Academic Media Production Services

Academic Media Production Services (AMPS) provides educational technology and media services in support of MIT's educational programs, events, and initiatives. In starting its fifth year of operation as a cost-recovery organization, AMPS is pleased to report the progress made in four key focus areas: learning systems platforms, media-enabled teaching and learning spaces, production and delivery of rich media content, and continuous improvement as a professional services organization.

Executive Summary

AMPS is impacting the way teaching and learning occurs on campus through the thoughtful and calculated use of technology for the Institute's strategic programs. In the area of learning systems platforms, we have continued development of Stellar™ Course Management System as a feature-rich and sustainable platform to support a growing number of users in the MIT community (a total of 2,391 class websites were created from spring 2002 to summer 2005). Our active participation in the collaborative Sakai project continued with the development of a technical framework that will allow us to take advantage of applications developed by the collaborative to meet MIT's needs.

For media-enabled teaching and learning spaces, we have employed digital technology and processes to facilitate “disintermediated”, or unstaffed, media services. AMPS created an unstaffed system that tapes and stores lectures and serves as educational resource material to British Petroleum project managers for the MIT–British Petroleum Projects Academy. The system accommodates both formal and informal learning within a 24-hour usage model.

In the area of production and delivery of rich media content, we have worked towards developing alternatives to resource-intensive capture, encoding, and delivery methods, such as digital and network-based approaches to production and delivery. Our ongoing support of projects such as Malaysia University of Science and Technology (MUST) and Cambridge-MIT Institute (CMI) has enabled us to set up rapid deployment systems that capture high-quality video of classroom interaction and encode in real time for posting on the class website within hours of the class. Using rapid deployment systems, AMPS produced a series of videos of two popular undergraduate classes, 7.012 Introductory Biology and 3.091 Introduction to Solid-State Chemistry, for the OpenCourseWare (OCW) website.

As a professional services organization, we have employed appropriate service models and metrics for determining client satisfaction and evaluating organizational and individual performance, and for delivering value on investment to MIT. We developed a unified video service process that resulted in the alignment of two internal organizational units. The new unit allows us to bring efficiencies and present options to meet the community’s need for video services and to be better positioned to take advantage of newer and cheaper convergent digital technologies.
Key Accomplishments in Areas of Focus

Learning Systems Platforms

Course management tools are a critical part of the resource suite available to faculty. These tools facilitate the organization, arrangement, and management of course content in support of teaching and learning. The adoption of Stellar Course Management System has grown steadily over the past several years, as shown in Figure 1. In the past year, unique log-ins increased by 26 percent, up to 8,468 in spring 2005 from 6,694 in fall 2004.

Figure 1. Growth of Stellar Course Management System, fall 2001 to spring 2005.

Over the past year, our efforts have continued to focus on developing Stellar Course Management System (http://web.mit.edu/amps/services/cms.html) and working with Academic Computing to support its integration as an instructional resource in courses. As part of current development plans, AMPS will run a production pilot of Sakai tools in fall 2005, with the goal of expanding the pilot and incorporating additional Sakai tools throughout AY2005.

Each successive release incorporates greater integration and ease-of-use improvements, added functionality, and improvements in performance. An overview of the system’s evolution is available at http://stellar.mit.edu/about/index.html.

Sakai Project

MIT is a founding member of the Sakai Project (http://www.sakaiproject.org), along with the University of Michigan, Indiana University, Stanford, the uPortal Consortium, and the Open Knowledge Initiative. The Sakai Project receives support from the Andrew W. Mellon Foundation.
The Sakai Project is working to create a learning system platform that facilitates collaboration and tool interoperability among the university developer community. For the last year, we have continued to work with other member institutions to develop modular tools within the Sakai framework, most notably Gradebook and the Sakai Style Guide for user interface design.

The Stellar team will run pilot projects in fall 2005 for two new tools from the Sakai framework: Gradebook and Assessments. The pilot projects will help us review the functionality of the tools and assess user acceptance at MIT.

**Media-enabled Teaching and Learning Spaces**

Multimedia classrooms for distance education delivery (Level 5) spaces have been extensively used in the last year for synchronous course delivery via multipoint and point-to-point videoconferencing over ISDN, the commodity internet, and the I2. With direct video uplinks to the encoding facilities, Level 5 rooms have comprised a substantial part of the infrastructure that supports the increasing demand for live webcasting, lecture, and event encoding for asynchronous viewing, and multimedia projects.

Distance education programs are seeking alternative delivery methods and teaching pedagogies, from webcasting or exclusively asynchronous delivery to full-featured collaboration systems supporting lectures, small group meetings and a full range of ad-hoc multipoint interactions.

To support media-enabled teaching and learning spaces, we have created process improvements in the form of best practices documentation to provide contingency plans for standard processes and operating procedures while providing services. We also added the following equipment in FY2005:

- Anystream Apreso software, to provide high quality Flash video capture of the presenter’s desktop in Level 5 distance education facilities
- Nexsan ATAbeast, a 16 terabyte storage array to provide space archives of distance education classes
- Eight encoders with advanced video capture cards, to allow flexibility in creating MPEG2-encoded archives on the fly
- Apple Xserve RAID array, to optimize work flow between post production and multimedia services and encoding and hosting services

**Production and Delivery of Rich Media Content**

The past year has been one of transition in how AMPS captures and delivers rich media content.

Technology underlies part of the transition, and AMPS has made a move to acquiring video content in widescreen format and to producing some products in high definition. AMPS also moved in the new direction of planning and producing live events for a global community. A few of the highlights follow:
AMPS staged a live webcast of the announcement of Dr. Susan Hockfield as the 16th president of MIT, which allowed people in other parts of the world to participate in the event on short notice. The events were also available for viewing on demand.

AMPS produced several multimedia presentations and webcasts for public and private viewing in celebration of the administration of Dr. Charles Vest that enabled the MIT community to reflect on and celebrate the accomplishments of the new president emeritus. The public presentations can be viewed at http://web/amps/spotlight/vest-years.html.

AMPS also executed its traditional range of projects involving video production, encoding, webcasting, and web publishing. These projects, such as MIT World and OpenCourseWare, allow the global community to stay in touch with MIT.

In addition, AMPS produced several tools to enable clients to publish web content on their own, without the intervention of the AMPS web design team. Projects that took advantage of these tools, as described under Project Highlights, include the following:

- Open Knowledge Initiative
- MIT and the US Geological Survey Science Impact Collaborative
- Ed Tech Times newsletter

**Continuous Improvement as a Professional Services Organization**

AMPS has made progress toward becoming the preferred provider of educational technology services to the MIT community, as seen in Figure 2. Over the past year, the volume, complexity, and customer-perceived value and quality of its services have
increased, and in some cases remained stable, whereas the resources applied have decreased or remained the same for most of the service lines. AMPS has employed the following organizational changes, technological innovations, and process improvements to propel itself on this trajectory as a cost-recovery organization:

—**Organizational realignment for greater focus, clarity, and efficiency.** AMPS developed a unified video services process to efficiently meet client needs for integrated video acquisition and delivery across a spectrum of feature and cost options, as well as to take advantage of newer and cheaper convergent digital technologies. This required integrating two administrative units—MIT Video Production and Digital Technologies & Streaming Operations—into a single unit called MIT Video Production & Digital Technologies (MVPDT).

—**Improved processes, capabilities, and infrastructure.** Through technology innovations we effected savings of $471 for the Singapore-MIT Alliance through reduced in-class setup time, established a disintermediated video acquisition and distribution for the MIT–British Petroleum Projects Academy, made capital improvements in the Level 5 classrooms, and built a new central transcoding facility.

—**Improved financial structure and process to align more closely with business needs.** With close to $3M in capital assets and $3M in budgeted operating expenses for FY2006, AMPS renewed and upgraded its technology with no impact on rates. The establishment of equipment reserve funds (estimated at $934K at the beginning of FY2006) contributed rate stability. AMPS achieved increased transparency in understanding the relationship between costs and services delivered plus an increase in data-driven decisions by AMPS managers through a financial structure and process that employs activity-based costing methodology and budgeting.

—**Reduced costs.** AMPS reduced costs by negotiating better vendor prices, switching to cheaper media, recycling media, and saving on T1 lines, phone lines, and net drops. As a result, our cost savings last year were approximately $50K.

—**Improved communication.** Changes to the AMPS website (http://web.mit.edu/amps/services/index.htm) served to clarify our services through client-friendly descriptions, one-point contacts, pricing, and case studies that showcase our successes.

—**Management of vacancies.** AMPS reduced its salary bill by over 13 percent through appropriate separations and layoffs, delayed hiring, reduced percentages of effort, and hiring only necessary skills at lower cost.

—**Professional and organizational development.** The AMPS Leadership Team employed a variety of approaches and opportunities for individual professional development, from confidential 360-degree-feedback to participation in professional leadership development programs. We have used input from these activities, as well as from individual managers and their supervisors, to define annual goals and development plans.
AMPS staff have been active in professional events, presented technical papers, and participated at conferences such as Educause, the E-Learn 2004 World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, the Sakai Educational Partners Program (SEPP) Conference, as well as several other professional forums.

**Project Highlights**
In the past year AMPS provided ongoing educational technology services to a wide range of projects, programs and initiatives. The following is a list of project highlights:

**Singapore-MIT Alliance**
The Singapore-MIT Alliance (SMA, http://web.mit.edu/sma/) program is one of the Institute’s strategic global partnerships. SMA has been the single largest user of Level 5 distance education facilities. SMA has evolved from an innovative distance learning experiment to a mature, stable program. AMPS facilitated the transformation through improved production and service processes, technology innovation, and cost efficiencies.

**Sakai Project: Gradebook**
MIT is a founding member of the Sakai Project, and has taken a lead role in defining the technical architecture of the Sakai framework, most notably the Gradebook tool. Gradebook allows instructors to calculate, store, and distribute grade information to students within a Stellar class website. AMPS will run a pilot study of Gradebook and the Sakai Assessment tool in fall 2005.

**Conversation with Charles M. Vest and Celebrating The Vest Years, 1990–2004**
Just prior to his departure from the president’s office, AMPS captured a series of conversations in which Charles Vest reflects on his tenure as president and his plans for the future. We also captured the program in the Kirsch Auditorium and a two-hour festival inside the Stata Center that celebrated the Vest years. The AMPS website created a spotlight page where all videos are available for viewing on demand (http://web.mit.edu/amps/spotlight/vest-years.html).

President Charles Vest commented, “... what you, your crew, and others put together in video spoke more to me than almost anything else. I really look forward to watching them again. They were simply amazing. And I know how much effort went into them.... I also owe you and your crew much gratitude for all of the work you have done in capturing these 14 years and making them look even better than the reality! Much of your work has clearly been ‘above and beyond the call.’”

**Webcast of Announcement of Susan Hockfield Appointment**
On August 26, 2004, MIT invited the entire community to a special meeting to hear the announcement of the election of Susan Hockfield as its next president. In order to extend the opportunity beyond the community, AMPS provided a live public webcast of the event, as well as an archived version for later viewing (http://web.mit.edu/newsoffice/2004/president-videos.html).
Uncommon in Common
As the inauguration theme of celebrating the exceptional aspects of MIT’s culture played repeatedly in a weeklong celebration, AMPS captured the action in photographs and on video. To see the slideshow and videos, visit http://web.mit.edu/inauguration/webcast.html and http://web.mit.edu/inauguration/highlights.html.

Learning by Design Competition
AMPS planned and produced an entertaining overview of MIT’s renowned 2.007 Design and Manufacturing course and contest as part of the inauguration week festivities. The event included a video retrospective of how the contest has evolved over 30 years, featuring Woody Flowers and Alex Slocum. Competition among eight of this year’s student contestants was transmitted live from the Pappalardo Lab, with brief video profiles of students describing the challenges of their particular design (http://web.mit.edu/inauguration/highlights.html).

Commencement 2005
June 3, 2005 was a great day to graduate. Sunny skies and warm breezes welcomed the men and women who received undergraduate and graduate degrees at the 139th MIT Commencement exercises. AMPS was on hand to webcast the event and make it available for viewing on demand (http://web.mit.edu/amps/spotlight/commencement-webcast.html).

Open Knowledge Initiative
In July 2004, the Open Knowledge Initiative (OKI, http://www.okiproject.org/) team released Version 2.0 of the Open Service Interface Definitions. As they prepared to publish, they wanted to ensure they were poised to communicate easily and openly with the open source community who were making development decisions based on OKI’s progress and thus needed timely information. AMPS redesigned the site to enable self-publishing using a forms-based tool that posts new text while enabling dynamic linking within the site from each entry. “We would like to thank the talented web design and development team at MIT’s Academic Media Production Services for their tremendous effort,” said Jeff Merriman, senior strategist for Academic Computing. “Their expertise in designing and delivering this new system for OKI has been a boon to the project.”

Ed Tech Times
MIT’s Department of Information Services & Technology wanted to replace a print newsletter for faculty and instructional staff with an online newsletter that lets users add opinions and join discussions, Ed Tech Times (http://edtech.mit.edu/times/). AMPS provided the interface design to integrate the newsletter software into the Teaching with Technology website.

Art in Roman Life: Villa to Grave
As part of MIT’s Museum Loan Network, Art in Roman Life: Villa to Grave presented an impressive collection of Roman sculptural busts from the Cedar Rapids Museum of Art, portrayed in an environment showing how they would have been displayed in Roman
times. AMPS built an interactive multimedia tour of the installation of the sculptures side by side with more than 200 Etruscan and Roman objects (http://loanet.mit.edu/exhibitions/crma/index.html).

**MIT-USGS Science Impact Collaborative**

MIT and the US Geological Survey joined forces to promote collaborative planning in science-intensive policy disputes. In an effort to enable self-publishing, AMPS designed a new website that allows them to publish on demand and provide leadership to science, management, and policy groups (http://web.mit.edu/dusp/epg/music/).

**Engineering Systems Division Case Studies**

Faculty within the Engineering Systems Division (ESD) created a series of case studies for teaching important concepts in system studies using instructional material combined with complex simulations. To advance the reach of their curriculum in the United States, ESD approached AMPS to convert the case studies to CD-ROM for potential distribution through an academic publishing channel, such as Harvard Business School Publishing. The new design includes not only a text-based faculty guide and slide show, but also executable simulations. According to Joel Cutcher-Gershenfeld, senior research scientist at the Sloan School of Management, “The folks at AMPS have done a first-class job, and we can all be proud of the resulting learning materials that we will be serving up to HBS Press.”

In spring 2004, MIT generated interest worldwide with the HawkCam (http://web.mit.edu/amps/spotlight/hawkcam.html) experiment conducted by AMPS. The overwhelming response highlights the MIT community’s engagement with media-based technologies, as well as the potential uses for these technologies for academic and research purposes and for building a strong sense of shared community. Throughout the past year, we have continued to receive email about hawk sightings around campus and questions about future plans for HawkCam.
Activity Metrics

Table 1. Representative Metrics for AMPS Deliverables, FY 2005.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stellar (classes)*</td>
<td>815</td>
</tr>
<tr>
<td>Web production</td>
<td></td>
</tr>
<tr>
<td>Websites (projects)</td>
<td>14</td>
</tr>
<tr>
<td>Web tools</td>
<td>0</td>
</tr>
<tr>
<td>DE facility access (hours)</td>
<td>1,791</td>
</tr>
<tr>
<td>Video bridge (connection hours)</td>
<td>284</td>
</tr>
<tr>
<td>Videoconferencing</td>
<td></td>
</tr>
<tr>
<td>AMPS facility access</td>
<td>192</td>
</tr>
<tr>
<td>Maintenance and support (SLAs)</td>
<td>3</td>
</tr>
<tr>
<td>Video production</td>
<td></td>
</tr>
<tr>
<td>Field and studio production (recordings)</td>
<td>860</td>
</tr>
<tr>
<td>Editing (hours)</td>
<td>1,467</td>
</tr>
<tr>
<td>Encoding (content hours)</td>
<td>1,657</td>
</tr>
<tr>
<td>Webcasts (events)</td>
<td>28</td>
</tr>
</tbody>
</table>

* Annual Stellar class sites (on-campus and SMA courses).

Organization

Over the past year, AMPS finalized the formation of a new unit, MIT Video Production & Digital Technologies. The new unit came about as a result of our unified video service process, put in place to efficiently meet client needs for integrated video acquisition and delivery and to take advantage of newer and cheaper convergent digital technologies.

People

Changes in personnel during FY2005 include the following:

- New employees: Tom Doran, programmer analyst on the web design team; Margaret Meehan, web content writer and editor on the web design team (appointment to permanent); Judy Prescott, support staff for AMPS
- Promotions: Marine Brown, to senior financial analyst; Corinne Butler, to financial assistant; Elaine Mello, to distance education technology administrator
- Appointments: Yousef Ayyub, network engineer; Clayton Hainsworth, distance education operations coordinator; Christopher Haynes, streaming media assistant; Lilian Ladd, videographer; Anna Pope, administrative assistant; Kevin Tierney, streaming media services coordinator
- Departures and transitions: Jay Benoit joined Akami Corporation; Brian Bermack left MIT to pursue artistic ventures; Doug Bolin joined Razor Fish; Bill Fitzgerald joined MIT’s Information Services & Technology as relationship manager; Dana Lashway joined the Massachusetts Biotechnology Council; Andrew Nyberg
relocated to Texas; Jennifer Silvey joined a federal agency; David Scannell joined the University of New Hampshire; Nishikant Sonwalkar left MIT to pursue new ventures

- Leave of absence: Mary Curtin, long-term disability for surgery

**Process**

Enhancements and changes to processes made in FY2005 include the following:

- Kande Culver, MIT administrator for the Rewards and Recognition Program, joined an AMPS management team meeting to initiate discussion and provide history on the overall benefits of creating an internal departmental recognition process.
- The AMPS management team formed a committee for the discovery, execution, and implementation of the AMPS Rewards and Recognition initiative. Team members include Larry Gallagher, Joanne Flood, Kevin Tierney, Stacy Keller, Ben Brophy, Anna Pope, Corinne Butler, and Babi Mitra.
- The AMPS management team established a new format for our AMPS All quarterly meetings. Meetings take place in the morning hours with lunch provided, plus time for the group to socialize. Routine announcements such as new hires, departures, promotions, and rewards have a regular spot on the agenda. Presentations by invited guests and by employees on their projects are added as appropriate.
- An administrative audit has been implanted and tallied. The results have proved useful in a variety of ways, such as creating appropriate job descriptions, organizing related tasks, and assessing the overall need for assistants.

**Recognition and Awards**

The following individuals and teams have made exceptional contributions through their work to AMPS and to the Institute.

**Awards**

Ben Brophy received the 2005 Infinite Mile Award (http://web/amps/spotlight/ben.html) in recognition of the extraordinary leadership he has provided through his single-minded focus on improving the quality of the user experience of Stellar Course Management System (http://stellar.mit.edu/). His advocacy and user interface design excellence have contributed significantly towards helping Stellar evolve into a reliable product that faculty and students find easy to use and relevant to their needs.

Tom White received the 2005 Infinite Mile Award (http://web/amps/spotlight/tomwhite.html) in recognition of the outstanding quality and range of videography he has contributed over the years. His video work captures the essence of MIT and reflects the best qualities of this great institution. Tom’s work is on display at the MIT Museum (Kismet exhibit, among others), and on the AMPS website portfolio (http://web.mit.edu/amps/portfolio/video/).
Ben Brophy, Mark Brown, Stacy Keller, Margaret Meehan, Babi Mitra, and Joanna Proulx won third place for Computing Services Web Site, ACM SIGUCCS 2004 Award Competition, “Special Interest Group on University and College Computing Services.”

**Honors**

At the Hockfield inauguration, Yousef Ayyub, Joanne Flood, Clayton Hainsworth, Kevin Kerwin, Lily Ladd, Mike Leoncini, Elaine Mello, Craig Milanesi, Andrew Nyberg, Joanna Proulx, Stefan Stasik, Robert Sikkema, Jeff Silva, Kevin Tierney, and Tom White received recognition and a gift from their peers within AMPS through the Rewards and Recognition Program and an invitation to a celebration at Grey House.

**Papers and Presentations**

AMPS staff members made many presentations to the MIT community on using technology to support teaching and learning, including during the Independent Activities Period. Several external presentations were also made, notably by Babi Mitra and Vijay Kumar, to reach out to a national and international audience and express MIT’s leadership in this area. The following list highlights a few select examples of their publications and presentations:

- Mitra, Amitava, Maneesha Aggarwal, Robert Cartolano, William Plymale, and Aaron Zeckoski. “Course Evaluation.” Presentation at the Sakai Educational

Looking Ahead: AMPS Strategy and Issues

The strategic focus, goals, and activities for FY2006 reflect the trends and transitions in each of the key service areas, namely development and delivery of learning systems platforms; design, implementation and operation of media-enabled teaching and learning spaces; and the acquisition, production, and delivery of rich media content for education, research, and community.

Learning Systems Platforms

Our efforts for Stellar Course Management System and the collaborative Sakai project will continue to be directed toward providing a feature-rich and sustainable platform to meet the educational needs of MIT, one that faculty and students find increasingly easy to use and that supports innovative pedagogic tools.

We will release two versions of Stellar during AY2005, and will initiate the Stellar-Sakai transition in fall 2005. This will include pilot implementations of some Sakai tools in consultation with the Stellar Advisory Group, students, and other key constituencies, such as OCW.

MIT’s participation in the Sakai project will also provide the opportunity to converge different learning management system—type applications across the Institute, such as Studio MIT, Sloanspace, Metamedia, and others, thereby allowing AMPS to leverage institutional investments in educational technology platforms, and to provide a coherent educational technology environment for faculty, students, and staff.

Media-enabled Teaching and Learning Spaces

All media-enable teaching and learning spaces will move toward a 24-hour usage model configured to accommodate the diversity of formal and informal learning, as well as the schedules of extended MIT communities. AMPS’ focus will be on responding to these transitions in education and research practices, with emphasis on collaboration and integrated communication.
AMPS will continue to provide innovative, network-based digital technology solutions and processes that facilitate disintermediated services and enable the provision of flexible, ad hoc spaces for media-integrated use. A key element will be continued support of strategic MIT programs such as SMA.

**Production and Delivery of Rich Media Content**

AMPS will also lead efforts in developing a comprehensive video strategy for MIT that leverages MIT’s infrastructure and the richness of its video resources. We will continue to provide a range of competitive solution and service options in the delivery of media-rich content for educational and research purposes to meet the programmatic and communication needs of the MIT community.

We expect that the organizational processes developed over the past years, such as our unified video services process, will enable us to provide more coherent and efficient services to meet the increasing demand in this area.

**Continuous Improvement as a Professional Services Organization**

The progress made in building a cost-recovery business model and in developing a professional services-propelled organization argues for the continuation of the funding model that has helped build a sustainable approach to supporting innovative educational initiatives for the MIT community.

The high quality of service and excellence demanded by the MIT community makes it imperative for AMPS to align even more closely with other infrastructure organizations and projects, such as Academic Computing, OCW, DSpace, the Registrar’s Office, and the MIT Libraries.

In summary, AMPS will continue to strengthen its position as an efficient, cost-effective, and valuable provider of media services in support of educational initiatives and research, as well as community events at MIT. The focus and emphasis during FY2006 will continue to be on quality and sustainability and on making it easier and easier for faculty, departments, laboratories, and centers to create and deploy educational technology.

*Amitava ‘Babi’ Mitra, Executive Director
M. S. Vijay Kumar, Assistant Provost and Director, Academic Computing*

*More information about the Academic Media Production Services can be found online at [http://web.mit.edu/amps/].*