

# Assessing Research Cyberinfrastructure Needs at the University of Minnesota

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CNI

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## RCA: Technical team

- College of Liberal Arts
  - Kemal Badur, Ed Clark, Jo-Ida Hansen
- Office of the VP for Research
  - Brian Ropers-Huilman and Birali Runesha
- Academic Health Center
  - John Crow
- Libraries
  - John Butler
- Office of Information Technology
  - Ann Hill Duin, Bernie Gulachek, Jim Hall, Dave Johnson, Amie Dardis, Patton Fast, and John Sonnack
- Consultant
  - Eric Celeste



# Alliance indicators

Develop the right working relationship

Create “means” metrics

- Information sharing

- Speed of decision making / clarity

Embrace differences

- Document strengths/competencies of each group

Enable collaborative behavior

- Share information

- Emphasis on inquiry rather than judgment

- Communicate issues jointly to senior execs for resolution

Manage internal stakeholders

From: “Simple Rules for Making Alliances Work.” J. Hughes & J. Weiss. *Harvard Business Review*, November 2007.



# What is Cyberinfrastructure?

Used as a term by the National Science Foundation and a host of nationally-prominent agencies, cyberinfrastructure includes the **information technology resources** used by researchers, clinicians, engineers, and artists in the creation of new knowledge.

It includes the instruments, sensors, high performance computational **systems**, massive storage systems, data resources, and visualization facilities, tied together by high speed networks and made to work together by advanced software to accomplish goals that would not be possible by any single information technology system.

It also includes the **people, processes, training, security, policies, and capabilities** to sustain the systems and networks over time.



# RCA Goal and Alignment

- Goal
  - to position the University to enable computationally intensive, interdisciplinary research for the 21<sup>st</sup> Century
- Alignment with strategic positioning
  - Exceptional faculty: to make this a “win” for faculty
    - Create a robust culture of collaboration that encourages and rewards boldness, imagination, and innovation.
  - Exceptional innovation:
    - Align resources to support strategic priorities
  - Exceptional organization
    - Foster an environment of creativity that encourages evolution of dynamic fields of inquiry



# Principles

- Align with NSF
- Preserve positive local ownership while leveraging expertise across the U
- Open channels of communication
- Create a coordinated research approach
- Provide a consistent outstanding faculty (researcher) experience



# Research Cyberinfrastructure Support prior to Fall 2007



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# Initial Vision for RCA



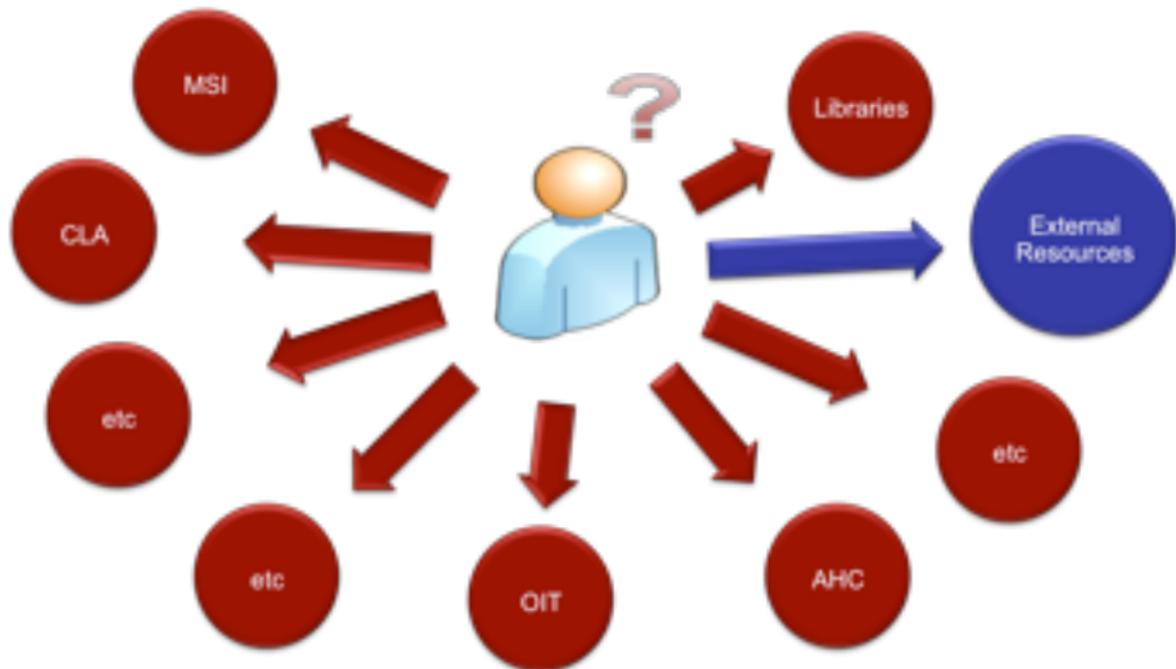
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# Proposed Vision

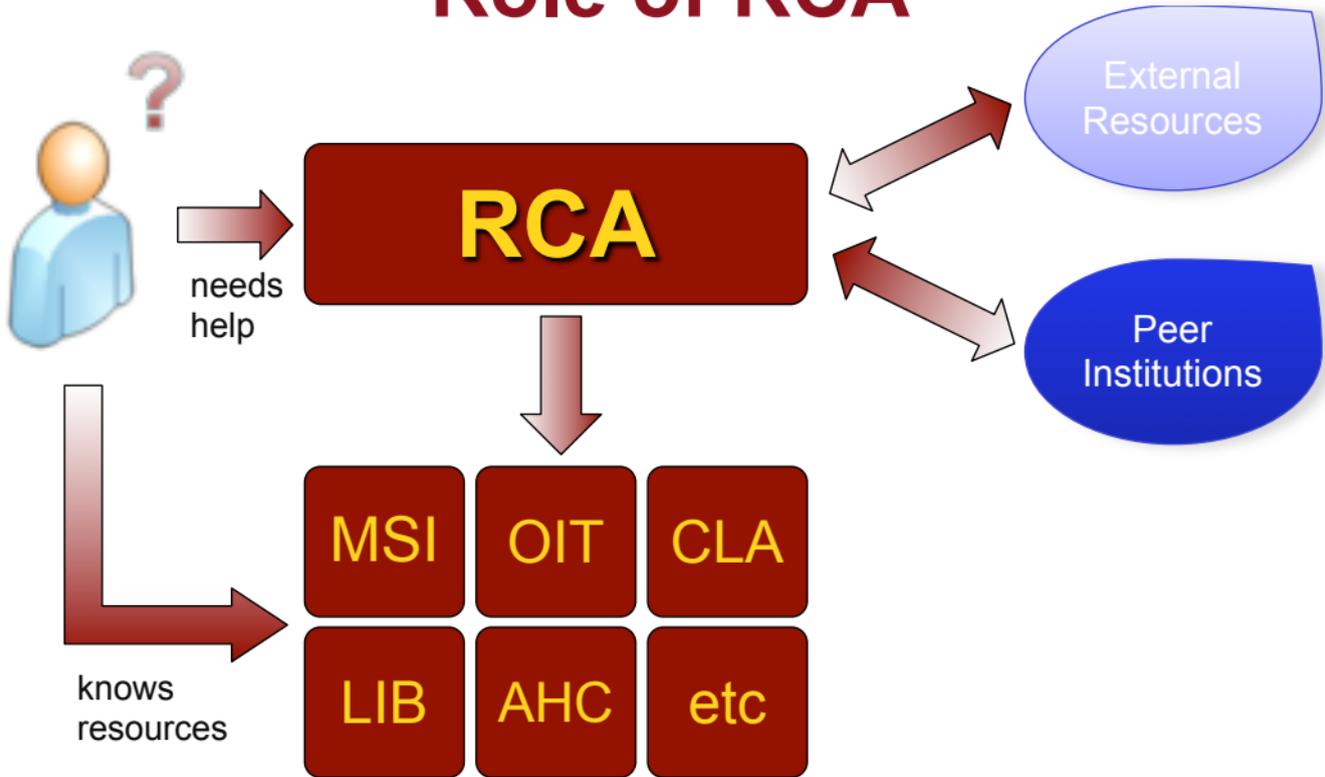


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# Our Current Model



# Role of RCA



# The Interviews

~~PI & IT~~

these are all very busy people



# biological macromolecules in solution

a biological simulations research group



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a biological simulations research group

12members 250GBdrives 1TBRAID

bound2researcher jointstudent inheritance

RNAdb code backupadmin

queues supercomputing msi



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# magnetic resonance imaging

a medical imaging laboratory



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a medical imaging laboratory

alltrades **auditor** centralservers

littlesupport webapps **osstoolkits** virtualization

**cmrr5TBlimit** bottleneck

tossthemiddle **AFS**



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# saving the world with bill and melinda

a worldwide data harvest project



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a worldwide data harvest project

betterdatasets hosting thirdparties

development storage

tens2hundredsTB CSdept bibdata

commercialoption

agilepartner followon



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# counting the world from minnesota

a large social science research center



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a large social science research center

grant2grant **claoit** digitaldata

networkstorage 35TB+ scrubprivate

**integration** giganet newonoldrefresh

**trust** dimarchive partnership organic



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accessible

**storage**

scaleable

sharable

grant2grant

**flexifunding**

nopayasyougo

**seed**

domainaware

**assistance**

sysadmin engineering development

planningstage

collaborate

**ready**

campuslevel

**partner**



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# The Interviews Suggest

layered approach  
core tech, interfacing staff

CLA-OIT model

university not in a vacuum



# Research Computing at CLA

- History
  - Established by faculty
  - Grown “organically”
  - Merged into OIT as a mature organization
- Model
  - Researcher-driven
  - Medium-scale
  - Inexpensive
  - Centrally funded
- Challenges
  - Collaborative research
  - Growing pains
  - Security and privacy



# From Here to Enterprise: Major Gaps

- Infrastructure and Coordinated Services
- Capacity that Scales to Demand
- Expertise Leveraging and Alignment
- Economic Models



# Hubs and Nodes: Coordinated Tiered Services

- **Share what makes sense to share**
  - Global and research domain networks
  - Institutional
  - College, Center, PI
- **“Servers vs services”**
  - **Servers**
    - Hardware, system administration, network administration, database administration
  - **Services**
    - Shared applications and databases, information systems, service management, compliance, data life cycle management (expertise in metadata and data archiving, data access and re-use).



# Sponsors Speak

- **Meaning** – communications and nomenclature
- **Structure** – think pyramidally
- **Core services** – identify and move forward, faster
- **Economies of scale imperative**
- **Structural barriers** – contrasting funding models, operating policies and practices across units
- **Value proposition** – “eyes of the researchers”
- **Harness what we have** – leverage the expertise and resources in all corners of the organization



# Contact Information

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