• **Introduction**

  • **About this plan**
    This plan was developed under the leadership of CMU’s Vice President for Information Technology and Chief Information Officer with the participation of the university community as described below. It is intended to provide a broad roadmap for the development and application of the university’s technology environment from Fiscal Years 2014 - 2016. The three-year span of this plan renders impractical any attempt to foretell many of the specific actions and projects that will be required to bring this plan to reality. Instead, those specific actions and projects will be outlined in and evolve through a series of annual reports documenting the work produced and planned against this plan over the next three years. As the plan evolves, the Action Plan attached at the end of this document will be used to as a dashboard to monitor its progress.

  • **Development of this plan**
    This plan is the result of numerous conversations with all campus constituencies. Formal information gathering began with a series of faculty, staff, and student focus groups in the fall of 2011, summarized in a final Focus Group report. This input was then combined with information gleaned from committee and less formal discussions, as well as results of past satisfaction surveys, to draft an initial plan. That plan then went through three iterations, each of which was reviewed by the Technology Planning Council, the Faculty Technology Advisory Committee, the IT Executive Council, the Council of Deans, and other executive level committees before reaching its final form. In addition, input was sought across the academic colleges and within a student community maintained by the Office of Information Technology.

  • **Documenting our success**
    The Office of Information Technology has regularly conducted a campus-wide technology satisfaction survey and will continue to do so. In order to document the effective execution of this plan, that survey will be revised to ensure that appropriate, measurable feedback is obtained concerning 1) the effectiveness and completeness of the feature sets included in IT services, 2) the performance of those services, and 3) the effectiveness of the IT processes that deliver them. Additional relevant metrics will be called out in discussions of the specific initiatives noted below.

• **Our Strategic Environment**

  These items constitute a high-level summary of the challenges faced by Information Technology at CMU as described and informed by the CMU Strategic Plan, input from the CMU community during the strategic planning process, and day-to-day technical realities. As noted below in "Our Strategic Plan," each of the goals and initiatives included in our plan addresses multiple elements of our strategic environment.

• **Supporting the CMU Strategic Plan**

  The CMU Strategic Plan addresses five areas of focus for the university in the years ahead - Student Success, Research and Creative Activity, Quality Faculty and Staff, Community Partnerships, and Infrastructure Stewardship.

• **Supporting the evolving academic mission of CMU**

  The increasing reliance on technology for the delivery of educational components and the continued trending online of a significant portion of the academic activity of existing programs place increased demand on the IT infrastructure of the university. In addition to continued demand to support the traditional classroom environment, the need for 24/7/365 services across our service portfolio increases our staffing and support needs and requires new and more robust approaches to systems design, hosting and delivery. The opening of
the College of Medicine, the expansion of the research mission of the university, and the ongoing refresh of university facilities introduce additional pressures on IT.

- **Enabling the mobility of students, faculty, and staff**
  Students, faculty, and staff increasingly expect to consume CMU IT services at any time, from anywhere, and on any device. Consistent with international trends, we are seeing more personal devices connected to our network and systems every day. The trends towards “bring your own device” (BYOD) and “bring your own applications” challenge us to support "everything" with a very limited staff.

- **Communicating with the campus**
  All segments of the CMU community report frustration with both the quantity and quality of communications coming from both OIT and distributed IT operations. They want to know what IT is doing, why we’re doing it, and how it will affect them. This is not to say that they necessarily want more communications from IT - they want communications that effectively and efficiently convey what they need to know.

- **Maintaining both the breadth and dependability of services in the face of resource constraints**
  A decreasing number of students, restrictions on tuition increases, and uncertain state support suggest that we will be required to support our services with a stable (at best) or declining (most probably) resource base.

- **Supporting CMU marketing, recruitment, and retention activities**
  The recruitment of the right students and an effective advising process that shepherds those students down an efficient path to successful degree completion will be critical to CMU’s future success. In addition, both the intelligence that guides decision-making around these processes and the processes themselves are highly dependent on IT.

- **Helping faculty and staff use technology effectively**
  Both faculty and staff complain about the frustration they face using the technology provided to them by CMU. Having become accustomed to the simple, efficient interfaces they find in their smartphone and tablet apps and across the web, they are baffled by the complexity of the SAP, Cayuse, and even, sometimes, Blackboard interfaces.

- **Delivering consistent, high-quality, end-to-end services to the campus in a distributed IT environment**
  CMU’s faculty, staff, and students care little about the complexities of the campus’ distributed IT organization. They want IT services delivered to them simply, consistently, quickly, and effectively. Unfortunately, this challenge is especially pronounced in the delivery of educational technology, an area of particular concern and one in which ownership of solutions and responsibility for providing them can be very unclear.

- **Managing and protecting CMU's data while supporting needs for transparency and requirements for information**
  In many ways, CMU’s future success may well be driven by the ability of CMU staff, faculty, and students to access appropriate and accurate data quickly and securely. Systems ranging from effective data dashboards that support decision-making to early-warning systems that forecast student academic performance rely on quick, accurate availability of data for their effectiveness. At the same time, that data needs to be appropriate secured, controlled, and protected.
• **Information Technology at CMU**

  • **Our Vision**
    - Information Technology at CMU will provide strategic technology leadership for CMU and advocate for the informed and efficient use of technology across the university. Specifically, we will:
      - Operate, maintain, and protect, with transparency and integrity, the information technology infrastructure and data of the university;
      - Partner with other offices in the development of technologies and services that support the mission, goals and competitive position of CMU; and
      - Provide personal development opportunities for university employees that foster engagement with current technologies and encourage understanding of the application of these technologies within higher education.

  • **Our Mission**
    Information Technology at CMU proactively addresses, collaboratively develops, and reliably provides the core technical infrastructure of the university.

  • **Our Values**
    - In addition to observing the university’s Service Excellence Values - Care, Knowledge, Availability, and Follow-through – the following principles will permeate all that we do:
      - **Partnership:** We value our partnerships with the groups with which we collaborate. We will communicate regularly and openly with our partners to develop our plans and conduct our affairs. We will be recognized as an efficient and trustworthy organization that is dedicated to producing work that exceeds customer standards.
      - **Speed:** We recognize that speed matters and will constantly push ourselves to find ways to deliver solutions as quickly as possible.
      - **Innovation:** We will be a major contributor to innovation across campus by constantly scanning the horizon for new opportunities and moving proactively to address them.
      - **Respect:** We will treat our internal and external partners with respect and courtesy.
      - **Data-Driven:** We will base our decisions on data and will design solutions that allow others to do the same.
      - **Simplification:** We will advocate for balance, simplicity, and clarity within the university IT environment. In order to control costs and manage our operations most efficiently, we will advocate for flexible solutions built around a consistent set of core technologies rather than unnecessarily duplicating existing assets. We will seek out external partners to assist in the delivery of services where necessary to retain the simplicity of the environment we support.
      - **Sustainability:** We will consider and integrate sustainability across our operations. We will model and advocate for responsible economic and ecological sustainability in campus choices of hardware and software solutions.

  • **Our Strategic Plan**
    Each of the goals and initiatives below addresses multiple elements of “Our Strategic Environment” as outlined above. The most relevant correlations are called out in the discussion below.

  **Goal #1: Improve CMU’s technical infrastructure and operations.**

  • **Initiative #1:** We will review CMU’s model for provisioning and staffing information technology. Before 1997, the Office of Information Technology was the only information technology (IT) unit at CMU, and all technical support was provided by OIT. In 1997, however, CMU implemented its version of Responsibility Centered Management (RCM), which placed considerable budgetary responsibility in the academic colleges and changed many of the budgetary practices of the institution. At the same time, largely because of these budgetary changes, the first information technology resources began to be created in the academic colleges and large administrative units. Today, the IT model in place at CMU consists of a centralized IT group (OIT) that provides services that reach across CMU, while independent IT units exist in each of the academic
colleges and a number of business units. This distributed IT model was last reviewed in 2005. Feedback and data collected during our planning process suggest that it is again time to conduct such a review.

CMU participates annually in the ECAR Core Data Survey, maintained by the Educause organization, US higher education’s primary technology professional organization. In comparing CMU’s IT staffing against that of the CMU’s Office of Institutional Research’s official benchmark institutions using data from the 2013 Core Data Survey, there are two inescapable conclusions to be drawn. The first is that IT at CMU is generally understaffed compared to its benchmark institutions (CMU - 137.50, Benchmarks - 163.23). The second is that IT resources at CMU are considerably more distributed than is the case in its benchmark institutions. At CMU, the percentage of IT staff reporting to OIT is 47.30%, while the percentage of IT staff at our benchmark institutions that report to the central IT unit is 76.10%.

There are undeniable benefits to the distributed IT model currently in place, not the least of which is that it has brought a large number of highly qualified, highly skilled IT professionals to CMU. Because the distributed IT groups report directly to their business unit (including colleges), the needs of the business unit are foremost in the distributed IT group’s responsibilities. There is no doubt that the closeness of the relationship between CMU business units and their IT groups have allowed our business units to address the needs of their students, faculty, and staff in very direct and responsive ways. It’s also important to note that the relationship between IT units is generally very good, and satisfaction levels for existing services are high.

But there are also significant problems. Beyond the reality that the juxtaposition of the two data points noted above suggests that OIT may be unable to deliver the university’s centralized services at levels commensurate with those at our benchmark institutions, there are also a number of campus-wide services that OIT simply does not have the funding to deliver. This manifests itself in significant ways that are directly reflected in the criticisms of campus IT collected as a part of our strategic planning.

As an example, many of the criticisms spoke to the reality of IT inequities across campus, like those found in the provision of support for computers, tablets, mobile phones, and other technology devices. Many of the distributed IT groups have plans established and funding set aside for the annual replacement and maintenance of the devices used by their faculty and staff. A staff member in one of these units expects to have a technician at their desk in short order when they have a problem, and, because the cost is borne by the business unit, they don’t have to be concerned about (and don’t see) the cost of that service. Most of the business units that do not have their own IT support, though, particularly smaller administrative offices, rely on OIT for their support. Because the OIT service is not funded, but paid for entirely by charge-backs to the business unit, the resulting perception of staff in these units is that they have to “pay” for IT support while others don’t. This leads to the unfortunately reality that many administrative offices don’t plan or budget for technology refresh, and they don’t call OIT for support until they face absolute disaster. It is a reality at CMU that we sometimes find our most important business offices using technology that will not effectively run the most recent versions of our centralized administrative software.

We also find ourselves unable to provide training on the technologies most visible on campus. This is one of the most reported criticisms of faculty and staff in the feedback collected. Perhaps, as the metrics suggest, IT at CMU is simply not funded adequately to provide the training that faculty, staff, and students require. It is certainly the case that OIT does not have the funding to provide training, Human Resources and FaCIT have eliminated much of their support for technology training through past rounds of budget reduction, and distributed IT groups are not charged specifically with training responsibilities related to centralized IT systems - though many do provide this service when they can find time. This can be a particular problem regarding the academic use of technology, where there is no single provider or solution path available to faculty. While the IT community has found ways to manage most of the challenges that result from this arrangement, faculty are sometimes frustrated with how difficult it can be to find a technical solution for something they want to do in their classes or to support their research.

Our broadly distributed IT environment also creates significant confusion for students. Students report being
totally baffled by the differences that confront them as they move between various campus labs - where the login process, the look of the desktop, and the software that’s installed might all vary significantly from one lab to another. When faced with these differences, the explanation that the labs are managed by different groups is simply meaningless and frustrating to them.

While some of the problems identified above might be addressed by additional funding, the budgetary realities of the coming years suggest that this approach is not practical. Instead, during FY14, we will engage a consultant to assist in examining the roles, responsibilities, staffing, and service levels of the various CMU IT groups. The goal of this examination will be to identify and recommend an IT provisioning model that best provides the widest possible range of services at the most reasonable cost and balances the centralized IT needs of the institution with the more unique needs of the individual business units. Appropriate follow-up steps stemming from this examination will be scheduled for FY15 and FY16.

Finally, as we discuss the provisioning of IT across campus, we cannot lose sight of the growing IT needs of the new College of Medicine (CMED), whose curricular, clinical, and research expectations are reliant on a highly capable information technology infrastructure. During FY13, the Office of Information Technology collaborated closely with CMED to prepare for the arrival Fall 2013 inaugural class. During FY14, we will work closely with the administration of the College of Medicine to develop a plan for appropriate technical staffing and resourcing to support CMED operations through FY16. The ultimate goal of this plan, which will be heavily informed by the outcomes of the general provisioning review, will be to determine a way to deliver IT services to CMED faculty, staff, and students in as highly leveraged and cost-effective a manner as possible.

- Initiative #2: We will improve the reliability and effectiveness of CMU’s network and primary systems.

  **Conduct regular reviews of critical enterprise applications**

  It is critical to CMU’s success that it has a portfolio of IT services that work for the institution and for its community. For this reason, we will conduct regular and systematic reviews of the primary components of our service portfolio to ensure that we are providing services of adequate quality that meet the needs of our community at acceptable cost.

  During FY14, we will initiate reviews of the components of our online teaching and learning environment (Blackboard, podcasting, web collaboration and conferencing, and/or the CMU Virtual Lab) and some or all components of our primary student-related administrative systems (student records, financial aid, housing). Should a determination be made to move forward with any of these components, they will be scheduled in subsequent years of this plan.

  **Increase the reliability of primary systems**

  There are two primary contributors or aspects to the reliability of IT systems. The first, the focus of this particular initiative, is the physical assets themselves, as well as the manner in which those assets are configured within the university’s IT architecture. The second aspect, called out in the following initiative, is the manner in which IT processes are structured and the ways in which IT staff respond to those processes. In the fall of 2013, we are bringing a Gartner consultant to campus to help us better understand our current options for architecting and operating Blackboard in a more reliable way. We expect this visit to inform both this and the following initiative and anticipate following up on this visit with the construction of a FY14-FY16 roadmap for implementation of any resulting recommendations. This roadmap will almost certainly include plans for adding additional systems redundancies, making adjustments to network design and traffic, and implementing single sign-on (SSO) more broadly.

  **Refresh the CMU network**

  The CMU network requires considerable investment in coming years if it is to continue to provide reliable, high-quality service. In FY06, the value of the CMU network infrastructure was about $7 million. Through the opening of new academic buildings and residence halls, a major network overhaul in FY06-FY07 that brought
wireless networking to campus, and the rapid increases in wireless density required to keep wireless networking functional and relevant since its installation, the current value of the CMU network has more than doubled and now sits at just under $15 million. The next five years will require the replacement of all of the infrastructure put in place in the FY06-FY07 project as well as much of the equipment installed between FY07 and FY12 - a projected total replacement cost of $10,343,254 through FY19. OIT has approximately $300,000 in network funds and augments that budget with service order revenues whenever possible, but this funding may not be adequate to maintain the network at present standards and quality.

**Revise our facilities plan following opening of new data center**

FY14 will see the occupation of our new data center, completed in June of 2013. We expect this new facility to provide relief from the unanticipated downtime we’ve experienced over past years in Foust Hall as a result of facility related failings in HVAC, electrical, and environmental systems. The Office of Information Technology moved all of its assets into the new data center on July 4, 2013, and most distributed campus IT units will move their servers and storage into the new data center before September 1, 2013. Other FY14 facilities-related projects include the remodeling of the vacated machine room space in the basement of Foust to accommodate OIT use, as well as the installation of final security and networking redundancies in the new data center. In FY15, we expect to explore the transfer of our disaster recovery assets from their current Southfield location to a new machine room planned in CMU’s East Campus facility. In FY16, following completion of East Campus construction and assuming a decision is made to occupy the small machine room there, we will relocate our disaster recovery site from Southfield to East Campus.

**Leverage Microsoft Office 365 to develop and deliver a campus-wide storage strategy**

OIT migrated students and alumni into Microsoft’s online offering, Office 365, in August of 2013. In FY14, we will examine selective incorporation of two of the additional services available through this offering at no cost to CMU - the possible move of faculty and staff into the email service and the positioning of SkyDrivePro in the university’s storage environment. Alongside our consideration of the positioning of SkyDrivePro, we will build a plan for the overall university storage environment to provide secure, reliable storage for the university’s HIPAA and research data, as well as scalable, general purpose storage for campus-wide use. Any actions recommended in this plan will be scheduled and implemented beginning in late FY14.

**Prepare for the replacement of the telephone switch**

A significant focus of this initiative will be the eventual replacement of the existing telephone switch, which has been pronounced end-of-life. The switch is functioning very well, we have a large number of replacement parts, and we anticipate that support will remain available for some time. Unfortunately, our switch is built on old technology, and any replacement will require not only new Voice over IP (VOIP) technology, but added budgetary consideration for ongoing licensing (not a part of the model supporting the current switch). In the fall of 2014, to prepare ourselves for the inevitable migration to VOIP, we will begin a pilot of VOIP technology with selected campus partners. During FY14 and FY15, we will prepare a plan for broader campus rollout of the VOIP technology and finalize a new telecom service cost model to support the introduction of new VOIP services.

The projects in this initiative support all priorities within the CMU Strategic Plan but tie most directly to Infrastructure Stewardship. Also, each shift in technology infrastructure allows us to address strategic opportunities to enable the mobility of faculty, staff, and students; better manage our data; and find more effective and/or less expensive ways to deliver our services. We will use benchmarking and survey results to determine the effectiveness of this initiative.

- **Initiative #3:** We will streamline our internal work, placing an emphasis on getting things done and communicating effectively with campus.

  **Process review**

  It is certainly important that we design and deliver reliable IT systems to campus, but campus satisfaction with IT services also requires a complex mixture of communicating clear expectations concerning the delivery of
those services, working as efficiently as possible to deliver them, and communicating effectively with the campus about changes.

Managing the delivery of and the communication about our services to our community is difficult when those services are supported in one respect or another by more than one IT group. Regardless of whether a service is offered by a single campus IT group or shared among two or more, our messaging to the campus community regarding engagement with the service must be clear and unambiguous. Beginning in FY14 and extending over the life of this plan, CMU will organize the work conducted by campus IT units into a revised, written Service Catalog containing publicly available service delivery outlines that will identify reasonable expectations for each IT service, provide simple instructions for engaging with the service, and clarify responsibilities of all parties involved in its delivery.

Because most IT communication is an outcome of an IT process - management of projects, management of incidents/outages (planned or unplanned), or management of changes to the university IT environment, as examples - the improvement of IT’s communication with campus necessarily requires that IT review the way it conducts its day-to-day work. We expect the Fall 2013 consultant’s report noted above to recommend a number of changes to our core work processes. Our subsequent review and alteration of those processes will provide an opportunity to identify and address the communications failings of those processes. Following receipt of the consulting report, then, we will construct a roadmap for process review and revision designed to implement both the recommendations of the consultant and improved communications outcomes.

Systems uptime and availability, as well as survey results, will be used to document the success of this initiative. Also, as each process is redesigned, we anticipate the construction of metrics designed to track the effectiveness of the process itself.

**Automation of systems maintenance and monitoring**

Over the past three years, through a dedicated effort to identify and automate our routine work, we’ve made considerable advances in workload reduction. The upkeep of many campus servers managed by OIT is now automated and all critical production systems are extensively and actively monitored. Over the life of this plan, we expect to expand both the automation of our routine maintenance and our monitoring environment through leverage of the Microsoft Systems Center Operations Management product (SCOM) - available to us at no additional cost through our Microsoft Campus Agreement. SCOM is already running in our environment, and we expect to engage with consulting later this year to build a plan for integrating it more thoroughly into our environment.

Similarly, we are planning to further explore Microsoft’s Systems Center Configuration Management product (SCCM) - also available to us through our Campus Agreement - as a solution that might be leveraged across the campus IT environment to address a wide range of technology-related maintenance issues - expanded software deployment services, management of critical patches, power management for energy savings, management of technology inventory, and management of critical licensing. SCCM has been part of the campus IT environment for a number of years, and we plan to engage with Microsoft Premiere Services and all campus IT units later this year to build a plan for integrating it more thoroughly into our environment in a way that respects local control and management preferences.

The projects in this initiative support all priorities within the CMU Strategic Plan, but tie most directly to Quality Faculty and Staff (in support of any training needs) and Infrastructure Stewardship. Systems uptime and availability, as well as survey results, will be used to document the success of this initiative.

- **Goal #2: Support the success of our students**
• **Initiative #4:** We will work with our partners to assemble a suite of tools that help CMU to manage recruitment and retention.

We will work with the Enrollment Management Committee, the ESS division, Academic Affairs, and Global Campus to build and/or integrate a suite of tools that will streamline and improve the engagement between prospective students and CMU and lead to more efficient and user-friendly enrollment processes. In FY14, we are planning to revise the campus visit forms, expand the use of CMU’s Customer Relationship Management (CRM) software to Undergraduate Admissions, and implement digital imaging in the College of Graduate Studies. We are currently gathering requirements for a set of revisions to the admissions application. That project will be scheduled as resources become available. FY15 and FY16 will see the extension of CRM into Graduate and International Admissions.

Several years ago, the VP for Information Technology began meeting regularly with the VP for Enrollment and Student Services, the VP of Global Campus, and the Interim Vice Provost for Academic Affairs to build a strategy focused, not just on providing better advising tools, but on using those tools to drive the success of our students. Our strategy is to integrate 1) predictive analytics regarding academic progress, 2) planning tools for advisors and students, and 3) personalized notifications capabilities built into CentralLink in ways that enable proactive engagement between our students and appropriate campus advisors - addressing potential problems before they can become problems.

We began executing this strategy in the spring of 2012 and have thus far begun a phased implementation of our Advising Workbench, introduced a Student Success window into our campus-wide SharePoint portal (CentralLink), established it as a mini-portal into the Student Success environment, and contracted with the Student Success Collaborative (SSC) for use of their online, software-as-a-service (SaaS) system. Iterative expansion of these tools, or, in the case of SSC, initial implementation, is currently underway. We expect to complete implementation of both Degree Audit and SSC in an iterative, degree-by-degree, side-by-side rollout over the next two years.

Use of the SSC system serves an important role in our strategy. This predictive tool will allow campus advisors to more quickly and accurately identify and intercede with at-risk students. The combination of the Advising Workbench and the SSC system will provide advisors with a user-friendly, holistic way of viewing and understanding a student’s academic progress. Ultimately, we expect that our integration of the Advising Workbench and SSC systems through the Student Success Portal will provide both students and advisors with a personalized, “one stop shop” through which they can manage their portion of the vital advisor/student relationship.

In FY14 we will fully enable the Student Success Collaborative tools recently obtained by CMU and are currently working with Academic Affairs to coordinate a roll-out plan for campus advisors. FY14 will also see the completion of Phase II of our Advising Workbench which contains degree audit capability for all degrees, majors and minors; program planning (degree mapping) capabilities; and online course substitutions and requirements modifications. FY15 will see substantial completion of the Advising Workbench with the addition of a “My Advisees” worksheet for advisors and online grade changes. As the SSC tools mature, we will be looking for opportunities to surface the alerts it generates in the CMU portal and/or the Advising Workbench, as possible and appropriate.

This initiative contributes directly to the first priority in CMU’s Strategic Plan - Student Success - addressing CMU’s desire to increase the Freshman and Sophomore Retention Rate, the Four-Year Graduation Rate, and the Six-Year Graduation Rate. Because the planned web services will be delivered using Responsive Design - adjusting the design to meet the requirements of the device accessing these services - this initiative also contributes to our strategic need to support the mobility of students, faculty, and staff. Additionally, by aggregating a range of advising services into the Advising Workbench, this initiative contributes to the strategic need to help faculty and staff do their work more effectively. Baseline and success metrics will be designed into all projects undertaken as a part of this initiative.
• Initiative #5: We will stabilize and enhance the CMU web environment.

The new CMU websites, launched in April of 2012, have been designed to provide CMU with a better opportunity to sharpen its brand and messaging, hopefully contributing in turn to better communication with all of its various constituencies, especially prospective students. Since the launch of our new sites, we have regularly reviewed input from help desk tickets and scheduled sessions to collect feedback on CMU web sites with significant campus stakeholders, and these practices will continue. Beginning in the fall of 2013, we will publish a 1-2 year roadmap for CMU website development, with the initial release of this plan to be followed by annual refresh and update.

FY14 will see the migration of our websites to SharePoint 2013, as well as numerous fixes, enhancements, and extended capabilities. In addition, we will begin implementation of a campus-wide events calendar, build a plan and timeline for incorporating content from various university databases (such as curricular and faculty-publication information), and determine opportunities and strategies for incorporating Office 365 into our web environment. FY15 and FY16 details will be outlined in future iterations of our web plan.

As the web serves as one of the university’s primary communications vehicle, this initiative supports all of CMU’s strategic priorities. By serving as the primary point of contacts between so many students and both the business and academic activities of CMU, the web strongly supports the success of CMU’s students - from before admission to after graduation. In addition, enhancement of the web environment support our strategic need to foster effective use of technology, allows a vehicle for delivery of effective IT services, and allows CMU to manage its data more effectively. We will use survey results, as well as broken link and other web analytic reports, to document the success of this initiative.

• Goal #3: Make it easier for faculty and staff to do their work

Along with ensuring that systems are available when faculty and staff want to do their work, there are three components that work together to ensure that faculty and staff can use technology effectively - the work they need to do must be available in digital form, the interface they use to do their work must be simple enough to use without training, and/or appropriate training must be provided. Our plan for addressing this goal contains all three components.

• Initiative #6: We will simplify access to and use of university data and knowledge.

   Data Warehouse
   CMU’s Data Warehouse is positioned to become a vital source of data for decision-makers across the university community. Designed to produce both easily consumable reports, as well as large data sets for campus super-users, the Data Warehouse will see significant enhancements over the life of this plan. While continuing to work closely with the Enrollment Management Committee to define and deliver a suite of reports and dashboards to help campus offices make more informed decisions regarding the recruitment, acceptance, enrollment and retention of students, we are also, in FY14, planning to expand financial reporting, design and plan a new Central Data site, provide the data necessary for official government reporting, enable single sign-on into the warehouse, pilot proactive broadcasting of reports, and form a PowerUsers group to foster its greater use and continued improvement. FY15 and FY16 will see increased automation of report generation and distribution, implementation of a new Central Data website, more dashboards, and further expansion of available data types.

   Knowledge Base
   During FY13, OIT released a knowledge base that allows the CMU community to search the Help Desk database for help articles relevant to specific CMU systems and services. The use of this knowledge base is in its infancy - its existence is not widely known, we have not surfaced links to it as widely as we’d like, and, though it contains all the information in the Help Desk database, there are other sources of information, technical and otherwise, that we’d like to explore adding. During FY14, we will publicize its presence, drive
more traffic to it, and build a plan for incorporating more content. FY15 and FY16 will see further additions of content as determined in our plan.

**Dashboards**

Over the next three years, we intend to develop dashboards that pull together the data and information needed by large portions of our workforce who work together and with our students to do the most strategic work of the university. The Advising Workbench discussed in our first goal is the first such dashboard. It allows students, faculty, and professional advisors to view and work with academic data from SAP through an easy-to-use, web-based interface. As noted, continued expansion of the Advising Workbench is planned through FY15. In FY14, we will begin discussions with the Office of Research and Sponsored Programs (ORSP) intended to address workflows and materials used across the research mission and to lead towards development of a Research Dashboard in FY15 or FY16.

This initiative contributes to the success of institutional priorities relating to Student Success, Research and Creative Activity, and Infrastructure Stewardship. It also addresses IT strategic realities by enabling the mobility of faculty, staff, and students; informing business decisions, including those regarding recruitment and retention; promoting the effective use of technology; delivering more effective IT services; and providing better management of the university’s data. We will document the success of this initiative by tracking usage and conducting periodic surveys designed to determine the effectiveness of these services.

- **Initiative #7: We will digitize significant institutional records and work towards automated Record Retention.**

  The Office of Information Technology has recently assumed ownership of the CMU Record Retention Schedule. In FY14, OIT will recast that schedule and augment the information collected. Alongside that effort, through expansion of our digital imaging system noted elsewhere in this plan, OIT will continue moving CMU towards the primacy of digital records in major administrative areas - student, employee, and financial. Also during FY14, we will review the state of digital records to determine whether a pilot project to digitize some portion of our cross-campus staff records can be undertaken during FY15. If it can, we will plan and pursue a pilot for FY15. If it can’t, we will identify the gaps that render a pilot build of a digital staff record impractical and address those during FY15. FY16 and beyond will see projects to digitize other record types from the list above.

  Our long-term goal - extending beyond the scope of this plan - is to see all significant university records in digital form and to not only enforce, but automate, the university’s record retention policies. Other anticipated benefits accruing to this initiative will include opportunities to categorize our data, clarify its ownership, and automate its correction and maintenance.

  In moving the university closer to the goal of managed digital records, this initiative addresses the university’s Infrastructure Stewardship priority, as well as the additional strategic needs to enable the mobility of faculty and staff, provide more effective services, and better manage university data.

- **Initiative #8: We will provide training on those technologies most critical to CMU’s success.**

  We will use our very limited training resources to focus on training initiatives that promise to delivery the most value to the success of this plan. For FY14, our focus will be on providing training intended to foster responsible and effective use of the university’s web environment. We’ll reexamine that focus at the beginning of FY15 to determine whether the web needs to continue to be our training focus.

  Alongside the web training effort, the Office of Information Technology will be working with campus business offices to develop “Super User Groups” for technologies used campus-wide - web development, reporting services, and digital imaging are initial targets for this approach.

  Through its investment in faculty and staff, this initiative supports the university priority regarding Quality
Faculty and Staff. Also, by fostering increased leverage of CMU technology investments, it supports the Infrastructure Stewardship priority. We will use participation rates and survey results to determine the success of this initiative.
## Action Plan to accompany CMU IT Strategic Plan

### Improving CMU’s technical infrastructure and operations

<table>
<thead>
<tr>
<th>Activity</th>
<th>Q 1-2</th>
<th>Q 3-4</th>
<th>Cost</th>
<th>Q 1-2</th>
<th>Q 3-4</th>
<th>Cost</th>
<th>Q 1-2</th>
<th>Q 3-4</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Review model for provisioning IT</td>
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<tr>
<td>Increase reliability of primary systems</td>
<td></td>
<td></td>
<td>$150,000</td>
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<tr>
<td>Refresh the CMU network</td>
<td></td>
<td></td>
<td>$1,621,504</td>
<td></td>
<td>$968,100</td>
<td>$1,439,000</td>
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<tr>
<td>Revise Facilities Plan</td>
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<tr>
<td>Occupy new data center</td>
<td>OIT/Distributed Units</td>
<td>Plan</td>
<td>Implement</td>
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<tr>
<td>Refresh and reoccupy Foust basement</td>
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<td>Plan</td>
<td>Implement</td>
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<tr>
<td>Relocate disaster recovery assets</td>
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<td>Plan</td>
<td>Implement</td>
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<td>Leverage Microsoft Office 365</td>
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<td>Review email for faculty/staff</td>
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<td>Plan</td>
<td>Implement</td>
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<tr>
<td>Plan use of SkyDrivePro</td>
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<td>Review</td>
<td>Implement</td>
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<tr>
<td>Build Storage Strategy</td>
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<td>Implement</td>
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<tr>
<td>Replace Telephone Switch</td>
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<td>Pilot and Plan Implementation</td>
<td>$180,000</td>
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<tr>
<td>Process Review</td>
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<td>Service Catalog and SLAs</td>
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<td>Plan</td>
<td>Implement</td>
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<tr>
<td>Automation of maintenance and monitoring</td>
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<td>Plan</td>
<td>Implement</td>
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<tr>
<td>SCOM</td>
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<td>Plan</td>
<td>Implement</td>
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<tr>
<td>SCCM</td>
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<td></td>
<td>Plan</td>
<td>Implement</td>
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</tbody>
</table>

### Supporting the Success of our Students

<table>
<thead>
<tr>
<th>Activity</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Recruitment and Retention</td>
<td></td>
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<tr>
<td>CRM</td>
<td>Undergraduate Admissions</td>
<td>Graduate and International</td>
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</tr>
<tr>
<td>Advising Workbench</td>
<td>Phase I</td>
<td>Phase II</td>
<td>Phase III</td>
</tr>
<tr>
<td>SSC</td>
<td>Pilot</td>
<td>Implement</td>
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<tr>
<td>Enhance CMU Web Environment</td>
<td>Web 1.5</td>
<td>Web 1.75</td>
<td>Web 2.0</td>
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</tbody>
</table>

### Making it Easier for Faculty and Staff to do their Work

<table>
<thead>
<tr>
<th>Activity</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Warehouse</td>
<td>Design Centralized Data Access Site</td>
<td>Implement Centralized Data Access Site</td>
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<tr>
<td>Record Retention and Digital Records</td>
<td>Record Retention</td>
<td>Explore Digitization of Staff Record</td>
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<tr>
<td>Knowledge Base</td>
<td>Plan</td>
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<tr>
<td>Dashboards</td>
<td>Plan</td>
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### Totals

<table>
<thead>
<tr>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding Required</td>
<td>$1,951,504</td>
<td>$968,100</td>
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<tr>
<td>Funding Available</td>
<td>$1,951,504</td>
<td>$ -</td>
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<tr>
<td>Difference</td>
<td>$ -</td>
<td>$968,100</td>
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