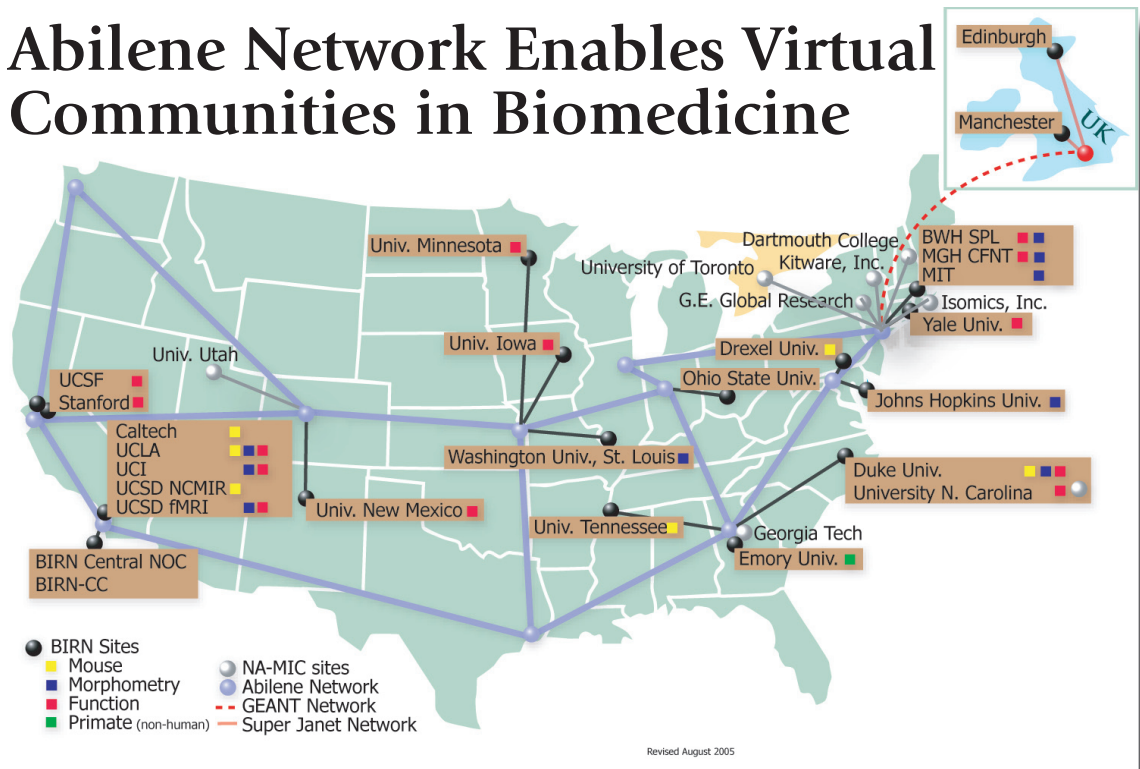


case in point



Abilene Network Enables Virtual Communities in Biomedicine



WHAT IS THE BIOMEDICAL INFORMATICS RESEARCH NETWORK?

The Biomedical Informatics Research Network (BIRN) promotes advances in biomedical and health care research through the development and support of a cyberinfrastructure that facilitates data sharing and multi-institutional collaboration. Sponsored by the National Institutes of Health, the BIRN is creating an environment that encourages biomedical scientists and clinical researchers to make new discoveries by facilitating sharing, analysis, visualization, and data comparisons across laboratories.

ABILENE NETWORK CONNECTS BIRN SITES

The growing BIRN consortium currently involves more than forty research groups from more than twenty-five universities and hospitals interconnected by Internet2's Abilene Network, which provides the backbone for all distributed data and computational resources within the BIRN.

TESTBED PROJECTS AND COLLABORATIONS

BIRN collaborators participate in one of three initial testbed projects or associated collaborative projects using the BIRN infrastructure. All of these projects require advanced networking capabilities. The BIRN's initial testbed projects (Morphometry BIRN, Function BIRN, and Mouse BIRN) center on structural and functional brain imaging of human neurological disorders and associated animal models of disorders

including Alzheimer's disease, depression, schizophrenia, multiple sclerosis, attention deficit disorder, brain cancer, and Parkinson's disease. The advanced applications that process the massive quantities of images generated by these brain imaging studies require the high-performance Abilene Network.

The National Alliance for Medical Imaging Computing (NA-MIC) is one example of a virtual collaboration project that uses the BIRN infrastructure. NA-MIC is a multi-institutional, interdisciplinary team of computer scientists, software engineers, and medical investigators developing computational tools for the analysis and visualization of medical image data. The team combines cutting-edge computer vision research and software engineering techniques to enable computational examination of both basic neuroscience and neurological disorders.

The BIRN's international partnerships also rely upon advanced networking capabilities. BIRN collaborators are working with e-science research groups in the United Kingdom whose expertise in data integration and semantic grid technologies will help advance the development of robust, scalable technologies for the integration and analysis of diverse, globally-distributed data.

DATA FEDERATION SYSTEM

The BIRN is using its initial testbed studies to drive the construction and daily use of a federated data-sharing environment that aggregates and presents biological data held at geographically-separate sites as a single virtual data resource. The BIRN program is rapidly producing tools and technologies to enable the aggregation of data from virtually any laboratory's research program to the BIRN data federation system. Lessons learned and best practices are continuously collected and made available to help new collaborative efforts make use of this infrastructure.

BIRN CYBERINFRASTRUCTURE

One of the BIRN's major goals is to develop cyberinfrastructure that enables sharing and collaborative use of distributed biomedical databases, data collections, analysis and modeling software, and visualization tools. At the BIRN Coordinating Center, located at the University of California – San Diego, a team of computer scientists, neuroscientists, and engineers develops and supports the information technology infrastructure that enables distributed collaborations and data sharing among the BIRN collaborators.

With Internet2's networking infrastructure as its technological foundation, BIRN cyberinfrastructure is addressing many needs of the biomedical and health care communities:

- Assisting to manage, preserve, and disseminate the large amounts of data collected in biomedical research.
- Fostering the integrated and collaborative scientific studies required to address increasingly complex problems in biomedical and health care research.
- Accelerating the pace of scientific discovery, facilitating innovation, and moving scientific findings from laboratories to clinical practice.
- Creating an environment in which data and software developed with public funds are preserved and made available in a timely fashion.
- Providing researchers and students easy access to powerful computational resources.

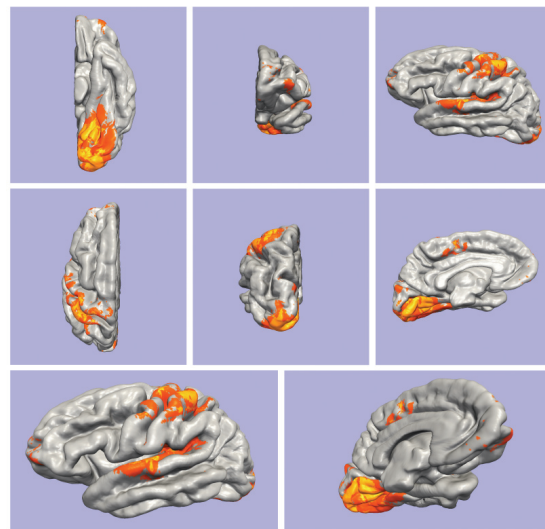


Image courtesy of Harvard University



<http://www.nbirn.net>
<http://www.na-mic.org>

Internet2 Members Participating in BIRN

California Institute of Technology
Dartmouth College
Drexel University
Duke University
Emory University
Georgia Institute of Technology
Harvard University
Johns Hopkins University
Massachusetts Institute of Technology
The Ohio State University
Stanford University
University of California - Irvine
University of California - Los Angeles
University of California - San Diego
University of California - San Francisco
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University of Minnesota
University of North Carolina at Chapel Hill
University of New Mexico
University of Utah
Washington University
Yale University