Research IT @ Illinois: Establishing Service Responsive to Investigator Needs

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Learning Outcomes

• Understand the strategies used to facilitate strong faculty engagement and administrator buy-in.

• Understand the motivations behind the effort and relate concepts to their own environments.

• Understand the key findings and identify components of use for your own campus.
Who, Where, Why
Motivations
Motivations... and Inspiration
Right People, Right Timing
Right Proposal
Right Team

- John Towns
  - NCSA and Office of the CIO (chair)
- Randy Cetin
  - Office of the CIO
- David Gerstenecker
  - College of ACES
- Laura Herriott
  - NCSA
- Ashley Hetrick
  - Technology Services
- Heidi Imker
  - University Library
- Chris Larrison
  - School of Social Work

- Brian Mertz
  - Technology Services
- Scott Poole
  - Dept. of Communications
- Eric Shaffer
  - Dept. of Computer Science
- Tracy Smith
  - Technology Services
- Chuck Thompson
  - College of Engineering
- Kandace Turner
  - NCSA
- Rob Watson
  - Technology Services
Year of CI Objectives

- Create a common understanding of which resources are part of cyberinfrastructure
- Highlight how cyberinfrastructure supports research and education across all disciplines
- Develop an implementation plan for additional campus cyberinfrastructure resources
Opening Symposium

Sponsors

HOW EXCITING!! PLEASE TELL ME MORE!!
About the Lightning Round
The Plan (Theory)

- Opening Symposium
- Bi-Monthly Seminars
- Surveys; Interviews
- (Heterogeneous) Focus Groups
- Working Groups for CI Master Plan Writing
- CI Master Plan Vetting and Editing
- CI Master Plan Approved by Campus Leadership, Governance
CNI Fall Members Meeting
December 12, 2016, Washington, DC

The Plan (Theory)

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Leadership, Governance
“Are you sure you want to do it this way?”
KEMP'S MANURE SPREADER

WILL SPREAD ANY AND ALL KINDS OF YARD AND STABLE MANURES, BROAD CAST OR IN ROWS.
Year of CI Activities

- Opening Symposium
- Seminars
- Roadshows
- Surveys
- Plan Writing
- Plan Vetting and Acceptance
3 geographically based roadshows advertised through campus announcements over a couple months
The Plan (Theory)

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The Plan (Reality)

- Opening Symposium
- Homogeneous Focus Groups
  - strategically scheduled
- Survey
  - including on paper at start of focus groups
- (Lots of) Qualitative Data Analysis
- Report with Key Findings, Recommendations
- Closing Symposium
- Lots of Success… But Still No CI Master Plan
Translators

- John Towner
  - NCSA (Office of Technology Services)
- Randy Cetin
  - Office of the CIO
- David Gerstenecker
  - College of ACES
- Laura Herriott
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- Ashley Hetrick
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Ваш любимый футбольный клуб?
Qui est votre équipe de football préférée?
Who is your favorite football team?
How Do We Define Cyberinfrastructure For Faculty

“Whatever IT related services you need in order to better conduct your research.”
Two Open-Ended Starter Questions

1. What existing IT issues are adversely impacting your work?

2. What are your aspirational research goals and what IT resources will you need in the future?
The Data – Focus Groups

- 27 sessions with > 200 participants
  - > 130 faculty plus staff and grad students
  - Participation from 12 of 14 colleges
- 155 pages of notes collected
- Reduced to 2132 codes for qualitative data analysis
- Analyzed for themes and details
The Data – Surveys

- **Paper version** given during focus groups
- **Online version** sent to **sampled set** of campus faculty, specialized faculty, postdocs, grad students
- **144 paper** and **183 online** responses
- Data cleaning and preliminary analysis by Post-Doc
Responses by Position Type

- All Tenure-Track Faculty: 50%
- Assistant: 17%
- Associate: 14%
- Full: 19%
- Other APs: 20%
- Graduate RAs: 17%
- Graduate student, non-RAs: 6%
- Research & clinical profs, post-docs: 7%
Survey “write-in”

13) What technology services on campus are you aware of?

- Illinois Campus Cluster Program (ICC)
- Campus Advanced Research Network (CARNet)
- Data Center Shared Services (DCSS)
- Blue Waters
- XSEDE (Extreme Science and Engineering Distributed Computing Environment)
- Campus Research Data Service (RDSS)
- Scholarly Commons
- Media Commons
- IDEALS (Illinois Digital Environment for Arts and Learning Systems)
- CITES Virtual Hosting

Aware but No Info
Aware
Utilize
Focus Group Paraphrased Quote

Stop building new services if you’re not going to **support** us in using them, provide us **training** in using them, or make sure we actually **know** they exist.
Key Finding #1: Access to Expertise
Key Finding #2: Communications
Key Finding #3: Data Needs
Key Finding #4: Technology Needs
### Most Critical Technologies for Research

<table>
<thead>
<tr>
<th>Role</th>
<th>Most Critical</th>
<th>Second Most Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Professors</td>
<td>Data Storage 48%</td>
<td>Dedicated / Specialized Instruments 43%</td>
</tr>
<tr>
<td>Research &amp; Clinical Professors, Post-doks</td>
<td>Data Storage 59%</td>
<td>Research Computing Resources 41%</td>
</tr>
<tr>
<td>Graduate Research Assistants</td>
<td>Data Storage 56%</td>
<td>Research Computing Resources 37%</td>
</tr>
<tr>
<td>Generators of Quantitative Data</td>
<td>Data Storage 64%</td>
<td>Research Computing Resources 43%</td>
</tr>
</tbody>
</table>
## Top 4 Data Challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>% Respondents</th>
<th># Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzing</td>
<td>67%</td>
<td>219</td>
</tr>
<tr>
<td>Acquiring</td>
<td>56%</td>
<td>182</td>
</tr>
<tr>
<td>Visualizing</td>
<td>41%</td>
<td>133</td>
</tr>
<tr>
<td>Storing</td>
<td>40%</td>
<td>132</td>
</tr>
</tbody>
</table>
Number 1 Data Challenge Across Colleges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>% Respondents</th>
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</thead>
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</table>

Important to all job classes
- Top challenge for Graduate RAs
- Important regardless of data generated
  - Quantitative data: 76%
  - Qualitative data: 61%
Final Report Publication

• Publically Released: December 1, 2015
  • http://cyberinfrastructure.Illinois.edu/

• 7 Recommendations
• 2 Meta-Recommendations
Recommendations Summary

[1] Single Source of Information About Available Resources & Services
[2] New Communications Strategies for Getting Info to Researchers
[3] Improve Training Opportunities for Researchers and IT Pros
[4] Provide Access to Staff with Specialized Technical Skills
[5] Critical Technologies Available with Low Barriers to Access and Use
[7] Solutions Developed, Deployed for Working With Sensitive Data

[9] Develop Coherent Strategy to Visibly Address Feedback
Planning for a Bold Investment in Research

*Included volunteers from across campus*

- **Major Focus Areas**
  - Research IT Support [1][2][3][4][5]
  - Research Computing Services [5]
  - Research Data Services [5][6][7]
  - Research IT Strategy and Planning [8][9]

- **Schedule**
  - Feb 18 & 26: kick-off
  - March: plan development
  - April (early): proposal drafting
  - April (mid): faculty reviews
    - present to Faculty Advisory Committee
  - May 1: submission
  - June 4: supplemental information submitted
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Working to Move Forward

- Pre-Existing Effort
- Funded New Effort
- Limited Start-up Funding
- No Funding
Research IT Support

- Training
  - focus on research computing topics
- Communications and Marketing
  - marketing services, raising awareness, successes/showcase, information service
- Research User Support
  - Concierge Service/Research Technology Facilitators, “Consulting Office”
  - helpdesk, documentation
- Research Applications & Software Development Support
- Data Visualization and Analysis Service
- Research IT Portal
Research Computing Services

• CARNE
  • ScienceDMZ

• Illinois Campus Cluster Program
  • shared HPC research computing

• High Throughput Computing Service
  • Condor, BOINC, etc.

• VM & Containers for Research
  • used with HTC, OpenStack resources, cloud resources

• Cloud Computing for Research
  • initially Amazon Web Services
Research Data Services

• Research Data Service
  • DMP consultation, data management consultation, long-term preservation, etc.
  • Active Data Storage service

• Sensitive Data Service
  • sensitive data policy
  • HIPAA Data Service (initial efforts underway)
  • REDCap Service
  • address other needs: PHI, FISMA, CLIA, FERPA, EAR/ITAR, ...
Research IT Strategy & Planning

• **Needs Collection and Analysis**
  • recurring focus groups
  • targeted surveys

• **CI Master Plan**
  • coherent strategy for campus CI build out

• **UIUC IT Architecture**
  • both research and enterprise IT
Some Deferred Items

- Data-Intensive Computing
  - Hadoop/MapReduce and similar
- Social Media Lab
  - tracking early development efforts
  - should be federated with these efforts
- Database-as-a-Service (DBaaS)
- Mobile Devices
  - use primarily in survey work and data collection

- Proposal Support Service
  - support proposers in identifying and incorporating into their proposals, the use of university research IT resources and services
- Allocations service
  - unified allocations process for research IT resources and services

Faculty onboarding process
Toward a larger vision...

*a dynamic research support environment in which a broad portfolio of resources, services and support are easily discoverable and accessible to the campus research community*