

Implementing Cyberinfrastructure for 21st Century Research

2008-2009 President's Emerging Leaders Program

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"I use a USB drive purchased with personal funds to backup data."

"I use a USB drive purchased with personal funds to backup data. Note that this is data about mice and is not related to any personal data that may need to be encrypted. We have an imaging system for viewing gels that is connected to a computer that can only store data on the hard drive and floppy disk. A floppy disk can hold only four images. Other storage or a network connection would be nice." -Scientist in the Medical School

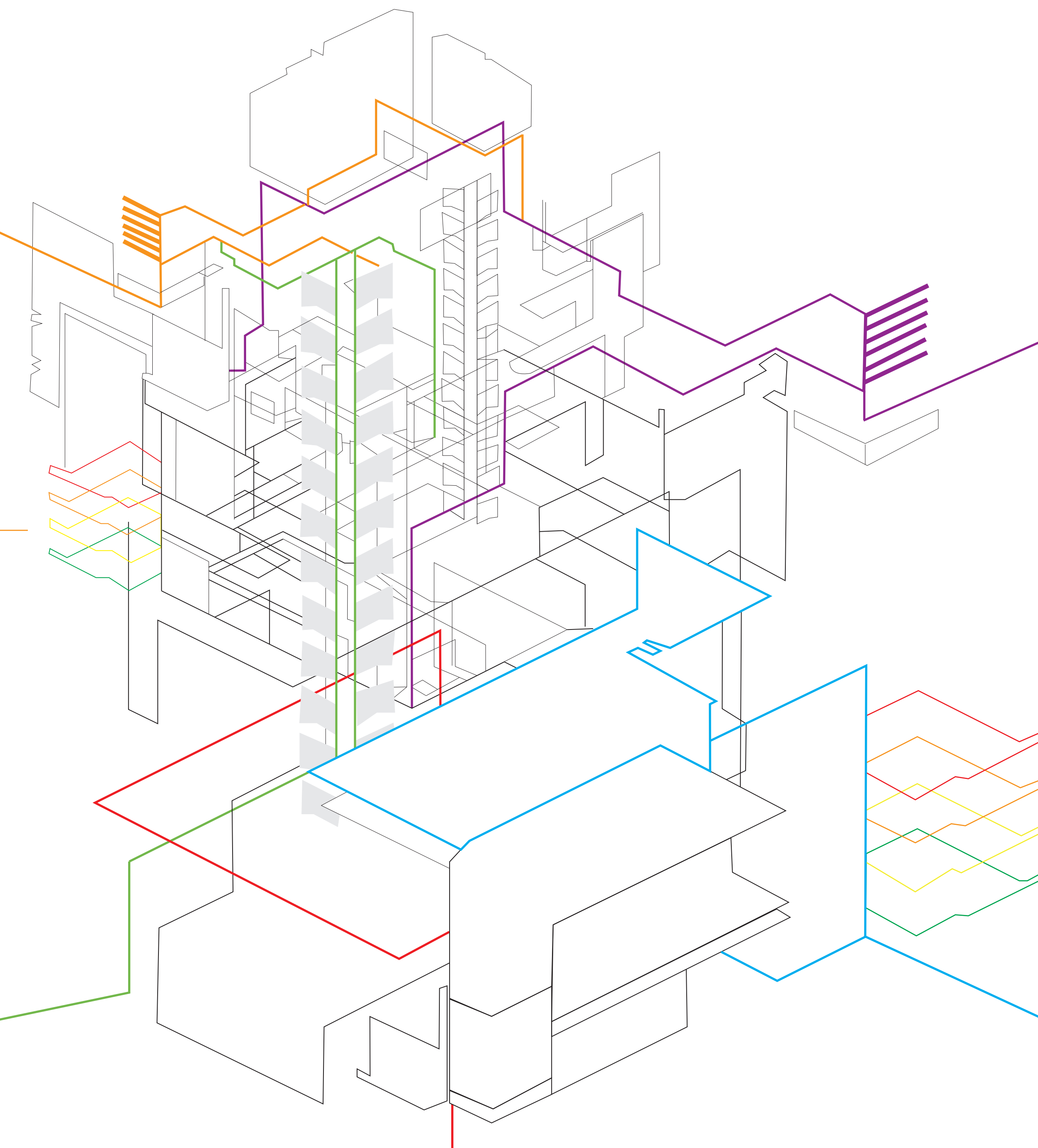
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DEVELOP ENTERPRISE-WISE INTEGRATED CYBERINFRASTRUCTURE TO ALIGN WITH NATIONAL EFFORTS

Accountability at the senior leader level is needed to ensure the University's competitiveness in the future (i.e., obtain grants, become a top three public research university, recruit, evolve research and programs). At the same time, the University has the opportunity to leverage existing 'cottage industries' and to align internal services.

"In my research group, research data is mainly managed by the respective owner. We evaluated the file sharing service from central IT but found it too cumbersome to use. It works best if research groups can set up their own servers to have control over their data storage platform." -Post Doc in the Institute of Technology

"There needs to be a mechanism for centralized storage of data with high security for individual research groups." -PhD Research Assistant in the Institute of Technology



"International collaboration will increase..."

"International collaboration will increase; how do we encourage/assure compliance with security standards from our collaborators?" -Faculty Member in the College of Education and Human Development

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CREATE INCENTIVES FOR VIRTUAL COLLABORATIVE RELATIONSHIPS

Give researchers the necessary tools to help develop collaborative relationships and facilitate local and external data sharing in order to establish the University as a top research institution.

"As far as I know, there is no inventory for data storage and we don't have a contact person for data storage. We just save our data in multiple places and on an external hard drive. There is no oversight for data storage." -Post-Doc in the School of Dentistry

"...it's not clear who to contact for what."

"The basic tech person assigned to the department is fine for routine computer and computer related software things, but beyond the basics it's not clear who to contact for what." -Faculty Member in the College of Liberal Arts

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BETTER POSITION SERVICES AROUND THE END-USER

Provide IT contacts with the tools to share/leverage existing resources across University service providers. Researchers do not care who offers the service; they just want the opportunity to take advantage of the offering.

"Attention needs to be given to the organization of the multiple electronic records we store for multiple researchers at the University. There needs to be a management plan that we can follow and somebody needs to be doing the inventory of these records." -Senior Research Fellow at the Academic Health Center.

"...I have storage requirements on the order of terabytes."

"5 GB space is paltry for backing up systems on active directory. I have storage requirements on the order of terabytes." -Faculty Member in the College of Food, Agriculture & Natural Resource Sciences

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IMPROVE AND EXPAND THE UNIVERSITY'S ABILITY TO HANDLE DATA

In order to meet the growing needs of researchers, IT service providers should provide short-term data storage as needed (i.e. a bank model), utilize external cloud storage for long-term archiving, provide high speed data connectivity, and automatic back-up, with the appropriate compliance and privacy mechanisms.

"Once or twice a year I have to negotiate for storage space; I always feel as if my research is at odds with IT policy. I always feel as if I'm living on borrowed time, no confidence in having access to adequate data storage for research in the future." -Faculty Member in the College of Education and Human Development

"I find it hard to translate the terms..."

"This instrument seems to have been constructed using the sciences as its template. I find it hard to translate the terms into my research in the Humanities..." -Faculty member in the College of Liberal Arts

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RE-BRAND CYBERINFRASTRUCTURE AT THE UNIVERSITY TO IMPROVE ACCESSIBILITY FOR ALL DISCIPLINES

In order to bridge the jargon gap among the research community, the service providers and University leaders should re-brand cyberinfrastructure to ensure efficient workforce training and awareness of technology needs.

"This survey is largely geared to researchers outside the Humanities. Consequently, many of the questions are stretch -- in terms of relevance. Please find a way to incorporate a genuine commitment to research in the humanities (without which no university with which we aspire to compete, either public or private, is ranked highly)." -Faculty member in Cultural Studies and Comparative Literature

"This survey needs to take into account that some of us are not at all familiar with technology or the language used to describe it." -Faculty member in Classical and Near Eastern Studies

What is Research Cyberinfrastructure?

Research Cyberinfrastructure (CI) is a key ingredient in fostering interdisciplinary research, garnering national funding, and transforming the University of Minnesota into a top three public research university. Increasingly, research technology and emerging global partnerships are generating data that have computational and storage needs that outpace the information infrastructure currently available. Our project addressed the growing needs for CI at the University and determined strategic ways that the University's Research Cyberinfrastructure Alliance (RCA) and other University partners might respond.

Methodology

During March 24st-April 8th, 2009, the PEL project on Research Cyberinfrastructure at the University of Minnesota emailed our online user-needs survey to 8,424 faculty, research staff, and students asking them to report the current state of cyberinfrastructure support at the University as well as to assess their future needs.

The survey was comprised of 130 questions on the following cyberinfrastructure trends: data storage, data management, and networking infrastructure; collaboration with other researchers; tools and applications; high performance computing; and learning and workforce development, as well as trends within each of these areas.

After two weeks, our survey generated 780 successful responses (a 9.2% response rate) from a broad cross-section of affiliates representing all research disciplines, environments, and campuses.

Acknowledgments:

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