



Collaborations between SBE and ACI

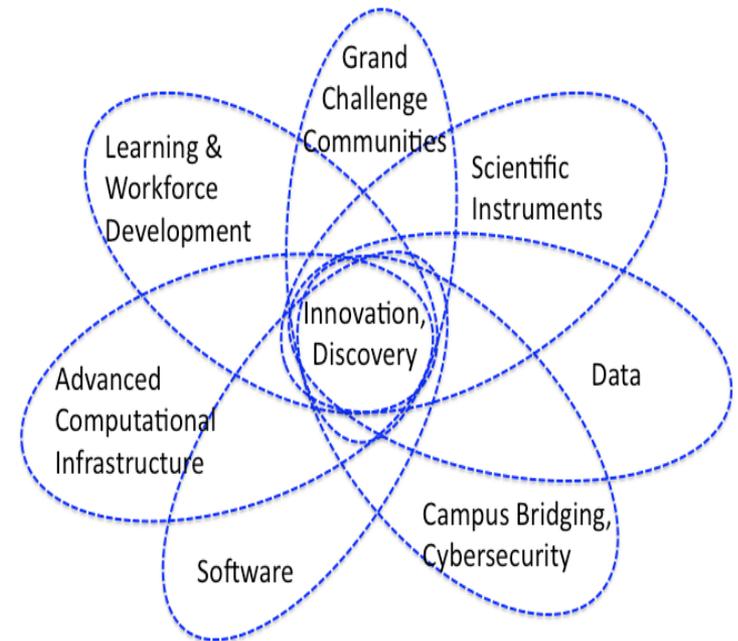
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Oct. 30, 2014

NSF's CI Vision for 21st century Discovery: People, Needs, Sustainability

Strategies:

1. Domain discovery, innovation, and community building
2. Coordinated, integrated infrastructure
3. Foundational research in core CI and in use of CI
4. Development of a diverse workforce
5. Culture, norms, incentives, policies, career paths

Vision: cyberinfrastructure as an ecosystem



NSF Advisory Committee for Advanced Cyberinfrastructure (ACCI)

3. Objective and Scope of Activities The Committee provides perspective and advice to the National Science Foundation (NSF) on the agency's plans and programmatic strategies to develop and support a state-of-the-art cyberinfrastructure that enables significant advances in all fields of science and engineering supported by the agency.

4. Description of Duties The Committee will advise the NSF on program management, overall program balance, and other aspects of program performance. The committee may advise as to the impact of overall NSF-wide policies on the cyberinfrastructure community. The Committee will provide an important base of contact with the scientific community encompassed by the various disciplines of the Foundation's cyberinfrastructure portfolio.

<http://www.nsf.gov/cise/aci/advisory.jsp>

CLG: Coordination across Directorates

- Coordinate cyberinfrastructure (CI) investments across NSF
- Serve as a liaison to support directorates' activities
- Update and receive guidance from the AD Council
- Identify & support CIF21 activities, which are a subset of NSF CI investments
- *Representatives appointed by directorates:*
 - BIO: Jim Deshler, DBI
 - CISE: Erwin Gianchandani, CNS
 - EHR: John Cherniavsky, DRL
 - ENG: Eduardo Misawa, EEC
 - GEO: Eva Zanzerkia, OAD
 - MPS: Patricia Knezek, AST
 - SBE: Jeryl Mumpower, SES
 - OIIA: Graham Harrison, OISE
 - BFA: Matthew Carnavos, BD
- *Co-Chairs:* Tom Russell, MPS/DMS, and Mark Suskin, CISE/ACI

NSF Cyberinfrastructure (ACI) is part of the CISE Directorate and responsible for NSF-wide CI coordination and support

Computer and Information Science and Engineering (CISE)

Division of Advanced Cyberinfrastructure (ACI)

Data

High Performance Computing

Networking/
Cybersecurity

Software

Division of Computing and Communications Foundations (CCF)

Algorithmic Foundations

Communication and Information Foundations

Software and Hardware Foundations

Division of Computer and Network Systems (CNS)

Computer Systems Research

Networking Technology and Systems

Division of Information and Intelligent Systems (IIS)

Cyber-Human Systems

Information Integration and Informatics

Robust Intelligence

Core Research Programs



Recent Examples of ACI/SBE Collaboration:

- **NSF Public Access Initiative (led by SBE)**
- **NAS Study: Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science and Engineering in 2017-2020**
Interim Report: http://www.nap.edu/openbook.php?record_id=18972
- **Data Infrastructure Building Blocks (DIBBS) Program**
 - The DIBBS program emphasizes interoperable, deployable cyberinfrastructure pilots that support a broader research community.
 - Activities must demonstrate a strong and credible connection to the communities they serve, and address potential usage by other communities.
 - 2014 DIBBs Solicitation: 17 awards
 - Pilot Demonstrations 15
 - Early Implementations 2

Early Implementation Awards

PI	Organization	Award Title / #	Science Areas / CI Issues
Fox, Geoffrey	Indiana University <i>Collaborators:</i> Arizona State Emory University Rutgers U U Kansas U Utah Virginia Tech	Middleware and High Performance Analytics Libraries for Scalable Data Science [#1443054]	<ul style="list-style-type: none"> • Develops middleware for data-intensive analytics and a library of parallel data analytics algorithms. • Makes a new platform (HPC-ADBS) available for data-intensive computations in a parallel architecture; • Application and testing in seven different communities: (1) HPC biomolecular simulations, (2) network science and computational social science, (3) computational epidemiology, (4) computer vision, (5) geospatial / GIS, (6) remote sensing / ice sheet mass balance, and (7) pathology Informatics. • Plans to broaden impact by working with several groups: NIST Big Data working group, Research Data Alliance, Apache and XSEDE.
Koedinger, Ken	Carnegie Mellon University <i>Collaborators:</i> MIT Stanford U Memphis	Building a Scalable Infrastructure for Data-Driven Discovery and Innovation in Education [#1443068]	<ul style="list-style-type: none"> • Enhances accessibility, integration, and analysis for a wide range of data types (audio, MOOCs); • Develops a data infrastructure for the learning sciences community, • Creates a hub (LearnSphere) providing access to data, local and cloud-based storage, and a library of analytical methods and workflows; • Builds on NSF Science of Learning Center (DataShop repository). <p><i>[Co-funded by EdHR and SBE]</i></p>

Pilot Implementation Awards

PI	Organization	Award Title / #	Science Areas / CI Issues
Reiter, Jerome	Duke University	An Integrated System for Public/Private Access to Large-scale, Confidential Social Science Data [#1443014]	Integrated system for disseminating large-scale social science data. Includes redaction, access to confidential data via secure remote access, and a verification server that allows users to assess the quality of their analyses with the redacted data. <i>[Co-funded by ACI/Security and SBE]</i>
Wang, Shaowen	UIUC	Scalable Capabilities for Spatial Data Synthesis [#1443080]	Develops a suite of scalable capabilities for spatial data synthesis on top of cloud computing and CyberGIS infrastructure. Applies capability to two cases (urban sustainability and population dynamics); Includes features such as uncertainty analysis. <i>[Co-funded by SBE]</i>



Thematic Areas of Engagement

- Data Policy and Research Cyberinfrastructure
- Privacy / Confidentiality within Research Infrastructure
- Infrastructure Research related to SBE scientific priorities
- Cyberinfrastructure for multidisciplinary/interdisciplinary advances
- Learning and workforce development to enhance use of cyberinfrastructure
- Sustainable Cyberinfrastructure (e.g. software, data)

Thank you