Silent plane designed
MIT, Cambridge conceive quiet, ‘green’ aircraft

MIT and Cambridge University researchers will unveil the conceptual design for a silent, environmentally friendly passenger plane designed by researchers at the Cambridge-MIT Institute’s Silent Aircraft Initiative. The engines are on top.

Elizabeth Thomson
News Office

MIT, University of Southampton launch World Wide Web research collaboration

Stephanie Schorow
News Office Correspondent

Someday, a newly graduated MIT student may proudly describe herself as a “web scientist,” that is, someone who has studied the political, economic and engineering aspects of the World Wide Web, and, in the process, steered the web’s development.

Such graduates could be among the results of the new Web Science and Engineering (WSRE) program at MIT and the University of Southampton that will generate research agendas to probe the scientific and social aspects of the web.

“The web is a living, ever-changing, ever-expanding and often unpredictable, complex system,” said Tim Berners-Lee, inventor of the web, a senior MIT research scientist and one of the four founding directors of the new initiative. While the web has created wonderful things, “it’s created some horrid things,” he said.

The web’s explosive growth requires a wide-ranging response to fully understand its ever-changing, ever-expanding and often unpredictable nature, Berners-Lee said during a press conference on Nov. 2 with the initiative’s three other founding directors: Nigel Shadbolt, professor of artificial intelligence and the new initiative’s leader, and a member of the Institute community, Edward M. Greitzer, the H.N. Slater Professor of Aeronautics and Astronautics at MIT; and Professor Ann F. Dowling of Cambridge University, the lead principal investigator on the Silent Aircraft Initiative. This collaboration of 40 researchers from MIT and Cambridge, plus many others from more than 30 companies, was launched three years ago “to develop a conceptual design for an aircraft whose noise was almost imperceptible outside the perimeter of an airport in an urban environment.”

While originally conceived to make a huge reduction in airplane noise, the team’s ultimate design also has the potential to be more fuel-efficient. In a typical flight, the proposed plane, which is designed to carry 215 passengers, is predicted to achieve 124 passenger-miles per gallon, almost 25 percent more than current aircraft, according to Greitzer. For a dose-to-earth comparison, the Toyota Prius hybrid car carrying two passengers achieves 120 passenger-miles per gallon.

The project aims to develop aircraft by 2020. The conceptual design addresses both the engines and the structure, or airplane, of a plane. Half of the noise from a landing plane comes from the airframe.

Other key features of the design include:

- An overall shape that integrates body and wings into a “single” flying wing. As a result, both the body and wings provide lift, allowing a slower approach and takeoff, which would reduce noise. The shape also improves fuel efficiency.
- The elimination of the flaps, or hinged rear sections on each wing. These are a major source of airframe noise when a plane is taking off and landing.
- Engines embedded in the aircraft with air intakes on top of the plane rather than underneath each wing. This screens much of the noise from the ground.
- A variable-size jet nozzle that allows slower jet propulsion during takeoff and landing but efficient cruising at higher speeds.

See PLANES

Theresa Stone is executive VP, treasurer

Theresa M. Stone, a member of the MIT Corporation since 1996 and the current chair of the MIT Investment Management Company, will serve as MIT’s next executive vice president and treasurer. President Susan Hockfield announced today Stone will assume her new role in February 2007.

Hockfield announced Stone’s appointment in a letter e-mailed to the MIT community today. In her comments, Hockfield emphasized Stone’s professional successes in investment banking and corporate management in the insurance and media industries, along with her ongoing engagement with MIT and its mission.

“Deeply knowledgeable about our academic enterprise, Stone brings to her new role a unique combination of qualifications as both an executive and as a member of the Institute community,” Hockfield noted.

Stone, who received the master’s degree in management from MIT Sloan in 1978, said, “I am devoted to MIT and both honored and thrilled to have this opportunity to serve.”

Since 1994, Stone’s MIT service has included membership on the Executive and Development Committees of the Corporation. She chairs the Visiting Committee for the Humanities and serves on the MIT Sloan Dean’s Advisory Council and the Visiting Committee for Music and Theater Arts.

Stone joined Morgan Stanley directly after graduation from MIT Sloan. In 1990, she moved into corporate management in the insurance industry, serving from 1990

See STONE

ARTS

TECHNO-SENSO-CITY
William Mitchell describes the future’s urban comfort zone.

ART OR MADNESS?
Panel probes new media, its friends and foes.

STARE-WAY TO HEAVEN
Astronomer develops youth apprentice program.

NEWS

OPEN ENROLLMENT
Tis the season to ponder 2007 health plans.

STARE-WAY TO HEAVEN
Astronomer develops youth apprentice program.

RESEARCH

DAY-OH!
Building technology prof describes new uses of natural light.

SCIENTIFIC AMERICAN names Angela Belcher
Researcher of the Year

Magazine ranks 4 from MIT in top 50

Professor Angela Belcher has been named 2006 Research Leader of the Year and a member of the “Scientific American 50,” the magazine’s annual list of individuals, teams, companies and other organizations whose accomplishments demonstrate outstanding technological leadership.

Three other MIT researchers are also among the Scientific American 50: They are Elizabeth Golding, a senior fellow at the Center for Advanced Visual Studies, and Professors Susan L. Lindquist and Richard A. Young of the Department of Biology and the Whitehead Institute for Biomedical Research. (Young shares the honor with Laurence A. Boyer, a postdoctoral scientist at Whitehead.)

The Scientific American 50 were named for their achievements in research, business or policymaking. A Leader of the Year is selected for “the use of custom-evolved viruses to advance nanotechnology,” according to the magazine.

“Using nature to create machinery, Belcher employs a living virus called M13 to construct metal nano-components that may be eventually incorporated into commercial products,” the magazine writes.

Angela Belcher

Elizabeth Thomson
News Office

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Gray will serve as interim VP for human resources

Executive Vice President and Treasurer Sherwin Greenblatt announced on Nov. 7 that Margaret Ann Gray, currently director of organization and employee engagement with the Human Resources Leadership Team (HRLT), which has acted as the managing group for HR since the departure of former Vice President Laura Ansaldi, will serve as interim VP for human resources.

"Gray has been meeting regularly with Greenblatt. "I would like to thank the HRLT members for their support and efforts during this transition," Greenblatt wrote.

"She and her team have been in helping to implement change, providing professional development programs and building workforce and career planning initiatives at the Institute," Gray said.

"In today's airplanes, with engines hinging below the wings, air flows unimpeded into the engine, accelerating and creating the air intake. In the future planes, the air intakes on top of the plane will behave differently. This presents a different set of issues to the designer." Greitzer emphasized that the collaboration between university and industry is essential. "The first is that Scientific American is so widely read, supported by kids. Since the magazine's article earlier this time by Bob the HR team, she and her team have been working to implement change, providing professional development programs and building workforce and career planning initiatives at the Institute."

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Astronomer develops youth apprenticeship program

Sasha Brown Nevada Office

An interdisciplinary field with room for creativity, astronomy is the perfect subject to spark a lifelong love of science, said David Forro, a professor of physics who gave an outreach presentation on science and space research for the MITKIV (Kavli Institute for Astrophysics and Space Research) Summer Program.

After MIT, the top 10 programs in the rankings include Berkeley, the University of North Carolina at Chapel Hill, Harvard, Penn, UCLA, Cornell, Rutgers, USC and the University of Illinois at Urbana-Champaign.

Building technology expert describes studies of daylight

Marilyn Andersen speaks about utilizing natural light

Sasha Brown Nevada Office

Using as much natural light in buildings as possible has many advantages over using artificial lights, if its penetration is appropriately controlled, according to the director of the Digital Sun and Light Laboratory, Marilyn Andersen of the Department of Architecture.

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“Light is not only an amount of energy,” Andersen said. “It is part of our biological needs. Intuition tells us that a change in the quality and quantity of room lighting can affect behavior and productivity. The colors and intensity of the light have a considerable impact on a person’s mood.”

Andersen cited studies in which natural light on those who will occupy their buildings, Andersen said.

Building with light

At MIT, there are a number of ways designers can access the lighting in their buildings. Among these methods are two types of heliostors—the motorized, automated type and the portable, manually operated type. The two heliostors simulate the course of the sun and use cameras to measure the effects of sunlight inside a building model during different times of the day and year. With these results, designers and architects are better able to determine where a building’s design will optimally attract and distribute light.

“HelioDome Project.”

The “LightSolve Project” attempts to fill the “gap between existing daylighting tools,” Andersen said. Although not everyone agrees, Andersen hopes the project will “allow the architect to really explore” and simulate the effects of sunlight on buildings.

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Robots developed for deepwater oil, gas operations

Andrea Cohen

Several recent advances in technology—such as the development of autonomous underwater vehicles (AUVs)—are revolutionizing exploration and production methods in the deepwater industry. AUVs are cost-effective tools for acquiring high-resolution, detailed images of the seafloor, and have been used successfully to perform deepwater exploration and production activities.

The autonomous underwater vehicle (AUV) was developed during World War II as a means of launching torpedoes from submarines. Since then, AUVs have been used for a variety of deepwater exploration and production activities, including surveying, mapping, and monitoring. AUVs are remotely operated vehicles (ROVs) that are typically equipped with a wide range of sensors and instruments, including cameras, sonars, and scientific instruments, to collect data about the seafloor and the subsurface.

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Mitchell maps cities’ new ‘techno-sensual comfort zone’

Ruth Walker
News Office Correspondent

“Visions of the future from a particular moment always tell more about that moment than they ever tell about the future,” William J. Mitchell, professor of architecture and of media arts and sciences, told his listeners at a lunchtime gallery talk on Nov. 1.

That observation didn’t hold him back, however, from predicting a future in which GPS-equipped cars bid against one another, clay style, but with no involvement from their human drivers, for scarce downtown parking spaces; or a future in which the entire outer skins of “intelligent buildings” naturally become “display spaces”—potentially public works of art, or maybe just a free-for-all of Jumbotrons, as in New York’s Times Square.

The audience gathered in an exhibition space thatredits the opening sequence of “2001: A Space Odyssey,” Stanley Kubrick’s 1968 film that had its own vision of the future, from the perspective of the year that included political assassinations, widespread civil disturbance and the “summer of love.”

But Mitchell reminded his listeners that 1968 was also the year that ARPAnet began—the forerunner of the Internet, which has given rise to a “ubiquitously networked world.”

The gallery talk was at the List Center for the Visual Arts, home through April 2007 to “Sensuari: Embodied Experience, Technology and Contemporary Art,” an exhibition inquiring into “the relationship between the body and electronic technology,” which has “reached a new techno-sensual comfort zone in the early 21st century,” according to the catalogue.

Mitchell is known for his work on how digital technology is creating not only “intelligent buildings” but intelligent cities—entities analogous to sensing human beings.

But in his exhibition catalogue essay, “Networked Eyes,” and in his gallery talk, he discussed the humble camera cell phone as the forward edge of this trend. Cameras have been connected to telephones for years—Mitchell’s essay is illustrated with a photo of a demonstration of desktop videophones at the 1984 New York World’s Fair. But such phones “put the eyes of the network in the wrong places,” Mitchell wrote. “A representation of the visible world constructed from the viewpoints of desk accessories just wasn’t that interesting.”

It is the addition of mobility to the camera-plus-telephone combo that has turned out to be critical. “In the process of evolving a global digital sensumtor, the camera-plus-telephone as you see the painting on the museum wall, you’ve seen it on the museum’s website, before you visit the city, you’ve explored it virtually using online mapping technologies.”

This sets up a new tension, Mitchell said, between expectation and reality. “The experience may be transformative in your experience of a city,” he said, comparing earlier eras when one would build a mental map of a place by experience, block by block. “What does your mental map mean in an era of Mapquest?”

A century of art crammed into a decade

Robin Ray
News Office Correspondent

New media art may be as subtle as a few digital white clouds floating across a sky-blue screen (“Super Mario Clouds,” by Cory), or as audacious as the Vex Men, who famously posted an apology for the drones at Bhupal, India, on a mock Dow Chemical web site. But in all its forms, it is not so much evolving as galloping in every direction.

What we’re seeing is “essentially a hundred years of new media art crammed into 10 years,” said Beth Coleman, assistant professor in Comparative Media Studies and in the Program in Writing and Humanistic Studies, who moderated a panel on “New Media and Art” on Oct. 26.

The pace of change poses a challenge for museum curators, collectors and academics who find themselves dealing with mercurial change, a parity of standards by which to assess the art, and art world that resists traditional curation and gallery display. An artwork of 1998, stored on a five-inch floppy disc, is today unreadable to the vast majority of operating systems.

“New Media and Art” focused on what the survival of new media.” Ippolito’s three threats are:

- “too many artists and not enough animators” (the preservation problem)
- “too many attorneys and not enough art” (the intellectual property wars)
- “too many academics and not enough artists.”

You can read his manifest on this topic at newmedia.umaine.edu/interarchive/three-threats.html.

A century of art crammed into a decade

Everyman finds love in OCW

Lynn Heimann
Office of the Arts

In “Portal Excursion,” Mike’s optimism is renewed after he discovers OpenCourseWare, MIT’s free and open educational resource for students in higher education around the world. “OCW offered Mike an incredible national resource for self-learners around the world,” said Smith. “OCW is a manifestation of our commitment to the idea that learning is a human right and we believe that learning is the key to achieving our vision of a better world.”

The eight-minute video, “Portal Excursion,” is from the Massachusetts Institute of Technology (MIT) series, initiated in the late 1970s, about the hopeless Mike Smith, a postmodern Everyman who believes everythings and understands nothing. “Portal Excursion” will be screened at the Center for Advanced Visual Studies (CAVS) on Wednesday, Nov. 8 at 7 p.m. in Room N52-386. The artist will attend. Smith is a video and performance artist who was a visiting artist at the CAVS in March 2005 and has since been a fellow at the Center.

For more information, call x3-4415 or visit cavs.mit.edu.