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 21st 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

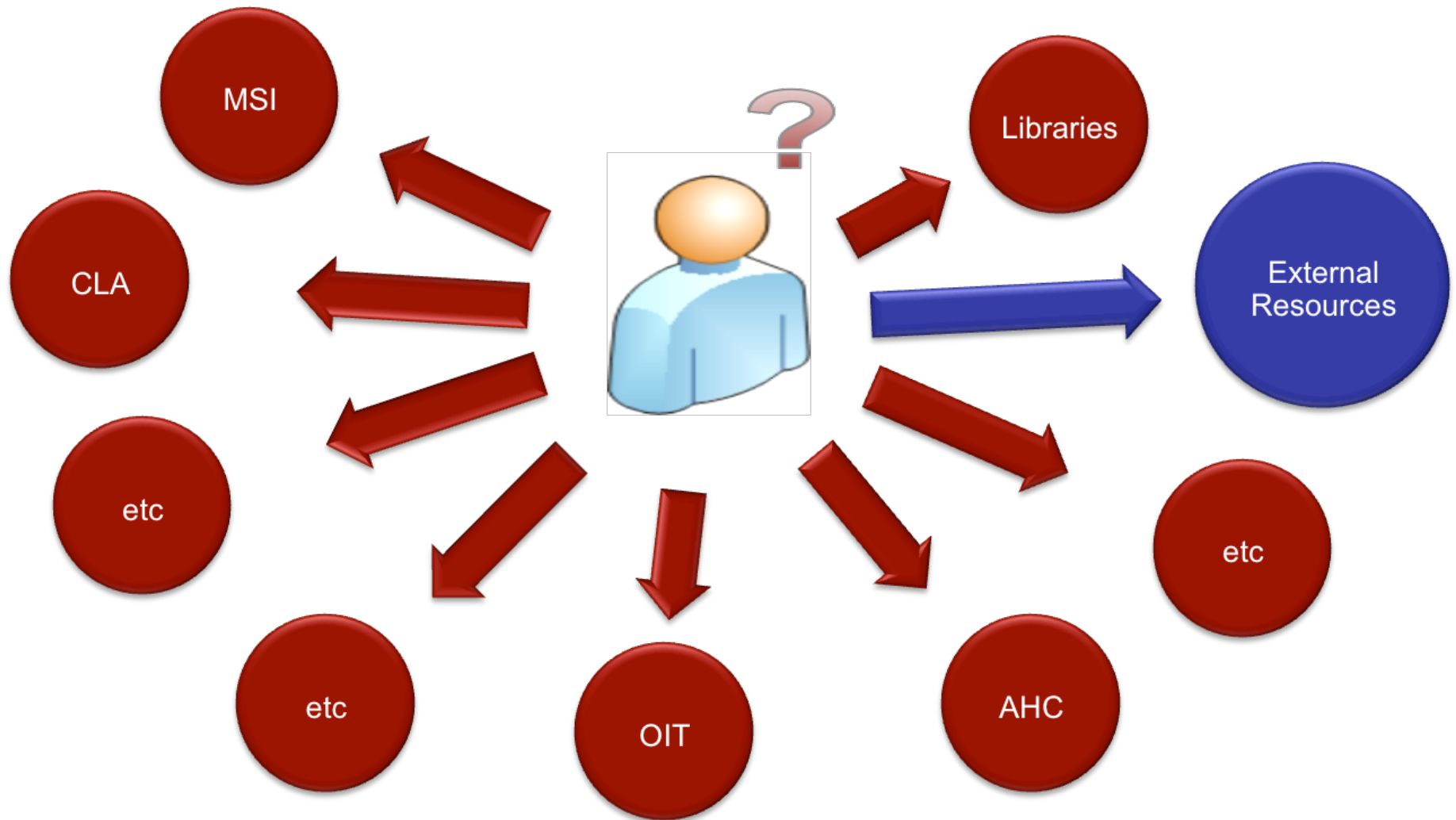UNIVERSITY OF MINNESOTA

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Proposed Vision

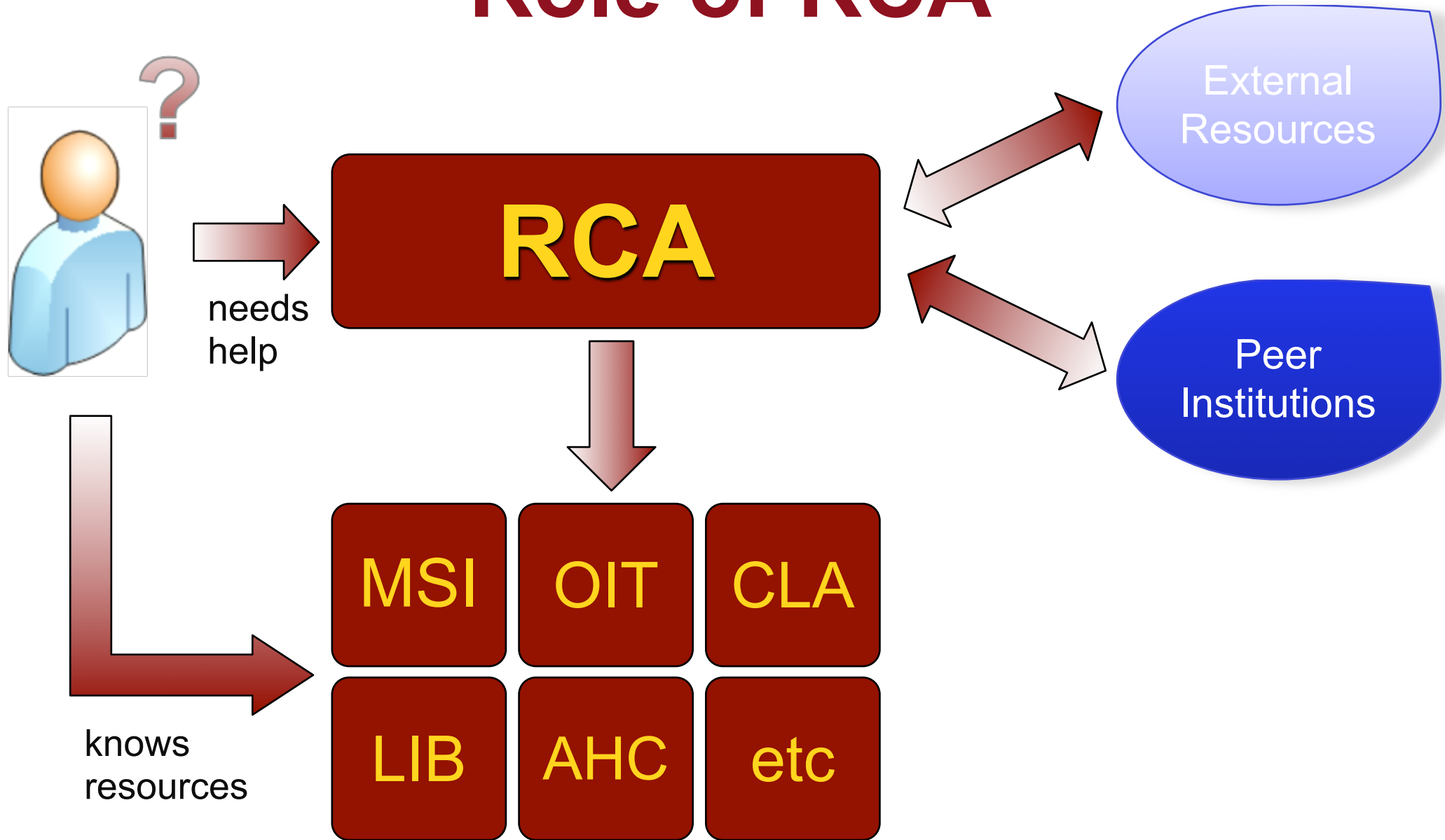UNIVERSITY OF MINNESOTA

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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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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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Photo Credit: Wheat by Bern@t

counting the world
from minnesota

a large social science research center

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a large social science research center

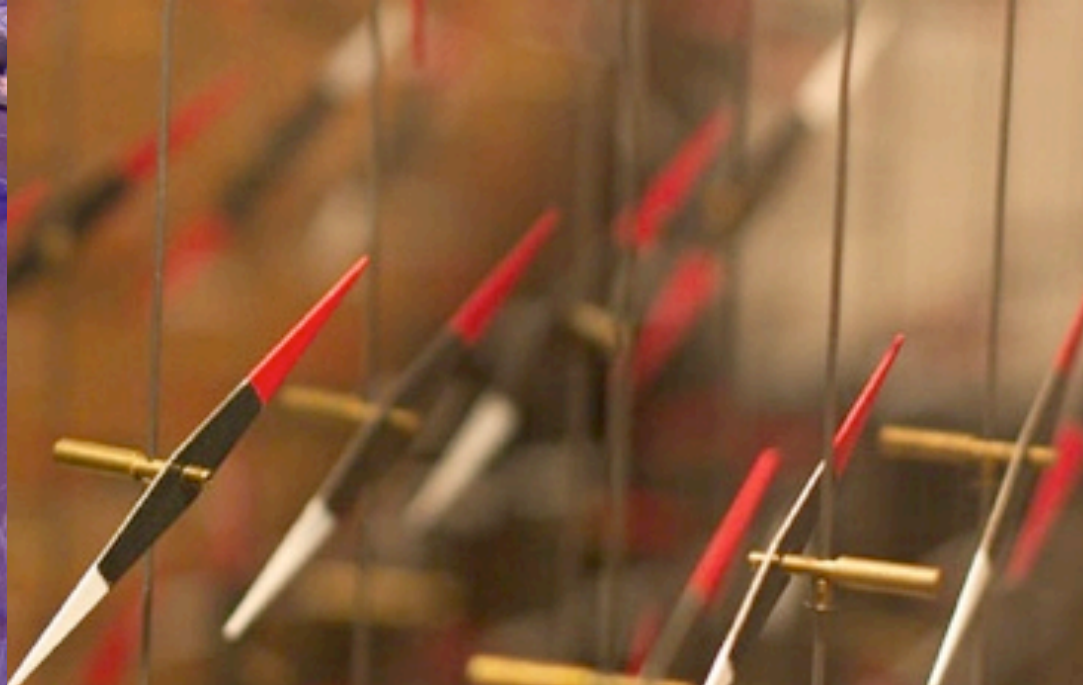grant2grant　claoit　digitaldata

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

campuslevel

ready

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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