Tufts University Next-Generation LMS Strategy Recommendations

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with Tufts University LMS Core Team

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Executive Summary:

Guided by an Advisory Team comprised of members representing educational, technical, and financial stewardship responsibilities across the Schools and Central Administration, UIT Academic Technology and the cross-organizational Learning Management System (LMS) Core Project Team have facilitated a broadly participatory process to accomplish four strategic planning goals. These goals were articulated in the Tufts University LMS Project Charter, “A Next-Generation Platform for Teaching, Learning, and Collaboration,” which was endorsed in February 2009 by the project’s Executive Steering Committee and executive sponsors across the Schools:

1. To define selection criteria based on the university's goals and the requirements of faculty, students, and administrators.
2. To evaluate leading LMS platforms to determine which best meets Tufts' criteria.
3. To articulate a robust, coordinated support model to ensure an effective migration process, as well as excellent continuing outreach, education, and service for faculty and other community members who will use the LMS to enrich their teaching, learning, and research at Tufts.
4. To recommend a comprehensive next-generation LMS strategy for Tufts University.

Major Strategy Recommendations:

A. Implement and leverage a common LMS platform for Tufts University.

B. Embark on an open-source pathway by adopting the Sakai platform and participating actively in the associated community. We believe Sakai represents the best open-source strategy for Tufts based on maturity of platform, vibrancy of community, usability evaluation, appropriateness of architecture, compelling roadmap, and adoption across respected institutions similar to Tufts.

C. Plan and implement coordinated LMS service for all participating Schools.

D. Form a cross-organizational, cross-functional LMS Implementation Team, an LMS Steering Committee with representatives from UIT and the Schools, and an LMS Executive Committee, respectively designed to facilitate and enact implementation, to provide context and oversight to the Implementation Team, and to make appropriate and timely policy decisions as needed to expedite implementation.

E. Hire an experienced vendor to provide technical support, migration assistance, and other professional services during the transition.

F. Host the new enterprise system internally if UIT staffing resources allow.

G. Implement the new Tufts LMS service and migrate from legacy systems in three phases to facilitate continuity of service for those on end-of-life applications and to enable planning and technical migration time for unique Tufts-built functionality.
Why These Major Strategy Recommendations?

A. Implement and Leverage a Common Platform for Tufts: We believe it is both feasible and desirable to move to a common university-wide platform for teaching, learning, and collaboration. The benefits of a common platform include:

- Focusing collective resources on supporting outstanding and meaningful faculty use of the platform, across disciplines and institutional boundaries.

- Harnessing technical expertise within and beyond Tufts to design, develop, and integrate new tools and features in cost-effective and sustainable ways, which serve Tufts and its diverse academic and global communities.

- Mitigating risk and disruption when critical staff leave the university by ensuring more redundant knowledge and coverage across the university. A distributed system of support around a common platform means the system is not dependent on any single employee. (This year two key LMS administrators left the university; in one case, the staff member represented 50% of the overall staffing for the program he supported, and he was the party responsible for liaising with the LMS vendor for his program and another School at Tufts; in the second case, the staff member was also the manager of the small group supporting an LMS for their local constituents.)

B. Build upon a Leading Open-Source Platform:

We recommend an open-source approach because:

- Open-source systems are mature in this technology space.
- We prefer an investment strategy that returns value directly to Tufts and the higher education community.
- We can collaborate and exchange with respected peer institutions as they and we adopt and contribute to leading open-source LMS platforms and resources.
- It allows us to be flexible about how and when we invest, divest, enhance, or change strategy to meet Tufts' changing resources and priorities.
- It allows us to share educational resources and tools across Tufts contexts and with local and global community partners.
- Open-source architectures are sustainable and extensible because they are based on open standards which enable interoperability.

Sakai is the preferred pathway for Tufts because:

- The Sakai community has over 100 actively participating institutions and a significant number of institutions that actively contribute code. Colleagues at participating institutions say consistently that they continue to choose Sakai because this is the professional environment where they experience the most forward-thinking conversations about educational technology platforms, meaningful integrations and deployments, and promising practices for leveraging technology in service of diverse academic and co-curricular goals.
- Sakai has a more robust technical architecture to meet Tufts’ complex and diverse needs.
- It has been adopted by respected peer institutions with similar needs and use cases worldwide.
- Investing in a common open-source platform with significant worldwide adoption, particularly at institutions similar to Tufts, ensures that we will be able to attract and retain skillful staff to support this service ongoing, and means that the staff who work at Tufts will gain and use broadly respected skills, knowledge, and practices.
- Sakai performed well in our usability evaluation with faculty, administrators, and students.
- Sakai 3 has a compelling roadmap which, when implemented, will make it easier to develop for and easier to interoperate with university systems and the broader universe of information and web services. The Sakai roadmap focuses on user experience enhancements, which speak to our highest-rated criterion of evaluation for next-generation Tufts learning management systems. 
- There is very little difference in total cost of ownership between the two leading open-source services, whether internally or externally hosted.

C. **Coordinated Tufts LMS Service Model:** We recommend a service model that combines a central technical infrastructure and administration with strong local instructional technology support in the Schools. Tufts currently has 15-20 people providing LMS client services, spread across five systems and multiple organizations. This group, who work directly with faculty, students, and administrators, strongly recommends coordinating service and sharing expertise around a single platform and a common set of tools, resources, curricula, and consultation offerings. The enthusiasm and collective expertise of this cross-organizational team highlights a core benefit of the proposed next-generation LMS strategy: working together around a common platform will yield better results with less effort for a university aiming to use educational and remote collaboration tools in myriad mission-critical and innovative ways.

UIT service components will include technical infrastructure and enterprise application administration, coordinators for the university-wide service, ticketing queues to channel first-tier support appropriately, academic technology consulting, and faculty development offerings. As part of this coordinated LMS service model, we also recommend shared approaches to prioritizing and investing in new educational technology innovation and integration based on university goals going forward. The advisory model described in recommendation G below supports this proposed approach to prioritized educational technology adoption and enhancement for the university.
D. **Implementation Project Model:** We recommend establishing a committee and team structure for the LMS implementation project that is roughly parallel to the model we used for the LMS strategy project, with its Executive Steering Committee, Advisory Team, Core Team and associated working groups. This model assumes that the enterprise LMS service will be funded as a core university-wide service with contributions fromUIT and all Schools, that it will be available for all university constituents to use, and that it is therefore appropriate for UIT and School representatives to have a role in ensuring that the LMS service is implemented to serve the needs of the university and its diverse academic communities.

While it is assumed that all Schools and relevant units will be represented on the Steering Committee throughout the migration and implementation, it is expected that during transitions between and through the various phases of the project, membership and particular representatives from each unit will fluctuate as appropriate. Schools, units and functions that are the focus of the then-current phase would likely participate at a higher level during those phases, and would likely participate at a lower level during other phases.

**Committee and team definitions:**

1) **LMS Executive Committee** – comprised of senior university leaders: the CIO and VP for Information Technology, the Executive VP, and a representative from the Office of the Provost. This committee will be available to make timely high-level policy decisions as needed.

2) **LMS Steering Committee** – including representative educational, IT, and financial stewards from UIT and all Schools to provide oversight and context for the implementation and migrations. The Steering Committee provides oversight to the Implementation Team and will have the opportunity to participate as needed or desired in decision-making at each phase of the project.

3) **LMS Implementation Team** – comprised of internal and external resources with the appropriate expertise and dedicated time to implement the Sakai-based Tufts University LMS platform and the coordinated service model envisioned in this document. This cross-organizational, cross-functional team will:
   - Work collaboratively to facilitate and enact all aspects of implementation and migration.
   - Bring together working groups to support their work as needed.
   - Provide the Steering Committee with project status updates and recommendations about university-wide LMS service policies and implementation choices, including configuration and customization decisions.
   - Consult with, and seek input from, the Steering Committee, executive sponsors, and other stakeholders, as appropriate.
   - Work with the Steering Committee and executive sponsors to ensure robust communication about the project with all appropriate sectors of the Tufts community.
E.  *Professional Expertise for Implementation:* We have built into the funding model the essential element of engaging professional services from a leading third-party provider to support our LMS implementation. We envision that this would include planning, configuration, integration with SIS and authentication services, data migration, and training. The service providers who responded to the RFI have deep expertise in facilitating LMS transitions and implementations for institutions of similar size and complexity. The scaffolding provided by these experienced providers ensures that we manage the transition as smoothly and efficiently as possible and will save us from novice pitfalls in this critical implementation process that will affect almost all faculty and students across the university. We are already leveraging the professional expertise found at other higher education institutions in the open-source community, as well, including relevant LMS data migration tools developed and shared by others that will save Tufts time and money in moving data forward from Blackboard to the new platform.

F.  *Hosting Strategy:* There are benefits to hosting internally and to hosting externally, and the costs are generally similar at this stage. We would recommend hosting internally if UIT staffing resources permit because leveraging storage infrastructure in-house will be more cost-effective over time for this service as data associated with LMS and instructional media services continue to grow significantly at Tufts. We have proposed one new system administrator FTE in the funding model to enable internal hosting.

External hosting is a reasonable alternative to pursue in the case that university systems resources prove insufficient at this time. Benefits to hosting with a third-party vendor include contracted guarantees of service levels and issue resolution, leveraging expertise of service provider with deep knowledge of platforms, and opportunity to learn from the vendor about promising practices of other client institutions.

Either way we initiate the service, we will have the flexibility to transition our hosting strategy in the future. Many schools begin with external hosting and move the service in-house once staff resources are available and trained; many other institutions begin with internal hosting and then choose later to move this service to an externally hosted environment.

G.  *Three-Phased Approach to Migration:* We recommend implementing the new Tufts LMS service and migrating from legacy systems in three phases:

1) Beginning in FY11 Q1 and finishing in FY12 Q2, implement the university LMS platform and migrate all Schools, programs, and organizations currently using Blackboard Basic (School of Arts & Sciences, School of Engineering, The Fletcher School, and Tisch College of Citizenship and Public Policy). Roll out the production service for these Schools and associated programs in Fall 2011. Blackboard Basic is an end-of-life product that has served these Schools and others at Tufts well for ten years, but it is no longer recommended for a user base of our size and it is moving quickly toward deprecation by Blackboard, Inc. as the company pursues its Blackboard NG product roadmap. For these reasons, we have prioritized transition and migration support for these Schools in this first phase.

2) During FY12, migrate existing programs from ANGEL Learning to the new platform
(Global Master of Arts Program at The Fletcher School and Friedman School of Nutrition Science & Policy), and implement course evaluation functionality to replace custom ANGEL course evaluations and to meet course evaluation requirements across Tufts. ANGEL Learning was acquired by Blackboard, Inc., in April 2009. GMAP and Friedman have two years remaining on their current contract with Blackboard/ANGEL because these programs wanted to ensure continuity for their cohorts that are already underway. Once the university LMS has been implemented and phase 1 Schools migrated, this phase 2 migration will be relatively small in scope, and we will be well-prepared to support this transition in a time frame that works well for the programs.

3) Phase 3 focuses on TUSK and might extend from FY11 to FY13 or beyond. We recommend prioritizing an architectural analysis of TUSK this coming year focused on identifying and understanding functionality and workflows that support health sciences education and accreditation in ways that are unique as compared with existing Sakai or third-party functionality, and designing migration plans for this unique set of functionality and workflows. The architect should research existing models for integrating such functionality into Sakai and should analyze fully the feasibility and effort of porting the unique and valuable TUSK functionality to Sakai. Following the architect’s roadmap, the TUSK team would focus during this phase on migrating essential functionality, workflows, and data to the new platform for the Tufts University School of Medicine, Tufts University School of Dental Medicine, Cummings School of Veterinary Medicine, Sackler Graduate Biomedical Research Center, and other TUSK partner schools.

We should continue to research and discuss promising models of Medical and other Health Sciences Schools who are building integrated systems based on Sakai and other architectures, considering where Tufts might cultivate the most effective partnerships. As a university, we have already begun to identify Medical Schools using Sakai in ways related to the important requirements of the TUSK community (see examples below), and initial conversations have focused in invigorating ways on visions for building beyond any of the existing academic technology platforms to create newly agile architectures for lifelong learning and collaboration that integrate both university-based and third-party services into a coherent user experience.

Ideally the TUSK team would play a leading role in fostering the community of practice among Health Sciences Schools through the Sakai Foundation and would work in conjunction with these institutions to share labor and benefits of discipline-specific functionality, workflows, and integrations. Health Sciences schools with strong involvement in the Sakai Foundation and innovative collaboration capacity include Johns Hopkins University, New York University, Stanford University, University of Michigan, et al. Through this sustaining community, Tufts would be able to continue leveraging the respected TUSK brand and vision to share educational resources, meaningful functionality, educational and accreditation scaffolding with interested external partners in the global Health Sciences community.

If Sakai continues to prove a viable platform and a vibrant community through our final phases of evaluation and strategy review, TUSK under Susan Albright’s direction, could request a discussion space and cultivate a Medical School Working Group within the Foundation, and could further propose a seat for Health Sciences Education on the Sakai
Product Council and Board. Initial conversations with Sakai Foundation leaders suggest that such engagement and contribution would be welcome if we seize the moment, and both TUSK and Tufts University as a whole would gain significantly in resources and new forms of national and international recognition for pursuing design, development, and integration of the functionality that is meaningful to the health sciences community globally.

This phase 3 proposal is based on the following principles and considerations:

- TUSK has been providing a respected and valued platform for health sciences education since 1997 and is used actively but Tufts Dental, Medical, and Veterinary Schools, as well as by external partners.
- Tufts should continue to support TUSK as a brand and vision with strategic value.
- Tufts should continue to support design, development, integration, and open sharing of health sciences functionality.
- Tufts should continue to support and leverage the expertise of the TUSK staff, particularly enabling their sustained focus on technical development in support of health sciences education.
- Recognizing that it will become increasingly costly to sustain both the architecture and the business model for TUSK, a complex system built within an institution by an excellent but finite team, both the university as a whole and the TUSK team and champions specifically seek sustainability pathways at this juncture.
- We value open standards, open sharing of educational tools and resources, and participation in an open-source community. We are seeing encouraging examples across institutions where colleagues have met use cases related to TUSK and other Tufts functional and workflow requirements through a variety of Sakai-based approaches and integrations:
  - Cohort- and course-specific calendars and synoptic calendars for students via My Workspace in Sakai to aggregate all relevant academic and co-curricular events with links to relevant resources and activities (Michigan, Stanford, College of the Redwoods, et al.).
  - Evaluations system in Sakai that institutions are using both for formative evaluations within a course or group context and for institution-wide summative course evaluations with email notification templates, online reporting and export of data, etc. (College of the Redwoods, University of Maryland, University of Michigan, Cambridge University, Virginia Tech, et al.).
  - Patient logging, clerkship evaluations, and accreditation support integrated with Sakai via either a third-party integration with a system such as E*Value (Stanford) or via robust scaffolding for Curriculum and Program Committee work through Sakai’s resource and forum tools (College of the Redwoods).
  - Shared resource repository accessible either publicly or to a subset of the community through Sakai’s built-in Resources functionality configured appropriately from the outset (College of the Redwoods) or integration of external repository such as Fedora (the open-source repository we use for both the Tufts Digital Library and the “dark archive” of institutional records). In some cases, institutions are having their libraries catalogue the materials in their Sakai repositories (Universidad Politécnica de Valencia).
• Custom virtual patient / case-builder tools delivered through Sakai via single sign-on (Michigan and Stanford)
• Lecture and Event Capture system integrated via both Sakai Calendar and via RSS feeds to course and project sites, to mobile devices, and to students’ own iGoogle-like dashboard environments, including automated keyword and other standard metadata harvesting to facilitate discovery (Stanford).
• Online collaboration tools including PHP-built tools and Adobe Connect delivered through the Sakai environment via single sign-on (Michigan).
• Sakai leveraged for OpenCourseWare, as learning objects repository, to build learning modules through Lessons tool, and to integrate re-usable multimedia content across courses and other sites (Universidad Politécnica de Valencia, et al.).

Recognizing that it is extraordinarily difficult at this historic juncture to build a viable open-source community from the ground up, and that there is a unique window of opportunity for Tufts and the TUSK team, we believe it is worth pursuing connections with both existing Medical / Health Sciences partners and existing global open-source communities such as Sakai, with Tufts playing a leading role in bringing those two vibrant communities together to enable sustained innovation in health sciences technology for local and global education.

Perceived benefits of planning future directions for the university LMS and TUSK in tandem:

• With shared vision and investment, we can build both core services for Tufts and innovative contributions to a global community in a more sustainable way.
• Faculty, students, and staff at Tufts benefit from a coordinated strategy and leveraging of expertise at every level from architecture to design and development to support, instructional design, and faculty development.
• Global communities benefit when we leverage a platform that is already available internationally and supported by many higher education institutions through contribution as Sakai Educational Partners and through investment in technical infrastructure, user experience / design, development, and associated professional services. The TUSK instance of Sakai-plus-integrated-functionality-and-services can leverage partnerships across this existing network, can focus development on new functionality specific to the health sciences, and can garner further funding through greater appeal of a powerful partnership between TUSK/Tufts leadership and well-governed and robust Sakai Foundation.
• TUSK staff benefit from working in communities, projects, and technologies that are international in scope. The ability to recruit and retain excellent staff would increase, and the professional development opportunity represented by working on TUSK powered by Sakai with integrated educational technology services would appeal broadly. The technical staff would benefit from ability to focus on interesting and innovative endeavors related to health sciences education rather than the full current spectrum of all elements of the platform, including those that are commonly available and used across all disciplines. The instructional services staff would benefit from working within a Tufts-wide and global community of colleagues in developing and exchanging resources, user-centered design practices, effective support approaches, and faculty development best practices.
Summary of Project Approach and Outcomes:

Collated project information, including project charter and history, data and analysis, working group reports and recommendations, is available via the LMS Planning space:

https://wikis.uit.tufts.edu/confluence/display/LMSPlanning/Tufts+University+Next-Generation+LMS+Strategy+Recommendations

Document History and Authorship:

This strategy recommendation is a report of the LMS Advisory Team, prepared on 4/1/10 then finalized on 4/15/10 by the project manager, Gina Siesing, with input from the LMS Core Team. The LMS Advisory Team approved the strategy recommendations unanimously on 4/16/10, and the LMS Executive Steering Committee endorsed the recommendations unanimously on 5/17/10.

LMS Executive Steering Committee

The LMS Executive Steering Committee, including these Tufts University senior academic and administrative leaders, provided oversight to ensure that the project maintained an appropriate university focus and to support the project’s successful completion through sponsorship and guidance:

- Patricia Campbell, Executive Vice President, Tufts University
- David Kahle, VP for Information Technology and CIO, University Information Technology
- Mary Y. Lee, Associate Provost, Tufts University

The project manager and project steward also maintained regular communication with other executive sponsors of the LMS project, including the Executive Associate Deans in the participating Schools.

LMS Advisory Team

The LMS Advisory Team provided input and guidance to the project manager and the LMS Core Team in support of the project’s successful process and completion. The LMS Advisory Team was comprised of the following members:

- Nancy Arbree, Associate Dean, Academic Affairs, TUSDM
- Cristelle Baskins, Associate Professor and Department Chair, Department of Art & Art History, School of Arts & Sciences (2008-09)
- Marybeth Caputo, Budget & Fiscal Officer, University Information Technology (UIT)
- David Damassa, Dean for Information Technology, Tufts School of Medicine
- Scott Epstein, Dean for Educational Affairs, Tufts School of Medicine
- Paul Giguerre, Director, Distance Learning, Friedman School of Nutrition Science & Policy
- James Glaser, Dean of Undergraduate Education, A&S and Engineering (2009-10)
- Rich Kelley, Budget & Fiscal Officer, Office of the Dean of Arts & Sciences (2009-10)
- Jeff Kosokoff, Director of the Ginn Library and IT, The Fletcher School
- George Norman, William and Joyce Cummings Family Chair of Entrepreneurship and Business Economics, Department of Economics, School of Arts & Science (2008-09)
- Anne Preble, Contract Administrator, Purchasing Department, Finance
- Scott Sahagian, Executive Associate Dean, School of Engineering (2009-10)
• Angie Warner, Associate Dean for Academic Affairs, Cummings School of Veterinary Medicine
• Chris Swan, Associate Professor, Department of Civil & Environmental Engineering, School of Engineering (2008-09)

**LMS Core Team**
The LMS Core Team was responsible for coordinating all phases of project work and for enlisting the input of the LMS Advisory Team and stakeholders across the university at key project junctures. In the selection process, the LMS Core Team was responsible for providing the LMS Executive Steering Committee with a recommendation for the next-generation Tufts LMS and for the support model that will enable transition from existing learning management systems, as well as excellent continuing service for the Tufts community. The LMS Core Team was comprised of the following members:

• Susan Albright, Director, Educational Technology, Tufts University Sciences Knowledgebase
• Mark Bailey, Manager of Support, TUSK
• Sheryl Barnes, Assistant Project Manager, Senior Educational Technology Specialist, UIT Academic Technology
• Neal Hirsig, Assistant Director for Instructional Services and Blackboard Administrator, ITS, Schools of Arts & Sciences and Engineering
• Hannah Reeves, Instructional Design & Technology Specialist, UIT Academic Technology
• Gina Siesing, Associate Director for Educational Technology, UIT Academic Technology (project manager)
• Chris Strauber, Humanities Librarian/Instructional Design Coordinator, Tisch Library, School of Arts & Sciences and Engineering

**For Further Information:**

See [http://go.tufts.edu/lms](http://go.tufts.edu/lms) for Project Charter and further project information.