

2021

IT@JH

SPRING UPDATE



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LETTER FROM LEADERSHIP

Reflecting On Our Achievements

IT goes without saying that 2020 presented challenges we have never faced before. The university went virtual, the health system ramped up COVID-19 operations while conducting a colossal shift to telemedicine, and research refocused efforts. Technology was at the root of it all – it kept us going across all our missions. We are so proud of IT@JH:

- + Overnight, IT@JH flipped the switch, allowing tens of thousands of employees, faculty, and students to continue their important work and studies.
- + Health IT and Enterprise Technology Services ramped up telemedicine, supporting hundreds of thousands of patients.
- + In June and with a major update in January, IT@JH teams (Technology Innovation Center, University Information Systems, Health IT) launched Prodensity and a suite of capabilities to manage the safe return to campus. This effort included a massive program for self-service COVID-19 testing.
- + In December, Health IT rolled out a large-scale, equity-focused COVID-19 vaccination program using Epic.
- + Day in and day out, Client Technology Services, Telecom, and Networking staff remained onsite to support critical operations.
- + We did all of these things amid tremendous national turmoil, while also launching Epic at All Children's Hospital and responding to escalating cybersecurity concerns.

Our talented and diverse IT@JH team demonstrated devotion, commitment, and grit. And while we are a technology-forward organization, times like these remind us that our strength comes from people. It is an honor to work among the best of the best.

Prior to COVID-19, our strategic focus was shifting in two directions toward data analytics and user experience. The pandemic served as a real-world validation of this strategy. Analytics guided nearly every decision, informing us as to what was working and what wasn't. User experience (aka digital experience) became integral to self-service programs enabling patients to receive virtual care, and students to safely return to campus. While reinforcing our direction, COVID-19 highlights the need to go faster.

In all that we do, we are mindful that the solutions we provide specifically help our students, patients, employees, and other stakeholders achieve their objectives and desired outcomes. We seek closeness with all those we serve in this endeavor.

This update is intended to serve as a snapshot of our countless hours of work and dedication over the last year. While we only have space to feature some of our achievements and successes, we are so proud of our incredible teamwork across this exceptional institution. Thank you for your interest in learning more about IT@JH.



Dwight Raum

Interim Chief Information Officer, IT@JH

GUIDING PRINCIPLES

SAFETY

IT@JH plays an important role in the institution-wide effort to promote patient safety. We commit to doing what is best for the patient, and best for the people who care for the patient.

SERVICE EXCELLENCE

Our first commitment is to our customers: Johns Hopkins patients, students, faculty, and staff. IT@JH is committed to providing the best possible service consistent with enterprise goals and strategies.

SUSTAINABILITY

IT@JH recognizes the need for greener practices to improve Johns Hopkins' waste reduction and energy conservation programs.

SECURITY

Protecting integrity and availability of network and systems is a challenge for open environments like ours. The focus on security is more pressing as we enhance protections for private information.

STAFF DEVELOPMENT AND STAKEHOLDER SATISFACTION

We evaluate ourselves first by the quality of the service provided to our customers. We also pay heed to all our stakeholders, including our workforce, staff, and partners. We hire and motivate a strong, diverse, and experienced staff.

SAVINGS

IT@JH works within resource constraints by leveraging investments across multiple areas and emphasizing the use of established technologies.

SCIENCE

IT@JH provides infrastructure and support for research laboratories and collaborates with Johns Hopkins scientists on projects with IT-related objectives.

SIMPLIFICATION

IT@JH emphasizes the need for IT to standardize and simplify rather than complicate business, clinical, teaching, and research processes.

VISION

“ WE ENVISION IT@JH AS ENTERPRISE IT FOR THE FUTURE. ”

CORE VALUES

Quality

We strive to excel and exceed expectations in everything we do. Customer service excellence is key.

Listening

We collaborate with colleagues and customers, providing us with new perspectives and different points of view.

Participating

We value every team member's opinion. Consensus building and inclusiveness factor in decision-making.

Fun

We encourage humor, imagination, and new ideas. Life is short, so we want to enjoy what we do.

Learning

We encourage team members to participate in opportunities for continuing education, professional development, and personal growth.

Informing

We share important information on a regular basis.

Respect

We are respectful, responsible, prepared, and courteous.

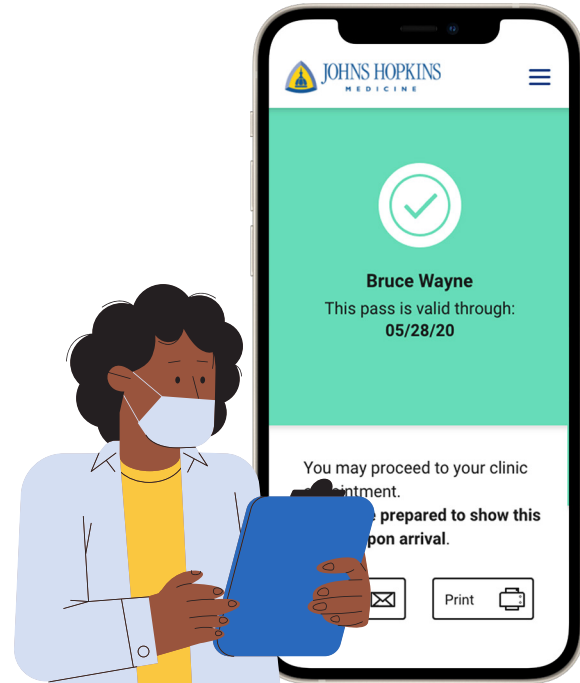
CYBERSECURITY



Cybersecurity Approach

Our security program addresses current and emerging threats in data theft, ransomware, and application attacks. Our network is relatively open, we have a large attack surface, and we employ defense-in-depth. Emerging ransomware attacks can spread organization-wide by establishing a beachhead through phishing or web compromise, and then scanning the network to replicate

on multiple machines. These attacks may be institution-wide or just focus on a single department or laboratory. Our IT groups are now logging network, endpoint, user, and application logs in monitoring tools. We regularly perform web vulnerability scans, application risk assessments, and have implemented several guidelines for client and server administrators to keep workstations, servers, service accounts, and group memberships secure.



HEALTH IT



Patient and Provider Safety

We quickly implemented several technologies to keep both patients and providers safe during clinical visits. Patient Pass, designed and developed together with the Technology Innovation Center, pre-screens patients prior to their appointments, and Patient SMS allows provider communication, transmittal of important instructions, and check-in/waiting room information. Epic, MyChart, and Zoom were integrated for clinicians to make virtual inpatient rounds and limit COVID-19 exposure.

Epic

Dissonance is a lack of harmony between systems, and in Health IT leads to unnecessary variation in build requirements, unresolved decisions, and discordant clinical care. Dissonance more than doubles our work in terms of clinical and Epic training, related flow sheets, decision support, and data views, as well as reporting and dashboards. For that reason, we consistently work toward harmonizing our clinical and operational systems for maximum efficiency.

During the COVID-19 pandemic, we created our COVID-19 predictive model in Epic in four weeks, and the final version went live six weeks later. Using this model, clinicians can potentially alter the course of care of hospitalized COVID-positive patients because the model predicts the likelihood of 1- and 7-day risk of progression to severe disease and/or death. This model was a collaboration between the Precision Medicine Analytics Platform (PMAP) team, data scientists, subject matter experts, the Epic project team, and Epic Verona. We are documenting the process with lessons learned to improve efficiency with subsequent models.

The Precision Medicine Centers of Excellence (PMCOE) continue increasing, to a current total of 22.

Telemedicine

The COVID-19 pandemic necessitated a quick move to video visits. The number of video visits per day increased from about 5 to over 5,000 at the beginning of the pandemic.

The new WebRTC platform replaced Polycom in summer 2020 for conducting virtual outpatient video visits. This system does not require an app download for patient or provider. A secure URL is generated after the appointment is scheduled and patients use their MyChart browser portal or mobile application to join their virtual visit.



Precision Medicine

Our inHealth Precision Medicine team worked with the Johns Hopkins Core for Clinical Research Data Acquisition (CCDA) to produce a COVID-19 data registry. The Precision Medicine Portal is a one-stop online resource for the inHealth community. We also expanded the Precision Medicine Analytics Platform (PMAP) Discovery Platform, allowing researchers to bring their data together in a centrally managed location and access data sets through modern analytical tools.

INNOVATION & Support

Enterprise Business Solutions (EBS)



EBS manages applications, software and solutions to serve the enterprise across many administrative functions including Human Resources and Payroll, Supply Chain, Finance, Grants Management, Real Estate, and Public Safety.

SAP is our enterprise solution for many of these key business functions and our SAP landscape continues to grow with SAP SuccessFactors for Recruiting, Performance & Goals, SAP Ariba for Purchasing catalogs, and Concur for Travel and Expense reimbursement, along with new enabling technologies for integration and analytics. To prioritize our work across the many functions and systems we support, we continually seek opportunities for innovations and improvements in business process, user experience, and insights from data/analytics.

Our current strategic focus is the development of a multi-year roadmap for the replacement and expansion of our current SAP technology suite.

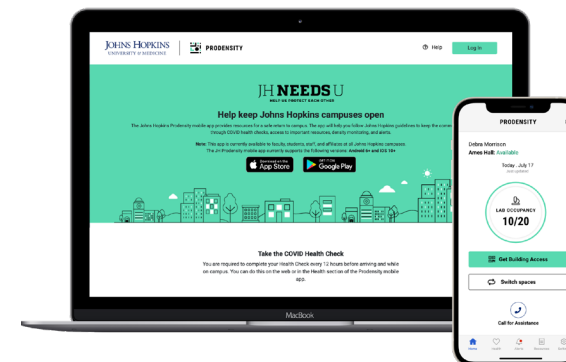


Technology Innovation Center (TIC)



We met the challenges that arose from the COVID-19 pandemic in support of patients, students, faculty, and staff.

Teams from University Information Systems (UIS), Epic, Client Technology Solutions (CTS), and the TIC combined forces, leveraging technology to support a return to campus for both Johns Hopkins University (JHU) and Johns Hopkins Health System (JHHS). The Prodensity mobile app provides resources for a safe return to campus. The app allows users to take a daily COVID Health Check, check into and out of monitored spaces to follow density requirements, and track required asymptomatic COVID-19 testing. JHU and JHM data were brought together in most of these instances.



The TIC worked with the JHU President's Office to develop an enhanced dashboard of details on the university community's COVID-19 status. The dashboard contains data on testing, positive cases, trend statistics in Baltimore and Maryland, and information about isolation and quarantine capacity.

In addition to the medicine-related apps and technology that we worked to develop and implement, the TIC also ran the LEADS leadership program for analysts, innovated in precision medicine and digital health, and led another cohort of HEXCITE, our medical software accelerator program.

Chesapeake Digital Health Exchange (CDHX)

Chesapeake DHX (CDHX) is a regional economic development effort co-organized by the Technology Innovation Center and Johns Hopkins Technology Ventures. In 2020, CDHX hosted a series of virtual Digital Health Huddles featuring local start-up leaders, a pitch event, and virtual trivia game. CDHX co-hosted the MAVRIC conference, featuring emerging augmented and virtual reality technologies with a focus on healthcare, and continued providing mentoring and technical guidance to regional digital health start-ups.

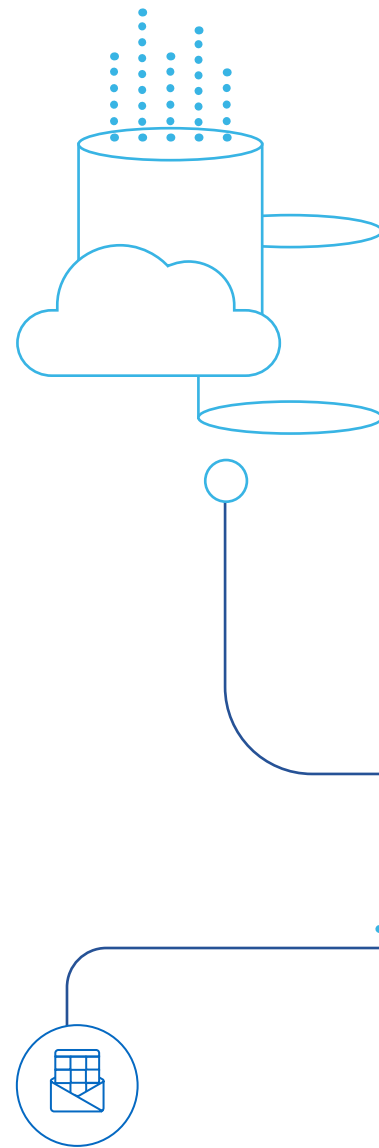
Tech Hub

The Tech Hub supports the technology needs of Johns Hopkins affiliates on the medical campus. As many employees transitioned to remote work due to the COVID-19 pandemic, the Tech Hub drastically increased the supply of webcams and iPads, then secured and deployed hundreds of each across the institution.



Work-from-home product bundles for simplified ordering are available, along with same-day

shipping and contact-free delivery. For virtual education, the Tech Hub provided 75 Apple AirPods to professors and 100 tablets to employees with children in Baltimore City Schools. The Tech Hub also continued supporting essential workers on campus through hardware and equipment repairs.



Networking, Telecommunications, & Data Center Services

Network fleet and wireless fleet replacements are underway and will continue on a rolling basis. A new Session Initiation Protocol (SIP) infrastructure will enhance voice service offerings. Other continuing work includes UPS replacement at the Mt. Washington Data Center, firewall upgrades, continued buildout of our Cloud infrastructure to Azure in Equinix (Ashburn VA), and our newest cloud peering point in Miami, FL.

Enterprise Directory, Messaging, & Authentication

We completed the email migration from Exchange 2016 on-premises to Exchange Online, Microsoft's Office 365 email offering, in January 2021. To keep up with relentless security concerns, additional detection techniques and expansion of Multi-Factor Authentication (MFA) will be implemented in the summer of 2021. The Privileged Access Management (PAM) solution securely manages accounts of users with elevated permissions to access critical resources.

Additional licenses for PAM have been purchased to keep up with demand. The Azure Active Directory Business to Business (B2B) service enables Johns Hopkins users to create guest accounts for external collaborators and allows select applications and resources to be securely shared with collaborators or affiliates who do not otherwise require a JHED account.

As of June 2021:

≈6000

collaborators and over 40 applications being used by B2B solution

As of Spring 2021:

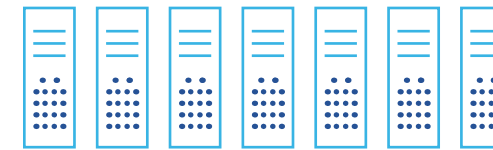
41k +

active users in Microsoft Teams facilitating phone calls, instant messaging, meetings, and group collaboration

IT@JH SPRING UPDATE 2021

Engineering Services & Systems Management

Our team rebuilt 134 Windows servers and 18 Linux servers for All Children's Hospital. These servers were built with the approved JH image, and all received regular patching and security scanning. We also facilitated several other server consolidation efforts including Anesthesiology, Neurology, Howard County General Hospital (HCGH), and the School of Medicine Office of Information Technology.



The 2020 Continuity of Operations Test presented us with a vastly different landscape than our past tests because of the pandemic. With the addition of a totally remote scenario, our teams constructed a virtual gateway to the testing environment in a very short

window. While we only officially conducted a test process on the technical and application team portions of the critical applications, only 3 applications out of the 264 that participated were unable to successfully recover. We are implementing an enterprise-wide, secure virtual session printer agent to simplify printing.

OnBase is the new home for archiving legacy IT patient data. We recently completed the archiving of the previous system (POE/Sunrise) and have begun archiving Cerner and HCGH Meditech. Our technical teams continuously upgrade Epic three times a year. We just completed a large, complicated upgrade to the Epic architecture from symmetric multiprocessing (SMP) to enterprise cache protocol (ECP). SMP allows users to access the database directly without any intermediary processes, while ECP has an application server act as an intermediary to offload some processing. This architecture more easily allows continued growth and is used by Epic's larger customers.

Cloud, Virtualization, & Storage

Cloud technologies continue to expand across the enterprise. At this point, more than 25% of central IT services have moved to the cloud. On-premise servers continue migrating to Azure Cloud as cost models have improved. We have fast, low-latency access to cloud providers and the team is working to provide universal access to virtual desktops and SAFE desktops. The Epic Citrix environment fully migrated to Azure Cloud for disaster recovery, and the Enterprise Web Services team is also using Azure Container Services (about 25% of Johns Hopkins websites).

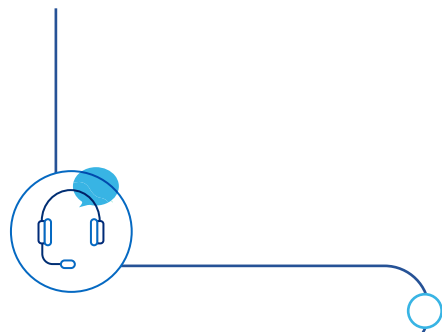
The Cloud-Client Infrastructure Team was able to failover Epic Citrix during the Annual Epic Business Continuity Test by utilizing 85% Azure-based Epic Citrix servers and 15% on-premises Citrix servers. Automated image versioning was essential to the consistency maintained between on-premises and Cloud-based virtual machines and was fundamental for the success of the Epic failover test. The adoption of cloud computing is an ongoing effort.



Client Technology Solutions, Solution Center, and Enterprise Mobility Management

Our support efforts were tested as our workforce pivoted to work from home during the pandemic, and we continued to provide outstanding remote customer support via Johns Hopkins Virtual Tier 2 Support (VT2). We are upgrading our workstations and laptop fleet to Windows 10, which is one of the biggest updates we have undertaken. Calls to the IT Help Desk increased approximately 25% over the last year. We aim to provide better service and improved customer support via self-service tools for more immediate resolution. We recently implemented chat functionality with live agents during standard business hours to eliminate phone calls or submitting a self-service form. This summer we will launch our 24/7 'virtual agent' as part of our chat experience.

Our Solutions Center team along with JHHS Legal and JHHS Procurement developed a simple yet inclusive contract intake system for JHHS and enterprise IT contracts. End users can submit their contracts, addendums, Statements of Work and orders that require Procurement and/or Legal review through our contract portal. This streamlined approach eliminates the need to determine who to go to and what documentation is required by following the simple instructions. Once the documents are fully executed, they are saved in the IT contract management repository. Vendor and basic contract summary information can be viewed on the ServiceNow portal.



In partnership with the Technology Innovation Center, our Solutions Center team is working to give the IT@JH a facelift and update, with the new site launching in summer 2021.

Project Management Office

Multiyear IT consolidations are underway with affiliates and divisions throughout the enterprise to reduce our cyber risk and improve operational efficiencies. Current active IT consolidation efforts include the departments of Neuroscience, Medicine, Anesthesiology & Critical Care Medicine, Howard County General Hospital, and the School of Medicine Office of Information Technology. Other consolidation efforts include our work with JHU Press. We migrated their email and firewalls to IT@JH services and will migrate their servers and improve desktop management. We are optimizing JHHC infrastructure to improve redundancy, internet connectivity, and data communications between JHHC and the rest of the enterprise. Similar efforts are underway to consolidate the Office of Public Safety infrastructure. We are also working with Johns Hopkins Regional Physicians to transition new practices to central IT services for networking, authentication, desktops, server and storage management, and support.

Diversity

IT@JH developed a Diversity, Equity, and Inclusion (DEI) Plan that aligns with the JHM Innovation 2023 Strategic Plan, as well as the JHU Roadmap on Diversity and Inclusion.

Our plan is comprised of four parts:



Understanding
IT@JH



Learning and
Enrichment

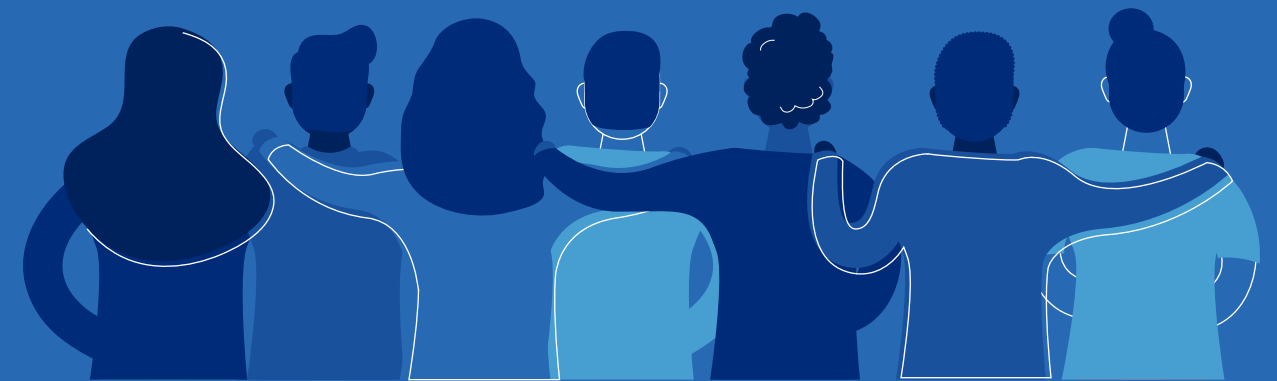


Supporting Our
Communities



Sourcing, Hiring, and
Developing Talent

This plan dovetails with a newly expanded and empowered Diversity, Development, and Inclusion (DDI) Council. The plan's action items will be examined by DDI Council subcommittees who are creating SMART Goals around each item. SMART goals are: Specific, Measurable, Attainable, Relevant, and Time-based. These goals all have deadlines, and progress updates will occur at quarterly IT All-Hands meetings. We are also collecting ongoing feedback around how the DEI initiative is working.



FINANCE

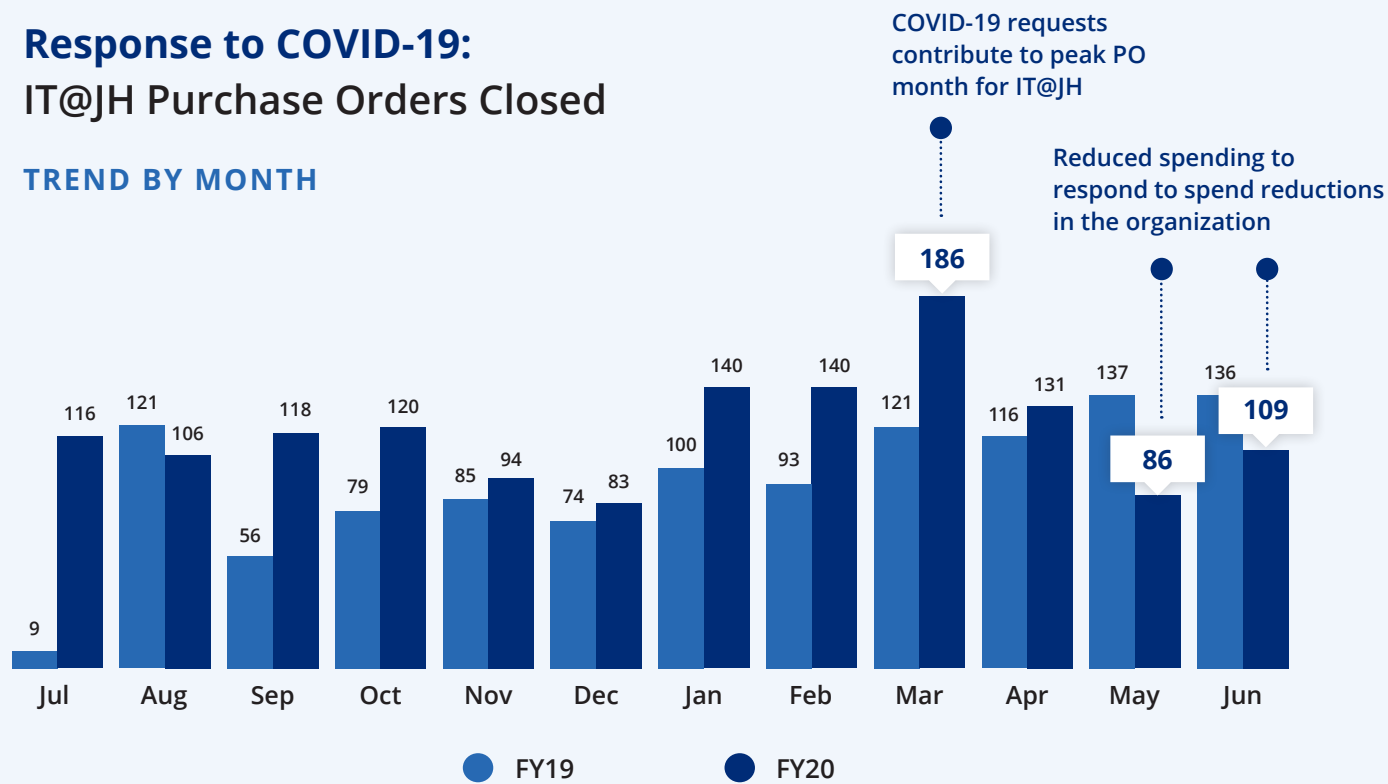
IT@JH Finance

Our IT@JH Finance team quickly and collaboratively worked to meet the pressures and costs incurred as a result of the COVID-19 pandemic.

March 2020 was a peak month for Purchase Orders due to COVID-19 requests. By May 2020 we were able to reduce spending in response to organizational mandates for spend reductions. A 19% increase in IT Finance orders processed in Service Now enhanced data collection measurement of progress and processes. Our partnerships with key JHU and JHHS business and financial leaders remain top priority as we provide total transparency.

Response to COVID-19: IT@JH Purchase Orders Closed

TREND BY MONTH



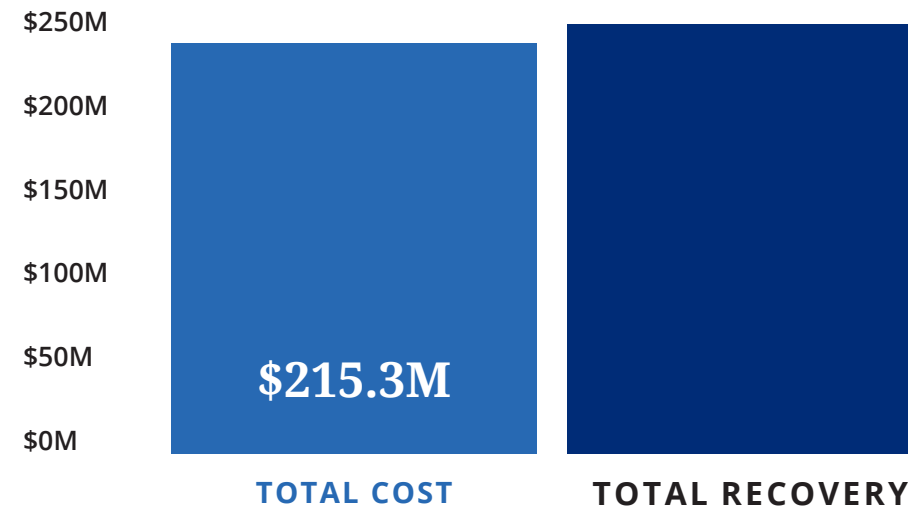
15%

IT@JH PO's from March to May that were COVID-19 related

3.6

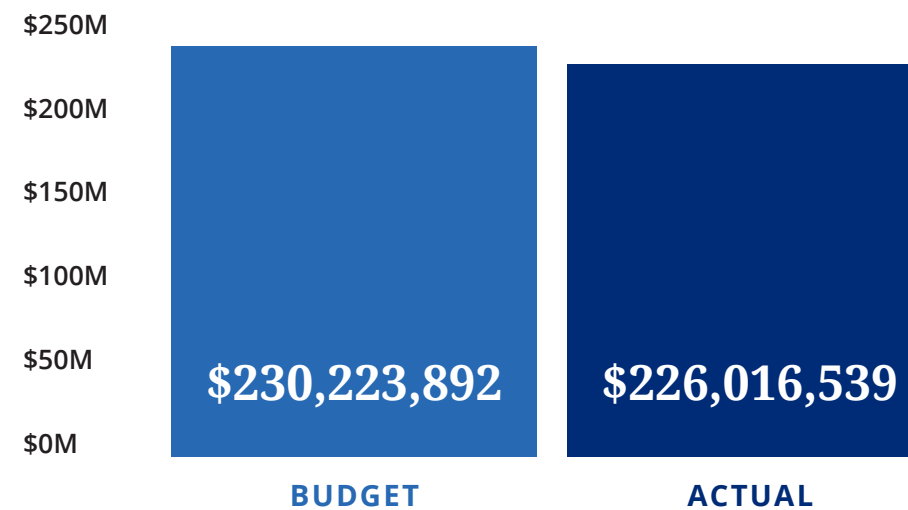
Average calendar days to complete COVID-19 PO request

Covering Operating Costs



\$1.2M
SURPLUS

Operating Financial Summary



\$4.2M
SURPLUS

STUDENTS

University Information Systems (UIS)

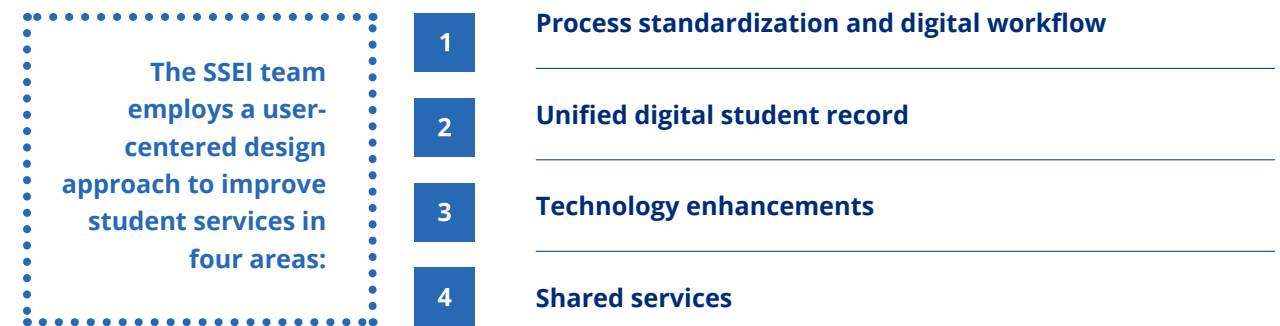
With a sudden shift to online learning in March 2020, our UIS team enhanced support of Zoom, Teams, and VoiceThread. We implemented several Student Information System (SIS) changes to enable and simplify the shift to online learning, including changes to support preferred name, modernization of the SIS self-service user interface, BookIT space reservation software, bill changes, address verification and collection, grading system/scale changes, modification of all transcripts, and student health insurance changes.

A quarterly Zoom newsletter was developed to keep the community informed about recent and relevant Zoom information. We are working with the University to select a replacement for Blackboard Learn, the University's primary learning management system (LMS), which will no longer be supported by the vendor at the end of 2023. The steering committee completed the Request for Proposal (RFP) process and evaluations of vendors and platforms is underway. Implementation will start this summer after leadership approves the committee's recommendation.

The School of Medicine migration into SIS is in progress; this change will streamline and improve business processes, reporting, and students' experience. Blackboard Ally was implemented in September for all Blackboard divisions to improve accessibility issues; Center for Talented Youth's implementation is in progress. We conducted our annual Digital Student Experience Conference remotely, with over 220 attendees representing all University divisions and administration. We also migrated AdAstra scheduling software to the cloud.

Student Services Excellence Initiative (SSEI)

SSEI is a university-wide initiative launched in 2016 by the Office of the Provost to improve the student experience across Johns Hopkins' nine schools.



Our SSEI team works with UIS and TIC colleagues to unify students' digital experience through a new case management platform and a shared services website. Co-design sessions and a Student Advisory Committee were also created, allowing students to participate directly in this initiative. Since go-live, the case management system has had over 40,000 cases, 70% of which came through the newly developed intake form.

The system's adoption rate continues increasing. Electronic transcripts and electronic diplomas were also implemented. Our UIS team worked with SSEI functional leads, the Provost's Office, and the Discourse Analytics vendor to target nudges to improve student retention and help with financial aid through early intervention. All graduate admissions offices are now using the Slate system for admissions and enrollment management.