

NCSA RESEARCH & EDUCATION

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CREN CHARGE

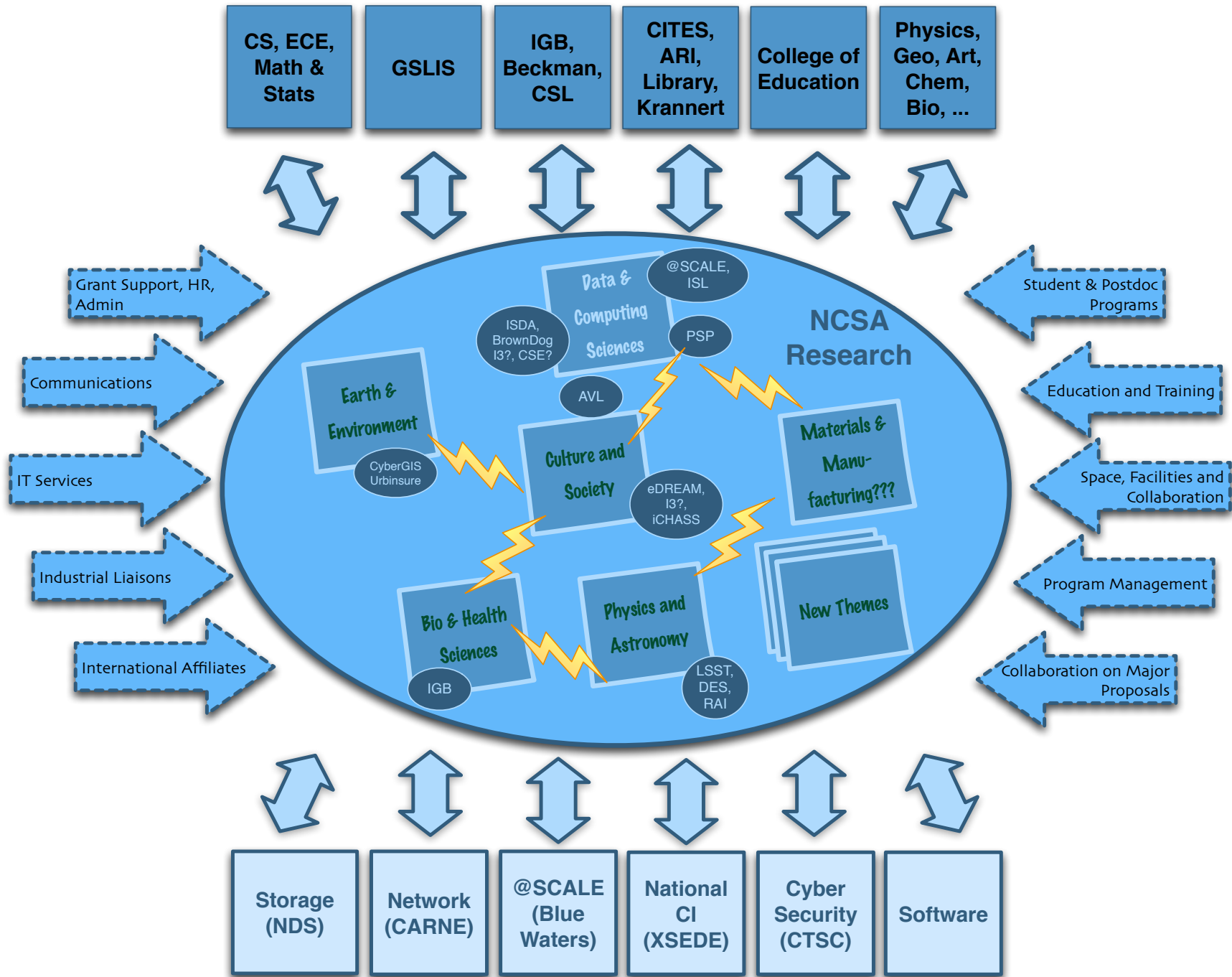
NCSA provides an important resource for the University of Illinois at Urbana-Champaign, with particular relevance for campus units engaged in, or impacted by, research and education activities around large-scale computation and big data.

To ensure that it functions as an integral part of the UIUC R&E enterprise, NCSA should establish an ad hoc committee to provide advice and counsel to the NCSA Director on how to engage effectively with faculty and researchers on the campus, to develop and organize a highly integrated set of R&E activities at NCSA.

To that end, the CREN is charged with making recommendations on how NCSA can

- provide a rich and inviting atmosphere that draws leading faculty and researchers from across the campus, and fosters interdisciplinary and innovative research in all aspects of computing and data;
- become a functional, collaborative choice for faculty and staff for innovative research into high performance computing and big data activities;
- set strategic goals and specific directions, leveraging NCSA resources for improving the UIUC educational environment, and for further developing programs in scientific computing, computational science and engineering, and data analysis;
- complement other major UIUC interdisciplinary research institutes, such as Beckman, IGB, CSL;
- organize a long term advisory structure for NCSA that would help guide the Director of NCSA in areas such as enhancement of NCSA's connection with the local campus as well as national and international research communities after the CREN makes its final recommendations.

These recommendations should be made to the Director of NCSA within 3 - 6 months of the constitution of this committee and should include recommendations of specific goals and milestones for NCSA to consider over the next 1, 2 and 5 years, as well as highlight any perceived risks and opportunities.



NUMBERS

- ~ 10 THEMATIC AREAS
- 2-4 CORE FACULTY PER THEMATIC AREA
- 1 STAFF, 2 POSTDOCS, 10 STUDENTS PER FACULTY GROUP
- 30 FACULTY
- 30 STAFF
- 60 POSTDOCS
- 300 STUDENTS

INTERIM THEMATIC AREAS

- **Earth and Environment (Shaowen Wang)**
- **Culture and Society (Donna Cox)**
- **Physics and Astronomy (Athol Kembball)**
- **Bioinformatics and Health Sciences (Victor Jongeneel)**
- **Materials and Manufacturing (Narayan Aluru)**
- **Computing and Data Sciences (Gabrielle Allen)**

THEMATIC AREAS

- NCSA faculty-led research organized through a set of thematic areas, each with 2-6 NCSA faculty and additional faculty affiliates, and several research groups.
- Address major challenges or opportunities that are complex, multifaceted, and interdisciplinary, going beyond traditional individual/departmental efforts, requiring a deep connection to NCSA technologies and expertise.
- Theme characteristics include:
 - Broadly defined with a portfolio of component research projects spanning multiple inter-related activities
 - Contribute to the nation's advanced cyberinfrastructure programs
 - Involve faculty from multiple home departments and colleges.
 - Align with and advance the Illinois Strategic Plan.
- Each theme and research group will have a faculty lead designated by the Director.

FACULTY AFFILIATIONS

- Faculty at NCSA can be either core faculty or affiliate faculty depending on their level of engagement. Core faculty perform a significant amount of their research at NCSA, typically all their advanced and interdisciplinary computational/data/cyberinfrastructure research activities, and have full-time NCSA students/postdocs/staff. Affiliate faculty are full NCSA members but not typically hosting research activities at NCSA.
- **Appointment Title:**
 - Faculty appointed as **NCSA core faculty** will receive zero percent joint appointments. Titles for joint appointments follow the rank accorded by the home departments.
 - NCSA Faculty status will be granted only to faculty with a tenured or tenure-track rank of Professor, Associate Professor or Assistant Professor in an academic unit at the University of Illinois at Urbana-Champaign.
 - Faculty appointed as affiliates will receive the joint appointment title of “NCSA Faculty Affiliate”.

CURRENT NCSA FACULTY AFFILIATIONS

- 23(+) Faculty affiliated with NCSA
- 10 NCSA staff have research/adjunct faculty appointments
- New appointments since January 2014
 - Victoria Stodden (GSLIS), Bertram Ludascher (GSLIS), 7 faculty affiliates through the “NCSA Faculty Fellow” program
- Additional faculty associated through NCSA centers/institutes, including:
 - eDREAM (Emerging Digital Research and Education in Arts Media Institute)
 - iChass (Institute for Computing in Humanities, Arts and Social Sciences)
 - CyberGIS (Center for Advanced Digital and Spatial Studies)
 - UrbInSuRe (Urban Informatics for Sustainability and Resilience Center)
 - Blue Waters Faculty

EXPECTATIONS

- **NCSA Faculty and to a lesser extent Faculty Affiliates are expected to play a role in determining the direction and success of Themes. They are expected to make significant commitment of intellectual effort and time to research and other NCSA activities. Examples include:**
 - **Leadership within a research program consistent with NCSA mission and goals.**
 - **Success in obtaining funding from federal agencies and the private sector to support the research program.**
 - **Identification of new opportunities for applying NCSA expertise including potential funding sources**
 - **Publication and presentation of advances in cyberinfrastructure applications and technologies.**
 - **Service as an internal leader in partnering with other faculty and researchers on campus, nationally, and internationally.**
 - **Represent NCSA on and off campus through presentations, participation and/or leadership in writing reports and papers associated with their activities.**

SOME CHALLENGES

- Providing faculty with the right environment and incentives
- Selecting the right thematic areas
- Recruiting the right faculty
- Partnering with home departments to mutual benefit
- Measuring impact (and potential impact)

RECRUITING FACULTY WITH DEPTS

Opportunities exist for joint faculty appointments at all levels with the National Center for Supercomputing Applications (NCSA). NCSA is developing interdisciplinary faculty-led research groups around major scientific data and scientific computational challenges which are complex, multifaceted, and interdisciplinary, going beyond traditional individual/departmental efforts, and which require a deep connection to the center's technologies and expertise, including the Blue Waters supercomputer funded by the National Science Foundation. Qualified candidates may also be hired as Blue Waters Professors who will be provided substantial allocations on and expedited access to the supercomputer. To be considered as a NCSA joint appointment and/or a Blue Waters Professor, candidates need to mention NCSA and/or Blue Waters as appropriate as one of their preferred research areas in their online application, and include a reference in their cover letter.