On the night of July 6, the Media Lab's lower atrium was transformed into a "brainstorming arena," with nine design teams competing in the Lab's first IRON PROTOTYPE-A-THON. The competition, hosted by the Lab's SIMPLICITY (formerly I:O) consortium, followed the concept of TV's Iron Chef cooking show, where chefs are given a "secret ingredient" to use in creating unique and tasty dishes. For the Media Lab's version, the task was to "cook up" an improved e-mail interface. And just to make the task more challenging, the secret ingredient was Play-Doh.
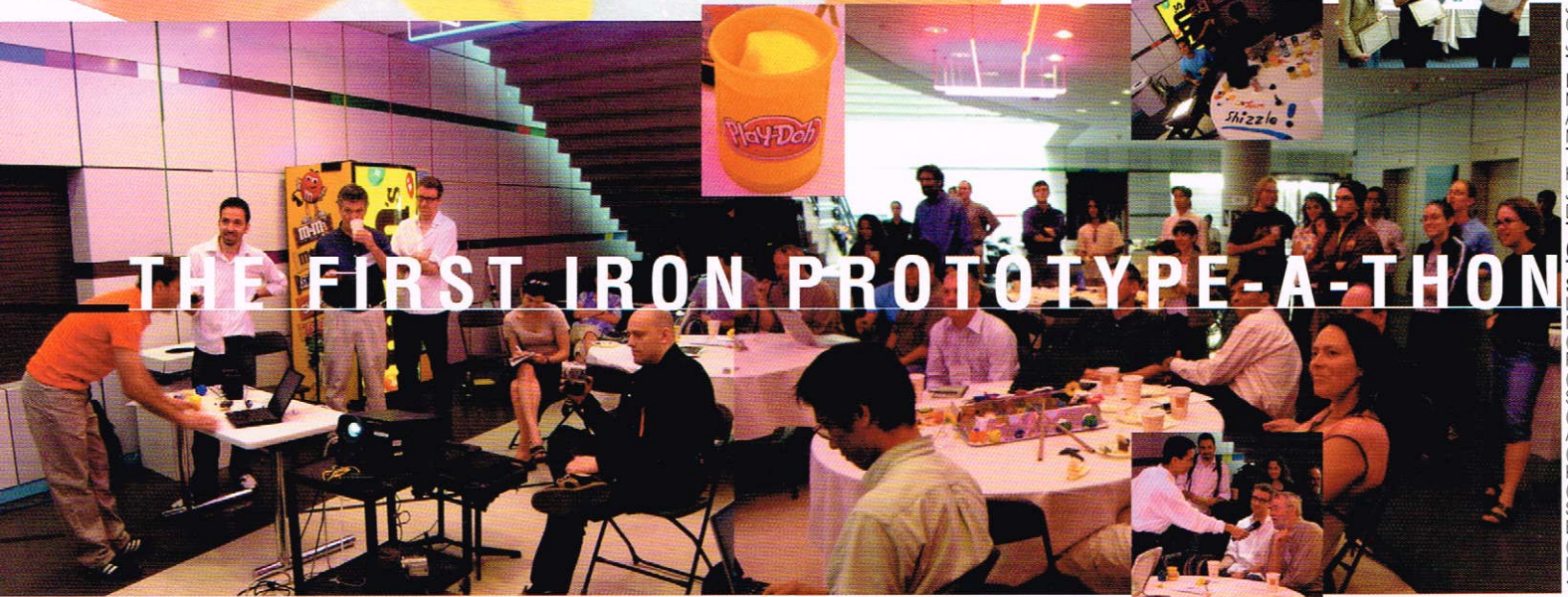
THE FIRST IRON PROTOTYPE-A-THON

"The whole idea came about in response to sponsors' requests," says John Maeda, E. Rudge and Nancy Allen Professor, who co-directs SIMPLICITY with Dan Ariely, head of the Lab's eRationality group. "So in true Media Lab fashion, we decided that this should be explored in a way that really tested the imagination."

In all, seven student teams, one faculty team, and one sponsor team competed. The sponsors called it a night at 9:30 pm, but many of the students toiled on through the wee hours of the morning. As one might expect, the approaches—and solutions—were as diverse and unconventional as the team names. For example, Team Super Friends' Internet system triggered more personal connections between people through a grassroots package-delivery system; Team Hummus gave e-mail a tangible presence by packaging it in Play-Doh marbles of different sizes and colors; Team Shizzle demonstrated magnetic filtering with clay-mation, while Team Foodtrux gave users e-mail sculptures, in the form of Post-it notes. Team Lovely (Evil) Pony wowed the crowd with a working system that literally printed out (albeit brief) e-mail messages directly onto the Play-Doh, and team Pondo Baba's ClayMail is now in use at http://imagemaps.media.mit.edu/claymail.

Bleary-eyed but enthused teams presented their e-mail at 9:00 the next morning. And the winner was Team Pixel Kittens, two undergraduates whose "e-mail fireworks" abandoned the usual e-mail box that hides messages in folders and replaced it with a layered screen display, allowing more important or timely "folders" to be pushed to the front, and those of lesser interest to recede.

If you missed out on this year's competition, Prototype-A-Thon organizers are already thinking about next year's problem, and the secret ingredient will be . . .

Not to be outshone by the students, Team Sponsor made a Bento Box presentation, where tiny Play-Doh sculptures of food symbolized the range of e-mails we receive: lobster, representing the "bottom feeder," spam; day-old sushi, representing viruses and worms; a rice bowl, representing undifferentiated messages; and salad, representing cc's—bulk with no substance.

To learn more about upcoming SIMPLICITY events, visit http://simplilcity.media.mit.edu

THE COLOR OF HEALTH

Diabetes is a long-term, lifestyle-related disease. Not surprisingly, physicians and health-care managers are always looking for new and creative ways both for diabetics to be more aware of glucose levels, and to engage family and friends in their day-to-day monitoring.

Now, following up on an idea suggested by one of our sponsors, Brent Lowensohn of Kaiser Permanente, researchers at the Media Lab are exploring a unique combination of wireless technology and ambient displays to address both issues. Recent graduate Akshay Mohan, working with Rosalind Picard in the Lab's Affective Computing group, has developed a computer-based system that uses a glowing orb that changes color to reflect a diabetic's glucose levels.

An ambient orb signals blood glucose levels: blue for low, green for normal, and red for high.
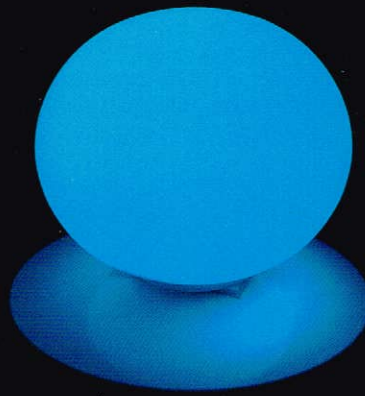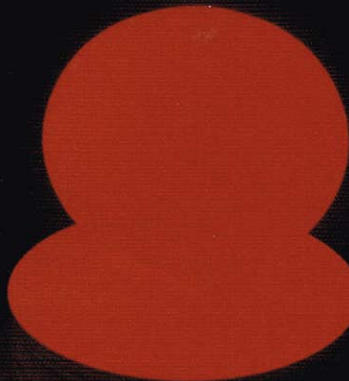
To date, diabetics have had only numerical values for these readings. Mohan and Picard believe that adding an ambient display like the orb can help improve upon this—first by providing a constant visual reminder, and second, by having an easily understood, constant feedback mechanism that can be shared by family and friends.

Earlier this year, a prototype system was tested with 12 adult diabetics through a collaboration with Katie Weinger, an investigator at the Joslin Diabetes Center in Boston. Each participant was given a glucose meter (donated by Lab sponsor Johnson & Johnson) that was equipped with a Bluetooth wireless transmitter. A Bluetooth receiver was attached to the participant's home computer, which communicated the results to the orb (provided by Lab spin-off company Ambient Devices). Every 20 minutes, specially designed software established a wireless connection between the glucose meter and the computer.

The reading was then assigned a color based on a scale determined with the help of Weinger, and transmitted to the orb. The orb retained the color until the next reading was obtained. If more than six hours elapsed between readings, the orb signaled this by also blinking.

"Brent's idea," says Mohan, "has proven to be a good one. While our test sample was small and only lasted for 15 days, it demonstrated the potential for ambient displays in health-care monitoring. The best example of this," says Mohan, "was one diabetic who could explain his diabetes to his five-year-old child using the orb. The child, who did not know numbers, could understand the significance of the colors and, when it was blue or red, knew to go to mommy for help."

To learn more about this and other projects in the Affective Computing group visit http://affect.media.mit.edu

Photos: Webb Chappell

S K I N & C O N T R O L

September 22 through December 30, 2004

Location One

26 Greene Street, New York City

Gallery hours: Tuesday through Saturday
noon–6:00 pm

Csikszentmihályi Exhibits in New York

Chris Csikszentmihályi, Benesse Assistant Professor and head of the Lab's Computing Culture group, has two large-scale installations, "Skin" and "Control," on display at the Location One gallery in New York City.

The installations, which rise out of the gallery floor and disappear into the walls, explore two central technologies of our late industrial society: the airplane and the control panel.

During the exhibition, Location One will present a series of conversations, lectures, and discussions with both the artist and international speakers from many fields to debate the ideas generated by the installations. And, as with all Location One events, the exhibition is live-streamed at http://location1.org/artists/skin_control.html

S K I N features an aluminum cylinder, representing the fuselage of an airplane, emerging from the gallery floor. Viewers will walk up to the windows, feel the vibrations of the plane in flight, and hear the muffled conversations of passengers.
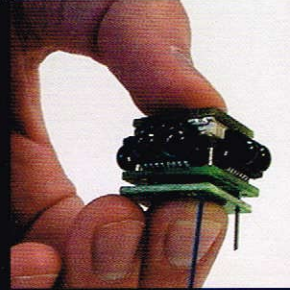
C O N T R O L, a giant panel roughly modeled on the one used in Chernobyl, emerges from a wall, wends its way through the gallery, breaks apart, and disappears. Viewers will interact with the puzzling array of buttons, bulbs, indicators, and dials.

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Number 125

A Publication for Sponsors of The Media Laboratory

Massachusetts Institute of Technology

A Pushpin node, with a modular, stacked architecture comprising four circuit boards: one each for power, communication, processing, and sensing. Photo: Josh Lifton

A large, foam "bulletin board" covered with dozens of illuminated "pushpins" may not look very high tech—but looks can be deceiving. This display, created by the Media Lab's Responsive Environments group, is, in fact, a testbed for developing advanced algorithms for extremely high-density sensor networks.

PUSHPIN NETWORKING

The testbed, appropriately called Pushpin Computing, is being developed by graduate students Josh Lifton and Michael Broxton, working with Sony Career Development Professor Joseph Paradiso. The Pushpins are small, bottle-cap-sized computers, each with two thumbtack-like pins that connect these mini-processors to the power-supplying "bulletin board." The pins, which are illuminated with LEDs, are easily configured for different sensing tasks, and communicate with their neighboring pins via infrared (IR).

"The advantage of such a system," says Lifton, "is that the processing takes place locally. It gets us away from a model where lots of cheap sensors deliver raw data to a single computer, which can take in only so much information before it gets bogged down."

"This system is especially useful because it is a real-world testbed," says Broxton. "A lot of sensor network research is conducted using computer simulations, but if you work in simulation and then try to debug your software in a real network spread around many square miles, it's logistically impossible. With the Pushpins, everything is right in front of you. And because the pins have IR communication instead of radio frequency (RF), they can communicate over a very short distance that pretty closely approximates a large-distance RF network."

Current research with the Pushpin platform focuses on distributed algorithms that determine the location of each Pushpin using a "thunder and lightning" approach in which an ultrasound "pinger" generates simultaneous bursts of ultrasound and light. Just as you can guess your distance from a lightning strike by counting off the seconds between the lightning flash and subsequent thunderclap, the Pushpins cooperatively determine their positions by comparing their timing measurements for a number of ultrasound and light pings.
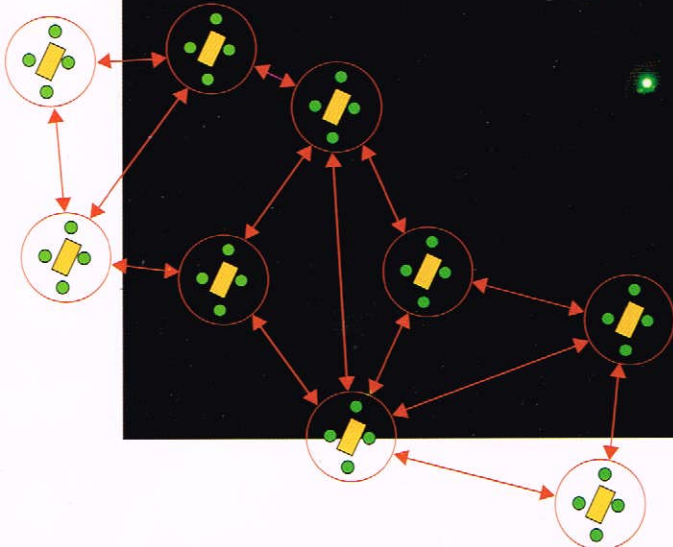
Near-term applications for such sensor networking systems could include environmental resource management. "Their advantage," says Broxton, "is that the nodes might be easily deployed by rangers on foot—or even by airplanes in remote areas—and could then become self-sufficient once the nodes are in place. I could imagine such a network deployed in a canyon, where there is no line of sight to communicate with the outside world, but because sensor nodes communicate neighbor-to-neighbor, they can pass information along until it reaches a node on the edge of the canyon that can relay the information back to a base station for processing."

In the long term, the hope is to scale down even further so that these sensor networks act more like a skin than a sparse network: hundreds or even millions of nodes that emulate the sensing capability of human skin, revolutionizing fields such as human-computer interaction and robotics.
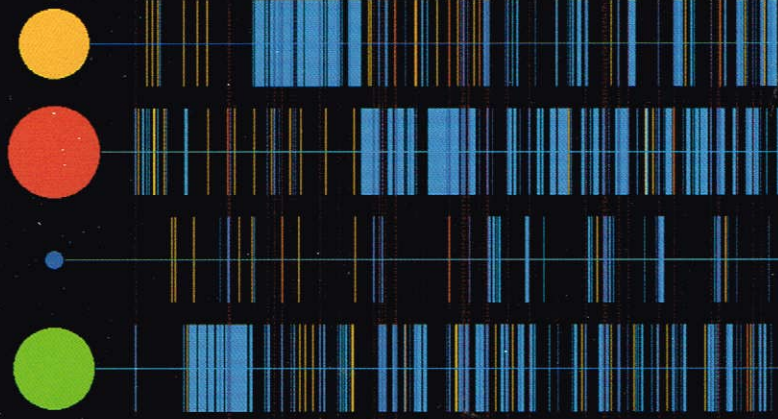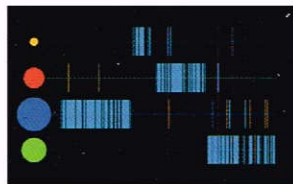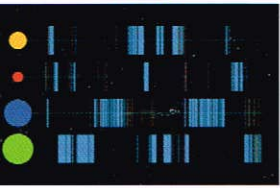
To learn more about Pushpins, visit: http://www.media.mit.edu/~lifton/Pushpin

Background photo: Webb Chappell

Circles matching pa[...]
physical position an[...]
indicate their level [...]
The smaller colored [...]
each circle indicate[...]
times each other pa[...]
overlapping the spe[...]

00:25:41/00:27:36

View:
○ Last 2 Minutes
○ Last 5 Minutes
● Entire Meeting

SECOND MESSENGER

We've all been there.

You're in a meeting,

and someone is

monopolizing

the discussion,

pushing a particular

viewpoint that becomes

overly weighted in

a group decision.

Someone else,

who has a valuable

contribution,

*sits quietly on the side,*

too shy to speak up.

Is there a way for technology to correct this social dynamic, increasing self-awareness so that group interaction is improved? Joan Morris DiMicco, a PhD candidate studying with Walter Bender in the Lab's Electronic Publishing group, is exploring this possibility with **Second Messenger**, a new interface built express-ly for improving dynamics in face-to-face, small group interactions.

Second Messenger technology is very simple. Everyone in the room wears a microphone that detects voice levels, but does not actually record the conversation. The voice levels are instantaneously fed to a program that translates these to graphic patterns of interaction that can be shown on a large display in the meeting room. The graphics can show who is speaking, who responds to whom, and patterns of interruption. "It's so simple," says DiMicco, "that everyone could have their microphones running the application on their own laptop, which feeds the information to the central program."

An earlier version of **Second Messenger** was more complex, using voice recogni-tion rather than voice-level detection, actually displaying the words during the meeting, filtering out the dominant people and emphasizing the people who hadn't spoken as much. But the voice recognition software was just not as effective, as it was designed for complete sentence dictation rather than for conversational speech. In addition, since **Second Messenger** has no recording capability, any privacy issues are eliminated.

"The ideal scenario would be for groups to use **Second Messenger** to ensure that all viewpoints are heard—to avoid a 'group think' mentality," says DiMicco. "The goal is to use these interfaces so that people become aware of imbalances, and self-correct, helping them reach a better consensus."
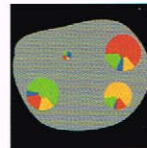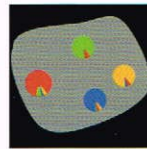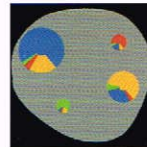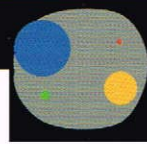
To learn more, visit http://www.media.mit. edu/~joanie/second-messenger
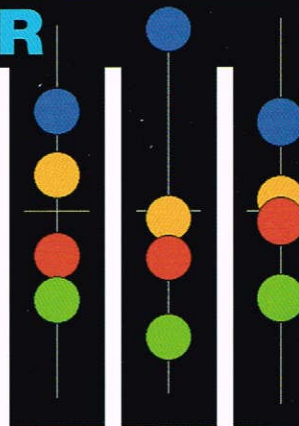
Colored circles representing each participant move up a vertical axis to indicate who is speaking, and how much is being said.

Graphic interfaces were created by undergraduate researcher Kate Hollenbach, working with the Electronic Publishing group. Hollenbach used a processing tool built by students in the Lab's Physical Language Workshop.

John Maeda, recently named to the E. Rudge and Nancy Allen Professorship, was recognized by *Fast Company* magazine as one of "20 Master Designers." The magazine referred to Maeda as a "game changer"—one of four designers identified as risk takers and agitators who are rewriting the rules of design. (http://www.fastcompany.com/magazine/83/mod_maeda.html)

奖励证书

潘鹏凯

荣获二〇〇三年度国家优秀自费留学生奖学金，特颁证书嘉奖，以资鼓励。

中国国家留学基金管理委员会

Recent PhD recipient **Pengkai Pan**, who studied with Glorianna Davenport in the Interactive Cinema group, was one of five Chinese students to receive the National Excellence Award for Overseas Chinese Students from China's Ministry of Education. The $5,000 prize, awarded for the first time this year, was presented in New York City in June.

Four MIT alumni who conducted their graduate work at the Media Lab were selected by *Technology Review* to be among the TR100: 100 innovators aged 35 or younger whose technologies are poised to make a dramatic impact on our world. **Dan Gruhl** serves as chief architect for IBM's WebFountain system, which identifies patterns in and extracts meaning from billions of Web pages; **Vikram Kumar**, cofounder and CEO of Dimagi, develops interactive software that motivates patients to manage chronic diseases; **Golan Levin**, an assistant professor at Carnegie Mellon University, explores the artistic implications of information technology; and **Nuria Oliver**, a researcher at Microsoft, constructs more intuitive human-computer interfaces.

Marco Escobedo, a Media Lab alumnus and former Telmex Fellow, was awarded first prize in the Michael Dertouzos competition, run in conjunction with the World Congress on Information Technology, held in Athens in May. The competition, named in honor of the former director of MIT's Laboratory for Computer Science, focused on "IT with a Human Face." Escobedo won the award for his Media Lab thesis, "Convivo Communicator: An Interface-Adaptive VoIP System for Poor-Quality Networks." He is now working at the Telmex Center for Digital Culture.

In June, Charles University in Prague awarded Media Lab Professor Emeritus **Marvin Minsky** a commemorative medal in recognition of his outstanding lifelong contribution in the field of information science.

Three Media Lab projects won honorable mentions in *Ars Electronica*'s 2004 International Competition for CyberArts: Topobo (**Amanda Parkes** and **Hayes Raffle** from the Tangible Media group), and Loops (**Marc Downie**, **Paul Kaiser**, and **Shelley Eshkar** in the Synthetic Characters group) won in the Interactive Art category; and DakNet: Store and Forward (developed by alumni **Rich Fletcher** and **Amir Hasson**, working with Media Lab Asia in 2002) won in the Digital Communities category. (http://www.aec.at/en/prix/honorory2004.asp)

Joseph Paradiso's modular synthesizer (probably the world's largest homemade modular synthesizer, obsessively built by Paradiso between 1974 and 1988) was displayed as part of *Ars Electronica*'s 25th Anniversary Festival in Linz, Austria.

Hot off the press: *The BT Technology Journal* (Volume 22, No. 4, October 2004), featuring 30 research articles written by Media Lab researchers. Sponsors of the Lab can view the journal online by visiting *insite*, the Lab's internal, password-protected hub (http://www.media.mit.edu/insite).

VOTING TECHNOLOGY: INNOVATION FOR TODAY & TOMORROW

October 1-2, Ted Selker, head of the Lab's Context-Aware Computing group, joins colleagues in the Caltech/MIT Voting Technology Project to host Voting Technology: Innovation for Today & Tomorrow at MIT.

The two-day symposium addresses how best to improve voting technology to protect the democratic process. Participants will examine such areas as ballot design, voter registration and authentication, Internet voting, the reliability of networked voting systems, and security.

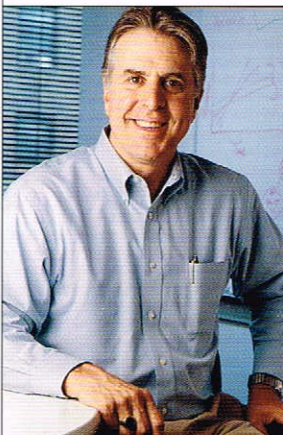To learn more about this event, visit http://www.vote.caltech.edu/IV2004.html

Photo: Webb Chappell

Sponsors may request more information about topics in FRAMES from Ellen Hoffman at hoffman@media.mit.edu or by telephone at 617 253-0640.

For information about the Media Lab, visit http://www.media.mit.edu.

Media Lab sponsors may visit FRAMES online through insite, http://www.media.mit.edu/insite.

SADTLER TO LEAD LAB'S MARKETING AND DEVELOPMENT EFFORT

Welcome Tom Sadtler, who joined the Lab in June as associate director for marketing and development.

Sadtler will be heavily involved in working with sponsors, faculty, and Lab administrators to promote the Lab as an innovative environment for sponsor collaboration. Toward this end, he will work with current sponsors to ensure that their needs are being addressed. He will also work with Lab faculty to bring in new sponsors whose needs match well with the Lab's research agenda and mission.

Sadtler comes to the Lab with 20 years of experience leading marketing and business strategy organizations for Lab sponsors. Most recently he was at Hewlett Packard, where he was vice president for marketing, HP services. Prior to HP, he worked at Compaq Computer, Digital Equipment Corporation, and Eastman Kodak.

For the past eight years, Sadtler has been chairman of the board of directors for CASCAP, a Cambridge-based, non-profit organization that creates low-income housing and services for people with special needs. Currently, the organization provides housing for more than 200 residents in over 20 locations throughout Cambridge and neighboring cities.

Sadtler received an MBA from the Harvard Graduate School of Business Administration, a master's in social work from Boston College, and a bachelor of science degree from Tufts University.