



Weill Cornell Medicine

Information Technologies & Services

Annual Report 2017



The Right Information at the Right Time



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Front cover image: "Solar Eclipse" taken by Vipin Kamath, Deputy CIO, with a Sony A9 camera, Sony FE 24-250 lens, focal length 208mm, ISO 50, exposure 1/30 sec at f/22.



About Us

An overview of our department and the state of information technology at WCM



Message from the CIO

- The transition to a new university president and college dean offers a unique opportunity to reflect on our recent accomplishments and future directions.

For the past few years, ITS has focused on pushing out new systems and functions that match the rapid expansion in the mission programs.

This past fiscal year, we focused on consolidating the large investments in new systems and infrastructure. We expect to focus on three main areas in the next few years: improving the customer experience across all our services, sharing Epic with NYP and Columbia, and retooling to meet the demands and opportunities from the next wave of technology change.

Research IT

This past year, we made one of the biggest changes in research IT support in the history of the college with the launch of the Sponsored Programs module in the Weill Research Gateway (WRG). For the first time, both pre-award and post-award workflows are automated and integrated. In the coming year, we will release a new Human Subjects module to replace our current eIRB, as well as kick off an all-new clinical trials system called OnCore.

Our Architecture for Research Computing in Health (ARCH) program also achieved critical mass this year, serving nearly twice the number of scientists as planned. Our free i2b2 service now contains over 60% more data than just a year ago. Our SUPER REDCap system is gathering data from twice the number of studies as the prior year, maximizing our

investment in the secondary use of clinical data.

The ARCH data normalization process has become the model for the national “All of Us” Precision Medicine Initiative. The data core built for Healthcare Policy & Research is now available to the whole college as a secure place for students and researchers to do their work.

Clinical IT

The big news in clinical IT is the decision by NYP and Columbia to adopt WCM’s Epic EMR. This collaboration will unify inpatient and outpatient records across all three institutions, including the regional hospitals. WCM will lead the initial steps, migrating our system to Epic’s hosting service. A tri-institutional team will implement all new locations and support the existing PO sites. Goals include an improved patient experience, more efficient care, more complete data for research, and lower costs.

Meanwhile, we continue to push clinical IT to the limit with the Clinical Genomics program. In collaboration with the Institute for Precision Medicine, we have become the first institution to transmit a whole exome from sequencer to analysis to report signature to the EMR.

Educational IT

The most visible work in educational technology has centered around supporting the upcoming evaluation by the Liaison Committee on Medical Education (LCME). In addition to supporting data gathering itself and the physical changes to the Ed Center, this has led to a number of new systems and improvements such as the OASIS evaluation system and the iSeek curriculum index. A great deal more has happened behind the scenes.

ITS supported the launch of the new MBA/MS program for the

graduate school and built a new tool for collecting data for T32 grant submissions. For staff, we launched an all new training system from SuccessFactors.

Wood Library

The Library piloted a new grant editing service this year. While most of the 90 grants were still pending as of this writing, we already have word that \$6.5 million worth of submissions were funded. The program is so popular that it will be made permanent this year. The Library also contributed to a record number of published systematic reviews, launched a new scientific software hub, and completely overhauled remote access to the collection. In the coming year, we will swap out the cataloging system with a modern indexing and discovery tool called Alma.

Weill on the Web

ITS is now more than halfway through updating all our of websites using the Drupal content management system to improve the look and feel as well as standardize on the new WCM brand. A new “lab distribution” has allowed 11 labs to build their own brand-compliant sites, with 21 on the way. The new Brand Center provides tools to make it easier for everyone to stay on brand in all their communications. Plus, WCM Central is a new internal website that will soon be the main destination for all users to look up internal information and get their work done.

With POIS, ITS is leading new patient engagement and telemedicine initiatives in weillcornell.org and our patient portal. Both units are collaborating with NYP to prepare for the opening of the DHK building, the largest expansion in the clinical enterprise in a decade.

Administrative Systems

SuccessFactors debuted this year with new modules to replace HR’s



All of Us

Our ARCH data integration model has become the standard for “All of Us,” a national study aimed at collecting biological samples, genetic data, and diet/lifestyle information from a million participants. This data will allow researchers to develop treatments for many conditions and diseases.



recruitment, onboarding, and evaluation systems. Next year, the system will be expanded with more training and support for faculty onboarding. We will also advance the new Academic Staff Management System, which will become a single source of truth for core information about faculty. A variety of complex changes to SAP were implemented that will simplify reporting and reduce the complexity users face across the most common transactions.

Free Software, Better Support

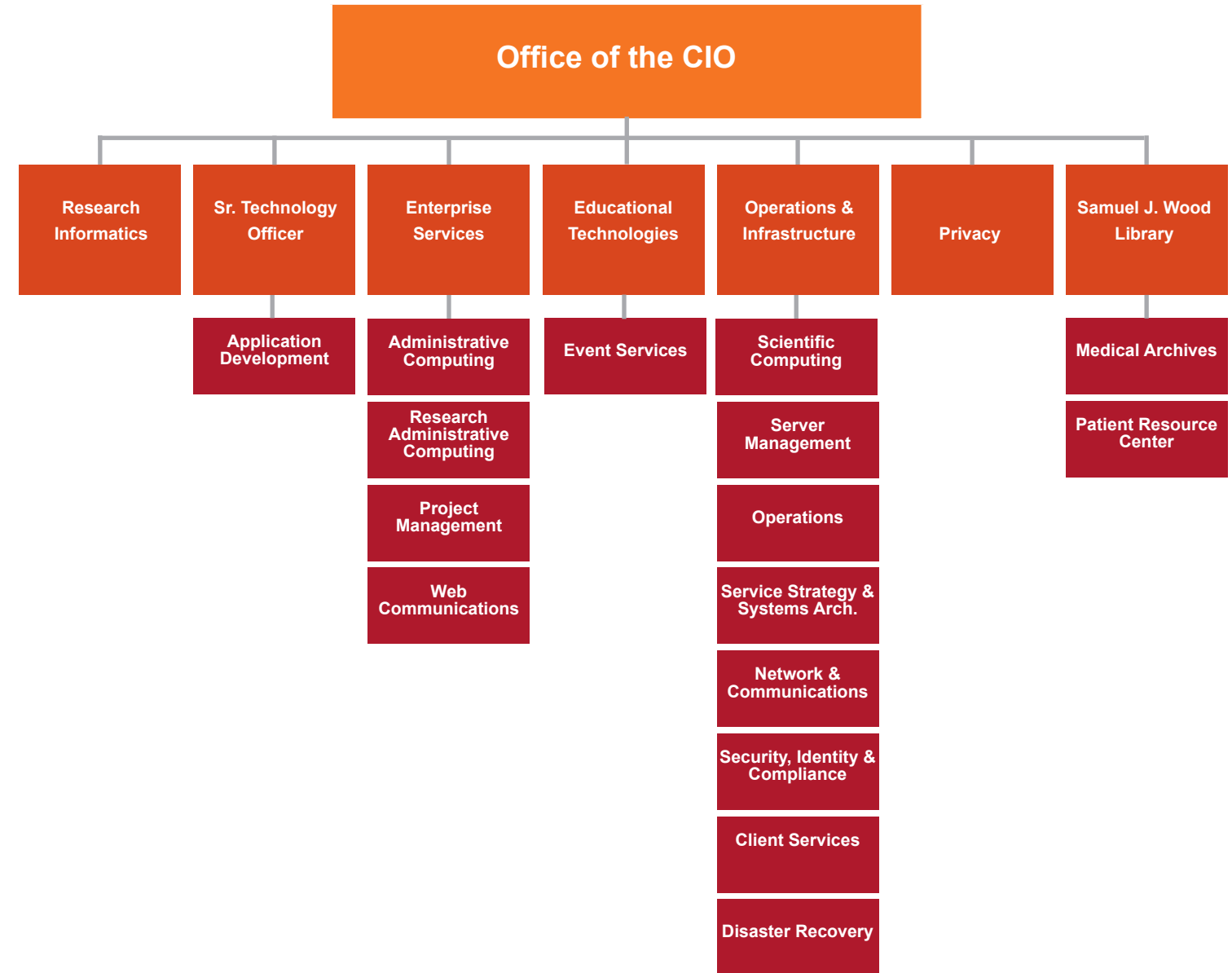
As promised, we released a host of new free services this year like unlimited storage from Box, web conferencing with Zoom, and thousands of new online courses from Skillsoft. Logging in is getting easier with our federated identity system, which now supports over 40 systems with the same log in. We have halved the time it takes to order and install a PC, and also started building our new Amazon Web Services (AWS) cloud service, which will speed deployments of servers.

Customer Experience

Unifying all our efforts in the coming year will be a focus on improving customer experience. With help from the Business Process Solutions group and scores of helpful focus group and survey participants, we have already identified the key areas for improvement that will guide our priorities in 2017. We have a major internal training program underway to help ensure you always get the best answer to all of your IT questions. We are deepening our investment in ITIL – a set of industry best practices that help IT organizations respond to incidents, problems, and requests quickly and effectively regardless of scale. Our Project Management Office is retooling around “agile” methods, a contemporary approach to projects that need to be faster and more flexible.

We are committed to continuous improvement and consistent pursuit of WCM’s missions by delivering the right information and the right time.

Organizational Structure



After over a year of working with our customers and members of our own staff, ITS is prioritizing the customer experience in FY18. This will include key changes, such as a massive training effort for our own staff to better handle customer needs and questions.



Curtis L. Cole, MD, FACP

Chief Information Officer

ITS Senior Leadership



CURTIS COLE

CIO



VIPIN KAMATH

Deputy CIO, Enterprise Services



JOSHUA GLUCK

Deputy CIO, Operations



TERRIE WHEELER

Director, Library



VINAY VARUGHESE

Sr. Technology Officer



TANISHA RAIFORD

Privacy Officer



DANIEL SPLITGERBER

Department Administrator



THOMAS CAMPION

Director, Research Informatics



HARISH CHAVA

Director, Administrative Computing



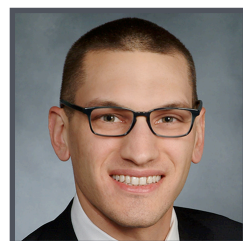
DOUGLAS COHEN

Director, Educational Computing



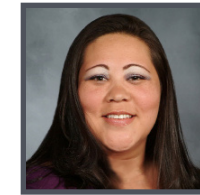
PAULA HERBER

Director, Service Delivery



BRIAN TSCHINKEL

Director, Security, Identity & Business Continuity



VANESSA BLAU

Research Administration



EUGENE CHEN

Network & Communications



DIANA DELGADO

Library User Support & Education



DAN DICKINSON

Web Communications



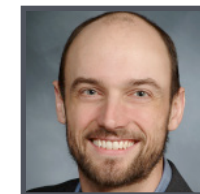
RICHARD HU

Service Strategy & System Architecture



CHRISTINE O'CONNOR

Client Services



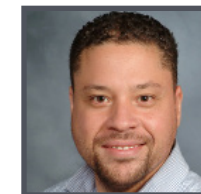
PETER OXLEY

Library Research



JOHN RUFFING

Advanced Tech Integration



RAMON SEGARRA

Server Management



VICTOR FARRELL

Project Management Office



MEGHANA FUTNANI

Business Intelligence



OUNALI JAFFERY

Security & Identity



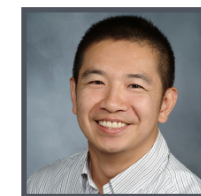
MOHAMMAD MANSOUR

Application Development



PHILIPPE ORTANEZ

Educational Technology



JOHN YOUNG

Unified Communications

Associate Directors

Assistant Directors

FY17 Score Card

Every year, we lay out a series of goals for the coming year. This sections reviews how well we did against these goals, and then we update them for the coming fiscal year. A ✓ means the goal was completed, a ± means it was partially completed, and a ⊗ means it was not completed in FY17.



New core research administrative systems

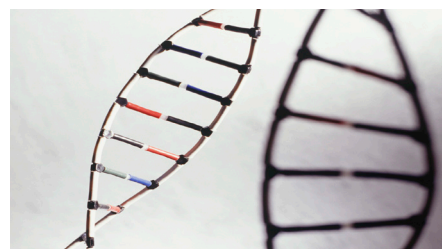
± Completed Sponsored Programs module in WRG, as well as foundational work on Human Subjects (eIRB).

± OnCore selected as new Clinical Trials Management System to replace IBM CREST.

± Completed successful pilots for mobile research consent capture and biobanking system.

± Completed pilot for eBinder regulatory study binders and subject binders. New technical direction required.

± Expanded iLab to Visual Function Core & WCM Proteomics and Metabolomics.



Enable basic and translational scientific computing

✓ Grew i2b2 to 2.1 billion facts including inpatient data, launched five new ARCH research repositories, enabled HPR Data Core for all of WCM, move HPR Data Core from pilot to production, supported 10 new studies for the NYC-CDRN. Piloted new NLP service. Published paper on SUPER REDCap.

± Successful launch of Genome Information System to send clinical genomic results to EHR, though a few months late.

± Expanded and simplified ITS and Library websites, with more focus on services for researchers.



Consolidate impact of existing educational technologies across all programs

✓ Implemented OASIS and iSeek systems to support LCME evaluation. Custom site for tracking LCME documents and progress developed and deployed.

✓ Launched Jenzabar Enhanced Billing/Accounts Receivable module for student accounting and UNICAS for Graduate School admissions.

✓ “Reinstalled” Jenzabar to clean data, retrained staff, and developed audit tools to measure best practices. Completed with marked improvement in satisfaction from Educational Administration.



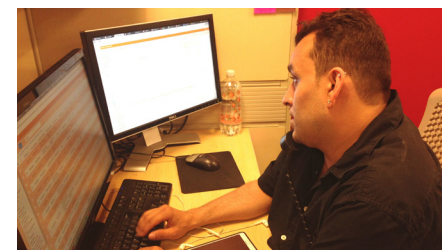
Deliver new and improved productivity applications

✓ Replaced fee-based WebEx with free Zoom web-conferencing tool

✓ Surveyed faculty regarding software needs and launched Scientific Software Hub with free and subsidized tools.

✓ Implemented SuccessFactors for recruitment, onboarding, and learning management system.

⊗ Delayed in launching Office 365 OneDrive, SharePoint, and mobile and cloud-based productivity applications, but should proceed in coming year.



Improve end-user experience when accessing IT services

✓ Created new Customer Experience initiative to improve projects, training, and service delivery.

✓ Expanded WBG self-service with eForms; Journal Vouchers in progress. Successful eTime replacement pilot with homegrown system; employee W2s online.

± Increased 1:1 outreach via ITS Liaison program, but reassessing program to make improvements; improved shopping experience in WBG delayed pending SciQuest/Arriba selection.

⊗ Modest progress with myHelpdesk service requests and knowledge base.



Upgrade core infrastructure for faster, more resilient services

± Some progress made updating business continuity plan for NYC campus with expanded disaster recovery capability in Ithaca. Reprioritized due to new plan to move Epic to cloud/hosting.

± Completed new “computable” organization structure in SAP, and made significant progress towards creating “Yellow Pages” service.

⊗ Deferred converting core Wi-Fi network to eduoam and creating new network security zones to next year.



Support key Physician Organization priorities and initiatives

✓ Assisted NYP with EMR selection; will share our Epic EMR with NYP and Columbia.

✓ Selected Epic remote hosting over an Ithaca-based disaster recovery plan.

✓ Closed five remote PO Physician network sites and added three sites to save costs and make revenue more efficient. Started new network service optimization plan.



Expand Library services with strategic support for institutional missions

✓ Completed successful grant editing pilot with 80 grants completed and \$6.5M in new awards received.

± Launched Reciter and VIVO Dashboard in beta for academic publication.

⊗ Modest progress on developing collection review program with Ithaca and Qatar while work on thinning out the Stacks has taken priority.



Continue roll out of new WCM brand with overhaul of web properties

✓ Web Modernization project on schedule with 60% of WCM websites updated with new brand standards.

✓ Published external vendors guide with standards and technical requirements for departments.

✓ Enhanced weillcornell.org with online testimonials, expanded scheduling, Open Notes pilot, and more.

± Rebuild of weill.cornell.edu underway with a delay due to change in leadership. Target launch spring of 2018.



Improve internal ITS operating policies and procedures

✓ Created new Service Delivery division with significant progress on integrating PMO with Client Services to improve services and project management.

± Significant improvement in implementing efficiency changes to cut down on service case backlog, but total backlog remains too large.

⊗ Some progress made on creating process to systematically update ITS knowledgebase and Problem Management capabilities, but this is significantly behind schedule.



Support other critical departments priorities and initiatives

✓ Started project to implement a WBG budget module.

✓ Launched key WBG features: Recruitment & Onboarding, Foreign Service Benefits, and Research Visibility Dashboard; eTime put on hold.

✓ Launched self-service portals for HR and EHS; new portal for Capital Planning on track.

± Major improvement to overall WBG reporting, though Research Visibility Dashboard use remains modest.



Implement improved security and access policies and procedures

✓ Expanded Duo to myApps, Webmail, VPN, system admin consoles, and clinical servers.

✓ Integrated WCM Web Login with 45 applications.

✓ Encrypted 21,000 (94%) of devices on campus; laptop tracking selection to be completed next year.

✓ Completed maturity assessment against the NIST Cybersecurity Framework.

± Launched phishing exercises and outreach campaign. Upgraded Data Loss Prevention system; deployed new antivirus/antimalware software.

FY2018 Goals

■ Each year, ITS works with stakeholders to set the major priorities for the department and ensures each division is working towards accomplishing these goals for the fiscal year.

Support major PO and NYP clinical initiatives

- Lead movement of Epic EMR to vendor cloud hosting
- Implement new operations and data sharing programs to support Enterprise Epic collaboration with NYP and Columbia
- Support POIS and NYP with IT infrastructure for DHK opening
- Develop mobile patient experience strategy
- Work with POIS to expand analytics capability

Expand core research administrative systems

- Launch InfoEd Human Subjects (eIRB) and begin EHS module
- Kick-off OnCore clinical trials systems project
- Launch central biobank system implementation
- Implement regulatory study binders management system

Enhance scientific computing

- Expand Genome Information System to support Exact1 and Oncomine tests
- Migrate from 1300 server room to BRB; support closure of WGC server room
- Support “All of Us” Precision Medicine initiative with clinical and research system integration; set up TriNetX clinical trials recruitment system
- Launch 3 more research repositories; add genomic data to i2b2; expand OMPO CDM data set; first live use of NLP service
- Add Cloud based capabilities to scientific computing service offerings through enhanced partnership with AWS, CAC, and others

Consolidate impact of existing educational technologies across all programs

- Roll out OASIS, iSeek, CQI database & LCME priorities
- Select alumni system and kick-off implementation project
- Perform post-optimization analysis of Jenzabar to identify future priorities
- Expand direct support by sponsoring healthcare IT student projects

Begin Phase 1 of User Experience Initiative

- The Service Management Program will improve quality and timeliness of problem and incident resolution
- The Projects Management improvement program will improve customer-defined success with better requirements gathering, prioritization, and agile methods
- Expand and standardize customer service, management, and technical training across all of ITS to improve communication, consistency, knowledge, retention, and morale
- Implement better customer satisfaction measurement to track progress and opportunities for improvement

Upgrade core infrastructure to deliver faster, more resilient services

- Update business continuity plan for New York campus with expanded DR capability in Ithaca
- Convert core SSID to eduroam and create new network security zones
- Upgrade ITS Cloud Services to enable the use of AWS directly or as an enhancement to existing ITS services, improving efficiency or resiliency

Deliver new and improved productivity applications

- Deploy Office 365 OneDrive, SharePoint, and mobile and cloud-based productivity applications
- Complete “Yellow Pages” Services Directory
- Deploy Windows 10 and Linux virtual desktop offerings with enhanced performance and recovery plans
- Enhance backup services to include end-user compute options including desktop backup
- Deliver first phase of new Academic Staff Management System replacing again WOFA

Improve end-user experience when accessing IT services

- Make user experience analysis part of all IT projects
- Launch process to systematically update ITS knowledge base and problem management capabilities
- Enhance Event Management, Incident Management and Problem Management capabilities to drive proactive response and resolution to service impacts
- Departmental Liaison program to include quarterly reviews and IT partnership alignment

Complete Web Modernization Initiative

- Bring 90% of existing WCM websites up to new branding and technical standards
- Rebuild main weill.cornell.edu site
- Publish best practices and minimum standards guide for non-ITS supported sites to ensure common experience
- Implement new site-search infrastructure

Expand library services with strategic support for institutional missions

- Expand grant application editing service
- Test VIVO Dashboard with Chairs and Deans and add new features
- Complete stacks thinning to prepare for renovation
- Implement Balanced Scorecard for Library as a test for a potential new service

Support other critical departments priorities and initiatives

- Launch SAP budget module for central administration
- Launch new Performance Management system for NY and Qatar
- Launch ServiceNow for Capital Planning
- Roll out SuccessFactors LMS

Implement improved security and access policies and procedures

- Expand dual factor authentication for Office 365, Linux servers and network equipment
- Launch laptop tracking and expand encryption to non-standard devices
- Continue expansion of web application firewall; replace network firewalls
- Deploy privileged access management software, user-friendly Network Access Control (NAC)
- Implement annual attestation to use of high-risk data and annual phishing training

2

Highlights & Accomplishments

A look at our most significant projects from FY17

Well Cornell
Medicine

Library Informationist Service

Do you need help managing data for a research project?
Speak with the Library's Research Informationist!

2.16.17
weill.cornell.edu

Michael E. Bates

CITATION IMPACT TOOL

Well Cornell
Medicine

Music
Medicine
Orchestra

As we expand our patient-facing technologies, engagement continues to rise, especially with Weill Cornell CONNECT. This portal offers patients personalized and secure online access to their electronic medical records around the clock.

Patients can access medical records and test results, read and reply to messages from a physician, schedule appointments, and request referrals.

200,000

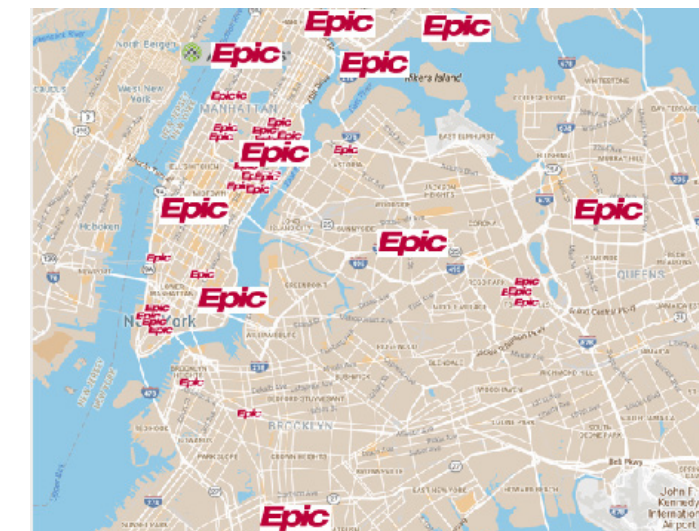
Number of patients using Weill Cornell CONNECT as of this year. Approximately 10,000 new and established patients sign up each quarter.

Clinical Initiatives

■ This year, NewYork-Presbyterian Hospital and Columbia doctors made a momentous decision to join WCM in a collaborative EHR based on our Epic system.

The Epic Enterprise initiative will be the most significant change in our IT strategy in a generation. A joint EHR across both schools and the entire NYP network of hospitals will improve care, lower costs, and simplify both provider and patient experiences. The first major collaboration with NYP will put the WCM Epic system in the new David H. Koch (DHC) Ambulatory Surgery building opening in 2018.

The shared system will take five years to roll out. In the meantime, WCM will continue to move forward with technologies that transform how we deliver care. We are expanding clinical and research analytics to support population health and scientific discovery. We are investing in clinical genomics to support precision medicine. And we are expanding patient-facing technologies to improve engagement and access to our services.



As part of the EPIC Enterprise Initiative, NYP sites across the city will transition from their current EHR to Epic. The larger Epic icons on this map represent NYP locations that will be making the change.



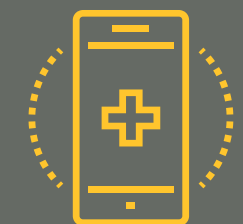
MyChart

This year, POIS added new features to the Weill Cornell CONNECT patient portal MyChart, such as video visits and access to physician notes.



MyChartCentral and Lucy

MyChartCentral and Lucy allow patients to use their Weill Cornell CONNECT login to access their charts at other medical centers that also use Epic.



NYP Mobile

We configured Weill Cornell CONNECT to integrate with NYP's mobile app.

Other Accomplishments

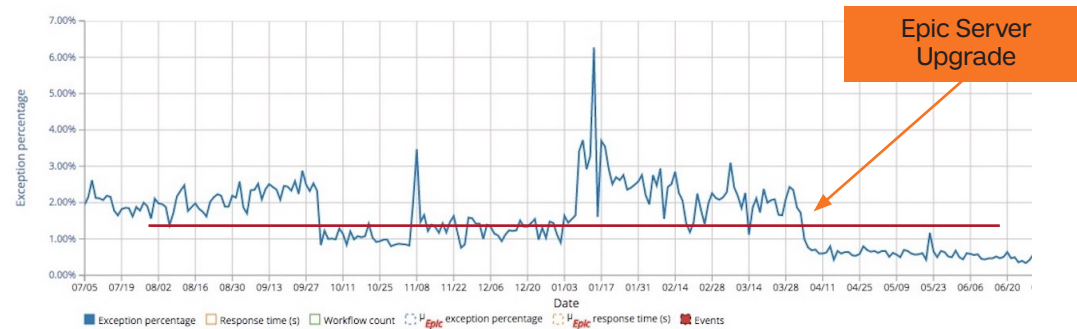
- Implemented a Cisco Unified Computing System (UCS) blade system server for Epic Hyperspace for faster response time. Our platform now performs at twice the speed as that of the national Epic user base.
- Improved Epic performance by replacing the AIX Cache Database server, improving average database performance. The vast majority of all Epic transactions now take less than one second to complete.
- Established three new remote offices supported by ITS networking and communications services: WCM Center for Comprehensive Spine Care on East 59th St., Call Center for Radiology, Primary Care, Ophthalmology on 88 Pine St., the Center for Reproductive Medicine and Infertility at 255 Greenwich St.
- Developed web content style guide for weillcornell.org. This guidance document will help practice managers and faculty create better profiles and more closely align with the WCM brand.
- Completed data migration and Heartflow upgrade for Radiology.

- Completed infrastructure improvements supporting systems and applications used by the following departments:
 - Ophthalmology - Migrated Zeiss FORUM system
 - Surgery - Implemented Server services for risk assessment tool Progeny for Breast Cancer risk modeling
 - Otolaryngology - Upgraded advanced Bionics database
- Integrated Reputation Management features into weillcornell.org. This allows for seamless inclusion of community-authored reviews and ratings for clinical services and practices from third-party review sites.

Upcoming Projects for FY18

- Improve online scheduling with weillcornell.org and improve integration with MyChart and weillcornell.org.
- Upgrade to Epic 2017.
- Establish networking environment that will support Epic Hosting at their data center in Wisconsin.
- Migrate on-premises Epic infrastructure to Epic Hosting.
- Upgrade Corepoint interface engine to include virtualization, allowing future Disaster Recovery initiative.
- Implement Advanced Predictive Medicine with EPIC Cognitive Computer Platform (ECCP).
- Work with Capital Planning to support Lasdon Hall to accommodate physicians' operations out of NYP/DHK building, which will include ITS-supported data network, phone and wireless services.
- Improve access to care with virtual visits leveraging integration of Vidyo into Epic hyperspace and mobile apps.
- Enhance payment system with chip and PIN features.
- Implement cloud-based document management system for large files that contain images and clinical data.
- Deploy new Cogito and Clarity servers to support Epic reporting and business intelligence.
- Integrate all Epic-related app services with Disaster Recovery.
- Develop the iOS PediScripts app for Pediatrics.
- Develop dedicated patient-focused mobile application.
- Develop next generation of POPS, the physician profile system behind weillcornell.org.
- Expand patient education content in weillcornell.org.

Response Time Exception Percentage and Workflow Count
07/05/2016 to 07/05/2017



ABOVE: The red line in this graph represents the average response time of Epic amongst its user community. The blue line represents the response time of Epic for WCM users. Following our server upgrade in April, response time has dropped well below the national average.

Supporting Medical Imaging

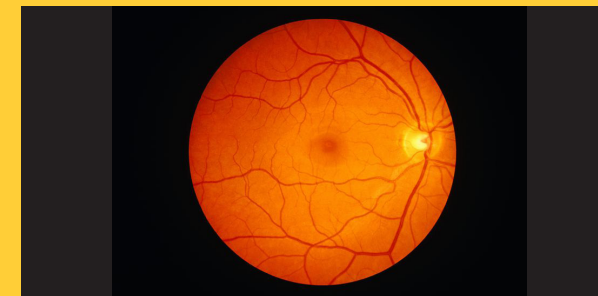
PACS, or Picture Archiving and Communication Systems, is medical technology used to store and retrieve images produced by various diagnostic systems like endoscopes, ultrasound machines, microscopes, and radiology systems.



ITS helps to ensure optimal storage and transmission of DICOM data at WCM. DICOM, or Digital Imaging and Communications in Medicine, is a standard for storing medical images enabling integration of devices like scanners, servers, workstations, and PACS.

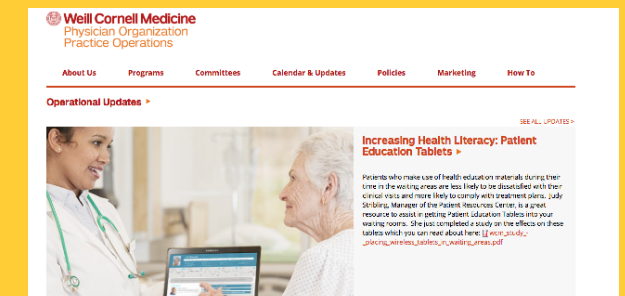
This year, we upgraded the PACS systems in the following departments:

- Obstetrics & Gynecology – Upgraded Siemens PACS
- Ophthalmology departments – Upgraded PACS & integrated DICOM data from Zeiss PACS into Merge PACS ECP Server, improving service to patients and referring physicians
- General Internal Medicine – Implemented Q-PATH PACS to streamline point-of-care ultrasound workflow
- ENT (Otolaryngology) – Completed PACS database migrations, implemented PENTAX Endoserver for retrieving and editing endoscopic exam information



Upgrading and implementing dozens of key clinical systems

ITS manages many models of PACS and other medical technology platforms that service specific practice areas. For example, Optos provides devices to eyecare professionals, while Progeny offers powerful software for breast cancer risk assessment.



New Physician Organization Practice Operations intranet

We recently launched the Physician Organization Practice Operations website, which gives clinical faculty and staff a central destination for industry news updates, clinical care policies, and committee updates. Visit practiceops.weillcornell.org for more information.



Research Initiatives

- This year, we launched a proposal development module within the Weill Research Gateway (WRG), simplifying one of the most complex and important workflows at the college.

The heart of the unified WRG research administration system, the Sponsored Programs (WRG-SP) module, streamlines processes for research funding both pre- and post-award. WRG-SP provides a hub for important research documents, like grants, sponsored research agreements, confidentiality agreements, and similar contracts. Once submitted, these documents enter a workflow for approval from departmental administrators, with WRG-SP then providing a direct feed to Grants.gov for submission to the National Institutes of Health (NIH), Department of Defense, and other Health & Human Services (HHS) agencies. The module was also integrated with the Weill Business Gateway (WBG) for grant account creation, automated grant budget uploads, and EnCCoMPass, creating a link between animal protocols and related grant proposals or awards.

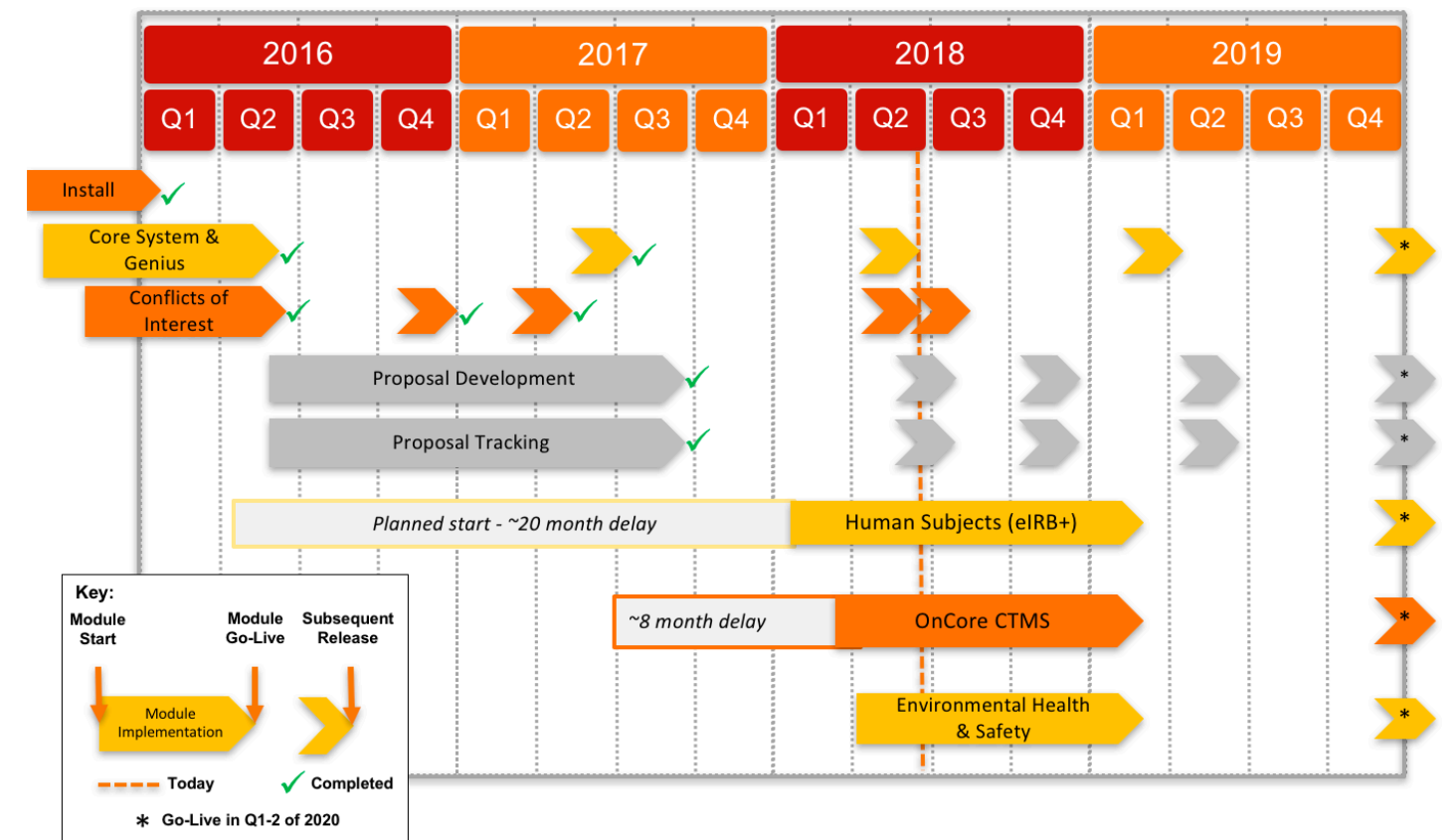
ITS also expanded its support for the Institute of Precision Medicine (IPM), providing complex system integrations, storage, virtual machines, and database resources to support Clinical Genomics. Additionally, we launched Red Cloud Secure, which offers secure servers

and on-demand storage within a virtual private cloud. This cost-effective option charges only for resources used. Designed specifically for researchers, this is usually a faster, cheaper alternative to purchasing and maintaining dedicated infrastructure or using less secure options from commercial cloud providers, like Amazon or Azure.

ITS and the Library also expanded our Research Data Core. Initially developed for faculty and students in the Healthcare Policy & Research (HPR) department, the data core is now available to the entire college. This state-of-the-art computing environment for research enables research teams to share access to a collection of clinical and claims data sets and analytical platforms, while meeting appropriate requirements for protecting sensitive data. The Wood Library provides meta-data management and oversight from their new bioinformatics service while the ITS operations teams manage the underlying infrastructure. The Data Core was used by over 100 users over 45 projects – a 50 percent increase from last year – with additional collaborators using the service at our Ithaca campus and other institutions.



LEFT: This year, we launched the new Sponsored Programs module in WRG, allowing researchers to submit a number of documents, like grants, electronically. This eliminates the use of Electronic Routing Forms (ERF) and paper routing forms with grant and contract submissions.

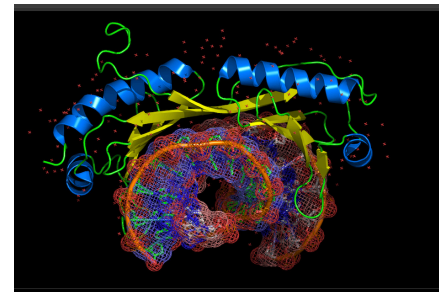


ABOVE: In 2018, we plan to release several new WRG modules as illustrated in this roadmap, including a replacement for eIRB (Human Subjects module), Environmental Health & Safety, and others to streamline the process of research administration in one convenient online portal.

Other Accomplishments

- Launched Research Mission site (research.weill.cornell.edu) unifying news about research accomplishments, grant opportunities, how-to tutorials, and research administration guidance. This website serves as the single portal to internal and external audiences.
- Kicked off implementation of the new Human Subjects module (eIRB replacement) in WRG.
- Piloted a new vendor solution for electronic research binders for clinical trials.
- Developed Standard Operating Procedures (SOPs) and workflow diagrams for the “All of Us” program to support ongoing national Precision Medicine initiatives.
- Continued implementation of iLab for Visual Function Core & WCM Proteomics and Metabolomics.
- Expanded our research software provisioning: Prism (GraphPad), Qiagen IPA, Schrödinger, LaserGene (DNASStar), Pymol, eMolecules database, GeneSpring GX (Agilent), and GeneSpring NGS.

- Enhanced the WRG-Conflicts of Interest (COI) module with a new recertification process in response to feedback from faculty users.
- Hosted research training for Ingenuity Pathway Analysis (IPA), Schrödinger Suites, Pymol, and GeneSpring. Completed a successful first run of classes for the HPR data core, with 30-50 students attending per session.
- Supported 11 accepted abstracts and 16 papers in development through the Architecture for Research Computing in Health (ARCH) program, which includes i2b2, REDCap, and other tools.
- Expanded i2b2 to 2.2 billion facts describing WCM patients, including microbiology results and inpatient diagnoses and procedures.
- Provided regular refreshes of de-identified college-wide data set and 10 investigator-initiated studies for NYC-CDRN.
- Piloted natural language processing (NLP) service for extracting structured data from unstructured clinical text.
- Completed five releases of eIRB to implement user enhancements.



PyMOL, used for 3D molecular visualization, is just one of the many tools ITS offers to researchers as part of a robust research software suite.

- Piloted EHR big data analytics by deploying Observational Medical Outcomes Partnership (OMOP) Common Data Model containing outpatient EHR data for query by faculty and staff.
- Published paper describing SUPER REDCap, WCM’s approach to REDCap-EHR data integration, and abstract describing custom research data repositories (RDRs).
- Upgraded our virtualization platform to Docker Data Center, which provides single-pane container management, scheduling, and security scanning of base images.



ITS worked with JCTO to select a new Clinical Trials Management System, OnCore, to replace the current IBM system CREST - Clinical Research Enrollment and Study Tracking. This project will kick off in FY18.

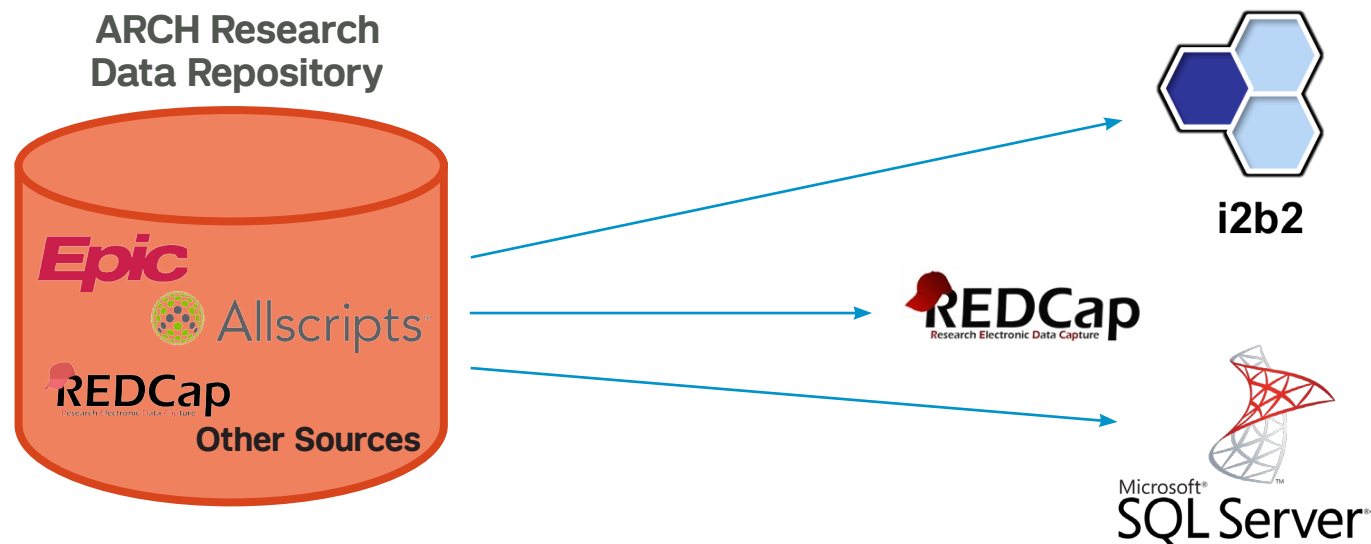
- Upgraded core infrastructure of WRG to InfoEd version 15 to improve visibility and implement new features.
- Delivered new reports to support WRG-SP, condensing the 101 previous reports down to seven. There are also 100+ ad hoc reports generated in a year.
- Expanded large-scale storage and hosting provisioning for SleepCenter, Dalio Institute, Citigroup Biomedical Imaging Center, and Genomics Core.
- Developed Reciter to improve disambiguation of authors in our faculty publications database. We believe this is the most accurate system in the country.

- Expanded the CDRN analytical platform for HPR to host large data-driven applications using National Patient-Centered Clinical Research Network (PCORnet) queries. The platform for 2017 consists of 12 virtual machines, each offering a rich statistical software stack: (i.e., SAS, Stata MP, R, RStudio, QSR Nvivo, Atlas.ti, and other applications) with the addition of data hosting using MySQL and PostgreSQL databases.
- Improved integration between the iLab Core Facilities Management tool and SAP.
- Upgraded to VIVO 1.9 and improved system stability; response times are more than three times faster.

Upcoming Projects for FY18

- Create an ITS-designed system to integrate subject enrollment information into the clinical trials systems and Epic for the “All of Us” program.
- Release eIRB 3.0 – the last major release for eIRB to add final enhancements and bug fixes while awaiting replacement.

- Implement WRG-COI Phase 3 to improve user experience and add new questions to the Conflicts survey.
- Implement an Electronic Binder solution to replace physical regulatory and subject binders for clinical trials.
- Redesign Research Mission, CGSC, EHS, CTMS, and BioPharma Alliances & Research Collaborations websites.
- Participate in TriNetX, a network that enables industry and academic centers to query WCM i2b2 data to identify new clinical trial opportunities.
- Expand i2b2 to include data from new Genomic Information System and outside genomic laboratories as well as inpatient medications, flowsheets, and locations.
- Expand OMOP CDM to include inpatient EHR data and additional outpatient elements.
- Pilot new biospecimen information management system to support Core Laboratories Center (CLC) Biorepository.



ABOVE: We expanded our custom research data repositories (RDRs) from three to nine investigator groups with a combination of i2b2, SUPER REDCap, and Microsoft SQL Server to support multiple workflows. These workflows include discovery (e.g., identifying patients of interest), collection (e.g., recording rare findings from experts), and analysis (e.g., defining rows and columns of a data set).

Weill Cornell Medicine Information Technologies & Services

LEFT: ITS launched Storage Wizard, an online guide to assist researchers in determining their storage needs. Researchers can answer a questionnaire to find the best match, and compare up to three different storage services to make the best decision. Other institutions are following this model for their own research communities.

Educational Initiatives

- ITS rolled out multiple new systems and made dozens of upgrades to make life better for students and faculty. Perhaps the biggest change was launching a new platform called OASIS for students, faculty, and course evaluation.



OASIS is a new system for students, faculty, and course evaluation. To support Education Administration with the mammoth task of coordinating our Liaison Committee on Medical Education (LCME) self-study, ITS created a SharePoint site to serve as the Data Collection Instrument, or DCI. This site provides a central location for LCME-related information and the thousands of documents that will make up our final report.

ITS also helped WCM students create the “Student Hotspot” in Canvas (courses.med.cornell.edu), a new non-curricular site built for students, by students. Here, key information is provided about transportation reimbursements, study locations, institutional policies, and more. The Student Hotspot also includes discussion boards, calendar feeds, and a place where users can send feedback to the site administrators for future improvements.

For employees, our legacy Weill Training Management System (WTMS) – was replaced with an improved Learning Management System (LMS). The new LMS hosts mandatory trainings, like HIPAA, and optional courses to help staff develop new skills. Dozens of new courses will be added. Courses can be assigned to new employees on their hire date reducing the lead time in providing them access to the applications they need to get working. It also simplifies aspects of taking an online course in WTMS requiring far fewer steps and log-ons than the old system. LMS allows users to register and complete an online course in one central location, track their learning progress, and sends reminders for upcoming requirements.

The Weill Education Center's Renovations

ITS played a major role in renovations in the Education Center to ensure state-of-the-art technology in our classrooms.

To enhance the student experience, each renovated classroom will be outfitted with two small group-huddle stations that include a large recessed screen, various audiovisual controls and options, and multiple outlets with USB-ports to charge numerous devices.

Additionally, classrooms feature teaching stations to project presentations and lectures, as well as whiteboard walls to take notes. Thanks to a flexible desk configuration, students and faculty can also change the setup of the room to suit their needs.

As an added bonus, noise from the street and adjacent rooms were taken into account while designing the rooms so they have better acoustics.

All computers in the Education Center labs and classrooms were upgraded to iMac 27” Retina 5K Displays with connections to the wall-mounted displays using AppleTV.



Work in Progress
Construction crews and technicians are busy preparing the rooms for the FY17 school year. A technician checks newly-built teaching station to ensure all connections are ready to go.



Artist's Rendering
This is a final vision of what the classrooms will look like once renovations are complete. Several classrooms were renovated this summer with new rooms coming online mid-year.

Other Accomplishments

- Launched iSeek, which indexes all content stored in Canvas and Panopto, including videos, for simple searching when designing a coordinated curriculum.
- Launched the new Alumni site (alumni.weill.cornell.edu) to help graduates stay connected with WCM.
- Assisted with 5,000 events requiring audiovisual and conference room support.
- Supported the launch of the new Executive MBA / MS in Healthcare Leadership.

Improvements & Upgrades

- Developed a persistent web-based tool so students can update their emergency contact information.
- Updated the Panopto course video delivery system so it can be used on more device types.
- Swapped the old evaluation system used by the Graduate School for a cleaner, more efficient system we developed using Qualtrics.

- Simplified the process for onboarding new students by providing computer IDs (CWID) for pre-matriculated students.
- Implemented new sonogram modalities with image storage for education.
- Implemented remote Wi-Fi access for 100 off-site student housing units within Stahl Apartment Complex.

Upcoming Projects for FY18

- Liaison Committee on Medical Education (LCME)
 - Education Center Renovation
 - Annual Compliance Module(s)
 - Student Clinical Performance Evaluations
 - Continuous Quality Improvement (CQI) Dashboard
 - Expansion of OASIS Implementation: Ongoing Rollouts and Integrations with Jenzabar and Canvas
- Jenzabar Student Information System (SIS) Optimization 2.0
 - External review to ensure best possible use of system

- Continued growth in the usage of the Student Information System
- Additional integrations with other systems, like BI reports and EMR
- Annual System Upgrade
- Launch of a redesigned Medical Education website is expected in the fall of 2017. A redesign of the MD-PhD website is planned for FY18.
- Instructional Technologies and Operations
 - New Continuing Medical Education (CME) Solution Implementation
 - Piloting a New Audience Response Solution
 - Areas of Concentration (AOC) Document Tracking and Approval System
 - iPad Rollouts and Training for MDPHD, MD, and PA Programs
 - Migration of course video system, Panopto, to cloud hosting
- Expansion planned for Wi-Fi enhancements in the Education Center.

Panopto Usage

Panopto, also known as stream.weill.cornell.edu, is used to host lectures online. These are the most-viewed lectures for the fiscal year:

Essential Principles of Medicine (EPOM)	Health, Illness and Disease (HID)	Health, Illness and Disease (HID) 2	Medicine Grand Rounds (MGR)	Dean's Distinguished Lecture (DDL)
- 30,394 views	- 44,239 views	- 29,029 views	- 1,841 views	- 28,887 views
- 245 sessions	- 322 sessions	- 220 sessions	- 163 sessions	- 5 sessions
- 223 hours	- 288 hours	- 213 hours	- 176 hours	- 5 hours

Total usage: 26,700 hours

Education for Faculty & Staff

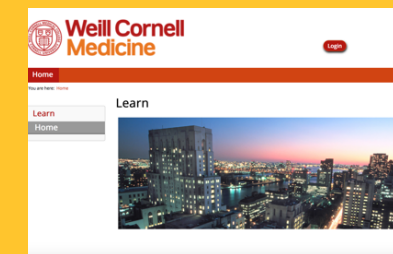
Our education initiatives aren't exclusive to students

ITS has multiple programs that ensure our faculty and staff are also educated on how to use the various services we offer.

- Tech Tuesdays are weekly half-hour demonstrations in the library that feature new tech tools. Our most popular demos have included Adobe Creative Cloud, Super REDCap, 3D printing, Zoom, Box cloud storage, and R Studio. We trained 500 attendees in FY17.
- Our ITS Training team provides online and in-person instruction on dozens of tools, from WBG to Skype. We trained 4,261 users this year (up 34% from last year).
- ITS also develops guides that can be accessed from our website. Our top training resources this year were:
 1. How to use Webmail - 4,214 page views
 2. Conflicts of Interest Survey video - 1,839 views
 3. How to install Duo - 1,805 views
 4. Training and Guides search page - 1,597 views
 5. Download personal software from OnTheHub - 1,449 views



Andrika Morant facilitates a Tech Tuesday demo on the CTSC's 3D printing facility and how the WCM community can access it for projects.



LEARN Upgrades

ITS upgraded the Jenzabar Student Information System (SIS) with new features and a more user-centric interface. We also created individual Student Directory reports within LEARN for the Graduate School and the Medical School. LEARN was added to our federated sign-on system so users have one less password to remember.



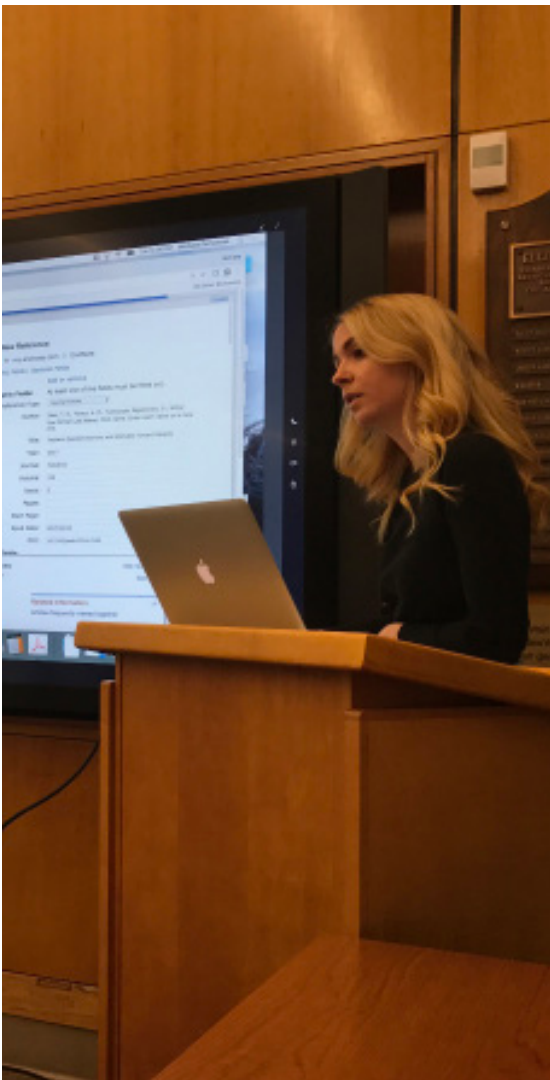
Expanded Student Printing Services

Our PaperCut printing service was expanded to first- and second-year PhD students so they could take advantage of free printing services. We also added an additional printer in Olin Hall and a color printer to the 24-hour reading room. Two more printers are planned for Lasdon Hall and the BRB.



NBME Exams Support

This year, we enhanced our support for the National Board of Medical Examiners (NBME) exams. The new process now provides pre-exam setup and on-site support during exams, ensuring seamless experience for the students and proctor(s).



Other Accomplishments

- Awarded several grants including:
 - Information access grant to fund increased interlibrary loan efforts
 - Collection development grant to fund growth of ebook and ejournal collection
 - Technology grant to fund new bioinformatics workstation
 - National Library of Medicine (NLM) grant to fund continuation of our research informationist service with the Clinical and Translational Science Center (CTSC)
- Added new free notary service at front desk.
- Showcased new information services and technology in cooperation with ITS at this year's SMARTFest and Tech Tuesday series, both of which saw record attendance rates.
- Began utilizing new performance management strategy tool Balanced Scorecard to realize goals by embracing Library's core values of excellence, service, integrity, teamwork, commitment and innovation.

Bioinformatics

- Launched the Library Bioinformatics Service in March, facilitating over a dozen workshops and demonstrations for bioinformatics software like Cytoscape, MacVector, and DESeq2, databases like Panther, InterPro and Gene Ontology, and various modes of bioinformatics visualization and analyses.
- Hosted 183 researchers and 46 projects on the Data Core, a secure space for analyzing data.

Clinical Medical Librarianship

- Performed unique consumer health rounding.
- Researched 563 clinical questions for care teams on the wards, up from 393 in FY16.
- Conducted patient education research in clinical settings.

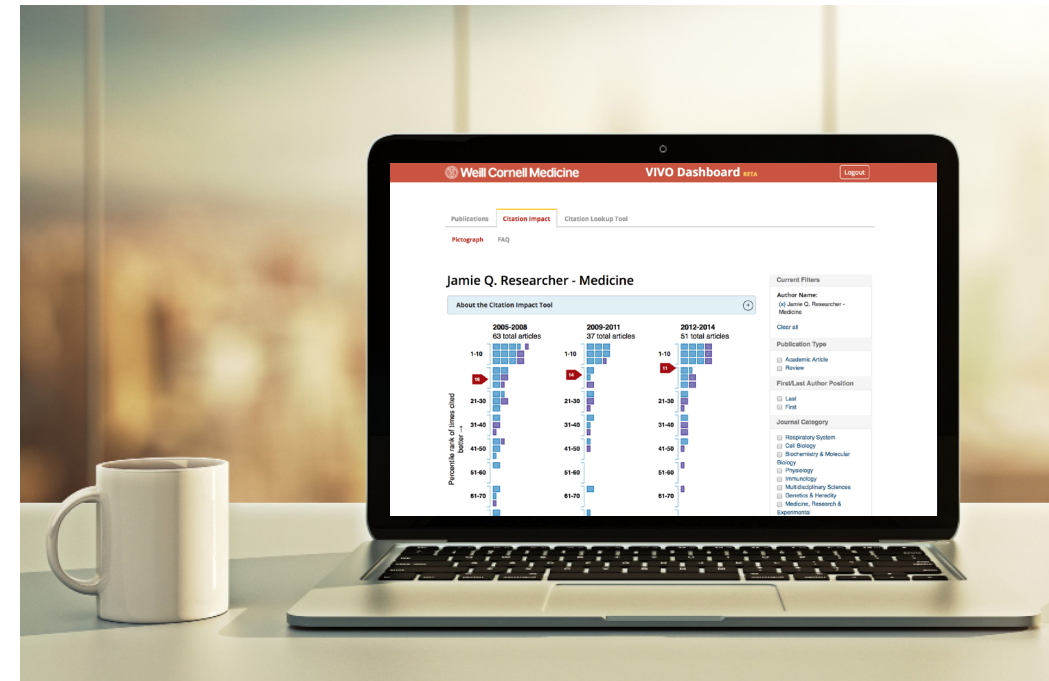
- Formed several new clinician partnerships, which leverage patient-centered technologies and research to improve health information. Our Lung Cancer Screening Program provides patients with a video outlining the pros and cons of a lung screen to help inform their decision. Other partnerships include the Parkinson's Disease & Movement Disorders Institute, Patient Activated Learning System, and Pediatric Intensivists.

Medical Center Archives

- Built a timeline and assisted with content for NYP's Health Matters site (healthmatters.nyp.org).
- Led Oral History Project to document the development of Weill Cornell Medicine-Qatar.
- Received a grant from Frank Naeymi-Rad and Theresa Kecip to scan the medical and surgical casebooks from 1808 to 1932.
- Started projects with students from Cornell Tech to develop handwriting recognition tools to convert the casebooks to text.
- Hosted campus Transcribathon to develop a "gold standard" for the students' machine learning algorithms.

Upcoming Projects for FY18

- Implement bioinformatics workstation.
- Hire Cancer Consumer Health Librarian for the patient resource center.
- Implement Covidence Software for Systematic Reviews.
- Improve ReCiter program to accurately label authors in the publication listings.
- Create VIVO profiles for PhD students.
- Host accredited data-science and genomics workshops in cooperation with Software/Data Carpentry organization.
- Implement a modern catalog with new discovery functionality called Alma in collaboration with MKSCC and Rockefeller.



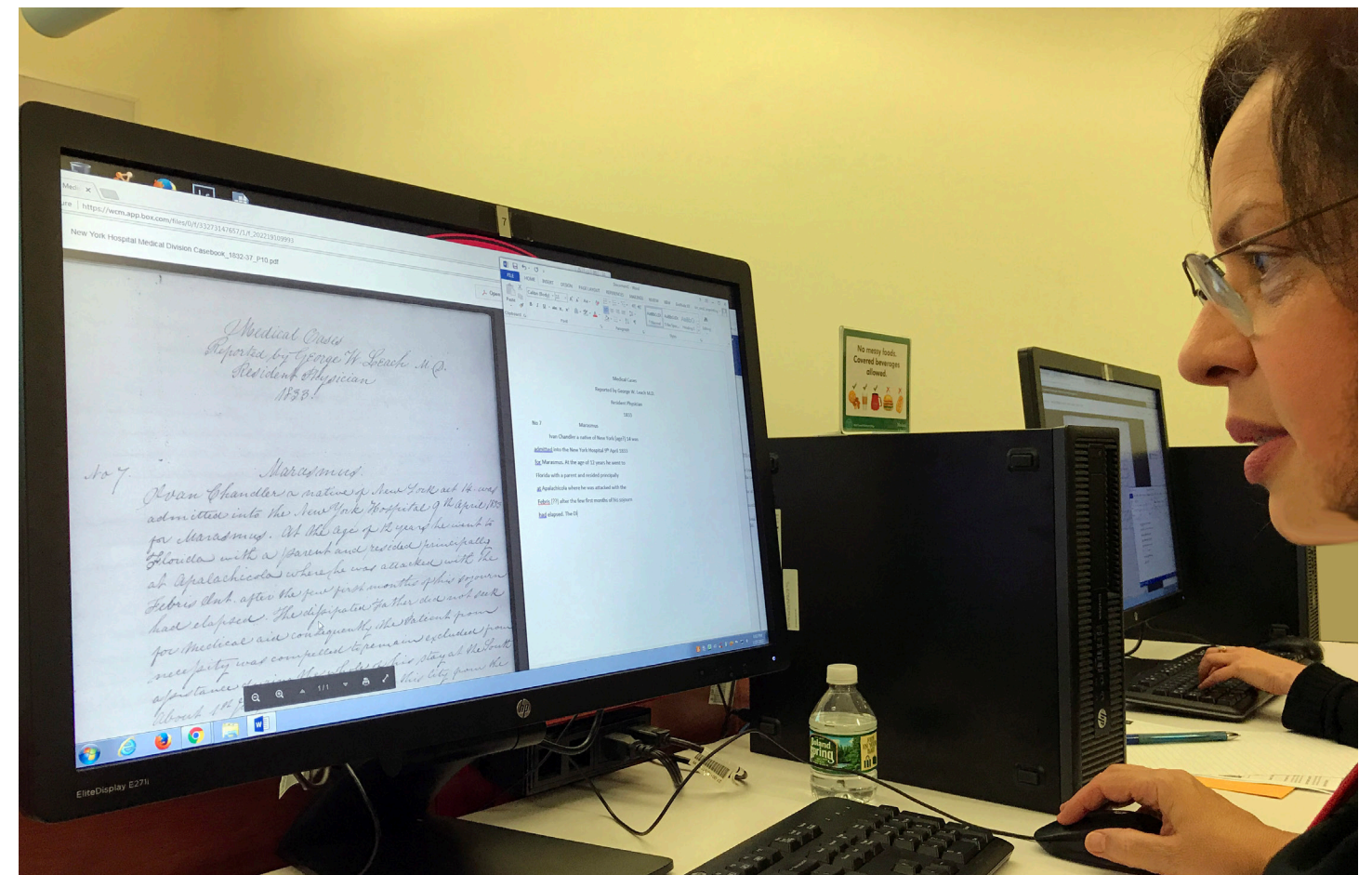
LEFT: VIVO Dashboard is a tool for answering questions about the publication record of academics and students at Weill Cornell Medicine. It includes all types of articles, including academic articles, reviews and editorials that are authored by Weill-employed full-time faculty.



LibGuides are an extensive collection of guides authored by our in-house expert librarians. This year, our 54 LibGuides received 18,470 views.



We added a new LibGuide on publishing Case Reports, contributing new insights to the understanding and management of a disease.



ABOVE: The Medical Center Archives hosted two Transcribathons to kick off a project to digitize hundreds of volumes of 19th and 20th century medical and surgical case records from New York Hospital. The transcriptions submitted by volunteers will be handed off to students at Cornell Tech to code a handwriting recognition software that will translate even more older medical records for future research.

New Software & Tools

■ As new technologies emerge in the marketplace, ITS consistently tests and determines which applications are beneficial to the WCM community. The majority of applications provided to faculty, staff, and students are free to use. For others, ITS arranges discounts or subsidies.

Free meeting software available at WCM Zoom, pictured below, is our new free meeting service. You can easily set up a meeting via the Zoom app or within your Outlook calendar.



Free storage and collaboration tools

This year, ITS upgraded some of our collaboration tools. Through our enterprise contract with Box.com, ITS now provides free unlimited cloud storage for all college staff and students. Box (box.weill.cornell.edu) enables you to store non-sensitive files and share them with colleagues so they can be reviewed and edited within the application. Unfortunately, Box is not HIPAA compliant, so it cannot be used for patient or other sensitive information – though we are working on a free solution for that, too.

Another new free service for more robust web meetings and video conferencing is Zoom. This replaces the need for costly WebEx, GoToMeeting, Basecamp, or other fee-based systems. Zoom (weillcornell.zoom.us) allows up to 100 people to simultaneously meet online (or more with a special account request), making it ideal for large-scale conferences and webinars here and with colleagues around the globe. For smaller meetings, screen sharing, and secure chat, Microsoft Lync was replaced with Skype for Business at no cost to our users.

More free training and online info

The Library and ITS also introduced Skillsoft, which works like our existing Lynda.com service. It hosts thousands of online courses on technology, business skills, and other topics, as well as full textbooks and guides. Faculty,

staff, and students can access Skillsoft (wcm.skillport.com) at any time from their desktop or mobile device.

This year, we also launched several new websites to provide WCM-related information and simplify a number of tasks online. In October 2016, we introduced our new intranet site, WCM Central, (wcmcentral.weill.cornell.edu) to serve as a primary hub for faculty, staff, and students to learn the latest about events at WCM and to find internal resources. We are working with External Affairs, the Dean's Office, and other administrative units to build up this site so it will become a real home page for WCM staff.

Last fall, we launched our new Newsroom (news.weill.cornell.edu), providing the first comprehensive redesign of External Affairs editorial content in over a decade. The newsroom features a comprehensive categorization system to help drill down through the news archives, request forms for news media to request assistance with stories, and multimedia galleries.

This spring, we launched a new Brand Center (brand.weill.cornell.edu) and Housing site (housing.weill.cornell.edu). The Brand Center provides comprehensive resources for the WCM community to best utilize our new WCM branding, while Housing assists faculty and students in locating housing arrangements across WCM-owned and leased buildings.



Need training on our new software? Contact its-training@med.cornell.edu.

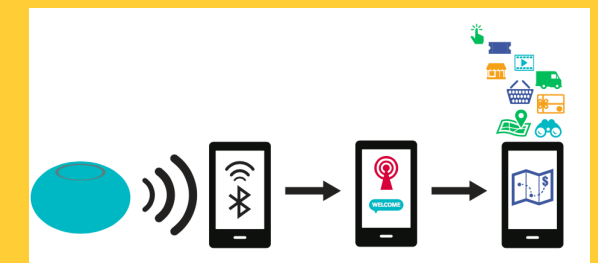
Should I use Skype or Zoom?

- Need to quickly chat with a handful of colleagues? Skype may be ideal to reach out, share your screen, and set up a quick video or voice call. You can also chat securely with colleagues to discuss patient data, like who is in the waiting room.
- Zoom is better for large-scale meetings of 20+ people, especially with international colleagues (toll-free numbers are provided). You can also record your meeting and share it with others.

Emerging tech at WCM: Beacons

ITS has been testing the various ways it can use beacon technology at WCM. A beacon is a small wireless device which transmits a continuous radio signal. This signal is detected by nearby devices with a Bluetooth app enabled. From there, the beacon and nearby device can communicate.

At WCM, beacons are being piloted to streamline the registration process for events like Grand Rounds, and push important information during these events to attendees via app. By placing a beacon in strategic areas, like conference rooms, we are better able to reach a targeted audience.



The diagram above shows how beacons work. A beacon transmits a signal to a Bluetooth app, which then opens the app and provides pertinent information to the user. At that point, the owner of the beacon can transmit information, like maps, registration details, videos, and more.



Pediatric Craniofacial Services

Craniofacial Center at NewYork-Presbyterian Weill Cornell Medical Center

Caring For Children and Young Adults With Face, Skull, and Jaw Medical Conditions



ITS now offers voicemail transcription which converts voice to text emails. This makes it easier for users who are not always at their desk to quickly review their voicemails by just checking their emails.

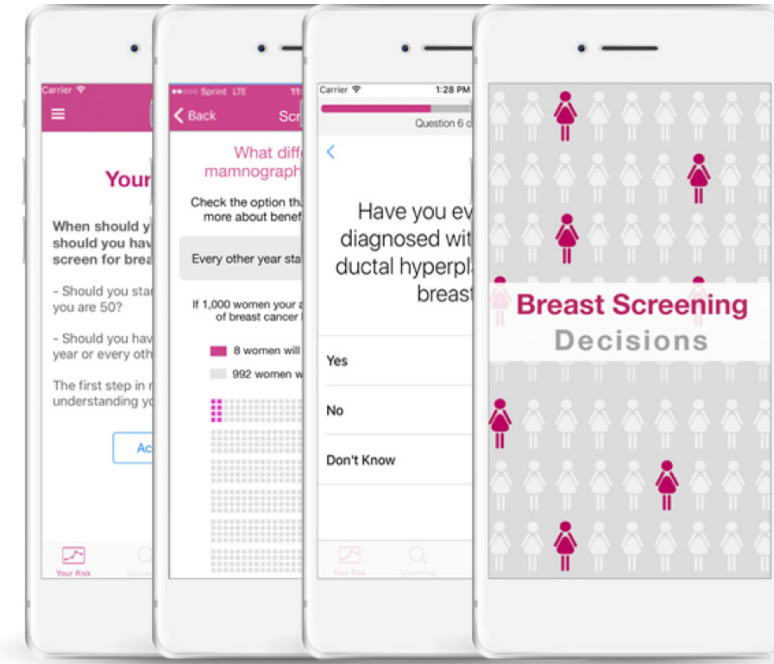
LEFT: The new Brand Center provides a wealth of information on how to properly use our WCM branding, as well as publication templates (like the one on the left), color palettes, and more.

Other Accomplishments

- Streamlined the order process for new PCs and halved setup times for connections.
- Offered patients MyChart Central and Lucy which allows them to link their EHR portals across different organizations that also use Epic.
- Introduced Cisco AnyConnect virtual private network (VPN) solution for Windows 10 users for more stable and secure remote connections.
- Rolled out free upgrades to Microsoft Office 2016 for both Windows and Mac computers.
- Upgraded Intellicred system used to enroll physicians in managed care plans.
- Launched first phases of our all new Academic Staff Management System (ASMS) with a Department of Medicine Faculty database and a Faculty Reappointment module for all departments.
- Deployed Epic Webcam software for new patient workflows.
- Launched the Identity Dashboard, a set of tools for departments to understand and manage the identity and access of their users; includes one-click activation of email account for those who do not automatically get such access.
- Developed AppMonitor, an iOS app for restarting specified servers remotely to help our own server administrators provide better support off hours.
- Deployed the Identity Request Form allowing departments to request CWIDs for people, including volunteers, temps from agency, and others not captured in a system of record.
- The Usability Services team were heavily involved in the design and implementation of new services like eTime, the Weill Research Gateway, and SuccessFactors.
- Launched ITS Contracts Databases, a web-based database to manage, track and report on ITS maintenance contracts.



ABOVE: The new alumni email service allows graduating students to keep their WCM identity and emails when they move on to another institution. Upon graduation, an automated process marks them as alumni in Jenzabar, and directions are provided by External Affairs for the graduates to claim their mailbox at identity.weill.cornell.edu.



LEFT: The Breast Screening Decisions app (breastscreeningdecisions.com) helps patients assess when they should start getting mammograms and how frequently they should receive them. This is done through a series of questions about topics like age and family history to give patients an idea of their risk for breast cancer.

Upcoming Projects for FY18

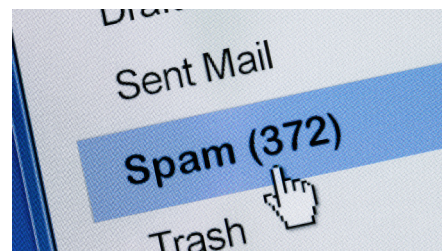
- Develop new modules for the Academic Staff Managements System (ASMS) to replace the legacy Faculty Affairs database.
- Develop web and mobile apps iOS PedScripts (app only), the Center for Research on End-of-Life Care, and Environmental Health & Safety (EHS) Health Physics Database.
- Roll out SiteImprove to all WCM websites, a monitoring software that will assist both with proactively identifying web accessibility issues, as well as general quality control checks like broken links and typos.
- The new weill.cornell.edu project is planned to be completed in FY18. This will provide a revamped, modernized door to the institution for the general public and better explain how WCM is constantly advancing its missions and areas of focus.
- Launch Services Directory, aka Yellow Pages.
- Implement third-party software to provide phone queue reporting tools for departments.
- Prepopulate identity data in the new badging system. The new badging system streamlines all employee and student profiles into one database used by campus security.

BELOW: The new Identity Dashboard allows users to activate and manage their CWID and password, as well as provide Department Administrators access information on their department's employees, and request CWIDs and email addresses for incoming faculty or staff.

The screenshot shows the 'ITS – Identity Management Services' page. On the right, there is a progress bar for 'Activate CWID' with five steps: Step 1 (Verify Email Address), Step 2 (Validate Temporary Password), Step 3 (Set Security Questions), Step 4 (Set Password), and Step 5 (Start Using Your Account). Step 1 is currently active. Below the progress bar, there is a form for 'Step 1: Verify Your Email Address' with a 'CWID' input field and a 'Verify Status' button. A text box on the right explains the CWID process: 'Enter your Center-Wide ID, or CWID (pronounced "seaweed"), in the form. We will check your account status, and if you are eligible, we will ask you to verify an email address we have on file for you (if you have more than one, each one will be displayed, and you must verify one of them). Once validated, we will set your temporary password to the verified email address. Please be patient. Once submitted, it can take up to a minute to process your request. If you do not know your CWID, please ask your supervisor, manager, or DA. You can also find your CWID by searching the WCM directory. If you have any issues activating your CWID, please contact the ITS Service Desk, at 212-746-4878 (Monday - Friday, 7 AM - 7 PM), or support@med.cornell.edu.'

Security & Identity

■ It was a big year in ITS for Security, Identity & Compliance as we strove to improve our robust security systems to contend with increasingly malicious cyberattack events.



More than 80% of the 229 million emails we received this year were spam. ITS blocks these before they get to your inbox.

Two high-profile ransomware infections, WannaCry and Petya, gained national attention when they affected hundreds of thousands of machines worldwide by exploiting a vulnerability in the Windows operating system. ITS is equipped to protect WCM from the attacks by ensuring our next-generation anti-virus software is installed, and patches

are deployed in a timely manner. As a precaution, ITS promptly quarantined all password-protected attachments. As cyberattacks grow more sophisticated, many of them explicitly targeting hospitals and healthcare institutions, security and compliance at WCM has never been more important.

The best protection against these increasing attacks is two-factor authentication, otherwise known as Duo on campus. Many institutions, like Gmail, Apple, and most banks and major software systems, already use this technology. ITS uses Duo to protect your passwords if they are stolen, adding an extra layer of security to verify your identity from your desk phone or mobile device (duo.weill.cornell.edu).

One of the key safeguarding services ITS

offers to WCM users is device encryption, which protects the contents of a device from unauthorized access by converting it into unreadable code. This year, we achieved 94% encryption of the total number of devices we support, which includes 95.6% of supported laptops, and 98.9% of supported smartphones.

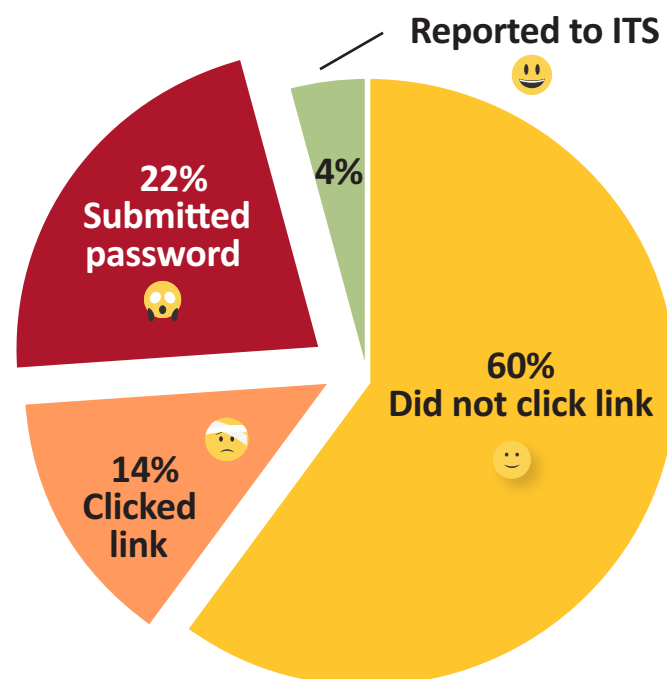


Our Security team educated this year's SMARTFest attendees on how to spot a phishing email.

PHISHING TEST RESULTS

In FY17, our Security team launched a phishing test to approximately 5,000 WCM email accounts. The email included a message purporting to be from our ITS Service Desk with a request to click a link to provide our technicians with more information. If a user clicked the link and provided their personal information, they were redirected to a site warning users that this was a test and explaining how to better identify malicious emails.

To date, 60% of users did not click the link, and 4% also reported the phishing attempt to our security team. While these results show some awareness of malicious attacks among the WCM community, 22% of our test recipients still clicked the link and submitted their passwords; another 14% clicked the link, but did not submit personal information. This campaign is still ongoing, but it is clear we need to do better. For more information on how to identify a phishing attempt, visit phish.weill.cornell.edu.



Security at WCM by the numbers



18,850

■ The number of supported devices that have been encrypted

One of our Security team's biggest priorities is ensuring that every device on campus that we support is encrypted. So far, 94% of approximately 20,000 devices, including laptops, desktop, smartphones, and tablets, have been encrypted. We hope to reach 99% compliance by the end of this year.



6,000

■ The number of targeted attacks we block every 30 days

This year, we upgraded our anti-virus system from Symantec to CrowdStrike. In a typical 30-day period, we're detecting 6,000 attacks and exploits on supported devices. Every month, we also block millions of less-targeted attacks to our network.



850

■ The number of servers we patch every month

Our software vendors are constantly releasing security patches to address the myriad new cyber threats seen on a daily basis. ITS takes these threats seriously too, and regularly updates our servers to ensure we are complying with the latest security measures. This has decreased the number of our overall vulnerabilities by half.

WCM Web Login

CWID

 Password

Important Security Reminders

- Only type your CWID and Password into this website if it displays login.weill.cornell.edu/ in the URL bar.
- **WCM Web Login** allows you to access many services by only logging in once (otherwise known as Single Sign On or SSO), so **never leave your computer unattended**.
- For maximum security, **quit your web browser when you are done accessing WCM web sites and applications that require authentication.**

Identity Management Services

- [Activate CWID](#)
- [Change Password](#)
- [Forgot Password](#)
- [Password Policy](#)
- [Duo Two-Factor Authentication Enrollment](#)

Support Resources

- **Phone:** 212-746-4878 (Mon. - Fri. 7 AM - 7 PM)
- **In person at SMARTDesk:** WCM Library Commons at 1300 York Ave (Mon - Fri, 9 AM - 6 PM; Sat, 10 AM - 6 PM; Sun, 12 PM - 8 PM) or 575 Lexington Ave 3rd Floor (Mon - Fri, 9 AM - 5 PM)
- **Online:** myhelpdesk.med.cornell.edu (Open a ticket)

ITS System Status and Maintenance

- [10/1: myApps maintenance](#)
- [Resolved: Service Alert - Listserv email delays](#)
- [Resolved - Service Alert: Issues Accessing Internal Websites](#)
- [Service Alert - Sporadic issues sending email if you](#)

RIGHT: Look familiar? It should. This single federated login page now appears prior to providing you access to 45 WCM-affiliated applications, with more in the works. Our goal is to both improve security and allow you to access multiple systems with only one password for a longer duration.

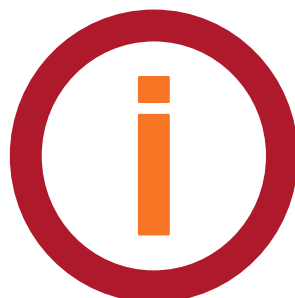
Other Accomplishments

- Data loss prevention software blocked 17,365 patient records from being emailed without encryption to outside accounts.
- Established first written information security program.
- Completed a National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF) maturity assessment.
- Began monitoring password compromises (suspected or confirmed) using advanced detection and analytics now available from both Proofpoint and CrowdStrike.
 - FY17: 505 incidents
 - FY16: 321 incidents
- Improved server and Windows operating system patching.
- Implemented a new offboarding policy and procedure and drafted checklist for HR website.

- Implemented new firewalls which now include NYP, giving us the ability to prevent attacks on NYP from spreading to WCM.
- Created or revised several Security policies:
 - 11.05 - Security and Privacy Incident Response Plan
 - 11.13 - Directory
 - 11.15 - Password Policies & Guidelines
 - 11.17 - Identity & Access Management
 - 12.5 - PCI Policy for PCI DSS v3.2
- Security Risk Management for Information Systems
- Service Policy: Supported Computers
- Service Policy: Cloud Document Storage - Box

Upcoming Projects in FY18

- Conduct an enterprise-wide HIPAA risk assessment.
- Improve patch management and vulnerability management processes.
- Redefine risk management process to align with NIST standards.
- Enhance existing risk register to track security-related risks.
- Integrate with Internal Audit and Risk Management to align security-related risks with the institution.
- Improve third party application patching process, including expanded testing coordination, for software not provided by ITS.
- Design solution for a new Internet Edge and data center infrastructure utilizing recently acquired Palo Alto firewall hardware.



HOW TO GET THE EMAIL YOU WANT

Sometimes, our spam management system will mark one of your emails as spam, when you actually wanted to read it! How can you keep these emails from getting sorted as spam? It's easy! Just log in with your CWID and password to antispam.med.cornell.edu. You'll see an option to add specific email addresses to your "Safe Senders List"; this prevents it from being blocked from your email account. Likewise, you can also add email addresses to your "Blocked Senders List" so you can stop receiving emails from those accounts.



How secure are you?

Follow our tips on how to secure your personal information at WCM and at home

With major security breaches, like Equifax, WannaCry, and other incidents, how can you make sure your information is safe?

When in doubt, contact ITS

Our systems are good at blocking malware, but criminals are creative, making it impossible to block every phishing attempt. If you're ever suspicious of an email you receive, forward it as an attachment to spam@med.cornell.edu. Remember: ITS staff will never ask for your password!

Use two-factor authentication

Duo is your friend and becoming increasingly necessary to log into WCM sites outside of our network! Set up your free Duo account at duo.weill.cornell.edu. It only takes a few seconds to receive a notification from Duo and verify it on your desk phone or mobile device.

Use passphrases, not passwords

A passphrase contains a sequence of words or other text to make the passphrase more memorable and harder to crack (e.g., "I graduated from Weill Cornell Medicine" could become "IgfWCM"). If you need to change your password, go to password.med.cornell.edu.



According to Symantec, 64% of Americans are willing to pay a ransom, compared to 34% globally. The average ransom spiked 266% since 2015, with criminals demanding an average of \$1,077 per victim.

Source: Symantec 2017 Internet Security Threat Report (<https://www.symantec.com/security-center/threat-report>)



Major Infrastructure Projects in FY17

Infrastructure Improvements

■ The overall WCM IT infrastructure is comprised of a complex network and data centers housing tens of thousands of devices, hundreds of software applications, and a vast array of data, knowledge, and other facilities that keep our computing services running reliably throughout the college.

Over the past few years, this infrastructure grew tremendously with the Belfer Research Building, PO growth, and all the other rapid expansion in the college. This fiscal year, we focused on analyzing our current infrastructure to determine how we could lower some of the costs of our services while improving resiliency.

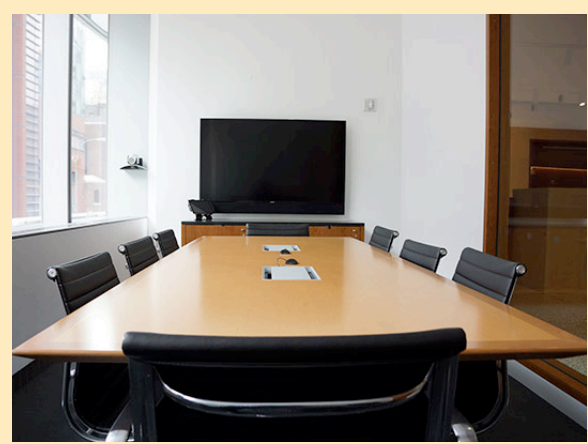
ITS launched a new audiovisual (AV) system support service for conference and training rooms. Departments and administrators that use our service have the benefit of an in-house AV system support team that, unlike an external vendor, offers quick response times to numerous issues, at a lower, more predictable cost.

We also optimized our telephony circuits, which service inbound and outbound calling. This lowered cost and added more reliability to the phone system. To increase resiliency for our other major services, we expanded our disaster recovery capabilities to the CIT data center in Ithaca. Having multiple locations housing our important data makes it easier to bring our services back online should we experience a disruption. We also tested disaster recovery solutions for our Data Warehouse, Clarity, and Epic shadow servers to ensure these vital services remain running.

Another major focus was a comprehensive analysis of our existing virtual servers. By optimizing the

resources allocated to each system, we were able to reduce the number of processors and amount of memory these servers used, allowing us to save their owners money and decrease power consumption.

In the coming fiscal year, ITS will continue to enhance our infrastructure to improve performance and mitigate outages. We will also expand our cloud-based services through Amazon Web Services (AWS) and Azure to provide off-campus capabilities and dynamic scaling that cannot be achieved internally.



Audiovisual support service available

Our new audiovisual support service includes 24/7 AV system monitoring, remote user telephone support (response time is within the hour), video teleconferencing (VTC) configuration and management, five-year hardware repair/replacement warranty, onsite troubleshooting, and more. A dedicated technician is available to assist with issues, providing peace of mind.

Department administrators can contact our Service Desk for more information on this support package.



Resiliency testing and plans increase

What happens to our systems in the event of a disaster, like the roof leak pictured above, or major outage? ITS has increased the number of our disaster recovery tests and plans to analyze the resiliency of our systems. Since 2009, we've gone from fewer than 10 completed tests and plans to more than 100.

While ITS works year-round to ensure our technology remains online during disasters, visit the EHS website at emergency.weill.cornell.edu for more information on disaster preparedness.



LEFT: The generators that support the BRB produce enough power to supply over 4,500 homes. Running at full load capacity with 32,600 gallons of fuel oil, all three engines could run for two days to support vital systems in the building.

Other Accomplishments

- The Web Modernization Initiative completed its first of two years, moving all public-facing WCM websites to our new institutional platform and branding. At the halfway mark, we are a bit ahead of schedule with 49% of sites complete, 28% in flight, and 23% waiting to start.
- Performed Disaster Recovery assessments on major new systems including Weill Research Gateway (WRG), Microsoft Office 365, SuccessFactors, and Jenzarbar.
- Installed 5,000 new phones at WCM locations around Manhattan; introduced voicemail delivery to email account.
- Developed a redundant network offering for off campus locations.

Improvements & Upgrades

- Grew our file share and storage capacity by more than a third.
- Supported 15 conference rooms renovations throughout campus.
- Completed WCM network core upgrade. Infrastructure core improvement ensures our network's resiliency to mitigate outages and provides an increase in data transfer capacity expected within a five-year growth period.
- Improved the connection to MSKCC resources to stabilize access to RARC resources.

- Developed Business Impact Analysis (BIA) program to help identify critical business processes and key dependencies to improve disaster response.

Upcoming Projects for FY18

- Upgrade our aging listserv system.
- Migrate servers from 1300 York data center to Belfer to expand capacity for scientific computing.
- Improve monitoring our infrastructure for any irregular activity or disruptive behavior.
- Upgrade Active Directory, which assigns and enforces security policies for all computers, and installs or updates software.
- The Web Modernization Initiative will complete in FY18.
- Replace website search system, enhancing search experience across all websites.
- Create a comprehensive Disaster Recovery Risk Register and perform 100 disaster recovery tests and exercises.
- Expand Business Impact Analysis to include research and education.
- Upgrade the core storage infrastructure that is used for Epic and other IT services (e.g., virtual servers, database services, etc.) to Flash storage for faster more reliable performance.
- Launch Office 365 applications, including OneDrive, SharePoint, and mobile and cloud-based productivity tools.

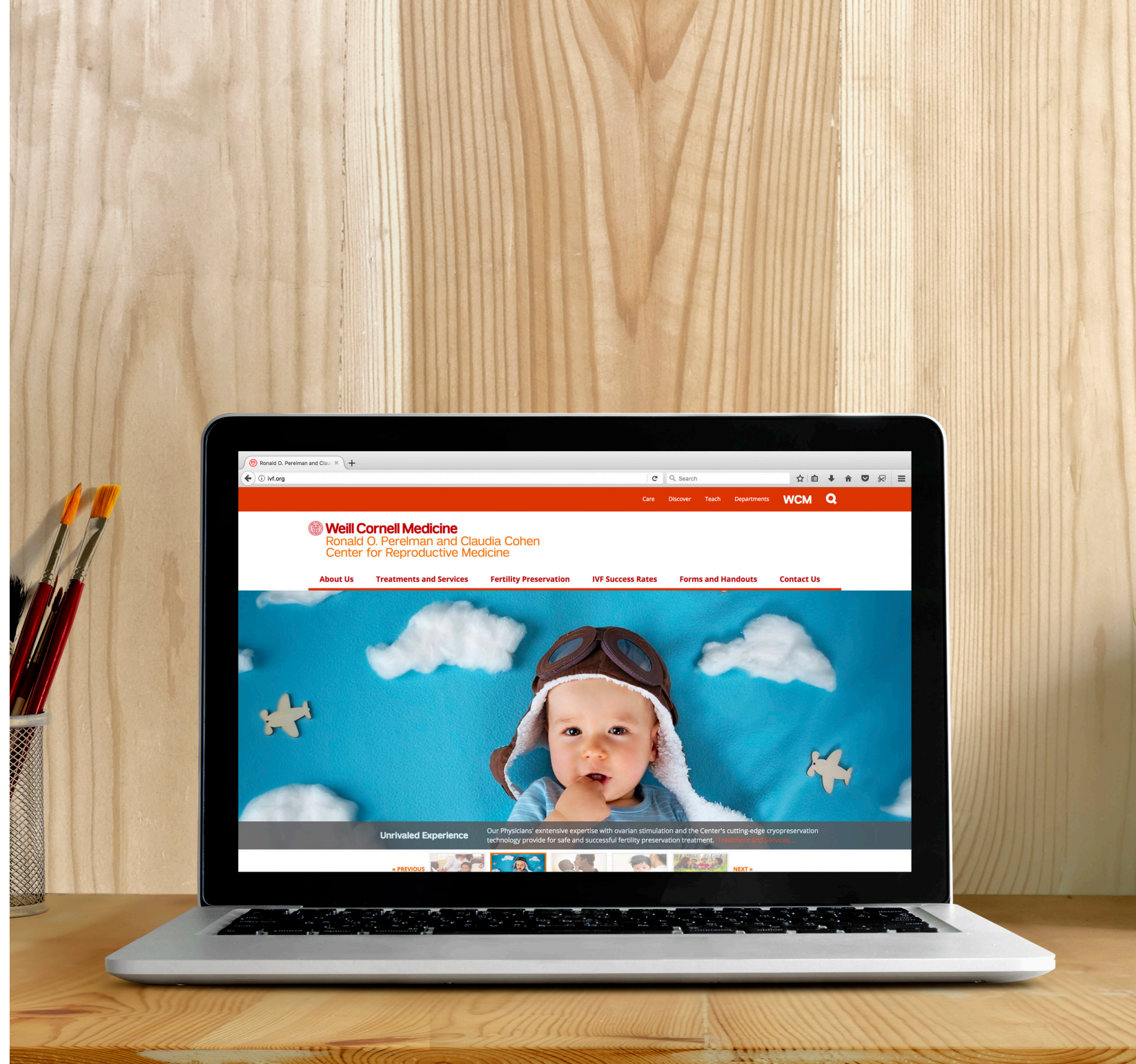


ACCESSING FREE WI-FI WORLDWIDE

For students and staff who travel frequently, eduroam is a Wi-Fi network available to anyone with a WCM email address. Thousands of research and educational institutions are eduroam partners, which allows you to connect with your WCM email and password almost anywhere. Visit eduroam.org for more information.

Over 2,100 users are taking advantage of our free Box storage, currently hosting 1.9 million files.

ITS stores 3.5 petabytes of data across a wide range of services.



Web Modernization

Since early 2016, ITS has undertaken an effort to migrate over 110 WCM public websites to a consistent, modern standard. This effort is being executed by migrating existing websites to the shared institutional platform, WCM Drupal. Through this central effort, unit websites have unified under the new Weill Cornell Medicine brand, established consistency across the enterprise, and enabled more departments to self-manage their web content. The initiative is expected to be complete in June of 2018.

System & Service Enhancements

Few things affect the daily lives of WCM students, faculty, and staff as much as the many computer systems we all use. ITS works continuously to improve performance and optimize end-user experience.

One of the biggest enhancements we released was My Workspace in the Weill Business Gateway (WBG). Currently, this new dashboard provides access to a completely revamped Learning Management System (LMS), as well as Recruitment and Onboarding tools for Human Resources and hiring managers. The LMS replaces the Weill Training Management System (WTMS), and allows employees to enroll in training, create learning paths, and track their progress. It integrates with Skillsoft and Lynda.com, so you can track your professional learning in one place.

Recruitment Management replaces HR's current applicant tracking system and improves the overall job candidate experience. It also provides new tools for hiring managers and the HR Recruitment team to review and manage applicants.

Onboarding Management makes the employee onboarding process

nearly paperless. Rather than printing a packet of paper forms, new hires can complete their forms online. The new dashboard is available by logging into WBG via myApps (myapps.weill.cornell.edu).

In the future, My Workspace will expand with more deep links to functions you need.

Another big role of ITS is providing help – help with new services and help when things go wrong. One of our most popular services is the face-to-face support provided at the library's SMARTDesk. This year, we opened a second desk at our Midtown 575 Lexington location where WCM has about 1,000 employees. Our SMARTDesk@575 offers the same great walk-in IT support as our flagship location in the Samuel J. Wood Library, including tagging and configuring a device to access WCM services, resolving password or login issues, and general troubleshooting.



SMARTPHONE TAGGING

Did you know you can get your smartphone tagged for free? If you're a WCM employee, you can visit either of our SMARTDesk locations and get your personal smartphone tagged to access WCM resources, like email and campus Wi-Fi.



LEFT: Need in-person assistance, but you're too far from our SMARTDesk in the library? Now you can get help from our new SMARTDesk location at our Midtown offices! We offer tagging, device support, laptop reservations, and other services. Visit us on the third floor at 575 Lexington Avenue.

My Worklist

To Do All Items <input checked="" type="checkbox"/> 657	Shopping Carts Approvals <input checked="" type="checkbox"/> 431	Travel and Expenses Approvals <input checked="" type="checkbox"/> 69	Payment Requisitions Approvals <input checked="" type="checkbox"/> 53
Funds Approvals <input checked="" type="checkbox"/> 44	Change of Funding Approvals <input checked="" type="checkbox"/> 46	Supplemental Comp Approvals <input checked="" type="checkbox"/> 9	Position Requests Approvals <input checked="" type="checkbox"/> 1
Employee Terminations			

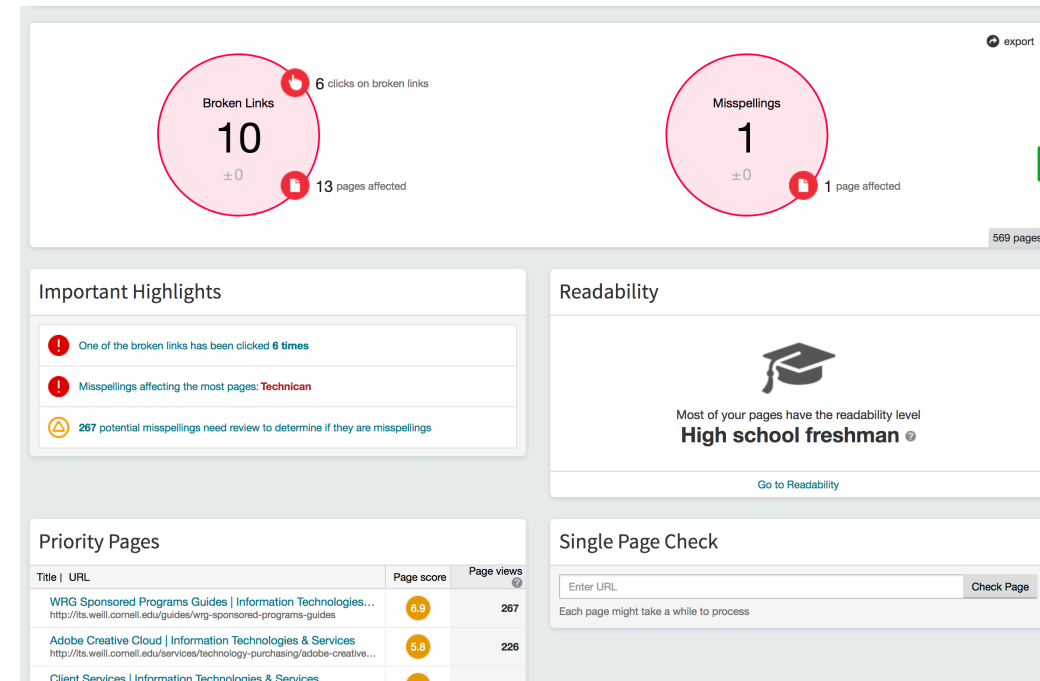
ABOVE: My Workspace offers a convenient dashboard within the Weill Business Gateway to access your important business transactions, based on your role at the college. From this dashboard, you can review tasks on your to-do list, view shopping cart transactions, review learning, look at position requests, approve expenses, and more.

Other Accomplishments

- Developed new SharePoint sites:
 - LCME accreditation management portal
 - Faculty Affairs document management system and workflow engine
 - Breach Risk Assessment database (Privacy and Compliance)
 - Business Process Services (BPS) project intake and management site
- Standardized site templates, improved user experience, and completed a site branding initiative across departmental sites
- Launched birthright provisioning, which automatically provides account or system access based on a person's role. For example, all employees automatically get Office 365 accounts as soon as their employee record is created.
- Migrated all WCM Lync users to Skype for Business in Office 365

- Enhanced Weill Business Gateway
 - We completely rewrote the eTime time management system to replace the existing TimeLink employee time keeping system that was being piloted. The new system is much easier to use and includes new features like Leave Requests.
 - SAP was enhanced to facilitate management of retirees and surviving dependents for the Affordable Care Act beneficiaries, eliminating old spreadsheets.
 - A new Internal Orders module was added to allow users to track costs and revenue associated with projects and services. This is being piloted within ITS itself.
 - Qatar research accounting received a new feature to track budget detail for their government NPRP grants.
 - Rolled out new purchasing (SRM) reports that allow departments to track transactions in more detail.

- The new Organization Unit & Fund Center Restructuring Initiative was extended to simplify reporting by migrating historical data into New Organization Units. It is now possible to run reports by Organization Unit Levels for key employee and labor commitment data.
- A new Financial Location attribute in SAP allows department and College leadership to view the financial status of a business unit according to physical location of a specific clinical practice. Paired with new reporting functions this is a critical new management tool as the college expand to locations throughout the city.
- Introduced College Structure ID which will be a unique identifier across all systems, as an Attribute of Fund Center and Organization Unit in all Finance & HCM BI reports.
- ServiceNow: ITS' internal workflow and asset management tool



LEFT: In FY18, ITS will introduce SiteImprove to WCM website administrators to monitor their sites' quality assurance (i.e., broken links and typos), accessibility, SEO, and policy. SiteImprove pinpoints which pages have potential errors and issues so you can ensure information on your site is accurate.

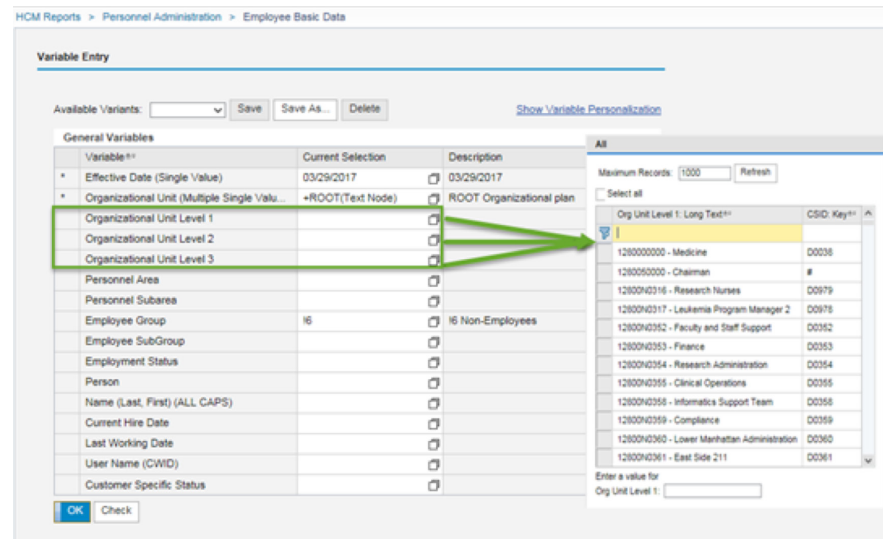
- Created a Cost & Resource Management module to track internal ITS project and operational costs
- Migrated request forms, billing process, and asset management into ServiceNow
- Upgraded to latest software release, Istanbul

Upcoming Projects for FY18

- Implement a new Project Management portal for Capital Planning. This builds off the same tool we are using for HR, EHS, and ITS - working toward a shared administrative portal.
- Migrate SharePoint to O365.
- Develop External Affairs Marketing Intranet site.
- Develop a Managed Care Claims Management portal.
- Deploy IP soft phone to allow ITS landline phone users to receive calls on their mobile phone.
- Migrate Listserv to cloud hosting.
- Update Supplemental Compensation Program to give more visibility to PO members.

- Expand eTime rollout to more departments.
- Update Organizational Structure.
- Roll out Journal Voucher eForm.
- Roll out Foreign National Taxation module.
- Add proactive, recurring website analysis to ensure newly redesigned websites are succeeding.
- Improve navigational model for all websites using the new branded framework.

BELOW: When Microsoft purchased Skype, ITS was tasked with transitioning Microsoft Lync users with the new Skype for Business service. Skype for Business still allows you to chat with WCM colleagues instantly, share your screen and attachments, and create online meetings of fewer than 20 people.

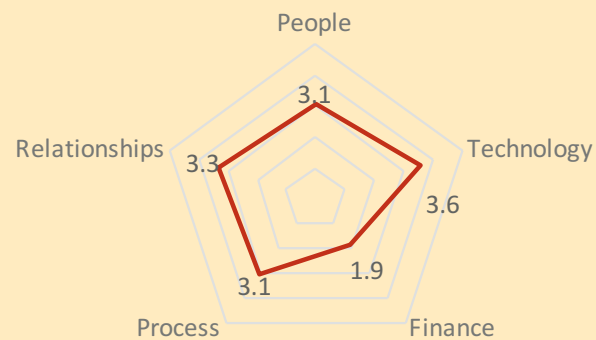


RIGHT: As part of our Organization Unit and Fund restructuring effort, we made it possible to run BI Reports by Organization Unit Levels, as highlighted here.



How We Support Our Services

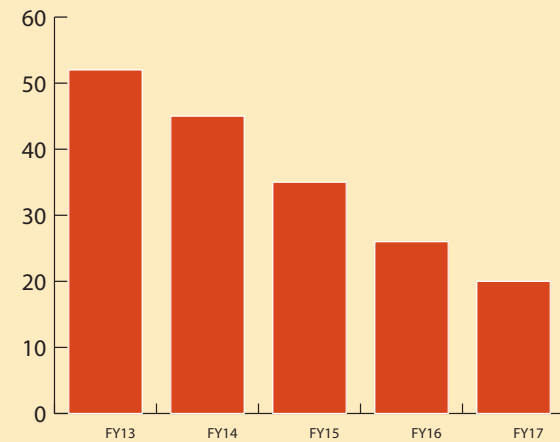
Our Project Management Office (PMO) and Client Services team work hand-in-hand to launch and support hundreds of projects and services a year. Each year, we press to improve these services to help faculty and staff work more efficiently.



Gartner PPM Maturity Score: 2.9

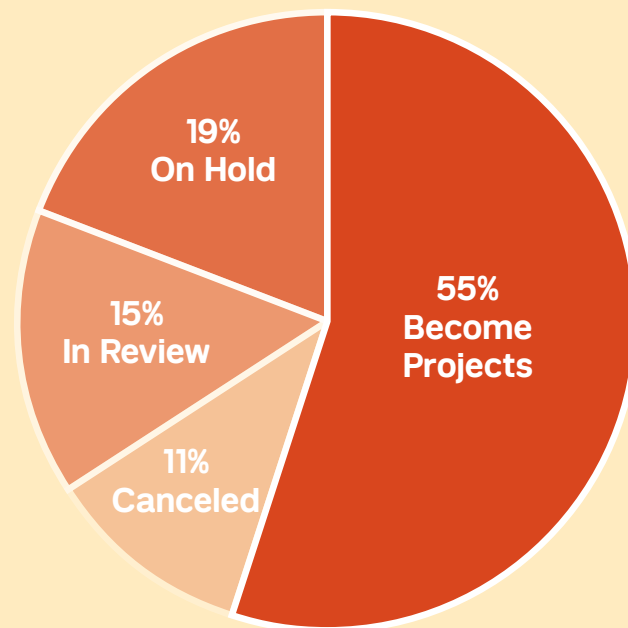
The Gartner Project & Portfolio Management Maturity Model has five levels of increasing maturity on a scale of 1-5, with 5 being the most innovative. This year, Gartner helped us conduct our assessment, offering us a more objective, critical view of the PMO's maturity. Our PMO scored an average of 2.9 this year, a slight dip from last year's score of 3.1. While we improved or remained steady in most areas, Gartner's assessment identified issues we have in the Finance dimension; we are planning to improve our project budget process as a result.

Average Number of Days to Charter a Project



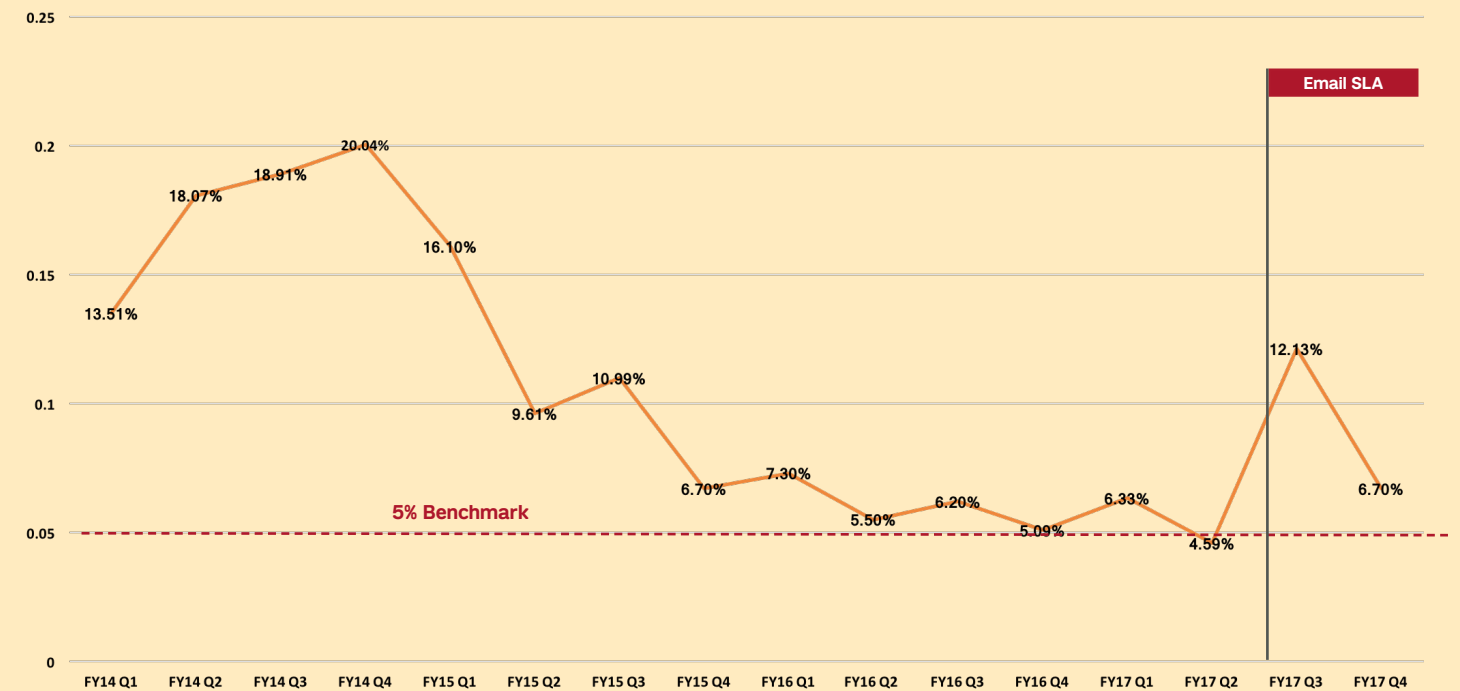
Chartering time reduced by 24%

The average amount of time to charter a project from the day it is submitted has been reduced by 24%, which expedites the overall service launch. Our goal for next year is to decrease our average to 14 days.



What happens to project requests?

We had 356 total project requests this year, and more than half became full-fledged projects. Overall, we've done a better job of managing our requests, canceling duplicate efforts, and chartering more program-based projects launched in phases.



Call Abandonment Rate

An abandoned call is one where the caller hangs up before connecting with a Service Desk technician. Call abandonment rate is the number of abandoned calls divided by all calls received by the Service Desk. Since 2014, ITS has significantly improved this rate with the goal of consistently reaching 5%. There was a slight increase in our abandonment rate due to the implementation of a new email service level agreement (SLA). We dedicated some of our technicians to supporting our email backlog, but the abandonment rate is already decreasing as we adjust to this process change.



Average number of support calls

The Service Desk agents answered about 5,300 calls per month this fiscal year, which is about a 4% decrease from two years ago. Our goal is to continually decrease our call volume by proactively addressing issues with improvements like better customer service and more training.



First Call Resolution

First call resolution is properly addressing a customer's need the first time they call with an issue. We have surpassed the industry standard of resolving issues the first time for at least 66% of calls.



3

POIS Annual Report

The Physicians Organization Information Services report provides a more complete picture of IT activities at WCM

2017



**Weill Cornell
Medicine**

Physician Organization Information Services



Adam D. Cheriff, MD

Weill Cornell Physician Organization

8/23/2017

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From the Chief Medical Information Officer



“Health Information Technology should be a foundational element to support the missions of Weill Cornell Medicine.”

Health information technology is foundational to the success of Weill Cornell Medicine. The Physician Organization Information Services Division (POIS) provides sophisticated health information systems and services to support the clinical operations of the Weill Cornell Physician Organization. Technologies are implemented to improve the quality and safety of care, enhance both the patient and caregiver experience, and achieve greater efficiency and cost effectiveness.

Clinician-led, POIS strives to continually optimize work-flow via its implementation of the Electronic Health Record and Practice Management System. Our IT systems are deployed to facilitate growth and improve patient access. We strive to minimize complexity and achieve tighter integration with our partners and affiliates.

This annual report summarizes the activities of POIS in Fiscal 2017. It serves as an inventory of key accomplishments and provides statistics that depict the scope and scale of our efforts.

Moving forward, our emphasis will continue to be on technologies that transform the way that care is delivered. We will focus on analytic tools that help us more cost effectively manage patient populations and support new scientific discovery. Enhancements will be made to the Electronic Health Record that allow our clinicians to make use of increasing amounts of genetic data in order to improve treatment precision. A broader suite of patient self-service tools will be implemented to improve patient engagement and access to our services.

We are embarking on an exciting new collaboration with New York Presbyterian Hospital and Columbia Doctors to deploy a shared enterprise version of the Epic EHR and revenue cycle management system. This promises to cost effectively strengthen our integration across the continuum of care.

A handwritten signature in black ink that reads "Adam D. Cheriff, MD". The signature is fluid and cursive, with a small arrow-like flourish at the end.

Adam D. Cheriff, MD
Chief Medical Information Officer
Associate Professor of Clinical Medicine and Healthcare Policy and Research



Executive Summary: FY2017

Each year, POIS executes on hundreds of projects to support the goals and objectives of the Weill Cornell Physician Organization. The following executive summary highlights the key accomplishments for each objective.

Objective 1: Use Information technology to promote PO growth and optimize point-of-care operations

The primary activity of POIS in the past fiscal year was EHR and practice management deployments and system optimizations to increase efficiency and staff/faculty satisfaction. Two major focuses were system and work-flow re-design to embed Epic as the key technology platform within the David H. Koch building and a series of preparation activities for the tri-institutional enterprise expansion of Epic.

- 10 DHK projects were completed to streamline patient check-in and unify registration and scheduling
- 116 practice-specific EHR optimizations were completed, focused on clinical care
- 110 revenue cycle enhancement projects were completed to improve billing and collections
- 43 practice management optimizations were completed to improve front desk efficiency and/or patient access
- An enterprise EHR evaluation was completed and a tri-institutional joint operating framework was designed to address implementation time-lines, cost allocation, team structures, and data sharing policies and procedures

Objective 2: Enhance tools to support population health and value-based care

The shift to value-based reimbursement continued this past fiscal year, with the support of several critical IT projects focused on improving decision support, care management, and analytics.

- Created new decision support rules and customized documentation tools to support ACO quality metrics of hypertension screening, medication appropriateness in cardiovascular disease, heart failure, and diabetes care
- Implemented a new imaging appropriateness decision support tool for whole body PET scans, CT pulmonary embolism imaging, and low back imaging
- Created a suite of decision support rules and registries to support the 'Million Hearts' cardiovascular disease prevention program
- Implemented new EHR documentation and reporting tools to support the CMS Innovation Center's Oncology Care Model
- Created tool to support the aneurysm tracking program in Cardiothoracic Surgery
- Refined e-COMPetency reporting tool and designed an optimization program to improve EHR use metrics that promote high quality, collaborative care

Objective 3: Improve care quality and efficiency via increased system interoperability

System interoperability and integration continued to mature in the past fiscal year, automating information flow and giving providers robust point-of-care information to facilitate patient care.

- Further adoption of Epic's native health-information exchange platform (Care Everywhere) resulted in the exchange of over 400,000 WCM patient records
- Several new interfaces were created to support unified registration and scheduling activities for DHK, including integration between Epic and Eagle, OR Manager, Medicalis, and Aria (radiation oncology)
- New integration was achieved between Epic and the Streamline document management system to support unified electronic document capture
- Epic was interfaced to CoverMyMeds to support electronic prior authorization for prescription medications
- The new system to capture ambulatory adverse events, *Safety Zone Portal*, was integrated directly within Epic

Objective 4: Improve patient access and experience by implementing patient engagement and self-service tools

Improving the patient experience was a major focus of FY2017. Several technologies were implemented aimed at enhancing patient satisfaction.

- WeillCornell.org was further enhanced to support digital marketing efficiency and online reputation management, including integration of patient testimonials
- Weill Cornell Connect patient enrollment exceeded over 219,000 active patients
- Online scheduling functions were implemented for over 380 WCM physicians (including integration with *ZocDoc*) resulting in over 39,000 online appointments
- Weill Cornell Physicians began participation in "Open Notes" initiative to allow patients full access to physician visit notes
- Epic's self-service kiosk platform (Welcome) was deployed in several clinical locations to prepare for unified check-in processes at DHK

Objective 5: Use information technology to support compliance with regulatory mandates

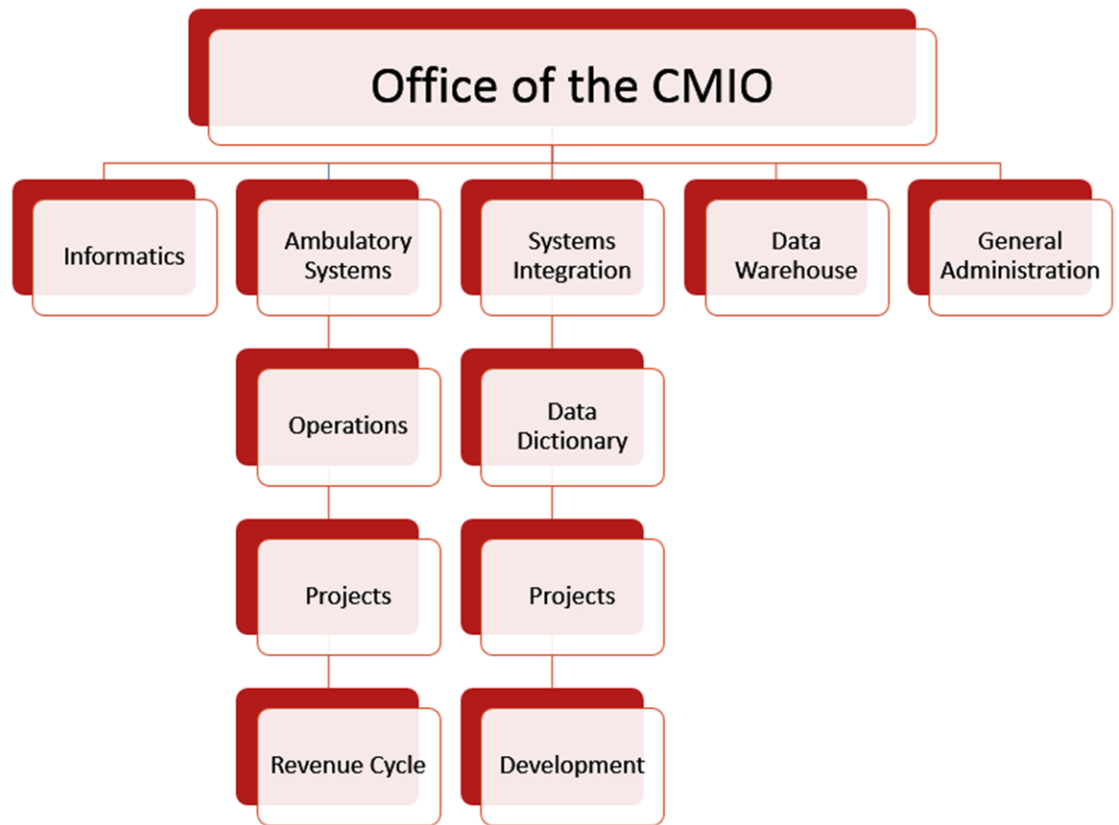
In FY2017, several challenging regulatory requirements were addressed via information technology projects.

- Performed a readiness assessment for the MACRA/MIPS program
- Implemented a new physician dashboard to monitor physician performance on MIPS requirements
- 451 providers successfully attested for 2016 Meaningful Use

POIS: Structure and Administration

The information services team that supports the PO is a dynamic group of individuals that combine deep technical expertise with significant domain and institutional knowledge. POIS collaborates closely with other administrative and clinical business units within the Medical College.

Summary of Table of Organization:



Key Personnel:

Travis Gossey, MD

Medical Director



Aurelio Gracia

Director,
Ambulatory Systems

Mark Israel

Director,
System Integration

Maggie Qiu

Associate Director,
Data Warehouses***Key Statistical Snapshot:***

<u>Metric</u>	<u>FY 2017</u>
Total '16-'17 allocated budget:	\$27.8M
Total revenue and recoveries (expected):	\$5.7M
Total POIS staff:	105
Total current vacancies:	4
New Hires:	9
Departed Staff:	6
Annual staff attrition rate:	5.7%
Total ITS FTEs funded by Physician Organization:	23

Snapshot
Demographics
Research Studies
Care Teams
Chart Review
Care Everywhere
Results Review
Review Flowshe...
History
Problem List
Health Maintena...
Medications
Allergies
Immunizations
Enter/Edit Results
Letters
Open Orders

EHR and Practice Management System

The Electronic Health Record and Practice Management System (Epic) are the key work-flow engines for all of our clinical practices. These systems automate virtually every aspect of the patient-provider interaction including patient registration and scheduling, visit documentation, order and review of diagnostic tests and procedures, referrals and provider communication, and revenue cycle management.

Accomplishments:

Ambulatory Epic Systems

- A total of **306** projects were completed
 - **10** David H. Koch Building Projects
 - Implemented Starr 3 infusion center on Epic registration/scheduling, implemented Epic patient arrivals and kiosk check-in for NYP areas moving to DHK (multiple OR areas, endoscopy, interventional radiology, and radiation oncology), Insurance mapping enhancements between Eagle and Epic, NYP mobile application development to integrate MyChart
 - **110** Revenue Cycle Projects
 - Patient refund automation, recurring payment plans, telehealth scheduling/billing workflows for collaborative care services, implemented CMS's Oncology Care claims model
 - **116** Practice Optimization Projects
 - Oncology Care Model for Hematology/Oncology, 5 departments implemented with the latest Epic documentation tools (VN3), EpicCare Link portal to allow payer access to Epic, care management documentation tools for the ACN, CoverMyMeds electronic prescription prior authorization expansion
 - **2** New Epic Implementations
 - Interventional Radiology, gynecology at 36 E. 36th Street (WCPN)
 - **43** Practice Operations/Management Projects
 - 21 online scheduling related department initiatives, 5 departmental call centers implemented with Epic customer relationship management module, automated patient cancelations, telehealth pilot,
 - **19** MACRA/MIPS Related Projects
 - VA onboarding for Care Everywhere, Stage 1 & 2 providers registered and attested, MU compliance reporting (Year 1, 2, 3 and 4), Care Everywhere auto-query, MU compliance audits, MACRA/MIPs readiness assessment
 - **6** Portal Projects
 - Open Notes activation, MyChart Central, Lucy (Personal Health Record), real-time insurance eligibility via portal, patient photo updates, Implemented patient phone line for support
- **83** system maintenance updates/patches

Enterprise Epic Preparations

- Completed a comprehensive vendor evaluation to select a tri-institutional enterprise EHR
- Created an enterprise implementation project plan and “go-live” sequence
- Designed a detailed cost allocation model for the shared system
- Devised governance committees and team structure to support the enterprise EHR deployment
- Revised tri-institutional data sharing agreement to support the new shared system

Key Statistical Snapshot:

<u>Metric</u>	<u>FY 2017</u>	<u>Annual Trend</u>
Support tickets closed:	57,655	↓ 0.3%
Cases resolved within one business day:	62.0%	(goal of 70%)
Epic development/configuration items migrated to production:	5,418	↓ 5.5%
Quality assurance testing/audit hours:	2,953	↓ 26.0%
Epic Ambulatory users trained:	3,360	↑ 31.1%
Epic PM users trained:	1,241	↓ 13.2%
Active Epic users :		
Attending:	1,307	↑ 6.8%
House-officers:	903	↑ 5.2%
Total:	8,428	↑ 10.1%

System Integration

Our systems only achieve their maximum potential when they are connected via seamless information flow. The Integration Team implements and supports hundreds of interfaces between a myriad of institutional systems. The EHR must send and receive a wide variety of clinical and administrative data in order to support work-flow. As health information exchange standards have matured, we have achieved more sophisticated integration with our partners. The latest integration projects have begun to make use of new modern APIs and web services for data exchange.

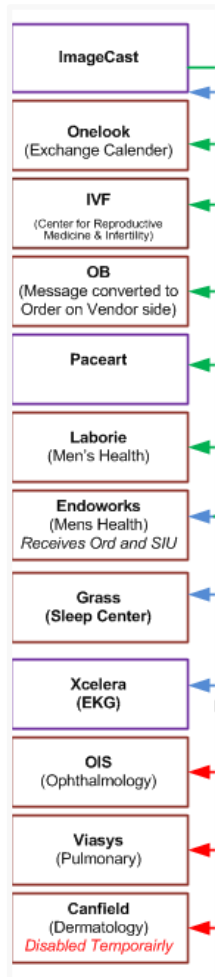
Accomplishments:

Interfaces

- 11 Newly Implemented/Optimized Koch Building Interfaces:
 - Ambulatory surgery appointments (*OR Manager*) to Epic
 - Interventional radiology appointments (*Medicalis*) to Epic
 - Radiology oncology appointments (*Aria*) to Epic
 - Epic oncology infusion appointments to NYP Registration (*Eagle*)
 - Epic patient arrivals to NYP clinical software (*Aria, Medicalis, OR Manager, Eagle*)
 - Epic patient check-in documentation to NYP document storage (*Streamline*)
 - Epic insurance coverage matching and updates from NYP Registration (*Eagle*)

- 12 Newly Implemented Clinical Interfaces:
 - Pulmonary function testing discrete data results (*Vmax*) to Epic EHR
 - Radiation oncology procedure notes from Lower Manhattan Hospital (*Mosaicq*) to Epic
 - Radiation oncology procedure notes (*Aria*) to Epic
 - Clinical trials data to NYP documentation portal (*iNYP*)
 - Electronic prior authorization messaging between Epic and *CoverMyMeds*
 - Ophthalmology orders for visual fields tests to *Zeiss Forum*
 - Epic care management visit notes interface to iNYP data repository
 - Epic pre-operative evaluation documentation to inpatient EHR (*Allscripts*)
 - Inpatient EHR (*Allscripts*) web service to Epic (*EpicCare Link*)
 - Orthopedic K2 x-ray orders to NYP radiology (*ImageCast*)
 - Transcription from Nuance to Epic
 - Adult immunization administration to the Citywide Immunization Registry

- 7 Newly Implemented Practice Management Interfaces
 - Registration interface for NYP Queens to Epic
 - Radiation oncology charges (*Aria*) interface to Epic
 - Cancer Genomics charges (*Cerner*) interface to Epic
 - Cardiology charges (*Muse*) interface for Lower Manhattan Hospital to Epic
 - *Oxford Pathology* electronic remittance interface to Epic PM payment posting
 - Epic registration interface to *Safety Zone Portal*
 - Epic appointments extract to *Birdeye* for online reputation management



The Epic EHR interfaces with dozens of clinical and administrative systems.

- **95 Operational/Development Enhancements:**
 - Implementation of *HL7 FHIR* for compliance with meaningful use
 - Human Resource information (*Morrissey*) to credentialing database
 - Migration from *Sharepoint* to *ServiceNow* for Change Management and Occurrence Tracking
 - Upgrade of *Corepoint* Integration Engine to version 2016.2.1
 - 37 projects/tasks related to operations and optimizations of the real-time eligibility interface (RTE)
 - 52 projects/tasks related to general operations including ongoing roll-out of electronic lab orders interface, conversion and new implementation of inpatient charge-capture super-bills
- **6,707 Interface-related support tickets resolved**

Data Dictionaries, Data Quality, and Content Management

- **Data Dictionary (*TruData*):**
 - Maintained and sustained mappings and data dynamics for 20+ diagnostic resulting agencies with additional content added:
 - Added 5,487 new procedures; committed 4,657 new local mappings
 - Added 5,752 new result components; 9,151 committed LOINC assignments
 - Maintained most recent controlled vocabularies – LOINC, SNOMED, CPT/HCPSC/CDT, RXNORM, NDC
 - Incorporated terminology for The National Council for Prescription Drug Programs (NCPDP)
 - Implemented new framework with automation for downloading and determining all CDC vaccines, manufacturers and crosswalk updates
 - Developed crawlers for additional reference laboratories:
 - Immco Reference Lab Services
 - Integrated Genetics
 - Viracor Clinical Diagnostics
 - Bio-Reference Laboratories
 - National Medical Services Laboratories
 - Developed and launched NIH value set content searching employed for Quality Measures
 - Expanded gene marker disease-based classification in results hierarchy, covering ~1,429 gene/LOINC concepts
 - Expanded results hierarchy to 172,556 nodes: 65,735 conceptual nodes, covering 57,914 LOINC nodes, and 75,497 local result components, 31,494 local procedures
 - Added Pulmonary domain with discrete concepts to results hierarchy
 - Expanded SNOMED assignments to 11,449 for local organisms
- **Provider Management and Credentialing**
 - Added 126,346 new provider records into Master Provider Index
 - 41,210 new providers exported and incorporated into Epic
 - Improved process for loading and synchronizing provider insurance data into Epic and online profile system
 - Developed processes to automate download and ingest of CMS NPI database
 - Developed reports to populate contents, e.g. NPI, fax, Medicare/Medicaid IDs, in downstream systems

- Master Files/Dictionary Support and Maintenance:
 - Converted patient health maintenance topics and overrides to conform to new Epic immunization rules/paradigm
 - Completed quality measure mapping conversion to Epic's Terminology Framework
 - Implemented Oncology Care Model (OCM) groupers for defined by CMS
 - Launched IMO 2.0, a terminology search portal for procedures and problems/diagnoses/symptoms

Health Data Exchange

- Epic's internal health information exchange functionality (Care Everywhere) facilitated thousands of patient record exchanges:

Document Types	FY 2017 (Received / Sent)	FY 2016 (Received / Sent)
Clinical Summary	448,225 / 158,820	216,905 / 37,705
Continuity of Care Document	23,552 / 665	27,263 / 1,123
Encounter Summary	598,638 / 241,552	246,944 / 82,680
Lab Results	442,152 / 152,273	213,389 / 35,163
Other Results	442,172 / 153,876	213,422 / 35,738
Referral Summary	932 / 1,006	0 / 0

Interoperability Exchange Statistics
Weill Cornell Medicine

Care Everywhere Update - June 2017



Key Statistical Snapshot:

<u>Metric</u>	<u>FY2017</u>	<u>FY2016</u>
Prescriptions transmitted electronically:	1,308,250	1,027,815
Electronic pharmacy benefit queries:	2,446,753	1,484,043
Real-time insurance eligibility queries:	2,558,325	2,148,531
Electronic lab orders:	1,462,203	1,354,529
Electronic radiology orders:	166,551	150,987

Web Presence and Portal



As is the case with most other sectors, consumers look to the web to access health information and services. POIS maintains our web-based directory of clinical services and physician profile system. Thousands of patients have enrolled in Weill Cornell Connect and are accessing personalized clinical information and self-service tools that allow for appointment scheduling, secure messaging, referral and prescription requests, and bill payment.

Accomplishments:

WeillCornell.org

- Institutional Portal:
 - Built support to display marketing-curated patient testimonials on clinical services and practice profile pages
 - Updated clinical services layout to differentiate practice office locations from services (problems, procedures, treatments) offered
 - Created provider directories for WCM-PO and WCM-Voluntary physicians for increased search engine optimization (SEO)
 - Improved Find-A-Physician search insurance filter to expose a more comprehensive mix of insurance payers and plans
 - Prototyped a turn-key solution for center and programs mini-site to reduce website build time from months to weeks, reduce build costs for departments, and build a more cohesive patient-facing website
 - Integrated ENT's Center of Performing Artist website content into WeillCornell.org
 - Built support for additional Open Scheduling visit types for Integrative Health providers

- Physician Online Profile System:
 - Expanded API for use with our reputation management vendor Birdeye that will utilize POPS data for contact and referral data on third-party review sites (e.g. Healthgrades, Vitals, Yelp)
 - Implemented automated profile URL standards upon profile creation to maintain URL consistency and improved search engine optimization
 - Added profile tagging system to allow for increase definition and flexibility of where and how different types of profiles are used, specifically to separate practice locations from services (conditions, problems, and treatments)
 - Created a baseline training program for all new POPS Editor users

WeillCornell.org Visit Statistics, Fiscal Year 2016/2017 Comparison

Visit Category	FY 2017 (Google Analytics)	FY 2016 (Google Analytics)
Total Sessions	3,930,112	3,277,871
Unique Visitors	1,913,990	1,566,466
Return Visitors	2,087,918	1,773,390
Average Visits per Day	10,768	8,981
Average Visit Duration	00:01:58	00:02:07
International Visits	3.81%	3.96%
Visits of Unknown Origin	0.12%	0%
Visits from Your Country: United States	96.07%	96.04%

Top 7 Traffic Sources by Channel

	Source	Sessions	% Sessions
1	Organic Search	2,037,878	51.85%
2	Direct site access	883,753	22.49%
3	Referral (linked sites)	607,350	15.45%
4	Paid Search	289,131	7.36%
5	(Other)	86,213	2.19%
6	Social	14,949	0.38%
7	Display	10,651	0.00%

Weill Cornell Connect

- Implemented “Open Notes” which allows providers to release full visit notes to patients
- Activated ability for patients to aggregate portal data across Epic instances and download to personal health record (MyChart Central/Lucy)
- Implemented automatic real-time insurance eligibility queries as part of online scheduling work-flow
- Enhanced patients’ ability to upload photos within portal
- Optimized support pages and increased password security policies

Key Statistical Snapshot:

<u>Metric</u>	<u>FY 2017</u>	<u>FY 2016</u>
Total active physician on-line profiles:	2,744	2,477
Total active practice/clinical services on-line profiles:	617	327
Total patients enrolled in Weill Cornell Connect:	219,000	178,000
Average monthly enrollment of new WCC patients:	5,518	5,330
Activation rate (percentage of patients who use system access code):	56.9%	69.9%
Unique providers offering online scheduling:		
Direct (existing patients via WCC):	382	206
Open (new patients):	213	116
Total online appointments made:	39,197	16,004

Analytics, Quality, and Decision Support

The majority of our core IT systems have been implemented and are being used effectively to capture vast amounts of data. We now need to effectively use our data to deliver the highest quality care in the most cost effective manner. Clinical data from the EHR is a critical resource for ongoing scientific discovery. The Reporting Team manages our data warehouses and business intelligence tools.

Accomplishments:

Analytics and Data Warehousing

- Installed “Epic Slicer Dicer” reporting tool for end-user ad-hoc clinical reporting within Epic
- Extracted Epic data into ITS ARCH data environment to facilitate research repositories
- Installed Tableau Business Intelligence tool
- Extracted Epic data for ACO quality metric performance attestation
- Implemented ACO Radar Dashboard within Epic
- Implemented two pediatric dashboards: Obesity and Asthma
- Implemented MACRA/MU3 Radar Dashboard, MIPS Scorecard
- Implemented Care Manager Radar Dashboard
- Implemented Cancer Registry in Epic
- Implemented Medicare & Medicaid custom payer registries to track quality metrics
- Optimized Five Payer Registries, including Aetna, Cigna, Emblem, Empire and UHC
- Created 5 new Cognos cubes that provide an additional 100 practice management metrics

Reporting

- Institutional Quality, Operations, and Regulatory Reporting:
 - *eCompetency* report to assess EHR user proficiency
 - Care Management and Patient-Centered Medical Home reports
 - ACO Reports
 - MACRA/MU3/MIPS reports
 - Medication recall reports
 - OCM (Oncology Care Model) reports
 - Empire P4P Specialist Report
 - Emblem quarterly quality measure performance extract
 - Empire P4P for HEDIS measures
 - United Health care gap analysis
- Clinical Reporting:
 - Created 148 departmental/divisional clinical and practice operations reports
- Research Reporting:
 - Delivered 30 data extracts/reports to support clinical research projects



- Practice Management Reporting:
 - 1,966 scheduling management or revenue cycle reports run via Cognos
 - Over 32,000 data files were generated for the clinical departments and the PO via 12 dashboards/snapshots templates
 - 47 Reporting Workbench templates published, resulting in 1678 reports
 - 2 New Epic Radar dashboards published for Epic Practice Management
 - Over 800 new SQL or Business Objects reports that were developed for the clinical departments and PO that generated over 6,000 data files

Clinical Decision Support (CDS) and Population Management Tools

- Decision Support
 - Modernized all system best practice advisory alerts by updating the underlying infrastructure and clustering alerts by categories such as preventative care, chronic disease management and research recruitment.
 - Created new decision support rules and customized documentation tools to support ACO quality metrics of hypertension screening, medication appropriateness in cardiovascular disease, heart failure, and diabetes care
 - Optimized a variety of preventative care health maintenance rules to stay current with the latest clinical evidence and adherence with vaccine schedules
 - Implemented a new Imaging Decision Support tool with custom rules and user interfaces for whole body PET scans, CT pulmonary embolism imaging, and low back imaging
- Population Health
 - One of the first sites in the nation to deploy Epic's 'Terminology Framework'; a modern approach for standardized quality measure reporting to CMS.
 - Implemented a new physician dashboard to track MACRA/MIPS performance
 - Pilot program to automatically remind women when their mammogram is due and automate creation of mammogram order
 - Created a suite of decision support rules, registries and patient lists to support the 'Million Hearts' program sponsored by the US Health and Human Services
 - Implemented new EHR documentation and reporting tools to support the CMS Innovation Center's Oncology Care Model
 - Created tool to support the aneurysm tracking program in Cardiothoracic Surgery

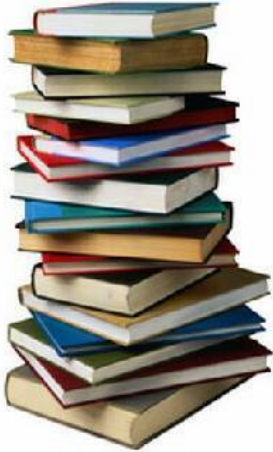
Key Statistical Snapshot:

Metric	FY 2017	FY 2016
Supported ACO quality measures via Epic	15	15
Meaningful User attestations:	451	435
Meaningful User incentive dollars:	\$0.3M*	\$1.2M

*Per-provider incentives fall every year of program

Academic Productivity

At Weill Cornell, we do not make a distinction between information technology and informatics. Five physician informaticians lead the information services division. In addition to rendering clinical care, the physicians contribute to the research and education missions of the Medical College.



Accomplishments:

- POIS Faculty Co-authorships and Presentations:
 - Lacson R, Ivan I, Hentel K, Malhotra S, Patricia S, Curtis P Langlotz C, Raja A and Khorasani R. Medicare Imaging Demonstration: Assessing Attributes of Appropriate Use Criteria and their Influence on Ordering Behavior. Accepted AJR Am J Roentgenology. Nov 2016
 - American Medical Informatics Association (AMIA) 2017 Conference Panel S95 - Redesigning the "Choice Architecture" of the EHR to Improve Medical Decision Making
 - Connected Health Conference (HIMSS), DC. Node Health 2016. Invited Panelist: Standardizing Protocols and Knowledge Sharing for Digital Medicine Pilots.
- Ongoing POIS Faculty Research Projects:
 - Optimization of Order Sets in the Electronic Health Record System
 - Key Personnel for NYC Consortium of Precision Medicine Initiative: *All of US*
 - Deployment of risk scores based on big data in electronic medical record systems
 - Imaging Decision Support research- multi-institutional analysis and reporting of data related to MID. 1) Validation of Physician order entry veracity 2) Rate of non-actionable alerts with CDS
 - Comparative Effectiveness of Bariatric Procedures among Adolescents: The PCORnet Bariatric Study
- Education/Teaching:
 - One of our faculty members is the Course Director for the "Clinical Informatics" course being taught as part of the Masters in Health Informatics program
 - One of our faculty members will be teaching a course in the Executive MBA program due to start in 2018 at Johnson's School of Management and Weill Cornell Medicine, Cornell University
 - Faculty and staff participate in Masters program curriculum and serve as student mentors for Masters level theses on clinical informatics projects
 - Medicine residents rotate at POIS as part of an elective rotation and are instructed in applied informatics methods
- Policy and extramural roles:
 - One of our physicians is the co-lead for Weill Cornell Medicine's QPLE (Qualified Provider Led Entity), one of 11 organizations designated to implement Appropriateness use Criteria (AUC) for advanced imaging decisions support as instructed by the PAMA 2014 law (Protecting Access to Medicare Act)
 - One of our physicians serves on the steering board for Genetics and Genomics Integration and development for Epic Systems Corporation



1300 York Avenue
212-746-4878
support@med.cornell.edu
its.weill.cornell.edu