Executive Summary

As part of our customer-focused approach to the IS&T strategic and operational plan, we have included multiple opportunities to improve accountability and measure our success against the plan. Quarterly project reviews are held with project managers and senior management, with an emphasis on examining, discussing and addressing outstanding issues and risks. Quarterly operational reviews are held with senior staff to track our progress against the operational plan. The budget is monitored and tracked regularly. This midyear report to our customers and stakeholders provides an accounting of where we are to date and where we plan to be by the end of this fiscal year.

The IT Governance Committee has been working to create a clear process for decision-making that will help to drive development of an IT strategy for MIT, manage the IS&T investment portfolio, charter and manage committees and working groups, and strengthen overall customer connections. The committee has met monthly since August, 2010 and has approved four roadmaps and held productive discussions around strategic direction, setting priorities and allocation of resources.

Development of a new IS&T Service Catalog and website are under way and will provide a single location for information about our IT service offerings in a customer-friendly menu/guide. Delivery is planned for late 2011.

IS&T has focused internally to improve our capability to deliver services to our customers. In order to increase this capability while maintaining level headcount, we have successfully negotiated contracts with two preferred contract programming/consulting vendors who have delivered good results on several critical application projects. These strategic partnerships will maximize capacity and minimize cost with negotiated lower rates.

We followed a detailed and thorough process for developing our FY12 Budget Request, one that maximizes our funding in a way that advances and improves the Institute’s mission of providing exceptional services to the MIT community. We met with the Budget and Finance Steering Group (BFSG) to present a proposal for the Telecommunications and Network Services Committee (TNSC) proxy rate increases and for approving proxy rates two years at a time. The final decision is still pending.

IS&T is facilitating a Management Development Series offering six workshops: Managing Ourselves During Change, Employment Law, Providing Constructive Feedback, Corrective Action Process, Active Listening, Diversity and Inclusion. Management development has been identified as a department priority.

Over the past seven months (since the July reorganization of the department), we have filled 30 of our 47 open positions. To date, three employees took positions in other parts of the Institute and thirteen employees have terminated voluntarily. IS&T’s turnover rate is currently at 4.4%.

IS&T continues to support strategic community programs:

- **Digital MIT**: We implemented a number of new systems, system functions, and operational changes with various groups across the Institute to further “Digital MIT” and to improve service for students, faculty, researchers, and staff.

- **MIT150**: We have representation on the Institute-wide planning committee and have created a working group to examine ways in which IS&T can support and participate in MIT150 events.
IS&T Operational Plan Progress Update March 2011

- **Massachusetts Green High-Performance Computing Center (MGHPCC):** Progress continues on this collaboration between five universities (MIT, UMass, Harvard, BU and Northeastern) to build a high-performance computing center in Holyoke, MA. The center is scheduled to become operational in late 2012. Building design is under way, with completion targeted for April. Development of IT design alternatives and potential business models are under way.

- **MIT Energy Initiative:** IS&T has been working closely with the MIT Campus Energy Task Force in support of its efforts to affect energy and paper use on the MIT campus. The focus this year has been on promoting smart printing practices through posters, workshops and outreach at various campus events, as well as deployment of multi-function devices that consolidate desktop printers and enable behavior change. IS&T is partnering with the Department of Energy, Lawrence Berkeley National Laboratory, and Department of Facilities on an assessment of energy use in the data center in W91, with an objective of understanding potential energy saving measures.

- **MIT Printing and Digital Archiving Project:** IS&T continues to support this task force effort to enable effective printing strategies, reduce costs and distribution of printed materials, develop record retention policies, and pursue electronic storage systems. The report will be presented mid-March.

**IT Roadmaps – Planning for the Future**

With the guidance of the Task Force recommendations, we have been working in partnership with our customers to develop and begin implementation of roadmaps for the major business and technical areas we support: Administrative Systems (multiple tracks), Education Systems, Data, Mobile Computing, Infrastructure (multiple tracks), and Customer Support. Several of these roadmaps have been reviewed and approved by the IT Governance Committee. Progress can be summarized as follows:

**Education Systems Roadmap (2011-2014):** Reviewed and approved 9/29/10. This moves us towards a robust education systems portfolio that has high-impact, customer-facing functionality and a solid, flexible technical infrastructure.

**Data Roadmap (2011-2014):** Reviewed and approved 1/21/11. This will result in an improved reporting infrastructure and improved data administration and practices.

**Mobile Computing Roadmap (2011):** Reviewed and approved 1/21/11. This outlines the work to increase support for MIT Mobile Web, accessibility for all mobile browsers, device capability detection service (DCD), and simplification of mobile software design and development. It also includes guidelines for choosing applications applicable to mobile development.

**Network Security Roadmap (2011):** Reviewed and approved 2/15/11. This will result in the implementation of hardware, software and procedures to increase visibility into the MIT network in order to better detect and remediate intrusive activity.

**Other Major Accomplishments:**

- **The Appointment Process Redesign Project** released version 1.1, which provides more flexibility for new hire transactions and additional information to approvers.

- **Athena Working Group Phase 1 recommendations** were approved by sponsors and MITCET, and implementation is under way. Phase 1 includes reduction of waste and cost of student printing.
Pharos hold-and-release printing pilot went live in January to the student community with 7 printing kiosks; a full cutover of all 58 public student and dorm printers is expected by summer 2011 (implementation of Institute Task Force and Athena Working Group recommendations.)

MIT Business Intelligence Reporting Tool evaluation was completed. Twelve members of the MIT administrative community completed their assessment and written recommendation for the next-generation reporting platform that will satisfy MIT’s administrative reporting needs and ultimately replace BrioQuery. The committee’s recommendation was to proceed with a 120-day proof of concept with the IBM/COGNOS tool suite.

The Textbook Information Project was implemented. This was a joint initiative between Education Systems, Data Management, DUE, and the Libraries to meet new regulatory requirements related to providing students online information regarding required course textbooks.

Stellar Next Generation experiment with Blackboard is under way for spring term. Fourteen courses are being tested.

Electronic Document Integration with Stargate (EDIS) was completed. This project moved Undergraduate Admissions to a paperless reading and decision process.

The Online Grading Application has been released as a pilot for IAP and spring-term courses.

Electronic W-2 functionality was implemented, giving MIT community members the opportunity to enroll in and receive W-2s electronically for the 2010 tax year.

Mobile computing functionality was delivered for the Android. The MIT150 application, which includes a campus tour, was released for the Android and iPhone as part of MIT’s sesquicentennial celebration.

IS&T sponsored a variety of Back-to-School Events, enabling us to engage with many incoming students and faculty and raise awareness about our services.

Enterprise Learning Phase 1 was completed and delivered, providing a catalog of professional development courses offered by MIT’s central offices.

lynda.mit.edu was implemented, providing the entire community with access to a library of software training and tutorial videos, and enabling MIT to add training modules to that library. MIT employees have participated in over 9,000 modules since the rollout.

Request Tracker 4.0 Upgrade was completed. The result has been increased performance, stability and serviceability for our issue-management and customer-service tracking tool for the IS&T Help Desk and various departments throughout the Institute.

Next-generation MIT Wireless Network rollout continues. In the past six months, Network Services has completed installation and configuration for the Koch Institute (76) and the network upgrade and MITnet conversion of the Media Lab (E15).
• **Improved indoor cellular coverage** continues to move forward. The AT&T contract was completed and signed under which the cellular provider will install in-building coverage for ubiquitous and carrier-agnostic mobile/cellular services.

• **Major update to MIT Alert was implemented.** The update included enabling real-time updates of mobile contact numbers in the emergency notification system.

• **IS&T partnered with Prof. Graves (Sloan)** on a fall-semester class project surveying and analyzing the role of social media such as Twitter and Facebook in business (especially IT) operational communications.

• IS&T also partnered with Professor Hal Abelson in teaching a class in mobile software development.

**Migrations and Retirements of Systems:**

- We migrated Stellar and Wiki production and development databases to Linux VMS Solaris.
- We migrated Undergraduate Admissions database from Oracle 10.2.0.2 on Solaris to 11.2 on Linux.
- We retired legacy E40 L550 tape libraries and introduced new physical and virtual tape libraries for Server Operations.
- We retired International Students Office (ISO) Xroads application and replaced it with SUNAPSIS International Office, case management system software from Indiana University. The new software enables staff to assist international students in maintaining their lawful stay without interruption.
- We retired the Training and Events Management module of SAP and replaced it with new Enterprise Learning SAP functionality.
- We ported pre-1994 transcripts from microfilm to electronic storage, retiring the use of microfilm in Education Systems.

**Service Performance Issues (Keep IT Up and Running):**

**SAP**

**Issues:**
As a result of four critical production SAP incidents, an investigation ensued to determine their root cause and follow-up actions to prevent future recurrence.

1. SAP File directory full/Batch jobs not run – 11/30/2010
3. Post-support-pack authorization issue – 12/14/2010

**Root Causes and Resolution:**
In addition to actions specific to each incident, IS&T incident response practices have been improved based on lessons learned from these incidents. Changes include:

1. Escalate critical issues to a member of IS&T Senior Staff immediately
2. Coordinate response across IS&T groups and business owners via teleconference early in the process
3. Communicate earlier and more frequently with business owner(s), IS&T Help Desk, 3Down, users impacted and the team(s) responsible for fixing the problem.
ISSUED:

1. The primary production Stellar Tomcat hung preventing users from using Stellar. As a result of the analysis of the outage, five separate issues were identified.
2. JVM out-of-memory errors from the JIT compiler were requesting large amounts of heap memory.
3. The primary Tomcat system was regularly exceeding 90% of total memory (physical + swap) in the last two weeks from general use.
4. Webapp for the OTI/Courseguide Tomcat would become unresponsive on some restarts.
5. There were an exceptionally high number of requests from the Mobile-prod server that account for 90% of Stellar traffic. It appears this didn’t cause issues but should be fixed.

Root Causes and Resolution:

1. Symptoms consisted of the Apache HTTP front end reaching its maximum number of allowed child processes and showing many (around 500) AJP connections in TIME_WAIT to the Tomcat system. JVM appeared to be deadlocked. The issue persisted across several restarts of the application. Tomcat session clustering was then removed and the application restarted successfully. The clustering had been planned to be removed at a future date. A tomcat script that will provide a stack dump upon shutdown will also be deployed in production.
2. This was resolved by restarting the JVM and has been identified as a Java bug in version 1.6.0_20. Stellar was upgraded to Java version 1.6.0_23.
3. 4 GB of RAM was added to the virtual machine to help prevent this. We will continue to monitor to see if the additional RAM solved the problem.
4. Code fix has been deployed to cache warehouse content in Stellar. We will monitor to ensure fix has permanently resolved the issue.

Future Plans

We have begun developing our FY12 operational plan. Much of our work will be a continuation of FY11 efforts (e.g. Digital MIT). We will continue to work on improving IS&T’s capacity and capabilities, as well as our consistency in delivering services and projects. We will also work towards strengthening partnerships and transparency with customers and with IT departments and personnel in DLCs across campus through increased outreach and relationship building.

Please let me know if you would like different or additional information in future communications.

Thank you all for your partnership and support!