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Dear Colleagues

I am pleased to introduce IT@Cornell: Technology in Service to “One Cornell,” a strategic plan for information technology, 2013-2017. This plan is the product of nearly a year of consultations, events, focus groups, and individual conversations among faculty, students, staff, and related communities.

Whatever your role at Cornell, we hope you will find the plan relevant, comprehensive, and useful as a guide to decision making, priority setting, and action. We also trust that you will find here an appropriate reflection of the vision and values of One Cornell, the university’s strategic plan, which this IT strategy is intended to enable and support.

We use the term IT@Cornell to connote the university’s entire ecosystem of information technology staff and services. The people in IT roles in colleges and schools, administrative units, and the central IT organization are all part of IT@Cornell. The systems and infrastructure for which they are responsible also are part of IT@Cornell. Although the journey is not yet complete, we are gradually transcending debates about centralization, decentralization, and control. Instead, we are moving toward an environment of intentional interdependence in which each of us supports and relies upon others.

Why an IT strategic plan, and why now? A confluence of events set the stage. IT@Cornell today comprises many pockets of excellence – groups, teams, and individuals who do outstanding work – but lacks an overarching perspective to combine these parts into a more cohesive and, therefore, more effective whole. Building on the strong foundations of the 2009 Reimagine IT initiative (http://www.cornell.edu/reimagining/it-review.cfm), and benefiting from what has been learned since, this plan identifies strategic objectives and actions that can lead to sustainable improvements.

As a university community, we have witnessed unprecedented reductions in staff ranks since 2008 of 8.5%, including 18% in the IT area. Despite having fewer staff, there has been no corresponding reduction in the volume of work. Indeed, many would say workloads have increased. IT can and should play a major role in responding to this challenge. Better systems that are easier to use, streamlined administrative practices, flexible and effective IT support, and massive scale infrastructure are among the improvements we can make together. In this plan you will find specific reference to these and many other difference-making initiatives.
Like most universities, Cornell allocates the great majority of its IT expenditures to utility services; roughly 90% of our non-research IT expenditures are for utility services. These technologies are vital to the operation of the university but they do not directly contribute to our core academic functions of scholarship, teaching, and outreach. Examples of utility services include our email/calendaring systems, much of our IT infrastructure (basic networking, storage, etc.), most administrative information systems, and desktop support, to name a few. Information systems have the potential to simplify administrative operations, but we have not always been successful in tapping that potential. We believe this plan lays the groundwork for improvements in the important area of information systems.

I believe this expenditure ratio – 90% on utilities and 10% on academic technologies – must be rebalanced so that a greater proportion is channeled to academic technology use. I intend to use this strategic plan to guide prudent reallocation of our IT investments from utilities to academic differentiators such as technology to support teaching and learning. I believe we can do this without sacrificing the quality of utility services. Rather, we must think about them and deliver them differently. The rapid emergence of cloud and other alternative means of sourcing IT solutions is already making this happen.

Another extremely important consideration for IT@Cornell is the rapid evolution of the roles played by IT staff and the changing characteristics of our IT organizations. Like most of our peer schools, demand for new skills that are relatively scarce today – instructional design is a good example – is growing, while the need for some previously crucial skills is declining. These changing skill requirements reflect the transition of IT@Cornell from a heavy utility focus to a better balance between utilities and academic technologies. The changes can, and hopefully will, be motivating and inspiring for the excellent staff of IT@Cornell. To that end, the final section of this plan, entitled “IT Career Framework” is intended as a guide to planning and action.

I welcome your comments, ideas, and suggestions for improving this plan. You may contact me by email at ted.dodds@cornell.edu or by phone at 607-255-7445. I look forward to working with the entire Cornell community as, together, we pursue the aspirational goals of IT@Cornell: IT in Service to “One Cornell.”

Ted Dodds

Chief Information Officer and Vice President for Information Technologies
EXECUTIVE OVERVIEW

IT@Cornell: IT in Service to “One Cornell” is the culmination of nearly a year of effort involving hundreds of members of the Cornell community – faculty, students, and staff. The plan is based primarily on input from people who use information technology, rather than being driven by technologists. Additional strategic guidance came from IT leaders across campus so that all involved in IT@Cornell can use this plan as a guide to meet the needs of our community and can accurately reflect its priorities as they provision and use IT services.

This plan lays out the objectives for the delivery and support of IT services as well as suggests many initiatives that will result in satisfying those objectives. Objectives are fairly broad and have a 3-5 year horizon.

Key principles were developed to establish the desired approach to providing IT services and serve as a guide to the activities of all IT professionals at Cornell. These included defining “IT@Cornell” as all IT professionals working collaboratively regardless of organizational unit; focusing on providing “IT solutions;” standardizing “utility” services such as email, using commodity services provided by central IT; developing locally provided services that require college or department differentiation; making administrative data available and accessible to all who need it; and always focusing on maximizing the value to Cornell of all IT.

Providing cost-effective infrastructures for information technology is a key objective in Excellence in Organizational Stewardship of the Cornell University Strategic Plan. As stated, information technology is one of the “enabling conditions” for the five goal areas of faculty excellence; educational excellence; excellence in research, scholarship, and creativity; excellence in public engagement; and staff excellence. This IT Strategic Plan serves to identify the IT objectives and initiatives necessary for success of the university’s goal areas. Cornell’s Strategic Plan can be found here: http://www.cornell.edu/strategicplan/.

Objectives were formulated for IT@Cornell under six topic areas:

**Student Experience**: functions that affect students from applicant to matriculated undergraduate to graduate and professional student to alumnus

- **OBJECTIVE 1**: Provide the essential IT capabilities in the colleges to achieve best practices for interacting and communicating with students.
• **OBJECTIVE 2**: Streamline IT services and provide greater awareness of student-focused IT resources for students who are enrolled in Ithaca-based programs, including the Cornell NYC Tech campus.

• **OBJECTIVE 3**: Embrace and build toward universal access and working seamlessly, regardless of location, for students enrolled in Ithaca-based programs.

• **OBJECTIVE 4**: Engage with our students and alumni regularly to understand their needs and identify opportunities for collaboration.

*Teaching and Learning Technologies: support for faculty, classroom technology, access, and innovation*

• **OBJECTIVE 1**: Facilitate the exploration, development, and adoption of new teaching tools and technologies. Focus on early adoption and leading-edge tools and technologies that reflect the range of needs across faculty and colleges.

• **OBJECTIVE 2**: Provide a robust technological baseline in all teaching facilities across the university that supports a range of instructional approaches and uses the most up-to-date technologies.

• **OBJECTIVE 3**: Enable a “virtual learning technology environment” that incorporates the most forward-looking learning systems and tools to support teaching excellence in face-to-face, online, and blended learning settings.

• **OBJECTIVE 4**: Support the development and use of high-quality instructional content across a range of formats, technologies, and teaching and learning approaches.

*Research: IT supporting research in all disciplines*

• **OBJECTIVE 1**: Improve campus effectiveness in addressing the requirements of “Big Data” by leveraging existing mechanisms and, where appropriate, creating new means of digital scholarly content creation, reuse, access, and preservation.

• **OBJECTIVE 2**: Enable easy access by researchers in all disciplines to infrastructure, tools, services, and support.

• **OBJECTIVE 3**: Improve administrative support systems and services for researchers, particularly as they relate to the efficient and effective management of grants.

• **OBJECTIVE 4**: Develop a coherent cyberinfrastructure for research according to the recommendations of the NSF Advisory Committee for Cyberinfrastructure.
Enterprise Information Systems: large systems underlying university administrative and academic-support processes

- **OBJECTIVE 1:** Improve the value proposition of enterprise information systems by decreasing the cost of implementing and supporting them and by increasing their business value.
- **OBJECTIVE 2:** Treat data as an institutional asset.
- **OBJECTIVE 3:** Manage enterprise information systems as an integrated portfolio of applications.

IT Service Excellence: deploying and managing IT systems and services

- **OBJECTIVE 1:** Build a service quality management function into IT processes for service development and management.
- **OBJECTIVE 2:** Increase university access to central administrative systems and institutional data.
- **OBJECTIVE 3:** Manage the lifecycle of IT services and projects.
- **OBJECTIVE 4:** Use and manage IT human resources efficiently.
- **OBJECTIVE 5:** Manage change. Provide leadership to those affected by technology and organizational change.
- **OBJECTIVE 6:** Continue developing an IT service support model.

IT Career Framework: addressing staffing to ensure effective implementation of all IT objectives

- **OBJECTIVE 1:** Implement a staff-development and career-development program to encourage and facilitate staff self-development.
- **OBJECTIVE 2:** Build and develop management and leadership capacity within IT@Cornell to meet future IT needs.
- **OBJECTIVE 3:** Establish a process to support and facilitate career development opportunities across IT functions.

We expect that this plan will be reviewed annually to reaffirm the identified objectives, include others if necessary, and assess progress on each of the identified objectives.
In creating **IT@Cornell: IT in Service to “One Cornell,”** we tried to find the optimal balance between broad and effective community consultation and timely completion of the plan itself. In January 2012 our Senior Advisory Group (fully identified in the appendix) was formed, comprising academic and administrative leaders from across campus. Its role was to oversee the process of developing the IT Strategic Plan, advise on the formulation of guiding principles, and offer feedback on preliminary versions of the plan. The Faculty Advisory Board on IT (FABIT, a standing faculty governance committee) also provided input to and comments on aspects of the plan during its formulation.

We created several advisory groups (see appendix), comprising campus thought leaders, who were responsible for developing five of the six sections contained in this plan. Each group focused on one specific domain. They developed the objectives and initiatives in that area by reaching out to as many IT users as possible. The groups used a combination of surveys (e.g., how Cornell faculty use learning technology, IT needs of students both at Cornell and off campus) and focus groups with graduate and undergraduate students (also with the Student Assembly and Graduate and Professional Student Assembly). We also solicited input via a widely broadcast series of inquiries called “IT Question of the Week” that were published in *PawPrint* and the *Chronicle* during the spring, summer, and early fall. Clearly, this plan would not have been possible without the hard work, dedication, and focus of all members of these advisory groups as well as the input resulting from the campus outreach.

The research enterprise at Cornell is so rich and diverse that addressing it through a single advisory group would not have been effective. Instead, the CIO conducted individual and small-group meetings with researchers in an array of disciplines to understand their work and their IT needs more fully. These conversations were very fruitful and will continue now that the plan is published. Their findings form the framework of the “Cornell Research IT Needs” section of the plan.

In addition, an all-day IT strategic planning event “**IT@Cornell: Planning Our Future, Together**” was held on September 11, 2012, with over 300 members of the community taking part. Fifty faculty members were among the participants that also included staff, students, and executives. Videos of the plenary session as well as a meeting report are available at [http://www.cio.cornell.edu/cms/cio/strategic/future.cfm](http://www.cio.cornell.edu/cms/cio/strategic/future.cfm). This meeting was very successful and may become an annual event for IT@Cornell.
STRUCTURE OF THIS PLAN

This plan lays out the objectives for the delivery and support of IT services and suggests many initiatives that will result in satisfying those objectives. The report begins by enumerating key principles that all IT groups across the university will follow in the design, development, delivery, and maintenance of IT services at Cornell. The plan is then presented in several sections with each focusing on a specific IT domain, such as Service Excellence, or IT constituent group, such as students or researchers. This format allowed for the focus on specific needs within a given domain and reflects explicit input from the individuals most affected by the IT services. These sections are Student Excellence, Teaching and Learning Technologies, Cornell Research IT Needs, Enterprise Information Systems, IT Service Excellence, and IT Career Framework.

Specific objectives for IT are identified in each of the plan sections. These objectives are fairly broad and have a 3-5 year horizon. This means that objectives should not change much through subsequent annual reviews, but rather should provide an IT direction that spans several years. Within the context of each objective, several outcome-focused initiatives are discussed. The purpose of these initiatives is to provide more detailed actions that, if undertaken, will sufficiently move the broader objective forward.

Our desire is to review this plan annually to reaffirm the identified objectives, include others if necessary, and assess progress on each of the identified initiatives. If progress has not been made on any specific objective or initiative, an assessment will be undertaken to determine if that particular item remains a priority.
IT@CORNELL GUIDING PRINCIPLES

Cornell has a decentralized organizational structure with diverse technical requirements. While there are advantages and strengths in this structure, it also introduces complexities and potential inefficiencies. Developing a shared set of principles to guide IT deployment and support helps strike the right balance across the IT organizations in terms of common direction, consistent strategy, and overall alignment with Cornell’s goals.

The following principles, developed as part of this IT Strategic Plan, establish the desired approach to providing IT services to the Cornell community in the future and should serve as a guide to the activities of all IT professionals at Cornell.

1. “IT@Cornell” is defined as all IT professionals working collaboratively, regardless of organizational unit, toward the development, delivery, and management of IT services.

2. IT@Cornell provides IT services to support and enable the academic and research activities of the university, and develops innovative and sustainable IT solutions that differentiate the university from our peers.

3. IT is a strategic enabler for many functions across Cornell. IT@Cornell strives to move from being “IT service providers” to “IT solution providers” by gaining a deeper understanding of the business and academic functions and goals that rely on and benefit from IT.

4. IT strategy and services are discussed and vetted using the IT@Cornell governance model to develop the highest level of collaboration and shared vision.

5. Central IT maximizes the utility of common or commodity IT functions (such as email, networks, and storage) by standardizing to realize scale efficiencies. Units draw on these central capabilities for local implementation or adoption, allowing for increased investment in additional services at the local level as required for department or college differentiation.

6. IT services are developed and maintained with environmental impact and sustainability in mind. Environmental sustainability focused tools, practices, and processes will be deployed where possible and economically feasible.

7. When value and economies are demonstrated, commodity services provided by central IT are adopted and used by all units. If initially these services do not meet the needs of local units, then analyses are undertaken to determine whether the services or unit expectations should be adjusted.

8. Cornell IT services are implemented according to nationally recognized standards and approaches, such as those for accessibility, quality, and usability.
9. Cornell IT services, whether developed locally, integrated with vendor solutions, or outsourced, will strive to meet accessibility measures so they are equally effective for persons with disabilities.

10. IT services are delivered in a way that maximizes value to Cornell. Cost, fit within the current IT architecture, product quality, product development, product lifecycle, and other relevant measures are considered. Central, local, outsourced, and cloud-based services always are included in this analysis.

11. IT services created locally that gain acceptance and use across the broader institution are migrated for support into the central IT organization.

12. University administrative data are expected to be accessible, comprehensive, timely, accurate, and flexible to accommodate the information and reporting needs of faculty, staff, and students. Data are made available to all with a legitimate need, consistent with the university’s responsibility to preserve and protect data.
STUDENT EXPERIENCE

Providing information technology that meets the needs of students is a key objective of IT@Cornell. These needs are diverse and fall into IT services that directly support the pursuit of the academic program, administrative functions such as course registration, other student services, health and safety functions, and remaining connected to the Cornell community.

IT services should provide functionality that aids in the transition through the full cycle of students’ relationships with the university, including prospective students, applicants, matriculated undergraduate, graduate and professional students, and alumni. By considering needs particular to different groups, we also can identify consistent practices and systems to improve efficiency of service delivery to all groups.

Cornell students are often early and enthusiastic adopters of technology. They are constantly “on” smartphones and social media software that allows them to be in continuous contact with friends and family wherever they may be. IT@Cornell must provide IT services that acknowledge this lifestyle, and also support students’ awareness of and effective use of campus IT services. Doing this requires regular interaction among IT@Cornell personnel and students throughout their relationship with Cornell, from prospects to alumni.

The objectives identified here serve to support the objectives and actions in the Educational Excellence goal of the Cornell University Strategic Plan.

OBJECTIVES

- **OBJECTIVE 1**: Provide the essential IT capabilities in the colleges to achieve best practices for interacting and communicating with students.
- **OBJECTIVE 2**: Streamline IT services and provide greater awareness of student-focused IT resources for students who are enrolled in Ithaca-based programs, including the Cornell NYC Tech campus.
- **OBJECTIVE 3**: Embrace and build toward universal access and working seamlessly, regardless of location, for students enrolled in Ithaca-based programs.
- **OBJECTIVE 4**: Engage with our students and alumni regularly to understand their needs and identify opportunities for collaboration.
OBJECTIVE 1: PROVIDE THE ESSENTIAL IT CAPABILITIES IN THE COLLEGES TO ACHIEVE BEST PRACTICES FOR INTERACTING AND COMMUNICATING WITH STUDENTS.

As the first and ongoing point of contact between student and advisor, the resources and campus-wide structures of the IT environment should enable best practices in academic advising. A successful advising effort is based on and promotes a direct, personal relationship between student and advisor that is meaningful and ongoing. Students are actively encouraged to meet regularly with their advisors, in person and online, with advisors providing ready means of communication and frequent, accessible opportunities for interaction. The IT environment should support simple and seamless opportunities for contact, as well as simple and workable means of tracking and documenting interactions.

INITIATIVES

a. Create a plan to provide a suite of applications that encourage and enhance the advising relationship between students and advisors.

b. Conduct a gap analysis of current Cornell applications and processes to determine the fit to current requirements for providing advisors and students with tools that allow them to manage administrative functions efficiently and easily within their colleges and across the university.

c. Articulate a plan to integrate advising more broadly into the student IT experience.

OBJECTIVE 2: STREAMLINE IT SERVICES AND PROVIDE GREATER AWARENESS OF STUDENT-FOCUSED IT RESOURCES FOR STUDENTS WHO ARE ENROLLED IN ITHACA-BASED PROGRAMS, INCLUDING THE CORNELL NYC TECH CAMPUS.

Central IT, colleges, and various divisions across the university offer a wide range of prospective student, applicant, enrolled-student, and alumni-focused IT services. Navigating this range of services and systems can be daunting and confusing, so IT strategic focus should be on ease of navigation, integration, and usability. This strategy also should include development of ways to familiarize students with those services that most effectively meet their needs and augment their IT skills for academic work.
INITIATIVES

a. Assess prospect, applicant, student, and alumni systems to determine opportunities for integration and improvement of navigation and usability.

b. Explore expanding IT training currently offered to Cornell faculty and staff to include students for the purpose of increasing their knowledge of IT functions such as word processing, spreadsheet functionality, web site development, video creation, and others.

c. Provide an infrastructure and increase collaboration on higher education initiatives to support emerging technologies and activities such as eTextbooks, blended online learning settings, and others.

d. Develop a project with the goal of increasing awareness of and access to the breadth of IT services available to students.

OBJECTIVE 3: EMBRACE AND BUILD TOWARD UNIVERSAL ACCESS AND WORKING SEAMLESSLY, REGARDLESS OF LOCATION, FOR STUDENTS ENROLLED IN ITHACA-BASED PROGRAMS.

Cornell’s student population accesses computing resources and engages in university functions from many locations: residential halls, local residences, permanent homes, other Cornell campuses, study-abroad locations, and countless other off-campus program settings. Where practical, the IT environment, access to Cornell academic and administrative resources, use of local IT infrastructure, and the transition between locations should be simple and seamless.

INITIATIVES

a. Implement and support a mobile strategy that allows students to access their data and to perform administrative and academic functions from any location and using any mobile device.

b. Develop a university-wide strategy around central and local labs, loaner laptops and other computing devices, and other activities or services that support universal access to computing resources.

c. Define and articulate a project that will systematically work toward building a more seamless IT user experience regardless of Cornell location.

d. Collaborate with other university units to develop a strategy to improve our maintenance of location and contact information of our community members so that we can communicate and connect with them more effectively.
OBJECTIVE 4: ENGAGE WITH OUR STUDENTS AND ALUMNI REGULARLY TO UNDERSTAND THEIR NEEDS AND IDENTIFY OPPORTUNITIES FOR COLLABORATION.

Meeting regularly with our students and alumni is an important activity to help create alignment and understand current and emerging needs. While there are a number of student organizations for various functions, IT-focused groups are currently nonexistent. Creating and supporting such groups will help establish a tighter and more responsive structure for meeting the needs of students.

INITIATIVES

a. Support and help develop the IT subcommittee of the Student Assembly (http://assembly.cornell.edu/SA/Home) and actively enlist the participation of the Graduate and Professional Student Assembly (http://assembly.cornell.edu/GPSA/Home).

b. Partner closely with Alumni Affairs and Development to explore ways our IT environment can more seamlessly transition students to alumni resources.

c. Define a model for actively and frequently engaging with students about their IT service ideas and IT support needs.

d. Develop an environment where student-focused IT systems and applications can be developed in collaboration with our creative students.
TEACHING AND LEARNING TECHNOLOGIES

Learning technologies can help to facilitate and enhance teaching and learning at Cornell and can be used to leverage Cornell’s core strengths as a research and educational institution. Technologies for collaboration and digital content creation can provide a bridge between teaching and research and enable the sharing of research both in the classroom and with other institutions.

Higher education is seeing significant advancement in the use of technology to aid teaching and learning across the board. Whether we are talking about technology-aided interaction in the classroom, video and audio lecture capture for later viewing, remote control of experimental apparatus, or computer simulations to augment hands-on activities, faculty and students alike are using more and more IT every day. Technology is providing the infrastructure to allow new ways of reaching students – in some cases, far beyond the campus classroom, such as in “massively open online classes” or MOOCs. All of these must be explored at Cornell so that our faculty will have the knowledge and capability to adapt the technologies that are most suited to Cornell’s environment.

The objectives identified here serve to support the objectives and actions in the Faculty Excellence and Excellence in Research, Scholarship, and Creativity goals of the Cornell University Strategic Plan. They will provide easier access to learning technologies, establish a core baseline of classroom technologies, and – perhaps most importantly – support innovation.

OBJECTIVES

- **OBJECTIVE 1**: Facilitate the exploration, development, and adoption of new teaching tools and technologies. Focus on early adoption and leading-edge tools and technologies that reflect the range of needs across faculty and colleges.

- **OBJECTIVE 2**: Provide a robust technological baseline in all teaching facilities across the university that supports a range of instructional approaches and uses the most up-to-date technologies.

- **OBJECTIVE 3**: Enable a “virtual learning technology environment” that incorporates the most forward-looking learning systems and tools to support teaching excellence in face-to-face, online, and blended learning settings.

- **OBJECTIVE 4**: Support the development and use of high-quality instructional content across a range of formats, technologies, and teaching and learning approaches.
Since current learning spaces and support levels for learning technologies need to be enhanced and appropriate support levels need to be developed, Objectives 2 through 4 initially will focus on mainstream adoption of technology. In subsequent years, the focus can shift to meeting objectives associated with innovative learning technologies and approaches.

**OBJECTIVE 1: FACILITATE THE EXPLORATION, DEVELOPMENT, AND ADOPTION OF NEW TEACHING TOOLS AND TECHNOLOGIES. FOCUS ON EARLY ADOPTION AND LEADING-EDGE TOOLS AND TECHNOLOGIES THAT REFLECT THE RANGE OF NEEDS ACROSS FACULTY AND COLLEGES.**

It is important to foster a culture that encourages and enables adoption of innovative teaching tools and methods. This will require direct support of faculty, both mainstream adopters and innovators.

**INITIATIVES**

a. Develop a program to encourage and support faculty innovation, increase and promote opportunities for experimentation and adoption of learning technologies, lower barriers for faculty participation, and provide a range of support services, including support staff, to help propagate ideas to all faculty.

b. Enhance services provided to faculty by developing a partnership, support, and professional-development program between Academic Technologies, IT staff in colleges, and other service groups that support learning and teaching activities at Cornell.

c. Develop and implement a staffing and support plan to create a "lending library" of learning technologies and a series of "showcase classrooms" that will allow instructors to engage easily with the technology.

d. Develop a support and outreach program that targets graduate students as early adopters in their classroom support roles.

e. Increase ease of use and create time savings for faculty by establishing clear criteria for the adoption of new learning technologies. Include: What teaching or learning need does the technology satisfy? Does it make faculty more efficient? Is it simple to use?

f. Create a plan that facilitates exploration of technologies enabling faculty with disabilities to teach effectively, and that results in implementation of new tools and support practices.
OBJECTIVE 2: PROVIDE A ROBUST TECHNOLOGICAL BASELINE IN ALL TEACHING FACILITIES ACROSS THE UNIVERSITY THAT SUPPORTS A RANGE OF INSTRUCTIONAL APPROACHES AND USES THE MOST UP-TO-DATE TECHNOLOGIES.

A key objective is to provide a consistent technological baseline in all teaching facilities across the university. Instructors should be able to walk into any teaching room on campus and have access to current and mainstream learning technologies that they can easily use and apply to their teaching, regardless of their device or platform. Defining a learning technology classroom baseline and identifying the spaces to be enhanced should be done in coordination with the Space Study initiative and should align with the Space Study recommendations.

INITIATIVES

a. Provide a consistent technological baseline in all teaching spaces across the university. Revise and update the “classroom tiers” description to provide robust definitions of the teaching needs in spaces and the technology necessary to support them.

b. Develop a process to meet changing faculty and student needs with evolving technology-enabled classrooms and learning spaces.

c. Provide knowledgeable and dedicated support staff who can stimulate effective faculty use of learning technologies by developing a scalable support program between Academic Technologies, college support staff, and other campus units.

d. Solicit regular faculty input about future learning technologies and strategic IT directions to gain on-going understanding of faculty needs.

OBJECTIVE 3: ENABLE A VIRTUAL LEARNING TECHNOLOGY ENVIRONMENT THAT INCORPORATES THE MOST FORWARD-LOOKING LEARNING SYSTEMS AND TOOLS TO SUPPORT TEACHING EXCELLENCE IN FACE-TO-FACE, ONLINE, AND BLENDED LEARNING SETTINGS.

It is important to establish learning technology systems that support a range of instructional formats and assessment approaches and foster teacher-student interaction. Technology tools must be simple to use and implement and must work and be supported on the user’s personal device or platform (e.g., support device independent platforms and Bring Your Own Device—BYOD).
INITIATIVES

a. Identify campus needs and gaps regarding technology used to assess student learning, and provide students timely feedback. Implement tools that support a range of assessment approaches and provide a “life cycle” approach to managing assessment data.

b. Provide support for developing and teaching with blended learning tools. These facilitate active learning strategies and enable immediate student feedback and assessment.

c. Implement an outreach, training, and support program to increase faculty awareness that leverages and partners staff in Academic Technologies and central IT with instructional support staff in the colleges.

d. Bring experts and researchers into the classroom by increasing support for remote collaboration tools.

OBJECTIVE 4: SUPPORT THE DEVELOPMENT AND USE OF HIGH-QUALITY INSTRUCTIONAL CONTENT ACROSS A RANGE OF FORMATS, TECHNOLOGIES, AND TEACHING AND LEARNING APPROACHES.

With the proliferation of new forms of instructional content, faculty have indicated a strong need for services to help with the creation and enhancement of digital course content, as well as the need for simple access to digital materials, such as eTextbooks. In addition, course content needs to be portable and offered as mobile versions to meet student needs. Developing digital content is important to faculty, and can be used in both a teaching and research context.

INITIATIVES

a. Identify campus needs and gaps and provide a robust suite of tools that deliver course content in multiple formats (e.g., eTextbooks, audio/video, mapping, etc.).

b. Support the development of digital course content and the conversion of older course content formats to improve current technologies and lower use barriers.

c. Enable the sharing and distribution of digital course materials and promote multi-university collaborations around digital content. Explore collaboration opportunities and options to build shared services with peer institutions.

d. Leverage Cornell’s strength in research to develop shared services and collaborate on digital learning materials.
e. Explore current practices and processes to archive and preserve course content and instructional materials; identify service gaps; and implement IT archiving, management, and support services.
CORNELL RESEARCH IT NEEDS

Virtually all of our research activities rely on some form of information technology. IT now pervades research in all disciplines – from genomics and nanoscience to humanities and the citizen science outreach activities of the Lab of Ornithology. The image of a lone scholar in an ivory tower long ago gave way to that of interdisciplinary teams working with colleagues across institutions and geography, relying on advanced networking and other core technologies to pursue discovery.

Research teams generate vast amounts of new data from sensor networks, social media, digital videos, GPS signals, and other technology infrastructure every second of every day. This so-called “big data” problem\(^1\) requires solutions that integrate resources across units within the university as well as national or global domains.

The issues facing IT support of research at Cornell are similar to those found at other leading universities. Our challenge is to identify the infrastructure, services, and support structures that can provide the most value in the areas of greatest need to the Cornell research community. Currently CIT provides most, but not all, of the IT infrastructure used by campus researchers. Depending upon their expertise and level of need, our researchers obtain their other IT services and support by a variety of means from a variety of sources, ranging from self-support within individual research groups to support at the departmental and college levels to support from centers such as CAC (http://www.cac.cornell.edu), CISER (http://ciser.cornell.edu), and others.

In what will certainly be for some time a constantly and very rapidly evolving environment, the issue is to determine, and regularly re-determine, how best to deliver research-oriented IT services and support to the campus. Cornell’s current funding model for centralized research support facilities, including CAC, requires the recovery of a very significant portion – up to 80% – of their direct costs from user fees. How to allocate central support to the most urgent and very diverse needs of our researchers, always present challenges. The rapid emergence of IT services “in the cloud” (provided over the Internet by third parties) could soon become a practical alternative to on-premises IT infrastructure, and may lead us to think differently about how scale can reduce overhead costs while increasing, for example, computational and data-storage capacity and access. We should view this as increasing choice rather than mandating a direction.

Although this plan focuses on information technology, we should aspire to create a comprehensive research infrastructure at Cornell, not only addressing IT needs but also acknowledging a broader

\(^1\) Large, complex data sets that require special processing tools.
context of policies, funding, business planning, IP issues, curation services, grant writing, and government mandates – going beyond big data to include management of research workflows, metadata creation, discoverability, training, new dissemination forms, publishing models, etc.

The objectives identified here serve to support the objectives and actions in the Excellence in Research, Scholarship, and Creativity goal of the Cornell University Strategic Plan.

**OBJECTIVES**

- **OBJECTIVE 1:** Improve campus effectiveness in addressing the requirements of “Big Data” by leveraging existing mechanisms and, where appropriate, creating new means of digital scholarly content creation, reuse, access, and preservation.
- **OBJECTIVE 2:** Enable easy access by researchers in all disciplines to infrastructure, tools, services, and support.
- **OBJECTIVE 3:** Improve administrative support systems and services for researchers, particularly as they relate to the efficient and effective management of grants.
- **OBJECTIVE 4:** Develop a coherent cyberinfrastructure for research according to the recommendations of the NSF Advisory Committee for Cyberinfrastructure.

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**OBJECTIVE 1: IMPROVE CAMPUS EFFECTIVENESS IN ADDRESSING THE REQUIREMENTS OF “BIG DATA” BY LEVERAGING EXISTING MECHANISMS AND, WHERE APPROPRIATE, CREATING NEW MEANS OF DIGITAL SCHOLARLY CONTENT CREATION, REUSE, ACCESS, AND PRESERVATION.**

More and more, research is dependent on collection and analysis of voluminous data sets coming from multiple sources over periods of time. Providing IT support for big data has quickly become a significant issue at Cornell.

**INITIATIVES**

a. Plan for and provide better coordinated institutional stewardship of research data and preservation of the scholarly record.

b. Participate in – and where possible, lead – inter-institutional projects that aggregate resources beyond the campus level to help preserve the scholarly record (e.g., DuraCloud [http://www.duracloud.org] and the Digital Preservation Network, DPN [http://www.dpn.org]).
c. Support and augment on-campus groups, such as the Research Data Management Service Group (RDMSG), that provide support services directly to researchers.

d. Maintain, invest in, and continue to enhance the campus data network so that the Cornell research communities in all disciplines have access to increasingly massive digital data resources.

e. Lead and collaborate with other institutions and with regional and national organizations (e.g., NYSENet [http://www.nysernet.org] and Internet2 [http://www.internet2.edu]) so that researchers have the best possible access to remote data sources. Consider related issues of policy, governance, and licensing.

f. Promote collaboration among all of Cornell’s campuses to create a seamless research “experience” for all disciplines.

OBJECTIVE 2: ENABLE EASY ACCESS BY RESEARCHERS IN ALL DISCIPLINES TO INFRASTRUCTURE, TOOLS, SERVICES, AND SUPPORT.

Faculty should not encounter technical and other obstacles when accessing IT tools and services necessary for their research activities. Enabling easy access to IT furthers the research enterprise.

INITIATIVES

a. Make all appropriate Cornell systems and services accessible to our own researchers and those from other institutions with whom we wish to collaborate by providing trusted federated identity access and management services (such as those supported by the InCommon Federation2).

b. Simplify and streamline software distribution and licensing processes so that researchers get the most value from these licenses while spending the least possible time managing them.

c. Explore emerging opportunities to maximize the benefits of research-related IT investments through cloud services (including but not limited to a growing suite of services brokered by Internet2’s Net+ division), campus-based cycle scavenging (for example, leverage lab computers when not in use), and other appropriate means.

2 The InCommon Federation is the U.S. education and research identity federation, providing a common framework for trusted shared management of access to online resources.
d. Extend Administrative Streamlining Program (ASP) efficiencies from administrative areas to address similar needs in research domains. (This includes Infrastructure Virtualization, IT Service Management, and perhaps Application Streamlining.)

OBJECTIVE 3: IMPROVE ADMINISTRATIVE SUPPORT SYSTEMS AND SERVICES FOR RESEARCHERS, PARTICULARLY AS THEY RELATE TO THE EFFICIENT AND EFFECTIVE MANAGEMENT OF GRANTS.

Research administration is often seen as an obstacle to carrying out research activities. Improved systems and services in this area can be of significant benefit to researchers.

INITIATIVES

a. Implement Kuali Coeus, a comprehensive research administrative system, in FY15.
b. Plan for and deliver improvements to other research administrative system that are beyond the functional scope of Kuali Coeus.
c. Optimize the administrative processes that researchers must use and make those processes as consistent as possible across the university.
d. Explore ways in which appropriate IT expertise can be of more help with research grant preparation.

OBJECTIVE 4: DEVELOP A COHERENT CYBERINFRASTRUCTURE FOR RESEARCH ACCORDING TO THE RECOMMENDATIONS OF THE NSF ADVISORY COMMITTEE FOR CYBERINFRASTRUCTURE.

Cyberinfrastructure is the totality of networks, computers, support structure, and community that services research computing. The NSF Advisory Committee Cyberinfrastructure Strategic Recommendation to university leaders says that “every institution of higher education should have a strategic plan, developed and endorsed at the highest level of its governance, for the establishment of a coherent cyberinfrastructure. Such a plan should have as one of its features a strategy for maximizing effective utilization of the institution's aggregate research cyberinfrastructure and minimizing impact on the global environment. Such a plan should also include ongoing funding for staff to support implementation and use of cyberinfrastructure hardware and software.”

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INITIATIVES

a. Create a cyberinfrastructure strategy through a collaboration of researchers, research administrators, and IT leaders. This plan should include the adoption of new technologies, management of large data sets, and the security of digital research data. A sample plan can be found at http://www.cic.net/CyberInfrastructurePaper.
b. Promote the plan and advocate for implementation funds.
c. Implement and support the cyberinfrastructure strategy.
ENTERPRISE INFORMATION SYSTEMS

Enterprise information systems are the large complex software systems and tools underlying many of the university’s core administrative and academic-support processes. Examples include the systems associated with finance, research support, human resources, student administration, course management, and several others. Every day these systems process thousands of business transactions in which data are entered, manipulated, and stored for both operational and informational purposes. The resulting information resources constitute a valuable institutional asset that is used for analysis and decision making.

Enterprise information systems have both operational (transaction-processing) and informational (data storage, retrieval, and reporting) functions. The operational goals tend to be focused on efficiency. When done well, enterprise information systems make it easier for people to complete their work in a timely and accurate manner. They also enable the university to standardize and streamline its operations. By contrast, poor quality enterprise systems can actually increase workloads, lead to frustration among the people who use them, and cause costly operational disruptions.

The informational goals of enterprise systems focus on effectiveness. Institutional data needs to be readily available to decision-makers in a form that marries data with context. The quality of the information is more important than the quantity of data.

Like many universities, Cornell has found it challenging to deploy and support these systems in ways that optimally balance operational efficiency with informational effectiveness. It is difficult for staff to maintain the necessary depth and breadth of technical skills required by our heterogeneous multi-platform environment. The costs associated with implementing and supporting these systems is substantial. It can take a long time to install or upgrade them. They are complex and can be difficult for people to use, especially for those who use certain systems infrequently but under tight deadlines, as is the case for many researchers.

Feedback from focus groups highlighted the following broad areas where people are looking for significant improvements to current enterprise information systems:

- Established workflows must align better with the business processes they support.
- Collaboration tools are essential.
- Strategic objectives and long-term planning for business systems are required.
- End users need to be engaged in the design of systems.
• Access to data is hindered by the current security model.
• Granular access to data—appropriate to need—should be available.
• Processes for data creation, storage management, and preservation are unclear.

The objectives identified here serve indirectly to support the objectives and actions in all areas of the Cornell University Strategic Plan.

**OBJECTIVES**

- **OBJECTIVE 1:** Improve the value proposition of enterprise information systems by decreasing the cost of implementing and supporting them and by increasing their business value.
- **OBJECTIVE 2:** Treat data as an institutional asset.
- **OBJECTIVE 3:** Manage enterprise information systems as an integrated portfolio of applications.

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**OBJECTIVE 1: IMPROVE THE VALUE PROPOSITION OF ENTERPRISE INFORMATION SYSTEMS BY DECREASING THE COST OF IMPLEMENTING AND SUPPORTING THEM AND BY INCREASING THEIR BUSINESS VALUE.**

Enterprise systems represent the university's single largest area of investment in software applications. Many if not most of our staff, faculty, and students interact with one or more of these systems every day. The combination of the substantial cost and widespread use of enterprise systems makes it a matter of urgency to improve the cost-benefit (or value proposition) of this group of systems. This can be done by reducing the cost or improving the benefits, or both. In addition, it is important that these systems reflect efficient and effective business practices, and that they not merely automate existing, often cumbersome, processes. To align with a cost-benefit analysis this objective is divided into two distinct sections – initiatives to decrease cost and initiatives to increase business value.

**INITIATIVES TO DECREASE THE COST OF IMPLEMENTATION AND SUPPORT**

a. Move all systems and databases to virtual infrastructure, with a strong preference for cloud providers, using on-premises hosting only when external services are not viable.
b. Source enterprise information systems from a cloud or external service provider whenever possible, and investigate community sourcing.

c. Identify and pursue a mix of alternative personnel resourcing strategies, including rural-sourcing (outsourcing to companies purposefully located in low-cost-of-living areas), staff augmentation, and other means.

d. Use the approaches outlined in initiatives a. through c., above, in the current enterprise information systems projects, which include:
   - Human Resources and Payroll (Workday)
   - Research Administration (Kuali Coeus)
   - Student Administration (technical version upgrade of existing system)

e. Refresh the software inventory first compiled by the Application Streamlining Initiative (ASI) every two years, beginning in 2013.
   http://www.cio.cornell.edu/cms/cio/initiatives/application/index.cfm

f. Plan and implement the consolidation projects identified by the ASI, specifically:
   - Document Management
   - Archival Storage
   - Customer Relationship Management
   - Lab Management

### INITIATIVES TO INCREASE BUSINESS VALUE THROUGH IMPROVED USABILITY AND STREAMLINED BUSINESS PROCESSES

a. Develop a deeper and wider level of local expertise in system usability, perhaps including the creation of a Usability Lab.

b. Conduct a usability assessment of enterprise systems; set specific targets for improvement so that people can use the systems effectively without the need for specialized training.

c. Leverage the entire IT@Cornell community to reduce implementation time.

d. Improve inter-system integration by adopting and following a service-oriented architecture.

e. Develop and implement a strategic quality management program for all enterprise information systems to increase the application of best practices.

f. Provide access to enterprise information systems on mobile devices, including the ability to view and approve transactions with appropriate security.
g. Develop an ongoing program of business process streamlining based on a proven methodology that works in a complex university environment.

OBJECTIVE 2: TREAT DATA AS AN INSTITUTIONAL ASSET.

Informed, data-driven decision making relies on accurate, timely, and well-defined information resources. While it may not be feasible, or even desirable, to have a single technology solution to support all of Cornell’s “institutional intelligence” needs, it is vital that the institution understand the characteristics of its data resources through appropriate governance, policies, and a coherent architecture.

INITIATIVES

a. Develop data governance and related policies that meet business requirements and that provide appropriate security within an open-access framework.

b. Create a technical data architecture framework with metadata that describes the value and location of institutional data.

c. Develop data dictionaries based on business requirements.

d. Publish consistent interfaces to key data repositories.

e. Develop a standardized data access methodology.

f. Clarify technical and functional roles associated with data reporting.

See “IT Service Excellence,” Objective 2 for related information.

OBJECTIVE 3: MANAGE ENTERPRISE INFORMATION SYSTEMS AS AN INTEGRATED PORTFOLIO OF APPLICATIONS.

Many points of integration and resource dependencies exist among our enterprise information systems. A deficiency in one system can affect another system that depends on shared data or workflows. Managing multiple software platforms, versions, upgrades, and implementation projects requires that we view these systems not only individually but also as an integrated portfolio that recognizes the interdependencies.
a. Complete the roll-out of the IT governance model to address priority-setting, resource allocation, and accountability for results with enterprise information systems.

b. Publish an annual multi-year schedule of planned activities related to these systems, reflecting both capital and operating budget allocations.

c. Require a “technical environmental impact statement” to accompany each enterprise information system proposal so that the technology lifecycle implications of the projects – such as compatibility with existing or envisioned infrastructure, integration with other services, etc. – are considered in the planning process.

d. Publish, and regularly refresh, a lifecycle roadmap for each enterprise information system.
IT SERVICE EXCELLENCE

Cornell desires and deserves IT systems that are highly reliable, efficient, stable, and secure. The methods used to deploy and manage IT systems directly influence their usability and reliability. Customer-focused activities help to deliver systems that closely meet Cornell’s needs.

IT Service Excellence describes the processes and methods currently in use or to be developed and applied to the definition, description, development, and management of IT services at Cornell. While there is no direct linkage of these objectives to specific goals in the Cornell University Strategic Plan, the effectiveness of our practices and methodologies used when delivering IT services will certainly affect all areas that rely on IT services.

OBJECTIVES

- **OBJECTIVE 1**: Build a service quality management function into IT processes for service development and management.
- **OBJECTIVE 2**: Increase university access to central administrative systems and institutional data.
- **OBJECTIVE 3**: Manage the lifecycle of IT services and projects.
- **OBJECTIVE 4**: Use and manage IT human resources efficiently.
- **OBJECTIVE 5**: Manage change. Provide leadership to those affected by technology and organizational change.
- **OBJECTIVE 6**: Continue developing an IT service support model.

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**OBJECTIVE 1: BUILD A SERVICE QUALITY MANAGEMENT FUNCTION INTO IT PROCESSES FOR SERVICE DEVELOPMENT AND MANAGEMENT.**

Quality management, enhancement, and assurance are important aspects of IT service management. Quality management provides for a common understanding of system reliability, functionality, and support levels. Quality of service is related to cost of service, so quality needs to be measured appropriately to strike the right cost/benefit balance. It is important for our IT community to assess the level of quality required for each of our services based upon the expectations of our user community.
When implementing quality-enhancing practices, it is always more cost effective to apply such practices earlier rather than later. Building quality into our services as they are developed is more effective than merely testing for problems prior to service release. Quality management practices and processes should be focused on “building in” rather than “testing out.”

**INITIATIVES**

a. Define and promulgate a set of common quality objectives and practices, driven by the requirements of the service and the needs of the users, which can be implemented for all IT services.
b. Implement a service quality measurement program that allows service support functions to identify quality issues prior to them inconveniencing our service users.
c. Define and implement quality management practices to augment the project management methodology.
d. Define and articulate an ADA accessibility program the increases local expertise, establishes broad awareness, and builds on standardized web development definitions.

**OBJECTIVE 2: INCREASE UNIVERSITY ACCESS TO CENTRAL ADMINISTRATIVE SYSTEMS AND INSTITUTIONAL DATA.**

Centrally provided administrative systems and other services are important assets for colleges and local units. The data maintained in these provide valuable information that, if available, can lead to better local and institutional decisions. It is imperative that these systems and the data that reside in these services be as accessible as possible.

Providing more open access, however, must be balanced with the requirements established by the appropriate data steward. Further, appropriate security and privacy measures must be fully understood and assured throughout the entire IT architecture.

**INITIATIVES**

a. Develop a clear and maintainable electronic data architecture. Data architecture is a set of data models, policies, and rules that help define consistent storage, arrangement, definition, and integration of institutional data. This architecture is even more important as we move to the adoption of cloud-based services.
b. Establish open access to data as the default strategy for all services. Work with data stewards to define more clearly and consistently the small set of data that should not be openly shared.

c. Develop and implement an Application Programming Interface (API) approach for all centrally provided services that invites leveraging these services.

d. Evaluate the necessity of policy changes that reflect the desired outcomes described above.

See “Enterprise Information Systems,” Objective 2 for related information.

OBJECTIVE 3: MANAGE THE LIFECYCLE OF IT SERVICES AND PROJECTS.

Cornell has a broad set of supported IT services that are at various stages of their service lifecycles. As these services evolve, it is important for the entire IT community to understand the direction they are moving, potential adjustments in their features or underlying technologies, and potential changes in their support models. Understanding these changes will allow local units to prepare for them better by transitioning users or migrating services. By creating a common understanding around investment, migration, or divestment of our IT services, we will function more cohesively as an IT@Cornell community.

Additionally, the IT@Cornell community should clearly identify its shared priorities to improve focus and availability of requisite resources. These institutional IT priorities should be communicated regularly to the Cornell community and form the basis for delivery commitments from IT@Cornell to the community.

INITIATIVES

a. Modify the existing IT Service Catalog to include such information as the specific underlying tool or infrastructure, position in lifecycle (growth, stable, declining), and particular skill sets required to support. These data elements will allow us to make informed decisions for such things as service retirement.

b. Implement more consistent portfolio management practices to improve our understanding of such issues as resource dependencies, skill set availability, and service lifecycle practices.

c. Use the emerging IT governance strategy regularly to discuss, identify, and communicate the top IT priorities. Use the governance structure to assess service lifecycles and direction.
OBJECTIVE 4: USE AND MANAGE IT HUMAN RESOURCES EFFICIENTLY.

In an environment with limited technical resources, declining budgets, and needs that often outpace our ability to deliver, it is important that IT@Cornell work on the right priorities and make good use of all available resources. We believe we have an opportunity to use the IT talent across our university more efficiently. To do this, however, we need to inventory and share our technical skills for the purpose of more thoughtful collaboration and institutional partnership. This may lead to virtual centers of excellence for such skills as web and database development.

INITIATIVES

a. Create a skills database of IT talent across all IT@Cornell.
b. Define and communicate a vision where technical talent, regardless of home organization, is used collaboratively on the highest priority initiatives.

OBJECTIVE 5: MANAGE CHANGE. PROVIDE LEADERSHIP TO THOSE AFFECTED BY TECHNOLOGY AND ORGANIZATIONAL CHANGE.

IT professionals participate in change in two distinct ways – change within the IT organization and change across our community as a result of new IT services or technologies. The rapid change we are seeing throughout the IT space in areas such as cloud services, mobile computing, and bring-your-own-device (BYOD) requirements makes it imperative that our IT organizations and the professionals within them are prepared to embrace changes and help those we support to understand and adopt them when appropriate.

All IT@Cornell should strive to adopt, support, and drive needed change. This will require gaining new skills, organizing or reorganizing as necessary, ushering in new technologies and systems to our community, and supporting everyone in our community as they participate in these changes for the betterment of Cornell.

INITIATIVES

a. Create a “Change Board” that focuses on change readiness and specific activities that serve to inform leadership and support others as change happens across the institution.
b. Invest in change management training to help inform leadership of successful change practices and processes.
c. Expand IT support of early adopters of new technologies to facilitate a successful user experience.
OBJECTIVE 6: CONTINUE DEVELOPING AN IT SERVICE SUPPORT MODEL.

A straightforward, consistent, and reliable support model across all IT services and departments is a requirement for successful use of IT by Cornell’s students, staff, and faculty in support of their educational and research goals. Such a model leads to higher IT service satisfaction because users of these IT services clearly understand where to go to receive the assistance they need. Such a model further adds to IT system reliability and increased satisfaction by providing input to the service owner who can resolve issues more quickly.

INITIATIVES

a. Implement a standards-based (ITIL) central IT Service Desk that will be used by all services.

b. Implement Level 1 support for centrally maintained IT services in the central IT Service Desk.
IT CAREER FRAMEWORK

For IT staff to be successful, they need to understand not just technology and related business processes, but also which problems IT can and cannot solve, and how to apply IT solutions to those problems as appropriate.

IT professionals can help drive efficiencies and improve processes by managing changes that are driven by new technology development. To do this, they need to:

- Have a thorough understanding of Cornell’s IT environment.
- Have an awareness of future IT trends.
- Know how to adapt new technologies to improve business processes.
- Understand the diverse needs of faculty, staff, and student users at Cornell and how to support each group.

To develop staff with these skills, an IT Career Framework needs to address staff technology competencies and develop other competencies across all roles – staff, managers, and leaders.

The objectives identified here serve to support the objectives and actions in the Staff Excellence goal of the Cornell University Strategic Plan.

OBJECTIVES

- **OBJECTIVE 1**: Implement a staff development and career development program to encourage and facilitate staff self-development.
- **OBJECTIVE 2**: Build and develop management and leadership capacity within IT@Cornell to meet future IT needs.
- **OBJECTIVE 3**: Establish a process to support and facilitate career development opportunities across IT functions.

OBJECTIVE 1: IMPLEMENT A STAFF DEVELOPMENT AND CAREER DEVELOPMENT PROGRAM TO ENCOURAGE AND FACILITATE STAFF SELF-DEVELOPMENT.

The IT skills that are necessary for today are different from those that were required even three years ago. With the ever-increasing pace of change within the IT development and support environments, Cornell needs an IT staff that is able to evolve. Cornell must invest in and support continuous staff improvement opportunities.
INITIATIVES

a. Develop an inventory of staff skill sets, IT competencies, and personal characteristics, and use it to identify staff for projects and future IT staffing needs. Determine how to identify staff who want to develop.

For example, identify staff with narrow IT skills who may need to develop broader IT skills, and develop a larger view and overall understanding of IT. Clarify staff (personal) development responsibilities vs. organizational responsibilities.

b. Implement a training program across all IT to develop common skill sets and approaches to self-development. Determine a core curriculum that enables progression and movement across areas. Materials and training need to be time-efficient.

c. Develop an IT employee orientation program to help staff understand business processes, roles, and how units work across campus. Determine training needed for on-boarding and career progression. Determine how managers can develop and plan for training and orientation.

d. Develop and implement consistent tools and a process to track staff progress, learning, and training/conference participation. Migrate data into Workday in the future.

OBJECTIVE 2: BUILD AND DEVELOP MANAGEMENT AND LEADERSHIP CAPACITY WITHIN IT@CORNELL TO MEET FUTURE IT NEEDS.

Cornell must develop its IT managers and leaders. The transition from technical expert to manager or leader should be a purposeful and planned one. Specific competencies and skills need to be developed to grow and advance Cornell’s future leaders. This objective identifies potential leaders within our staff and creates a process through which they are developed to be even more prepared for the leadership roles of the future.

INITIATIVES

a. Leverage existing Office of Human Resources (OHR) programs and resources for developing managers and leaders, and develop a more focused use of HR resources to meet the unique needs of IT staff.

b. Build an IT competency model that identifies the key concepts of IT career development along three related paths: IT staff, IT technical leaders, and IT managers.
c. Develop hiring practices to meet future IT staffing needs with a focus on recruiting and retaining women and staff from under-represented populations.
d. Develop a process to identify and develop IT leaders, recognizing that increasing diversity should be part of this goal. Leverage existing mentoring and leadership programs.

OBJECTIVE 3: ESTABLISH A PROCESS TO SUPPORT AND FACILITATE CAREER DEVELOPMENT OPPORTUNITIES ACROSS IT FUNCTIONS.

Creating an environment where our IT staff can grow within their current field, understand how to shift specialties within the IT domain, and identify career opportunities is imperative for continuous improvement within IT@Cornell. Our staff are our most valuable resource. IT@Cornell must identify ways to support and facilitate career development.

INITIATIVES

a. Create an IT Career Development Committee where committee members identify appropriate and relevant growth and development opportunities (stretch opportunities).
b. Pilot an IT career student internship program modeled on the existing Division of Financial Affairs (DFA) program. The goals are to:
   • Encourage a more diverse IT staff by creating opportunities for under-represented minority groups and women.
   • Provide IT staff with no supervisory or managerial responsibilities with an opportunity to develop these skills through short-term assignments leading interns.

PROPOSED 2013 PILOTS AND NEXT STEPS

The follow four initiatives will serve to set a more immediate course for our career development work. These initiatives were important to capture here as they demonstrate some immediate work already underway and they provide a platform for other initiatives within this plan.

1. Focus on and prioritize developing the management skills of current IT managers at Cornell though the IT Leadership Program (ITLP) and other existing programs.
2. Develop an IT employee orientation program to help staff understand business processes, roles, and how units work across campus. Implement in 2013 for all IT staff on campus.
3. Implement a Career Development Committee with an initial charge to map out the tools and processes for the IT competency model and skill set.
4. Build web resources/presence about the IT Career Framework @ Cornell.
APPENDIX – ADVISORY GROUP MEMBERSHIP

SENIOR ADVISORY COMMITTEE

- Laura Brown (Vice Provost for Undergraduate Education)
- Bob Buhrman (Senior Vice Provost for Research)
- Joe Burns (Dean of University Faculty)
- Ted Dodds (CIO)
- Jerry Grochow (Consultant, former Vice President for IS&T, MIT)
- Mike Kotlikoff (Dean, College of Veterinary Medicine)
- Peter LePage (Dean, College of Arts and Sciences)
- Sean Murphy (Student)
- Susan Murphy (Vice President, Student and Academic Services)
- Rich Robinson (Associate Dean, Administration and Finance, Law School)
- Steve Schuster (Associate CIO)
- Peter Turner (Assistant Dean for Administration, College of Architecture, Art, and Planning)
- Adam Wolford (Chair of CIT Committee, Student Assembly)

STUDENT EXPERIENCE COMMITTEE

- Peggy Beach (Director, University Communications)
- Karen Brown (Director, Marketing and Communications)
- John-Paul Couce (Student, GPSA Representative)
- Cassie Dembosky (University Registrar)
- Ted Dodds (CIO)
- Andrew Gossen (Alumni Engagement Officer, Alumni Affairs and Development)
- Jason Kahabka (Assistant Dean of Student Services, Graduate School)
- Diane Kubarek (Communications Manager, Student and Academic Services)
- Lee Melvin (Associate Vice Provost, Admissions and Financial Aid)
- Sean Murphy (Student)
- Susan Murphy (Vice President, Student and Academic Services)
- Kellie Page (Associate Vice President, Student and Academic Services)
- Steve Schuster (Associate CIO)
• Lisa Shaffer (Assistant Dean of Student Services, School of Hotel Administration)
• Rebecca McMillan Sparrow (Director, Cornell Career Services)

TEACHING AND LEARNING COMMITTEE

• Tilman Baumstark (Senior Project Manager, Graduate School)
• Laura Brown (Vice Provost for Undergraduate Education)
• Andrew Chignell (Professor of Philosophy, College of Arts and Sciences)
• Evan Cortens (GPSA President)
• Cassie Dembosky (University Registrar)
• Ted Dodds (CIO)
• Barry Perlus (Associate Dean, College of Architecture, Art, and Planning)
• Theresa Pettit (Director, Center for Teaching Excellence)
• Oya Rieger (Associate University Librarian)
• Chris Schaffer (Professor, Biomedical Engineering)
• Charles Seyler (Associate Dean for Undergraduate Programs, College of Engineering)
• Frank Strickland (IT Director, College of Arts and Sciences)
• Clare van den Blink (Director, Academic Technologies)
• Paul Velleman (Associate Professor of Social Statistics, Computing and Information Science and FABIT Chair)
• Don Viands (Associate Dean, College of Agriculture and Life Sciences)
• Adams Wolford (Chair of CIT Committee, Student Assembly)

IT CAREER FRAMEWORK COMMITTEE

• Tammy Blasz (Senior Human Resources Consultant, Human Resources)
• Ted Dodds (CIO)
• Debra Howell (IT Director, Facilities)
• Tim Lynch (IT Director, College of Agriculture and Life Sciences)
• Mary Opperman (Vice President, Human Resources)
• Clare van den Blink (Director, Academic Technologies)
• Kevin Drake (IT Director, CIT and DFA)
• Dan Dwyer (IT Director, Research Administration)
• Andre Hafner (IT Director, College of Architecture, Art, and Planning)
• Sasja Huijts (Director, Planning and Project Management)
• Debra Howell (IT Director, Facilities)
• Shari Kearl (IT Director, College of Veterinary Medicine)
• Dean Krafft (IT Director, University Libraries)
• Todd Kreuger (IT Director, Johnson Graduate School of Management)
• Steve Lutter (IT Director, CIT Applications)
• Tim Lynch (IT Director, College of Agriculture and Life Sciences)
• Randi Rainbow (IT Director, College of Human Ecology)
• Laura Robinson (IT Director, School of Industrial and Labor Relations)
• John Ruffing (Director of Information Technologies and Services, Weill Cornell Medical College)
• Steve Schuster (Associate CIO)
• Don Sevey (IT Director, Student and Academic Services)
• Scott Sheavly (Director, CIT Finance)
• Lisa Stensland (IT Director, Alumni Affairs and Development)
• Frank Strickland (IT Director, College of Arts and Sciences)
• Clare van den Blink (Director, Academic Technologies)
• James Vanee (IT Director, Research Center)
• Dave Vernon (Associate CIO)
• Paul Weber (IT Director, Law School)
• Scott Yoest (IT Director, College of Engineering and Faculty of Computing and Information Science)
RESEARCHERS INTERVIEWED

- John Abowd (Professor, Economics)
- Kenneth Birman (Professor, Computer Science)
- Bill Block (Director, Cornell Institute for Social and Economic Research)
- Tsuhan Chen (Professor and Director, Electrical and Computer Engineering)
- Andrew Clark (Professor, Molecular Biology and Genetics)
- James Cordes (Professor, Astronomy)
- Ted Eisenberg (Professor of Law, Cornell University Law School)
- Craig Fennie (Assistant Professor, Applied and Engineering Physics)
- Roger Loring, Professor, and Will Dichtel, Assistant Professor (Chemistry and Chemical Biology)
- Timothy Murray (Professor, Comparative Literature and English, and Director, Society for the Humanities)
- John Schimenti (Professor, Biomedical Sciences)
- Mark Turnquist (Professor, Civil and Environmental Engineering)
- Michael Webster, Associate Professor, and other researchers (Laboratory of Ornithology)