Human
Sciences &
Technologies
Advanced
Research
Institute
STANFORD UNIVERSITY

January 5, 2011

To: Ann Arvin, Vice Provost and Dean of Research

From: Roy Pea, Director, H-STAR
            Keith Devlin, H-STAR Executive Director

Subject: Annual Report for H-STAR for FY 2009–2010[*]
            (Response to email of November 12, 2010)

CONTENTS

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[*] Some confidential personnel and financial details have been deleted from this posted version.

1. Overview

H-STAR is an interdisciplinary research institute, with independent lab status. It includes a research center, SCIL (Stanford Center for Innovations in Learning, established in 2002), with its own faculty director (Roy Pea), and runs an industry partners' program, Media X.

H-STAR focuses on advancing the human sciences, often in the context of their application to the design and uses of information technology and their influences on people. All H-STAR programs conduct research at the intersection of human sciences and information technology in the areas of learning, mobility, collaboration, entertainment and commerce.

We pursue this mission in a number of ways: we organize and service interdisciplinary grants, contacts, and other funding opportunities; we bring together faculty to work collaboratively on projects — both across the campus and in collaboration with faculty at other universities around the world; and we organize events such as lectures, small seminars, workshops and conferences, sometimes through our Media X program.

The total volume for federal and non-federal sponsored research funding awarded to H-STAR in FY10 was $6.0M, of which $3.9M was F&A (indirect cost charges).

Having a broad scope of interest that has commonalities with every School, H-STAR is defined by research mission rather than permanent faculty affiliation; we facilitate, fund, and support research within our mission anywhere on the campus. Nevertheless, H-STAR does have a *de facto* core faculty. A total of 11 Stanford University Academic Council faculty carry out research wholly or principally within H-STAR, and an additional 34 faculty have one of more projects within H-STAR or else are actively involved in H-STAR activities. H-STAR also provides the research base for 24 (non-faculty) Stanford researchers (predominantly senior researchers with doctoral degrees) who are working on projects led by faculty PIs.

H-STAR researchers who reported (some did not) produced 219 research papers, 8 books and 1 patent in the past FY. A complete list is provided as an appendix to this report.

H-STAR employs 25 regular staff (academic and non-academic FTE), of which 6 employees are performing shared administrative support functions, such as research administration, financial, human resources, and building management in two locations, Wallenberg Hall and Cordura Hall. We also currently have 25 casual and temporary employees. In FY10, under academic staff, we supported 30 graduate students.

The primary source of funding for H-STAR research is the normal system of federal and foundation grants. The infrastructure costs (primarily support-staff salaries) required to support the institute's research and outreach activities and to ensure compliance is approximately $**1**M, of which roughly a half is covered by our current allocation from the University. The institute develops the remaining half of the budget from external sources.

2. H-STAR's mission and its relation to the Stanford Challenge

H-STAR's primary research focus is on people and technology — how people use technology, how to better design technology to make it more usable (and more competitive in the marketplace), how technology affects people's lives, and the innovative use of technologies in research, education, art, business, commerce, entertainment, communication, national security, and other sectors of society. H-STAR is also the locus of basic research into the nature of information processing by humans and machines. Among the large, complex, global problems that are at the heart of the H-STAR research agendas are:

- **Reducing complexity of technology** to enable its universal and creative uses for work, learning and other vital sectors of life
- **Closing digital divides** across class, race, gender, age, languages and nations, so that access to and fluencies with technologies can provide equal opportunities to learn and work productively for personal and societal well-being
- **Accelerating innovation** in the creation and diffusion of products and services that better identify and meet human needs
- **Solving security and trust problems** of computing, communications, and information systems at home, work and in governmental affairs
- **Ensuring pervasive safety and health** of people over the lifespan with human-centered technology innovations

Of the eight specific targets listed in the Stanford Challenge, four are highly central to the activities of H-STAR:

1. *Multidisciplinary Research Across the University*. H-STAR's mission is to promote and support interdisciplinary research campus-wide. Over the past six years, H-STAR's Media X program has used income from industry partnership fees to fund around $3.5M of (predominantly interdisciplinary) faculty research across five Schools.

2. *International Initiative*. See Section 7 of this report for the list of H-STAR's extensive activities in the international arena.

3. *Improving K-12 Education*. H-STAR is the only organizational unit on campus focusing on the multi-disciplinary core of theory, research, and methods that are needed for world-class work on the central topics in K-12 learning sciences and technology design. See also section 7 for a description of the NSF funded LIFE Center's research on these issues.

4. *Extending the Renaissance in Undergraduate Education*. While the mission of H-STAR is university research, the H-STAR faculty members are among campus leaders in undergraduate education.

3. How H-STAR works

H-STAR provides affiliated Stanford faculty and researchers with office space, physical and "virtual" meeting rooms (via IP videoconferencing), lecture rooms, lab space, seminars and lectures, printing and copying facilities, secretarial services, the services of administrative,

financial and technical support personnel, assistance with identifying and securing funding for research, and, through the Media X program, contacts with industries relevant to their research pursuits. Most of the faculty in H-STAR are in social science and humanities-affiliated departments (rather than engineering and research-equipment intensive disciplines such as physics), which do not have the extensive infrastructure needed to support the interdisciplinary research projects they wish to pursue.

The primary means for funding H-STAR research is external grants, secured by the faculty and researchers. The administrative and financial support staff of H-STAR provides help and support for faculty in proposal preparation and grant management. H-STAR also takes the initiative to secure large-scale, institute-level research funding that provides support to many institute faculty members when the opportunity arises. In particular, in 2004 the LIFE Center (Learning in Informal and Formal Environments) was established as one of the first three national Science of Learning Centers (SLCs) in partnership with the University of Washington and SRI International. Following a major NSF Site Visit in Spring 2010, the National Science Board approved on December 2, 2010 a funding extension for the final four-year period ($18 million of funding) of the LIFE Center, which thus comprises a full ten-year NSF-funded project of approximately $47M total funding. This Center has funded faculty and students across education, communication, psychology and served as a tremendous interdisciplinary training ground for building capacity in the university for fundamental learning sciences research across schools and departments. LIFE Center faculty are among the core faculty for the new Center for Neurobiological Imaging opening in Jordan Hall during 2011.

H-STAR supports and funds activities across the campus, but the main loci of research are in Wallenberg and Cordura Halls. H-STAR has its administrative offices in Wallenberg Hall and Cordura Hall. In Cordura Hall, in addition to three administrative offices, H-STAR has five multi-person offices devoted to research projects. SCIL is housed in Wallenberg Hall. Media X has two offices and an administrative staff workstation in Wallenberg Hall. An open area of the top floor of Wallenberg Hall is currently used by H-STAR and Media X to house some research projects (for limited periods of time).

4. Major programs within H-STAR

4a. *SCIL.* SCIL conducts scholarly research to advance the science, technology and practice of teaching and learning. It has a strong focus on the multi-disciplinary core of theory, research, and methods that are needed for world-class work on the central topics in learning sciences and technology design. Recognizing that the processes of knowledge creation, discovery and communication in the disciplines make continually deeper uses of technologies that are transforming the very nature of inquiry and scholarly practice, SCIL seeks to make transformative advances in learning and teaching with technologies by bringing together disciplinary faculty to work with experts in education and the sciences of learning as well as with leading designers and technologists.

4b. *Media X.* H-STAR's industry partnership program, Media X, is a self-funded program that seeds campus-wide research and coordinates industry interest. The program currently includes 14 industry partners. The program supports and funds research initiatives on domains involving people and technology, rather than by discipline. Since the program began in 2001, Media X has supported more than $3.5M of Stanford research, spread across over 90 Stanford faculty

PIs, receiving over 200 proposals, representing faculty from all seven schools, and involving over 100 graduate students. Research funding from Media X has been in the form of seed grants to support early investigation of promising ideas that show likelihood of leading to larger projects. Media X research funds are open to all researchers in the Stanford community, and preference is given to novel interdisciplinary collaborations. Many of these "seed" funded projects leverage large federal and foundation grants (bringing faculty and student work closer to societal impact through commercial diffusion.) A significant number have led to new interdisciplinary proposals for federal and foundation grants that build on the Media X seed projects. (See *Section 10* for more details about Media X.)

4c. ***Energy Project*** This $6.2M, two-year project, commended in January 2010, focuses on the development of an interactive software system that encourages people to be more energy efficient at home. The funding includes $4,992,651 from the U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) and about $1.28 million in matching grants from Stanford and the California Energy Commission. The PI is Byron Reeves.

Smart meters and related sensing technologies promise that energy information will change energy use. Poorly designed interactions with energy information, however, jeopardize billion dollar infrastructure investments. The current problems are numerous: sensor information is complex and dull, incentives are inappropriate, interactions with energy information are poorly designed to modify behavior, and social context is ignored. These problems all involve the intersection of human behavior and technology.

The goal of this initiative is to develop a comprehensive human-centered solution that leverages the anticipated widespread diffusion of energy sensors to significantly reduce and shift energy use. Our major innovation is the creation of a transformative system that combines behavioral techniques with human-centered design, computation, and technology to affect energy behavior. The work involves a collaboration of Stanford University researchers and energy industry leaders that was formed in 2008 to establish a new concentration in energy and human behavior. Our group will conduct research, build systems, and test solutions at scale in the field.

Our initiative has four parts: (1) a software platform that enables behavioral programs to be implemented at scale; (2) behavioral interventions to reduce and shift energy use; (3) data modeling that incorporates behavior into prescriptive engineering and economic analyses; and (4) an extensible energy communication network to enable future innovation. The behavioral interventions include technology (behavioral analytics, human-centered computational infrastructure), media (interaction design, social networking, games and feedback interfaces), policy (behavioral economic incentive programs) and community (schools, NGO's, utility and social organizations).

4e. *CTEL/CLAD* The Stanford Online CTEL/CLAD Program is a pioneering program of technology-enhanced learning, taught by Stanford School of Education faculty Kenji Hakuta and Guadalupe Valdés and operated by H-STAR. The program leads to the California CLAD credential, a professional K-12 teaching credential required by the State for any public school teacher providing instruction to English Learners.   CTEL stands for California Teacher of English Learners, and CLAD stands for Cross-cultural, Language, and Academic Development. As part of their coursework, participants in the Stanford Online CTEL/CLAD program analyze videos of teacher practice in real classrooms and engage in carefully selected readings through three online courses. Participants learn about the latest methods in teaching English language

learners and are introduced to education policy and the scientific fields of linguistics, human learning, and anthropology as they pertain to English learners. Since it began its online operations in 2003, the Stanford Online CTEL/CLAD Program has serviced 1,900 teachers. The program has served over 85 school districts, the majority of which are in California.

Total number of program graduates to date: 1,900 students
Total number of enrollees in AY 2009-2010: 367
Number currently enrolled: 159

Among the school districts served by the program are:

Los Angeles USD 75
San Francisco Unified School District 52
Palo Alto Unified School District 38
Modesto City Schools 27
Long Beach Unified School Districts 23
Stanford New Schools 16
Juneau (Alaska) School District 11
Oakland Unified School District 10
Atascadero Union High School District 9
Liberty Union HSD 7
Lucia Mar USD 6

Morongo Usd 6
Ravenswood City School District 6
San Ramon Valley USD 6
Castro Valley Unified School District 5
Fremont union high school district 5
Moraga School District 5
San Jose Unified School District 5
Santa Clara Unified School District 5
Santa Ynez Valley Union High School District 5
Simi Valley Unified School District

5. Faculty and researchers in H-STAR

5a. *Core faculty members of H-STAR*

The following 11 Academic Council faculty carry out research wholly or principally within H-STAR:
1. Bailenson, Jeremy, (Department of Communication)
2. Barron, Brigid (School of Education)
3. Blikstein, Paulo (School of Education; courtesy, Computer Science)
4. Goldman, Shelley (School of Education)
5. Hagström, Stig (Materials Science and Technology)
6. Hakuta, Kenji (School of Education)
7. Nass, Cliff (Department of Communication)
8. Pea, Roy (School of Education; courtesy, Computer Science)
9. Reeves, Byron (Department of Communication)
10. Schwartz, Daniel (School of Education)
11. Valdés, Guadulape (School of Education)

5b. *Affiliated Stanford Faculty*

The following additional 34 Academic Council faculty have some research projects within H-STAR, or participate actively in one or more H-STAR programs. Those that have received research funding from H-STAR are marked with an asterisk.

1. Altman, Russ (School of Medicine)*
2. Bailey, Diana (Department of Management Science and Engineering)*
3. Berman, Russell (Department of Comparative Literature)
4. Bienenstock, Arthur (Wallenberg Research Link)
5. Carstensen, Laura (Department of Psychology)
6. Chafe, Chris (CCMRA)*

7. Clark, Herbert (Department of Psychology)
8. Cook, Karen (Department of Sociology)
9. Cutkosky, Mark (Department of Mechanical Engineering)*
10. El Gamal, Abbas (Department of Electrical Engineering)*
11. Genesereth, Michael (Department of Computer Science)
12. Guibas, Leonidas (Department of Computer Science)*
13. Hanrahan, Pat (Department of Computer Science)*
14. Heer, Jeffrey (Computer Science)
15. Heller, Craig (Department of Biology)
16. Hinds, Pamela (Management Science and Engineering)*
17. Iyengar, Shanto (Department of Communication)*
18. Klemmer, Scott (Department of Computer Science)
19. Koltun, Vladen (Department of Computer Science)*
20. Krawinkler, Helmut (School of Engineering)*
21. Law, Kincho H. (Dept of Civil and Environmental Engineering)*
22. Leifer, Larry (Department of Mechanical Engineering)
23. Levis, Philip (Department of Computer Science)*
24. Levoy, Marc (Department of Computer Science)*
25. Lewenstein, Marion (Emeritus, Department of Communication)
26. Lunsford, Andrea (Department of English)
27. Musen, Mark (School of Medicine)
28. Perry, John (Department of Philosophy)*
29. Salisbury, Kenneth (Departments of Computer Science and Surgery)*
30. Schnapp, Jeffrey T. (Stanford Humanities Laboratory)*
31. Wagner, Anthony (Department of Psychology)
32. Wandell, Brian (Department of Psychology)
33. Willinsky, John (School of Education)
34. Winograd, Terry (Department of Computer Science)

5c. *Stanford researchers in H-STAR*

The following 24 Stanford and Stanford associated researchers (the majority of whom are senior scholars with doctoral degrees) have a significant affiliation with H-STAR (an asterisk indicates that the researcher has received funding from H-STAR, mostly through Media X):

1. Barbagli, Federico (Computer Science)*
2. Bennetsen, Henrick (Stanford Humanities Lab)*
3. Chen, Helen (H-STAR)
4. Chin, Doris (H-STAR)
5. Devlin, Keith (H-STAR, CSLI)
6. Fern, Veronica (H-STAR)
7. Fogg, B.J. (H-STAR)
8. Frampton, Matthew (H-STAR)
9. Fruchter, Renate (Engineering)*
10. Go, Janet (H-STAR)*
11. Grossman, David (Center for Design Research)*
12. Charles H. House, Media X
13. Huang, Camillan (H-STAR)
14. Kunz, John (Civil and Environmental Engineering)*
15. Kwong, Henry (H-STAR)
16. Levitt, Raymond (Civil and Environmental Engineering)*

17. Martin, Caitlin (H-STAR)*
18. Rosen, Joseph (H-STAR)*
19. Rosenberg, Duska (Royal Holloway University, London)
20. Martha Russell, Media X
21. Van der Loos, H.F. Machiel (CDR)*
22. Varma, Sashank (H-STAR)*
23. Verplank, William (Computer Science and CCRMA)*
24. Vogl, Roland (Law School)

Much of the research carried out at H-STAR is conducted under faculty guidance by doctoral level researchers, postdocs, graduate students, and academic and industrial visitors who are based in Wallenberg or Cordura Hall.

6. International activity

H-STAR has several international activities, with ongoing academic and industrial research collaborations throughout Europe and Asia. The most significant today are listed below:

6a. *The Wallenberg Research Link*
Led by special assistant to Stanford's president for federal research policy (and former Dean of Research), Arthur Bienenstock, the Wallenberg Research Link serves as a contact center to initiate and support contacts with Swedish researchers, Swedish students and their counterparts at Stanford.

6b. *Baltic Research Partnerships*
Over the past four years we have developed several collaboration initiatives with a number of countries in the Baltic region, known for their world leadership role in the human-centered design of technology that forms a major component of H-STAR's research focus. In FY10, government technology agencies of Finland (TEKES) and Denmark (DASTI) funded Stanford's infrastructure costs in supporting research collaborations on the Stanford campus between university scholars from Finnish and Danish universities, working on projects with Stanford faculty PIs.

The following fifteen Stanford faculty collaborated with visiting scholars under this program during 2009-10:

1. Chris Chafe, Dept of Music
2. Herbert Clark, Dept of Psychology
3. Karen Cook, Dept of Sociology
4. Michael Hannan, Graduate School of Business
5. Pamela Hinds, Dept of Management Science and Engineering
6. Martin Kay, Dept of Linguistics
7. Leonid Kazovsky, Dept of Electrical Engineering
8. Larry Leifer, Center for Design Research
9. Dan McFarland, School of Education
10. Roy Pea, School of Education
11. Byron Reeves, Dept of Communication
12. Henry Rowen, Graduate School of Business
13. Jeffrey Schnapp, Stanford Humanities Lab

14. Fred Turner, Dept of Communication
15. Terry Winograd, Dept of Computer Science

On May 17–18, STAR organized a two-day Denmark–Stanford workshop on Digital Learning Environments attended by 32 researchers from Stanford and Danish universities, including both faculty and graduate students. A particularly gratifying outcome of the workshop was that the Danish visiting group invited two of our graduate students (Sarah Lewis and Heidy Maldonado) to spend a week in Denmark giving lectures at a number of Danish universities. H-STAR contributed funds to facilitate this visit during the early summer.

On October 5–6, H-STAR organized a similar two-day workshop with Finnish academics on Learning, Learning Environments & Technologies. We are currently developing a research proposal with the Finnish CICERO educational research network to submit for funding from the European Union.

6c. *Sweden* Through its management of the Wallenberg Foundation grants to Stanford, H-STAR has regular contacts with scholars in Swedish universities, and is frequently a host to visitors from Sweden. We have been playing a supporting and facilitating role in preparing the proposal for a new award from the Wallenberg Foundation to commence in 2011.

6d. *Germany*

Several H-STAR researchers have strong links to colleagues at German universities. H-STAR faculty co-developed an international series of research workshops, funded by NSF in the USA and the DFG in Germany, on network-supported collaborative learning, which have led to joint publications and enriched mutual influences across a knowledge network of 10 American universities and 7 German universities. One new journal, the *International Journal of Computer-Supported Collaborative Learning* (iJCSCL, published by Springer/Kluwer) was initiated as a result of these developments, and H-STAR Director Roy Pea is on its Editorial Board. Most recently, Roy has collaborated with Professors Friedrich Hesse and Carmen Zahn of the large DFG-funded Knowledge Media Research Center in Tübingen, and a number of research publications and scientific conference symposia have developed from these collaborations, which is now a strategic partnership with the NSF LIFE Center. Professor Zahn will be a visiting scholar at HSTAR in April 2011 for planning a new round of collaborative studies and grants.

6f. *Taiwan*

Through SCIL, H-STAR developed a partnership with the Center for Learning Sciences and Technology at Taiwan's National Central University, invited by Center Director Professor Tak-Wai Chen and a delegation to Stanford including Taiwan's Deputy Director of the Ministry of Education. H-STAR Director Roy Pea advised Center Director Tak Wai-Chen in his formation of the G1:1 initiative, to which HSTAR contributes. G1:1 is a global one-to-one computer to learner initiative with participation for over twenty countries, a devoted website to projects, results, tools and datasets, and a sponsor of over about a dozen conferences on the subject with professional societies such as IEEE. The aim is developing global collaborative research models on 1:1 personal (and increasingly mobile) computer learning (http://www.g1on1.org/). This partnership spawned the international conference on computer-supported collaborative learning (CSCL-05) in June 2005 at the Taiwan campus, with strong Stanford representation in leadership and paper presentations. The G1:1 network has spawned a large number of IEEE

workshops on wireless mobile ubiquitous technologies for education (WMUTE) on which Chen and Pea and colleagues from other nations have served on program committees, with WMUTE now a thriving interdisciplinary area of scholarship. Roy co-chaired the 6th IEEE WMUTE conference in Taiwan April 2010, and presented three papers with students and collaborators.

7. The LIFE Center

The National Science Foundation (NSF) has been funding Science of Learning Centers (SLCs) in order to extend the frontiers of knowledge on learning of all types and create the intellectual, organizational, and physical infrastructure needed for the long-term advancement of learning research. Launched in Fall 2004, the Learning in Informal and Formal Environments (LIFE) Center is now in its seventh year of a ten-year research collaboration between the University of Washington in Seattle (College of Education, and Institute for Learning & Brain Sciences), H-STAR, SRI International and other partnering institutions. This final period of the LIFE Center is thanks to a successful NSF site visit in Spring 2010 and a National Science Board recommendation for a full ten years of funding in early December 2010.

The purpose of the LIFE center (http://www.life-slc.org) is to develop and test principles about the social foundations of human learning in informal and formal environments, including how people learn to innovate in contemporary society, with the goal of enhancing human learning from infancy to adulthood.

The Center is engaged in many interdisciplinary studies of learning, incorporating diverse methodologies such as brain imaging, comparative experimentation, ethnographic inquiry and virtual reality. From its inception, LIFE Center research incorporated three academic traditions. LIFE's socio-cultural research tradition relied on ethnographic, interview, and survey methods to document the impact of culture and social activities on learning in and out of school. LIFE's experimental and neural studies used behavioral and neuroscience methods to document the mechanisms underlying social learning from a developmental and neural perspective, showing the deep reach of culture on the developing individual's mind and brain. LIFE's work on formal learning and technology examined teachable agents and learning in designed learning environments. LIFE's Center-mode work integrated these traditions into a set of six "Social Learning Drivers" that need to be taken into account in any transformative theory of the social foundations of human learning. Collectively, these six can be viewed as an integrative network of concepts that need to be explored separately and as an integrated whole in order to better understand social learning. The six are: (1) Imitation & Joint Attention, (2) Language, (3) Identity, (4) Guiding & Collaborating, (5) Choosing & Valuing, and (6) Simply Believing a Virtual Interaction is Social.

LIFE has two Missions to achieve its Purpose:

- To identify and investigate underlying principles of how people learn socially by strategically sampling learning across settings, domains, and ages, and by using multiple methodologies (neurobiological, cognitive, developmental, and socio-cultural) to spark conceptual collisions and syntheses among viewpoints.

- To foster research and education collaborations with individual and institutional partners, and to promote qualitative improvements, both theoretical and practical, in our collective capacities for understanding and supporting human learning.

Stanford faculty leading LIFE projects include LIFE leadership group Professors Roy Pea (Stanford Co-PI), Daniel Schwartz (LIFE Co-Director), and Co-Lead Brigid Barron, and contributing faculty Professors Jeremy Bailenson, Byron Reeves, Shelley Goldman, Anthony Wagner, Paulo Blikstein and Geoffrey Cohen. Over twenty doctoral students, postdocs and staff are involved in LIFE Center research work each year as well. The most recent award period for the Stanford component of the LIFE Center was $1.74 mil for the period 2/01/10 to 7/31/11, and additional grants make synergistic contributions to this encompassing project.

The LIFE leadership team consists of Brigid Barron, Philip Bell, John Bransford, Patricia Kuhl, Andrew Meltzoff, Na'ilah Suad Nasir, Roy Pea, William Penuel, Nora Sabelli, Dan Schwartz, Reed Stevens, and Nancy Vye. They are joined by an exceptional group of graduate students, post-doctoral scholars, faculty researchers, and staff in LIFE Center activities. The Center is directed by UW's Patricia Kuhl, Co-Director of the Institute for Learning and Brain Sciences (iLabs), and Co-Directors are Stanford's Dan Schwartz and UW's John Bransford.

8. Community outreach

Research with local schools and teacher preparation
H-STAR faculty and students are active in conducting research on learning, teaching, and new technologies with partnerships that take them into public schools from elementary to high school, from Redwood City and East Palo Alto to San Francisco, Palo Alto and beyond, to charter schools, as well as in after-school clubs and community centers. H-STAR faculty are also actively involved in contributing to SUSE's teacher preparation programs, the Teachers for a New Era initiative jointly funded by the Carnegie Corporation and the President's Office, and are engaged in planning and pursuing the campus-wide "K-12 Initiative." Several H-STAR faculty have been conducting Stanford K-12 Initiative-funded projects in the past several years (Barron; Goldman; Lunsford; Pea; Schwartz; Wineburg).

Continuing and professional education.
Chuck House and Martha Russell co-taught "The Secret Sauce of Innovation" via Stanford Continuing Studies in Autumn 2008.

Chuck House co-chaired IMMERSCOM 2009 at the University of California at Berkeley with Professor Rusina Bajcsy.

Martha Russell co-chaired Publications of the International Symposium on Workshop on Computer Science and Engineering, WCSE 2009, Qingdao, China, Oct. 2009.

Martha Russell serves on the Editorial Boards of the *Journal of Electronics* and the *Journal of Interactive Advertising* and on the Program Committee of PERSUASIVE 2010 - The Fifth International Conference on Persuasive Technology.

The Summer Institute at Wallenberg Hall
In July of 2010 Media X held the seventh Summer Institute at Wallenberg Hall, a multi-week program for researchers and practitioners to explore the important issues at the crossroads of learning, physical space and technology. The purpose of the Institute is public outreach and education, as well as the development of new contacts and collaborative relationships. Most of the courses were co-directed by a Stanford researcher and a colleague from a collaborating institution.

The 2010 Institute focused on **21ˢᵗ Century Conversations**, with a themed conference: "Social Media & Social Technologies: Changing Personal & Civic Conversations," attended by roughly 200 attendees. Speakers from Stanford University and Media X member companies addressed issues such as: Intended and Unintended Consequences; New Realities of Grassroots and Civic Action; and Crafting the Next Research Agenda. High definition video recordings of the conference were produced to extend the benefit of the thought exchange to Media X affiliate companies. Excerpts of those presentations were posted on the newly created Media X YouTube channel, for a public audience.

Keynote
Genevieve Bell, Intel Fellow, Intel Labs & Director of Interaction & Experience Research, Intel

Intended Consequences – Key Players on the Future of Conversation
Peter Hirshberg, Co-Founder & Chairman, The Conversation Group
Engin Erdogan, Interaction Design Lead, IDEO
Phil McKinney, Vice President & CTO, HP Personal Systems Group
Phil McKinney: The Predictive Ability of Social Media
Phil McKinney: Reverse Mentoring and Learning from Interns

The New Realities
Diana Scearce, Monitor Institute
Beth Kanter, CEO, Zoetica
Gifford Pinchot, Co-Founder & President, Bainbridge Graduate Institute
Neerja Raman, Distinguished Visiting Scholar, Media X at Stanford University
Howard Rheingold, Scholar & Lecturer, Stanford University & University of California at Berkeley

Unintended Consequences
Cliff Nass, Thomas M. Storke Professor, Stanford University
Cliff Nass: Multitasking and the Effects on Concentration
Jennifer Aaker, General Atlantic Professor of Marketing, Graduate School of Business, Stanford University
Ryan Calo, Senior Research Fellow, Center for Internet & Society, Stanford University Law School
Ryan Calo: Are Online Privacy Policies Effective?
Dean Eckles, PhD Candidate & Researcher, Stanford University
Renate Fruchter, Founding Director, Project Based Learning Laboratory, Lecturer & Senior Research Engineer, Stanford University
Renate Fruchter: Many-to-one instruction in the Classroom
Renate Fruchter: Improving Team Collaboration

Known and Unknown: Crafting the Research Agenda
Paul Saffo, Futurist & Consulting Associate Professor, Stanford University
Genevieve Bell, Intel Fellow, Intel Labs and Director of Interaction & Experience Research, Intel
Genevieve Bell: The Future of the Television
Genevieve Bell: Anthropological Perspective on Social Media
Cliff Nass, Thomas M. Storke Professor, Stanford University
Genevieve Bell and Cliff Nass: The Mainstream Adoption of Social Media
Byron Reeves, Paul C. Edwards Professor of Communication and Co-Director, H-STAR Institute
Byron Reeves: Games Promoting Positive Leadership

Byron Reeves: The Potential Dangers of Games
Byron Reeves: What Makes a Game Addictive?

The 2010 Summer Institute also offered eight short courses, providing deep level subject matter to roughly 150 participants.

Total Engagement: Using Fames and Virtual Worlds to Change Behavior Related to Work, Productivity, Energy, Transportation and Health, Byron Reeves (Stanford) and Dante Anderson (Seriosity)
Teaching My Avatar New Tricks: Experiential Learning and Bio-measurement in Virtual Online Environments, Wm. LeRoy Heinrichs (Stanford)
Ideas Are Nice: Outcomes Are Better: Intuit's Counter-Intuitive Lessons of Innovation, Roy Rosin (Intuit)
From Micro to Macro: Enabling Sustainable Progress Through Information Technology, Martin Curley (Intel)
Network Analysis Made Easy: Using NodeXL to Map Social Media Networks, Marc Smith (Connected Action)
Thinking Tools: A Hands-on Workshop on the History and Use of Personal and Social Knowledge Amplifiers, Howard Rheingold (Stanford)
Leadership Tradecraft: Designing Strategic Conversations, Lisa Kay Solomon and Chris Ertel (Monitor Group)
Elephants in the Sustainability Room: What The Vision 2050 Project Mural Does and Doesn't Tell Us, Robert Horn (Stanford)

10. Wallenberg Hall

H-STAR has principal responsibility for the research and research-related activities that take place in Wallenberg Hall, a facility funded (by the Swedish Wallenberg Foundation), designed and built explicitly to enable research into different forms of education, taking advantage of new technologies and flexible, novel architectural features, and paying particular attention to international educational initiatives and collaborations. Wallenberg Hall has (thus) become a locus of activity for at least three distinct constituencies: faculty and students at Stanford University; researchers located at Stanford, in Sweden, and beyond (e.g., H-STAR affiliated faculty, Media X, LIFE Center collaborators, and WGLN projects); and a global array of industrial, commercial and academic enterprises with interest in the intersections between Silicon Valley and Stanford. It serves both as an H-STAR research medium, and to mediate teaching across states and international boundaries.

For **faculty and students at Stanford**, Wallenberg Hall is a place to explore and use advanced technologies for teaching and learning. For at least 12 hours most days, teachers and students take advantage of Wallenberg's state-of-the-art spaces to enhance learning in a multitude of ways. Video conferencing, in-class laptops, Stanford-developed collaborative iRoom software and DIVER Video Tools, reconfigurable furnishings and multiple Webster "interactive" boards provide some of the tools and both physical and representational infrastructure in the rooms that helps make good teaching even better.

Since September 2002, Wallenberg Hall has played host to more than 700 regular Stanford courses in more than 30 academic disciplines as well as to the University's Program in Writing and Rhetoric. For many Stanford faculty and students, Wallenberg Hall has become an indispensable tool for doing the work of education better, faster, and in newly transformative

ways than is possible elsewhere on campus. The additional benefit of these users from the perspective of the research and development community is that they demand that the technology work *now*, and that it work to support learning activities. H-STAR is the organization that supports the technology staff that makes Wallenberg Hall work, and that guides research that evaluates technology innovations used in the Hall.

For *researchers at Stanford, Sweden, and elsewhere*, Wallenberg Hall is a workplace and a laboratory for explorations in the application of technology to learning. On the fourth floor of Wallenberg Hall, H-STAR provides support to faculty-led research projects funded by the NSF, WGLN and other funding agencies such as the Mellon Foundation, National Endowment for the Humanities, and other private foundations and corporate sponsors.

For *industrial, commercial, and academic enterprises* with interests in education and technology, Wallenberg Hall provides a gateway to Stanford's remarkable resources as a world-class university located in the world's most fruitful incubator of technological innovation. We continue to attract globally distributed visitors to learn about our ideas, methods, findings, technologies and teaching. H-STAR faculty and staff were instrumental in helping plan the new learning technology facilities at Stanford's Medical School, among many other efforts in the US and abroad. These visits are consequential in many ways: (1) as an efficient method for communicating to colleagues and decision-makers results from the research and the teaching that we support; (2) as providing potential collaborators for multi-institutional and international projects; and (3) in providing Stanford researchers with opportunities for scholarly exchanges about current thinking about technology and education in a concrete context of demonstrations. We continue to find Wallenberg Hall to be a vibrant hub for attracting and sustaining a far-flung network of researchers and practitioners in the U.S., Sweden, and elsewhere.

For the *campus community* as a whole, Wallenberg Hall provides ideal facilities and support for special events. H-STAR administers the staff that makes these events possible, many of which involve complex logistic planning and execution. Among the many varied activities that took place in Wallenberg Hall during FY10 (usually with support from Wallenberg Hall staff) were:

Date	Event
9/1-9/18/09	Sophomore College
9/3/09	SiCa Japanese Visitors
	Doug Osheroff Video Conference to India
9/9/09	PAC-10 Baseball Coach Video Conference
	Arts Intensive Faculty Night
9/9/09	CTO Forum
9/10/09	Arite- Ingolf Lindau
	Ed O'Neil- iMovie Workshop for SoCo
	Megan Miller-Digital Portfolios
9/15/09	Intel Visit
	Media X Workshop
9/18/09	Media X/ Veterans Hospital
9/22/09	CTL Event Mentors in Teaching
	Stan Shakes Auditions
9/24/09	Video Conference- Stanford Laingustics/Edmonton , Alberta
9/28/09	MJ Conference Call

	Mark Applehaum Video Conference
9/30/09	Roy Pea Interviews
	Conference call with UMN at Research
	Elevation Partners info Session
10/1/09	Conference Call with New York
	Revast Session
	Spatial History Lab Conference Call
	Tour for Swedish Visitors
10/5/09	Mayfield Fellows Practice Presentations
10/6/09	ePortfolio Presentation to Cisco/Media X
	Media X-Cisco Focus Day with Australian Educators
10/7/09	Video Conference- David Nordfors (INJO & Technologic de Monterey)
	Visitors from Malmo
10/8/09	Semantic Integration Workshop
	Castilleja Tour and Visit
	Tour for LDT Seminar Cohort
10/9/09	Roy Pea educational technology group (VIP Tone)
10/10-10/11/09	SPLASH Conference
10/13/09	AI Development Meeting
10/14/09	Video Conference to UCL London for Anne Godfrey
	Mayfields Fellow Rehearsals
	Quantified Self Meeting
10/15/09	Media X, Augmented Decisions Workshop
	Doug Osheroff Lecture VIA Video Conference to Mexico
	Video Conference -Helen Chen /ePortfolio California
	Meeting for Swedish Reception
10/16/09	SURF/CCR Marratech to Russia
	Stanford Webmasters Meeting
10/19/09	Fredrik Borg Swedish Video Conference/Stanford Program
	Training Session PPO HR
	Tendrul Meeting
	DNP Meeting
10/20/09	Ed Howard/China Delegation - tour of 1st and 2nd floors
	PPO - Staff Meeting
10/21/09	Video Conference to UCL London for Anne Godfrey
	Silicon Vikings Speaker Event
	Columbian Delgation with Claudia Engel discuss classrooms
10/22/09	Media X Seminar- Tad Milbourn, Intuit Brain storm
	Reunion Homecoming Tour
10/23/09	Pennsylvania Schools Superintendents
	Video Conference to Mexico
10/26/09	SiCa Presents: The Yes Men
	Video Conference to Mexico
	Tom Byers Special Evening Sessions
10/27/09	Tour for SCANCOR Board members
10/29/09	Doug Osheroff Video Conference to India

	Faculty Affairs – HERC Meeting
	ePortfolio presentation to VPUE
10/30/09	Video Conference to Cambridge, MA for Oral exam (PhD)
	Silicon Vikings/Helsinki Group speaker/reception event
	Stanford Swim Team Recruiting Event
11/2/09	Video Conference for President Hennessey
	Roundtable Journalism/PR Lunch- INJO
11/3/09	SCANCOR – Norwegian Delegation Meeting
11/4/09	PWR Cross Cultural Rhetoric Sessions
	INJO - Video conference with Technologico de Monterrey
	Roy Pea/GSE, UC Berkely
11/5/09	Video Conference-President Hennessy
11/5/09	Media X Seminar-Henrik Bennesten, Stanford Humaities Laboratory "Speed Limits-Immersive Consumer/Curator Collaborations"
	Media X/NYC Media Labs Intro
11/6/09	Video Conference President Hennessy
	Swim Team Event
11/9/09	Faculty Lunch
11/10/09	Drama Video Conference to Thomas Riccio and teleconference to Leslie Hill
	Faculty Affairs DVD Showing
	SiCa Presents-Speaker Event
	Oklahoma - Film Screening
	Oklahoma Transformative
11/11/09	SURF/CCR Marrtech to Russia
	INJO Event -David Nordfors
	INJO/Anders Flodstorm visit/Lunch Speaker Event
	WGLN Project Presentations
	PWR Open House
11/12/09	SiCa-Creative Campus Meeting
	Media X-Time Wasted or Time Won: Adding Value to Transit $ Wait Time
11/13/09	Meeting with SUN
11/16/09	Marvie Video/PPO Staff Meeting
	Media X-Dutch Executive MBA Crossmedia
	Natalie Philips Video Conference Job Search Interivew
	Swedish Researchers Reception
	Lobby for Fusion Reception
	Dinner for Melanie Edwards's Speaker
11/18/09	Life Lab Media Lab Show and Tell
	IHUM Open House
11/19/09	Media X Chuck's book launch Seminar
11/20/09	Hamid Aghajan-Video Conference
	Video Conference-Emily Brink doing ACE exam and connecting with Dr. Gough at Harvard
12/1/09	Video Conference woth Leslie Hill for Drama
12/2/09	K-12 Review Panel
	Tom Kealey Final presentations
	Fusion Reception

12/3/09	Meeting with Kate Janete Academic Deputy SuperIntendent, Fremont High School
	Michael Wu Web Meeting
	Media X-Seminar-Byron Reeves-"total Engagment: Using Games & Virtual Worlds to Change the Way People look and Businesses Compose
12/4/09	Dean of Claudia's Dept-Video Conference to the UK
	Finish National Day Reception
12/7/09	Jacobstein Video Recording-Media X
	PPO/HR Staff Meeting
	IT Video Conference to USC
	St. Lucia Celebration-Scandinavians At Stanford
12/8/09	Media X Workshop-Technology Transfer for Silicon Valley
	Dan Schwartz-Heuristics Meeting
	Sarah Walter-Dissertation Defense Oral Exam
	Wilson H. Shearin Video Conference to Australia
	Howard Rheingold Student Presentations
12/9/09	Faculty Affairs-Meeting-Faculty Equity & the Quality of Life
	Dr. Laub's Crew
	PPO Meeting
12/11/09	Adobe Meeting
	Video Conference- Daniel Sack
12/15/09	Outhink Media-SPIX
12/17/09	Konica Minolta
12/18/09	Staging for Exhibits
	Martha Russell-Virtual Experiences
1/5/10	Video Conference for PhD Candidate Amanda Robinson to UC Berkeley
1/6/10	Media X seminar
1/7/10	University Communications/Rich Smith
1/11/10	Video Conference to BBC Scotland-Morag Pavich
	NCAA Women's Volleyball Video Conference
	SciOutreah meeting
1/13/10	Media X - Mercedes Meeting
	Joel Benin-VC to Eygpt
	Media X-Toshiba
1/14/10	Media X - Mr. Omi STS Forum
1/15/09	Media X - A. Finlayson
1/18/10	Menko meet with Susan Savage from QUT
	Chuck's Reception
1/19/10	Maurits Kaptein
	PAC-10 Video Conference
1/21/10	Student Housing Video Conference Job Search Interview
	Cammy Haung- Wallenberg Initative
1/22/10	Annekatrin Hoppe-Video Conference to Germany for Job Interview
	Media X-Open Source Tools for Social Media & Network Analysis (Marc Smith)
1/25/10	Video Conference for Joel Velasco to University Bristol UK
	Media X Seminar Series-Television Meets Social Media
	Helen Chen/Earthquake Meeting

1/26/10	Video for PhD Candidate Amanda Robin
	Martha Russell Telespace Tutorial
1/27/10	Media X/Apollo Group
	GSB Orientation
	Incites Meeting
	David Wilkins Interview
2/1/10	PWR CCR VC (From Union Pacific)
	Skype Video Conference for Professor Doug McAdam
	Media X/Intel
2/2/10	GSB Prime Minister of Lithuania/Dean of GSB
	Press Interviewa
2/3/10	Jesse Foster-LDT Meeting
	Neerja Raman Meeting
2/4/10	OGC Virtual Seminar
	Doug Osheroff Video Conference to India
	Vered Shemtor Film Event-Akhmatova Movie Screening
2/5/10	Internet Media Strategy Workshop Group Meeting
2/8/09	Art&Arts History Job Search Video Conference for History of Architecture Position
2/9/09	INJO/Knight Fellow Mixer
2/11/10	Drama PhD Admission candidate interviews
	Drama PhD Interview with Chris Gregory on iChat
2/15/10	Byron Reeves Energy Grant Workshop
	SEISS Meeting
2/17/10	SiCa Presents: Aaron Koblin
	INJO Welcome Reception
2/18/10	Instructional Space Focus Group
	PWR Spring Open House
2/19/10	Media X- IT Forum "The Century of Sogan $ Fjordane in Norway"
2/23/10	Video Conference Job Search for Arts&Art History
2/24/10	Tim Jaconnette VC - Connect with Howard Rheingold
	Keio University Panel Event
2/25/10	Video Conference Center
2/26/10	Tour for Parent's weekend
	VC3 Speed dating Event
2/28/10	Social Entreprenurship Panel Event
3/5/10	Stanford-Berkeley Conference
	Media X Workshop Innovation Ecosystems
	Tamal HS District Visit
3/8/10	PhD Oral Defense from Anthroplogy
	Media X Workshop - LeRoy Heinrichs
	Neema Morjevi-Teleconference
3/10/10	ARPA-E Exec Comm Meeting
	Blyth Fund Speaker Event
	Carolyn Ross Final Presentations
3/15/10	Video Conference for Gem Presentation
3/16/10	Keith Devlin Meeting with Tekes
	Byron Reeves Brainstorming meeting

	Vanessa Vega-Research Demo
3/17/10	Sandy Smith Video Conference
	Final EXPO for Ed 164/394
3/18/10	Media X/Aalto University
3/19/10	STS Leader Reunion Event
3/22/10	Media X-Student Group from Claremont University
3/23/10	Cammy Huang-CSET Session
	MARTHA Innovation Norway
3/26/10	Vanessa Vega-PhD Dissertation Defense
3/30/10	Bethany Steiner-Community Mapping Practicum
	Bruce O'Neil Oral PhD Exam
4/1/10	Department of Defense
4/2/10	Sociology Admit Weekend-Faculty Presentations
4/5/10	Ferguson Exam-Claudia Engel
	Residential& Dining Enterprises Video Conference Job Search Interviews
4/6/10	Amanda Robinson-Video Conference
	Marie Sumpter-Video Conference meeting with Google
4/7/10	Joris Janssen-Teleconference call
	Preserving Virtual Worlds Workshop
	Predicting Volcanos
4/9/10	PPO HR/Finance Meeting
4/12/10	Media X seminar Series "Human Immersion in E-Selling"
	Daniel Murray PWR, Film Screening
4/16/10	Media X Workshop-"The Live Video Streaming Revolution"
	Mr. Robert Vardyan-Bechtel International Center
4/17/10	3D Animation-Whitney Johnson
	Jumpstyle-pablo Garcia del Real
	Virtual Scavanger Hunt-Jason Wilson
	Predicting Volcanos
4/19/10	PPO HR/Finance Meeting
4/21/10	PhD Oral Exam Video Conference to UK & Turkey-Alexandra Konica Minolta
4/22/10	Media X Claremont Graduate University Visit
	PhD Oral Defense Video Conference-Sarah Ives/Anthropology
4/23/10	Cal. Dept. of ED
	San Jose City College Doug Treadway
4/26/10	Mary Campbell-PhD Oral Defense
	StateFarm Meeting with Chuck
	Nordic Green/Silicon Vikings Event
5/3/10	NCAA Video Conference
	Shelly Fishkin-Video Conference
5/4/10	Rick Aubry Video Conference
5/5/10	Video Conference to BCNET Annual Conference
5/11/10	Media X - POD
5/14/10	Media X Workshiop-Identity & Privacy in United Communications
	Digital Manuscript-SULAIR Workshop
	Media X Workshop Resumaes
5/17/10	Stanford Scandinavian Education Symposium

5/18/10	SiCa- Jasper Ridge Lunch
5/25/10	SiCa "Memory" Lunch Evenet
	Bing Video Conference
5/29/10	IEC Workshop
6/1/10	IEC Workshop
6/3/10	Chris Barnes Monash University of Melbourne
6/4/10	GEM Presentation
6/8/10	Jung Young Lee Video Conference to Korea (Job Intereview)
6/9/10	GAO Meeting-Byron Reeves
	SiCa-Meeting with Theatre Works
6/14/10	Gabriel Aduto-Presentation Prep
	Cathrine Baylin PhD Oral defense
	National Heritage Academies-Roy Pea
6/14/10	IVY Plus Conference
	Math Conference Reception
9/21/10	Ann Fust, Director at Uppsala University
6/22/10	Oracle Education Design Workshop
	SPIX Meeting
6/29/10	ARPA-e Commercialization Team intro to Stanford-Byron Reeves
	UMN Conference Call
6/30/10	Galt ESD-John Gordon
	UMN Conference Call
7/2/10	Tech Aids- Wallenberg Hall Welcomes
7/8/10	PPO-HR/Marvie Video
	Writing Conference
7/12/10	LDT Masters Project
7/13/10	PhD Oral Defense-Greg Miller
	Konica Minolta Focus Day
	Carroll County-Apple
7/14/10	Pee Saut Hoon-Singapore Polytechnic
	Larry Friedlander
7/16/10	Ericsson-Media X Welcomes
7/20/10	Wallenberg Summer Institute - Total Engagement-Byron Reeves
	Wallenberg Summer Institute - Teaching my Avatar-WM Le Roy Henrichs
	Wallenberg Summer Institute - Ideas are Nice-Roy Rosin
7/21/10	Mark Nicholas Coaching: The Indispensible Leadership Skill
	TCEA - Apple Computer
7/22/10	Wallenberg Summer Institute - Leadership Tradecraft-Lisa Kay Solomon
	Wallenberg Summer Institute - Network Analysis Made Easy-Marc Smith
7/27/10	Jack Rakove-Skype Connections to Ann Arbor
7/28/10	Video Conference for Med School
7/29/10	Video Conference to Princeton-Phil Reese
	Alyssa Glass - PhD Oral Defense
7/30/10	Studio Code Training Session - Cammy Haung
	LDT Expo 2010
8/2/10	SSTI Workshop
8/3/10	SSTI Workshop

8/4/10	SSTI Workshop
8/5/10	SSTI Workshop
	CLAD Facilitators Workshop
8/9/10	Japanese Delegation - Keith Devlin
8/10/10	Media X - Eciffo Team
8/11/10	INJO - Google/Silicon Vikings
8/13/10	Apple - NE Independent Visit
8/19/10	Media X Summer Institute - Monetizing Virtual Worlds - Parvati Dev
8/20/10	Stephen Cooper - PhD Oral Defense VC
8/25/10	CSET Faculty Brainstorming Session
8/26/10	Media X - State Farm Focus Day
	Spatial History Lab - Final Presentations
8/30/10	Faculty Affairs - Officers Luncheon
	SiCa - Reception for Karen Nagy
8/31/10	Sophomore College
	VC to ISR Director's Office, Ann Arbor MI for Lauren Schoenthaler, OGC, Stanford

In addition (some are listed above) we have been pleased to host, on multiple dates:

- Videoconference connections for PAC10 Meetings, various PhD Oral Defenses, Woods Institute, Residential & Dining Enterprises, Concert Hall Planning Meetings,
- Job searches for Drama, Art, Sociology, and the Dean of Research
- Research user testing studies for various non-Wallenberg students
- Auditions and rehearsals for Stanford Shakespeare Society
- Meetings for Stanford Student Groups, including: Forum for American-Chinese Entrepreneurs (FACES), ISIS, Green Dorm Project, Brainstorming India, Scandinavians at Stanford, Fusion, Blyth Fund
- President and Provost Faculty Workshops

10. Media X Industry Partners Program

The Media X program is staffed by Executive Director, Charles (Chuck) House (Silicon Valley executive and entrepreneur and IEEE/ACM Fellow), and Associate Director, Dr. Martha Russell. During the past six years 90 Stanford professors have submitted research proposals for roughly $3.5M in funding for research initiatives provided through gifts from Media X industry partners. Media X revenues from membership contributions for FY 2010 were $992K.

Included in these gifts were $450K for supporting high risk research initiatives related to *Publish-On-Demand,* a Media X theme begun in 2005 through Media X seed funding on topics of *"Online Media Content"* and *"Human-Machine Interaction and Sensing."* Interdisciplinary concept-proving projects funded through those initiatives led to the conceptualization of the SIPX system, by the team of Mike Genesereth (Computer Science) and Roland Vogl (Stanford Law School), that then led to the establishment of CodeX, the Stanford Center for Computers and Law. The SIPX system is conceptualized as an online intellectual property rights clearinghouse that allows copyright owners to list their content and provides a way for consumers to acquire rights to the listed content. The SIPX system is especially interesting in that it supports the creation of custom contracts for licensing content.

To explore questions related to human-machine interfaces that will enable publish-on-demand services, the current *Publish-On-Demand* research program asks the next series of questions that focus on intellectual property rights in the publish-on-demand environment. Through the

Publish-On-Demand research program, Media X has awarded research activities that include participants from Computer Science, Law and Business.

Additionally, initial planning was completed in FY 2010 for a 2011 research initiative focused on Measuring and Increasing Enterprise Productivity in Knowledge Management.

Five Focus Days (in-depth brainstorming sessions with Stanford faculty and industry researchers from a member organization) were held in FY2010 on themes of:
  Global Information Exchange for Regional Growth
  Human Awareness for Ambient Intelligence
  Connected Continuum of Human-Computer Interaction
  Intellectual Property for Publish on Demand
  Company and Customer-facing Informatics for Simulation and Service

Follow-up activities between industry affiliates and the faculty members who attended the intimate, in-depth discussions about issues of common concern during the Focus Days have led to faculty speaking engagements, hiring graduating students, expanded Media X member relationships, and collaborative submission of proposals.

The Media X YouTube Channel was established following a graduate student-led assessment of the optimum use of social media for the membership-based programs of Media X, as the industry outreach for the HSTAR Institute.

Media X hosted six Industry Visiting Scholars in FY 2010: two from Konica Minolta, Japan; three from Philips, Eindhoven, Netherlands; and one from The Apollo Group, Phoenix, US. The visits of these researchers extend the collaboration between Media X and three affiliate members. Individuals from these three affiliate members will continue residencies in FY2011.

Media X also hosted ten Media X Distinguished Visiting Scholars during 2010. These Scholars were active in giving presentations and seminars, contributing to proposal development and meeting with existing and potential Media X members.

Two new Affiliates and one new Associate Members were added in 2010. Media X members continue to be involved in seminars and meetings. Recruitment activities were held for prospective members. The total income from membership contributions for FY10 was $972K. The bulk of this money was used to run the program and support faculty research. Media X members in FY 2010 included:

Affiliate Partners ($50K per year)
- The Apollo Group (Phoenix, AZ)
- Cisco (San Jose, CA)
- Intel (Santa Clara, CA)
- Konica Minolta Technology USA (Fremont, CA)
- Philips (Eindhoven, Netherlands)
- State Farm (Bloomfield, Illinois)

Associate Partners (<$25,000 or in kind support)
- Accel Partners (Palo Alto, CA)
- Boeing (Seattle, WA)
- BT Innovation (Palo Alto, CA)
- Connected Action (Burlingame, CA)
- FXPAL (Palo Alto, CA)

- Hewlett Packard (Palo Alto, CA)
- Innovations in Learning (Menlo Park, CA)
- Teknowledge (Palo Alto, CA)
- Teleplace (Palo Alto, CA)
- Terapac (Waterloo, Ontario)

Media X Innovation Outreach

Media X collaborated with industry groups and business-oriented international government-sponsored innovation organizations in offering half-day and one-day programs on communication technology and Innovation for their delegates:

Government:
- Department of Education (STEM initiative)
- Department of Homeland Security (energy grid)
- Esprit Innovation Initiative (Braunschweig, Germany)
- European Institute of Technology: Information Communications Technology Labs
- Innovation Norway
- Malaysia Industrial Development Authority

Industry:
- Cisco Forum
- Global Business Network Workshop
- Google Talks
- HP Speaker series
- HP Innovation series
- Intel Developer's Forum
- Intel European Research Symposium
- San Francisco Quantified Self Meet-up
- Savantas of Hong Kong
- Sun Microsystems and Spinal Cord Injury Unit of the Veterans Administration

Universities:
- Bainbridge Graduate Institute Fellows
- Caltech Alumni
- Carnegie-Mellon Symposium
- Claremont Graduate Universities (HCI Program,)
- IMD Switzerland
- SLAC Visiting Lectures
- SUNY Stony Brook Innovation Series
- Warwick Business School Lectures

Community:
- NY City Museum of Science

Professional Societies:
- ACM/IEEE Asilomar 36th Annual Microcomputer Symposium
- STS Kyoto, Japan
- VSMM Seoul, Korea

Media X Workshops

In FY2010 Media X held seven workshops to highlight Stanford research interests and for explore academic-industry collaboration. The first live video broadcast of a Media X workshop was held April 16 (subsequently curated for YouTube broadcast), and other workshop presentations were recorded and are available online.

> January 22: Open Source Tools for Social Media and Network Analysis Workshop, Marc A. Smith.
> March 5: Innovation Ecologies Workshop, Martha Russell, Neil Rubens, Marc Smith, Natasia Milic-Frayling
> March 8: Virtual Medical Environments Workshop, Parvati Dev, Eilif Trondsen, Dan Gillette
> April 16: The Live Video Streaming Revolution, Andrew Finlayson
>> The Live Video Revolution: Ubiquitous Live Video, Changes in Media Coverage
>> The Live Video Revolution: Changing Dynamics of Video Production
>> The Live Video Revolution: New Opportunities For High Quality, Compelling Content
>> The Live Video Revolution: Vidyo Demonstration
>> The Live Video Revolution: A Paradigm Shift in Journalism
>> The Live Video Revolution : Mobile Media Coverage in Haiti
>> The New Role of Professionals and Instructors: Curators of Information
>> Connecting Innovation Centers through Live Video Streaming
>> The Live Video Revolution - Part 2: Exploring Hybrid Experiences
>> The Live Video Revolution - Part 2: Ubiquitous and High Quality Mobile Video
>> The Live Video Revolution - Part 2: The Importance of Video in Business
>> The Live Video Revolution - Part 2: Behavior Change Prompted by Technology/Video
>> The Live Video Revolution - Part 2: Anecdotal Evidence of Live Video Experiences
>> The Live Video Revolution: The Future of Live Streamed Video
> May 14: Identity and Privacy in Unified Communication Environments, Gary Wolf, Carl Hewitt, and others
> June 1: Social Network Analysis: New Tool, Data and Questions, Marc Smith, Martha Russell, Neil Rubens, Jukka Huhtamaki and others
> August 19: Cashing in on Virtual Worlds Workshop, Parvati Dev, Laura Kusimoto
> August 25: Technology Transfer for Silicon Valley Outposts Workshop, Jean Marc Frangos, Chuck House, Martha Russell

Media X Seminars

The Media X Seminar Series was continued in FY2010, sponsored in Spring 10 by Philips, with 20 seminars given by academic and industry researchers. Video recordings of Media X Seminars are available online for viewing by the public.

> October 22: "Catalyzing innovation and collaboration in the organization with Social Media" Tad Milbourn, Intuit Brainstorm.
> November 5: "SPEED Limits: Immersive Audience-Curator Collaborations" Henrik Bennetsen, Stanford Humanities Lab
> November 12: "The Mental Costs & Benefits of Media Multitasking" Clifford Nass, CHIMe Lab
> November 19: "The HP Phenomenon: Innovation and Business Transformation" Chuck House, Media X
> December 3: "Total Engagement: Using Games and Virtual Worlds to Change the Way People Work and businesses Compete" Byron Reeves, HSTAR, Media X Video at: http://mediax.stanford.edu/video/Byron120209.mov
> January 25: "Television Joins Social Media" Gurminder Singh, Naval Postgraduate School, Video at: http://mediax.stanford.edu/video/GurminderSingh.mov
> February 1: "User-Generated AI for Games" Ashwin Ram, Georgia Tech
> February 8: "Immersive Environments for Mental Health Services" Dan Gillette, InWorld Solutions

February 25: "Linking Work & Play for Corporate Events: A Cisco Case Study Kenny Lauer, GPJ Digital Solutions, Video at: http://mediax.stanford.edu/video/DanGillette.mov

March 1: "Videogame Abbaci" Keith Devlin, HSTAR, Media X

March 8: "All the World's a Game: Enterprise Software as an Immersive Gaming Experience" Lyle Fong, Lithium

April 12: "The Need for Human Immersion in E-Selling" Petric Parvinen, Aalto University, HSTAR Visiting Scholar

April 19: "The Quantified Self - a Glimpse of the New Normal" Gary Wolf, Contributing Editor, WIRED

April 23: "Wittgenstein versus Gödel on the Foundations of Logic" Carl Hewitt, Emeritus MIT EECS Video at: http://mediax.stanford.edu/video/CarlHewittEdit.mov

May 3: " An Adult Conversation about Sustainability 2050" Robert Horn, MacroVu Analytics

May 10: "The Power of Pull" John Hagel, Deloitte Consulting, LLP, Center for the Edge

May 17: "The Flow of Information in Networks" Jure Leskovec, Computer Science Stanford

May 24: "My Connected Continuum: Configuring a Mosh-Pit of Technology with aDevice Crowd-Sourcing" Trevor Pering, Intel Santa Clara

Media X continues to broaden the intellectual exchanges for the campus through funding and collaboration opportunities, as well as through seminars and Focus Days. Media X is aggressively pursuing both new partner development activities and related faculty interests.

Plans for outreach and cultivation in FY 2011 include the continuation of occasional Media X Seminars, a 2010 fall meeting co-sponsored with Accel Partners, and workshops on topics of interest to members.

11. Affiliated Masters and Doctoral Programs: LSTD and LDT

In late 2001, H-STAR co-Director Roy Pea collaborated with colleagues in the School of Education (SUSE) and elsewhere on the campus to establish an interdisciplinary doctoral program in Learning Sciences and Technology Design (LSTD), which now has a cohort of approximately 30 full-time students. These students are active in H-STAR Institute research activities, commonly found on the 4th floor of Wallenberg Hall, and are typically funded by H-STAR and Media X faculty research grants. A related program, established by SUSE in 1997, is Learning Design and Technology (LDT), with an engaging project-focused curriculum that attracts 18-20 masters' students for its full-year duration. Together, the LSTD (PhD) and LDT (MA) programs provide a vital "people" contribution to the interdisciplinary research, teaching, and apprenticing activities of the H-STAR Institute. Many of the students convene in the technology and video resource enabled workspaces of Wallenberg Hall for conducting their work activities, meetings with faculty and one another, and for group analysis of videorecordings associated with their research studies.