

# ANNUAL REPORT

## 2016

The Right Information  
at the Right Time



**Weill Cornell Medicine**  
Information Technologies & Services



# Content

<a href="#">Message from the CIO</a>	4
<a href="#">Organizational Structure</a>	7
<a href="#">Leadership</a>	8
<a href="#">FY16 Score Card</a>	10
<a href="#">FY17 Goals</a>	16
<a href="#">Research Initiatives</a>	18
<a href="#">Education Initiatives</a>	26
<a href="#">Clinical Initiatives</a>	32
<a href="#">Samuel J. Wood Library</a>	36
<a href="#">New Services &amp; Tools</a>	42
<a href="#">System Enhancements</a>	46
<a href="#">Infrastructure Improvements</a>	52
<a href="#">Security &amp; Identity</a>	58
<a href="#">How We Support Services</a>	62
<a href="#">Appendix: POIS Annual Report</a>	



# Message from the CIO



Last year we promised a steady stream of new services and incremental improvements in all the areas we support. I'm proud to report that through countless collaborations and plain old hard work, we have delivered and continue to add more every month.

## Research IT

The most talked-about change in research was the launch of a new research administrative system, the Weill Research Gateway. After building the backbone for all the modules, we delivered the first, small module this year to manage Conflict of Interest. Most of the effort has been behind the scenes preparing for the all new grants and human subjects modules that will come next year.

Our direct support to research got a major boost this year with the rapid expansion of our ARCH program. Hundreds of researchers have signed up for our free i2b2 service so they can query de-identified data from the EMR. This is especially useful when preparing grants to count the number of patients with different diseases or their various treatments. This year, we are adding inpatient data. We

also built numerous new custom research repositories, expanded the NYC-CDRN, the Clinical Data Research Network, and helped support the successful Precision Medicine Initiative collaboration with Columbia. REDCap Plus is helping many researchers build case report forms that pull data directly from the EMR, and the new Qualtrics system provides a best-in-class self-service survey tool. The ARCH program also built a new eConsent tool currently in pilot, and wrote an RFP for a new institutional biobanking system we hope to launch in 2017.

## Clinical IT

Working closely with POIS, we launched an all new weillcornell.org with new patient engagement tools. We connected five new remote offices for our PO Network. We supported a major upgrade of the EpicCare EMR and continued incremental build



of our new disaster recovery site in Ithaca. We also added 2,200 users to our IP telephony system with advanced services to improve patient access.

Additionally, ITS, POIS, and the Institute for Precision Medicine started a new Clinical Genomics program and have successfully transmitted a whole exome from sequencer to analysis to report to the EMR. This is still in testing, but we hope to be the first in the nation to do this live in the coming year.

Next year, ITS and POIS will work closely with NYP to help them make their next generation EHR selection. It is no secret that we hope they will



## Clinical Genomic Program

*In FY17, WCM hopes to be the first institute in the nation to transmit a whole exome from sequencer to analysis to report to the EMR - live.*

pick Epic but we are committed to helping them implement whatever system they choose to ensure optimal patient care.

### **Educational IT**

The MD students started Year 3 of the new curriculum and continued refinements to the technologies we started in Year 1. We added a new Financial Aid and Student Accounting system, redesigned the LEARN and Canvas portals, and built a new service to support the NBME onsite exam for the clinical clerkships. A number of new forms, reports, and other tools were built out for the graduate school, as well as the new UNICAS admission system. We continued the ongoing upgrades to classrooms and study spaces with improved AV and new iMacs. This year will bring even larger renovations and a number of new systems to support LCME and Jenzabar improvements for all programs.

### **A Vibrant Library**

The Wood Library continues its drive to be the country's most dynamic medical library with new services and constant reexamination of old ones. This year, we launched a grant editing service to nudge more applications over the funding line. The technical team continues to enhance our bibliometric services and the clinical librarian program rapidly grows, peaking at almost 100 clinical and consumer rounds in a month compared to just over 40 last year.

## Supporting the New Brand

ITS continues to update more than 100 web properties to the new WCM brand. Built on our own upgraded Drupal distribution, we have completed 31% of the sites with a goal of 90% by March 2018. We also launched a version of Drupal that allows labs to build their own sites, fully compliant with the new brand, in weeks for minimal cost.

## Administrative Systems

ITS continues to exploit our new HANA in-memory database system, as well as develop a new face to the aging user interface of SAP with the new Fiore tool set. The first major application we developed was an all-new time management system, which went into pilot this fall. We have also started the build for a new employee evaluation system, a new HR recruitment portal, and new learning management system from market-leading SuccessFactors. Later, we will kick off implementation of a new Budget system and some key services for Qatar.

## New Software, Better Security & More Support

All staff can now benefit from new software contracts such as Adobe Creative Cloud, Office 365 web applications, and LastPass. Our security team launched a powerful and easy to use dual-factor authentication system, an improved anti-spam system, and a new anti-phishing tool. This year, we will update our desktop anti-malware application and expand our security analytic tools.

Our Wi-Fi expansion project is now complete covering the campus to better support mobile devices. Come January, we expect a lot more mobile users when we will drop tag fees for smartphones!

Last, but not least, we are very proud to report major improvements in support services. Two of the biggest complaints we have had is phone hold times and delays in installing new desktops. Both are dramatically better this year with more improvement coming soon. We have new support desk procedures and some expanded staff that should continue the positive trends at the helpdesk. And we are switching desktop vendors from HP to Dell, which will significantly reduce delivery times.

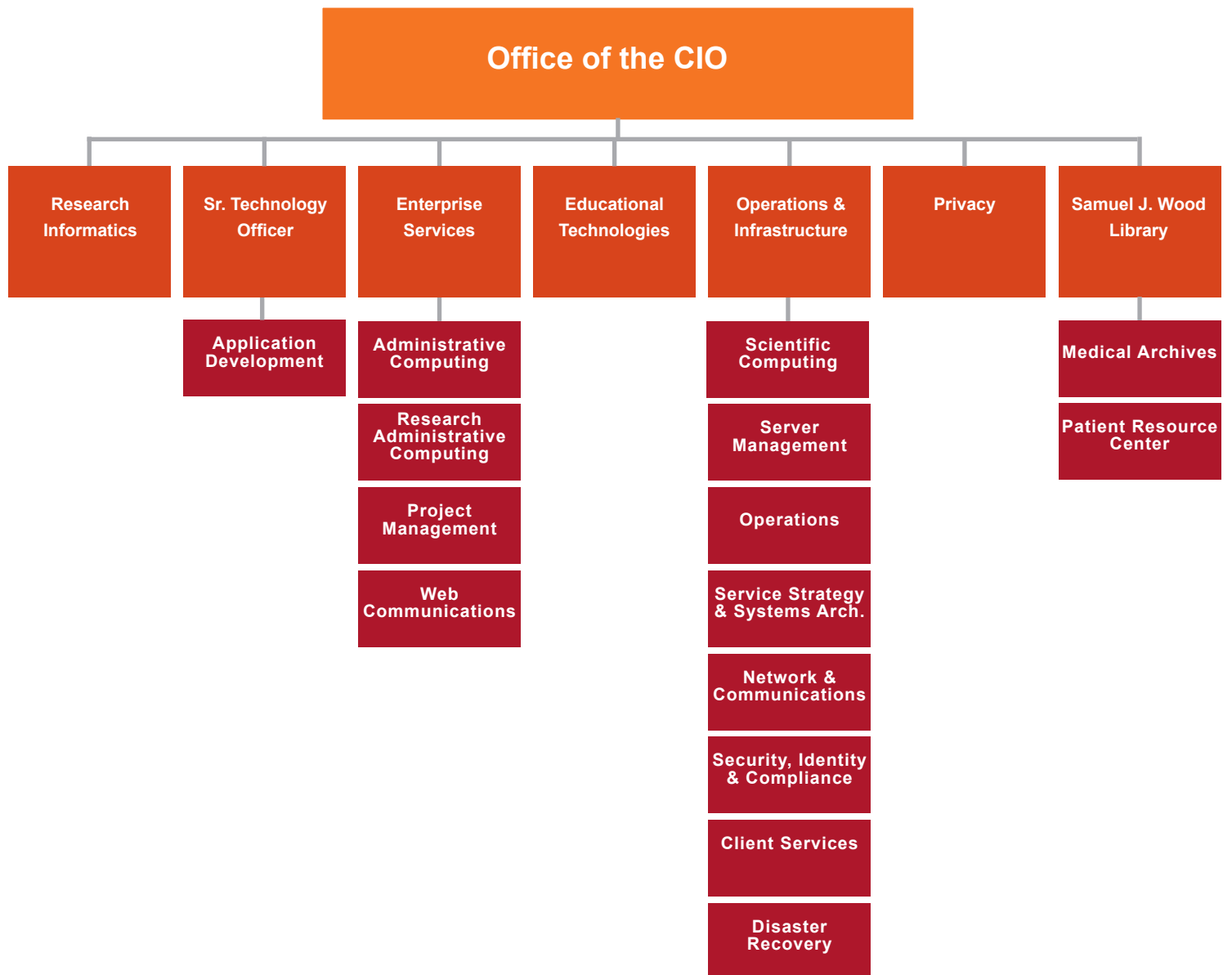
Our highest priority for the coming year will be improving the customer experience across the board. With help from the Business Process Solutions group and scores of helpful focus group and survey participants, we have already identified the key areas for improvement that will guide our priorities in 2017.

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Curtis L. Cole, MD, FACP

Chief Information Officer

# Organizational Structure





# ITS Senior Leadership



CURTIS COLE

CIO



VIPIN KAMATH

Deputy CIO, Enterprise Services



JOSHUA GLUCK

Deputy CIO, Operations



TERRIE WHEELER

Director, Library



VINAY VARUGHEESE

Sr. Technology Officer



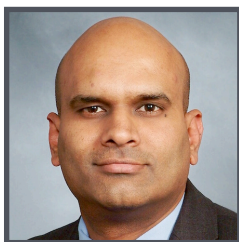
SUSANNA PARTRICK

Privacy Officer



DANIEL SPLITGERBER

Department Administrator



HARISH CHAVA

Director, Administrative Computing



THOMAS CAMPION

Director, Research Informatics



DOUGLAS COHEN

Director, Educational Computing

Associate Directors



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



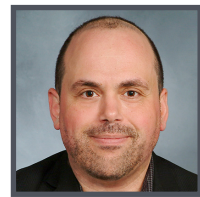
VICTOR FARRELL

Project Management Office



MEGHANA FUTNANI

Business Intelligence



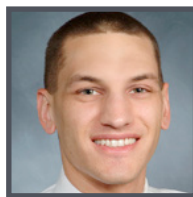
MOHAMMAD MANSOUR

Application Development



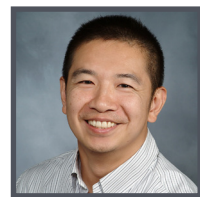
PHILIPPE ORTANEZ

Educational Technology



BRIAN TSCHINKEL

Security, Identity, Business Continuity



JOHN YOUNG

Unified Communications

Assistant Directors

# FY2016 Score Card

Every year, we lay out a series of goals for the coming year. Below, we review how well we did against these goals, then 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 FY16.

## Complete infrastructure upgrades outside of BRB

- Close old data center and open new network services for 575 Lexington
  - ✓ 575 Data Center closed on time with build out of new network closet
- Enable first critical disaster recovery services in Ithaca and enhanced backup and recovery service in NY
  - ✓ Initial disaster recovery infrastructure set up in Ithaca
- Expand the Wi-Fi coverage throughout main campus and convert core SSID to edu roam
  - ✓ Wi-Fi coverage expanded throughout main campus
  - ♦ edu roam launched, but not yet converted to core SSID

## Launch new core research administrative systems

- Go live with new Conflicts (COI) module and start new Human Subjects (eIRB) and Grant Proposal modules
  - ✓ Launched COI in WRG and completed system upgrade. Grant Proposal modules in progress; Human Subjects module to start summer 2017

- Complete rollout of core management system (iLab)

- ✓ iLab now in use for 19 central cores and all new cores as they go live
- ✓ Proof of concept for eBinder of regulatory study binders and subject binders



## edu roam Coverage

*edu roam allows all WCM users to connect to any edu roam institution's Wi-Fi with your credentials. A full list of participating institutions is available at [edu roam.org](http://edu roam.org).*



## New core research administrative systems (cont.)

- Develop new orders and results data flows for Precision Medicine
  - ✓ First clinical genomics results successfully sent to EMR in test environment

## Expand scientific computing services

- Expand user-dedicated support services customized for researchers
  - ✓ Expanded research liaison program
- Create tiered network with dedicated research domains
  - ◆ Research network and zoning in development, but behind schedule
- Activate three new ARCH research repositories, double the de-identified data types available in i2b2, and implement Data Core for HPR
  - ✓ RDRs live for CADC, Anesthesia and in development for Myeloid Biology, and Ophthalmology



## Lumira

*Lumira transforms spreadsheets into graphs and other visualizations to illustrate the trends and meanings of your data.*

- ✓ i2b2 now has 250+ active users with three times the amount of data available since last fall
  - ✓ HPR Data Core pilot completed and moving to rollout department wide
  - Launch free and subsidized services, including WebEx, Adobe Creative Cloud, and shared scientific applications
    - ✓ WebEx, Creative Cloud, Lumira, and LastPass deployed
  - Implement new WBG features using new HANA in-memory architecture
    - ◆ SuccessFactors and Computable Org Structure projects underway with revised timelines
- ### Improve IT services through expanded cloud-based services
- Deploy Office 365 OneDrive, SharePoint, mobile and cloud-based productivity apps
    - ✗ O365 extensions are significantly behind schedule

## Simplify end-user experience when accessing IT services

- Reduce PMO chartering time by a third, new install time by a half, and support services backlog by three quarters
  - ✓ PMO charter time improved by 30%, desktop installs down from a month to less than 2 days (95% success rate), and backlog down from 742 in FY15 to 377 in FY16.

## eTime

The new eTime system will allow users to clock in and out, request leave, and submit their time sheets online in lieu of paper time sheets.

- Expand personalized 1:1 orientation to IT services by offering to 100% of new faculty and high-level staff, plus 50% of existing faculty
  - ✓ 1:1 orientation expanded to existing faculty and accepted by >250
- Expand self-service with more SAP eForms, eTime replacement, myHelpdesk service requests and knowledgebase, and an improved shopping experience in SAP
  - ✓ eForms for travel and payment requisition live in July
  - ◆ etime replacement developed and in pre-pilot testing

- ◆ myHelpdesk service requests live for first internal IT services

- ✗ Knowledgebase is significantly behind schedule

## Consolidate impact of existing educational technologies across all programs

- Create a new Educational Technology Steering Committee to set priorities across programs
  - ✓ ETSC relaunched and working well, chaired by Yoon Kang and David Christini

- Implement new Financial Aid and Graduate School admissions systems

- ◆ New Financial Aid system scheduled for go live this summer

- ✗ New Grad School admissions system went live, but users disliked it

- Complete core AV upgrades and establish a sustainable annual upgrade program

- ✓ AV upgrades completed and upgrade plan established

- ✓ A new service to support departmental conference rooms was launched

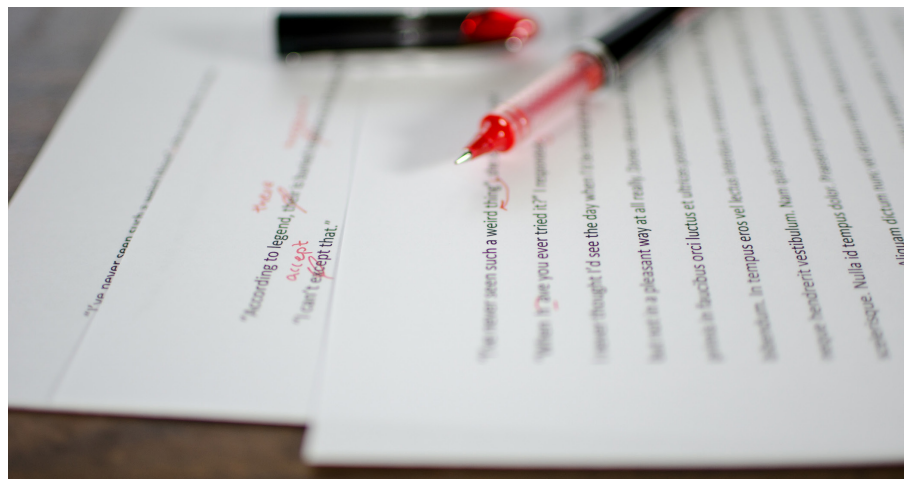
### Overhaul web properties with new WCM brand

- Relaunch weill.cornell.edu and weillcornell.org with new brand
- ✓ New weillcornell.org launched months ahead of schedule with expanded scope, including several new patient engagement features
- Update 90% of existing websites with new brand standards through Drupal conversion over the next two years
- ✓ Multi-year effort to rebrand weill.cornell.edu and upgrade ~100 web properties is on schedule
- Launch new self-service site management for research labs
- ✓ Low-cost, self-service lab distribution released and successfully used by multiple labs

### Expand library services with strategic support for institutional missions

- Develop grant application editing service and clinical librarian internship programs
- ✓ Grant editing service designed and launched for year-long pilot
- ✓ Received grants to support NLM 2nd Year Associate Fellow, as well as NIH funded Informationist

- Create regular bibliometric reporting services for key users, with self-service options, and new VIVO Dashboard
  - ◆ VIVO Dashboard development advanced significantly, but release is behind schedule
- Complete paper back-file review and de-accessioning/digitization to prepare for stacks renovation
  - ◆ >70,000 volumes de-accessioned and replaced with digital backfiles



## Grant Editing

*The library offers editing for researchers who need assistance polishing up their grants. More information is available at [library.weill.cornell.edu](http://library.weill.cornell.edu).*



## Improve internal ITS operating policies & procedures

- Pilot new service management, project cost accounting, divisional training, and employee mentoring programs
  - ✓ Trials of service management, project cost accounting, expanded training programs, and targeting mentoring completed
  - ✓ Department-wide cost accounting also implemented, though additional refinement is still needed
- Upgrade ITS and Library websites with more user-oriented data, services, and reporting
  - ✓ Both sites have launched at [its.weill.cornell.edu](http://its.weill.cornell.edu) and [library.weill.cornell.edu](http://library.weill.cornell.edu)
- Implement efficiency metrics for all divisions
  - ✓ Improvement in use of management metrics in several divisions

## Support key Physician Organization priorities & initiatives

- Support new clinical workflows and regulatory requirements with security infrastructure for e-prescribing of controlled substances and PCI 3.0 compliance
  - ✓ Dual factor and other security tools launched for e-prescribing and PCI 3.0

- Deploy advanced Epic infrastructure tools to enhance security, virtualization, system operations, and business continuity
  - ✓ Continued hardening of Epic infrastructure and preparations for hot site in Ithaca
- Continue supporting growth of PO Physician Network through infrastructure, application, and support services
  - ✓ Added 9 new remote sites for PO Network (49 sites total)



## e-Prescribe

*In March 2016, New York mandated electronic prescriptions, requiring ITS to make updates to our current system with Duo to ensure security.*

## Support other critical departments priorities & initiatives

- Launch multi-year project to implement SAP Budget module
  - ◆ SAP Budget module launched, but behind schedule
- Deliver key SAP features for Qatar supporting Foreign Service Benefits, new hires, and open enrollment
  - ✓ Multiple new services for WCMC-Q delivered, including FSB and open enrollment
- Expand ServiceNow ticket tracking system to Human Resources and Environmental Health and Safety
  - ✓ ServiceNow user portals launched for POIS, HR, and EHS

## Implement improved security/ access policies & procedures

- Implement dual factor authentication and LastPass password management systems
  - ✓ Dual Factor launched for



## Device Encryption

*ITS encrypted more than 17,000 devices this fiscal year, safeguarding data created and transmitted at WCM.*

- e-prescribing and remote access to core services
  - ◆ LastPass released, though adoption has been disappointing
- Complete laptop and desktop encryption programs
  - ✓ Desktop and laptop encryption program completed
- Implement web application firewall, expanded Data Loss Protection (DLP) malware protections, user friendly Network Access Control (NAC), updated penetration test, improved security training and access request processes
  - ✓ Web Application Firewall implemented, expanded DLP, repeated penetration testing
  - ◆ NAC, security training, and revised access request process still in progress

# FY2017 Goals

## New core research administrative systems

- Go live with the InfoEd Human Subjects (eIRB) and Grant Proposal modules.
- Define new clinical trials systems strategy
- Pilot mobile research consent capture and begin biobank system implementation
- Pilot implementation of eBinder for clinical trials regulatory data
- Continue to expand the use of iLab along with the growth of the Core Laboratory Center (CLC)

## Continue rolling out new WCM brand with overhaul of web properties

- Bring 60% of existing WCM websites up to new branding and technical standards
- Publish “Standards and Technical Requirements” for departments using external vendors for services
- Enhance patient engagement on weillcornell.org by implementing additional digital health services, enhancing the breadth and depth of available content, and collaborating with Marketing to support future advertising campaigns
- Rebuild main weill.cornell.edu site
- Review and plan alternative strategy for site-search infrastructure with exit of Google Search Appliance

## Enable basic & translational scientific computing

- Go live with new Genome Information System to send clinical genomic results to EHR
- Expand service portal for researchers
- Expand i2b2 commons to include inpatient data and activate three new ARCH research repositories
- Move HPR Data Core from pilot to production
- Support expansion of CDRN

## Deliver new & improved productivity applications

- Deploy Office 365 OneDrive, SharePoint, and mobile and cloud-based productivity applications
- Survey faculty regarding scientific software needs for free or subsidized purchase
- Implement SuccessFactors recruitment and onboarding software, as well as learning management software, replacing WTMS

## 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
- Complete “computable” organization structure in SAP and expanded directory services, like “yellow pages”



### **Expand Library services with strategic support**

- Complete and evaluate grant application editing pilot
- Go live with Reciter and VIVO Dashboard; write up for academic publication
- Develop collection review program with Ithaca & Qatar to improve user targeting while controlling costs

### **Improve user experience with IT services**

- Create customer experience/service management improvement strategy
- Upgrade Departmental Liaison program with stronger communications, tracking, and 1:1 outreach
- Expand self-service with more eForms, improved eTime, online W2 forms, myHelpdesk service requests and knowledgebase, and better shopping experience in WBG

### **Consolidate impact of existing educational technologies across all programs**

- Implement new technologies to support LCME evaluation and priorities
- Implement new student accounting and Graduate School admissions systems
- Partner with educational administration to “reinstall” Jenzabar, clean data, re-train staff, and develop audit tools to measure best practices

### **Improve internal operating policies & procedures**

- Integrate PMO with Client Services to improve user-facing services and internal project management
- Systematically update Knowledgebase and Problem Management capabilities
- Cut service case backlog by more than half in all divisions

### **Support key Physician Organization initiatives**

- Assist NYP with new EMR selection/program planning
- Define staged Ithaca-based DR program and compare to Epic remote hosting
- Work with POIS to define cost savings and revenue efficiencies in the PO Physician Network through infrastructure, application, and support optimization

### **Support other critical department initiatives**

- Begin work on Budget module
- Deliver key SAP features for Qatar – Recruitment & Onboarding, eTime, Foreign Service Benefits, Research Visibility Dashboard
- Enhance Reporting in WBG, including All-funds Reports and extending Research Visibility Dashboard
- Expand ServiceNow ticket tracking system to additional departments and build foundation for unified administrative “311” portal

### **Implement improved security & access policies**

- Expand dual factor authentication to other services
- Launch laptop tracking and deep encryption programs
- Implement web application firewall, expanded Data Loss Protection (DLP) malware protections, user friendly Network Access Control (NAC), updated penetration test, improved security training and access request processes

# Research Initiatives

ITS launched the Weill Research Gateway (WRG) in November 2015, in collaboration with WCM's research administrative offices. This system is based on InfoEd, the leading software of its kind among peer institutions nationally.

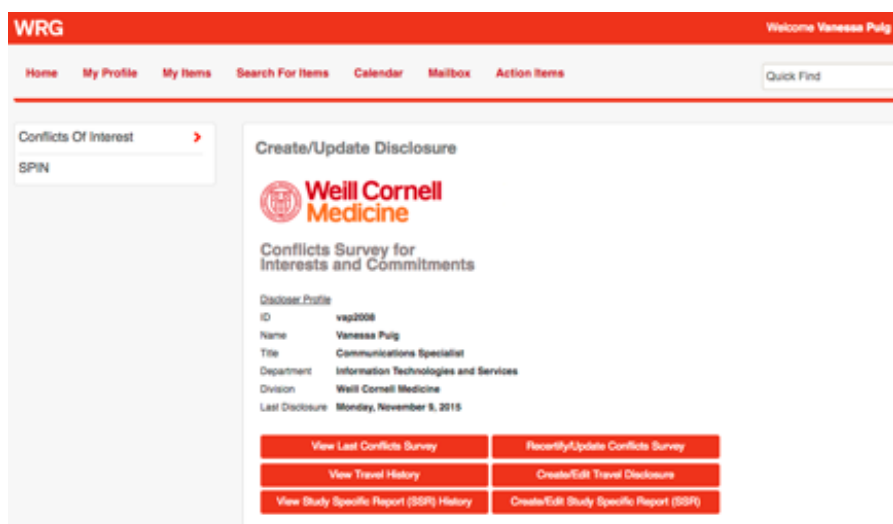
Ultimately, this new portal will consolidate 12 systems that researchers currently use for administrative processes, starting with Conflicts of Interest. All users can now submit potential conflicts of interest for review by the Conflicts office online, as well as travel disclosures and study specific reports (SSRs).

Next year, ITS plans to implement a new Sponsored Programs module in WRG where Principal Investigators can submit proposals in an easy online format. More modules will be added to WRG well into 2018, including a replacement of the existing eIRB with an all new Human Subjects Protection module.

Additionally, ITS continued to promote Informatics for Integrating Biology and the Bedside (i2b2),

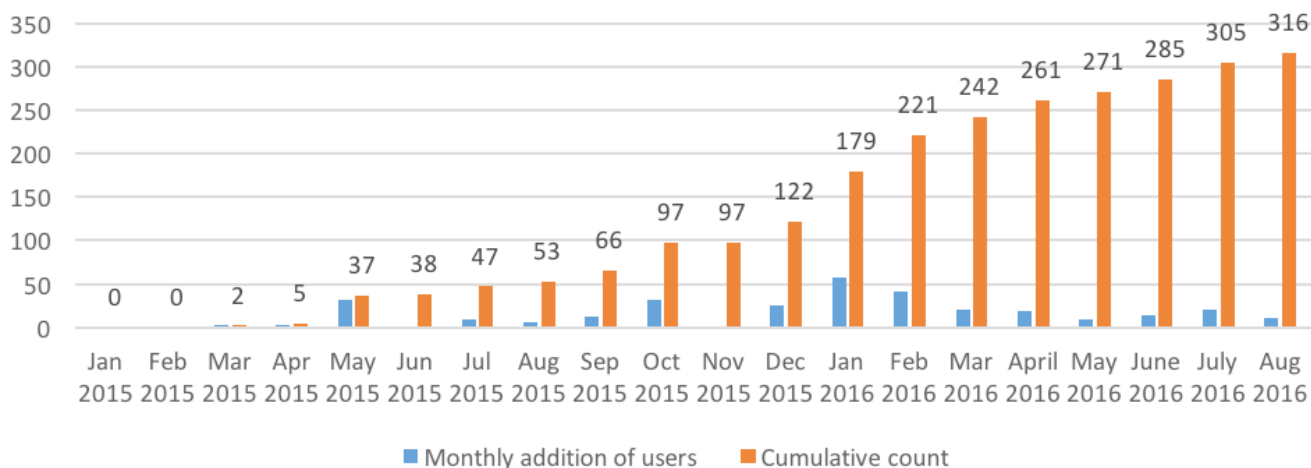
a self-service tool for cohort discovery using de-identified electronic health record data. More users continue to sign up for this service as we have dramatically expanded the amount and types of data available. This fiscal year, we tripled the number of de-identified facts from 500,000 to 1.7 billion. As of May 2016, any WCM investigator can search - without programming knowledge - using diagnoses, lab results, medications, allergies, demographics, encounters, social and family history, procedures, and tumor registry annotations.

ITS has also implemented and supported a number of other tools and enhancements to assist researchers with their work, including SUPER REDCap and Qualtrics survey tools. SUPER



## The New WRG

*WRG ([wrg.weill.cornell.edu](http://wrg.weill.cornell.edu)) provides a streamlined, convenient portal to conduct administrative aspects of research. Currently, Conflicts of Interest resides as a module within WRG; other administrative systems will soon become a part of this portal.*



## i2b2 User Growth

*The number of i2b2 users continues to grow each month. Email [i2b2-support@med.cornell.edu](mailto:i2b2-support@med.cornell.edu) to request access.*

REDCap can now pull data directly from the EHR to populate research case report forms, saving investigators hours of time, while Qualtrics provides access to the industry-standard survey platform with the ability to store protected health information (PHI).

Furthermore, we are testing bleeding edge technology to support electronic consents. This year, we tested a new commercial system that uses an iPad and are currently comparing this to a homegrown system based on REDCap.

To support research using biofluids and tissues, we have written a request for proposal (RFP) for a new biobanking system. Additionally, we have continued supporting specific disease areas with

custom research data repositories (RDRs). One of our proudest efforts is supporting the New York City Clinical Data Research Network (NYC-CDRN), now open for business and accepting queries of electronic patient data from all the major medical centers in NYC.

Finally, ITS built a clinical grade pipeline to support the EXaCT-1 whole exome sequencing test now available for precision-guided care of patients at WCM. With POIS, ITS has begun implementing the first ever Genome Information System from a partner company, Standard Molecular. In our test environment, we have successfully transmitted whole exome data into Epic as structured results. Next year, we hope to become the first center in the nation to accomplish this in a live EHR.

Search Knowledgebase...

The Knowledgebase is currently in BETA.

Welcome to the Precision Medicine Knowledgebase...

The Precision Medicine Knowledgebase (PMKB) is a project of the Institute of Precision Medicine (IPM) at Weill Cornell Medicine.

PMKB is organized to provide information about clinical cancer variants and interpretations in a structured way, as well as allowing users to submit and edit existing entries for continued growth of the knowledgebase. All changes are reviewed by cancer pathologists.

All Articles

Genes	145
Variants	465
Interpretations	315

Browse by Gene

EGFR	PIK3CA	NRAS	IDH1
BRAF	CDKN2A	CTNNB1	ERBB2
KRAS	TP53	KIT	SMAD4
PTEN	MET	APC	HRAS

See all...

Browse by Tumor

Adenocarcinoma	T Lymphoblastic Leukemia/Lymphoma
Acute Myeloid Leukemia	Myeloproliferative Neoplasm
Mvelodvsplastic Svndrome	B Lymphoblastic

## PMKB

The PMKB ([pmkb.weill.cornell.edu](http://pmkb.weill.cornell.edu)) site developed by the Institute of Precision Medicine allows for collaborative editing, maintenance, and sharing of structured clinical-grade cancer mutation interpretations. It provides structured information of variants and interpretations for oncology, and was designed in collaboration with pathologists for accurate and standardized terminology and workflows compatible with clinical use.

### Key Accomplishments

#### Research Informatics

- i2b2
  - Increased the number of users by 10 times to well over 300
  - Tripled the number of de-identified patient facts from 500,000 to 1.7 billion through the addition of allergies, laboratory results, problem list diagnoses, billed procedures, and other clinical data elements
  - Piloted a process for researchers with Institutional Review Board (IRB) approval to request patient identifiers based on de-identified i2b2 queries, resulting in support for 13 studies
- Established monthly updates of i2b2 data and features
- Supported an investigator-initiated pharmaceutical contract through integration of inpatient and outpatient electronic health record data as part of a custom research data repository
- Contributed clinical data to NYC-CDRN—including allergies, laboratory results, and tobacco status—for more than 2 million patients
- Supported three multi-site, investigator-initiated, electronic health record-based studies as part of NYC-CDRN
- Implemented FreezerPro, an electronic biospecimen management system, for the Leukemia Program, improving chain of custody records

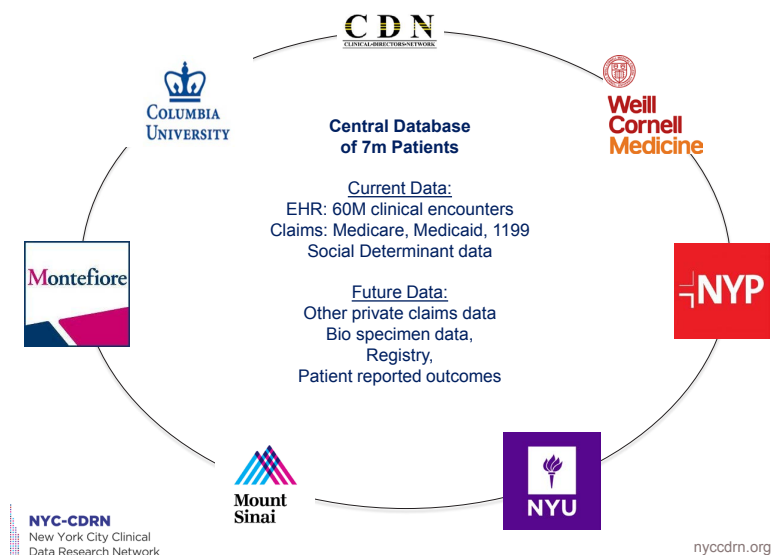
- Supported institutional biobank core efforts through start of a request for proposal (RFP) process as well as a pilot for inventorying existing biospecimens
- Piloted electronic patient consent using REDCap on iPads for two studies
- Participated in successful Precision Medicine Initiative federal grant application to collect consent, specimens, and clinical data
- Trained more than 200 faculty, staff, and students on i2b2, REDCap, and other tools through weekly CTSC ARCH Workshops
- Deployed Healthcare Policy & Research (HPR) Data Core, a secure computing environment for investigators to perform statistical analysis of sensitive data
- Enabled automated sharing of clinical trial enrollment data with NewYork-Presbyterian

### Research Administrative Computing

- Launched the Weill Research Gateway (WRG), a toolset for researchers and research administrators to unify and streamline processes for research funding, compliance, and integrity; Conflicts of Interest was the first module introduced to users

## Clinical Trials

*ITS created a new central repository for advertising clinical trials to study volunteers, in conjunction with the Joint Clinical Trials Office. Open clinical trials are listed at [jcto.weill.cornell.edu](http://jcto.weill.cornell.edu).*



## NYC-CDRN Structure

*The NYC-CDRN will bring together a total of 22 organizations across seven systems to pursue data sharing and patient-centered clinical research.*



- Delivered hundreds of scheduled and ad hoc reports including reporting to assist with multiple National Institutes of Health (NIH) grant applications including the Clinical Translational Science Award (CTSA), several training (T32) grant applications, and the preliminary work toward the National Cancer Institute (NCI) Designation for the Meyer Cancer Center
- Began piloting the eConsent process via REDCap, an iPad-based method for collecting Informed Consent for two clinical trial registries in the Hematology & Medical Oncology group and in the Center for Advanced Digestive Care
- Began configuration and user acceptance testing for the Sponsored Programs modules within WRG to replace several Grants & Contracts related workflows, including the Electronic Routing Form (ERF), submission of Grants.gov Adobe packages, and Coeus – WCM’s internal tracking database for Grants & Contracts

## Research Infrastructure

- Deployed scalable analytical data pipeline and clinical reporting support for the Institute for Precision Medicine. The ICB Pipeline infrastructure, recreated in the BRB data center, consists of one head node and three computing nodes, each running on a respective physical server with 48 CPU cores, 512GB or RAM and 3TB or local disk space. There is also an analytical server with 73TB of network storage.
- Advanced virtualization platform: Docker via a local Docker Trusted Registry (DTR).
- Deployed analytical platform for the Department of Healthcare Policy and Research (HPR). The platform consists of ten virtual machines, each offering a rich statistical software stack: SAS, Stata MP, R, Rstudio, QSR Nvivo, Atlas.ti, and others.

## Lab Websites

*ITS implemented a Research Lab Website Service that provides researchers with a quick, easy, and affordable solution for creating professional-looking websites for their WCM team. Seven lab websites have launched on the service since the fall of 2016, with another 17 in development.*



- Developed tools to internally monitor sequencing tasks on ITS-managed services
- Provisioned research software, including Qiagen IPA (Ingenuity Pathway Analysis), Schrodinger, LaserGene (DNASTar), Prism (Graphpad), Pymol, eMolecules database, GeneSpring (Agilent)
- Hosted training for IPA, Schrodinger, and Pymol
- Provisioned local private cloud provisioning for the Genomics Core automated analytical pipeline
- Provisioned large-scale storage for SleepCenter, Dalio Institute, Citigroup Biomedical Imaging Center, Genomics Core

#### Research Sites

- Successfully setup more than 40 researchers into new office space at the Belfer Research Building

## Sponsored Programs Testing

*Users test and provide feedback on what will become the new Sponsored Programs module in WRG. This module, set to launch in late spring of 2017, will replace Electronic Routing Form (ERF), submission of Grants.gov Adobe packages, CIA, and Coeus – WCM’s internal tracking database for Grants & Contracts.*

#### Weill Business Gateway

- Updated Research Visibility Dashboard in WBG for faculty
- Extended Research Visibility Dashboard to Qatar



## ARCH Workshops

*ITS holds workshops every Thursday on various research tools, including REDCAP, i2b2, EHR reporting, and additional approaches on acquiring patient data. The schedule is available on the Events Calendar at [events.weill.cornell.edu](http://events.weill.cornell.edu).*

### Upcoming Projects for FY17

- Expand inpatient data from Allscripts/Eclipsys available in i2b2
- Add next generation sequence data from the Englander IPM to i2b2 for researchers to query
- Enable investigators to query tumor registry data in i2b2
- Implement three new custom research data repositories, which integrate data from disparate source systems for specific groups of investigators
- Expand SUPER REDCap to include inpatient data from Allscripts/Eclipsys
- Pilot natural language processing (NLP) of unstructured clinical notes from electronic health record systems
- Launch a proof of concept the eBinder software to test the feasibility of electronic study binders to replace research “shadow” and regulatory charts for clinical trials with ten clinical trials in the Lymphoma service within Hematology & Medical Oncology
- Continue to work with the Core Laboratory Center (CLC) to rebrand, merge services, expand laboratory offerings, and launch new Cores in the iLab Solutions tool
- Conduct functionality demonstrations and technical reviews to assess the most suitable Clinical Trial Management System (CTMS) to replace the current Clinical Research Enrollment & Study Tracking (CREST) system
- Launch the Sponsored Programs modules of WRG (Spring 2017)
- Begin work to replace the CSEC tool and eIRB with the Human Subjects module of WRG

# Research

About Us

Events, News & Honors

Funding

Core Facilities

Resources & Tools

Research Administration



- Update features and reports in the Weill Business Gateway:

- Single WBS for Grants
- Conflicts of Interest Reporting and Data Warehousing
- InfoEd Sponsored Programs Reports
- JCTO Leadership Reports
- Qatar Research Reporting

## Research Website

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The [research.weill.cornell.edu](https://research.weill.cornell.edu) site shows activities of the research mission. It provides guidance on research administration topics and a calendar of research community events.

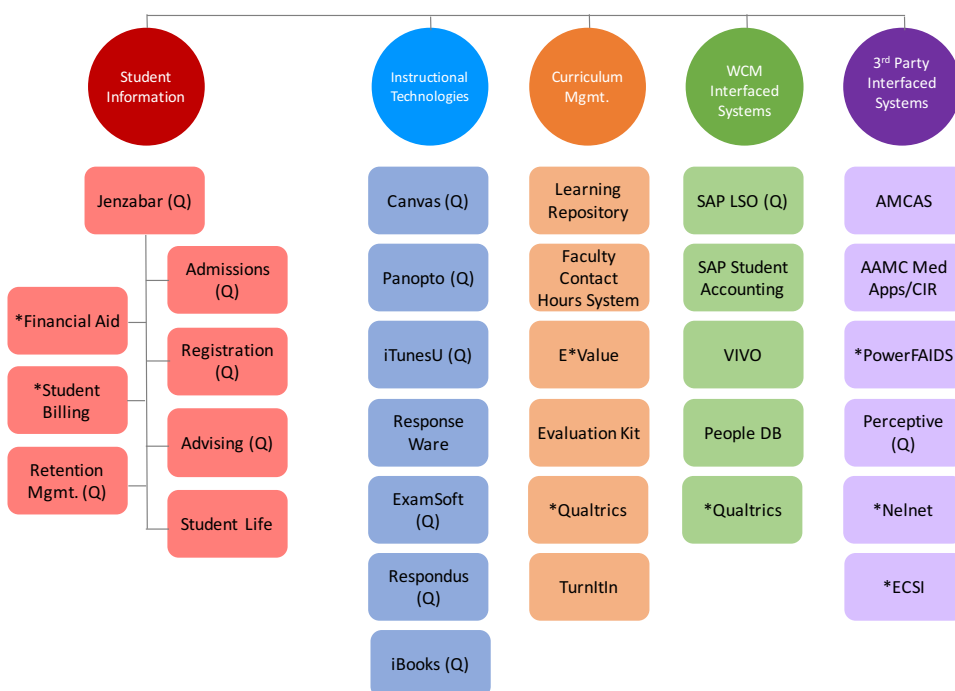
# Education Initiatives

ITS had three major groups of activity this year supporting education; continuing support for the new curriculum, continued improvements to our Student Information System (SIS), also known as Jenzabar, and the usual handful of new systems and services.

Students can now pay for their tuition online in our new Student Billing Portal, as well as request financial aid through the PowerFaid module in SIS. We made improvements to our Canvas learning management interface to make it more user friendly and consistent as students access course content. We also rolled out the EvaluationKit system to our graduate students to provide feedback on their professors and coursework.

As a result of adding so much new technology over the past few years, we ramped up our training for faculty and staff. Tech Tuesdays, our weekly tech

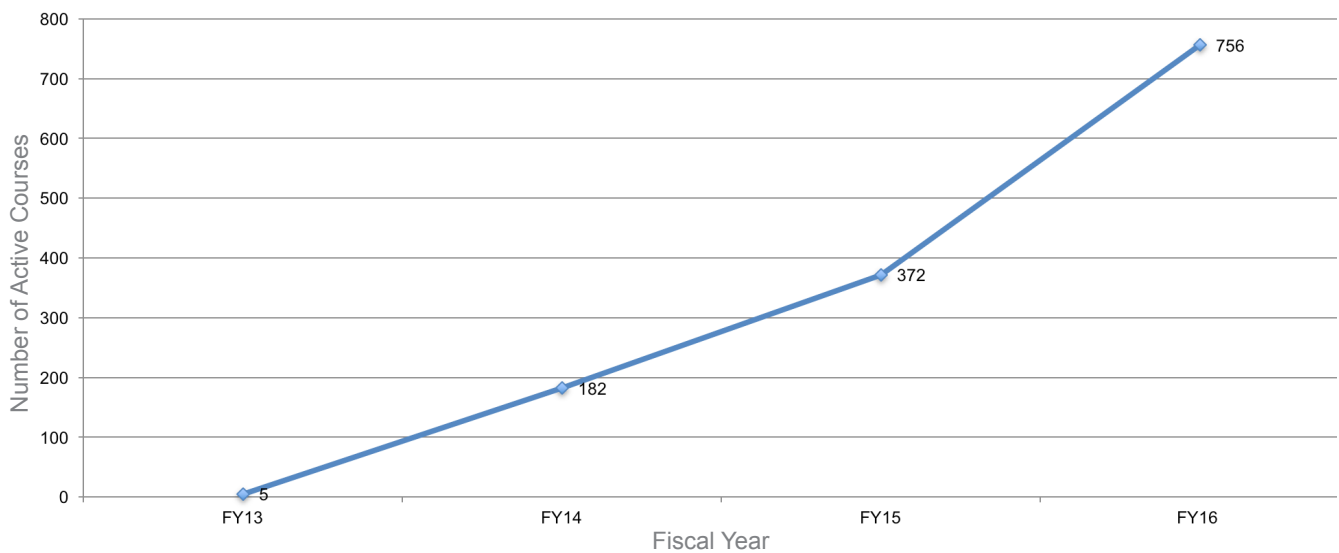
demos, attracted almost 500 attendees this fiscal year. Additionally, our learning specialists trained almost 1,500 users on how to use various services we offer. Lynda.com adoption has grown since its launch in April 2015, with users watching more than 3,000 hours of training videos this year. The ITS training team has also launched a “Traveling Training” program, bringing their expertise on widely-used applications and tools directly to departments for customized, hands-on learning.



## Student Systems

ITS supports a multitude of learning systems, as pictured at left. Systems marked with an asterisk were rolled out in FY16.





## Canvas Usage FY13-FY16

*Canvas usage has jumped significantly since FY13. Aside from student courses, Canvas is heavily utilized for faculty and staff training within WTMS.*

### Key Accomplishments

#### Jenzabar Enhancements

- Financial Aid/PowerFails module rollout
- Student Billing/Accounts Receivable module
- SAP Student Billing integration
- Redesign of learn.weill.cornell.edu portal
- Creation of a Student Administrative Systems data governance workgroup
- Customization of forms within Learn for direct URL linking
- Online electives course catalog

#### Educational assistance for MD, MD/PhD and Graduate students

- Provisioned Student Degree Progress Trees for MD and Physician Assistant students
- Developed MD clerkship videos and course templates
- Distributed iPads for incoming MD and Graduate students
- Built a compliant National Board of Medical Examiners (NBME) Onsite Exam Center
- Created promotional videos for MD Areas of Concentration



- Developed a series of WCM Jenzabar SIS Advisory Forms & Reporting
- Helped implement a pre-matriculation orientation course for incoming MD students to prepare for their first year
- Implemented a new online course evaluation system for Graduate students to provide critical feedback on their coursework
- Implemented UNICAS online admissions system for Graduate students
- Introduced several new WCGS Jenzabar Forms: Laboratory Rotation Agreement (LabRot) Agreement Form; WCGS LabRot Evaluation Form; Annual Evaluation Form; Progression to Degree Form
- Rolled out new, streamlined interface for Canvas to enhance the user experience

## New Canvas Dashboard

The new Canvas ([courses.med.cornell.edu](https://courses.med.cornell.edu)) dashboard includes a Course Navigation menu that collapses on smaller screens, allowing for a more content-focused and responsive layout. The site will be optimized for viewing on mobile devices.

- Improved onboarding of students for the Registrar's and Admission offices via better coordination with our identity management services
- Launched new website for the Weill Cornell Graduate School of Medical Sciences, as well as an overhauled site for WCM alumni
- Integrate E-Cornell rich media content into Canvas
- Deploy student directory reporting for Graduate students
- Implement MD/PhD student Individualized Development Plan using Qualtrics
- Deploy new iMacs in the Education Center



# 480

## Tech Tuesday Attendees

Number of attendees over 37 sessions from May 2015 - June 2016, averaging 13 people per session.



# 1,100

## YouTube Views

Number of views for new ITS YouTube news and tech tips channel from launch date in February 2016 - June 2016.



# 1,451

## Staff Trained

Number of people trained during FY16 in Weill Business Gateway, WebEx, Lync, SharePoint, and other services.

Lynda.com Use	FY16 Q1	FY16 Q2	FY16 Q3	FY16 Q4
Total Users	582	557	566	698
New Users	188	147	134	180
Videos Watched	12,987	8,508	8,279	8,388
Hours Viewed	893	560	738	819
Certificates of Completion	185	105	94	201

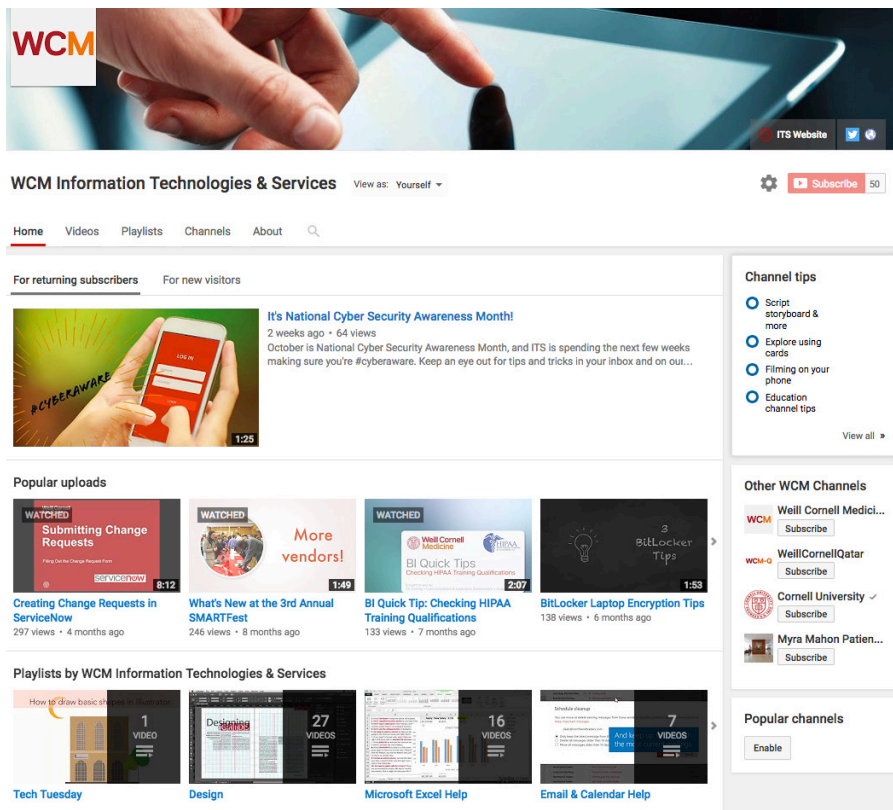
### Upcoming Projects for FY17

#### Liaison Committee on Medical Education (LCME)

- Deploy OASIS Academic Curricular Administrative System
- Deploy Data Collection Instrument (DCI)
- Deploy iSeek Search Tool

#### Jenzabar implementations and enhancements

- Data governance and standardization across all programs
- Server architecture redesign
- Advising module enhancements
- Needs access data integration for Financial Aid
- Student Life module analysis



## Social media

In FY16, ITS launched two new social media channels to better inform our users about initiatives and news. Our YouTube channel hosts a number of training and tip videos, while our Twitter account (@wcmits) provides quick tidbits of news throughout the week.

Links to our social media sites are available at the bottom of the ITS website ([its.weill.cornell.edu](http://its.weill.cornell.edu)).

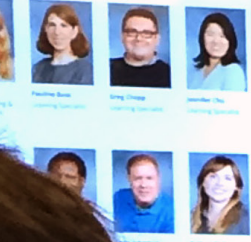
- Alumni module analysis
- Federated authentication for Online Learning Portal
- Integration with Official Transcript Request System analysis
- Deliver Traveling Training sessions onsite to various departments to make it more convenient for departments to learn ITS-supported tools
- Continue promoting and enhancing social media

### Upcoming Faculty & Staff Training

- Begin implementation of new Success Factors learning management system to replace current WTMS
- Record Tech Tuesdays to reach more users

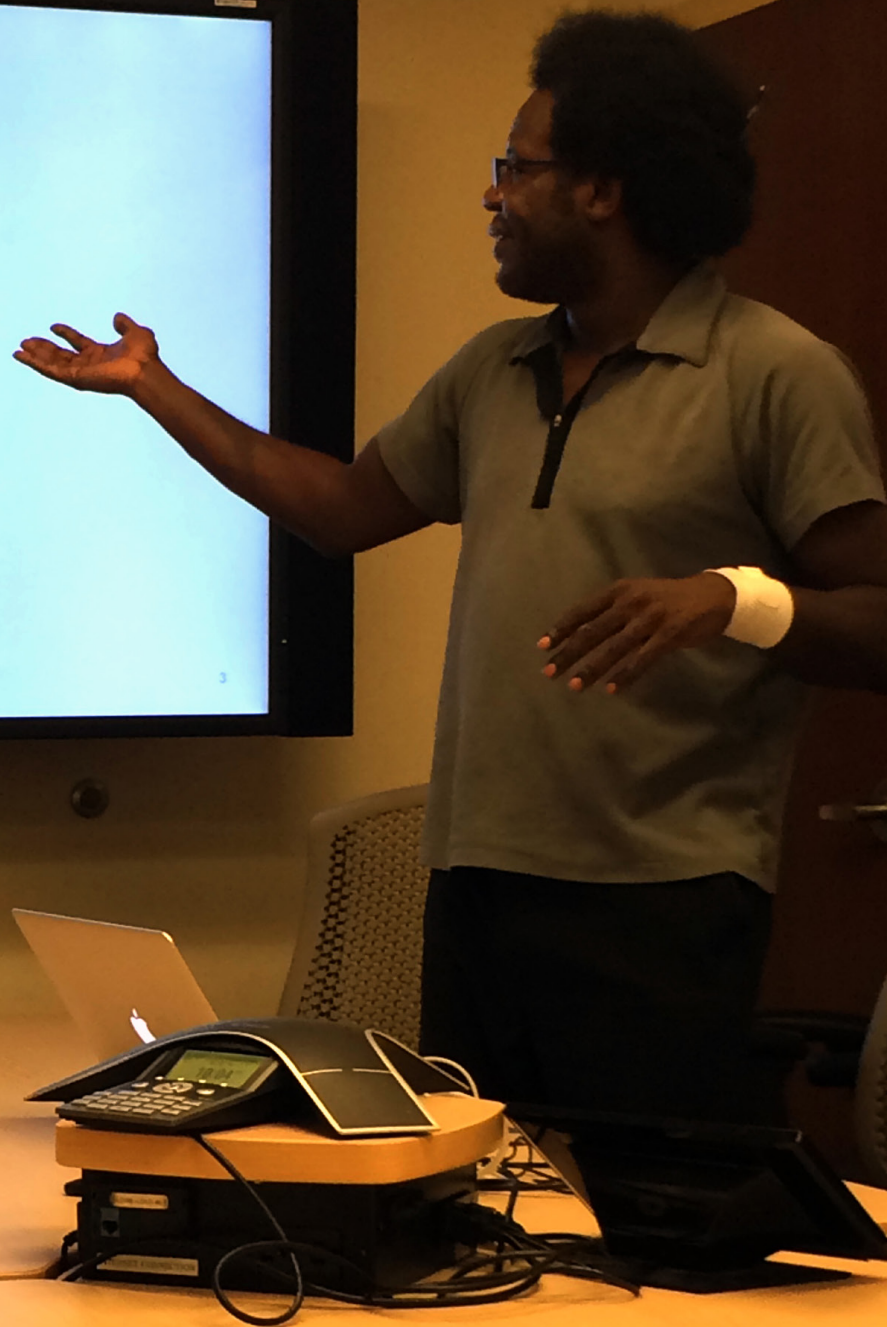


## Training & Communications



Our Traveling Training Program, which launched at the end of FY16, was created to replace our previous Coaching Lab, held at a fixed time in the library and at 575 Lexington. In order to reach even more users, the Coaching Lab was repurposed to bring training to various WCM offices. Traveling Training has seen much success, with many departments opting for regular training sessions at their locations.

Training can be requested at [its-training@med.cornell.edu](mailto:its-training@med.cornell.edu).





# Clinical Initiatives

Our Epic EHR is constantly improving to support high-quality patient care, touching almost all points in the outpatient workflows, including registration, scheduling, orders, documentation, results review, and billing.

This year, we upgraded the infrastructure to improve speed and add new features. We also implemented a real-time replication of our Epic databases at Cornell Ithaca. In the event of a major incident, such as a natural disaster, these databases can be enabled in minutes and provide backup support in New York City.

ITS also added secure solutions for using mobile devices for clinical purposes, and expanded our Weill Cornell Physicians network to new sites. We also created a Patient Engagement Team with POIS to focus specifically on patient care web services, such as weillcornell.org and adjacent services that impact marketing and delivery of care to our patients over the web.

The screenshot shows the Weill Cornell Medicine website. At the top left is the Weill Cornell Medicine logo. To its right are navigation links: Events, News, Giving, Careers, Contact Us. Further right are two buttons: 'Find A Physician' and 'Patient Portal'. Below this is a large orange banner with the text 'Patient Care'. Underneath the banner are four sub-sections: 'Clinical Services', 'Health Resources', 'Referring Physicians', and 'About Us'. Below these is a headline: 'We are Weill Cornell Medicine.' followed by a paragraph: 'People are the heart and soul of our institution. Our faculty and staff — physicians, scientists and administrators — strive every day to provide the best patient care and to discover innovative cures and treatments. Learn more about our physicians, the conditions we treat and how our collaborative, patient-centered approach inspires us each day to improve the lives of those we treat. #WeAreWCM'. At the bottom of the screenshot is a photograph of a man looking through a microscope. Below the photo is a caption: '#WeAreWCM: Dr. Olivier Elemento' and 'Computational biologist Dr. Olivier Elemento harnesses the power of microscopes and computers to spot patterns and trends in cancer that could help doctors treat the disease — and perhaps even find a cure.'

## WeillCornell.org

The *weillcornell.org* site was overhauled to comply with our new brand and provide better information and services to site visitors.

## Patient Engagement

### Weill Cornell Connect

#### Your secure, online health connection

Your health is important to you around the clock—not just during office hours. That's why Weill Cornell Medical College offers Weill Cornell CONNECT. With this Internet connection to your doctor's office, you can request appointments, request prescription refills, review your health history, view and pay your medical bills, and more—online, any time!

#### Available for download on your mobile device

Apple Store



Google Play



#### Urgent Medical Matters

Please do **not** use Weill Cornell CONNECT to send any messages requiring urgent attention. For urgent medical matters, contact your doctor's office by phone or call 911.

#### NY State Prescription Changes

As of March 27, 2016, New York State Law requires your doctor to send all prescriptions to your pharmacy electronically. Prescriptions can no longer be handwritten or called in to your pharmacy, except in limited circumstances. At your next visit you will be asked to provide a preferred pharmacy. Click [here](#) for more information.



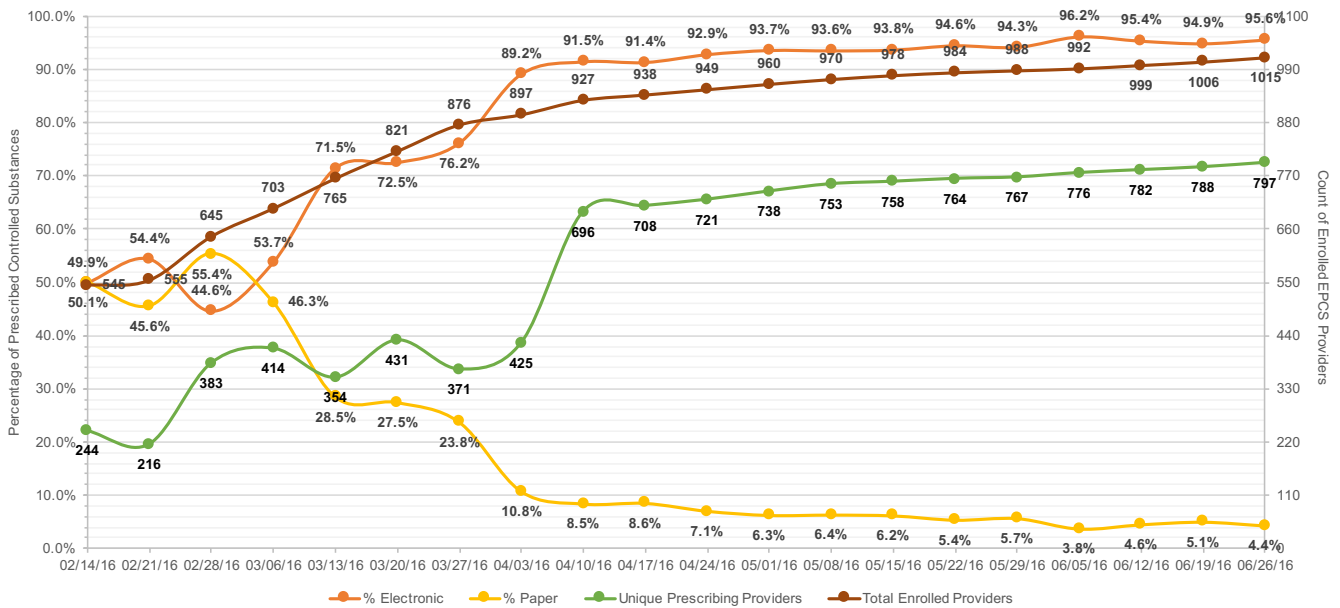
#### Manage your appointments

Schedule your next appointment, or view details of your past and upcoming appointments

*The Patient Engagement Team, a joint initiative between ITS and POIS, was created to focus specifically on patient care web services. The team analyzes how we can best provide patients the information they need to learn about our services and seek treatment.*

### Key Accomplishments

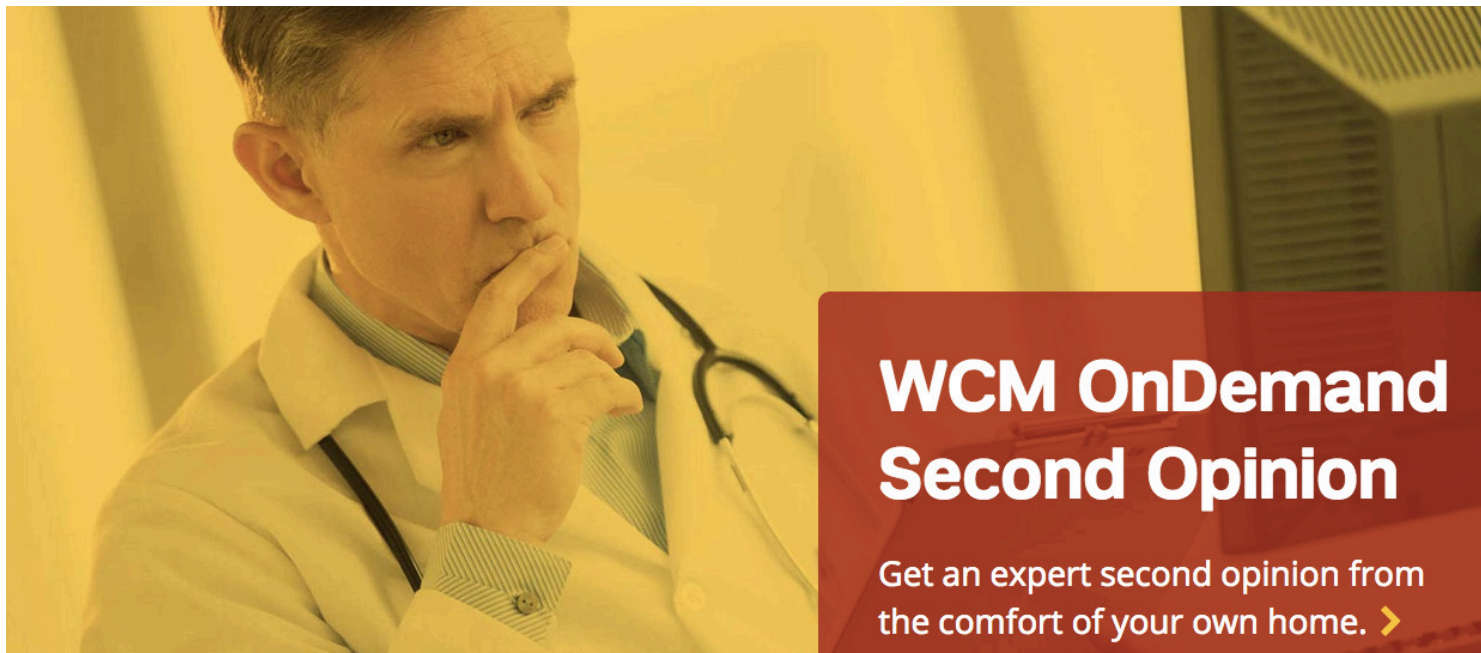
- Upgraded our Epic infrastructure and software to Epic 2015
- Improved system continuity by deploying real-time replication of Epic databases to our co-location data center site at Cornell Ithaca
- Supported additional Epic growth:
  - Citrix sessions increased 14% from 2,950 to 3,350
  - Peak Workflow increased 15% from 760,000 to 872,000
- Total BLOB storage increased 29% from 16.6TB to 21.51TB. BLOB storage (aka object storage) is a service that holds unstructured data, like images, outside the main database.
- In conjunction with POIS, implemented the ability for practitioners to electronically prescribe controlled substances within Epic
- New clinical websites were launched for the Jill Roberts Center for Inflammatory Bowel Disease, the Division of Geriatrics and Palliative Care, the Center for Male Reproductive Medicine & Microsurgery, and the HeartHealth program



## e-Prescribe Use Growing

*With the launch of e-prescribe in Epic, the number of e-prescriptions given by WCM providers has increased, while traditional paper prescriptions have decreased significantly.*

- Upgraded weillcornell.org throughout the year, including:
  - An all-new site design using the new Weill Cornell Medicine brand
  - New data structures for the three core types of site content (Providers, Practices, and Clinical Services)
  - Expanded online appointment scheduling to new patients
  - Added voluntary faculty profiles
  - Launch of digital “Second Opinion” services through Grand Rounds
- Expanded Weill Cornell Physicians network to five new sites
- Introduced “locked” iPods for Department of Dermatology, creating a secure solution to capture patient images directly to Epic
- Implemented mobile device management VPN iPad solution with NYP for students and faculty to access services while off campus
- Integrated ITS liaisons into six departmental meetings to provide better communication and support for our users



## WCM OnDemand Second Opinion

Get an expert second opinion from  
the comfort of your own home. >

### Upcoming Projects for FY17

- Assist key leaders at NYP with the selection of a new EMR and program planning
- Continue to expand business-defined resiliency of Epic by offering full access and functionality from Ithaca data center for better system reliability
- Assist in Identifying cost savings and revenue efficiencies in the PO Physician Network

### WCM Second Opinion

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*Available at [weillcornell.org](http://weillcornell.org), the OnDemand Second Opinion service allows patients to request and receive an informed opinion on a recent diagnosis from WCM experts, in collaboration with NYP. All of this can be done online for the patient's convenience.*

# Samuel J. Wood Library

The Samuel J. Wood Library made great strides this year in its mission of promoting excellence in health through access to information. We kicked off a year-long pilot grant editing program focused on supporting junior faculty applying for government and private foundation grants.

We also launched a new Clinical and Translational Science Center (CTSC) Information Service comprised of a Research Impact and Evaluation Informationist, who is dedicated to supporting researchers in data management. The 3rd Annual SMARTFest, WCM's keystone event for showcasing library and ITS services, was a tremendous success. The event attracted over a thousand visitors, nearly doubling last year's attendance, saw a two-fold increase in the number of vendors, and drew \$13,500 in sponsorship funds, up from under \$2,000 in FY15.

## Key Accomplishments

- Expanded Clinical Medical Librarianship program at NYP. Clinical Librarians attend morning reports to provide evidence-based literature relevant to current clinical cases, and help physicians integrate mobile information tools into their clinical workflows.
- New Library and Archives website launched in the fall of 2016



## SMARTFest

*SMARTFest attendees visit the ARCH booth to learn about services available for research computing assistance.*

Event Statistics	2016	2015
Number of Vendors	16	7
Number of Visitors	1,118	610
Number of Exhibition Booths	21	16
Sponsorship Dollars	\$13,500	<\$2,000



- 22 systematic review requests (increased by 57% in FY16). Supported in the publication of four articles:
  - Brenner SK, Kaushal R, Grinspan Z, Joyce C, Kim I, Allard RJ, **Delgado D**, Abramson EI. *Effects of health information technology on patient outcomes: a systematic review*. J AM Med Inform Assoc. 2015 Nov 13. [Epub ahead of print]PMID: 2656807.
  - Gupta A, Giambrone AE, Gialdini G, Finn C, **Delgado D**, Gutierrez J, Wright C, Beiser AS, Seshadri S, Pandya A, Kamel H. *Silent Brain Infarction and Risk of Future Stroke: A Systematic Review and Meta-Analysis*. Stroke. 2016 Mar;47(3):719-25. PMID:26888534.
  - Levine MV, Cuendet MA, Khelashvili G, Weinstein H, Allosteric. *Mechanisms of Molecular Machines at the Membrane: Transport by Sodium-Coupled Symporters*. Chem Rev.2016 Jun;8116(11):6552-87. PMID: 26892914. **Terrie Wheeler** acknowledged.
  - Riddle MS, DuPont HL, Connor BA. *ACG Clinical Guideline: Diagnosis, Treatment, and Prevention of Acute Diarrheal Infections in Adults*. Am J Gastroenterol. 2016 Apr 12. [Epub ahead of print] PMID: 27068718. **Kevin Pain** acknowledged.



**47,438**  
**e-Books**

This number increased from 18,272 in FY13. Our e-Journals also grew to 17,266 from over 12,000 in FY13, thanks to the purchase of SpringerLink archives.



**3,679**  
**Patron Transactions**

Reference or education transactions take an average of 23 minutes; 929 of these transactions were electronic.



**85**  
**Education Sessions**

Thirty-six of these sessions were part of the student curriculum, and 19 were evidence-based medicine-related.



## Myra Mahon Patient Resource Center

*The Myra Mahon Patient Resource Center hosted 7,664 visitors to provide accurate, science-based health information so patients can make informed decisions about their care. The PRC also answered 695 consumer health questions (up from 239 two years ago), assisted 106 patients with WeillConnect, hosted four National Library of Medicine traveling exhibitions, and received 9,149 hits on its YouTube channel, which archives medical talks. More info at [prc.weill.cornell.edu](http://prc.weill.cornell.edu).*

- With a generous donation from the Weill Cornell Medical Center Alumni Council (CAC), we procured an 84" Surface Hub in the Library Commons. The touchscreen will be used for Tech Tuesday demos and to showcase interactive web-based medical programs.
- New Research Impact and Evaluation Informationist is a member of the CTSC Navigator Team dedicated to supporting researchers in data curation, storage, retrieval and use, raising awareness of institutional data policies, and providing guidance in creating data management plans
- Organized a new Data Curation Service to support the Department of Healthcare Policy and Research's (HPR) Data Core
- Initiated alpha testing of ReCiter, a new author disambiguation tool
- Edited 14 applications for pilot grant editing service, which supports junior faculty applying for government and private foundation grants

### Collections

- Collaborated with Ithaca to evaluate electronic journal and database collections for low-use titles to eliminate within current license agreements
- Obtained quotes for future purchase of backfiles for electronic journals



### Medical Center Archives

- Assisted 447 patrons with 437 reference questions
- Led 5 tours/presentations for 124 attendees
- 52 medical librarians from mid-Atlantic region attended a “Boost Box” learning session presented by Lisa Mix
- Hosted 3 Heberden Society lectures

### Medical Center Archives

*The Medical Center Archives collect, organize and preserve the records of NewYork-Presbyterian Hospital and Weill Cornell Medicine, as well as affiliated and predecessor institutions. These materials are available to students, faculty, staff and the public. Images, like this photo of CPR training in 1972 from the Division of Cardiology, are available in an online archive available at [library.weill.cornell.edu](http://library.weill.cornell.edu).*

## Successful Grant Applications

- \$2,400 from METRO for Consumer Health
- \$5,950 for Medical Information Services Program
- \$7,400 for collection development
- \$25,000 from National Institutes of Health to support data informationist

## VIVO

- Completed alpha testing for VIVO Dashboard, including Citation Lookup and Research Impact extension
- Set up a regular feed from the WCM Directory that imports headshot, email, preferred name, phone, location, and preferred title
- Drafted a workflow for creating VIVO profiles for PhD students

## Surface Hub

*The Library's new 84" Surface Hub, installed in the Commons area, will be utilized for various presentations. Its touch screen capabilities make it an ideal tool for interactive web-based medical programs, as well as Tech Tuesday demonstrations. Additionally, when not in use, the Hub will be used for important Library and ITS announcements.*





## Graduate Medical Education

*The Library designs and curates specialized content geared towards the needs of resident education.*

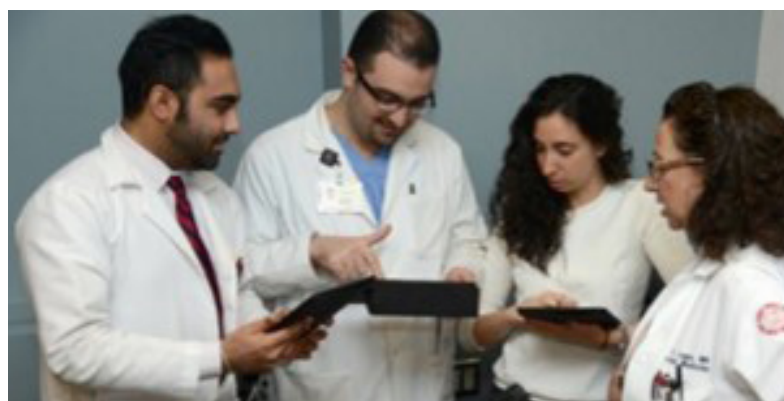
*Our Clinical Medical Library Internship Program is preparing a new generation of librarians to meet the needs of clinicians and healthcare consumers.*

### Duplicating

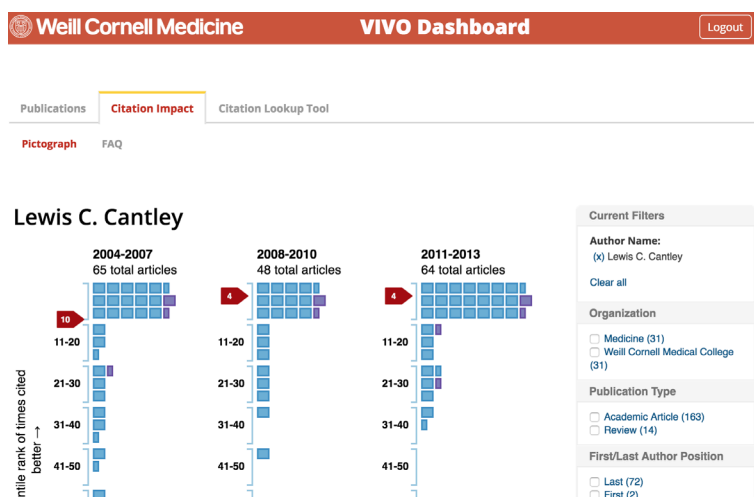
- Produced over 1 million black and white photocopies and 500,000+ color copies; printed 832 posters
- Bound over 4,000 books and reports for college departments
- Delivered a revenue surplus of \$95,000

### Upcoming Projects for FY17

- Implement bioinformatics support service
- Implement consumer health information to hospital bedsides for Pediatrics and Burn Center
- Implement content review and evaluation service
- Introduce EZproxy service simplifying users' access to library resources from off campus
- Launch production version of ReCiter
- Complete grant editing pilot and evaluation



- Survey research faculty regarding scientific software and database resource needs
- Provide assistance with scholarly publishing, such as case reports and medical student publications



## Citation Impact Tool

*This tool assesses individual and departmental research impact. This interactive web application graphs percentile rank of citations relative to comparable peer publications.*



# New Services & Tools

ITS launched dozens of new services and tools this year to assist users with their work at WCM. Among our most requested new services was Adobe Creative Cloud, a suite of tools for graphic design, video editing, animation, web development, and photography.

Users attended our Tech Tuesdays on Creative Cloud applications in record numbers, learning how to utilize Adobe applications to do everything from publish professional-looking research papers to manipulate medical images in 3D. Since its launch, we have provisioned Creative Cloud access to approximately 560 users, with requests coming in almost daily.

Other notable tools and services we introduced this past year include the Qualtrics and SUPER REDCap survey tools for researchers. Additionally, to

address increasing security needs, we are providing LastPass, a password management tool, for free, and launched Duo authentication to speed up required dual-factor logins from off campus.

Our largest new system is the Weill Research Gateway (WRG), which will host major new features in the years to come, including our first-ever protocol development system, a new Human Subjects Protection system (eIRB), and a grant management system (more in the “Research Initiatives” section).

## New ITS website

*The new ITS website includes improved search capabilities, a dashboard displaying the status of major services, a directory to search for services by your role at WCM, and more. The site is accessible at [its.weill.cornell.edu](http://its.weill.cornell.edu).*

**Weill Cornell Medicine**  
Information Technologies & Services

Get Help   How-To   News and Alerts   Services   Security and Privacy   Policies   About Us

**Need Support?** Open a ticket (212) 746-4878 SMARTDesk

**Featured News**  
See all news

**October is National Cyber Security Awareness Month**  
ITS is kicking off October by promoting National Cyber Security Awareness Month! Throughout the month, we'll be providing helpful tips on how you [...cont'd]

**More Featured News**

- It's a dangerous business going out your door, so protect your devices
- Does something seem phishy? Send it to ITS
- Is your password "12345" or "dragon"? Let's talk.
- Even Betty White knows about multi-factor authentication
- Tech Tuesday October Schedule – R Studio, EndNote, Duo & LastPass

**Status**

- Broadcast Email Good
- EpicCare (EMR) Good
- Office 365 Email/Calendar Good
- Phones Good
- WBG Reporting Good
- Weill Business Gateway Good
- Wired Connectivity Good
- Wireless Good

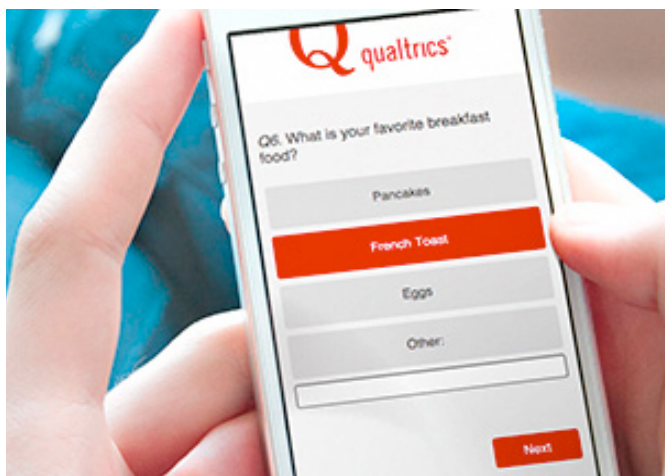
See all Alerts

**Browse Services for...**

- Administrators
- Faculty
- IT Professionals
- Researchers
- Staff
- Students
- Visitors

The Wood Library began offering a grant editing service which has already proved very popular. This program is funded for one year and will be evaluated when funding concludes to determine if it should continue.

ITS continues to add support for the latest devices and operating systems after rigorous testing from our Quality Assurance team. Information on our services is readily available on our new website, where it is now easier to find audience-specific service information, how-to guides, and much more.



## Qualtrics

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Our new Qualtrics ([survey.med.cornell.edu](https://survey.med.cornell.edu)) survey tool has been used for over 750 surveys and has collected over 17,000 responses to date.


In the upcoming year, ITS is looking forward to releasing more new services, including Box for unlimited online storage, RedCloud Secure for storing and processing large amounts of research data, and our Research Informationist service, which provides one-on-one consulting on data collection and management.

ITS is also replacing our current time management solution. The current vendor eTime system has been completely rewritten by ITS to be more user-friendly and offer better features for supervisors and their staff to clock in and out electronically, submit time sheets online, and request and manage leave. The system is piloting in select departments now, and will eventually be introduced to the entire college.

Finally, an all-new Weill Training Management System (WTMS) is also planned. The current system will be replaced by a new product from SuccessFactors, which will also replace the Taleo recruitment system and the EZEval staff evaluation system. This software is considered best in class and should help dramatically improve the experience of hiring and onboarding new employees.

For immediate assistance, please call (646) 962-WCHR (9247).

-  **Create an HR Case**  
Submit an HR form, ask a question, or make a request
-  **HR Case Status**  
Check the status of your submitted HR cases
-  **HR Forms**  
Download forms from the HR Intranet

 [hrsc@med.cornell.edu](mailto:hrsc@med.cornell.edu)

 (646) 962-WCHR (9247)

## Key Accomplishments

- Launched new ITS website at [its.weill.cornell.edu](http://its.weill.cornell.edu)
- Launched the Weill Research Gateway (WRG) for research administration (more in the “Research Initiatives” section)
- Distributed licenses for Adobe Creative Cloud and Acrobat Pro to eligible users
- Launched Qualtrics and SUPER REDCap for creating and administering surveys for research (more at [survey.med.cornell.edu](http://survey.med.cornell.edu))
- Introduced Duo Dual-Factor Authentication to meet rising security requirements
- Rolled out LastPass for free to all ITS users. LastPass is a secure cloud-based password manager that makes it easier to maintain different, strong passwords for every service
- Introduced the new HR Solution Center, an online portal to submit HR-related issues similar to myHelpdesk and the myEHS service portal
- Developed new process for testing latest Mac and Windows operating systems for quicker onboarding upon completion of testing and approval
- Implemented new Apple device enrollment methods to streamline setup of Apple iOS devices and central distribution of iOS applications for residency programs and Education Center computing
- Improved process for provisioning of new passwords
- Implemented Twitter and YouTube for broader communication and outreach to users to supplement email (more in “Education Initiatives” section)

## HR Solution Center

The HR Solution Center ([hrsc.weill.cornell.edu](http://hrsc.weill.cornell.edu)) allows WCM users to submit HR cases online, track them, and download important forms. ITS also created the myEHS portal ([myehs.weill.cornell.edu](http://myehs.weill.cornell.edu)) to submit issues to Environmental Health & Safety.

you use – and you can keep it if you ever leave Cornell.

## Upcoming Projects for FY17

- New InfoEd Grant Management and Human Subjects systems (eIRB)
- New SuccessFactors replacement for EZEval staff evaluation system, Taleo recruitment system, and WTMS Learning Management System
- New UNICAS graduate school admissions system (see “Education Initiatives” section)
- New OASIS education reporting system (see “Education Initiatives” section)
- New SAP Budget module
- New ITS developed eTime system replacing old Kronos system
- Launch Windows 10 as the standard operating system for Windows machines
- Introduce Box cloud storage
- Introduce RedCloud Secure for storing large amounts of data for research
- Introduce Research Informationist service, a consultation service for researchers who require assistance developing data collection and management plans
- New research software services to be determined by a faculty survey



## Box Cloud Storage

*Box will provide all faculty, staff, and students free storage for their important documents and files in a secure cloud environment. Users will have access to unlimited space and will be able to share and collaborate online with their WCM colleagues.*

# System Enhancements

ITS continually analyzes and evaluates our existing systems to determine the best ways to improve performance and optimize end-user experience. Our teams release myriad updates throughout the year across a spectrum of systems.

These updates can include any enhancements, from adding reports, to simplifying user interfaces, to adding new or better automated workflows, or whole new modules – all with the common goal of transforming tedious manual work into efficient automated online processes. Changes are made bit by bit, leading to improved systems over time.

Earlier this year, we launched eForms in conjunction with Finance to further reduce the use of paper forms. Two financial forms – Payment Requisitions and Travel & Expense Reimbursement

– were converted to electronic forms in the Weill Business Gateway, which interfaces directly with our finance systems. The eForms application allows users to track whether their requests are approved or rejected, as well as the status of their reimbursements from the cashier's office. Additional eForms will be launched in the coming year.

We also continued to test the resiliency of our systems with disaster recovery checks, ensuring that our major systems remain up and running in the event of a major unplanned outage.



## eForms

*eForms allow you to submit your receipts, invoices, and expenditures electronically in the Weill Business Gateway, where they are reviewed by supervisors and Finance. Once approved, Finance will issue a check to the location you select online. Currently, eForms are available for Payment Requisitions and Travel & Expense Reimbursements, with more categories on the way.*



Designing more intuitive interfaces for our business applications to improve usability was another priority. Projects this year included the Weill Research Gateway, replacing eTime, SuccessFactors, and an updated myApps application.

interface. SuccessFactors will replace and enhance multiple services, including recruitment, new employee onboarding, and training.

eTime is currently in pilot and will eventually replace all paper timesheets at the college with an online



**99.5%**

**WBG Uptime**

Percentage of time WBG was available this year without unplanned downtime.



**7,000**

**ESS Users**

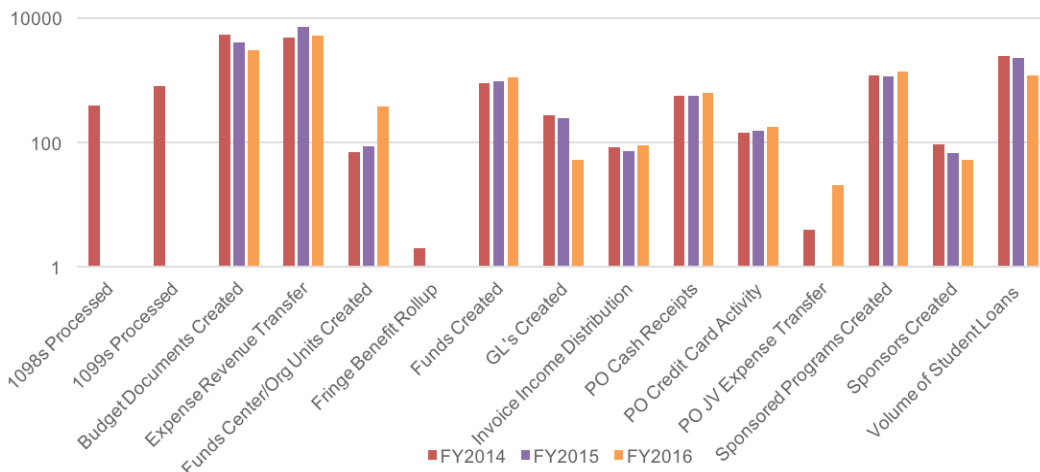
Approximate number of Employee Self-Service users who access paystubs, benefits, and other employee info.



**65,000**

**Purchase Orders**

Approximate number of purchase orders created in WBG for various supplies and items available in the system.



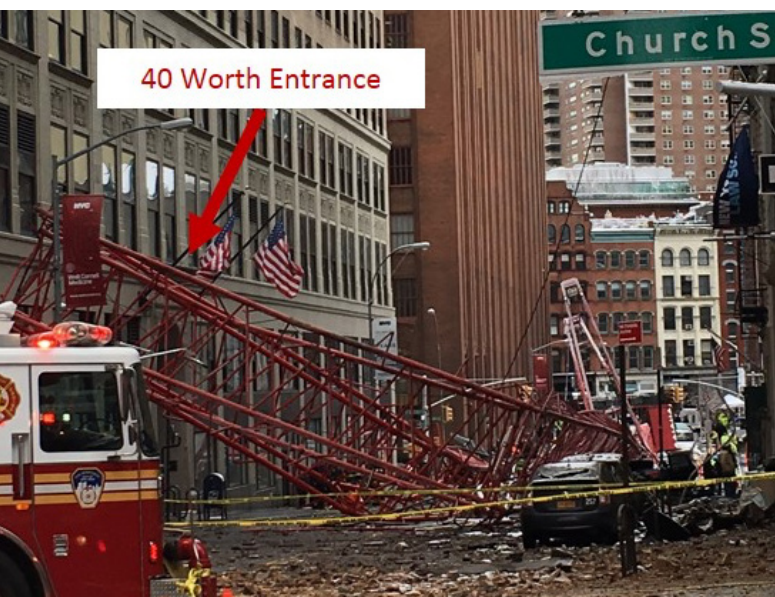
**Transactions**

*WBG automates hundreds of thousands of transactions a year.*

## Key Accomplishments

### Weill Business Gateway

- Launched eForms for AP Payment Requisition and Travel & Expense Reimbursement
- Upgraded to SciQuest version 16.1
- Rolled out Medical Service Agreement (MSA) Billing Module to the departments
- Upgraded to POIS Business Objects 4.1
- Supported Annual Open Enrollment in Employee Self-Service (ESS) in NYC and Qatar
- IRS Report - Employer Health Coverage Information
- Qatar ESS-New Hire
- Upgraded eFax Application
- Cleaned up Human Capital Management (HCM) data, standardizing employee names and work addresses
- Rolled out WCMC-Q Foreign Service Benefits Allocation
- Implemented Weill Training Management System (WTMS) for Environmental Health & Safety, allowing users to enroll into online and classroom training on subjects such as fire safety
- Developed registration and authentication solution for non-employees to log into WTMS
- Optimized SAP Business Warehouse post-HANA migration



## Avoiding Outages

*Even with careful planning, unexpected events, like the crane collapse at left, are inevitable. Our Disaster Recovery team has put systems in place to recover services as quickly as possible when outages do occur. Currently, 14 major components of our infrastructure are self-healing, and 26 business services can be recovered in less than one day.*

- Performed in-depth analysis and definition of organizational structure for 22 departments
- Executed yearly upgrade of SAP

### System Reliability

- Successfully performed disaster recovery tests confirming reliability of our Epic, email, and SAP (used to run Weill Business Gateway) systems in the event of a major impact

### Websites

- Expanded project services, formalized content writing and editing services, and enhanced the user research phases of our standard site build process
- Continued deploying usability services to enhance business applications

### Upcoming Projects for FY17

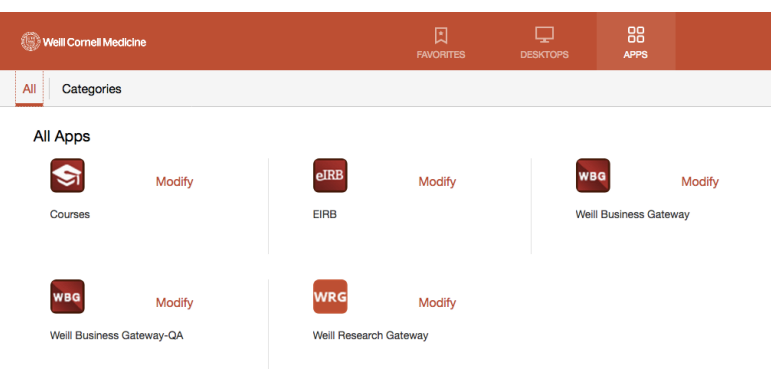
#### Weill Business Gateway

- Develop new BI Report Level III training
- Create Faculty Salary Funding Report for Budget and HR Offices
- Make enhancements to BI Reporting, including Supplier Relationship Management (SRM) and Labor reports

## eTime

*The new eTime system will allow employees to manage their time and leave requests, and managers the ability to review requests and team calendars. Currently in pilot, eTime will eliminate the need for paper time sheets once released to the entire college.*

- Enhance Affordable Care Act functionality
- Enable W4 functionality in ESS
- Enable Commuter Tax Benefit outsourcing
- Upgrade eTime for pilot users, incorporating their requests and feedback
- Implement SuccessFactors Program with new learning management system, and onboarding and recruitment-management modules



## myApps

A streamlined myApps now allows you to designate favorite apps that you use frequently, and search for specific applications easily. myApps, which allows you to access various WCM applications, is available at [myapps.weill.cornell.edu](http://myapps.weill.cornell.edu).

- Introduce Repatriation to WCMC-Q Foreign Service Benefits
- Complete open enrollment for WCM community
- Complete automation for AP Purchase Order Invoices
- Create and implement Journal Voucher eForm
- Enable Life Events functionality in ESS
- Implement Document Management for Pcards
- Complete FI Calendar Year End Activities
- Implement systems controls to prevent posting of over-budget expenses
- Improve WCM Bank Claim Process
- Implement a new interface for Shopping Cart Creation
- Implement Foreign National Taxes
- WCMC-Q NPRP Itemization
- Make updates to Organizational Structure, including:
  - Departmental Organizational Structures in SAP for 17 departments
  - Attributes Reporting in SAP
  - Structure for WCM-Qatar
- Simplify the project management process
- Major optimization effort to improve Jenzabar student information system
- Pro-Lease Update for Capital Planning
- Fall 2016 WBG Year-End Upgrade
- Enable W2 Functionality in ESS
- Complete HR Calendar Year End Activities

### System Reliability

- Test all SAP components in Disaster Recovery site

- Expand recovery capabilities of new email features
- Perform Business Impact Analysis (BIA) with select business representatives to determine critical systems/services and drive more aggressive recovery times
- Integrate people, process and technology into comprehensive, departmental continuity plans

#### Websites

- Begin redesign of weill.cornell.edu site



## Emergency Info

*ITS has worked hand-in-hand with Environmental Health & Safety to ensure that everyone on campus has easy access to safety information through our emergency app on every tagged device, and that users can be contacted in the event of an emergency. All faculty, staff, and students are encouraged to update their contact information at [directory.weill.cornell.edu](http://directory.weill.cornell.edu) to be connected to our Weill Cornell Alert system.*



# Infrastructure Improvements

Our IT infrastructure is comprised of a complex collection of hardware, software, networks, data centers, and other facilities that support most of the computing services throughout the college.

This year, ITS added additional core technologies to improve performance and security, such as Microsoft SQL Server 2016 and Docker. Our server infrastructure also grew by 197 servers this past year. Overall, our operational “uptime” on critical services – such as file share, email, and Epic servers – remained close to 100 percent year-round.

ITS also made its network more accessible, connecting 10 additional remote office locations throughout the New York City area, adding multiple 10gb Internet connections throughout campus, and

adding almost 500 more wireless Internet access points expanding service to almost the entire campus. We also upgraded over 1,500 phones to our new Avaya IP telephony system.

On the web infrastructure front, ITS began executing a Web Modernization Initiative in February 2016. This initiative will refresh the visual design of many sites, and move all publicly-facing WCM websites to our Drupal content management platform. This will help keep our web properties consistent going forward.

## File Storage



**220 million**

Number of files stored on ITS servers.  
Users connect to storage 100,000 times a day.

## Disk Storage



**3 petabytes**

One petabyte is enough space to store 13.3 years worth of HD video.

## Database Transactions

**35.9 million**

Users connect to our many databases this often every day, making system uptime a top priority for all of our services.

## Domain Name System Requests

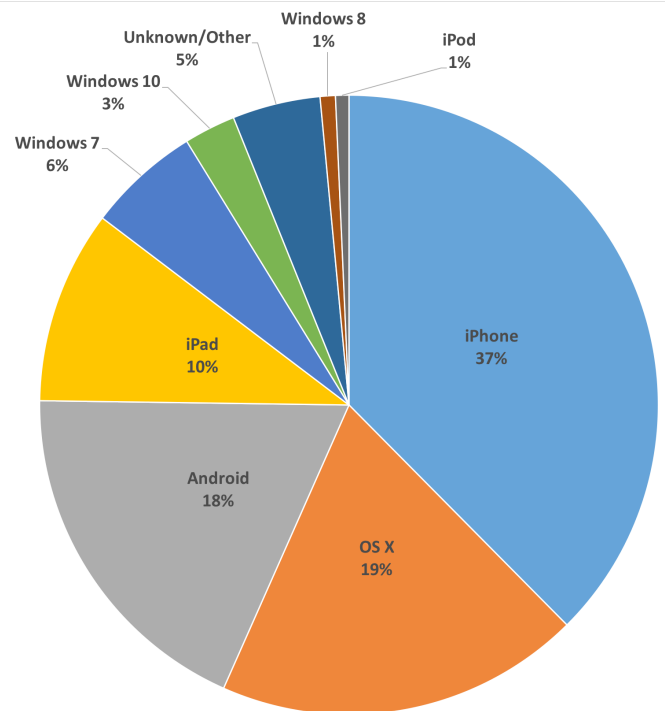
**95 million**

Every day, our systems handle this many requests to access various web-based services from devices on and off campus.

## Key Accomplishments

### Server Management

- Added support for Microsoft SQL Server 2016 and Docker
- Added 197 more servers to meet user demands
- Added Microsoft's Azure cloud support for "IAAS" Infrastructure As A Service to protect calendar and email services in the event of a disaster
- Maintained 100% uptime on our block storage services used for mission critical applications and services, like Epic, email, calendar, Listserv, database service, virtual server services, and the new EXaCT-1 whole exome pipeline
- Expanded block storage service by nearly 50% compared to the previous fiscal year
- Expanded our virtual servers service by 33%, adding approximately 200 additional servers
- Added 6 more departments to ITS-managed services, including CRMI, Neurology, Dalio Institute and Citigroup Biomedical Imaging Center



The chart above shows the percentage of operating systems and devices on campus that connect wirelessly to our services. iPhones are among the most used wireless devices on campus while Windows operating systems dominate our wired connections.



- Simplified patching schedule to weekend hours once a month to reduce service interruptions
- Reduced the deployment time of new Virtual Servers through automation by 50%
- Released new version of myApps with improved stability and new customization feature
- Central file share upgrade to improve performance and stability

#### Networking & Communications

- Expanded support for 10 additional remote offices in NYC area
- Built all-new network at 575 Lexington Avenue's data center

## Faster Internet

---

*In the last five years, our Internet bandwidth - or speed - has increased significantly, from about 500 megabits per second (Mbps) to over 3,500 Mbps, helping you get to web-based resources faster.*

- Decommissioned old data center
- Completed buildouts for Belfer Research Building for data networking, wireless, and IP telephony services throughout 6th, 7th, and 9th floors
- Retired legacy wireless network (WMC Secure) and moved onto new enhanced wireless service solution (WCMC)
- Added 486 new Wi-Fi access points, expanding coverage, speed, and reliability throughout the main campus
- Introduced multiple 10gb internet connections for improved resiliency and throughput performance
- Migrated over 1,500 phones from legacy Nortel System onto the new Avaya system
- Added over 700 new phones for a total of more than 4,500. New sites include External Affairs at 850 3rd Avenue, additional floors within Belfer, new 575 Lexington Avenue floors, and 425 61st Street expansions on floors 8 and 9.

- Completed upgrades on data network supporting Library, C-200 and A-950 Auditoriums
- Completed network infrastructure upgrade supporting Oxford building
- Completed upgrade on core data network supporting all Weill Cornell supported metro-Ethernet remote office locations
- Completed upgrades to core wireless infrastructure and affiliated backend components

### System Reliability

- Replaced three aging data backup systems with one new unified solution with off-site co-location
- Dramatically improved data recovery capabilities by migrating from backup tape to disk replication

### Websites

- Implemented three major releases of WCM Drupal, our web content management platform, which included a new universal design using the Weill Cornell Medicine brand, enhancements to the emergency notification infrastructure, and syndication of Clinical Trials content
- Executed the “Web Modernization Initiative” to refresh the visual design of many sites, and move all publicly-facing WCM sites to the Drupal content management platform
- All WCM sites receive centrally-authenticated security certificates as part of our hosting services.
- Upgraded Nexus Wiki software and hardware, introducing new features, quicker user provisioning, and significant performance gains

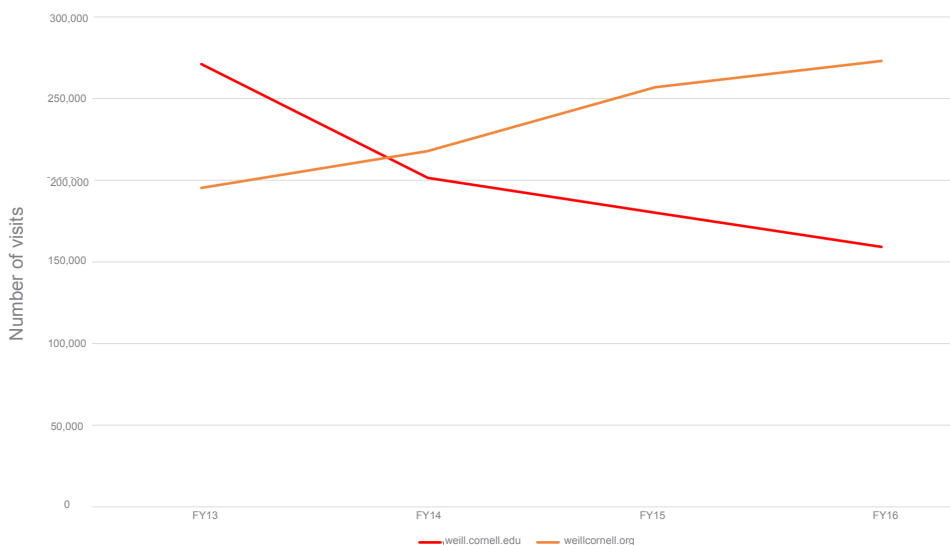


## Always On

*Uptime, or the percentage of time a particular system is online without unplanned outages, has been stellar this year. Three of our major services - file share, virtual servers, and Office 365 email - were available 100% of the time in FY16, better than our target of 99.5%.*

## Upcoming Projects for FY17

- New Windows 10 Virtual Desktops (VDI)
- Deployment of the Box Collaboration Suite
- Improvement of remote access services
- Deployment of Microsoft Office Apps for mobile devices
- Migration from Lync to O365 Skype for Business
- Pilot of Slack group messaging system
- Migration to O365 version of SharePoint
- Complete IP phone migration to Avaya system and decommission legacy Nortel system
- Complete wireless access point expansion throughout campus
- Continue network infrastructure upgrades throughout campus environment
- Automate phone requests and asset management
- Rightsize legacy telephone infrastructure with completion of SIP transition
- Operationalize VoIP-related incidents
- Add departmental and institutional conference rooms AV service
- Translate operational improvements into improved service level agreements (SLAs) with businesses to reflect new and improved service capability
- Continue transitioning all public-facing WCM websites to Drupal platform

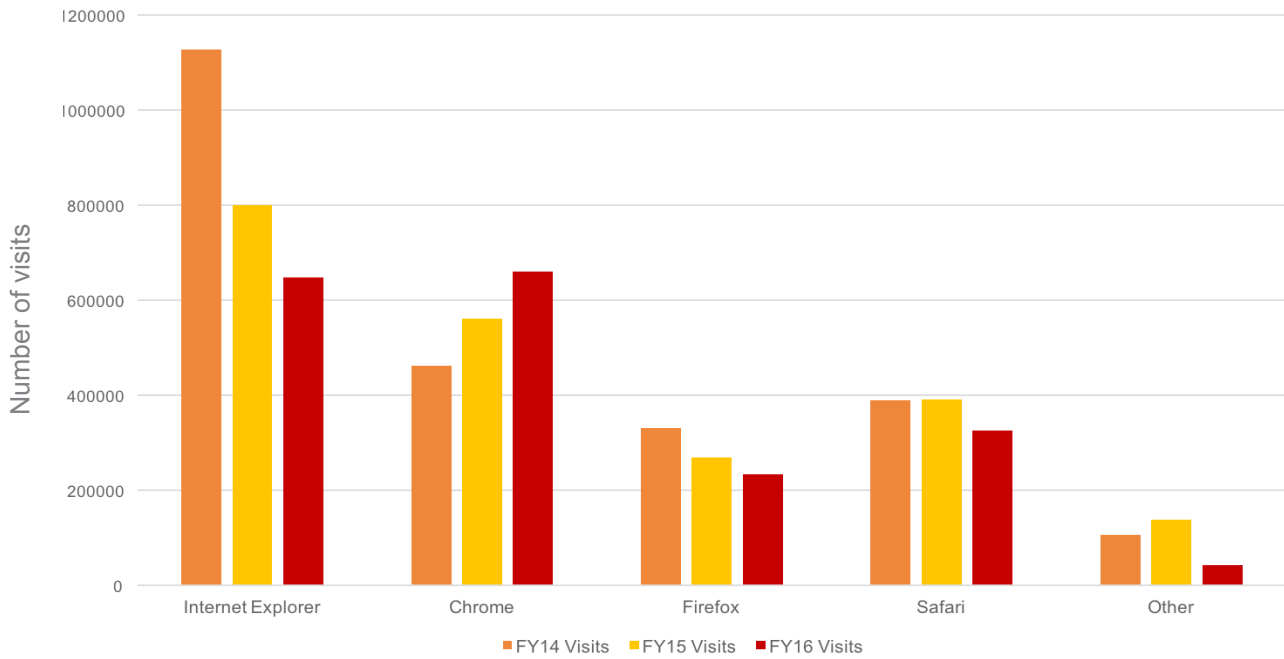


## Website Visits

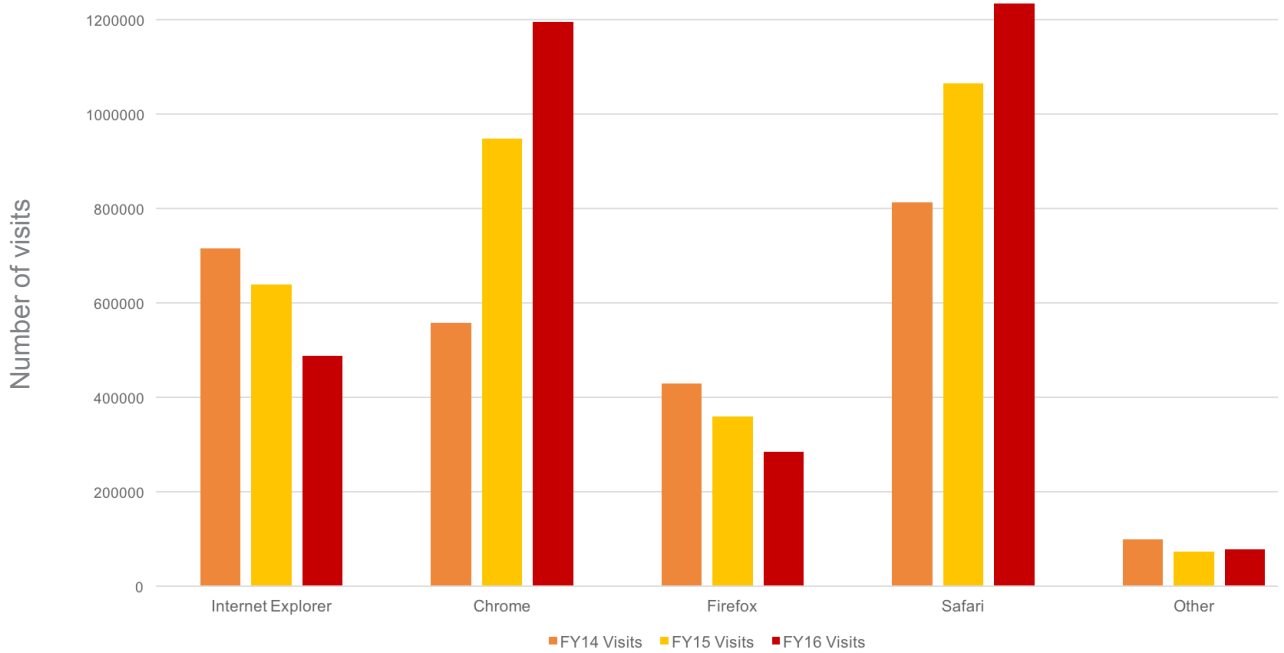
The chart at left shows the average number of visits per fiscal year for our two main websites. Weillcornell.org visits continue to climb; .edu numbers have declined as previously housed functions (such as News, Careers, Alumni, and Ways to Give) were moved to separate websites.



Visits to weill.cornell.edu by Browser



Visits to weillcornell.org by Browser



The charts above demonstrate how, over time, Chrome has surpassed Internet Explorer as the preferred browser for both of our main websites.

# Security & Identity

Every month, WCM deals with more than 5 million cyber attacks. Every day, WCM users create and transfer large amounts of data, much of which is sensitive or confidential. Reducing the risk of a data breach remains a top priority for our department.

Our newest protection mechanism is the Duo Two-Factor Authentication system required while off campus (more information on this in “New Services & Tools”). However, security tests and implementations are a part of every project we initiate.

This fiscal year, ITS has touched over 18,500 devices in an effort to encrypt all devices across campus. Thus far, we’ve managed to achieve a compliance rate of 92%. This is remarkable, especially considering we only began encrypting desktops in 2015. This encryption effort will significantly prevent our data becoming compromised in the event a device is lost or stolen. We have also enhanced our email security with Proofpoint, a state-of-the-art system that helps limit the amount of spam, phishing, and malware sent to users’ inboxes. In just the first

two months of implementing Proofpoint, we realized a 70% reduction in the number of compromised accounts.

Additionally, ITS has joined with key leaders in the creation of a new Security and Privacy Incident Response Team (SPIRT), charged with responding to incidents that impact our high-risk data. The team consists of core members from ITS, University Counsel, External Affairs, and the Privacy Office, with a virtual team of 10 primary contacts from representative areas of the institution.

In the coming year, ITS plans to further promote security awareness and remain vigilant about keeping our systems secure.



## Duo

*The Duo Two-Factor Authentication system makes it much harder for criminals to break into your account, even if they guess your password. You can register at [duo.weill.cornell.edu](http://duo.weill.cornell.edu).*

Key Encryption Statistics	2014	2015	2016
Laptops Encrypted	54% (1,581)	68% (3,234)	94% (3,140)
Tablets Encrypted	75% (1,114)	98% (1,604)	99% (1,758)
Smartphones Encrypted	60% (1,526)	99% (3,202)	99% (4,046)
Desktops Encrypted	--	54% (5,085)	87% (8,396)
Total Devices Encrypted	--	69% (13,125)	92% (17,340)

### Key Accomplishments

- Encrypted 92% of devices on campus (see table above)
- Enhanced email security with Proofpoint, effectively limiting the amount of malicious email sent to users with WCM email accounts
- Expanded Central Web Logon services to several applications, allowing users to seamlessly log into an application or website with their WCM credentials. Applications enabled were:
  - Box
  - VIVO Dashboard
  - Drupal Website Administrators
  - Proofpoint
  - Duo Enrollment
  - LastPass Enrollment
- IPM Knowledge Base
- Qualtrics
- Weill Research Gateway
- Everbridge Administrators
- Created Security & Privacy Incident Response Team (SPIRT) to respond to incidents that impact WCM's high-risk data
- Created and updated security-related IT policies, specifically 11.03 – Data Classification, 11.05 – SPIRT, 11.13 – Directory, 11.14 – Email Security, and 12.5 – PCI Policy
- Obtained Payment Card Industry (PCI) Data Security Standard version 3.0 Compliance. This was necessary for WCM to accept credit card payments for various transactions.
- Engaged a third-party vendor to conduct a penetration test of our environment; including our patient portal, Weill Cornell Connect



- Upgraded FairWarning system, which provides alerting and reporting of anomalous activity in Epic
- Worked with the Center for Reproductive Medicine to monitor their electronic medical record audit logs similar to Epic
- Improved security software patching updates to address major vulnerabilities more quickly
- Issued new domain name policy through the Web Governance Committee, which will help institutional websites consolidate around a more standard URL structure

## Proofpoint

---

*During its first six months of use, Proofpoint blocked 75% of over 69,000 emails containing malicious links, and delivered 13% of those emails with added protection. Additionally, the system blocked 99% of about 365,000 emails containing malicious attachments. You can manage your spam and senders by visiting [antispam.med.cornell.edu](https://antispam.med.cornell.edu).*

### Upcoming Projects for FY17

- Security Awareness campaign
- Epic Breach Detection Alerting Improvements
- NIST Cybersecurity Framework Assessment
- Enhance login experience for many WCM applications
- Replacement of antivirus software with next-generation technology
- Improve disaster recovery response capabilities
- Separate network for researchers
- Simplification of WCM wireless networks
- Increase security for access to WCM applications with network access control and two-factor authentication

## Responding to attackers

---

In May, ITS led a table-top exercise with Verizon Enterprise Services to test the effectiveness of our response plan. The exercise included a mock incident where law enforcement contacted ITS about suspicious traffic on the WCM network. The exercise, which walked through the entire lifecycle from reporting, detecting, remediating, and closing, involved a contractor's laptop which was compromised and contained sensitive data from a researcher's database. The exercise was a great success with high participation, and the plan has proven effective in actual incidents since this exercise.

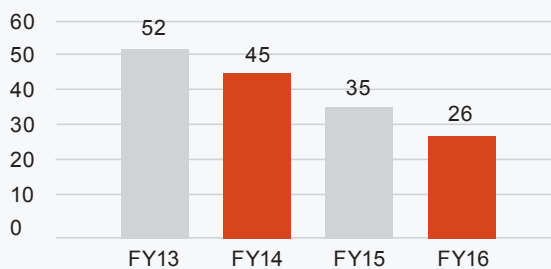




# How We Support Services

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 faster and more efficiently.

## Average Number of Days to Charter a Project



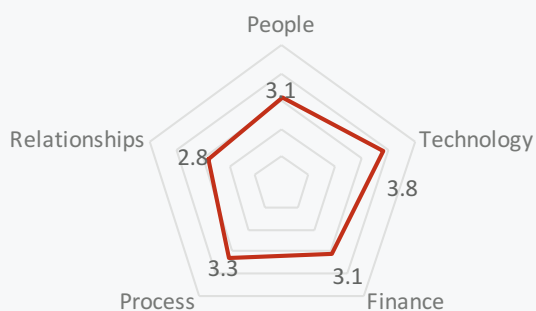
The average amount of time to charter a project from the day it is submitted has been reduced by a quarter, which expedites the overall service launch.

## New Projects in FY16

# 449

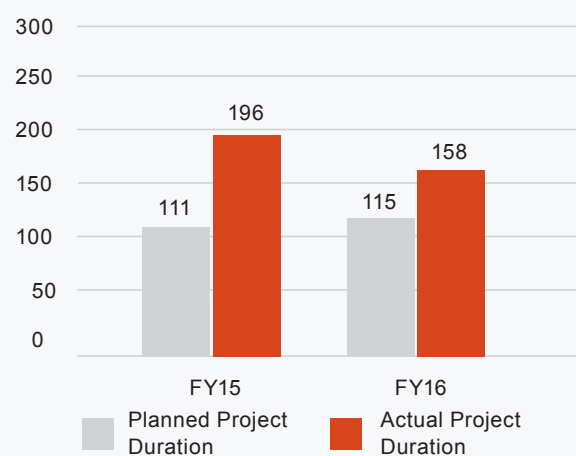
The number of projects ITS handles continues to increase over time, with 339 projects on our plate just two years ago. In FY16, 250 of these projects were launched, with the rest still in progress.

## Gartner PPM Maturity Model



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. Our PMO improved its rating since last year, which is now an overall score of 3.1 from 2.9.

## Planned vs. Actual Project Duration in Days

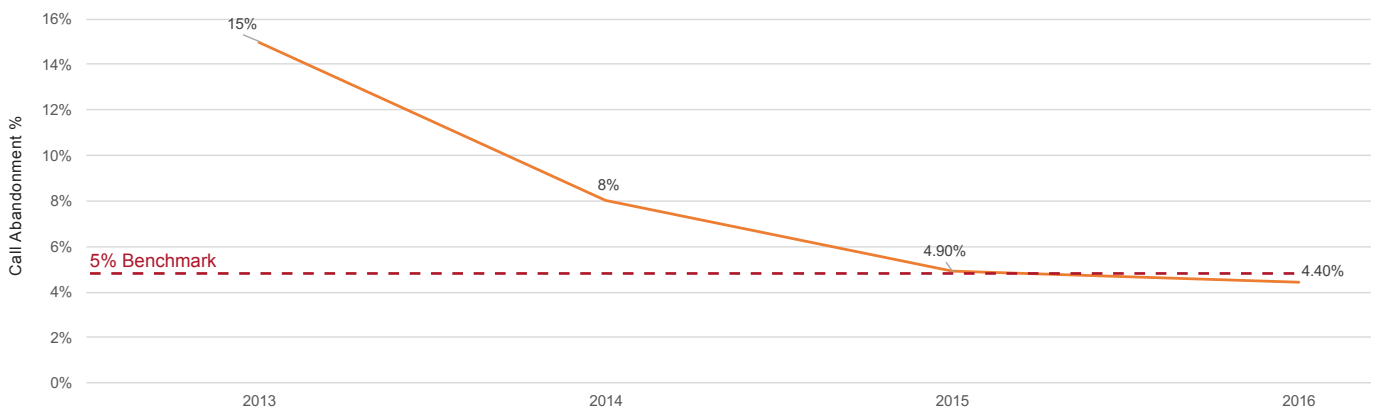


Within a year, the PMO increased its planning and execution efficiency by 50% on large projects.

The work doesn't end once a new service is launched. Our Service Desk works day in and day out to help you when you have questions about how to use a service, or when you need a technician to troubleshoot an issue.

## 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 2013, ITS has significantly improved this rate, surpassing our benchmark of 5%.



**5,274**

**Average Calls**

The Service Desk takes in more than 5,200 calls every month on all of our supported services.



**2.7**

**Days to Connect**

A technician can connect your device, such as a computer or phone, within 3 days, a huge improvement from 12 days two years ago.

2016



**Weill Cornell  
Medicine**

# Physician Organization Information Services



**Adam D. Cheriff, MD**

Weill Cornell Physician Organization

8/23/2016

## Contents

From the Chief Medical Information Officer _____	1
Executive Summary _____	2
POIS: Structure and Administration _____	4
Ambulatory EHR and Practice Management _____	6
System Integration _____	8
Web Presence and Portal _____	11
Analytics, Quality, and Decision Support _____	13
Academic Productivity _____	16

## **From the Chief Medical Information Officer**

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***“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 2016. It serves as an inventory of key accomplishments and provides statistics that depict the scope and scale of our activities.

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.

A handwritten signature in black ink, appearing to read 'Adam D. Cheriff, MD', with a stylized flourish at the end.

**Adam D. Cheriff, MD**

*Chief Medical Information Officer*

*Associate Professor of Clinical Medicine and Health Policy and Research*

**Weill Cornell Medicine**



## Executive Summary: FY2016

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 and faculty satisfaction.

- 4 new WCM practices and 10 new WCPN practices were implemented on the Epic EHR and practice management system
- 109 practice-specific EHR optimizations were completed, focused on clinical care
- 110 revenue cycle enhancement projects were completed to improve billing and collections
- 41 practice management optimizations were completed to improve front desk efficiency and/or patient access

### ***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.

- Created payer-specific registries for Aetna, Cigna, Empire, United, Emblem, and Medicare with 230 quality metrics to support pay-for-performance and shared savings programs
- Deployed two predictive models within EHR for use by clinicians and care management: risk of hospital utilization and Charlson co-morbidity index
- ACO quality metric performance was enhanced via the implementation of several new decision support rules and custom documentation tools
- Implemented a new *e-COMP* competency reporting tool to monitor adherence to EHR usage standards that promote high quality, collaborative care

### ***Objective 3: Improve care quality via increased system interoperability***

System interoperability and decision support tools continued to mature in the past fiscal year, giving providers robust point-of-care tools to facilitate patient care.

- Widespread adoption of Epic's native health-information exchange platform (Care Everywhere) resulted in the exchange of over 200,000 WCM patient records across 49 states
- A proof of concept was completed for integration of sequencing data from the Genomic Information System to the Epic EHR
- Several clinical and revenue cycle interfaces were implemented between Epic and radiation oncology

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

Improving the patient experience was a major focus of FY2016. Several technologies were implemented aimed at enhancing patient satisfaction.

- WeillCornell.org underwent a major re-design with improved provider and practice profiles
- Weill Cornell Connect patient enrollment exceeded over 170,000 active patients
- Online scheduling functions were implemented for over 200 WCM physicians (including integration with *ZocDoc*) resulting in over 16,000 online appointments
- A new online second opinion platform was implemented on WeillCornell.org

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

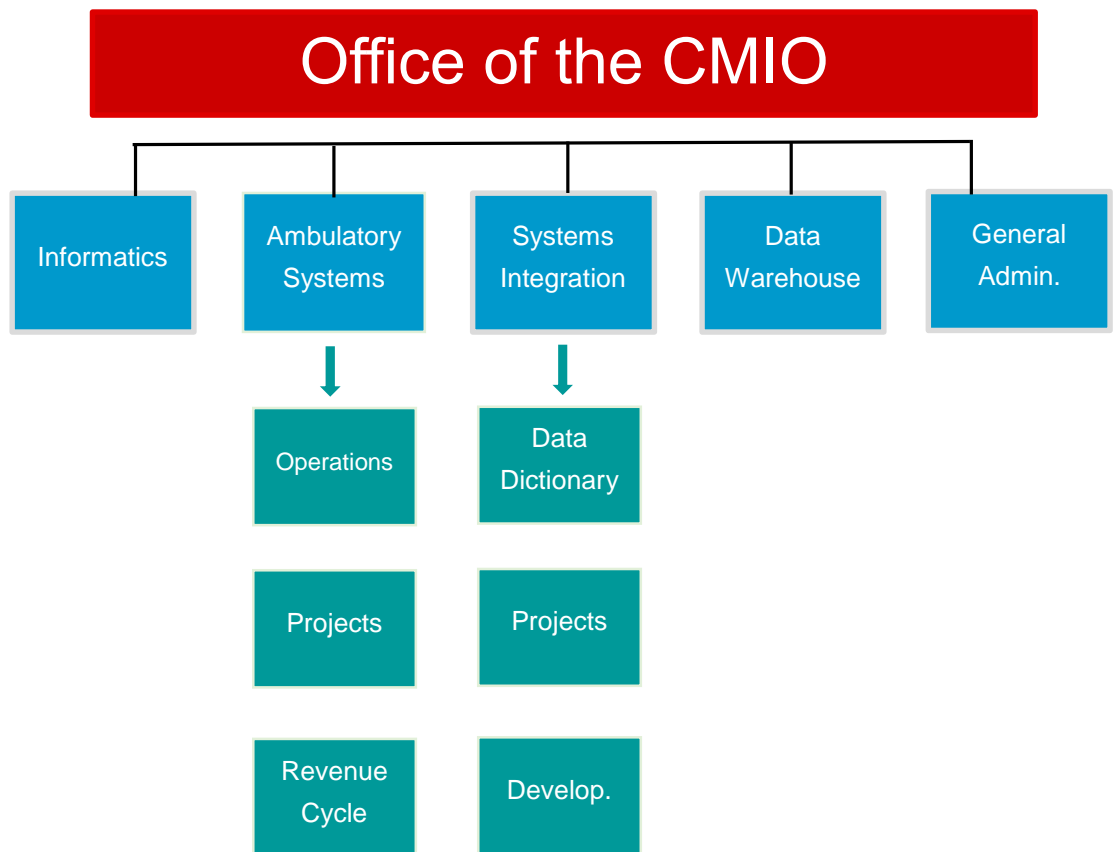
In FY2016, several challenging regulatory requirements were met via information technology projects.

- The ICD-10 conversion was implemented with minimal disruption to provider productivity and revenue cycle operations
- Electronic prescribing of controlled substances (EPCS) was successfully implemented
- 435 providers successfully attested for 2015 Meaningful Use, earning approximately \$1.2M in incentives

## **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,  
Amb. Systems



**Mark Israel**  
Director,  
System Integration



**Maggie Qiu**  
Assoc. Director,  
Data Warehouses

**Key Statistical Snapshot:**

<u>Metric</u>	<u>FY 2016</u>
Total '15-'16 allocated budget:	<b>\$27M</b>
Totally revenue and recoveries (expected):	<b>\$6.0M</b>
Total POIS staff:	<b>104</b>
Total current vacancies:	<b>6</b>
New Hires:	<b>9</b>
Departed Staff:	<b>10</b>
Annual staff attrition rate:	<b>9.6%</b>
Total ITS FTEs funded by Physician Organization:	<b>23</b>

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

## Ambulatory EHR and Practice Management

The Ambulatory Electronic Health Record and Practice Management System (Epic) are the key work-flow engines for all of our ambulatory 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:

- A total of **324** projects were completed (↑ 40.9% over last year)
  - **14 New Epic Implementations (10 WCPN and 4 WCM)**
    - Radiation Oncology at Stich Radiation Center & 21 West Broadway, Integrative Health at East 80<sup>th</sup> Street, Lung Center at Starr Pavilion, OB/GYN at Lower Manhattan (LoMa), Horizon Medical, Cardiology at 186 Joralemon Street (Dr. Niki Kantrowiz), Cardiology at Sunrise Medical (Dr. Gina Day), Gastroenterology at 5 Station Square, Forest Hills (Dr. Patrick Basu), Gynecology at 186 Joralemon Street (Dr. Jaqueline Perlman), Urology at 186 Joralemon Street (Dr. Alfred Winkler), Urology at 108-28 68th Drive, Forest Hills (Dr. Edward Moss),
  - **110 Revenue Cycle Projects**
    - ICD-10 Implementation, Implementation of “Global Credit Solutions Collections Agency” for International Collections, Optimized Workflows Around Experian Return Mail Process, Provider Audit Workflow (MD Audit) Optimization, Appointment Interval Logic Optimization to Reduce Denials
  - **41 Practice Management Projects**
    - 20 online scheduling related department initiatives, Automated Patient Alerts (TelevoX/West) for Emergencies at WCM Locations, Patient Wait Time Tracking, Standardization for Canceling Appointments, Automated Faxing Solution for WCPN Departments
  - **14 Meaningful Use 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
  - **7 Portal Projects**
    - New patient visits via WeillCornell.org, Glucometer Integration, Configured the Haiku and MyChart Epic Applications for the Apple Watch
  - **109 Practice Optimization Projects**
    - Chemotherapy & Office Administered Medication Workflow Optimization for Hematology/Oncology, Documenting Medication Waste for the IBD Practice, DSRIP Program for NYP Pediatrics, Asthma Action Plan for WCM Pediatrics, 42 Epic Department Level Moves/Splits to Account for Expansion, Activated 10 Departments on the NYP Lab Orders Interface
  - **29 Operational (System Enhancement) Projects**
    - EPCS compliance with NYS mandate to electronically prescribe controlled and non-controlled medications, User Security Update to Reflect the Scope of Practice Standardization, Configured Epic’s ‘Lot Manager’ Activity to Improve Immunization Documentation, Facility Administered Medication Workflow Optimization, Training Playground Implementation
- **91** system maintenance updates/patches (↑ 54.2% over last year, mainly due to a major system upgrade)

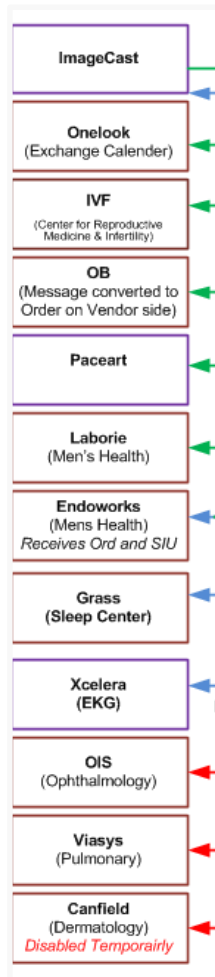


**Key Statistical Snapshot:**

<u>Metric</u>	<u>FY 2016</u>	<u>Annual Trend</u>
Support tickets closed:	<b>57,811</b>	↑ <b>8.9%</b>
Cases resolved within one business day:	<b>62.5%</b>	<b>(goal of 70%)</b>
Epic development/configuration items migrated to production:	<b>5,733</b>	↑ <b>14.3%</b>
Quality assurance testing/audit hours:	<b>3,991</b>	↑ <b>39.0%</b>
Epic Ambulatory users trained:	<b>2,563</b>	↓ <b>9.9%</b>
Epic PM users trained:	<b>1,429</b>	↑ <b>5.6%</b>
Active Epic users :		
Attendings:	<b>1,224</b>	
House-officers:	<b>858</b>	
Total:	<b>7,657</b>	↑ <b>10.2%</b>

## 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.



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

### Accomplishments:

#### *Interfaces*

- 9 Newly Implemented Clinical Interfaces:
  - Genetic results interface (*Counsyl*) to Epic EHR
  - Radiation oncology procedure notes (*Mosaiq*) interface to Epic EHR
  - Pulmonary function testing result interface (*Vmax*) to Epic EHR
  - EKG (Westchester campus) result interface to Epic EHR
  - Epic care management visit notes interface to iNYP data repository
  - Facility Identifier for 340B Drug Pricing Program interface to *SureScripts*
  - Electronic prescriptions for controlled substances interface to *Surescripts*
  - Citywide Immunization Registry interface to Epic EHR
  - Epic EHR orders to radiology scheduling management system (*Medicalis*)
- 7 Newly Implemented Practice Management Interfaces
  - *ZocDoc* online provider availability and scheduling to Epic PM
  - *Mosaiq* appointment interface to Epic PM
  - *Mosaiq* (Lower Manhattan) charge interface to Epic PM
  - Registration interface for EKGs (Westchester campus) to Epic PM
  - Charge interface for EKGs (Westchester campus) to Epic PM
  - Laboratory (*Helix*) charge interface to Epic PM
  - 4 registration conversions to support WCPN initiative
- 111 Operational/Development Enhancements:
  - Upgrade of *Corepoint* Integration Engine
  - Transition of all interfaces from ICD-9 to ICD-10
  - Migration from *Sharepoint* to *ServiceNow* for Project Management
  - Implementation of Epic mobile application for interface monitoring
  - 107 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
- 825 Interface-related support tickets closed

### *Health Data Exchange*

- Care Everywhere
  - Expanded use of Care Everywhere to inpatient setting to allow for clinical record exchange in Epic for hospitalized patients
- Direct Messaging
  - Direct messaging protocol being used to replace faxed pharmacy benefit management patient safety notifications
- Healthix
  - Collaborated with Healthix to create a prospective authorization consent form that will allow patients to authorize sharing of Weill Cornell data

### *Data Dictionaries, Data Quality, and Content Management*

- TruData:
  - Maintained and sustained mappings and data dynamics for 20+ entities with additional content added:
    - Added 5,520 new procedures, committed 2,531 new local mappings.
    - Added 14,887 new result components, 8,019 committed LOINC assignments
    - Added 310,077 local laboratory, radiology, clinical attributes.
    - Added new concepts, synonyms, and transformations/relationships.
    - Captured/audited 151,442 changes
    - Maintained most recent controlled vocabularies – LOINC, SNOMED, CPT/HCPSC, RXNORM, NDC
    - Maintained and sustained vaccine and manufacturer codes and related mappings
  - Enhanced data dictionary functions to improve information management within EHR:
    - Developed and launched electronic search capability for CMS, AMA, and CDT vocabulary contents
    - Added/fixes Athena, Esoterix, Enzo and Mayo reference labs to web crawler engine
    - Expanded gene marker disease-based classification in results hierarchy, covering ~1,200 gene/LOINC concepts
    - Expanded results hierarchy to 62,300 conceptual nodes, covering 71,000 local result components
    - Expanded SNOMED assignments to ~8500 for local organisms
    - Tumor Type/Site/Gene SNOMED and LOINC assignments for Precision Medicine
- Master Provider Index:
  - Added ~62,000 new NPI provider records.
  - ~28,000 providers exported and incorporated into Epic
  - Developed and implemented framework for incorporation of taxonomy contents
  - Enhanced efficiency in MPI discrepancy detection, data processing, and reporting
  - Enhanced insurance participation web application to include search by department

- Master Files/Dictionary Support and Maintenance:
  - Quarterly/annual RVU, CPT/HCPSC, SNOMED updates
  - Monthly/annual Meds/Medispan/RxNorm updates
  - Diagnosis code 2015-2016 upgrades (IMO, ICD-10, and ICD-9)
  - Implemented Intelligent Problem List groupers
  - Conversion of immunization/vaccination model aligning with CDC codesets
  - Maintained NDC and HCPCS/CPT crosstalk mappings for billing
  - Developed comprehensive summaries pertaining to patient data quality/identity, and related activities by departments, users, and interfaces
  
- Managed-Care/Enrollment:
  - Upgraded Intellicred/Webview to version 14.238, addressed bugs and fixes.
  - Upgraded webserver Coldfusion to version 2016
  - Added and tracked new facilities: Oxford Metro/Core/Charter, Amida Care, and WellCare Health Plans
  - Converted all relevant reports from Cognos to Crystal, conforming to WMC reporting infrastructure
  - Established process and interface to enumerate provider insurance participation for Pagoda/POPS

**Key Statistical Snapshot:**

<u>Metric</u>	<u>FY2016</u>	<u>FY2015</u>
Prescriptions transmitted electronically:	1,027,815	821,633
Electronic pharmacy benefit queries:	1,484,043	1,629,984
Electronic lab orders:	1,354,529	1,137,521
Electronic radiology orders:	150,987	135,326

**Interoperability Exchange Statistics**

**Weill Cornell Medicine**

Care Everywhere Update - April 2016



We've exchanged patient records with organizations spanning

**49**  
states



We've exchanged patient record with more than

**650**  
hospitals

**830**  
emergency departments and

**19,590**  
clinics

**59,030**

patient records exchanged in 2016

**118,346**

patient records exchanged in 2015

**205,015**

since Care Everywhere Go-Live in 2012

## Web Presence and Portal



Home > About Us > Overview



### About Us

Weill Cornell Physicians are faculty members of Weill Cornell Medical College, one of the top-ranked clinical and medical research centers in the country. They are also attending physicians at one of the most comprehensive care facilities in the world — NewYork-Presbyterian Hospital/Weill Cornell Medical Center. Weill Cornell physicians have consistently been leaders in patient care, in primary care as well as in

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. Over 178,000 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:
  - Redesigned the web site, the first Weill Cornell site to implement the new Weill Cornell Medicine brand. The new site includes:
    - A responsive design that is mobile and tablet friendly
    - Newly designed home page, physician and practice profiles, and clinical services pages
    - Integration of patient-focused events with the institutional events calendar system
    - Creation of news pages and a news archive
    - Inclusion of patient stories produced by External Affairs
    - Links to official WCM social media outlets
  - Launched integration of Epic's Open Scheduling in physician profiles
  - Created physician profiles for Voluntary Faculty
  - Integrated the Second Opinion platform by Grand Rounds
  - Completed web site updates in support of the new digital marketing campaigns
- POPS:
  - Expanded the profiles to include new features, including:
    - Embedded video links and additional photography for physicians and practices
    - Frequently asked questions
    - Downloadable files and PDFs for brochures, patient forms, and similar content
    - Patient testimonials for practice profiles
    - Re-introduced practice hours
  - Expanded our data interface with Faculty Affairs to autonomously manage voluntary faculty data for those physician profiles in WeillCornell.org

### WeillCornell.org Visit Statistics, Fiscal Year 2015/2016 Comparison

Visit Category	FY 2016 (Google Analytics)	FY 2015 (Google Analytics)
Total Sessions	3,277,871	3,094,394
Unique Visitors	1,566,466	1,504,405
Return Visitors	1,773,390	1,589,989
Average Visits per Day	8,981	8,478
Average Visit Duration	00:02:07	0:01:43
International Visits	3.96%	4.35%
Visits of Unknown Origin	0%	0.05%
Visits from Your Country: United States	96.04%	95.60%



## Top 7 Traffic Sources by Channel

	Source	Sessions	% Sessions
1	Organic Search	1,879,789	57.35%
2	Direct site access	857,511	26.16%
3	Referral (linked sites)	532,676	16.25%
4	Social	7,575	0.23%
5	(Other)	180	0.01%
6	Paid Search	100	0.00%
7	Email	40	0.00%

*Weill Cornell Connect*

- Optimized online scheduling for pediatrics and various other adult specialties
- Implemented services for the Apple Watch
- Implemented on-line scheduling from Smart Phone Applications

**Key Statistical Snapshot:**

<b>Metric</b>	<b>FY 2016</b>	<b>FY 2015</b>
Total active physician on-line profiles:	<b>2,477</b>	<b>1333</b>
Total active practice on-line profiles:	<b>327</b>	<b>296</b>
Total patients enrolled in Weill Cornell Connect:	<b>178,000</b>	<b>130,000</b>
Average monthly enrollment of new WCC patients:	<b>5,330</b>	<b>3,538</b>
Activation rate (percentage of patients who use system access code):	<b>69.9%</b>	<b>59.0%</b>
Unique providers offering online scheduling:		
Direct (existing patients via WCC):	<b>206</b>	-
Open (new patients):	<b>116</b>	-
Total online appointments made:	<b>16,004</b>	-

## 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:

#### *Data Warehousing*

- Installed “Epic Slicer Dicer” reporting tool for end-user ad-hoc reporting within Epic
- Piloted United Health Care Epic data extraction for quality metrics
- Upgraded SAP Business Objects environments to version 4.1
- Imported ACO claims data into Epic Cogito Data warehouse
- Implemented Epic predictive risk model for unplanned hospitalizations and ED visits
- Implemented data extraction from Epic to NYP’s *Humedica* data warehouse
- Extracted Epic data into ITS research data environment
- Extracted Epic data into i2b2 (cohort identification) environment
- Implemented Physician Practice Dashboard in Epic
- Implemented ACO Registry within Epic
- Implemented 5 custom Payer Registries within Epic to track quality metrics
- Extracted Epic data into Health Endeavors for ACO reporting
- Created tool set to facilitate bulk patient communication via *Weill Cornell Connect*
- Upgraded Epic Clarity environment to 2015 version
- Upgraded Epic Data Warehouse environment to version 12
- Established Epic Clarity disaster recovery plan
- Completed ICD 10 related report conversion
- Implemented data transfer from Epic Clarity to Department of Anesthesiology for billing reconciliation
- Implemented Pediatric DSRIP registry
- Updated Patient Access data extractions from new phone system and Press Ganey

#### *Analytics and Reporting*

- Institutional Quality, Operations, and Regulatory Reporting:
  - eCompetency report
  - ACO Physician Score Card Report
  - Meaningful use stage I & II reports
  - ePrescribe Control Substance Exception Report to NY State
  - Online scheduling frequency report
  - Scope of practice order monitoring reports
  - ACO Care manager productivity reports
  - Emblem Diagnose report
  - AMGA hypertension management report
  - Aetna bulk release of information reports



- Pay-for-performance reports for Aetna, Emblem, and Empire
- Patient-Centered Specialty practice reporting for Department of Ophthalmology
- Department/Division Reporting:
  - Created 86 + departmental/divisional clinical and practice operations reports
    - *Academic Departments/Divisions Serviced:* Radiology, Primary Care, Medicine, Marketing, Cardiology, Ophthalmology, Neurology and Neuroscience, NYP – CAN, ENT, WCIMA, Pediatrics, Surgery, WCCC, Dermatology, CT Surgery, NYP Emergency Medicine, WCPN, NYP Finance, Center for Advanced Digestive Care, Pediatrics Hematology/Oncology, Cardiothoracic Surgery, Psychiatry, Neurological Surgery, Adult CSS, NYP Team Graphite, OBGYN, Rehabilitation Medicine, Public Health, Geriatrics
- Research Reporting:
  - NIH Precision Medicine Grant reports
  - Medicine – Infectious Disease – ACTG A5332; Infectious disease – CCTU Monthly Visit report; Infectious Diseases - MCA-0866 Study Screening Report; Infectious Disease - HABIT One Time Screening Report; B1481022 Cholesterol Study; Infectious Diseases - HIV screening study; Marfan Registry; Heart Failure Report; Endocrinology - Exlard Study Report; Pulmonary – COPD; Gastroenterology - Outpatients Diagnosed with Cholecystitis or Cholelithiasis; Cardiology - EP Syncope; Adult IBD Patients Seen at WCMC/NYP
  - Radiology – Bypass patients who have coronary CTA
  - Neurology –Neuroscience - ICD9 and ICD10 Codes;
  - Ophthalmology – CHAN EUA Visits from 2002 thru 2010;
  - NYP - Stimulating Factor (GCSF) for Febrile Neutropenia
  - WCIMA - Readmissions Study November 2015
  - Otorhinolaryngology - Methicillin Resistant Staphylococcus Aureus Abscesses of the Head and Neck
  - Urology - Klinefelter Syndrome Patients
  - Pediatric – Neurology - Headache Disorder Cohort; Nephrology - Nephrotic Syndrome; Infectious Disease - CMV Infants with Congenital Infection; Neurology - Concussion Report; Endocrinology - Vitamin D 25-OH Levels in Pediatric Endocrine Patients
  - Public Health - Metformin Persistence Study
  - Dermatology - AKs in Organ Transplantation
- Practice Management Analytics:
  - Training and Support
    - Trained 80 new Cognos users (351 active Cognos users)
    - Trained over 40 end users on Epic reporting workbench
    - Conducted 9 training webinars with 210 participants
  - Cognos development
    - Developed 2 new cubes with an additional 30 Practice Management metrics
      - Developed 4 new metrics in existing cubes

- Developed a new dimension for regional and locational reporting in all cubes with over 80 practice management metrics
  - 2,268 active patient access or revenue cycle based reports are live
    - 967 automated reports are scheduled and automated
  - 33,000 dashboards and report files are generated for the clinical departments and the PO via 10 dashboards/snapshots templates
- Reporting
- 40 new Epic Reporting Workbench reports were developed and published for the Clinical departments and the PO
  - 1 New Epic Radar dashboard published for Epic practice management
  - Over 600 reoccurring and/or ad-hoc SQL and miscellaneous reports were developed for the Clinical departments and PO that generated over 4,000 data files

### Clinical Decision Support (CDS) and Population Management Tools

- Created payer-specific registries for Aetna, United, Empire, Cigna, Emblem and Medicare with 230 quality metrics to support pay-for-performance and shared savings programs
- Created new decision support rules and customized documentation tools to support ACO quality metrics of falls screening, depression screening, and body mass index screening
- Updated ACO registry to track performance for updated 2016 ACO quality measures
- Enhanced suite of Epic documentation tools for care management
- Deployed two predictive models for use by clinicians and care management: risk of hospital utilization in the coming year and Charlson co-morbidity index
- An updated version of the imaging decision support tool has been implemented in collaboration with Epic, Medicalis and Department of Radiology. Pilot deployments will start in September 2016
- Completed a major overhaul of our immunization setup, enabling use of more accurate decision support for projecting vaccinates schedules
- Added HCC coding designation to diagnosis search feature in Epic to assist with risk adjusted coding

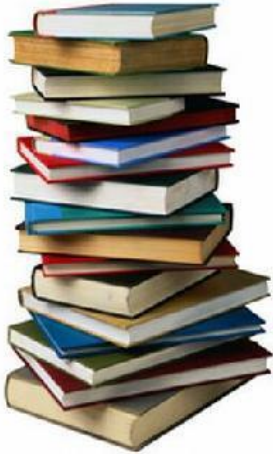
#### Key Statistical Snapshot:

Metric	FY 2016	FY 2015
Supported ACO quality measures via Epic	15	15
Empire shared savings:	\$2.3M	\$1.1M
Meaningful User attestations:	435	422
Meaningful User incentive dollars:	\$1.2M*	\$2.1M

\*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:
  - McEvoy DS et al [Malhotra S, 24 authors]. Variation in High Priority Drug-Drug Interaction Alerts Across Institutions and Electronic Health Records. Accepted JAMIA 2016
  - Ip IK, Lacson R, Hentel K, Malhotra S, Darer J, Langlotz C, Weiss A and Khorasani R. Predictors of Provider Response to Clinical Decision Support: Lessons Learned from the Medicare Imaging Demonstration. 16-16373R1. Accepted in American Journal of Roentgenology
  - Malhotra S, Cheriff AD, Gossey JT, Cole CL, Kaushal R, Ancker JS.. Effects of an e-Prescribing interface redesign on rates of generic drug prescribing: exploiting default options. J Am Med Inform Assoc. 2016 Feb 17
  
- Ongoing POIS Faculty Research Projects:
  - Key Personnel for grant application and study design of *Precision Medicine Cohort Initiative*
  - 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 3) Effect of local practices that may conflict with national guidelines
  
- Education/Teaching:
  - One of our faculty members is the Course Director for the “Healthcare Quality and Informatics” course being taught as part of the Masters in Health Informatics program
  - Faculty and staff participated in Weill Cornell HIT Certificate Program and Masters program curriculum
  - Our faculty members are mentoring students 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 and theory
  - Faculty mentorship of Department of Medicine residents for research projects