



# **Expanding Cyber-Communities: *A Workshop on Developing New Models for the Natural, Social, and Human Sciences***

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## **I. Proposals for Conferences, Symposia and Workshop**

**Title:** "Expanding Cyber-Communities: A Workshop on Developing New Models for the Natural, Social, and Human Sciences"

## **II. Cover Sheet Principal Investigator: Cathy N. Davidson, Duke University Co-Principal Investigator: David Theo Goldberg, University of California Humanities Research Institute (UCHRI)**

### **III. A statement of the objectives (summarized in one page or less)**

We propose to convene a workshop in April of 2006 at the University of California Humanities Research Institute to bring together researchers from over a dozen institutions for an intensive meeting to strategize, model, and assess the robust models for cyberinfrastructure that have been developing across our institutions since 2003. Known collectively as HASTAC (Humanities, Arts, Science, and Technology Advanced Collaboratory), the participating institutions have successful records of multiple research and educational collaborations. Participants have had six prior meetings, mostly dedicated to research and development of new projects, planning and theorizing cyberinfrastructure, or planning future events and research protocols. The objectives we seek to achieve from the proposed Workshop would be:

- to assess rigorously the products of the prior collaborations (including software development and application);
- to assemble a Human Sciences Toolbox of existing open source software, search engines, and applications for broad public use by researchers and students in the humanities and interpretive social sciences;
- to create a roadmap of our collaborations that others can follow;
- to make decisions about priorities, including deciding which past efforts should be continued and which put aside in order to ensure maximum success;
- to concretize cyberinfrastructure planning for the ambitious AY 2006-2007 InFormation Year series;
- and, finally, to produce a written document for NSF and for the greater public (posted on the HASTAC website and distributed in our on-line journal *Needle*) that will provide data about our efforts to date and assessments that can inform future policy decisions and provide cyberinfrastructure models for other institutions attempting multi-site collaboration.

Our workshop will bring together, by invitation, engineers and computer scientists from each institutional site, with social and human scientists working on cyberinfrastructure. We are particularly dedicated to analysis of the social structures, human alliances, ethical issues, equity imperatives, historical precedents, interdisciplinary interactions, and

collaborative models of research (both mediated and face-to-face) that are as important for the successful development and application of new technology as the technology itself.

#### **IV. Statement of the Need for Such a Gathering**

Cyberinfrastructure is comprised of social, institutional, legal, scientific, and technological components that, together, are necessary for successful interaction, collaboration, and communication. All of these human factors must be weighed and understood so that the fruits of science and engineering can truly benefit society. Yet the overwhelming differences in scale, resources, expertise, and goals among various user-communities can impede the translation of cutting-edge science into more widely useful applications and can result in the costly development of important tools that never reach all of their potential audiences or that are reinvented at multiple sites with little or no coordination synergy between projects. The HASTAC consortium is dedicated to strategizing new and robust models of cyberinfrastructure by collaborating across and among a variety of communities. Our "Expanding Cyber-Communities" Workshop will allow us to bring together a group of some fifty representatives from over a dozen institutions to report on dynamic and on-going collaborations, to prepare a report for NSF on how these diverse communities have managed to work together as a model for other such collaborations, and, finally, to create the roadmap for an entire year of research-based inter-institutional seminars and public forums that will demonstrate, publicize, and implement models of cyberinfrastructure that others can adapt to their own multi-institutional purposes.

In advance of the meeting, the Workshop Project Manager (WPM) will prepare a survey of efforts and products to date as well as perceived cyberinfrastructure needs for research and teaching in consultation with the institutional leaders, working with each leader to compile uniform data for a shared data base. The WPM will also establish assessment and evaluation guidelines for our "Expanding Cyber-Communities" Workshop. The results of the survey will be distributed in advance of the Workshop and will be the starting place for our discussions. The WPM will also be responsible for providing leadership in creating the agenda for the workshop, handling logistics, sending invitations, coordinating events, and overseeing the production of a written document for NSF and for public dissemination. S/he will also work with the participants to ensure proper presentation of their data (observing all confidentiality and human subjects protocols, both national and site-specific).

The "Expanding Cyber-Communities" Workshop will likewise enable us to finalize cyberinfrastructure planning for an ambitious AY 2006-2007 InFormation Year series, which will consist of seminars, workshops, events, and international conferences across all of the 12-plus participating institutions. These events will all be linked, coordinated, and jointly administered, advertised, and funded. Specific workshop outcomes are expected and will include decisions about the ways each site will continue to develop its particular applications and its designated user-community of participants (ranging from scientists at participating national science centers and research centers to minority- and community-serving institutions, science museums, and K-12 programs). The April 2006

Cyber-Communities Workshop will also enable us to make final decisions on the array of inexpensive and practical communication devices we will use to reach the broadest possible communities (such as intelligent cell phones, iPods for portable media, global access grids, webcasting, videocasts, and local public television and radio channels). The Workshop's formal report to NSF will propose ways that cyberinfrastructure can be shared more effectively by other institutions. Our goal is to help develop cyberinfrastructure to be robust, sharable, and interoperable across varied institutions, and to assess its applications and uses, actual and potential, for a broad range of user-communities.

### **Background**

HASTAC ([www.hastac.org](http://www.hastac.org)) is a voluntary consortium of leading researchers from over a dozen institutions who, together, have been co-developing software, hardware, and cyberinfrastructure systems since early 2003. HASTAC was founded by Cathy N. Davidson, Vice Provost for Interdisciplinary Studies and co-founder of the John Hope Franklin Humanities Institute at Duke University, and David Theo Goldberg, Director of the University of California's state-wide Humanities Research Institute. At a meeting of humanities leaders held by the Mellon Foundation, it was clear that Davidson and Goldberg had been working on a variety of projects with leading scientists and engineers dedicated to expanding the innovative uses of technology and to thinking together about social, ethical, and access issues of cyberinfrastructure in parallel with the process of creating it. Each of them also knew of leaders at other institutions who shared that vision and, within a few months, the HASTAC consortium was born. Members have been meeting twice a year, writing grants together, holding forums, and developing new research initiatives, both at their individual institutions and across them. These individual projects are leading up to a national InFormation Year of programming in AY 2006-07.

### **Two Exemplary Projects**

Two projects by HASTAC institutions will serve as examples of our purpose and illustrate our success to date. Projects include an NSF-funded 3-D modeling system for a virtual museum of diasporic Sikh art, a collaboration between The Sikh Foundation, The Center for Information Technology Research in the Interest of Society (CITRIS) at UC Berkeley and the UC system-wide University of California Humanities Research Institute (UCHRI), located at UC Irvine, as well as the Smithsonian Museum for Cultural History and the Worldwide University Network (WUN) located in England that enables participation of scientists and community leaders from the United Kingdom. This project underscores a HASTAC principle of making sure that end-users (in this case, the worldwide Sikh community) are involved in the research-and-development since the project's inception to ensure that the technology will best suit their needs. The project combines the technological difficulties in creating accurate three-dimensional representations of physical objects with the social-ethical-legal dilemmas facing the fair use of three-dimensional representations of significant art and cultural objects. The cyberinfrastructure modeled in this collaboration extends across multiple institutions with widely varied missions and requires the complex cyberinfrastructure necessary for distance-based research collaborations.

Similar motivations prompted Duke University, as one of five Apple Digital Campuses, to select iPods as the technology with which to conduct a university-wide, user-based experiment. As now has been noted in virtually every news medium, Duke distributed iPods to first-year students and to faculty interested in integrating the iPod into both new and established courses. In keeping with the HASTAC principle of user-inspired and community-based technology development, Duke chose the iPod precisely because it already had tremendous appeal to the students and was the technology that elicited the most creative excitement. Faculty development courses supported the pedagogical aspects and students and faculty were both encouraged to find innovative uses for the iPods. Though roughly only half of the courses succeeded in actually finding innovative uses, the sum of the results are spectacular and, in the fall, Duke will be sponsoring a Podcasting Symposium, part of which will highlight a range of innovative technology developments, many pioneered by the students themselves, from improved podcasting ability itself to adapting the iPods to medical rounds (data bases of heart arrhythmia used for both instruction and clinical purposes) or facilitating the process of orchestral composition for performers and composers. It was a risky experiment with enormous dividends and Duke will be continuing a variation on the experiment again this year. It should be emphasized that much of the iPod impetus and evaluation, as well as the upcoming Podcasting Symposium, was sponsored by the Information Science + Information Studies program (ISIS), a teaching and research program that is Duke's local version of HASTAC.

The HASTAC website details several other such projects as does our on-line newsletter, *Needle*,\* which utilized HASTAC's collectively broad and diverse communications networks to reach over 30,000 individuals in its first preliminary issue. One of our primary leadership institutions, the Annenberg Center at the University of Southern California, has also recently launched its first issue of *Vectors*,† a fully refereed on-line multi-media journal. We know our success and accomplishments have been impressive, all the more so because we have achieved our goals largely through our own institutional channels by maximizing the advantages afforded to each of us in our leadership roles at our respective institutions then pooling these resources through our networks of expertise and communication to create something much greater than the sum of its parts.‡ “The Expanding Cyber-Communities” Workshop will allow us, at this critical juncture, to take stock of all of the multiple parts of our enterprise, and to collect the concrete products into a user-friendly and widely available, open-source Human Sciences Toolbox. It will enable us to create assessment tools for what we have done and to develop a report with enough data and analysis to allow others to profit from the models of cyberinfrastructure we have created. It will also allow us to concretize and finalize what needs to be in place in order to launch our ambitious InFormation Year.

## **The InFormation Year**

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\* [http://dev.binaryjungle.com/uchri/newsletter/needle\\_news.html](http://dev.binaryjungle.com/uchri/newsletter/needle_news.html)

† <http://vectors.impl.annenberg.edu>

‡ Cathy N. Davidson and David Theo Goldberg, “Managing from the Middle,” *Chronicle of Higher Education*, May 5, 2005 (print and electronic versions).

In addition to our on-going research collaborations across the various HASTAC institutions, we are dedicating AY 2006-2007 to an extremely ambitious multi-institutional program. This will include ongoing, cross-institutional, user-based tool development, professional development seminars in cyberinfrastructure aimed at those normally outside the cyberinfrastructure community (including humanists, artists, designers, social scientists, and media experts as well as scientists, engineers, and a range of IT experts). We call this our "InFormation Year" to signal that it is about information technologies but it also is about forming cybernetworks that extend the reach of cyberinfrastructure beyond a specialized scientific community to vast networks of connectivity and interconnectivity. Our key institutional partners are nodes in part of this vast network.

The purpose of this "InFormation Year" is to model, demonstrate, *and* implement cyberinfrastructure at its very best, where the fruits of our various research endeavors—creation of new softwares, hardwares, middlewares—are put into circulation by using the array of communications technologies available. A key feature of our ambition is to help shift the culture of the Humanities, Arts, and Social Sciences regarding implementation of cyberinfrastructure in the everyday practice of research and teaching. The InFormation Year includes:

1. A five-day summer workshop (June 2006) co-sponsored by the University of California Humanities Research Institute and the San Diego Supercomputer Center, with various HASTAC leaders serving as ancillary faculty. This will be a hands-on course designed to introduce social scientists, humanists, and artists to commonly used emergent information technologies such as data modeling, web services, geographic information systems, and grid computing;
2. A Seminar in Experimental Critical Theory on "Technospheres/Digitalities/Humanities," also conducted at UCHRI and including HASTAC faculty. This will be an international two-week long symposium pairing instructive critical interactions between major digital innovators and innovative humanities researchers aimed at humanists, artists, and social scientists concerned with the social implications and possibilities of cyberinfrastructure;
3. Site-specific InFormation seminars at each of the HASTAC sites will focus on faculty development and postdoctoral and graduate student training, with a different topical focus at each site. Topics include Inauthenticity (identity theft, plagiarism, shared authorship), Intellectual Property, In Community, Interaction, Injustice, Interdisciplinarity, Invitation (trust networks, access), Interface, and Inscription (multiple literacies, reading, writing, code);
4. A distributed public lecture series on each of the seminar topics, one per month hosted by the site, pairing a major technology innovator and distinguished exemplar of the human sciences in dialogue about the importance, history, and future of specific technologies. Each lecture will be broadcast and archived, and supported by various innovative software (and data gathering) technologies; and

5. An international conference (April 2007) at Duke University's John Hope Franklin Center with sessions, workshops, demonstrations, and refereed papers on each of the topics of the InFormation year.

All public events will be supported with social softwares that require registration by users. Information gathered from these registration forms will allow us to assess and evaluate the reach and impact of our programming. At the end of the year, we will be able to prepare a full report, analyzing our data and reporting on who has participated, whether locale, race, gender, age, or discipline determine participation, whether participants tune in to one or multiple events, what they think about the events, what they have learned from this year about cyberinfrastructure and its importance to society and to their individual lives, and how it might have impacted their own practice.

### **Conclusion**

In short, the "The Expanding Cyber-Communities" will be key to concretizing the Human Sciences Toolbox, to assessing our progress, to making that evaluation available to NSF and to the public in order that others can adapt the robust model of cyberinfrastructure for their own purposes, and to making the necessary preparations for the ambitious InFormation Year to follow. For maximum efficiency and consistent standards, the evaluation phase of the program will begin in October of 2005, with a project manager preparing a survey for each site and working with the leader at each site to gather data for a report that will be distributed in advance of the meeting and discussed at the Workshop itself. We believe this report will also be useful to NSF in offering new models for the distribution, application, and, indeed, the development of cyberinfrastructure that will facilitate the ways key technologies can have maximum benefit to society and to a wide range of user communities.

### **V. A List of recent meetings on the same subject, including dates and locations:**

Previous meetings of the HASTAC consortium include:

University of Washington Simpson Center, September 16-18, 2005

University of Southern California Annenberg Center, March 1-6, 2005

Stanford University Humanities Laboratory, September 28-October 3, 2004

University of California Humanities Research Institute, May 19-23, 2004

NCSA Access Center, Washington DC January 25-6, 2004

University of California Humanities Research Institute, June 5-6, 2003, UCHRI

### **VI. The names of the chairperson and members of organizing committees and their organizational affiliations.**

Conference Co-Chair: Cathy N. Davidson, Vice Provost for Interdisciplinary Studies at Duke University, co-founder of the John Hope Franklin Humanities Institute, and Ruth F. DeVarney Professor of English at Duke University

Conference Co-Chair: David Theo Goldberg, Director of the University of California Humanities Research Institute (UCHRI) and Professor of African-American Studies and of Criminology, Law, and Society at the University of California at Irvine

Organizing Committee:

Ruzena Bajcsy, Director Emeritus of the Center for Information Technology Research in the Interest of Society (CITRIS) and Professor of Engineering, University of California, Berkeley

Anne Balsamo, Director, Institute for Multimedia Literacy, University of Southern California

Kevin Franklin, Deputy Director, University of California Humanities Research Institute

Tara McPherson, Editor, *Vectors*, and Chair and Associate Professor of Critical Studies in the School of Cinema-Television at the University of Southern California

Jeffrey Schnapp, Director of the Stanford University Humanities Lab, and Professor of Italian and Comparative Literature, Stanford University

Kathleen Woodward, Director of the Simpson Center for the Humanities and Professor of English, University of Washington

Other participants will come from the following HASTAC affiliates: Cal IT 2 (based both at the University of California-San Diego and the University of California-Irvine), National Humanities Center, National University, North Carolina Museum of Life and Science, RENCI (Renaissance Computing Institute, funded by the University of North Carolina at Chapel Hill, North Carolina State, and Duke), Rutgers University, San Diego Supercomputing Center, University of Michigan, and Wayne State University.

**VII. Information on the location and probable dates of the meeting and the method of announcement or invitation.**

The meeting will be held at the UCHRI facility in Irvine, California, in April of 2006 most likely in conjunction with the Irvine facilities of CalIT2 (David Theo Goldberg serves on the Irvine Divisional Council of CalIT2). We will write invitations to each point person at a HASTAC institution and invite that person to come to the meeting with key people representing science, engineering, social sciences, and human sciences from their own institution, as well as the key person or persons representing cyberinfrastructure development at their site.

**VIII. A statement of how the meeting will be organized and conducted, how the results of the meeting will be disseminated and how the meeting will contribute to the enhancement and improvement of scientific, engineering and/or educational activities.**

The two-day workshop will have four sessions.

Morning Day 1: **Plowing the Field (Reports)**: Discussion of reports from each HASTAC site, with data as well as qualitative assessments of accomplishments to date, failures, and projections of what must be in place before AY 2006-2007. Report will be delivered in advance, as coordinated by the Workshop Project Manager.

Afternoon Day 1: **Practicing Cyber-Community**: Focus groups (no more than 10 participants in each group) comprised of members from various sites who are focusing on similar aspects of cyberinfrastructure and comparing data, methods, theories, ideas, and concepts of implementation. The Workshop Project Manager will provide an outline for each Focus Group.

Evening Day 1: **Cyber-Consumption**. Dinner, and speech by John Seely Brown or Dan Reed, both HASTAC advisers, followed by extended discussion of the talk in relationship to cyberinfrastructure models pursued by HASTAC.

Morning Day 2: **Use(r)-Value and Cyber-Networking** Developing a Roadmap for Community-Based and User-Based Cyberinfrastructure. Talks by three key HASTAC leaders/participants addressing these issues.

Tim Lenoir, Duke University

Ruzena Bacsy, CITRIS

Anne Balsamo, USC

Afternoon Day 2: **Assessing the Effort: Final Report**

Discussion led by Davidson and Goldberg as well as Workshop Project Leader. Begin to work out methods and delegation of sections for the report, to be delivered to NSF and posted on the HASTAC website and published in *Needle* by June 1, 2006.

**IX. A plan for the recruitment of and support for speakers and other attendees, that includes participation of groups underrepresented in science and engineering (e.g., underrepresented minorities, women, and persons with disabilities).**

As indicated above, we will work through our HASTAC leaders to determine speakers and other attendees. Our group is already an unusually diverse one, including several women as well as underrepresented racial minorities in leadership roles for HASTAC and at individual sites. All the names mentioned in the proposal are directly connected to HASTAC, participating in our infrastructure development and activities in one capacity or another.