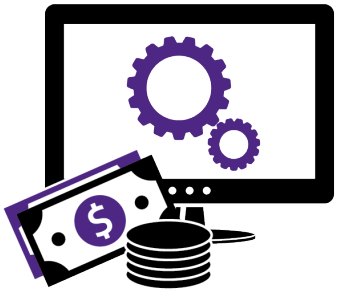
Kansas State University

Information Technology Strategic Plan

March 11, 2019

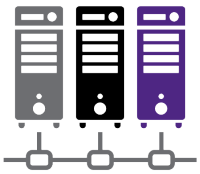
COST OF HARDWARE AND SOFTWARE FY2018



$14.8 M

4.6 MILLION
THREATS BLOCKED
DECEMBER 2018

AVERAGE NETWORK TRAFFIC
DURING PEAK USAGE*



6 Gbps download
.5 Gbps upload

*Peak usage is defined as Monday-Friday, 10AM - midnight

Data collected in November and December 2018 from the Financial Information System (FIS), the Human Resource Information System (HRIS) and Network and Telecommunications Services (NTS)

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Introduction

Information technology (IT) has the power to transform how we learn, teach, research, serve and engage across the state, region, country, and the world. The people we serve define the tools and services needed; IT delivers these tools and services in support of our land grant mission.

The IT community consists of central and distributed services with staff spread among K-State's four campuses – Manhattan, Polytechnic, Olathe and Global. There is one main data center for the campus supported by a backup site and two smaller data centers on the Olathe and Polytechnic campuses. There are four other data centers maintained by distributed IT staff. There are 131 central and 129 distributed IT staff, respectively. The distributed IT staff are located in 44 units across campus. From a budgetary perspective, the university expenditures for hardware and software total more than $14.8 million.

These few metrics point to the magnitude of the resources involved in providing for the IT needs of K-State students, faculty and staff. Adding to the complexity of the IT environment, a fire on the roof of Hale Library, which houses the primary data center, reduced the life span of the on-premises hardware. The result is an opportunity to evaluate innovative solutions for IT service delivery as the University moves forward with strategic enrollment management, a new budget model, and updated federal regulations. As IT advances with strategic planning and implementation, the people who rely on technology tools and services, will define the way forward.

In Spring 2018, interviews with stakeholders (n=16), focus group sessions (n=19), and a campus-wide survey (n=1,290), were conducted to identify gaps in current IT tools and services. Nearly all stakeholders described IT as very important and essential to their success. Survey respondents rated IT systems and services favorably. About 72% agreed that the portfolio of IT services met their current needs in comparison to 51% who indicated that the IT portfolio will meet anticipated future needs. Thirty-four percent of the respondents rated K-State average in comparison to other public research universities with regard to selection and adequacy of IT solutions and IT maturity and effectiveness. In July, IT leadership reviewed the data and developed a first draft of the strategic plan. In October, both central IT and distributed IT staff reviewed the draft strategic plan and provided input, which were used in the preparation of this document to inform the strategic direction for IT at K-State.

The strategic goals consider the success of students, faculty and staff at the core, align with K-State 2025 and reflect the dynamic IT landscape capable of supporting technology today and tomorrow (Appendix A). Research from the EDUCAUSE 2019 Top IT issues (Appendix B) and the 2018 National Survey of eLearning and Information Technology in US Higher Education (Appendix C) mirror issues voiced by our stakeholders including IT security, leveraging technology for student success, fostering a data informed environment, hiring and retaining IT talent, unifying an IT governance strategy and more. Similarly, the goals in the IT strategic plan are broad strokes and fluid; we are relying on our stakeholders to help us develop the road map and operational plan.

Vision

One IT community: Enabling through technology.

We are dedicated to the success of students, faculty and staff at Kansas State University. We will operate as a unified IT community to deliver seamless and secure IT services that enable institutional excellence in student success, research, service, and engagement.

We will leverage a modern, scalable network and computing infrastructure, use transparent management and decision-making processes, and work in an integrative and collaborative manner. As stewards of IT resources, we will intentionally measure and continuously improve IT performance and capacity, and take strategic risks to foster innovation. We will invest in the growth and development of IT professionals across the university.

The trusted partnership between One IT and our stakeholders is grounded in the land grant mission.

One IT

Our One IT community connects hundreds of distributed and central IT staff invested in reaching the goals outlined in this strategic plan and addressing the challenges that surface in an ever-shifting IT environment. One IT gathers collectively for a cause bigger than ourselves by investing, advocating and providing a transformative environment for those we serve.

Guiding Principles

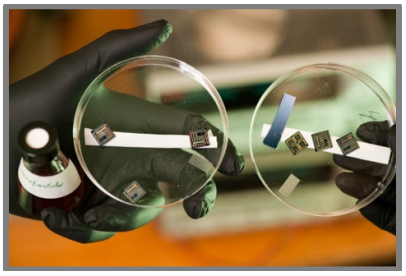
The foundation of our success includes our people, effective IT governance, high-performance IT service delivery, and excellence in communications and collaboration. In support of those beliefs, as One IT community, we have adopted the following guiding principles:

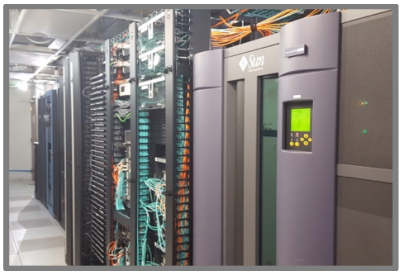
- **Affirm our focus on K-Staters** – One IT nurtures a customer-centric, outwardly-focused culture, while cultivating awareness of technology and solutions.
- **Grow an evolving IT community** – One IT grows individuals and evolves as a community, understanding that when one of us excels, we all excel. We strive to work collaboratively as a distributed IT community to achieve common goals. We foster growth and development among IT staff while improving the ability to attract and retain IT staff to develop relevant skills to flexibly meet IT needs.
- **Lead with transparency** – One IT is transparent in its operations, decision making, policies, and purchasing efforts. We will work cooperatively with stakeholders in an environment of shared governance to ensure that we serve the university in an open and responsive manner.
- **Serve as responsible stewards** – One IT manages resources entrusted to us with compassion and good judgement in support of those we serve. We will continue to enhance operational efficiencies through partnership, collaboration and communication.

These principles define the approach of One IT to achieve our strategic goals. Success will be determined by application of the appropriate critical success factors at the operational level.

Strategic Goals

The following strategic goals, based on feedback from the K-State community with input from IT leadership and staff (central and distributed), will steer the efforts of One IT to attain the vision set forth in this strategic plan. The goals address existing challenges and establish technical and organizational structures that will empower K-Staters for success. See Appendix A for full details of objectives and activities associated with each goal.





- **Unify Organization and Governance** – Build an enterprise approach for IT organization and governance that unifies university IT communities and provides clear mechanisms and processes for decision making around IT activities, resources, and priorities. Ensure appropriate organizational structures and financial resources to address the business and academic technology needs.
- **Modernize Infrastructure** – Sustain a modern, secure, well-architected, and resilient IT infrastructure to include the data center, networking and telecommunications. Enable seamless and discoverable integration of solutions and data to meet university, departmental and affiliate organization needs.
- **Re-architect Enterprise Applications** –Maintain a well-architected enterprise application portfolio to meet the shared and common needs of K-Staters.
- **Strengthen Communications and Feedback** – Develop a comprehensive plan for communicating IT programs, initiatives, and services, and obtaining actionable and measurable input from K-Staters.
- **Enhance User Experience** - Deploy solutions that facilitate a consistent user experience.
- **Evaluate IT Service Delivery –** Ensure effective, reliable, and efficient delivery of all IT services provided via the One IT community.
- **Enable IT for Research** – Establish an approach and strategy to provide additional IT resources and capabilities for research activities.
- **Improve Enterprise Security** - Improve cybersecurity programs to enable the organization to proactively protect and mitigate the risks of unauthorized access to K-State's information and technology resources.

Critical Success Factors

The success of the IT Strategic goals depends on our ability to:

- Focus our efforts on university interests in addition to department or unit specific concerns.
- Leverage university expertise to facilitate problem definition, effective analysis, solution identification and adoption.
- Develop a sustainable funding model.
- Develop meaningful metrics that align with the strategic initiatives and K-State 2025.

- Ensure strategic goal working groups are diverse and inclusive.
- Communicate consistently with One IT voice.

The most important critical success factor will focus on the culture change required to unite IT staff across the University as One IT community.

Summary

Successful implementation of this strategic plan depends on many factors. A critical success factor is uniting central and distributed IT staff as One IT community to address our collective challenges. With limited resources and increasing demands, we can better address the complex needs of K-Staters through this cooperative community. The strategic plan is inclusive of the colleges and departments spanning four campuses and K-State Research and Extension and the 105 counties we serve. In addition, a year one focus is enhancing the university's network infrastructure. One IT has the opportunity to build an infrastructure befitting a 21st century land grant university – one that combines cloud and on-premises solutions. The other strategic goals listed in this plan, each important in their own right, build upon one another as One IT evolves into an improved service organization.

Appendix A - Strategic IT Goals

Goal: Unify Organization and Governance

Goal description: Build an enterprise approach for IT organization and governance that unifies University IT communities and provides clear mechanisms and processes for decision making around IT activities, resources, and priorities. Ensure appropriate organizational structures and financial resources to address the business and academic technology needs.

Objectives and Activities

Objective 1: Unify the IT organizational structures. Define organizational structures that unify the IT community and IT roles across the University.

Activities

1. Identify existing structures and responsibilities within the community
2. Survey existing IT community for input
3. Define process for retaining and evolving the One IT community
4. Evaluate IT organizations restructuring to achieve performance, service management and delivery goals

Objective 2: Design comprehensive and unified IT governance model. Design and adopt a comprehensive governance plan for all areas of IT. Confirm committee representation and schedule the first governance group meeting. Design a framework for decision-making. Implement policies and plans.

Activities

1. Document and evaluate current governance structures (e.g., Enterprise Architecture Review Board) to update methodology, approach, and membership
2. Define IT provider roles by function and streamline roles as appropriate
3. Utilize roles and responsibilities, RACI[1] (Responsible, Accountable, Consulted, Informed) methodology
4. Develop key decision entities and processes crafted around the unique roles of each department to include the governance process in the portfolio and project management area.
5. Develop and support policies and standards conducive to University and distributed unit success
6. Define role of Faculty Senate Committee on Technology
7. Develop communication plan for governance process to include website (members of the governance structure, purpose, goals, responsibilities, decisions, etc.). Provide regular (monthly) updates: which projects considered, which projects approved and then which projects tabled
8. Improve purchasing processes
9. Improve service request process where a General IT request could be changed to specific requests

[1] (Delos Santos, J.M. Understanding responsibility assignment matrix (RACImatrix). https://project-management.com/understanding-responsibility-assignment-matrix-raci-matrix. Last accessed January 4, 2018.

Objective 3: Redefine IT roles across the University to unify the IT community.

Activities

1. Establish IT job family structure for role definition, skill development, and career progression
2. Develop IT professional development program with ongoing needs and opportunities
3. Develop recruitment and retention plan
4. Integrate core values and competencies into recruitment and onboarding and performance management
5. Conduct IT compensation study

Goal: Modernize Infrastructure

Goal description: Sustain a modern, secure, well-architected, and resilient IT infrastructure to include the data center, networking and telecommunications. Enable seamless and discoverable integration of solutions and data to meet university, departmental and affiliate organization needs.

Objectives and Activities

Objective 1: Upgrade the university network. Ensure consistent wireless connectivity throughout the Manhattan campus.

Activities

1. Complete campus fiber loop
2. Improve campus wireless
3. Improve the accuracy of wireless geolocation for application development
4. Upgrade building infrastructure
5. Implement VOIP solution for unified communications capabilities
6. Develop a single view (e.g., dashboard) network incidents

Objective 2: Modernize the data center. Grow availability, capacity and dependability of IT resources.

Activities

1. Improve automation, efficiency and resiliency of the data center
2. Evolve data storage capabilities to meet the needs of the university
3. Retire legacy servers and services
4. Incorporate cloud first strategy into our data center posture

Objective 3: Develop the cloud and hosted computing strategy.

Activities

1. Develop a comprehensive cloud strategy to drive K–State's infrastructure modernization.
2. Evaluate 100% of the service catalog (central and distributed) against the Infrastructure 2.0 decision matrix
3. Migrate 100% of those service

Objective 4: Provide support for high performance computing.

Activities

1. Develop and execute high-performance computing strategy
2. Increase support for research computing

Objective 5: Complete the disaster recovery plans for all One IT units or any IT provided services.

Activities

1. Create critical service central IT recovery plan.
2. Complete BIAs for all mission critical services to include IT external to ITS
3. Create BIA Lites for non-critical services
4. Integrate BIA data into Bold Planning BC Complete recovery plan for non-critical systems
5. Complete recovery plan for non-critical systems
6. Define datacenter failure table top exercise; plan 90-day cycles
7. Live testing of mission critical systems failover

Goal: Re-architect Enterprise Applications

Goal description: Maintain a well-architected mission critical enterprise application portfolio to meet the shared and common needs of K-Staters.

Objectives and Activities

Objective 1: Define IT portfolio management processes.

Activities

1. Define and evaluate projects
2. Prioritize projects through transparent processes
3. Define role of enterprise project management
4. Develop and use enterprise project governance

Objective 2: Develop business architecture capability to consult and advise business, academic and technology processes.

Activities

1. Assist and enable business and academic units in establishing effective operating processes
2. Define business architecture
3. Establish business reference model
4. Consider tools to automate business process improvement and automation
5. Create solutions that allow for true data informed decision making

Goal: Re-architect Enterprise Applications

Goal description: Maintain a well-architected mission critical enterprise application portfolio to meet the shared and common needs of K-Staters.

Objectives and Activities

Objective 3: Establish enterprise architecture capability.

Activities

1. Ensure IT architecture and resulting infrastructure supports internal and external data and users to enhance engagement and outreach
2. Establish campus wide unified systems standards
3. Use collaborative approach to design across academic units

Objective 4: Define and implement enterprise customer relationship management (CRM) strategy. Initial focus will be on Undergraduate Admission.

Activities

1. Review data from prior study of an enterprise CRM strategy
2. Assess and document current activities and solutions being used
3. Define common needs and ensure stakeholders have input.

Objective 5: Establish and execute enterprise resource planning (ERP) upgrade strategy.

Activities

1. Assess the ERP landscape for higher education
2. Document K-State ERP needs and requirements
3. Complete procurement process
4. Implement new ERP system

Objective 6: Develop enterprise-wide shopping and payment system for campus.

Activities

1. Identify and implement an enterprise-wide shopping and payment solution

Objective 7: Identify tool(s) for enterprise-wide forms management.

Activities

1. Identify and implement an enterprise-wide solution to provide electronic forms management
2. Identify possible solutions (vendors, in-house, current systems), see what other universities are successfully using and implement enterprise-wide solution to provide electronic forms management

Goal: Re-architect Enterprise Applications

Goal description: Maintain a well-architected mission critical enterprise application portfolio to meet the shared and common needs of K-Staters.

Objectives and Activities

Objective 8: Establish business intelligence/analytics capability.

Activities

1. Define data governance strategy and plan
2. Establish "business intelligence / analytics center of excellence" capability to assist and advise business, academic, and technology departments
3. Develop strategy for financial and operational business intelligence / analytics capability
4. Develop institutional data warehouse capability
5. Create solutions that support true data informed decision making
6. Develop long-term plan for artificial intelligence in support of business analytics capability

Goal: Strengthen Communications and Feedback

Goal Description: Develop a comprehensive plan for communicating IT programs, initiatives, and services, and obtaining actionable and measurable input from K-Staters.

Objectives and Activities

Objective 1: Develop a comprehensive communication program to coordinate dissemination of IT information.

Activities

1. Establish IT communications team of diverse communicators (social media, writers, multimedia)
2. Develop comprehensive and ongoing communications template and checklist

Objective 2: Develop comprehensive and robust approach for obtaining and sharing customer feedback.

Activities

1. Identify and institute standards for survey mechanisms and appropriate timing
2. Define how the "voice of the customer" will be reflected in IT performance measurement and improvement

Objective 3: Develop a comprehensive training program to coordinate IT training on campus.

Activities

1. Establish IT training team.
2. Develop comprehensive training plan.
3. Develop and identify scope of training needed, to include professional development.
4. Partner with entities that offer certification, testing, online training, and more.

Goal: Enhance User Experience

Goal description: Deploy solutions that facilitate a consistent user experience.

Objectives and Activities

Objective 1: Develop and execute accessibility/universal design strategy.

Activities

1. Define core accessibility capabilities, processes, and tools
2. Develop longer term strategy and execution plan

Objective 2: Develop mobile application development strategy.

Activities

1. Develop a platform-agnostic mobile application development architecture and strategy

Objective 3: Adopt end-user profile standards.

Activities

1. Identify and adopt end-user profiles (personas) to guide and facilitate user experience strategy execution

Objective 4: Establish business continuity plans among One IT units.

Activities

1. Review and redefine membership of the existing Business Continuity and Planning (BCP) committee
2. Establish business impact analysis (BIA) template for university units
3. Schedule and conduct “table top exercises” to confirm effectiveness of BCPs

Objective 5: Create innovative learning environments.

Activities

1. Establish innovative learning environments for students, faculty, staff, and outreach. Includes classrooms, labs, collaborative workspace, conference spaces, etc.

Goal: Evaluate IT Service Delivery

Goal description: Ensure effective, reliable, and efficient delivery of all IT services provided via the One IT community.

Objectives and Activities

Objective 1: Develop a unified IT service catalog.

Activities

1. Establish a standard approach to portfolio management and build a standard portfolio management system
2. Link IT services and other performance measurement programs (service level management, voice of the customer, etc.)
3. Define data collection method to assist in measuring performance
4. Identify portfolio inventory with service level contacts across One IT
5. Identify opportunities for consolidating IT services
6. Establish service roadmaps and lifecycle approach
7. Define processes to review and update the catalog (currently available in ServiceNow)
8. Communicate and train on the use of the service catalog

Objective 2: Improve IT Assistance. Perform a comprehensive IT support process improvement project.

Activities

1. Continue evaluation and implementation of an enterprise-wide IT Service Management (ITSM) platform to determine if it meets the needs of the One IT community
2. Research support models at peer and aspirational universities

Goal: Enable IT for Research

Goal description: Establish an approach and strategy to provide additional IT resources and capabilities in support of research activities.

Objectives and Activities

Objective 1: Develop strategy that enables and supports a broad range of research activity.

Activities

1. Identify and prioritize strategic research needs pertaining to IT resources
2. Identify solutions that support the research life-cycle
3. Identify and mitigate enterprise risks resulting from IT in research environment
4. Develop a strategy that considers the funding opportunities and constraints associated with sponsored research activities

Objective 2: Include research IT in unified IT governance structure and processes.

Activities

1. Establish roles and responsibilities, RACI (Responsible, Accountable, Consulted, Informed)
2. Identify key decision areas
3. Define key decision entities and processes

Objective 3: Address research compliance issues.

Activities

1. Identify and adopt solutions that enable improved compliance with research protocols, guidelines, sponsor requirements, etc.

Goal: Improve Enterprise Security

Goal description: Improve cybersecurity programs to enable the organization to proactively protect and mitigate the risks of unauthorized access to K-State's information and technology resources.

Objectives and Activities

Objective 1: Establish cybersecurity awareness and risk management program.

Activities

1. Identify major groups of users/stakeholders and how their unique roles have different security needs including adherence to General Data Protection Regulation (GDPR), Controlled Unclassified Information (CUI), etc.
2. Develop cybersecurity plan
3. Develop K-State security framework to align with National Institute of Standards and Technology (NIST) Frameworks
4. Develop policy and security alliance

Objective 2: Improve enterprise security. Define program to improve enterprise security capabilities.

Activities

1. Enforce patch management standards
2. Enhance endpoint security
3. Implement two-factor authentication university-wide
4. Implement security information and event management (SIEM) Solution

Appendix B - EDUCAUSE 2019 Top 10 IT Issues

1. **Information Security Strategy:** Developing a risk-based security strategy that effectively detects, responds to, and prevents security threats and challenges
2. **Student Success:** Serving as a trusted partner with other campus units to drive and achieve student success initiatives
3. **Privacy:** Safeguarding institutional constituents' privacy rights and maintaining accountability for protecting all types of restricted data
4. **Student-Centered Institution:** Understanding and advancing technology's role in optimizing the student experience (from applicants to alumni)
5. **Digital Integrations:** Ensuring system interoperability, scalability, and extensibility, as well as data integrity, security, standards, and governance, across multiple applications and platforms
6. **Data-Enabled Institution:** Taking a service-based approach to data and analytics to reskill, retool, and reshape a culture to be adept at data-enabled decision-making
7. **Sustainable Funding:** Developing funding models that can maintain quality and accommodate both new needs and the growing use of IT services in an era of increasing budget constraints
8. **Data Management and Governance:** Implementing effective institutional data-governance practices and organizational structures
9. **Integrative CIO:** Repositioning or reinforcing the role of IT leadership as an integral strategic partner of institutional leadership in supporting institutional missions
10. **Higher Education Affordability:** Aligning IT organizations' priorities and resources with institutional priorities and resources to achieve a sustainable future

Source: Campbell, J. , Grajek, S., Lavagnino, M., Early, L., Hartman, J., & Morales, C. (2018, Nov). *The EDUCAUSE 2019 Top 10 IT Issues. Panel Presentation at the* EDUCAUSE Annual Conference 2018, Denver, CO. https://events.educause.edu/annual-conference/2018/agenda/educause-top-10-it-issues

Appendix C - The Campus Computing Project's Top Campus IT Priorities, Fall 2018

Rank	Issue	Challenges (and yet…!)
1	IT Data Security (86%)	Just 35% rate IT security as "excellent"
2	Hiring/Retaining IT Talent (74%)	Four-fifths (79%) report it is hard to hire/retain IT talent because of off-campus competition and salaries
3	Leveraging IT to Support Student Success (68%)	Only 40% say IT investments to support student success efforts have been very effective
4	Assisting Faculty with the instructional integration of IT (58%)	-Just 15% rate IT training for faculty as "excellent" -Only an eighth (12%) of campuses included faculty IT instructional initiatives as appropriate for promotion
5	Learning and Managerial Analytics (57%)	Less than a fifth (19%) rate investments in data analytics as "very effective"

Source: Green, K. C. (31 Oct., 2018). *The compounding consequences of IT budget cuts; few campuses evaluate the impact of their IT initiatives*. The Campus Computing Project*. Available from* campuscomputing.net. NOTE: The Campus Computing survey is based on responses of senior IT officials from 242 U.S. public and private institutions.