

CHAPTER 5

IGERT Looking Ahead FY 2008-2009

To inspire and transform....

NSF advances scientific discovery by supporting transformational and distinctive new capabilities – those innovations in research and education that move discovery well beyond the boundaries of current knowledge.

– NSF Strategic Plan

The IGERT program looks forward to continuing at the vanguard of inspiring new and innovative models of transformative interdisciplinary graduate training. Now in its tenth year, the IGERT program continues to innovate not only through grants but also through the management of the program.

As a guidepost for the program, IGERT has adopted three strategies to ensure that the Solicitation and NSF goals that frame the program are addressed:

1. Synthesize and use the knowledge developed by the IGERT program as the basis for articulating and communicating the value of interdisciplinary education, research, and training to IGERT stakeholders, in general.

2. Facilitate and enable learning and communication among the IGERT community to both improve the IGERT program and each IGERT project.
3. Ensure alignment of NSF support, structure, roles, and responsibilities.

Beginning in 2006-2007 for FY 2008-2009 these strategies have led to the following initiatives:

- **Cyber-enabling collaboration and information exchange** among IGERTs and between IGERTs and the NSF and the general public.
 - An upgraded **Solicitation** for FY 2009 which addresses
 - **IGERT Resource Center**— a web-based community for IGERT

- Information dissemination and sharing among IGERTs using tools such as webinars and Access Grid.
- Determining the extent to which IGERTs are aligned with the goals of the new Cyber-enabled Discovery and Innovation initiative (CDI) and overall cyberinfrastructure (CI) initiative.⁹

IGERT Vision

Leading the nation in enabling transformative interdisciplinary graduate education through knowledge, ideas, practice, evaluation, and dissemination.

⁹ Umesh Thakkar – IGERT Linkages to CDI and CI; DGE Internal Report, 2007.

- **Improvements in project monitoring and post award oversight:**

- Enhanced methods of annual report collection which foster sharing accomplishments in research, education, and by trainees as well as sharing and disseminating learning and data from all IGERTs. This annual report is an example of the use of these data.
- Upgraded final reporting and dissemination to the entire NSF.

- **Evaluation** of IGERT with respect to trainee achievements after graduation with a longitudinal study being undertaken in 2008.

- Proposing a series of **workshops to determine the impacts** of integrative interdisciplinary research and education training on institutions, faculty, graduate students, the economy and workforce, and scientific disciplines.

- The first of these, an Institutional Workshop, is scheduled to be held after the IGERT PIs' meeting in May 2008.

- **Continually improving processes** for engagement of and involvement with NSF as a whole through interactions of the IGERT Coordinating Committee and other means, as appropriate.

- Developing a compendium of IGERT **best practices** for sharing across NSF.

The remainder of this chapter gives illustrations of specific initiatives using the IGERT Resource Center and determining the alignment of IGERT with CDI and CI as examples. IGERT encourages readers to view our FY 2009 Solicitation at http://nsf.gov/publications/pub_summ.jsp?ods_key=nsf08540.

IGERT Linkages: Cyber-enabled Discovery and Innovation Initiative (CDI) and Overall Cyberinfrastructure (CI) Initiative

Since the start of the IGERT program, there have been 195 IGERT project awards. In response to the 2006 IGERT program solicitation,¹⁰ 443 preliminary proposals were submitted. Of these, 100 preliminary proposals were invited to submit full proposals. IGERT received 98 full proposal submissions. After the full proposal panel reviews, there were 20 IGERT awards for FY 2007.

As part of the DGE programs' review, these recent IGERT awards and their connections to the emerging NSF

Cyberinfrastructure vision were assessed.¹¹ Connections between these 20 IGERT awards for FY2007 and the new Cyber-enabled Discovery and Innovation research initiative¹² were also defined.

Utilizing Ucinet,¹³ the social network analysis software,¹⁴ various relationships among these projects and NSF directorates in addition to the possible connections to CI and CDI are illustrated.¹⁵ Figure 1 shows how these projects connect to NSF directorates. Each numbered circle

represents a unique IGERT project funded in 2007. The lines illustrate the connection among directorates and IGERT projects. For instance, 12 IGERT projects have possible connections to the Mathematical and Physical Sciences (MPS) Directorate (represented as a green node). Nine of these are new projects (represented as blue nodes), while 3 are renewal projects (represented as red nodes). In this cohort, every IGERT project has connections to at least 2 NSF directorates.

¹⁰ <http://www.nsf.gov/pubs/2006/nsf06525/nsf06525.htm>

¹¹ <http://www.nsf.gov/pubs/2007/nsf0728/index.jsp>

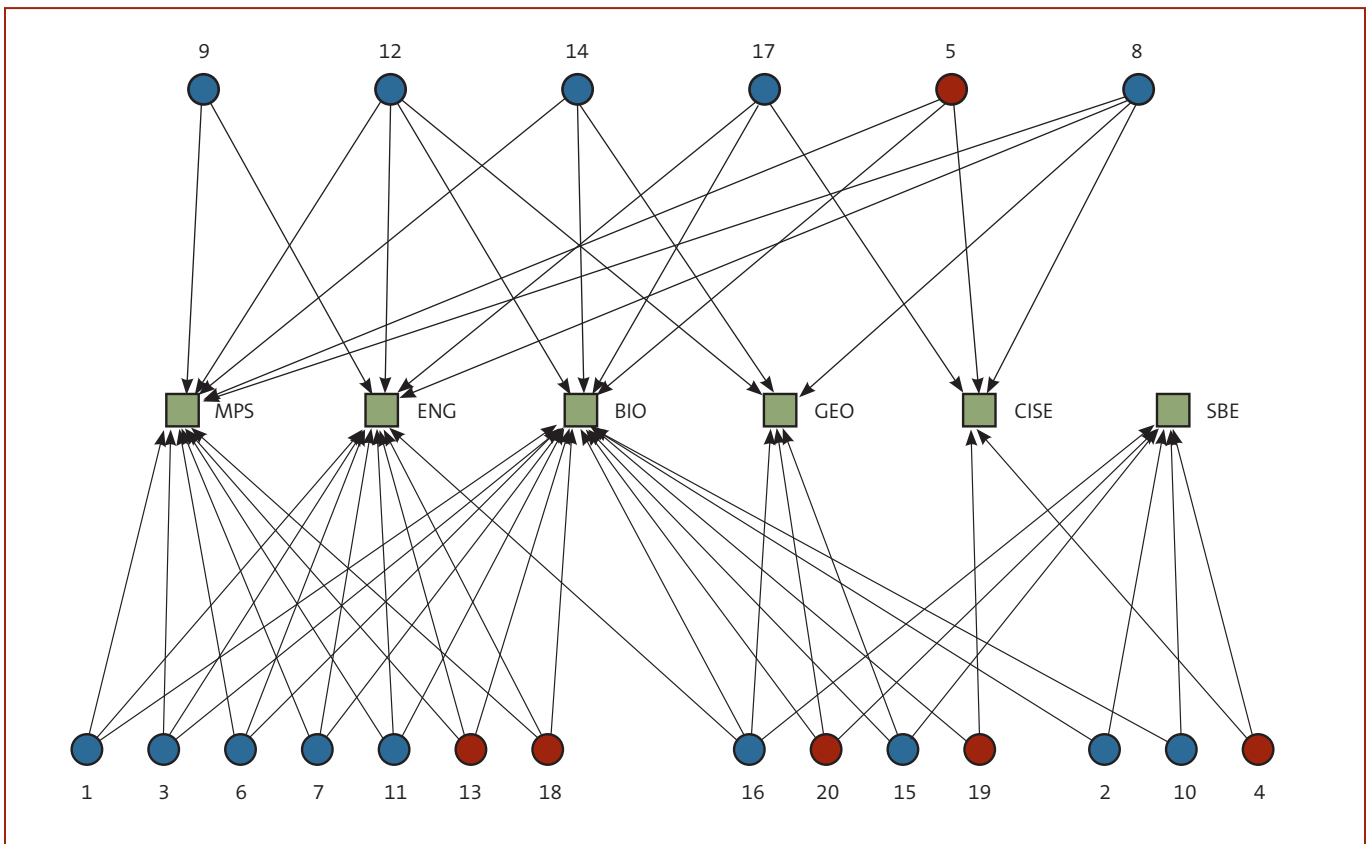
¹² http://www.nsf.gov/about/budget/fy2008/pdf/39_fy2008.pdf

¹³ Borgatti, S.P., Everett, M.G., and Freeman, L.C. (2002). *Ucinet for Windows: Software for Social Network Analysis*. Harvard, MA: Analytic Technologies.

¹⁴ <http://www.analytictech.com/downloaduc6.htm>

¹⁵ In this document, the distances among nodes have no particular interpretation.

Figure 1: IGERT projects and NSF directorates



Eight projects have possible connections to cyberinfrastructure aspects (see Figure 2). For instance, one project (identified as # 8) has connections to 3 CI aspects. This project is

also connected to 4 NSF directorates. For the remaining 12 projects, it was not clear at this time how these projects have connections to cyberinfrastructure. As indicated in

Figure 3, all 20 projects have possible connections to the CDI. The project (identified as #8) has connections to 3 CDI themes.

Figure 2: IGERT projects and cyberinfrastructure aspects

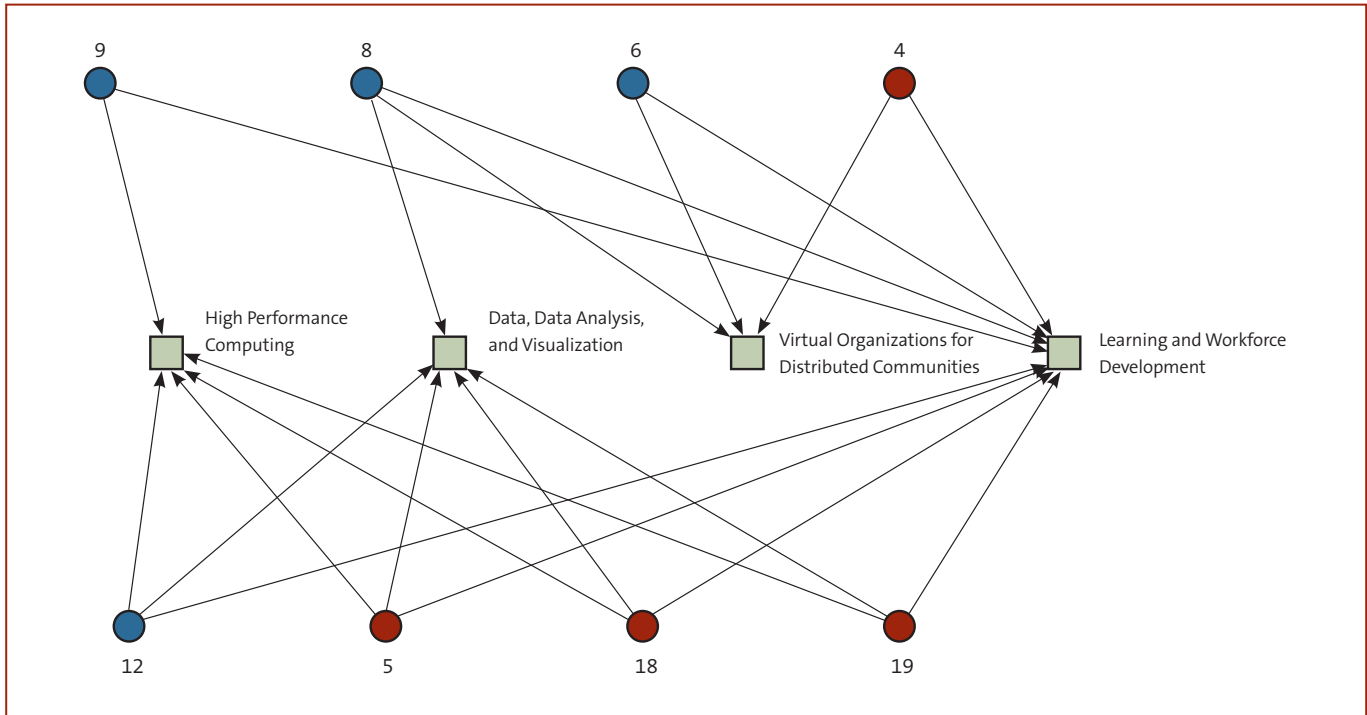
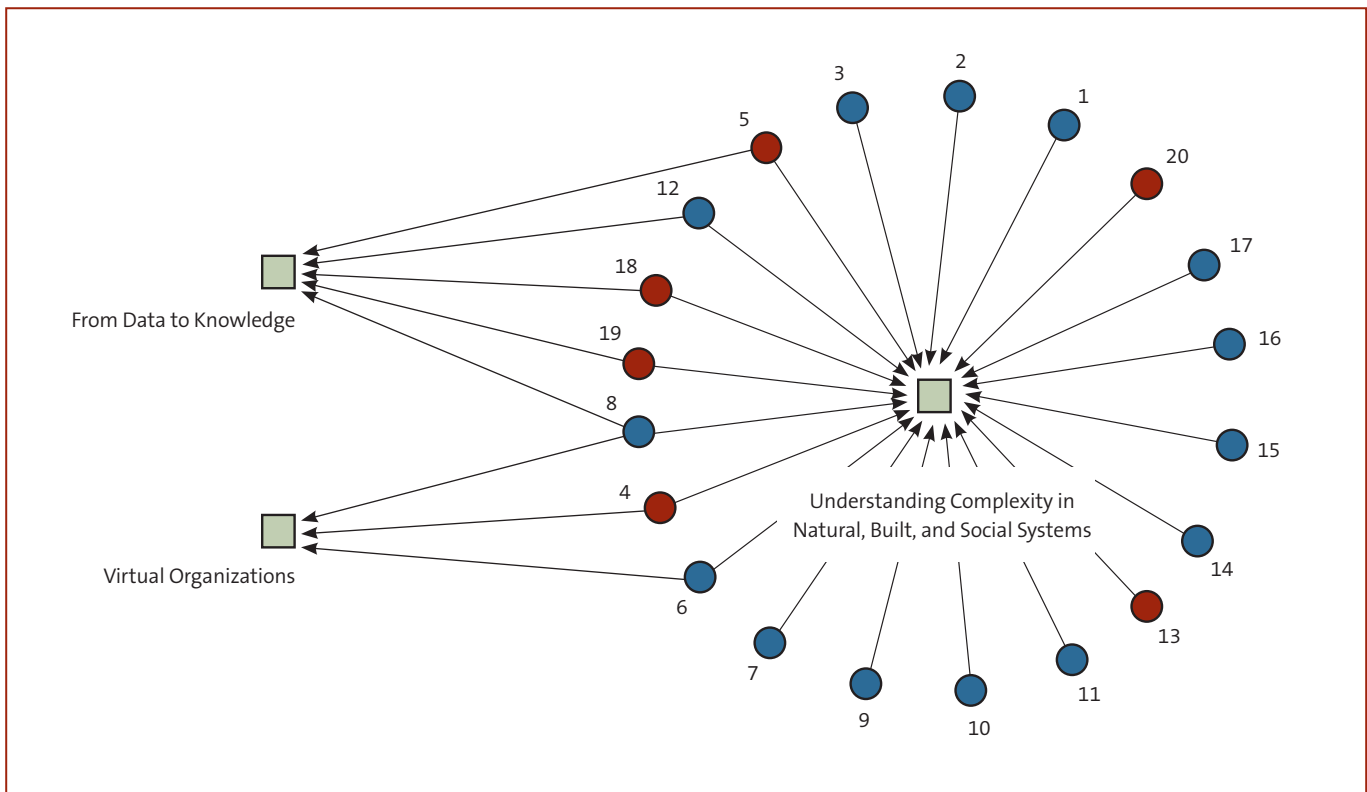


Figure 3: IGERT projects and cyber-enabled discovery and innovation themes



Resource Center

With the release of the FY 2009 grant solicitation, institutions being awarded IGERT grants will be committed to creating a supportive environment for cyber-enabled audio and video collaboration. The suggested tool to provide this form of communication is the Access Grid. Using an ensemble of open source videoconferencing resources developed by Argonne National Labs, Access Grid supports group-to-group (or individual) communication through high-speed networking over the web (Internet-2). It provides high quality audio and video interaction along with capabilities for sharing and interacting with files and applications.

Utilizing Access Grid, program officers, faculty staff, IGERT trainees, and other members within the IGERT community will be able to participate in collaborative discussions with their colleagues from across the country in the comfort of their offices and home institutions. It is anticipated that NSF program officers will have the opportunity to conduct “virtual” site visits. Tremendous savings in both time and money will be realized once the IGERT Access Grid is utilized to its full capacity.

Another new project underway to further facilitate collaboration within the IGERT community is an IGERT Resource Center. It is envisioned that the resource center will provide

information and tools through a web-based, electronic venue for sharing, interaction, communication, and information dissemination. Content items under consideration for incorporation include IGERT bibliographies, facilitated and ad hoc forums, curriculum repository, IGERT library, educational outreach portals, wikis, online virtual workshops, and workshop archives. The resource center is anticipated to be the hub of the IGERT cyber-community and a center for anyone seeking additional information related to the IGERT program.