

Media Laboratory

Last year, the Media Lab took a giant step forward in redefining its mission when it hosted “h2.0: New Minds, New Bodies, New Identities,” a one-day symposium focused on ushering in a new era in human adaptability. This year, the Lab received the largest research grant in its history as a result of Bank of America (BAC) attending that event.

After BAC’s initial contact with the Lab and its hiring of a graduate student intern, the Lab and BAC began exploring how the Lab’s unconventional, entrepreneurial research approach could be translated into reinventing the banking industry. After months of negotiation, in March the Lab and BAC announced the establishment of the Center for Future Banking, made possible by a five-year commitment of \$3–\$5 million per year from BAC. The new center, headed by AT&T associate professor Deb Roy, will serve as an innovation engine to transform the ways banking will be conducted in a world of rapidly changing social, economic, and information landscapes. It will focus on inventing technologies that reveal and leverage insights across a wide range of physical and social scales, from one-on-one customer interactions to global transactions.

Lab director Frank Moss emphasizes that the Center for Future Banking represents a powerful new model by which academia and business will partner to invent the future of entire industries, bringing together the creative, multidisciplinary research of the Media Lab with real-world business experience—all in a highly innovative environment that promotes our basic understanding of the rapidly changing relationships among people, technology, and society in the 21st century.

The Lab also realized several other significant achievements during FY2008, as follows.

In July 2007, MIT broke ground for the Media Lab Extension, designed by Pritzker Prize-winning architect Fumihiko Maki. Together with the existing Wiesner Building, the expanded facility, due to be occupied in January 2010, will also house the List Visual Arts Center, the Comparative Media Studies program, the Legatum Center for Development and Entrepreneurship, the Center for Advanced Visual Studies, and the Department of Architecture’s Visual Arts Program. Another key component of the building will be the Okawa Center for Future Children, established at the Media Lab through a \$27 million donation from Isao Okawa, the late chairman of the CSK Corporation and SEGA Enterprises Ltd.

On January 17, a capacity crowd of more than 200 participants from 31 companies and more than 20 representatives from the press came to Tokyo’s International House of Japan to attend “Media Lab++” a one-day symposium featuring a wide range of Media Lab work, from affective computing to neuroengineering to stackable and environmentally friendly cars for tomorrow’s cities.

Two new research groups were established: New Media Medicine, headed by Frank Moss, which focuses on how radical new collaborations among doctors, patients, and communities will catalyze a revolution in human health, and Camera Culture, headed by Ramesh Raskar, which explores how to create new ways of capturing and sharing visual information.

Scratch, the open-source programming language for kids that allows them to create their own interactive stories, games, music, and animations for the web, has reached a broad, worldwide audience during its first year of availability. More than 120,000 users have registered and more than 150,000 projects have been uploaded on the Scratch website.

The Lab's LabCast team (Paula Aguilera, Jonathan Williams, and Henry Holtzman) won a Webby Award for Technology from the International Academy of Digital Arts and Sciences in the Online Film & Video category.

A sampling of 2007–2008 Media Lab research initiatives includes:

- RoboScooter, a lightweight, folding, electric motor scooter designed to provide convenient, inexpensive mobility in urban areas while radically reducing the negative effects of urban vehicles such as congestion, excessive consumption of space for parking, noise, air pollution, and carbon emissions.
- Nexi, a humanoid robot that possesses a novel combination of mobility, moderate dexterity, and human-centric communication and interaction abilities. With two hands, an expressive face, and multiple cameras, Nexi has enough on-board circuitry to handle low-level control tasks. Wireless networking allows researchers to use remote workstations for high-level control (including cognition) and audio/visual data processing.
- Sociometric Badges, devices that connect individuals through an innovative sensing platform that logs voice features, proximity to others, face-to-face interactions, and movement to create a social network diagram of badge wearers, all in real time.
- Quickies, “intelligent” Post-it notes that bring one of the 20th century’s most useful inventions into the digital age. Radio frequency identification (RFID), artificial intelligence (AI), and ink-recognition technologies allow these popular “sticky notes” to be searched electronically, send reminders and messages, and, more broadly, help us seamlessly connect our physical and digital worlds.
- The Restaurant Game, a multiplayer, online simulation that has been used to collect data from over 10,000 people playing the roles of customers and waitresses in a virtual restaurant. The data collected are helping to build statistical models of behavior and dialogue for developing AI-controlled characters and to provide an understanding of human decision making.
- The world’s first powered ankle-foot prosthesis, which was demonstrated by an Iraq war veteran at a ceremony held at the Providence, RI, Veterans Affairs Medical Center in late July. An important advance for lower-limb amputees, the device propels users forward using tendon-like springs and an electric motor, reducing fatigue, improving balance, and providing a more fluid, humanlike gait.
- The Lab’s new X-Reality initiative, which explores the fluid merger of “real” and “virtual” worlds. Innovative, core technologies will go well beyond mimicking physical spaces in virtual landscapes and will provide new platforms and environments that seamlessly scale, from ambient to immersive, the blending of virtual and real.

- The Trainer Piano, a player piano that moves one's fingers as one learns how to play. Employing active magnetic force below the keys of a working piano, the Trainer Piano provides users with kinesthetic input that augments their normal motor learning process. By providing a "feel" for what a user is supposed to play, the Trainer Piano minimizes the amount of time necessary to learn new motor patterns and acquire new motor skills.
- New technologies to better understand emotion-related physiological signals, which will help identify the emotional states of those who have difficulty communicating verbally (such as people with autism). The goals are to equip individuals with personalized tools to understand the regulatory influences of emotion on their own state and to enable scientists to accurately measure and understand the role of emotion regulation in autism.

For a complete list of Media Lab projects, visit <http://www.media.mit.edu/research/projects/>.

Exhibitions and Performances

The Media Lab had a multiple presence at this year's Sundance Film Festival, first with *Gas Zappers*, a short animation about climate change that was a collaboration between New York-based artist Kenneth Hung and Media Lab PhD student Noah Vawter, and second with alumnus Dietmar Offenhuber's experimental movie *Please stand back!* (*zurückbleiben bitte*).

In January, Media Lab students were once again involved in "geek chic" on the runway with Seamless Computational Couture, the third student-organized fashion show highlighting wearable technology. Students Amanda Parkes and Adam Kumpf's Piezing and Jay Silver's ok2touch projects were also included in the 2nd Skin fashion show on April 25 at San Francisco's Exploratorium.

The Media Lab had a strong presence at the Museum of Modern Art's Design and the Elastic Mind exhibit, which featured the work of Neri Oxman (Smart Cities group) and Hugh Herr's advanced prostheses.

In February, the Grammy Award-winning Ying Quartet premiered a full concert collaboration with Media Lab professor Tod Machover at the University of Iowa. The first half of the concert featured music written using the Hyperscore software developed at the Lab, and the second half featured Machover's ". . . but not simpler . . ."

Last December, associate professor Chris Csikszentmihályi and collaborator Edmund Ming-Yip Kwong exhibited a sculpture and video installation at Fringe Exhibitions in Los Angeles.

The Sociable Media Group's "Stiff People's League" project was shown at the LABoral Centro de Arte y Creación Industrial in Gijón, Spain.

A half-scale model of the Smart Cities group's City Car and the Tangible Media Group's SandScape project are now on display at the remodeled MIT Museum.

Collaborations

The Lab's research agenda is synergistic with work going on across the MIT campus and involves numerous interdisciplinary collaborations, particularly with researchers in brain and cognitive sciences, bioengineering, management, mechanical engineering, computer science, AI, and urban planning. These collaborations are in the form of joint academic appointments, teaching efforts, and research programs. Sixteen of the Lab's graduate students and all of its approximately 200 Undergraduate Research Opportunity Program (UROP) students are enrolled in degree programs outside the Lab's academic program in Media Arts and Sciences. In addition, 25 students are enrolled in the alternative freshman-year program, which completed its ninth year.

The Center for Future Civic Media, a joint effort between the Media Lab and MIT's Comparative Media Studies program established through a four-year grant from the Knight Foundation, creates technical and social systems for sharing, prioritizing, organizing, and acting on information. Civic media goes beyond news gathering and reporting: it ensures a diversity of input and the mutual respect necessary for democratic deliberation. The center, directed by Media Lab faculty members Chris Csikszentmihályi and Mitchel Resnick and Henry Jenkins of the Comparative Media Studies program, hosted its first conference in June 2008.

Within the next three years, another billion people will make regular use of cell phones, continuing the fastest adoption of a new technology in history. The Next Billion initiative is an Institute-wide collaboration exploring how new digital technologies can transform business and community life in emerging markets and testing these technologies in the field. The goal is to unleash a wave of entrepreneurship, collaboration, and wealth creation, turning the newly connected into a powerful force in the world economy.

The Lab is continuing its collaboration with Taiwan's Industrial Technology Research Institute through NEXT, a Lab consortium that explores new approaches to innovation. Its members include commercial enterprises, research organizations, and governments.

The Lab's Communications Futures Program, which explores the dynamics, technology opportunities, and regulatory issues that form the basis for communication endeavors of all kind, operates through a series of working groups led jointly by MIT researchers and industry collaborators. It is directed by Dave Clark of the Computer Science and Artificial Intelligence Laboratory (CSAIL), Charles Fine of the Sloan School of Management, and Andrew Lippman of the Media Lab.

Sponsors

The Media Lab, whose research and expense volume was approximately \$29 million in FY2008, continued to work on fostering a spirit of collaboration with Lab sponsors, advancing a model for one-on-one relationships between sponsoring companies and individual faculty members.

The Media Lab welcomed the following new sponsors: Bank of America, Dentsu Inc., DirecTV, FutureWei Technologies Inc., Hearst Corporation, Linden Lab, Oblong Industries Inc., Philips Electronics Nederland B.V., Sprint, and Telefónica S.A.

Fellows

Six corporate sponsors—Highlands and Islands Enterprise, Motorola Inc., the NEXT Consortium, Nortel, PepsiCo, and Samsung Electronics Co. Ltd.—funded student fellows. In addition, each year the Lab awards the Steven R. Holtzman Fellowship for Digital Expression, funded by the family and friends of the late Steven R. Holtzman. The following were named fellows during FY2008:

- Peter Schmitt and Susanne Seitinger (Highlands and Islands Enterprise)
- Kate Hollenbach (Steven R. Holtzman Fellowship for Digital Expression)
- Mariana Baca (Motorola Inc.)
- Ryan Chin, Kwan Hong Lee, Anita Lillie, Michael Chia-Liang Lin, Wu-Hsi Li, Bo Morgan, Jeff Orkin, Raul-David Poblano, Eric Rosenbaum, and Noah Vawter (NEXT Consortium)
- Jackie Lee (PepsiCo)
- Angela Chang, Jae-woo Chung, Shaundra Bryant Daily, David Merrill, and Polychronis Ypodimatopoulos (Samsung Electronics Co. Ltd.)

Patents

The Lab filed 29 patents in FY2008, and four were issued, including one US patent on wireless networks.

Directed Research

In FY2008, the Media Lab submitted 42 proposals for new and continuing directed research projects. Nearly half of these proposals remain under consideration, and 11 have resulted in awards. Approximately 70 percent of the proposals submitted were in response to government solicitations (National Science Foundation, Defense Advanced Research Projects Agency, Department of Defense, Office of Naval Research, and National Institutes of Health), with additional interest in directed sponsorships from foundations and nongovernmental sources. The proposals ranged in size from \$12,000 to \$4.1 million and spanned one to five years, with awards averaging \$300,000 per year for three years.

Human Resources/Administration

Mary Markel Murphy joined the Lab as its new director of human resources. A 17-year MIT veteran, she was most recently administrative officer for the Department of Biology, and for the previous 10 years she held various human resources positions at the Institute. She took over for Ramona Allen, who is now director of human resources for the School of Architecture and Planning. The Lab also has two new directors. Sixteen-year Media Lab veteran Felice Gardner returned from One Laptop per Child to serve as the Lab's new director of sponsor management, overseeing sponsor relations and retention. Paula Anzer, who spent 14 years working on fundraising and communications in the Department of Urban Studies and Planning, came to the Lab from her most recent position as associate director of MIT's Leadership Center in the Sloan School of Management.

Professor John Maeda, who had been serving as the Lab's associate director for research, left the Lab in June to assume the presidency of the Rhode Island School of Design. He has been replaced by two co-associate directors: Hiroshi Ishii and Andrew Lippman. Ishii, who has been a faculty member at the Lab since 1995, codirects the Things That Think consortium and is best known for work in creating the field of Tangible User Interfaces. Lippman, a founding member of the Lab, directs the Digital Life consortium, which focuses on the confluence of technical invention and human understanding in creating a networked world where communication becomes fully embedded in our daily lives.

Frank Moss
Director

More information on the Media Laboratory can be found at <http://www.media.mit.edu/>.

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