

# THE UNIVERSITY OF MEMPHIS®

## Information Technology Services Strategic Plan

Revised September 2019

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## Executive Summary

The University of Memphis (UofM) is changing rapidly, adapting to institutional challenges and opportunities with fresh vigor and an ambitious strategic plan. Responsible for the data and information infrastructure underpinning these changes, Information Technology Services (ITS) must be agile, finding new solutions to fit new contexts and retiring solutions designed for a previous strategy. The Information Technology Strategic Plan (ITSP) identifies the steps the division will undertake to support the University's direction of the next five years.

## Environmental Scan

The following characteristics describe the environment in which ITS seeks to support the academic and research mission of the University through transformative change while maximizing resource efficiency:

- Infrastructure demands (e.g., network, servers, storage, applications, etc.)
- Portfolio growth and employee workloads (e.g., applications, services, etc.)
- Security and risk management needs
- Budget constraints
- Agile collaboration efforts (e.g., process improvement)

## ITS Strategic Initiatives

ITS has identified the following strategic initiatives for the next 5 years that will support the University's mission:

- Expanding support for student success initiatives
- Improving technology adoption and training
- Supporting business automation and efficiency
- Enhancing support for online learning and UM Global initiatives
- Collaborating on digital marketing, constituent engagements, and constituent experiences
- Strengthening IT infrastructure
- Improving support for end-user analytics
- Increasing use of contractors and vendor managed services
- Deploying smart campus technologies

The university is poised to enable and leverage further adoption of existing and new cloud-based services to support transition from CAP-EX to OP-EX, strengthen disaster recovery processes, and move toward service delivery anywhere anytime.

Because the University environment is rapidly transforming, this ITSP is reviewed and adjusted as needed in response to tactical needs including changing technologies, needs of constituents, and internal measurements collected by ITS.

## ITS Overview

ITS provides core educational, research, and business technologies and services that enable the university to achieve its ambitions. ITS is responsible for implementing, monitoring, and maintaining all centralized information technology such as the campus data network, telephone system, computer systems, computer labs, data centers, servers, enterprise applications such as ERP and CRM systems, and Service Desk functions at the University of Memphis. And, while some units acquire decentralized technologies, ITS provides integration, support services, and training opportunities for many of the technologies used or proposed to the campus community.

## Vision

ITS drives transformational change at the University through collaboration with internal and external peers to support student success, research, innovation, and sustainability.

## Mission

ITS is committed to providing excellent service to students, faculty, researchers, and staff in support of the University's mission.

## Values

The values below define our organization and support our mission:

- We put students first.
- We listen and respond to the needs of others.
- We conduct ourselves with professionalism, integrity, and accountability.
- We provide comprehensive and reliable service to do the job right the first time.

## ITS Strategic Planning Process

Strategic planning is a critical component of the ITS continual improvement process. To inform the planning process, we continually seek input from customers about satisfaction and service quality, solicit input from academic and administrative leadership, and consult with IT governance bodies. To create the ITSP, we combine that input with an environmental scan and an internal SWOT (strengths, weaknesses, opportunities, and threats) analysis. Because the institution's needs and the technology environment constantly evolve, the ITSP is a living document.

### Environmental Scan

The external environment is characterized by the growing importance of:

- Operational rather than capital expenditures -- vendors will continue deploying cloud-based solutions, including platform-as-a-service (PaaS) and Software-as-a-Service (SaaS) and will pursue customer lock-in through cloud-based hosting agreements, increasing institutional switching costs of future migrations. Pressure will mount for further cloud-based provisioning, and new skills will be needed to support cloud-based services for generic infrastructure and specialized business, academic, and research activities.
- iPaaS and integration brokerage -- adoption of niche products will require additional effort to integrate with existing systems and to leverage data collection and analysis using integration platform as a service (iPaaS) or other technologies. This "post-modern" trend will require the institution to implement a strategy for coordinating among multiple systems of record, for data abstraction to ensure retention of data during vendor switching, and for providing a single source for analytics and reporting.
- Digital Twin – the digitalization of the higher education business and academic models will continue, thereby requiring institutions to re-think service delivery throughout the entire constituent lifecycle including marketing, experience management, data analytics, and decision-making strategies.
- Adaptive technology - adaptive e-textbooks and gamification, virtual and augmented reality, blockchain and micro-credentials, and voice interfaces have created a new basis for competition in the higher education marketplace.
- Mobile technology and IoT utilization - further investments in network infrastructure, security, and support as well as applications for Deep Learning, machine learning, and artificial intelligence will be driven by further growth of mobile and IoT (Internet of Things) technologies.

The internal environment is characterized by:

- Emerging, independent business initiatives – expectations for faster project deployments and ad hoc projects with limited stakeholder involvement will increase pressure on limited resources thereby creating an opportunity to align project prioritization with University strategic priorities.
- Customer capability and maturity concerns – lack of succession planning and cross training, as well as lack of training for existing applications, creates opportunity for strengthening institutional knowledge.
- Funding model inefficiencies – charge-back models create potential for inefficient business processes, and technology student fees provide inadequate funding for technology in academic programs, thereby creating opportunities for re-envisioning existing funding models.
- Organizational and cultural challenges – SaaS, IaaS, iPaaS, and other cloud-based IT service models create opportunities for realignment of resources and cultural expectations needed to

support these new operating modalities (e.g., SaaS may increase the frequency of service updates requiring functional units to be more agile in testing and learning new features).

- Deferred physical and technical maintenance -- opportunities exist to avoid future capital investments related to physical plant issues and to address deferred technical costs (e.g., fiber upgrades).

Table 1 (“Rates of Change”) illustrates the rate of change of the university infrastructure supported by ITS and the related financial support:

Table 1: Rates of Change

<b>Description</b>	<b>Five-Year Changes<sup>1</sup></b>
Network ports	132% increase
Wireless access points	114% increase
Storage capacity – research (TB)	175% increase
Desktop computers	85% increase
Security Cameras	44% increase
ITS operating budget	10% decrease <sup>2</sup>
TAF budget	15% decrease
ERP budget	no change

Without exception, the success of every new academic, research, partnership, and business initiative depends on information technology infrastructure, daily operational activities, enterprise applications, and service desk support.

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<sup>1</sup> Infrastructure and service support information based on data available as of October 29, 2014.

<sup>2</sup> Based on nominal, unadjusted dollars

SWOT Analysis

For this strategic plan, ITS analyzed customer feedback and engaged in self-reflection to create the SWOT analysis in Table 2. The SWOT analysis helps us identify strengths, weaknesses, opportunities, and threats.

Table 2: SWOT Analysis

<b>SWOT Analysis</b>	
<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• We are a talented team and knowledgeable about the services we provide.</li> <li>• We are available and responsive in supporting our services during peak and non-peak hours.</li> <li>• We are flexible and adaptable.</li> <li>• We have a solid technical infrastructure.</li> <li>• We strive to provide excellent customer service.</li> <li>• We support University community partnerships.</li> </ul>	<ul style="list-style-type: none"> <li>• We don't spend enough time in research and development.</li> <li>• Communication about IT services could be improved within ITS and with the broader campus community.</li> <li>• We need to improve resource management by prioritizing projects in support of University strategic goals.</li> <li>• Resource contention occurs between ESAC, PMG, project management, and executive-level out-of-band requests.</li> <li>• Unsustainable charge-back revenue model used to fund Network Services and related functions.</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Improve IT security by continuing to enhance our Information Security program.</li> <li>• Improve customer outreach (including students, faculty, and staff) by engaging governance structures and attending departmental meetings.</li> <li>• Collaborate on technology purchases before they are made.</li> <li>• Improve resource management by sunseting legacy services.</li> </ul>	<ul style="list-style-type: none"> <li>• Some services provided by ITS are supported one-deep due to inadequate staffing levels.</li> <li>• Inadequate stakeholder involvement, project planning, and compressed timelines.</li> <li>• Vendor relationships that lack appropriate stakeholder involvement and planning but require significant support.</li> <li>• Enrollment migration from on-ground to online courses reduces TAF revenue making that funding model unsustainable.</li> <li>• The University lacks an enterprise desktop computing replenishment strategy.</li> </ul>

## ITS Strategic Priorities

ITS relies heavily on its advisory bodies for planning, coordination, and communication. Additionally, ITS identifies future technology trends in higher education from a variety of sources including peer institutions, Gartner, and Educause. ITS identifies potential areas of opportunity by constantly scanning these sources, communicating with institutional leadership, and supporting professional development of staff.

## Major Initiatives

To support the university in achieving its ambitions, we anticipate the following major initiatives over the next five years, and specific tactical projects are listed in the roadmap later in this document:

1. One or more major ERP-related implementations
2. A large-scale migration of the data center architecture and infrastructure to the cloud
3. A transition from traditional desktop computing hardware to virtual desktop infrastructure (VDI)
4. One or more major CRM-related implementations and market automation projects
5. A large-scale implementation of “beacon” or “smart campus” IoT devices
6. Reorganization of ITS and functional units to support IaaS and SaaS models
7. Reimplementation of the data warehouse to accommodate the business intelligence and decision support needs of the university, including machine learning and artificial intelligence, while shifting ERP and CRM resources and incorporating beacon and other IoT “smart campus” devices
8. Coordinate elements of the technology ecosystem to support UM Global and other online learning initiatives such as blended learning and hybrid course experiences
9. Strengthen digital marketing strategy by redesigning constituent engagement from recruitment through alumni phases to create a consistent experience that leverages data collection, analysis, and informed decision-making
10. Improve operational efficiencies by leveraging electronic signature and workflow technologies
11. Invest in campus IT infrastructure to provide reliable and sustainable services
12. Deploy augmented and virtual reality technologies that enable academic excellence
13. Leverage vendor management services, including cloud hosted solutions, when appropriate
14. Improve information security program through training and new technology deployment
15. Support student success and retention through expansion of artificial intelligence technologies
16. Increase efficiencies through pursuit of cloud-first and data center migration strategies
17. Conduct enterprise resource planning platform review and potential refresh in collaboration with business units, including a review of existing business processes and cloud-based solutions
18. Collaborate with business units to improve efficiency by identifying needed changes to business processes, organizational design, and technologies
19. Pursue smart campus strategies to support sustainability, external collaboration, and improvement of the constituent experience
20. Implement a data analytics strategy that shifts ad hoc reporting to business units, and creates a business intelligence unit focused on leveraging data analytics

## Strategic Challenges

Strategic challenges anticipated for these initiatives include:

1. Talent challenges brought on by:
  - a. Increased competition with local marketplace for talent exacerbated by low compensation levels.
  - b. Because of application diversity and limited staffing, high-quality support for many products and technologies is one person deep both in functional offices and ITS.
  - c. Any ERP or CRM implementation is likely to spark staff departures, creating a greater gap in business process knowledge.
  - d. New ERP and CRM skills, especially if related to a system used outside of higher education, will result in greater market pressure for talent.
  - e. High levels of retirement eligibility within a five-year horizon for both ITS and functional areas.
2. Fiscal challenges brought on by:
  - a. Decentralized, non-institutional operating budgeting for campus-wide concerns, such as security cameras, network drops, managed switches, access systems, telephone billing, software (e.g., work-order systems), and staff training.
  - b. Deferred physical and technical maintenance will require collaboration from institutional leaders to decommission obsolete or inefficient services rapidly.
  - c. Annual ad hoc funding for multi-year agreements.
3. Institutional capability and maturity challenges brought on by:
  - a. Critically low levels of maturity, capability, and succession planning in ITS's campus partners create sudden, critical gaps in business continuity and diminish institutional potential.
  - b. Institutional capability and maturity deficiencies related to existing technologies and adoption requiring training to use the ERP system more effectively and increase the slate of products that use these ERP functions.
4. Organizational and cultural challenges brought on by:
  - a. Institutional siloes of information, technologies, strategy, and planning create unforeseen crises for implementation and interoperability.
  - b. Ineffective participation in some governance committees creates problems for ITS in meeting strategic priorities.
  - c. Misalignment of cross-division strategies creates internal competition and contention for limited resources resulting in institutional and enterprise inefficiencies.

## Five Year Roadmap

Table 3 illustrates tactical projects that will support UofM Strategic Priorities during the next five years. Projects created in response to agile business needs and collaboration opportunities, as well as projects needed to support the previously defined ITS strategic initiatives, will be defined throughout the horizon as needed.

**Table 3: ITS Tactical Projects by Year Supporting UofM Strategic Priorities**

Fiscal Year	ITS Tactical Project	UofM Strategic Priority						
		Student Success, Access, & Affordability	Academic Excellence	Research & Innovation	Diversity & Inclusion	Community, Alumni, & External Collaborations	Brand Enhancement & Global Visibility	Sustainability
2020	UMRF Ventures Partnership	X	X	X		X	X	
2020	UMRF Research Park Partnership	X	X	X		X	X	
2020	UM Global Expansion Support	X	X				X	X
2020	Cloud-based storage initiative		X	X				X
2020	Desktop security initiative							X
2020	Facilities management software							X
2020	ERP assessment and replacement	X	X	X				X
2020	LMS assessment and replacement	X	X					X
2020	Enrollment Services CRM implementation	X			X		X	X
2020	Security camera server replacements							X
2020	Telephone system upgrade	X						X
2020	Support International Council for Educational Media conf.					X	X	
2020	Zero-/thin-client computing (Virtual Desktop Infrastructure)	X	X					X
2020	Enhanced Internet2 engagement/ collaboration		X	X				X
2020	Music building construction	X	X	X		X	X	
2020	Replace core network/ firewall	X	X	X				X
2020	Implement iPaaS							X
2020	Campus fiber upgrades – Phase 2		X	X				X
2021	Campus fiber upgrades – Phase 3		X	X				X

Fiscal Year	ITS Tactical Project	UofM Strategic Priority						
		Student Success, Access, & Affordability	Academic Excellence	Research & Innovation	Diversity & Inclusion	Community, Alumni, & External Collaborations	Brand Enhancement & Global Visibility	Sustainability
2021	Advancement CRM implementation					X	X	X
2021	Data center migration to cloud							X
2021	Redesign network address space for Network Address Translation							X
2021	Smart Campus initiative	X	X	X	X	X	X	X
2021	Digital Signage					X	X	X
2021	Student Recreation Center	X	X	X	X	X		
2021	Network infrastructure for athletics media rights implementation						X	X
2021	Implement Microsoft Teams	X	X	X		X		X
2021	Cloud-based High-Performance Computing			X				X
2021	Evaluate new portal and mobile application	X	X				X	X
2022	Unified communication services / cloud-based telephony							X
2023	IPv4-to-IPv6 migrations			X				X
2024	Data Center Network Upgrade							X

## Summary

From context, process, priorities, challenges, and projects, this technology strategic plan articulates the rationale for the next five years while also surfacing tactical opportunities in the more immediate future. The context for the plan describes the external and internal forces shaping the options available to the institution, and potential challenges the institution must address to successfully implement the initiatives.