Information Technology Strategic Plan 2018 – 2021

Executive Summary

The College of Staten Island is a four-year, senior college of The City University of New York providing exceptional opportunities to all of its students and offering undergraduate and graduate degrees as well as certificate and continuing education programs. CSI is accredited by the Middle States Commission on Higher Education.

The Information Technology Strategic Plan (ITSP) in collaboration with the Information Technology Advisory Council (ITAC) developed this plan carefully aligning each of the goals and objectives with the College's institutional Priorities.

The mission of the Office of Information Technology Services (OITS), consistent with that of the College, is to advance the use of technology in all aspects of the College's operations, so as to strengthen support services, teaching, and research. OITS is responsible for guiding, assessing, planning, developing and executing state of the art information technologies. OITS's mission is to support the College of Staten Island community in the use of technologies that will enhance and strengthen the teaching and learning process to foster student success. OITS has a responsibility to support current technology at CSI while at the same time plan and implement the continuing evolution in technology.

Purpose of the Information Technology Strategic Plan

The strategic use of technology is vital to every institution, especially one educating a large, diverse student body on multiple campus locations. The College of Staten Island's updated Information Technology Strategic Plan will guide the institution, and more specifically Information Technology Services, in executing the College's strategic priorities and addressing the future technology needs of students, faculty, staff and the community. The goals of the ITSP are aligned to the institutions values and fundamental principles and strategic directions.

The Information Technology Strategic Plan is designed to be a living document that is reviewed regularly to adjust to the changing higher education environment and CSI's institutional priorities. The primary purpose of this plan is to ensure that CSI will be in a position to leverage technology to achieve its instructional and business objectives as it moves forward in meeting challenges over the next few years. The ITSP is also intended to provide a clear long-term

direction for all IT projects and expenditures over the next four years and to ensure that there is agreement regarding the long-term direction.

2014 – 2017 Information Technology Accomplishments

Network Infrastructure

Networking continues to make substantial upgrades providing for a scalable and flexible architecture to support 10G connectivity. Networking replaced core switches and performed configurations allowing for Quality of Service (QoS) in support of increased traffic and bandwidth. In addition, the implementation of a redundant infrastructure to automatically fail over to secondary circuits providing access to the Internet was completed. Some of the significant advances to CSI's network infrastructure include:

- 2016 - 2017: Replacement of (20) End-of-Life Core/Main Distribution Frame (MDF) Layer Network Switches
- 2017: Installation of additional 10Gbps circuits to the CUNY Optical Network
- 2017: Installation of a pair of PaloAlto (PA-5050) next generation firewalls with Intrusion Prevention System (IPS) functionality
- 2017: Replacement of (50) End-of-Life access layer switches

As part of the network infrastructure, OITS also continued improving the wireless network infrastructure in order to respond to the increase use of mobile technologies acquired by administration, as well as students and faculty in support of pedagogy to improve student outcomes. Faculty, staff, and students are leveraging the ClearPass Access Management System in order to provide for faster and more seamless access to the wireless network.

Website

The redesign of the College website was completed in May 2017. The new environment uses Drupal, a content management system allowing faculty and staff to maintain much of their own content. This new website will serve as the vehicle to attract new students as well as support initiatives to recruit and support students from abroad.

Telecommunications

The multiyear phone system upgrade project continues to progress with the replacement of the main PBX and the voice messaging systems. In addition, CSI's voicemail system was replaced with Microsoft Unified Messaging, which is now

integrated with Outlook email. The campus community can now access their voice mail through their email as well as communicate using Instant Messaging (IM) on campus.

Classroom and Faculty/Staff Technology

Numerous computers were upgraded with new systems in some of the open, instructional, tutoring, and specialized computer labs. They were also equipped with the necessary software needed for the variety of classes and disciplines that take place in these rooms.

OITS continues to move closer to accomplishing an ITIL (Information Technology Infrastructure Library) framework in order to standardize the selection, planning, delivery and support of IT services. The management of technology assets became more efficient through the installation of the Dell KACE Asset Management System. All computers connected to the network are now being monitored by the KACE agent, which automatically records hardware specifications as well as specific applications and software running on the machine. In addition a new robust ticketing system was deployed providing the College community the ability to provide feedback on a regular basis using the HelpDesk ticketing survey tool.

Video streaming, storage, and access continued to be a success. Illumira is currently being used by faculty and students as part of classroom instruction as well as others for archival and research purposes. Illumira is also integrated within Blackboard supporting automatic uploads to videos.

The Virtual Desktop Infrastructure (VDI) initiative provided for students to virtually access specific software from off-campus, regardless of device or Operating System. Another branch of VDI also expanded to support Universal Design allowing individuals with accessibility needs to attain needed software from any computer lab as well as off campus.

The card access pilot was also successful allowing faculty the ability to access classroom labs using their dolphin cards that authenticated against card readers. This eliminated the need for technicians to be on call for the sole purpose of opening the lab. The success of this pilot has now provided for all faculty teaching in computer labs to access their labs using their dolphin card.

Communication, Training, and Outreach

The Information Technology Services in collaboration with the Office of the Provost/Senior Vice President for Academic Affairs formed a CSI *Information Technology Advisory Council (ITAC)*. The committee participates with other academic and administrative units in the development of short and long-range plans for strengthening campus-wide technology initiatives, instructional and content management systems, academic computing facilities, improving access and usage of these facilities, and meeting community needs.

OITS has made great strides by improving services being offered through improved training initiatives and enhanced communication evidenced by monthly newsletters, brown bags and workshops, and the IT Doctor. An OITS branding is also being used, signifying the importance of OITS communications. OITS actively participates in New Student and Faculty Orientation. In this regard, changes were implemented to streamline material and provide for a more hands-on experience. Finally, a security awareness campaign provided monthly security updates to faculty and staff as well as a security awareness workshop to the campus community.

Disaster Recovery

The Information Technology Services developed a Disaster Recovery manual and procedures as part of the CUNY disaster recovery initiative. Coalesced contact information and a call list as well as procedures for IT backup and recovery was developed. The College of Staten Island will be a pilot school for CUNY's business continuity and disaster recovery initiatives.

Budget and Administration

New procedures were implemented that streamlined the budget request process for IT purchases. In addition, the chargeback process was streamlined and integrated with our ticketing system for accurate reporting. Student Technology Fee budgeting requests were also standardized utilizing templates that captured requests received from the Academic and Administrative areas.

Reorganization

Information Technology Services was originally structured where disparate departments handled technology service related functions. A reorganization occurred to leverage resources more efficiently and provide for improved support. One key element was the creation of End User Services, which merged several distinct areas that provided classroom and end user support into one department. In preparation for a Unified Communications environment leveraging VoIP technology a newly formed Collaborative Technologies area was created merging Telecom with Office Automation and User Services (Exchange/AD). In addition, Security Services, which was once under Telecom is now under Networking Services. A new position was also created, the Executive Director of Networking Services, who is responsible for overseeing both Collaborative Services

and Networking. Finally, in order to provide more structured training workshops as well as assist with project management and budgetary functions, the Technology Operations Training and Development department was created.

Survey

At the end of every spring semester, an Information Technology Systems Survey is administered. The survey was created to offer the College community an opportunity to provide feedback on the technology services offered to the College. As a follow up to this survey, OITS also developed a Technology Training/Needs Assessment Survey. The results of the survey are being used to develop a comprehensive and innovative IT Training Program.

High Performance Computing Center (HPCC)

Under the leadership of a new Executive Director several initiatives are either underway or have been implemented. Highlights include:

- HPCC faculty portfolio
- Workshops for high school students
- Revised mission statement that includes a broader audience focusing not only on education and research but also on economic development opportunities
- Development of HPCC advisory committee consisting of faculty and staff across all CUNY institutions.
- Budget and usage analysis
- New website and brochure
- System enhancements
- Grant applications

The Office of Information Technology Services (OITS)
2018 – 2021 Strategic Plan Goals

As CSI embarks on the new strategic plan, budget constraints, limited space, and staffing resources continue to be a challenge. Albeit these limitations, the following objectives have been established for Information Technology Services aligning with institutional goals.

Goal #1: Foster innovation and expand academic and administrative initiatives

Information Technology Services will support the use of technology in order to provide an effective teaching and learning environment as well as provide for an infrastructure that supports future growth by:

1. providing training opportunities to the college community in support of technology currently being used as well as for future initiatives that enhance the teaching, learning, and administrative uses at the college

2. enhancing the infrastructure in order to support current and future technologies for classroom instruction, student services, and administrative activities to sustain operations and provide for seamless learning environments

3. ensuring an all-inclusive learning experience that includes updated computers, peripheral equipment, network connectivity, and applications as well a learning space that encourages flexibility and engagement in accordance with budgetary limits

4. will continue to explore applications and technologies that enhance and afford efficiencies for academic and administrative areas and support academic research

Goal #2: Ensure operational efficiencies for academic and administrative areas

Information Technology Services will assist with providing technology solutions that will ensure operational efficiencies in support of effective business processes in administrative and academic areas by:

1. assessing the College's use of technology and office operations

2. collaborating with College constituents in order to provide guidance related to the implementation of new technologies and procedures within the constraints of limited staffing and budgetary resources

3. researching alternative ways of conducting business that could leverage technology

Goal #3: Support academic research and growth opportunities

Information Technology Services will collaborate and support the academic community and ongoing initiatives related to economic development, continuing education, and research computing in order to leverage technology to develop and implement programs and foster relationships. This will be accomplished by:

1. encouraging the use of, and providing a clear, straightforward path for students to utilize the High-Performance Computing Center

2. providing IT resources and technical support services to create new and innovative learning environments for community partnerships and continuing education initiatives

3. providing training and support for the use of resources to support research and scholarship as well as promote the Library's expansive e-resources that are available to faculty and students both on and off campus

Goal #4: Improve training and raise awareness of technologies

Information Technology Services will provide training opportunities, service and support and will continue to perform systematic data collection and analysis, so that we could continually improve a framework for service delivery and support that best meets the needs of the College. This will be accomplished by:

1. continually enhancing the knowledge of the faculty, staff, and students to align with industry best practices in order to best serve the College Community

2. increasing awareness to the College community of training opportunities and resources provided by CSI and CUNY

3. collaborating with academic and administrative departments to maintain a consistent approach to highlighting technology initiatives and services

Goal #5: Manage risk effectively and provide for disaster recovery solutions

Information Technology Services will continue to provide for an environment where users can access data or systems and collaborate securely. In addition, ITS will continue to implement strategies that provide for business continuity and disaster recovery solutions. This will be accomplished by:

1. researching best practices for data backup/restore, data security and Business Continuity Disaster Recovery (BCDR) procedures; implement improvements where feasible and raise awareness to the College community of their role in BCDR related activities

2. engaging with CUNY Central on BC/DR related activities; maintain continued involvement in appropriate committees, programs, initiatives

3. exploring opportunities for using available resources/ (on-campus) locations for BC/DR systems as interim approach in lieu of a full fail-over hot site

Information Technology Trends in Higher Education

This plan will address key priorities for CSI's use of technology over the next four years. Thus, it is important for the College to understand significant trends in higher education's use of information technologies and anticipate how to make purposeful and timely decisions to capitalize on these trends. Information Technology Services leverages Educause and the New Media Consortium to provide insights on these trends.

Educause 2018 Top 10 IT Issues

1. *Information Security:* Developing a risk-based security strategy that keeps pace with security threats and challenges

2. *Student Success:* Managing the system implementations and integrations that support multiple student success initiatives

3. *Institution-wide IT Strategy:* Repositioning or reinforcing the role of IT leadership as an integral strategic partner of institutional leadership in achieving institutional missions

4. *Data-enabled Institutional Culture:* Using BI and analytics to inform the broad conversation and answer big questions

5. *Student-centered Institution:* Understanding and advancing technology's role in defining the student experience on campus (from applicants to alumni)

6. *Higher Education Affordability:* Balancing and rightsizing IT priorities and budget to support IT-enabled institutional efficiencies and innovations in the context of institutional funding realities

7. *IT Staffing and Organizational Models:* Ensuring adequate staffing capacity and staff retention in the face of retirements, new sourcing models, growing external competition, rising salaries, and the demands of technology initiatives on both IT and non-IT staff

8. (tie) *Data Management and Governance:* Implementing effective institutional data governance practices

9. (tie) *Digital Integrations:* Ensuring system interoperability, scalability, and extensibility, as well as data integrity, standards, and governance, across multiple applications and platforms

10. *Change Leadership:* Helping institutional constituents (including the IT staff) adapt to the increasing pace of technology change

https://er.educause.edu/articles/2018/1/top-10-it-issues-2018-the-remaking-of-higher-education

New Media Consortium (NMC) Horizon Report

Bring Your Own Device (BYOD) (1 year)

"Adoption of BYOD policy into the corporate sphere has provided a model for educational contexts, and the practice is gaining acceptance in universities and colleges all over the world."

Flipped Classrooms (1 year)

"Flipped learning is seen as especially suited for higher education because the rearranging of class time gives students in large introductory lecture courses more opportunity to engage and interact with their peers."

Makerspaces (2–3 years)

"Institutions are taking advantage of makerspaces to provide students and faculty a place that is integrated into the community to do their tinkering."

Wearable Technology (2–3 years)

"Wearable technology is poised to see significant growth in the coming years, spurring experimentation in higher education because the demand for wearables is seen to be coming in large part from college-aged students"

Adaptive Learning Techniques (4–5 years)

"The emergence of adaptive learning technologies reflects a movement in academia towards customizing learning experiences for each individual."

The Internet of Things (4–5 years)

"As understanding around this emerging technology develops, universities are taking advantage of opportunities to give learners greater insight into the power of IoT."

https://edtechmagazine.com/higher/article/2015/03/6-tech-trends-course-reshape-higher-ed-2020

Key Information Technology Initiatives

The ITSP also reflects the following key initiatives for Information Technology Services:

Business Continuity

An IT disaster is defined as any condition or event that alters normal information technology services to such a degree that the mission-critical business operations of the institution are significantly compromised. The purpose of CSI's IT Disaster Recovery Plan is aimed at re-establishing IT services that support the institution's business continuity needs, as well as outlining strategies for responding to a disaster and ensuring that appropriate back-up procedures, off-site storage, and co-location plans are in place.

IT Governance

IT governance plays a critical role in ensuring that decisions about technology are widely understood. CSI strives to continue to enhance its IT practices so decisions are made in a coordinated and purposeful way by leveraging ITAC (Information Technology Advisory Council) as well as ad hoc subcommittees (i.e. Web Steering).

Project Approval Process

In order to promote a more coordinated approach to IT decision-making and investments, Information Technology Services has developed an approval process for new projects. Project approval criteria include a consideration of the proposed project's benefit and need, its anticipated institutional impact, and its alignment with the IT strategic plan.

Website Redesign

The redesign of the CSI website is completed and we went live in May 2017. When the site was designed by the vendors, it was developed to be compliant with current government ADA (American Disability Act) accessibly requirements (Level "A"). The government now requires Level "AA" compliance requiring massive updates to the design, colors and contrast as well as remediating PDFs currently on the site.

Telecom Infrastructure

CSI has three integrated Avaya phone systems (Gateways) on campus, two of which were installed back when the campus opened in 1993. These two critical communication systems have been operating for approximately 24 years without major investments. The replacement of CSI's antiquated phone system is critical to sustain operations.

Fiber Replacement

The CSI fiber plant, established in 1993, supports all daily campus activities and has grown organically. It provides the physical network interconnects including data exchanges between academic and administrative areas distributed across the entire 22 building, 204 acre campus, and the High Performance Computing Center (HPCC). The fiber plant also supports the campus' telecommunications and building management systems (e.g. HVAC, fire alarms, door access, and security cameras). The original design topology and infrastructure (including a lack of fiber redundancy between buildings) cannot accommodate the rapid expansion of data flows and file transfers to and from the HPCC particularly those required by data scientists and researchers. A substantial replacement of the fiber plant, incorporating an enhanced topology is necessary.
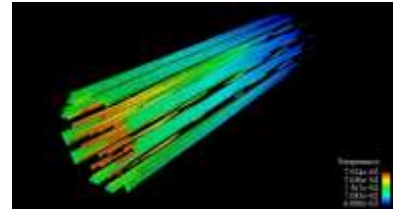
IOT

The Internet of Things (IoT) consists of devices (i.e., "things") that compute, are networked, and interact with the environment with the intention of collecting sensory data and/or manipulating the local environment. The coming decades will see a new wave of personalization enabled by big data and artificial intelligence. Higher education has the potential and the imperative to lead that transformation. Already established working groups will continue making progress on IOT initiatives including improving energy consumption, leveraging location tracking devices, and attendance tracking just to name a few.

MakerSpace

A MakerSpace provides an array of digital fabrication tools, electronic equipment, and technologies in a communal area, where faculty, students, researchers, and entrepreneurs can freely design and prototype their ideas. Students and the Staten Island community can be exposed to new things and provide for serendipitous learning opportunities. Makerspace will provide for a cultural transformation that will demonstrate value and sustainability to stimulate innovation, creativity, and entrepreneurship where undergraduate and graduate students will benefit from this space to enhance their learning experience at CSI.

Sustainability and Cost Recovery

Develop a cost recovery model for provisioning IT resources and services at a level that is appropriate for College and not jeopardize the ability to remain committed to the goals and objectives of the institution and CUNY at large.

Information Technology Services Communications

Annual Reports

- ITS 2016-2017 Annual Report
- ITS 2015-2016 Annual Report
- ITS 2014-2015 Annual Report

Newsletters

- Spring 2018 Newsletter
- Spring 2017 Newsletter
- Spring 2016 Newsletter
- Spring 2015 Newsletter
- Fall 2014 Newsletter

Surveys

- ITS Survey Spring 2017
- ITS Survey Spring 2016

Next Steps

An important culmination of this process is communicating the plan to the College community. This will ensure the vision for technology use is shared among all of the constituencies served. Future communication on both changes to and progress on the plan will also be conveyed on a continuing and timely basis.

It is important to establish a mechanism for overseeing the implementation of strategic and tactical technology plans, as each of the objectives requires an owner who will be responsible for moving the individual objective forward under the oversight of the IT governance structure. Furthermore, it is imperative that the plan be considered holistically. A review of all objectives, regardless of the goals they are intended to support, reveals patterns and identifies common activities that can be leveraged in support of these goals. This plan should serve as a basis for the annual work plan process which outlines tactical action items that align to the goals and objectives. Additionally, as some goals are dependent on funding, the ITSP will feed into the budgeting process for technology for the coming three years. The implementation grid will be used to manage the progress of achieving the objectives outlined in the ITSP.

Implementation Grid Sample

Goal #1: Foster innovation and expand academic initiatives						
Information Technology Services will support the use of technology in order to provide an effective teaching and learning environment as well as provide for an infrastructure that supports future growth by:						
Objective	*Dependencies*	*Responsible Party*	*FY18*	*FY19*	*FY20*	*FY21*
1. providing training opportunities to the college community in support of technology currently being used	• *Staff; technology*	IT	$??			

About the Office of Information Technology Services

https://www.csi.cuny.edu/online-resources/office-information-technology-services

Resources

https://events.educause.edu/annual-conference/2017/agenda/the-educause-2018-top-10-it-issues

https://edtechmagazine.com/higher/article/2015/03/6-tech-trends-course-reshape-higher-ed-2020