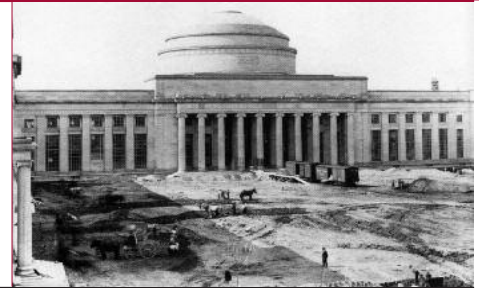


MIT Faculty Newsletter

<http://web.mit.edu/fnl>

in this issue we offer several perspectives on MIT 2030: our Editorial and the piece by O. R. Simha below, Faculty Chair Sam Allen's "MIT 2030: The Education Part," and "Twenty to Thirty Questions About MIT 2030," by faculty in the School of Architecture and Planning (page 15); an update on Learning Management at the Institute (page 6); and a progress report on "Improving Graduate Admissions Processes at MIT" (page 8).



MIT 2030: Concerns for the Future

O. R. Simha

ON OCTOBER 1, 2010, THE MIT Corporation was presented with a perspective on MIT's future planning and development, "MIT 2030." The MIT 2030 proposal is breathtaking in a number of ways, but it raises some serious questions about the future of MIT that bear closer scrutiny by the faculty, and the larger MIT community. [See M.I.T. Numbers, back page, for a schematic of MIT 2030.]

What is MIT 2030? It was presented as "a process to analyze and integrate the condition of the campus and building renovation needs and measure the development capacity of MIT land holdings for academic growth." Most important, it introduced a new role for the MIT Investment Management Company's (MITIMCo) real estate division, a role which put it on an equal footing, if not in the dominant position, as a competitor

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New Retirement Program for Faculty and Staff Hired On or After July 2, 2012

L. Rafael Reif and Israel Ruiz

Summary

THE INSTITUTE-WIDE PLANNING Task Force was formed in 2009 to find creative ways to reduce overall expenses, as well as look for opportunities to make MIT even better. This led to a thorough evaluation of all major benefits at MIT by the Benefits Advisory Group, which included members of the faculty, senior leaders, and staff.

The group determined that our 401(k) plan has a high enrollment rate and is well understood and appreciated by the community. Our exceptional pension and retiree medical plans, however, were found to be complex and undervalued. In addition, the group found the long-run cost of these two plans could place substantial financial burdens on the Institute.

To address these issues, we will offer a new retirement program for those hired

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Editorial Long-Term Planning for MIT's Future

THE ADMINISTRATION AND THE MIT Investment Management Company have recently put forward an ambitious proposal – MIT 2030 – for the redevelopment of the Main Street/Kendall Square area with both commercial and academic components. In this issue of the *Newsletter*, a group of Architecture and Planning colleagues (page 16) lay out their views and visions. O. R. Simha (page 1) expresses a number of concerns about the MIT 2030 proposal, as does Faculty Chair Sam Allen (page 4). These pieces reveal the complexity and impacts of the decisions that will be made in implementing MIT 2030. We are concerned that there is insufficient involvement of faculty in long-range planning of land use for MIT.

As stated on the associated Website (web.mit.edu/mit2030),

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Address

MIT Faculty Newsletter
Bldg. 11-268
Cambridge, MA 02139

Website

<http://web.mit.edu/fnl>

Telephone 617-253-7303

Fax 617-253-0458

E-mail fnl@mit.edu

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Long-Term Planning for MIT's Future
continued from page 1

MIT 2030 is a long-range planning process designed to help MIT make thoughtful, well-informed choices for the renewal and evolution of its facilities and physical environment, based on a continuously refreshed understanding of the Institute's academic, research, and community priorities.

As pointed out in the article by Simha, the MIT Investment Management Company (MITIMCo) has played a large role in the development of the MIT 2030 proposal. The mission of MITIMCo is "to provide stewardship of MIT's financial resources." It is appropriate that plans for the future use of MIT real estate take into account the financial implications of the use. And MITIMCo is uniquely positioned to evaluate the financial implications. But MITIMCo is not in a position to balance the financial implications of long-term planning with the future academic needs of MIT.

For example:

- It is nearly impossible to predict academic needs 20 or more years in advance. The nature of research and education is far too dynamic, and it moves breathtakingly fast. MIT should be very circumspect in granting long-term leases for its land.
- Land that is contiguous to MIT's current campus is much more valuable for academic use than is land that is further away. One needs to take into account the potential non-fiscal value of land to MIT in any long-term decisions.

Long-term planning for MIT 2030 may have implications far beyond that date. To illustrate, a few years ago Novartis was granted a 40-year lease of MIT properties. MIT 2030 is charged with considering other long-term leases as well, which would not end until after 2050.

The plans in MIT 2030 involving the revitalization of the existing campus have had limited direct faculty involvement. This is regrettable, as it deprives the planning process of potentially significant inputs from a supportive and important

The articles in this issue make clear that we need an Institute committee with full faculty representation to plan the growth and further reorganization of our campus. . . .

constituency. The editorial subcommittee is concerned that MIT 2030 has not sufficiently involved MIT faculty on the long-term planning of non-campus properties, and that the current process will lead to decisions that are not in the long-term interest of MIT.

MIT has a long tradition of reaching out to the faculty in the course of framing important long-term decisions. Currently, there is no faculty committee that is charged with helping to develop (or even analyze) the implications of the MIT 2030 initiative with respect to the off-campus land. The articles in this issue make clear that we need an Institute committee with full faculty representation to plan the growth and further reorganization of our campus, considering all the diverse requirements of maintaining a vibrant university community.

A faculty committee could help address, even remedy, another gap in the MIT 2030 planning: the lack of communication. Based on anecdotal evidence, it appears that faculty have little awareness of MIT 2030, and few faculty have even heard of MITIMCo. One indication of a lack of information is that *MIT News* refers to only four articles that provide any information about MIT 2030. Two of the articles describe different speeches given by President Hockfield in which she mentioned MIT 2030. A third article was about a Website created to explain MIT 2030. And the fourth article was about a sale of bonds whose revenue would support the MIT 2030 project. None of the articles discusses the planning of the remaining MIT properties.

Simha raises another important policy issue within his article. Does MIT have the responsibility to honor promises made by previous MIT administrations? We believe that past promises should be taken seriously, and there should be trans-

parency concerning what promises were made and what were the circumstances.

We close with an additional recommendation: MIT should draw more on its own faculty and alumni in strategic planning. With respect to MIT 2030, faculty with expertise in urban planning or in financial investments can contribute to this process. And some of our alumni could share their great expertise in real estate management and development for MIT strategic planning.

.....

Perry and Winston Elected to FNL Editorial Board

PROFESSORS Ruth Perry (Literature) and Patrick Henry Winston (Electrical Engineering and Computer Science) were elected to the Newsletter Editorial Board in the Institute-wide faculty election held last month. We'd like to thank our colleagues for participating.

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In Memoriam

WE MOURN THE RECENT passing of three honored and devoted faculty members: Har Gobind Khorana (Biology); Robert Silbey (Chemistry); and David Staelin (Electrical Engineering and Computer Science).

MIT obituaries for each can be found at:

- Prof. Khorana (web.mit.edu/newsoffice/2011/obit-khorana-1110.html)
- Prof. Silbey (web.mit.edu/newsoffice/2011/obit-silbey.html)
- Prof. Staelin (web.mit.edu/newsoffice/2011/obit-staelin-1115.html)

We offer a fond remembrance of Bob Silbey on page 22. ■

Editorial Subcommittee

From The Faculty Chair MIT 2030: The Education Part

Samuel M. Allen

MIT 2030 HAS GOTTEN a lot of exposure in the past year. According to the MIT 2030 Homepage, “MIT 2030 is a long-range planning process designed to help MIT make thoughtful, well-informed choices for the renewal and evolution of its facilities and physical environment, based on a continuously refreshed understanding of the Institute’s academic, research, and community priorities.” (web.mit.edu/mit2030). I expect that most faculty have seen the impressive “fly-over” virtual tour video that shows current and projected views of our campus and its surroundings. MIT 2030’s primary focus has been on the facilities and physical environment that are expected to result from an integrated plan to renew campus facilities and develop real estate adjacent to the current campus. While academic priorities are an acknowledged part of the MIT 2030 process, there has not been extensive campus-wide discussion of what an MIT education will look like in 2030.

Each semester, Academic Council devotes part of the weekly meetings to in-depth discussion of a particular “theme.” This fall’s theme is the role of technology in education, and the Council has heard about innovative educational methods that are demonstrably better than traditional “chalk and talk” lectures in terms of learning outcomes and efficiency.

The reality of “distance learning” is here, for better or worse, and technology-enabled education is an ever-increasing

part of the way in which knowledge is imparted on campus and internationally. Distance education has tremendous potential to bring higher education to remote parts of the world: MIT will cer-

Because the world is at the threshold of rapid change in educational methods, we need to devote significant time and energy to discern what shape MIT’s educational programs will likely take in 2030. Does distance learning pose a threat to MIT’s current emphasis on education within a residence-based learning community?

tainly have a role in this, either through a coordinated effort or through a spinoff of successful on-campus educational innovations.

Because the world is at the threshold of rapid change in educational methods, we need to devote significant time and energy to discern what shape MIT’s educational programs will likely take in 2030. Does distance learning pose a threat to MIT’s current emphasis on education within a residence-based learning community? Assuming that education-at-a-distance is widely available at relatively low cost, what incentives will future students have to invest in a residence-based educational experience? These are serious questions that need to become part of the MIT 2030 vision.

A residence-based education’s value will have to rely on the features that only

face-to-face contact and immersion in a “24-7” shared experience can provide. Many aspects of what can be contributed by an on-campus MIT education have already been assessed at length in the

landmark study by the MIT Task Force on Student Life and Learning published in 1998 (web.mit.edu/committees/sll/tf.html). The report’s introduction rings just as true today as it did 13 years ago:

“Information technology introduces new methods for teaching and reduces the barrier of distance, challenging residence-based education. Investment in science and technology has shifted from a national defense basis to one encompassing economic viability, environmental concerns, and health care. Finally, students who come to MIT will participate in an increasingly global economy, whatever their career choices, and more leadership will be expected of them. The Task Force was charged with determining how an MIT education should reflect these changes.”

The Task Force's report and its recommendations bear further study and contemplation as part of the MIT 2030 project. Especially pertinent to the discussion of residential educational communities is this statement in Section 6, The Next Step:

"A cultural shift is needed at MIT. It is a shift

from demanding separation of student life and learning to demanding they be inseparable,

from focusing on formal education to emphasizing learning in both formal and informal settings,

from a community divided by place, field, and status to a community unified by its commitment to learning,

from keeping research, academics, and community apart to unifying the educational value each provides."

We need to reflect on how successful we've been at achieving this cultural shift over the past 13 years, and how we can continue to focus our energies to strengthen MIT's educational community. I don't think it's an exaggeration to say that MIT's future depends on it. From Section 2 of the Task Force report: "... MIT remains a campus-based university, and the value of maintaining it as such lies primarily in the degree to which its students learn from one another. Collaboration among students and interaction with faculty, whether they take place in formal or informal settings, are the distinguishing qualities of the academics, research, and community activities that take place at a campus-based university."

Let's return to technology-enabled education and its role in MIT's future.

How can developments in enhanced learning practices be leveraged to enhance the value added by a residence-based MIT education? The answer has to lie in creating and sustaining a unique on-campus learning community that successfully integrates elements of what the Task Force Report calls the "educational triad" –

How can developments in enhanced learning practices be leveraged to enhance the value added by a residence-based MIT education? The answer has to lie in creating and sustaining a unique on-campus learning community that successfully integrates elements of what the Task Force Report calls the "educational triad" – research, academics, and community.

research, academics, and community. I expect that for the foreseeable future MIT's research expertise and infrastructure will continue to draw students to campus. Most research thrives when creative people come together to work on related problems, and personal interactions often result in serendipitous exchanges that ultimately lead to major advances. And for an individual to learn how to do research, there is no substitute for the on-campus experience of working with seasoned researchers.

No doubt by 2030, technology-enhanced tools that significantly enhance learning will be commonplace in MIT's academic offerings. Let's assume that using these tools eliminates a significant fraction of "chalk-and-talk" lecturing. This would free up faculty time that can be devoted to other activities that will change our day-to-day activities as educators. The question is, in what ways will faculty redirect their efforts to ensure survival of the residence-based educational model?

We will certainly have the opportunity to use more time to engage under-

graduate students in "hands-on" learning and research. But we will also have to find ways for faculty to engage in community building to add value to the residential learning experience. A more robust system for advising and mentoring will be essential. More faculty will need to participate in mentoring, and

deeper and enduring mentor/mentee relationships will be necessary. Faculty engagement with students will need to extend beyond the academic and research spheres and into the community sphere. The creation of options for more faculty to live on campus, or close by, will need to become a priority for MIT 2030 planning.

From our undergraduate and graduate student exit surveys, we repeatedly find that our students yearn for more interactions with faculty. That's something that a distance education is unlikely to provide. We all need to brainstorm and discern possible scenarios for the MIT 2030 educational experience. These discussions need to inform the plan for developing MIT's infrastructure and real estate over the next decade. I welcome your comments, suggestions, and engagement in future discussions of this important topic. ■

Samuel M. Allen is a Professor in the Department of Materials Science and Engineering and Faculty Chair (smallen@mit.edu).

The Future of Learning Management at MIT

Dan Hastings
Hal Abelson

IN 2009, THE MIT Council on Educational Technology (MITCET) charged the Faculty Committee on Learning Management Systems (LMS) to provide strategic guidance on the future of LMS at MIT. MIT needs a more robust LMS with the flexibility and features necessary to support the evolving pedagogical and technological innovations in the classroom. The Committee, chaired by Eric Klopfer, collaborated with Information Services and Technology (IS&T) to gather community requirements, evaluate alternatives, and ultimately recommended the evaluation of the Blackboard Learning Management System as a possible alternative to the current Stellar platform.

Results of the Blackboard Evaluation

In spring 2011, IS&T conducted a limited evaluation of Blackboard 9.1. The evaluation included two components: a rigorous technical assessment of the Blackboard platform and extensive user testing. The technical analysis revealed several significant issues with respect to the Blackboard LMS, highlighted by shortcomings in the following areas:

- Supportability
- Maintainability
- Core functionality
- Extensibility and customizability
- Value-added functionality

IS&T concluded that, from a technical perspective, the systemic issues associated with supporting and maintaining Blackboard 9.1, coupled with limitations in core functionality and extensibility,

render the product less than suitable to MIT's needs.

Based on the consistently negative results of both the technical assessment and user testing, the Committee on LMS made a recommendation to MITCET to halt further experimentation with the Blackboard platform.

At the same time, user testing showed that the majority of users found Blackboard more difficult to use and administer than Stellar. Testing involved 14 courses spanning six disciplines, representing the participation of 33 course administrators and over 600 MIT students. In order to mitigate the dissonance often associated with product migrations, the version of Blackboard 9.1 implemented at MIT was heavily customized to present a user interface and workflow logic closely paralleling that of Stellar.

In follow-up surveys, 90% of course administrators and 68% of students preferred Stellar over Blackboard. In considering the content management capabilities, 97% of administrators found the Blackboard Content Collection difficult to use and 87% bypassed it and managed content manually. Grading was also challenging; 62% of the administrators found the Blackboard gradebook tool difficult to configure and use. Finally, the Blackboard course support modules received mixed reviews, but approval rates were unimpressive overall.

Based on the consistently negative results of both the technical assessment and user testing, the Committee on LMS made a recommendation to MITCET to

halt further experimentation with the Blackboard platform. The Committee

also recommended a shift to the Modular Service Framework as the foundation for learning management at MIT. MITCET supported both recommendations.

The details of the analysis and user feedback are documented in the Blackboard 9.1 Experiment: Analysis and Recommendation Report.

Future Plans

In moving forward, IS&T has already shifted resources to the development of the Modular Service Framework as the new foundation for learning management at MIT. This approach will gradually replace existing Sakai 2-based Stellar functionality with a set of discrete, flexible Web services driven by a common data framework and based on a standardized set of Application Programming Interfaces (APIs).

With a focus on flexibility and integration, the Modular Service Framework is well positioned to meet MIT's future LMS needs, including the technological evolution mandated by Digital MIT, as well as the emerging trends in curriculum development and online education. In this model, key functional components are represented by individual Web services that can be utilized as either standalone

modules or as part of an integrated set of user tools. These Web services are driven by common core data sets, and share common standardized APIs. This aspect of the model eases integration and interoperability with community-developed and third party tools. Such an approach encourages community innovation while balancing individual customizability and extensibility with service standardization and the reduction of support overhead.

Development of the Modular Service Framework began in summer 2011. Current planning projects a 48-month delivery trajectory for the initial core components. This includes grading, attendance, calendaring, content and material management, forum integration, and

blog/wiki integration. These represent existing functionality currently delivered within the Sakai 2-based Stellar framework. The first component, the Gradebook Module, has been made available to community evaluators as a beta 1 release; a full community release is planned for fall 2012.

Over the next several years, as existing core Stellar services are accounted for in the Modular Service Framework, focus will increasingly shift to the integration of value-added functionality satisfying specific unmet or emerging user needs. Such functionality will be identified and prioritized via a community requirement gathering process.

This new direction for Stellar will allow MIT to develop a state-of-the-art, Web-

services enabled learning management system. In the future, the LMS will also provide integration points with the registration system, as well as advising and learning tools for both students and faculty. As a critical system serving the needs of a large percentage of the faculty, we realize that it is important to keep such functionality front and center as MIT continues to transition to a more digital future. ■

Dan Hastings is the Dean for Undergraduate Education, Professor of Aeronautics and Astronautics and Engineering Systems; Co-Chair, MIT Council on Educational Technology (hastings@mit.edu);

Hal Abelson is a Professor of Electrical Engineering and Computer Science; Co-Chair, MIT Council on Educational Technology (hal@mit.edu).

American Infrastructure Deficiencies

Ernst G. Frankel

IT IS SHAMEFUL THAT a small snow-storm in October can disrupt essential power and telephone services for hundreds of thousands of people for weeks.

America is the only advanced, rich, developed country that still uses wooden pole supports hanging electric, power, and telephone lines in densely populated urban areas, even though gas, water, and now cable are all buried underground. The cost of burying these distributed services could easily be recouped in just a few years by the savings in costs of emergency repair and outages, which a study in Brookline clearly showed.

It is outrageous that we allow this to

continue and not only expose our population to gross inconvenience and added costs, but quite often to threats to life and health. There is no excuse to delay these actions, particularly now when there are large numbers of workers readily available to perform this work and a public which would more than welcome such a development. The contention by the power companies that it would cost trillions of dollars to do this statewide is not credible, as the investments by cable and other providers clearly show.

There is also an urgent need by lawmakers to enforce cooperation by distributed services providers (telephone, electricity,

gas, water, cable, etc.) to ensure close cooperation and coordination in planning, maintaining, updating, etc. of these distributed services under the threat of government takeover, as done in many countries. It is unacceptable to expose the public to the inconvenience and dangers of lengthy service interruptions, which we experience more and more frequently now. Similarly, these systems should also be modernized to assure instant remote fault detection and have rerouting or bypass facilities, which exist now in many countries. ■

Ernst G. Frankel is a Professor Emeritus in the Department of Mechanical Engineering (efrankel@mit.edu).

Improving Graduate Admissions Processes at MIT

Christine Ortiz

THE GRADUATE ADMISSIONS process is central to maintaining the vitality and quality of our education and research enterprise. During the 2011 admissions cycle, MIT had the highest number of graduate applicants (22,220) and the most competitive admission rate (15%) in its history. However, the graduate admissions process at MIT is currently decentralized across more than 40 graduate programs and highly heterogeneous, using a variety of electronic, paper-based, and hybrid systems.

The current state of graduate admissions

Discussions with graduate administrators, graduate officers, and Department Heads raised many systems-based issues with the current graduate admissions process, as detailed following. A significant administrative burden exists due to manual data entry, reporting, double-checking, formatting, scanning, file conversion and consolidation, and maintaining shadow systems and reporting. Unintuitive, awkward and slow interfaces have resulted in poor applicant experience with various software platforms. Generally, there is no capability for real-time data reporting, as well as inconsistent data capture and reporting between programs. The use of time and financial resources due to paper-based and hybrid paper-electronic systems (for example, during faculty evaluation of applications) is highly inefficient. Lastly, there is difficulty in maintaining resources for training and documentation to support admissions processes.

Graduate administrators, admissions staff, and faculty do an outstanding job with the systems available to them, but it is clear that there is an urgent need and broad support for an improved infrastructure to support their work.

Institute and by our peers; to assess baseline functionalities required by all graduate programs; and to propose a plan (including organization and implementation) for the development of a centrally-supported online paperless admissions system.

The Task Force conducted its work during the spring 2011 semester, which included interviewing a number of graduate admissions experts from across MIT, surveying 38 graduate programs at MIT with the assistance of MIT Institutional Research/Office of the Provost, and investigating internally constructed and external commercial options.

Assessing the need

The 2007 *Student Systems Vision Project: Graduate Admissions Workshop Report* and the 2009 Institute-wide Planning Task Force both recommended that MIT pursue an online paperless graduate admissions system. When considering the transition to an all-electronic centrally-supported admissions system, it is essential to consider the graduate admissions process as a whole, including our current procedures, as well as potential future needs and innovations.

In January 2011, as Dean for Graduate Education, I assembled a *Task Force on Improving Graduate Admissions Processes* chaired by Professor Nicolas Hadjiconstantinou of the Department of Mechanical Engineering. The charge of the Task Force was:

- To comprehensively analyze the capabilities and limitations of current graduate admissions systems utilized across the

- To catalog current graduate admissions processes and develop recommendations for innovation in the graduate admissions evaluation process.

- To explore synergies with the centralized undergraduate admissions system and processes from recruiting, to selection, to yield.

The Task Force conducted its work during the spring 2011 semester, which included interviewing a number of graduate admissions experts from across MIT, surveying 38 graduate programs at MIT with the assistance of MIT Institutional Research/Office of the Provost, and investigating internally constructed and external commercial options. The Task Force considered graduate program customization needs; security; installation; training; maintenance; enhancements for future innovations in the evaluation process (see

below); interfacing with other student information and financial aid systems; cost; value-added; long-term sustainability; and implications.

Recommendation

The Graduate Admissions Task Force released its final written report entitled “*Towards an MIT-supported, all-electronic admissions system, and a highly diversified applicant pool,*” in early June, 2011. This report recommended adopting the system developed by Professors Frans Kaashoek and Robert Morris of the Department of Electrical Engineering and Computer Science (EECS) Institute-wide over a timeframe of three admissions cycles, in a manner allowing graduate programs to opt-in and commercial vendors to be phased out. Under this plan, graduate admissions at MIT would evolve from a fragmented structure with multiple providers to an all-electronic system with one recommended and supported application provider. Adoption of the EECS system will additionally provide opportunities to simplify and unify the graduate admissions data flow and database structure, including a decrease in the number of data feeds and necessary maintenance, as well as improve graduate admissions data quality and timeliness of access.

The EECS system is a demonstrated excellent, customizable, and adaptable platform that will improve efficiency, reduce processing times and paper use, streamline the review process by faculty, and improve applicant experience and recruitment competitiveness. The system provides a Web interface for collecting applications and fees; application review is performed using a second Web interface, which reviewers (e.g., admissions committee members or other experts) are invited to visit using their MIT Kerberos and a local password. This latter Web interface provides the reviewer with a list of assigned applications which they can proceed to review on the computer screen. The reviewer then provides a

numerical score that is tallied with those of other reviewers for the Admissions Officer’s consideration, as well as the ability to enter comments.

The EECS system exhibits a large number of functionalities that make it exceptionally flexible. Departments may

The EECS system is a demonstrated excellent, customizable, and adaptable platform that will improve efficiency, reduce processing times and paper use, streamline the review process by faculty, and improve applicant experience and recruitment competitiveness. The system provides a Web interface for collecting applications and fees; application review is performed using a second Web interface, which reviewers (e.g., admissions committee members or other experts) are invited to visit using their MIT Kerberos and a local password.

customize parts of the application and the review system on their own. The system may be set up to flag applications based on any searchable criterion (e.g., students who have previously applied to that particular graduate program, previously admitted students from a particular institution, underrepresented minority students, etc.). Reviewers typically enter a numerical score, but also may add comments that can be made visible/blind to the subsequent reviewers. Searches are possible in real time (i.e., by applicant’s School, research sub-area of interest, reviewer’s comments, etc.). Letters submitted by the same recommender on behalf of different applicants over the years can be reviewed for comparison. Applicants are given a copy of the notification e-mail sent to each recommender, so that the applicants themselves can ensure timely submission. Applicants can check on-line if the recommenders have submitted their letter. Departments can compile real-time statistics (i.e., admitted/applicant population, number of applications received per period, etc.). The possibility exists to store applications locally and/or

to print to hard copy for review later when an Internet connection is not available. Turn down letters can be posted on the applicant’s status page. Applicants can upload documents (i.e., PDFs, etc.) and application fee waivers can be implemented.

Implementation

The release of the Graduate Admissions Task Force report was followed by a two-week comment period to solicit input from the MIT community. Feedback from faculty, students, staff, and administrators during the open comment period included broad support for the adoption of the EECS system Institute-wide. There was a strong appreciation that the EECS faculty developers have previously demonstrated successful transitions to three graduate programs, significantly improving their graduate admissions processes. The community acknowledged the numerous benefits, provided suggestions for enhancements, and articulated some concerns, potential risks, and recommendations to develop mitigation strategies for these risks.

A project team consisting of the EECS faculty developers, Information Services and Technology (IS&T), the Office of the Dean for Graduate Education (ODGE), and the Office of the Dean for Undergraduate Education (DUE) was formed over the summer of 2011 and a detailed implementation plan developed, that includes Institute financial/staffing

continued on next page

Improving Graduate Admissions

Ortiz, from preceding page

support. The EECS faculty developers will transition the EECS system over to all graduate programs that would like to opt-in by directly working with and training department graduate administrators and officers. They will make development, customization, and enhancement decisions, manage and maintain the system for those departments who have opted in. IS&T will work on modification to and maintenance of the central data flow and storage structure for graduate admissions, and work with EECS on integration issues between the EECS system and MITSIS.

For each graduate program, the transition to the EECS system involves a number of steps. The EECS faculty developers initially meet with the graduate officers and administrators, and set up an account with access to the demo application, as well as their unique database on the EECS server. Requests for updates are subsequently handled via e-mail, which the EECS faculty developers then carry out. There are generally no fundamental software changes required and the graduate programs can configure the system themselves. An online guide has also been prepared to assist the graduate administrators through the transition. The graduate program is responsible for closing out the prior system and requesting that central admissions redirect their Webpage to the EECS system.

An *ad hoc* Committee on Graduate Admissions (CGA) has been assembled to serve as the primary Institute body for review and oversight of the all-electronic graduate admissions transition consisting

of faculty, a graduate student representative, a graduate administrator representative and a representative from the Central Admissions office in the Office of the Dean for Undergraduate Education. The CGA will periodically review, discuss, and provide feedback and recommendations to the EECS faculty developers on the all-electronic graduate admissions system. Additionally, the transition will be reviewed by the Committee on Graduate Programs (CGP) and the Student Systems Steering Committee (SSSC). ODGE will act as the project sponsor, provide information, feedback, advice, coordination, communication and act as a liaison with various relevant committees. Central Admissions will continue to play the role they do now in customer service and data management.

The EECS faculty developers have been working to transition 10 graduate programs for the fall 2011 admissions in-take including Biology, Brain and Cognitive Sciences, Chemical Engineering, Chemistry, Civil Engineering, Computational and Systems Biology, Engineering Systems Division, Mechanical Engineering, Microbiology, and Physics. At the time of writing this article, all of these programs were live with the new system and accepting applications while customization refinements were ongoing. Enormous improvements and relief have already been realized for these graduate programs. In addition to the new graduate programs being transitioned over, the EECS faculty developers have continued to work with the Departments of Mathematics, Aeronautics and Astronautics, and EECS, which already had the EECS system in place prior to AY12.

We welcome comments and questions on the all-electronic graduate admissions

transition; feel free to contact me directly at the e-mail address below.

Acknowledgements

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Christine Ortiz is the Dean for Graduate Education (cortiz@mit.edu).

Review Committee on Orientation

Merritt Roe Smith

IN MARCH 2011, Dean for Undergraduate Education, Professor Daniel Hastings, and Dean for Student Life, Chris Colombo, charged the Review Committee on Orientation (RCO) to examine all aspects and activities associated with Freshman Orientation. Specifically, the Committee is considering potential changes to Orientation that would improve the experience for first-year students and better prepare them for the challenges they are about to encounter at the Institute.

The impetus for the Committee was based on a recommendation from the Task Force on the Undergraduate Educational Commons in 2006. The Task Force recommended that the Chancellor establish a faculty committee to examine Orientation, to achieve better program balances among student life, academics, and research in the interest of setting “the stage for the intellectual journey upon which first-year students are about to embark.”

The committee includes five MIT faculty members (three of whom are housemasters), one non-faculty housemaster, six undergraduates, and four senior administrators from the Office of Undergraduate Advising and Academic Programming, Student Development and Support, and Residential Life. I serve as the faculty chair of the Committee. The purview of the Committee includes a review of the official Institute Orientation, Freshman Pre-Orientation Programs (FPOPs), Residential Exploration (REX), and the fraternity and sorority rush.

With such a broad and diverse set of programs to review, the Committee has dedicated significant time to gathering

background information and data from key stakeholders. During the spring, we met with the Director of the International Students Office, Director of Housing, Director of FSILGs, faculty overseeing the Advanced Standing Examinations and Math Diagnostic (biology, physics, chemistry, and mathematics), sponsors on behalf of a suite of Freshman Pre-Orientation Programs (FPOPs), the DormCon Vice President for REX, and students representing the residential community. These initial discussions gave the Committee an understanding of the underlying challenges and goals of the diverse components of Orientation.

Subsequently, we established subcommittees to undertake a substantial and deep review of specific aspects of Freshman Orientation. The subcommittees addressed:

- Orientation Programming
- Freshman Pre-Orientation Programs (FPOPs)
- Residential Exploration (REX) and Housing
- FSILG Rush.

Over the summer, these subcommittees gathered survey and assessment data, sponsored focus groups, spoke with content experts, and reviewed best practices at other universities. Each subcommittee summarized its findings in a report to the full Committee.

In addition, a special subcommittee on Data Gathering and Assessment was created to collect and analyze data that would help us better understand the impact of MIT’s Orientation on first-year students. Headed by Professor Charles

Stewart and Elizabeth Young, the subcommittee surveyed a subset of incoming freshmen before, during, and after Orientation to evaluate their immediate transition problems, levels of anxiety, and knowledge of resources. In addition, the full Class of 2015 was asked to complete a comprehensive survey the first week of classes.

As of this date, the RCO has collected a great deal of data. The next stage of our work, the most difficult, will be to analyze this data with an eye to discovering synergies and complementarities while eliminating and/or reducing possible conflicts, overlaps, and redundancies.

As the fall term unfolds, the Committee will continue to engage faculty, students, and other members of the community. We have met with the Committee on Undergraduate Program (CUP) and will meet with the Undergraduate Officers. We also held public forums in November designed to gather additional student perspectives. The first forum was held on November 10 and the second on November 21. All members of the MIT community were invited.

The Committee will report its findings and recommendations on Freshman Orientation to Deans Hastings and Colombo in January 2012. All comments and questions are welcome. Please send them to Leslie Bottari, at bottari@mit.edu, who will keep a record of all messages received and pass them on to the Committee. ■

Merritt Roe Smith is a Professor in the Program in Science, Technology, and Society and the History Faculty (roesmith@mit.edu).

MIT 2030: Concerns for the Future

Simha, from page 1

for the use of MIT's land resources, resources which were assembled, over many years, to ensure there would be an inventory of land available, at a reasonable cost, to meet the future needs of MIT academic departments, laboratories, Schools, housing, and support services.

This shift in responsibilities represents a sea change in policies that have guided the land acquisition and land management strategies for MIT academic and investment real estate initiatives for 95 years. It is a shift that has occurred quietly over the past decade, but until now has not been explicitly stated for all to see.

In summary, MIT 2030 appears to rest on several key assumptions that will have long-term implications for MIT as well as the City of Cambridge.

The plan assumes that the Institute's facilities needs will grow at a sharply reduced rate during the next 20 years; 50 percent slower than it has during the past 50 years. It assumes that the principle focus within the academic campus will be the renovation and restoration of existing buildings, and that only a very limited number of new facilities for the Schools of Engineering and Science in areas of materials science and energy will be supported in the next 20 years. There appears to be no indication that the housing, teaching, and other service needs of the MIT community will receive attention during this period. There is also little discussion of how new opportunities, not yet envisioned, will be accommodated.

Instead, it appears that the MIT Management Company's real estate division has been given a significant role in shaping the future MIT campus. They have been empowered to either lease for long terms to private corporations, or develop for commercial uses, most of the land and building areas previously earmarked for near- and long-term academic needs. Their vision for the MIT campus and surrounding neighborhood is one in which they would add new office and laboratory buildings for industrial clients to

the existing concentration of commercial real estate, with a goal of maximizing investment returns. For example, they have leased to the Novartis Company four acres of MIT land on Massachusetts Avenue for a period of 60 years. They have announced a new building for the Pfizer Company on land south of Main Street.

The 2030 vision makes no note of how long-term Cambridge land use policies and the zoning ordinance could encourage or impinge on the development of the campus. There is no reflection on the commitments MIT has made in the past to Cambridge and other public agencies with respect to both campus development and economic development. There is no analysis of the long-term financial, political, and social implications of the plan

They propose to build – in the Kendall Square East Campus area – an additional one million square feet of commercial space including a modest addition of retail space (50,000 sq. ft. over the current 48,000 sq. ft. that exists south of Main Street). This is largely in response to President Hockfield's urging for a more humane and congenial environment. Only under Cambridge community pressure have they agreed to include in their developments 120 units of housing, up from an original proposal for 60 housing units.

This vision of the MIT campus and surrounding neighborhood raises many questions that would profit from a full airing. The 2030 vision makes no note of how long-term Cambridge land use policies and the zoning ordinance could encourage or impinge on the development of the campus. There is no reflection on the commitments MIT has made in the past to Cambridge and other public agencies with respect to both campus development and economic development. There is no analysis of the long-term financial, political, and social implications of the plan, save the estimated cost of \$2 billion to renovate and restore existing buildings and the issuance of taxable bonds that will provide \$750 million in

capital to undertake a variety of institutional and investment projects.

In its description of the campus today, MIT 2030 does not indicate the cost and implications of MIT's current leasing of over 400,000 square feet of space for MIT departments in privately owned commercial buildings adjacent to the campus. It

does not take note of the several buildings within the campus district, controlled by the MIT investment real estate group, which have been allowed to remain empty and non-productive for many years. These are buildings that are almost equal in size to the amount of space that MIT rents in the private market at commercial rates.

In addition, the 2030 plan presents an inventory of MIT buildings classified by building quality and by historic value. There is no indication, except by age, of the criteria used to classify so-called "Historic and Iconic" buildings. There is no information provided about the implications of such classification. In years past, in lieu of a comprehensive agreement with MIT on all of its campus and investment properties, the Cambridge Historic Commission has sought to label most of MIT's property as having historic interest. The implications of these designations suggested by the 2030 plan need to be thoroughly understood, as they could mean significant limitations on the utility of buildings built for industrial purposes but which now have little value for MIT's educational purposes. Over 30 years ago, one of the country's most distinguished architectural historians, Professor Albert Bush-Brown, was asked by MIT to lead a

team to evaluate MIT buildings to determine which ones had true historic value. Their report is still a valuable resource for MIT planning. It concluded that only a limited number of buildings merited such protection and did not include many of those currently in the 2030 plan.

There is no reference in the 2030 plan to the long-range implications of the creation of high value real estate in areas earmarked for ultimate academic use; implications that would include the cost to the academic budget to buy from the MIT Investment Management Company buildings needed for academic use at market prices, and the parallel implications of the loss of tax revenue to the City of Cambridge. Current “payment in lieu of taxes” agreements require that the Institute continue to pay the taxes on property removed from the tax roles for a number of years. Under the present conditions, those costs would presumably fall on the academic budget. One might ask if

the capital cost and taxes might make the cost of acquisition of this space insurmountable for the academic budgets at the time of need.

In view of the absence of a context for evaluating MIT 2030, it may be of value to review briefly the policies and procedures that have guided MIT’s land acquisition and development policies in the past (see next page).

Troubling though many aspects of MIT 2030 may be, more fundamental is the matter of the Institute’s integrity. In 1965 and 1967 MIT made promises and formal commitments to the federal government and the City of Cambridge in exchange for \$6.2 million dollars of federal aid (see section “Kendall Square Urban Renewal Project,” next page). MIT does not make promises or commitments that affect its future casually. Several of MIT’s most distinguished leaders – James Killian, Julius Stratton, Howard Johnson, Jerome Wiesner – who authorized these Kendall Square Urban Renewal commitments and

supported them vigorously both here in Cambridge and with our congressional delegations in Washington – were fully aware of what they were promising. They were keenly cognizant of the need for a long view with respect to land resources for MIT’s future, and thoughtfully directed our academic and commercial energies to appropriate locations. Their wise decisions are now under attack from within, from those who seek short-term gain rather than long-term institutional value.

It is for this generation of MIT leaders and faculty to consider if those who have profited from the prudence of prior generations, which provided the land resources for reasonable and economic growth for institutional development in their time, will leave the same opportunities for future generations of young faculty and their students who follow. ■

O. R. Simha is a Research Affiliate in the Department of Urban Studies and Planning, and former MIT Planning Director (*simha@mit.edu*).

M.I.T. Numbers MIT Campus 2011



Source: MIT Department of Facilities

A Brief History of MIT's Land Acquisition Policies

IN 1912, FRANCIS HART, the sixth treasurer of MIT, oversaw the purchase of 46 acres of land in Cambridge for the new campus. The purchase cost was \$775,000 or \$17,000 per acre. Shortly thereafter, Coleman du Pont, a member of the MIT Corporation, argued for additional land acquisitions and arranged for the acquisition of land west of Massachusetts Avenue for MIT's future growth. Additional land was purchased in the years that followed, for either immediate academic use or for investment use on an interim basis, awaiting the need for academic purposes.

These properties and others that followed were purchased with the intent of leasing them "as is" and if any improvements were made they would be covered by tenant leases. The intent was to have the lease income write down the capital cost of the property, so that when it came time to transfer it into the academic category its cost would be low. The funds used to make these purchases of property scheduled to be held for future academic expansion were held in Pool C, current invested funds, rather than endowment funds. Thereby enabling below market transfers of property to academic use when needed.

In addition, MIT solicited gifts of property from both the federal government and private companies, which were added to our land inventory without a capital cost. After WWII, the federal government transferred several buildings to MIT that had been acquired during wartime and were now surplus to the government's needs. In addition, the Nabisco Company gifted to MIT a property on Albany Street that allowed for the expansion of the Magnet and Fusion Laboratories. In similar fashion, the Atlantic Richfield Company donated land on Massachusetts Avenue to MIT for Institute purposes. Many of the tenants of these low cost real estate investments were MIT faculty startups who were able to afford the simple, low cost space as they struggled to get their companies going.

A Long-Range Plan

In 1960, the Institute's Long Range Planning Committee commissioned the newly established Planning Office to prepare a long-range plan for MIT, a plan that

would deal not only with the then current building priorities, but would provide integrated strategies for the academic, residential, social, financial, and community relations needs of the Institute for the next 40 years. This time frame reflected the expected period of service for a newly tenured faculty member. A key component of that effort was a land acquisition plan identifying the area that MIT should acquire for its long-term institutional needs and would ultimately remove from the tax rolls. A parallel effort in this plan identified nearby areas where MIT could assist the City in rebuilding its then dismal economic base, and replenish and enhance the City's tax base. The Technology Square initiative was the first example of this policy. Simultaneous with MIT's planning efforts, the City of Cambridge Planning Board and its Citizen's Advisory Committee had undertaken a review of the City's plan and zoning ordinance. MIT, working closely with the City, was able to establish that the logical areas for MIT expansion would remain south of Main Street and Sidney Street, and that the Institute would seek to focus its efforts at economic renewal for the City north of Main Street and Sidney Street. This plan was enshrined in 1965 in the Planning Board's publication "Land Use Goals for the City of Cambridge," as well as later in the designation of an Institutional district for MIT in the Cambridge zoning ordinance.

Kendall Square Urban Renewal Project

By 1965, the initial success of the Technology Square project attracted the attention of a team from NASA that was charged with establishing an electronics research center in the Boston area. Their interest in being close to MIT and other institutions led to a Cambridge proposal, backed by MIT, to initiate the Kendall Square Urban Renewal Project that would clear much of the antiquated industrial buildings in Kendall Square, provide a site for NASA's needs, and reserve a 13-acre area for private development. Their precarious financial condition in those days gave the City pause, until MIT agreed to utilize a special provision of the urban renewal law that enabled Cambridge to have the value of MIT land and buildings purchased within a mile of the project area transferred to

its account. Ultimately, this amounted to a sum of \$6.2 million in credits that the federal government awarded the City of Cambridge, and made it possible for Cambridge to undertake the project without financial risk. MIT, in turn, was required to commit itself to using the properties that had been certified for these credits for educational, research, and service purposes. MIT provided, as required by law, campus development plans for these properties, which were duly approved by the City Council in 1965 and 1967. While all of these MIT sites lay outside the official boundaries of the urban renewal project area, they did meet the federal requirements and they also lay within the area that had been established by the Cambridge Planning Board and MIT as the districts in which the Institute would concentrate its campus development.

Since MIT would have to assemble the remaining land to fulfill this plan on the open market, it was clear from the outset that the implementation of the land acquisition plan would take a long time; as much as 40 to 50 years. That projection has been painfully accurate.

The implementation of the plan was the responsibility of a real estate group in the MIT Treasurer's Office. From time to time its energies were diverted to tasks that included MIT's commitment to develop badly needed elderly housing for the Cambridge Housing Authority in 1971, and later for the completion of the land assembly required to rationalize the properties acquired from the Simplex Wire and Cable Company on which the University Park Project would be built. Notwithstanding those challenges, the Institute was fortunate to have as its Treasurer Glenn Strehle '58, who placed Phillip Trussell '56, an alumnus with deep loyalty to the Institute and considerable real estate experience, in charge of the Real Estate Office. As an MIT staff officer, Trussell worked in close cooperation with the Planning Office to implement the long-range Institute land assembly plan, as well as lead the development of the University Park project. This 20-year effort did not produce significant short-term gains but is now, with its combination of office, laboratory, retail space, and over 650 units of housing, an important source of the higher

returns reported by the management company's real estate group. University Park is also one of the City's major taxpayers.

A Change in Focus

The change in the Real Estate Office's focus begins with the change in leadership of the MIT Treasurer's Office in the late 1990s. When Allan Bufferd became Treasurer, the focus of the Institute's land acquisition program shifted from one whose primary goal was the assembling of land for future academic purposes, to one whose primary goal was the management and development of these properties to maximize the return on investment, until such time as it was needed for academic purposes. At that time it could be purchased by the academic budget at its market value. The argument for this shift in policy was, to some degree, based on the view that private real estate developers in the vicinity of the Institute were profiting from the economic stimulation provided by MIT faculty and students, and that MIT should also seek to enjoy the possibilities for significant returns in real estate development. In addition, the rising costs of land acquisition resulting in part from MIT's early initiatives in Tech Square and University Park and the growing success of developments in Kendall Square, suggested a different "more business-like" view of the management of MIT's land assets.

In a report prepared by the Planning Office in 1998, the issue was brought into sharp focus, when it pointed out the conflict between priorities for ensuring the continuity of the academic land reserve program and the pursuit of investment opportunities. The report stated that one of the results of this shift was that the Institute had failed to acquire some important properties that were key to its academic future, because the return on investment was not high enough to meet their benchmark for returns. The focus was now clearly on purchasing property for the investment portfolio, rather than the academic expansion portfolio. A number of recommendations were made to free the Treasurer to make land acquisitions for future academic needs, by providing a different financing mechanism that favored the needs of the academic land acquisition program. But, to date, this has not occurred.

MIT Investment Management Company

In the years that followed, Stephen Marsh became the Director of the MIT Real Estate Office and, with the establishment of the Investment Management Company in 2004, land acquisition and management policies took a very different turn. The former MIT staff members of the Treasurer's Office now became employees of a separate MIT Investment Management Company (MITIMCo). Their new levels of compensation were based on market standards for investment managers and their total compensation based on incentives for performance. While this arrangement has become a common practice for some universities whose endowment is principally in equities and other similar investments, it was new to MIT. A key result of this arrangement is that the investment real estate group's employees, whose incomes are based in part on performance, were encouraged to seek maximum return for any land resource under their supervision.

In addition, the new MIT administration, under President Hockfield, called for the acceleration of improvements to the environment in East Campus between the Sloan School and the Medical Department. A plan for this area had been prepared in 1998 consistent with MIT's long-range academic, service, and environmental goals, but it was awaiting the completion of key land purchases before going forward. It would have permitted the development of 600,000 to 800,000 sq. ft. of space for academic and research use and provided for over 115,000 sq. ft. in retail area. In addition, it provided for the development of 400 units of housing on the Sloan School campus and a new green court for East Campus.

As noted above, Mr. Marsh and his colleagues in the investment company have proposed to the City and the MIT community a new development plan for these properties that had heretofore been reserved for academic use. He submitted an amendment to the zoning ordinance that would allow the addition of approximately one million square feet of additional development. This development would be characterized by a series of separate buildings dominated by a 25-story office/laboratory tower for commercial clients to be located adjacent to the Kendall T Stop.

Since a substantial part of this area had been certified by MIT to the City of Cambridge and to the federal government for exclusive use as educational facilities as part of the underlying financing of the Kendall Square Urban Renewal area, Mr. Marsh was informed of the potential conflict between his proposal and the Institute's past commitments. The issue was raised of the prospective conflict between future academic space needs that required the transfer of investment land to the academic portfolio, and the reduced revenues to the City of Cambridge when the projected high tax valued real estate was removed from the tax roles in the future. MITIMCo's response was to claim that the current inventory of development rights for academic purposes would be preserved in the campus area in this proposal through a variety of mechanisms, primarily the demolition of existing buildings, possibly including the 270 apartments at 100 Memorial Drive, and through the development of high rise buildings. Since high rise buildings for academic and research purposes have proven to be problematic at MIT – as witnessed by the Earth Sciences Building – to depend on that type of solution for the future needs careful scrutiny.

More troubling, has been the view held by MIT's General Counsel that the Institute's commitments to use the properties that MIT had certified to the federal government and the Cambridge City Council for educational purposes was no longer in force, based on a letter from the deputy counsel of the regional office at HUD, a letter which indicated that the federal government had no mechanism to enforce this agreement, since the project had been closed out with the City of Cambridge in 1984. This view is troubling for at least two reasons. First, the government has in effect admitted that it did not perform its due diligence in ensuring that MIT was in compliance with its commitments when the project contract with Cambridge was closed out. Nor, in fact, did the City of Cambridge ensure that MIT was in compliance at that or any other time.

O. R. Simha

Twenty to Thirty Questions About MIT 2030

Caroline A. Jones*

offered to the MIT community by the SAPIens (an assemblage of architects, planners, and historians in SA+P – the School of Architecture and Planning)

MIT 2030 REPRESENTS A bold beginning for a comprehensive plan that anticipates the renovation of MIT’s aging facilities and produces a map of its future research priorities and expansion needs. As emphasized by its original authors, MIT 2030 “is a process, not a plan.” A plan is now needed, one focused on the core educational priorities of the Institute rather than driven by real-estate development paradigms.

We advocate that the administration take full advantage of the professional and research expertise of its faculty, and open the MIT 2030 process to its community for wide-ranging input and needed modification. We know that this more transparent, collaborative, and open engagement works: such a process contributed to a smooth financial response to the world-wide economic crisis, and that kind of engagement will help convert the MIT 2030 “process” to a visionary plan.

The following questions purposefully do not add up to a single opinion, but weave together suggestions and concerns based on our research in design and planning. We urge consideration of community and housing issues, quality of life, and integration with regional plans that are not evident in the current MIT 2030 [web.mit.edu/mit2030] and Kendall Square Initiative [www.kendallsquareinitiative.org] Websites. We also advocate for an open and transparent process in formulating a viable plan for MIT’s future.

1) MIT 2030 is insistently “not a plan, but a process,” an appropriate demurral when

research objectives, tools, and methods change as rapidly as they do on the edge of

The MIT 2030 documentation is driven primarily by programmatic imperatives and economic considerations that can be captured *quantitatively*; how can MIT 2030 better reflect *qualities* and consider broader spatial constructs that address life at the Institute? How can MIT 2030 both address and build community, making MIT an even more desirable place to be?

innovation. But not having a plan is not a long-term solution. How can the shifting projections of spatial needs become a flexible, achievable, visionary plan, with attention to views, perimeters, gateways, 24-hour life, and community?

2) The MIT 2030 documentation is driven primarily by programmatic imperatives and economic considerations that can be captured *quantitatively*; how can MIT 2030 better reflect *qualities* and consider broader spatial constructs that address life at the Institute? How can MIT 2030 both address and build community, making MIT an even more desirable place to be?

3) What does MIT want to be 20-30 years from now? What are the existing typologies of built and open space, and of landscape? How can we produce a long-range vision that does not simply see space as a “left-over” to be filled by more buildings, or raw material for real estate? MIT, of all places, should be intelligently adventurous.

4) Can the need for housing in Cambridge be incorporated into MIT 2030, in part-

nership with the state and city, to foster a dense residential development on the peripheries of MIT property? This would create a more diverse environment, supporting shops, eating places and a 24-hour life, which adding only academic space and more non-MIT research facilities cannot provide.

5) Image projection is one of MIT’s major issues, which MIT 2030 could address. How can our physical structures and informational infrastructures better communicate the sense of the MIT spirit to our students, our local community, and the world? Can we partner with the City of Cambridge in its current study of Central Square, to address the fact that the approach to MIT along Mass. Ave. (from Lafayette Square) is the least successful part of this major thoroughfare?

6) The MIT 2030 flyover reflects MIT’s historical orientation toward the Charles River. Can we turn 180 degrees and re-conceptualize MIT’s orientation? How

might its 21st century development engage with the City of Cambridge, including our neighbors in public housing as well as commercial firms? Can we begin to clarify the difference between the historic core and the West side, between edges such as Memorial Drive or spines such as Vassar Street? Which areas/places are those of lively interaction and which are for nature and tranquility? How does technology and innovative construction factor into the open space and landscape design?

7) Where is *design* in the MIT 2030 plan? It seems that design is still considered a decoration to be applied in the final stages of individual buildings. By contrast, architects see design as a fundamental component of large-scale conceptualization: urban planning, relations to energy systems, coordination of green integument, and instigations of lasting cultural change. A bias for design would help the MIT 2030 plan become less bureaucratic and more visionary.

8) Should we accept MIT 2030's conception of the Institute as a series of separate buildings, or use the planning process to recall the genius of Bosworth's original and highly flexible idea? The original 1913 designs envisioned a grand interconnected structure conceived in opposition to the idea of the normative college campus (a stretch of land populated by independent buildings with separate functions). MIT's 1913 facility, the largest academic structure in the world when it was built, remained highly adaptive and flexible for half a century. Today's Biomedical labs are vastly different from Humanities buildings, but can the original flexibility be recaptured? As buildings become more and more specialized they will become more self-limiting.

9) Almost every building on campus is centered in on itself, and on its own internal corridors. How can we improve larger-scale continuities across the campus, across building lobbies, and courtyards?

(Such continuities can concern themselves with materials, vegetation, rainwater management, etc.) The purpose would be to think of the Institute as a set of dynamic functions and integrated spaces rather than fragmented ones, an integration that will not produce itself automatically.

Where is *design* in the MIT 2030 plan? It seems that design is still considered a decoration to be applied in the final stages of individual buildings. By contrast, architects see design as a fundamental component of large-scale conceptualization: urban planning, relations to energy systems, coordination of green integument, and instigations of lasting cultural change.

10) MIT encompasses both practical and symbolic spaces – how will MIT 2030 think through *both* of these imperatives? Unlike the traditional university, MIT has many courts (not a “quad”) and many spaces that exist at an unprecedented scale. This scale often dwarfs existing buildings – as in the West Campus area bounded by Saarinen, Aalto, and Holl structures (with the dorms stretching beyond to Sidney Street, etc.) Can we reconfigure the sport fields to integrate the structures that surround their chain link perimeter into a unified sub-campus environment, or even consume some of their space for social activity buildings? How can this otherwise featureless domain-in-between be given identity and symbolic meaning?

11) Will the current plan accommodate the tactical choices of the last five decades, in which buildings have been put here or there, each dedicated to a specific purpose (and each in a completely different design language)? Or, since specific purposes and even interdisciplinary groupings are doomed to become obsolete, can we use MIT 2030 to urge a rethinking of the building as a unit? The recently completed North Court is a promising beginning – can it be improved from a simple crossing of walkways and be reconceived as a quad con-

ceptually enhancing Killian Court?

12) What would happen if we could imagine the MIT environment as a series of outside spaces reconfigured to link and integrate the separated buildings once again? Perhaps in some remedial way the space around and behind the Calder

could be redesigned so that the Killian, McDermott, and North Courts would constitute an inner spine that then could get linked to the new sites to the north. One thinks of Olmsted's famous conception of an “emerald necklace” for Boston. Adding a few trees here and there to the front of buildings is not enough; we need to understand how public space knits life, work, and learning together as interrelated activities. We can begin by valuing, enhancing, and structuring the interstitial public spaces that we have.

13) How might the “campus landscape” be creatively re-envisioned as an “urban ecosystem?” The MIT 2030 profile features an emergent Great Circle around the North Court with a strong emphasis on biological and allied sciences. How might this area of campus, and other areas, become “ecological laboratories” where experimentation extends beyond the walls of the buildings? The bioswale behind Stata might be a beginning, but how might MIT move toward dramatic instrumentation and experimentation in the campus as a living, learning laboratory?

14) The CSX railway corridor, which defines MIT's northern border, is both a barrier and a potential resource. How can the MIT property on the other side of the rail lines be woven into the rest of the

continued on next page

20 to 30 Questions About MIT 2030

Jones, from preceding page

campus, particularly for pedestrians? There is presently no access to those areas after Mass. Ave., yet there are gaps in the wall defined by Metropolitan Storage, West Garage, etc. MIT owns the air rights some eight meters above the rail corridor, which can yield a very large volume of floor space for campus and other expansion (as in the example of the Brain and Cognitive Science building) and change the form of both the campus and Massachusetts Avenue.

15) In a related question, how can the traditionally internal focus of MIT buildings and the “transportation” conception of the outdoor spaces (crosswalks, sidewalks, asphalt) be radically rethought? How can the planning process encourage the proliferation of external openings, buffer zones, and vital small businesses (cafes, galleries, bookstores) or even non-governmental and international organizations and not-for-profits that will mesh public and university spaces, contributing to the life of our wider community?

16) What can we do to integrate additional programs into the campus, in order to enliven its spaces when there are no classes or in the evening, and in doing so increase a sense of liveliness, safety, and security? Can spaces and zones for public/university partnerships be incorporated into the plan? Can MIT partner with the City or non-profit cultural groups to ensure that its peripheries and surrounding community areas become green, well-lit, and comfortable to be in at all hours?

17) MIT is neither a fully urban university nor a traditional campus built on the monastery model – how can its status as a sprawling institution with urban edges be leveraged to bring “contaminant urbanity” within reach of students and faculty? A different kind of investment and urban vision, not based on current real estate models, will be needed if MIT is to enable

more than a food court culture. (The vibrant restaurants that have grown up in the non-MIT-owned stretch of Main Street offer a living laboratory for this question to be tested.)

MIT is neither a fully urban university nor a traditional campus built on the monastery model – how can its status as a sprawling institution with urban edges be leveraged to bring “contaminant urbanity” within reach of students and faculty? A different kind of investment and urban vision, not based on current real estate models, will be needed if MIT is to enable more than a food court culture.

18) Can the MIT 2030 process serve to reopen questions with Boston, the Commonwealth of Massachusetts, and the federal government about the proposed Boston inner urban ring public transportation corridor (which would cross the river at the BU Bridge and connect the Green and Red Lines)? The CSX rail corridor (referenced above) is crucial to this circular route, and MIT must keep on advocating for this metropolitan expansion as part of its long-term plans. Unlike Harvard but more like Tufts, MIT has at least two main access points: Mass. Ave. and the Kendall “T.” Can MIT 2030 aggressively conceptualize the CSX rail corridor in order to rethink and reinvent these urban nodes?

19) Why are we not conceiving an internal circulation system for our increasingly sprawling campus, allowing the members of the community to traverse it more quickly? Can we investigate moving sidewalks? Shared bicycles? An internal taxi system with small electric cars in dedicated lanes across the courtyards? The Tech Shuttle does not seem to be serving these needs.

20) The retrofitting of our existing building stock will be a major challenge in

order to meet our own evolving sustainability standards. Can the MIT 2030 plan to cost, design, and sequence this be dynamically connected to the substantial cutting edge research being produced by our urbanists, engineers, and building

technologists around questions of sustainability?

21) MIT has the top-ranked Urban Studies Program in the world; can this research capacity be better utilized for the conversion of MIT 2030 to a plan? How can MIT use the assets of its faculty and students to drive a more deliberative development process that avoids the classic town/gown problems? Is it time to have a strong urban designer come in, to give MIT 2030 a compelling visual narrative?

22) The challenge of improving the interface between the campus and the surrounding community once seemed to fall within the purview of the MIT Executive Vice President for the physical plant (who was given oversight of MIT real estate holdings). Is this charge now part of new EVP Israel Ruiz’s portfolio? Can the process for “moving to a plan” be clarified along with this new leadership? What has happened to the previous planning proposals (from current faculty such as Dennis Frenchman to outside architect Robert Venturi)? Can these proposals be shared with the community and opened to campus-wide debate and discussion?



The firm of Elkus Manfredi Architects' rendering of Kendall Square as presented to the City in March 2011 and illustrated on the MIT 2030 Website

23) Can the current plans for Kendall Square be reopened in light of MIT 2030? This major portal to the Institute sets up much bigger stakes than can be addressed by a few banners and signs. Kendall can be a laboratory for all the questions we have been asking: How can the Institute encourage a more porous and yeasty urban edge? How can MIT partner with the city to produce a destination that will allow students and faculty to engage with the community? How can we produce the circumstances for MIT culture (art, experiment, performance, science) to interface with small-scale entrepreneurial urbanity (coffeehouses, performance spaces, the Kendall Cinema)?

24) The Kendall Square plan as it stands does present a vision for this important gateway to the MIT campus. Can this plan be reconfigured to incorporate more than real estate and commercialism in its brief? A revised plan for Kendall Square should view architectural design as a tool that transforms space and environments

through unprecedented ideas. We note that the following words are missing from the current plan:

- civic
- public
- identity
- invention
- innovation
- transformation

How can the Kendall plan better confront the civic, public, and iconic missions of materializing the ambitions of a global institution?

25) Both Kendall and MIT 2030 suggest a process driven by development rather than well-informed planning; the model anticipates future revenues based on an unending stream of real estate partners. How can MIT better utilize its collective intelligence (economic and urbanist)? Planners can think through and visualize different economic contingencies, they can do time models based on good data already in

hand for the campus, city, region, and nation. Time taken now will save time wasted later, if these data can be tapped.

26) Discussions about an integrated campus life have long included debates about faculty housing (especially for young faculty), about daycare, about schools (possibly associated with MIT like the BU Academy), a viable faculty club, and so forth. How can MIT 2030 accommodate a vision for housing related to MIT? Without such a vision we risk being surrounded by high-end condominiums, service industries, and office space, with the campus a factory that produces workers for the companies around it. ■

***Caroline A. Jones**, a Professor in the Department of Architecture (cajones@mit.edu), solicited a range of views from a collective called here the SAPIens: School of Architecture and Planning faculty Stanford Anderson, Julian Beinart, Eran Ben-Joseph, Alexander D'Hooghe, John Fernandez, Dennis Frenchman, David Hodes Friedman, Amy K. Glasmeier, Mark Jarzombek, Nasser Rabbat, Bish Sanyal, Nader Tehrani, Gediminas Urbonas, and Lawrence Vale.

New Retirement Program

Reif and Ruiz, from page 1

on or after July 2, 2012. The new program involves changes to the pension plan and the retiree medical plan. The 401(k) plan will remain unchanged.

This article outlines the rationale behind the new program and describes how it's different from the current one. In designing the new program, we made sure our retirement benefits would remain substantive and competitive relative to our peers, while also remaining affordable for MIT.

The Essence of the Challenge – Lowered Surplus and Rising EB Rate

MIT, like many other institutions, benefited from a strong stock market in the 1990s and into the 2000s. Rising stock prices, and skillful investment management, fueled growth in both MIT's endowment and pension assets. Our pension assets exceeded liabilities by \$1 billion in 2007. This surplus benefited MIT by providing an accounting credit to actual pension costs, resulting in a reduced Employee Benefits (EB) rate.

Since the economic downturn of 2008, the funding status of MIT's pension plan has changed significantly. The value of MIT's pension assets has dropped because of the declining stock market, while the present value of our liabilities has increased because of the current low interest rates that are used to discount future obligations. As a result, the pension surplus was only \$113 million in 2011. This change in funding contributed to a rise in the EB rate from 21% in FY09 to 26% in FY12. The EB rate is currently projected to reach 28% in FY13.

We are concerned that such an upward trend in our EB rate, if sustained, could affect MIT's competitive ability to attract research grants. At the same time, we recognize the need to offer competitive retirement benefits to newly recruited faculty and staff – and to honor our commitments to current employees. The proposed new retirement program, which will apply only to faculty and staff hired

on or after July 2, 2012, is designed to improve long-run sustainability while offering retirement benefits that are comparable to those at the key institutions with which we compete, including Harvard, Princeton, Yale, and Stanford.

“The current MIT pension plan is the result of a 1989 merger of two quite different plans, one for faculty and one for staff. It retains features from both of those plans, which makes it complex and has resulted in unintended consequences with regard to benefit accruals and plan costs. The new plan adopts a simpler and more transparent design, remains broadly competitive, and also generates long-term cost savings for MIT.”

Prof. James Poterba

New Hire Design: MIT's Pension Plan

MIT's 401(k) plan for new hires will remain the same as the current plan, and will provide a 100% match on participant contributions up to 5% of pay, subject to federal contribution limits.

For employees hired on or after July 2, 2012, MIT's pension plan will be changing in the following ways:

- The new plan will offer a Cash Balance Benefit equal to the pension provided by the participant's Cash Balance Account. As under the current plan, the Cash Balance Account will be credited with 5% of the participant's pay each year plus interest. In addition, there will be an extra 5% credit each year on pay above the Social Security Taxable Wage Base (\$106,800 in 2011). Several of our peer institutions include a feature like this in their retirement plans to make up for the fact that Social Security benefits do not recognize pay above the wage base.

The current pension plan provides retirees with the greater of a Cash Balance Benefit and a Career Pay Benefit of 1.65% of lifetime pay. The new plan will not include a Career Pay Benefit.

- The current plan provides an automatic cost of living adjustment (referred to as a “COLA”) equal to 75% of the increase in the Consumer Price Index every three years, to a maximum of 10%. In the new plan, retiring participants will have the

option to choose a cost-of-living adjusted income stream of equivalent value to the fixed pension they would receive from the plan. In the new plan, the cost of inflation protection will be paid by the retiree; in the current plan, it is paid by MIT. This feature preserves the opportunity for a retiree to protect his or her retirement income against the risk of inflation.

- Under the current pension plan, eligible faculty and staff start earning retirement benefits as soon as they start working at MIT. Under the new plan, faculty and staff will start earning benefits 12 months after being hired.

New Hire Design: MIT's Retiree Medical Plan

For employees hired on or after July 2, 2012, MIT's retiree medical plan will be changing in the following ways:

- MIT's current retiree medical plan is unusual among our peer institutions, and among employers in general, in requiring neither a deductible nor copayments from retirees. The new plan will require a \$200 deductible for all services and retirees will be responsible for paying 20% of insurance not covered

by Medicare. This means that if a retiree is charged \$100 for a service after meeting the deductible, Medicare will pay \$80, MIT will pay \$16, and the retiree will pay \$4. Retiree expenses should average \$400 to \$600 per year, and they will be capped at \$1,000 annually per individual.

- Currently, MIT's subsidy on the premium ranges from 50% to 70% for both the retiree and the retiree's spouse/partner, depending on the retiree's length of service at MIT. In the new plan, the subsidy will be 50% for the spouse/partner but the retiree subsidy will be unchanged.
- Currently, MIT's share of future premium increases is the same as the subsidy level (as much as 70%). In the new program, MIT will pay 50% of premium increases and the retiree will be responsible for the balance.

Keeping MIT's Financial Future Strong

After much study and consideration, we

“We owe it to the Institute to keep our services and programs financially sound and our benefit programs competitive and adequate to meet the needs of the MIT community. These changes meet these principles, contribute to controlling the benefit rates, and will continue to provide adequate and fair retirement incomes for current and future retirees. I am pleased MIT is standing firm against the private sector trend by maintaining both a defined benefit pension plan and a 401(k) plan for faculty and staff.”

Prof. Thomas Kochan

believe the new program is a fair and equitable solution to the problem of balancing retiree needs and the fiscal challenges facing MIT. The changes are quite modest, and they keep MIT's benefit programs in a competitive position. These changes will reduce our EB rate by about 1.5 percentage points on an ongoing basis.

The stock market continues to be volatile. If we experience another major drop in the value of our endowment and pension assets, we may have to re-evaluate some of the provisions of our current

benefits program for active faculty and staff. If this becomes necessary, we would introduce changes on a gradual basis to minimize the impact on individuals near retirement age. For now, our plan is to continue the existing benefit program for current faculty and staff and offer a modified but still very competitive program for new members of the community beginning next year. ■

L. Rafael Reif is the Provost (reif@mit.edu); **Israel Ruiz** is Executive Vice President and Treasurer (iruiz@mit.edu).

The Alumni Class Funds Seek Proposals for Teaching and Education Enhancement

THE OFFICE OF FACULTY SUPPORT is requesting proposals for projects for the 2012-2013 academic year that improve the quality of teaching, enrich students' learning experiences, and uphold the tradition of innovation at the Institute. The Alumni Class Funds comprise gifts from the classes of 1951, 1955, 1972, and 1999.

Over the past 15 years more than 150 projects have been made possible through the generous assistance of the Alumni Class Funds. These projects have had substantial impact on education both inside and outside MIT. Grants typically range from \$10,000 to \$50,000, and cover a wide variety of creative curricular and pedagogical projects.

Proposals are due on Monday, February 6, 2012. Guidelines, forms, instructions, and descriptions of previously funded projects can be found at web.mit.edu/alumnifunds. Please contact the Office of Faculty Support at 617-253-6776 or alumnifunds@mit.edu for more information. ■

In Memoriam A Tribute to Bob Silbey

Debra L. Martin

OCTOBER 27, 2011 WAS A very bad day. It was the day that Bob Silbey passed away. He left us much too soon. Some say that the best amongst us are always the first ones to leave. Maybe that's true, maybe not. All I know is that my heart is broken.

I first met Bob back in the 1990s when I worked for the Dean of Science, Robert J. Birgeneau, and Bob was the Chemistry Department Head. When he was named Dean of Science in 2000, I was thrilled because I knew that working with him would be a great experience.

We had the dream team back then in the Dean's Office, or at least we liked to think so. And me, I had my boys – Bob, Ron Hasseltine, the money guy, and Marc Jones, the space guy. If you had money and space, and a Dean's authority, most problems could be solved. Rounding out our awesome staff was Cindy LuBien, Chuck Munger, and Sara Frenier. It was a pleasure to come to work every day. Bob's style of managing was all about teamwork. Everyone worked hard to make the Dean's Office a friendly and inviting place. Bob believed that his staff working as a well-informed team was the ideal way to run the office.

His door was always open. We solved problems quickly and efficiently whenever possible, but it was Bob's wise counsel and wit that usually saved the day. No problem was too big or too small to be brought to his attention – faculty, staff or researchers could make an appointment to talk to Bob. That's the kind of guy he was. Everyone was equal in his eyes and he led by example. He stayed long after quitting time to talk with a colleague or work on research with one of his students.

The best part about working with Bob was the personal side. He truly cared about people. You could see it from the way he talked about his wife, Susan, and his daughters, Jessica and Anna, and the grandchildren. The twinkle in his eye and his pride in each of them was evident, especially when he told stories about his grandbabies. I got to know them all, especially Susan, an MIT faculty member, and a frequent visitor to the office.

He extended that caring quality to me all the time, and one time in particular. When I received the phone call that my brother was being deployed to Iraq, I was very upset and shaking. Bob called out from his office asking for a file. I brought it to him, but the moment he saw my face he dropped everything and asked what was wrong. I told him about the deployment and he gave me a reassuring hug and told me it was going to be OK. We sat on his couch and talked about the war and how hard it was on the family left behind. Luckily, everything *was* OK. My brother came home safe from Iraq, but it was that gesture from Bob to stop everything that he was doing to comfort me that was so special. A Dean's life is hectic and stressful. There's no denying that, but Bob never hesitated to set aside important matters if someone needed his help or counsel.

There are so many things that made working for Bob so special. He was always open to new ideas I had for making the office more efficient or improving the way we conducted business. All of the Dean's staff worked like a well-oiled machine and Bob appreciated everyone. He believed in happy employees and there was no happier bunch than the Dean of Science staff under Bob Silbey. We were all devastated when he decided to step down, but

we knew it was the best decision for Bob. There was a fundamental shift and my boys all went their separate ways – Bob went back to the Chemistry Department, Marc Jones went to the Dean's Office in Humanities, and Ron Hasseltine stayed another year in the Dean of Science office before joining the office of the Vice President for Research.

I headed up to the Vice President for Research office and joined Claude Canizares' administrative staff. It turned out that I was only at the other end of the Infinite Corridor from Bob's faculty office. The most wonderful things happen when you venture out of your office and into the corridors. More likely than not, you'll meet your former co-workers. I had the pleasure of meeting Bob numerous times during coffee runs. There was no mistaking that booming voice or his ready smile. He stopped and talked, always interested in how I was doing. I was doing well, but I still missed our dream team, most especially Bob.

This past June, Bob spoke at a get-well party for me. His kind words of our days together brought tears to my eyes. As Bob said, I was "the other woman" in his life for seven years. That was truly a tribute that I'll always cherish. That day was the last time I saw him, but it is that image of him laughing and telling his stories that will always stay with me.

The Institute and the scientific community have lost a valued colleague and a great scientist. I've lost so much more. I lost my friend. A piece of my heart that was Robert J. Silbey is now gone forever, but I will never forget you Bob. ■

Debra L. Martin is Programs Manager in the Office of the Provost (debra@mit.edu).

letters

Is there a conflict between diversity and excellence at MIT?

To *The Faculty Newsletter*:

IN HIS RECENT LETTER to the September/October 2011 *Faculty Newsletter*, Professor James H. Williams, Jr. worries that I have set up an opposition of diversity versus excellence that has the potential to create a toxic environment with deleterious consequences for black faculty members. My experience and actions on matters of diversity and excellence strongly confirm my belief that there is no conflict between the two, and that such arguments must not be part of the MIT culture that supports and celebrates the accomplishments of all individuals regardless of race, gender, sexual identity, religion, or other personal characteristics.

Unfortunately, as noted in the 2010 Report on The Initiative for Faculty Race and Diversity (see the article by Professor Paula Hammond in the January/February 2010 *Faculty Newsletter*) it is the case that there is tension at MIT around the concepts of inclusion and excellence. That fact is troubling and surprising to some, hence worthy of our intellectual engagement, challenge, and action. The 2010 Report concluded, “In general, the belief that inclusion must equal dilution of excellence is one that has not been effectively discussed and countered within

MIT’s culture, although inclusion of the top scientists and engineers across a broad range of experiences can lead to innovation. It can also lead to the foundation of new research areas that have high impact in many parts of the country and the world.”

The Race Initiative report provides several recommendations to improve the recruiting, mentoring, promotion and career development, and climate of and for minority faculty, as well as structural recommendations intended to increase MIT’s overall engagement with faculty diversity issues. MIT has made some progress but still has a long way to go in carrying out these recommendations to their successful conclusion, and it is worthwhile to re-read the report and to ask whether we are doing all that we can.

One of the report’s recommendations was “The Institute should create forums at MIT where race and cross-cultural interactions are openly discussed.” The Human Diversity and Social Order Forum Series, co-organized by Associate Provost Wesley Harris and Professor Leon Trilling during the MIT150 celebration, was one major forum of this type. Discussions of this type can also occur at the departmental level, as advocated in my article in the March/April 2011 *Faculty Newsletter*, “Departmental Discussions of Diversity

and Inclusion.”

On January 27, 2012 the Committee on Race and Diversity and the Committee on Staff Diversity and Inclusion will be co-hosting the 2012 Institute Diversity Summit, an event that will bring members of the MIT community together to brainstorm ways to help MIT be a leader in diversity and inclusion as it is a leader in many academic fields. I encourage all readers to participate.

In the February/March 2004 *Faculty Newsletter*, Professor Williams made a formal recommendation to the MIT Corporation that the official MIT motto be amended to “Mens, Manus et Cor” (Mind, Hand and Heart) to honor President Charles M. Vest. This suggestion gives a hopeful vision of an MIT where tolerance and warmth, merit and success, respect and inclusion are all central and recognized as integral to one another. Graduate students have encouraged me to help change the MIT culture from “sink or swim” to one of caring and support for all to achieve their best. This vision can be made reality, but only if we are willing to engage, grapple, and care enough – with mind, hand, and heart – to make it so. ■

Edmund Bertschinger
Professor and Head
Department of Physics

M.I.T. Numbers MIT 2030 Vision



Campus-Wide Renovations
Multiple Partial Building Renovations
Capital Renewal Projects Throughout Campus (Systems, infrastructure, roofs, elevators, plazas, interior finishes, etc.)

Source: MIT Department of Facilities