DIVISION OF INFORMATION TECHNOLOGY

July 15, 2016

The Division of Information Technology (DoIT) would like to recognize and thank the members of the Program Prioritization (PP) task forces for their diligence, care, and insight in producing their reports. **DoIT accepts the overwhelming majority of the recommendations** as either creative additions to or thoughtful reflections of our submitted narratives.

In response, this action plan seeks to add its own creative additions to the recommendations. The PP process comes at a time in the evolution of information technology (IT) at Northern Illinois University (NIU) when wholesale transformation is needed both within IT and within the administrative and academic units.

In addition to describing action plans, this document also establishes a context for the work leading up to the PP narrative submissions, details key milestones achieved since the narratives were submitted, and lays out long term roadmaps for local and distributed IT teams that go beyond the PP recommendations to prepare NIU to compete effectively in the uncertain future.

Transition is a stable state.

It is also one that is familiar and readily embraced by skillful leaders.

Good partners like Student Affairs and Enrollment Management, University Libraries, and NIU Athletics have reduced their use of phones and printers, expanded their use of wireless, or modernized their business practices and have shown the first glimpse of a more efficient university. Much more work remains.

The recommendations, road maps, and action plans provided through the PP process show us the way to transition from a focus on mere efficiency to becoming a more effective institution.

Sincerely,

Brett Coryell

Brett Coryell
Vice President for Information Technology
Northern Illinois University

SETTING AND CONTEXT

Information Technology (IT) is pervasively embedded in every area of the university to a degree that exceeds every other administrative and academic function on campus.

> IT is active in the classroom, the residence hall room, the libraries, and in other learning spaces through all layers of the learning hourglass: gathering, sorting, personalizing, collaborating, and disseminating.
>
> IT is present in the labs, the offices, the grants process, and at conferences where researchers create knowledge that advances human understanding.
>
> IT is the mechanism of modern administration for tracking, assigning, and reserving; for paying, communicating, and documenting; and for projecting, recruiting, and hiring.

With wireless and cellular technologies, IT is in the air. With broadband networks and telephones, IT is under our feet and in our walls. Digital projection and peer to peer technologies are reshaping physical spaces even as videoconferencing enables telework and international partnerships.

> Digital signs, iBeacons, instant messaging, and emergency notification systems keep us informed. Web pages, student portals, shared drives, and intranets keep us informed. Multimedia production, printing services, streaming media, and mobile apps keep us informed.
>
> Software like SAS, SPSS, and Matlab help us analyze data. Excel, OBIA, and PowerBI help us pivot and visualize data. PeopleSoft, Ungerboeck and Adobe allow us to schedule classes, manage conferences, and deliver online education.
>
> Hardware lets us make phone calls, send faxes and monitor fire alarms. Hardware lets us print, scan, or store documents. Hardware lets us have desktops, laptops, tablets, credit card swipes, electronic door locks, and document cameras in classrooms.

Despite the many distinct examples that show how technology is inextricably embedded into the life and success of the university, **we still have not scratched the surface**. For all the great variety of technologies listed above, there is an equally large and equally important but hidden layer of infrastructure that serves its own purpose.

IT copes with the breadth of adoption and the depth of complexity through layering and frameworks.

> Physically, networking has access networks that are supported by distribution networks that are supported by core networks that connect to the rest of the world by broadband networks. Beyond the physical description of the types of networks, there are seven additional layers in the traditional framework, each with its own unseen technologies.
>
> Similar to the types of networks, software has application architecture, information architecture, and data architecture. Operationally, software is connected to middleware which is connected to databases which is connected to one of four types of storage systems. All of it runs on servers which run on hypervisors which run on compute clusters. Every layer is its own specialty with little professional crossover.
>
> There is infrastructure that assigns A-ID's and Z-ID's, deactivates accounts, passes messages between different PeopleSoft systems, routes email from shadow systems, and scans email for spam. There is infrastructure that assigns an address to your computer so you can use the Internet, separate infrastructure

that makes our addresses "niu.edu," and separate infrastructure to manage thousands of changes per year to both of the above-mentioned systems.

There is infrastructure that validates your password when you're wired, another when you're wireless, another when you login to PeopleSoft, and another when you're in the College of Engineering. There is infrastructure that keeps the password systems in sync with each other.

IT has special expertise and deep responsibilities associated with HIPAA[1], FERPA,[2] PCI,[3] FOIA,[4] and CJIS.[5] By the nature of the work IT does repeatedly, it needs and develops expertise in project management, service management, business process redesign, and of course security.

In all, there are tens of thousands of configurable pieces of equipment and thousands of configurable software items on our campus. Managing them demands sound financial and managerial practices, each of which are co-equal to the visible use of IT and the invisibly managed infrastructure on campus. Together, the people, infrastructure, finances, and the portion of IT that people see and use from the four equal pieces of an IT ecosystem on campus.

THE CASE FOR CHANGE

In 2013, external and internal assessments, formal and informal, led to this simplified conclusion:

No aspect of IT mentioned above could be considered excellent or good.

At best, the central IT unit at that time could only be called upon to meet a set of expectations made artificially low by the predominance of manual and paper-based business processes and the laxity of internal management practices.

Moreover, the proliferation of local IT departments was a direct result of the inability of central IT, at that time, to align with the business and offer sufficiently credible services.

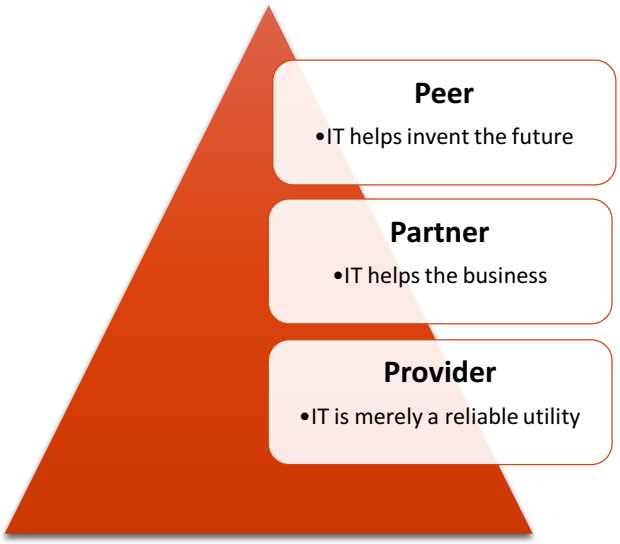
The transformation in information technology on campus predates our 2016 Program Prioritization effort with the realization that all major academic and administrative processes depend on or can benefit from the skillful use of technology.

Therefore, IT must be a trusted partner as the institution reshapes itself.

Trust depends on performance.

[1] *Health Insurance and Portability and Accountability Act of 1996*. The HIPAA Privacy Rule protects paper, oral and electronic health information that is individually identifiable and held or transmitted by covered entity such as a health care provider.
[2] *Family Educational Rights and Privacy Act of 1974*. FERPA protects the privacy of student education records.
[3] The Payment Card Industry (PCI) data security standards ensure all companies that accept, process, store or transmit credit card information maintain a secure environment.
[4] *Freedom of Information Act of 1966*. FOIA grants citizens the right to access information from the federal government. The *Illinois Freedom of Information Act* grants Illinois residents the right to access information about state entities, including universities.
[5] The FBI maintains a security policy for Criminal Justice Information Services (CJIS) to grant law enforcement timely and secure access to services that provide data for stopping and reducing crime.

IT organizations move through three phases of relationship with the organization they support:



Until IT can reliably **provide** functional services, IT is inwardly focused – trying to fix its own problems and understand its own value.

When IT masters reliability, it can now **partner** with functional areas to help them solve their business problems. When both IT and functional areas are reliable and efficient, IT becomes a **peer** that can help the institution reinvent its future.

In this relationship pyramid, the 2013-2014 assessments placed central IT squarely in the Provider stage.

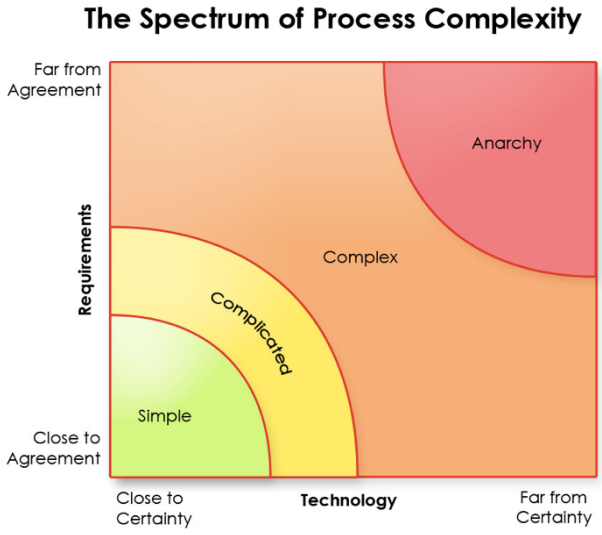
And DoIT will remain a simple Provider until it can claim widespread, consistent, and reliable performance across the clear majority of its eighteen services.

Because technology is a critical component of business strategy, DoIT's place as a mere Provider establishes de facto that the long term vision for DoIT is a mandate to move through those three layers – Provider, Partner, and Peer – mastering each in turn before investing significantly in the next.

THE PATH AHEAD

Although establishing a reliable and cost-effective IT organization is a complicated endeavor, the path to success is well understood. Leaders who are able to manage the time, money, people, risks, and issues associated with the myriad of moving pieces can complete this journey in a matter of a few years.

This is, indeed, the journey that DoIT is on today, although the triple constraint of **scarcity, uncertainty, and rigidity** makes it unclear how long it will take to complete. Coping with any two constraints keeps the move from Provider to Partner complicated, but with all three constraints the path through change becomes complex, in the sense shown in the diagram to the right.



The work of university leadership is ultimately to remove at least one of these constraints.

Within DoIT, the move from Provider to Partner began in 2015 with the recognition that our organization was missing entire programs and functions necessary for success. Our organizational structure was flawed, causing work to move inefficiently within the division. Services were not well defined, work was not well tracked, and costs were frankly barely understood at all.

DoIT is addressing these and other issues with a long term strategy based on eight key planks, the last of which is only now beginning to come into play.

AN EIGHTFOLD STRATEGY

1. Establish all **programs** that are nonexistent. Governance, project management, security, and service management have all been established since FY15.

2. Determine correct **cost basis** for services. A complete cost of services analysis has been completed three times and is now renewed annually.

3. **Organize** the division to do the future work efficiently. A reorganization of the division has been largely completed, though some work with human resources remains.

4. Enable people to **work in new ways**. The focus here is largely on giving people the tools needed to do their jobs well and then documenting that knowledge.

5. Establish and manage by **key performance indicators**. DoIT management now has Key Performance Indicators for major processes and assigns SMART goals to all employees.

6. **Modernize or decommission** old systems. There are many duplicate, out of warranty, or simply outdated systems in IT, from desktops to networks. Much work remains.

7. Adopt **common practices and systems** not present here. Workflow, data warehousing, collaboration tools, and major PeopleSoft business process improvements all remain.

8. Move most Applications and Infrastructure **off site**. DoIT must shift its cost structure and refresh cycles to a more sustainable approach by making major moves to the cloud.

These strategic initiatives, whether complete or just entering the planning stages, are sufficient to modernize and stabilize the university's technology stance. The eight initiatives provide room to continue our valuable partnership with local IT departments, who will not themselves be displaced solely because of a move to the cloud, as has already been suggested. Instead, these eight major planks of the DoIT platform fan out to form dozens of discrete projects (some already complete) and thousands of goals for hundreds of workers.

The remainder of this document shows you that work at a high level.

In some areas reductions are proposed as an aid to reducing scarcity. Roadmaps are provided as an aid to reducing uncertainty. Equally important is the addition of cost in some other areas such as capital refresh, testing, or security as another approach at tackling uncertainty. Service and process improvement is proposed as an aid to relieving rigidity first in IT and then for offices and end users.

Immediately below are the thematic and relational aspects of the PP administrative report, activities and recommendations that exist outside the framework of the eighteen central IT services.

Further below are the specific action plans for each program, including miniature roadmaps at a high level for each individual area. In August 2016, an expanded version of the roadmaps along with DoIT FY16 accomplishments will be released as both an annual report and Microsoft Sway online presentation.

ON THEMES AND RELATIONSHIPS

The task force recommendations included multiple themes and relationships that warrant discussion in this response.

Chargebacks

DoIT agrees that chargebacks for its major revenue producing services should be reduced and possibly eliminated. The three services that produce the most chargeback revenue for DoIT are wired networking, telephones, and wireless networking in decreasing order. In FY15 DoIT began preparing to eliminate these charges systematically over several fiscal years. Recommendations to eliminate chargebacks for these and other services (e.g. OnBase) formed part of DoIT's FY16 and FY17 budget request narrative.

The university should work towards a financial model that reduces or eliminates the reliance on internal charges . . . Such a system creates inequalities between programs and leads to substantial differences in quality between units . . . There is a basic level of campus services that should be centrally funded. (Administrative Task Force Report, p. 15)

In response to the FY17 narrative, the CIO and CFO have agreed to eliminate chargebacks for wireless networking and most telephone charges *in this fiscal year.* DoIT also expects to receive approval to centralize all OnBase and Blackboard Community charges in FY17. If successful, DoIT anticipates eliminating wired networking charges in FY18. No decisions have yet been made on recharges for servers and storage.

Work remains for the IT Steering Committee as it responds to questions about how and whether funds for these services will be reclaimed from departmental budgets. Operational details and communication challenges aside, the recommendation to eliminate chargebacks for major IT services is accepted and underway.

Distributed and Duplicated Services

Within IT across campus, there is duplication present in at least a dozen software packages either through the purchase of similar, competing products or through the separate purchase of the same software by different departments. DoIT addresses two or three of these per year as part of normal low level decision-making.

. . . in different situations, fully centralized services, fully distributed services, and a hybrid of centralized and distributed services can all be valid service models. . . . Ultimately, the measures for whether a model is working or not might come down to two factors: does it meet the needs of the institution in terms of quality or [client] outcomes . . . and does it do so in an efficient fashion? (Administrative Task Force Report, p. 16)

The task force clearly recognizes the proliferation of IT units on campus, noting that many of them describe IT customer support as a key feature of their unit and thus raise the question of duplication.

In response to this charge, the Vice President for Information Technology has called on the IT directors from the various departments around campus to form a committee to study this question and produce a set of recommendations for consideration. That group has been in place for several months and is nearing its final conclusions.

The direction of the committee thus far has been a productive and open discussion of what both DoIT and local IT departments do well, what they should be able to do well if they aren't already, where resources might be redirected in the event that structural changes are made on campus, and how to address the special needs for business continuity any time an IT function is represented by only a single person.

As a special note, this last topic is relevant not only to one-person IT shops such in the Police Department or College of Law, but also to DoIT in those areas where attrition over time has caused us to lose backup staffing in critical functions like identity management. A more specific response to the balance of local and central IT along with timelines for implementation will be developed by December 2017.

Media Production

IT programs like Document Services and Multimedia Production both have regular operational interactions with similar or adjacent services in Marketing and Communications. In the case of Document Services, the pipeline of creative work that results in high volume, professional grade print runs often involves both MarComm and Doc Services and in fact, often sequentially. The timeliness and efficacy of this workflow has been a recent topic of discussion with Marketing, DoIT, and Admissions but there is no present timeline for resolution.

IT Hardware: Networking, Servers, and Voice Services

The observations of the task force are succinct and correct. DoIT agrees and so do most local IT departments, some of whom have already stopped providing this hardware. Many others are ready to follow provided the university can afford to fund replacement storage. DoIT's storage systems are in need of replacement and both FY16 and FY17 budget requests underscore the importance of addressing these outdated platforms. If funded, all local servers and storage will flow to DoIT, resulting in lower net costs for the university. If not funded, DoIT will accelerate the move of all storage off campus with the same net result.

IT hardware must be considered and centrally funded as a campus-wide utility. Baseline infrastructure (e.g., internet connection, server space) should be universal for every member of the NIU community. . . .(Administrative Task Force Report, p. 27)

There is, however, one cautionary note related to hardware.

Networking, servers, and storage are in need of recurring capital refresh funds; on a relative cost basis, this is achievable for the institution. Replacing the telephone system as-is will cost more than all other infrastructure costs combined and the university cannot justify this expense. Reductions of phones as baseline infrastructure must be part of our new reality. Faculty and staff alike will have to grow accustomed to communicating electronically to a much greater degree. There will be resistance, but it is not just the way the entire world is headed, it is the only path NIU can afford.

IT Software

The recommendation to modernize the way we use our PeopleSoft systems is wholeheartedly embraced by DoIT. Part of that modernization is to use modules we already own but have never implemented, part is to loosen some configuration decisions made years ago during the original installation of the software, and part is to purchase new capabilities not yet present.

[O]ne of the glaring issues noticed across these reports is that the university has paid for, but not yet implemented, numerous PeopleSoft modules. . . . The university should consider whether and where implementation is feasible, and reexamine its processes to move away from inefficient workarounds and/or custom solutions. (Administrative Task Force Report, p. 27)

The common defining factor in each of these is to recognize that the implementation or reconfiguration of these systems simply cannot be done without relying on external expertise *and* freeing current staff from the yoke of their existing manual processes so they have time to design, install, and train others on the new and proper way to use our PeopleSoft modules.

This is a problem that is easily solved with money and people. The caution is that those are in short supply.

ACTION PLANS

ENHANCE: Academic Technologies Support
Response: ACCEPT

DoIT provides NIU's core academic applications for instructional use and student learning:

- **AnywhereApps** for course-specific software available in the cloud;
- **Helix Media Library** streaming over 1,800 videos created by 549 users in the last year;
- **mobile** applications including Blackboard, MyNIU, and NIU Mobile App;
- over 3,000 custom **Qualtrics** surveys created in the last year; and
- **Blackboard** Learn, which supports 96% of faculty and 98% of students by delivering online courses with
  - Assessments, gradebooks, plagiarism prevention, web conferencing, distance learning, collaboration tools for non-academic organizations;
  - Content Collection for file storage;
  - eReserves library materials for academic courses;
  - Grade Submission to MyNIU;
  - MyEdu integration and Portfolios for registering academic and extracurricular achievements, creating online resumes, and connecting with employers and alumni.

Task Force Recommendation

The core academic applications supported by this program are integral to the student learning experience. Blackboard Learn provides a rich, online learning environment with nearly universal usage by faculty and staff. Students expect—and demand—24/7 access to this learning environment. Providing a recurring source of funds for salaries, hardware, and annual software licensing could enhance this program.

Associated Programs

- DoIT works closely with the **Faculty Development** and Instructional Design Center, evaluating faculty and student needs, and determining roadmaps in order to provide the tools of choice.
- Academic applications rely heavily on the **Student Administrative System Support** and **Identity and Access Control** programs to provide automated deployment of tools and a seamless, consistent user experience throughout the faculty and student account lifecycles.

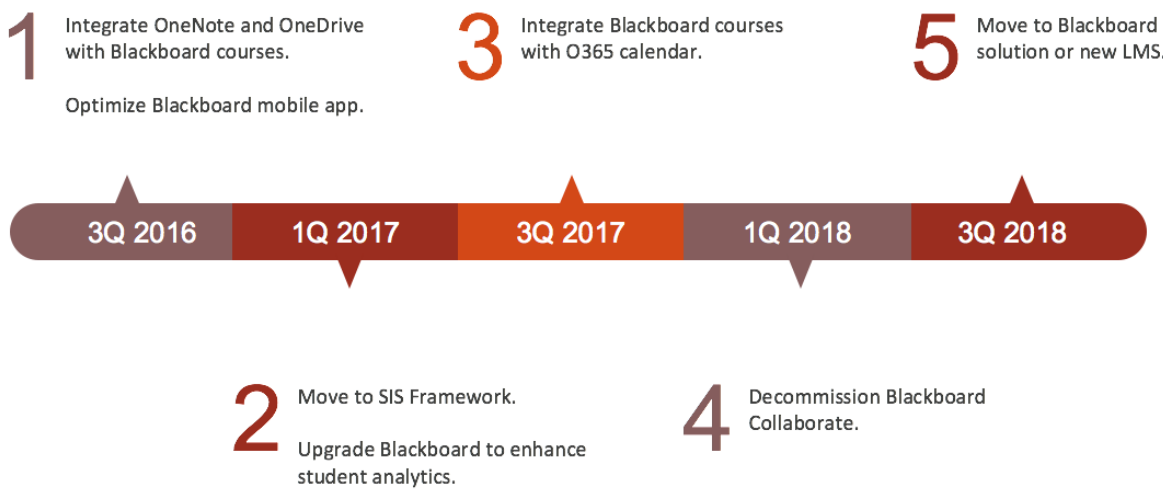
Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Create recurring funding for Blackboard.** Because there is no identified source of funds for Blackboard in any divisional budget, DoIT has asked for a recurring line item in both FY16 and FY17 budget requests.
- **Receive central funding or cancel Qualtrics license.** Qualtrics became NIU's campus-wide survey tool in FY15. DoIT provides staff support for the product and the Division of Research and Innovation Partnerships (RIPS) pays the annual $23K maintenance fee. Both DoIT And RIPS request that Qualtrics be supported and funded as a centrally provided service. Providing recurring funding was part of DoIT's FY16 and FY17 budget requests. Qualtrics runs the risk of cancellation in the next month if funding is not identified.
- **Increase current staffing by 1 FTE to enhance Academic Technologies.** Expansion of available academic technologies is a measure of highly-ranked universities and an expectation of 21st-century students and newly-minted Ph.Ds. Current staffing and funding levels are simply not sufficient to expand these services. DoIT will request an additional FTE to provide cross-training for the various modules and functions associated

with this program as a means of reducing staffing risk. Moreover, we will use the additional FTE to help broaden and deepen the skillful use of Blackboard's many new and upcoming features.

- **Move Blackboard to the cloud.** While Blackboard is still the industry leader, some universities have moved to open source learning management systems that promise inexpensive software maintenance, but generally more expensive staffing requirements and level infrastructure costs. Other universities are moving to hosted platforms in the cloud that remove hardware costs while increasing software licensing.
  - 2017: DoIT will work with the Office of the Provost to periodically review the competitive landscape for learning management systems, initiating an RFP process to assess the costs and capabilities of Blackboard as compared with other software offerings.
  - 2018: DoIT will complete its currently ongoing review of the costs and benefits associated with moving our existing Blackboard implementation to the cloud as a means of avoiding outages that result from the university's inability to afford the upgraded storage on which Blackboard depends.
- **Reduce duplicative systems.** NIU licenses both Blackboard Collaborate and Adobe Connect: two videoconferencing and distance learning systems with a large degree of feature overlap. Similarly, Blackboard's improved Portfolio product replicates other portfolio tools on campus.
  - 2018: After working with campus partners who directly support faculty, DoIT will decommission Blackboard Collaborate in the summer of 2018.
  - 2017-2018: DoIT will also review and eliminate other duplicative web conferencing systems to the maximum extent possible. Possible candidates for elimination include: Polycom, Blue Jeans, WebEx, and GoToMeeting.
- **Improve student success indicators in Blackboard.** More important than version upgrades for Blackboard is the concept that it holds critical data that can be used in unique ways to identify students who are struggling in real time. This informs advisors, professors, and students in the race to find ways to improve retention. This is an essentially untapped area today and could become a key and distinguishing factor for any institution that is able to make advanced use of this data. As such, it holds more opportunity for improvement than any other service DoIT offers.
  - 2017: Implement Blackboard's Student Information System (SIS) Framework in the spring of 2017 to ensure more robust, flexible and real-time integration with PeopleSoft Student Administration (PS-SA).
  - 2017: Upgrade the current version of Blackboard to:
    - enhance reporting capabilities of student activities within Blackboard courses;
    - allow faculty to measure student performance against faculty-defined competencies;
    - deploy persona-based mobile applications – Bb Instructor and Bb Student – that will integrate with both Blackboard Collaborate and OneDrive and providing polling and usage analytics.

Summary of Proposed Actions



SUSTAIN: Identity and Access Control
Response: ACCEPT

DoIT supports NIU's account lifecycle for faculty, staff and students who access many of the institution's core enterprise applications. This centralized service also synchronizes with PeopleSoft Human Resources and Student Administration systems to create and terminate access, managing credentials so that faculty, staff and students can access only those systems to which they are authorized.

DoIT has a single employee whose identity and access management role is to provide support for the entire authentication infrastructure. This infrastructure works together with PeopleSoft HR systems to manage employee status and securely force password resets on a regular basis.

In order to meet new and pre-existing security and compliance requirements, this program is expanding to include such things as multi-factor authentication, single sign on, password resets, and role-based access.

Task Force Recommendation

The university must have secure identity management systems. This program is functioning well with adequate staffing levels.

Associated Programs

- The central identity and access management system is structured to integrate with all relevant enterprise applications. Future deployment of applications that the business deems critical to NIU's success should be integrated with this program infrastructure.

Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

While the program was functioning well with adequate staffing levels, this is no longer the case.

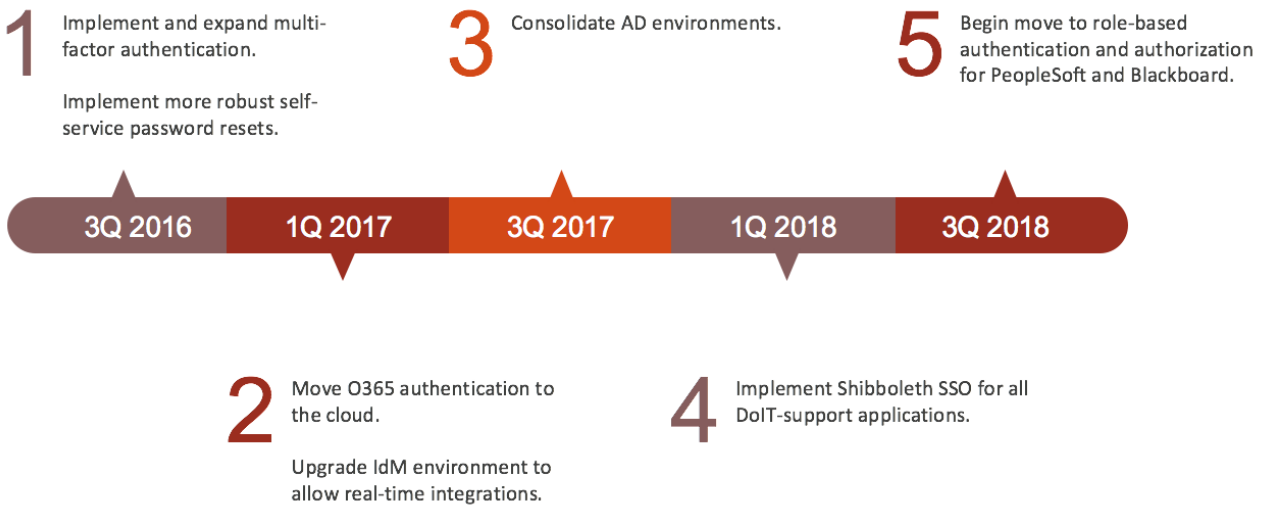
DoIT lost the primary support resource for this program in the spring of 2016 when David Gersic received a competitive offer that was 67% more than his NIU salary. Unable to justify the internal inequity associated with bringing this position to a competitive pay level, DoIT accepted the attrition and moved its only O365 support person to the Identity Management program. DoIT has sought approval for rebuilding the loss to both O365 and Identity Management through additional hires. That approval was given and the hiring process is ongoing, though it is entering a second round of searching due to low salary levels. Presently, DoIT can provide only minimal maintenance to our critical directory infrastructure and account creation and removal processes.

- **Consolidate duplicate authentication structures.** By the fall of 2017, central and distributed IT units will move into a single Active Directory (AD) structure, adopt Shibboleth as a preferred sign-on technology, and allow for single sign-on via third party multi-factor authentication tools.
- **Expand multi-factor authentication (MFA)**. Required by federal and state regulations for persons who work with sensitive person data, health information, criminal justice records, or credit card processing information, DoIT will expand MFA in 2016 with the purchase of a software suite that will reduce phishing attacks by requiring password PLUS a second factor anytime people login to systems that contain sensitive data. This

project will also allow DoIT to implement more robust self-service password resets, saving up to $100,000 per year in phone-based password reset costs.

- **Implement role-based authentication and authorization.** Currently, access to central and local IT systems is based on individual requests, manually made and manually granted. This is fraught with risk of data entry errors, creates inequities of access, and only sometimes provides the timely removal of access that is required by federal and state regulations. Beginning in FY18, DoIT will work with administrative offices to implement more finely-grained role-based access to both our networks and our PeopleSoft systems. This will reduce the 1.2 FTE of manual effort involved in simply provisioning and deprovisioning permissions in our administrative systems.

Summary of Proposed Actions



SUSTAIN: Email and Messaging
Response: ACCEPT

DoIT designs, manages and maintains NIU's email, calendaring and instant messaging applications for faculty, staff and students:

- faculty and staff use Microsoft's **Office 365** (O365) suite of email, calendaring, audio conferencing, video conferencing, and instant messaging features
- faculty, students, and staff have access to the full Microsoft Office suite for use at home and work: a $400,000 annual cost savings to the NIU community;
- retirees have access to O365 email and calendaring;
- students currently use Google's Gmail, calendaring, messaging and full application suite;
- campus digital signage from **Tightrope**; and
- the **Everbridge** Notification System for mass and emergency messaging.

Together these applications offer a robust collection of communication tools to allow NIU's faculty, staff and students to communicate with each other, their community, and the broader world.

Task Force Recommendation

Email and messaging applications are critical to the functioning of the university in order for users to effectively perform their duties. Based on the narrative, there has been a significant decline in total costs of this program over the past three years, in large part due to moving the email server and storage infrastructure from on-premises GroupWise and NetMail to the Office365 and Gmail cloud offerings. Although a request is made for additional FTE support, the task force is not convinced that such a position is needed given the declining costs of the program.

Associated Programs

- This program integrates seamlessly into the **Identity and Access Control** program which provides for single sign-on capabilities for much of this application suite's infrastructure.

Response to the Recommendation: ☐No Action ■Routine Action ☐Significant New Action

- **Consolidate duplicate digital signage systems.** Cost savings and efficiencies can be achieved with the successful consolidation of multiple digital signage systems across NIU into one enterprise application. While not a high priority, DoIT will attempt to do a simple RFP and migration during FY17. If time does not permit, DoIT will make this a priority for FY18.
- **Migrate students to O365 environment.** Migrating faculty/staff from GroupWise to Office365 in FY15 reduced DoIT's annual costs by over $250K; moving students to O365 saves an additional $30K each year. DoIT will also shut down its legacy spam filtering in favor of O365 capabilities/protection and save an additional $10K per year. Not only do these changes save money, they also simplify NIU's overall architecture in support of such a critical service offering.
- **Revisit student account lifecycle business rules.** Historic decision-making has resulted in business rules that create new NIU accounts for every student applicant *and then never, ever delete them.* This has resulted in hundreds of thousands of inactive accounts that must be deleted. In FY17 DoIT is working with Admissions and other areas to seek timely approval of these accounts.
- **Expand Everbridge to non-emergency mass communication.** The new Everbridge solution has the capability and capacity to allow campus-wide access for mass texting to a variety of constituents. In FY17 DoIT will

implement Everbridge as the foundation for an automated on-call system to be integrated with the newly-implemented Cherwell solution for IT work tracking. In FY18 and beyond, most or all IT departments on campus will migrate to both Cherwell and Everbridge.

- **Deepen and broaden skillful use of O365.** In 2016, DoIT created an O365 Governance sub-committee that falls within the larger IT Steering Committee governance structure. This committee of O365 champions will collaborate with DoIT to launch and re-launch marketing, communication and training campaigns for underused O365 functionality like OneDrive, OneNote, Delve, Sway and PowerBI.
- **Enhance O365 security.** In 2016, DoIT will implement email encryption for those who have an immediate need for that type of protection. In 2017, DoIT will investigate O365's Advanced Threat Protection, create policies for securely managing mobile devices, and implement Data Loss Prevention warnings for O365 files by location, device, and file type.

Summary of Proposed Actions

SUSTAIN: Research Computing Support
Response: ACCEPT

Supporting High-Performance Computing (HPC) enables researchers to take advantage of NIU's Gaea supercomputer, the ARC computing cluster, and potentially other research friendly computing resources centered on storage, compute, and networking. Plans are in place and awaiting funding to significantly enhance the High-Performance Computing environment and ensure that NIU research computing remains both attractive and competitive.

These plans include developing a Science network zone and implementing low cost enterprise backup and storage options for researchers. The Science Zone will enable high speed, low latency large data transfers and expand opportunities for national research collaboration. The enterprise backup and storage systems, if funded, will level the playing field for researchers by providing equitable, centrally funded options to all departments.

Task Force Recommendation

There is internal growth opportunity for this program, but the program needs to be better marketed so it can be used more widely. The program serves an important function, especially as big data analysis continues to grow. The task force does not believe that this program is essential to the functioning of the university, but the increasing emphasis on big data analysis convinced the task force that this program should be sustained.

Associated Programs

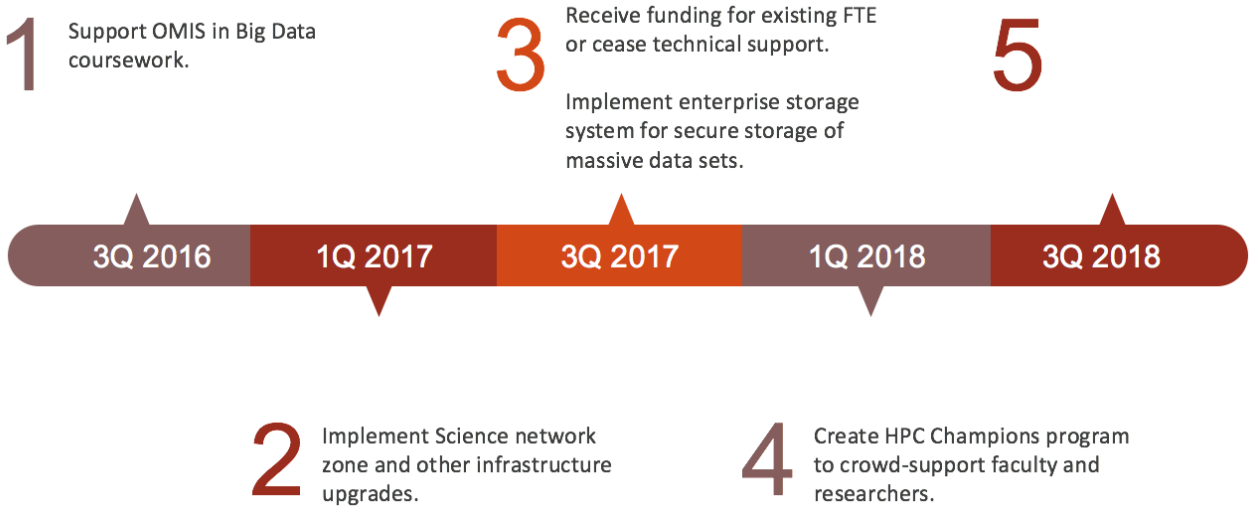
- NIU scientists acquired the High-Performance Computer cluster in February 2012 intending to exponentially ramp up on-campus capabilities to sort and analyze large quantities of research data. The initiative grew out of a medical-imaging project led by John Lewis of the Northern Illinois Proton Treatment and Research Center. **Physics** Professor Emeritus Clyde Kimball also contributed a portion of the funding he received for nanotechnology-related research that also requires high-performance computing.
- DoIT supports these faculty and others with an interest in or use case for HPC, with the level of support varying with the faculty requirements or their level of expertise. While collaboration is campus-wide, DoIT primarily works with the **Computer Science** department whose faculty, especially Dr. Nicholas Karonis, have been champions in the effort to bring High-Performance Computing to NIU and are now the leaders in its use and expansion within NIU and in growing partnerships with Argonne National Laboratory and Fermilab.

Response to the Recommendation: ☐No Action ■Routine Action ☐Significant New Action

- **Provide support for the Array of Things (AoT).** DoIT is working with Computer Science to support the installation of wireless arrays of sensors around the NIU campus.
- **Seek centralized funding for the existing 1 FTE or move support to Computer Science.** DoIT has been absorbing the salary cost of 1 FTE for HPC support for the past three years. In FY15 a joint proposal from DoIT, the Department of Computer Science, and the Division of Research and Innovative Partnerships (RIPS) described a sustainable model that funded equipment refresh, hardware and software maintenance, and staffing. Though the proposal was approved, DoIT never received funding for the staffing cost. DoIT is simply not funded to provide technical support for HPC and without funding, must cease support at the end of FY17.
- **Revisit the Science Zone.** Together with Computer Science, in FY17 DoIT will gather requirements from researchers throughout campus regarding their desire to have unrestricted access to the Internet from a high speed “science zone.”

- **Market HPC to faculty.** The generalized improvement path for HPC begins with the realization that NIU does not have the funds to become a credible national player in this field. Therefore, we are best served by preparing researchers who are ready to work computationally at a national scale to enter the ecosystem of nationally shared supercomputing resources. Many faculty are unaware of the potential uses an HPC provides to researchers across many academic disciplines. In FY17, DoIT will work with Computer Science to prepare improved messaging on what resources are available.
- **Big Data support.** Through its development of the ARC cluster, DoIT has brought Hadoop implementations to campus and provided trial environments for several dozen faculty and students who were eager to begin working with this package. DoIT is also pursuing partnership with OMIS, who wishes to analyze big data sets as part of their course offerings.

Summary of Proposed Actions



SUSTAIN: Storage Administration
Response: ACCEPT

DoIT provides NIU's storage infrastructure for users, departments, and applications and provides multiple forms of data protection.

This program includes:

- Microsoft's **OneDrive** offering to faculty, staff and students with 10TB of secure cloud storage that meets the compliance standards for personal health information (HIPAA), student data (FERPA), credit-card processing (PCI), and law enforcement data (CJIS).
- **AnywhereFiles** with access to a 5GB shared drive for faculty, staff and students.
- **Network Attached Storage** (NAS) for departments who don't require more-expensive locally-attached drives.
- High-performance server storage for enterprise applications.

Task Force Recommendation

Although this program appears to have adequate resources, the task force agrees with the narrative's call for a mandated, centrally-managed storage offering.

With regard to chargebacks, the *Administrative Task Force Report* stated: "*In many cases, the products or services being charged are essential to all programs on campus and, as a result, the university should make a commitment to funding them through a central source rather than having each division dedicate a portion of its budget towards covering chargeback costs."* (p. 15)

Associated Programs

DoIT's storage infrastructure is available for any unit on campus to use. Data protection and backup options exist to service a full range of requirements at the best cost/benefit ratio for each use case. This program is dependent on DoIT's **Network Architecture and Support** program to provide a stable data transfer environment and enhances the offerings of both the **Server Hosting/Administration** and the **Research Computing Support** program.

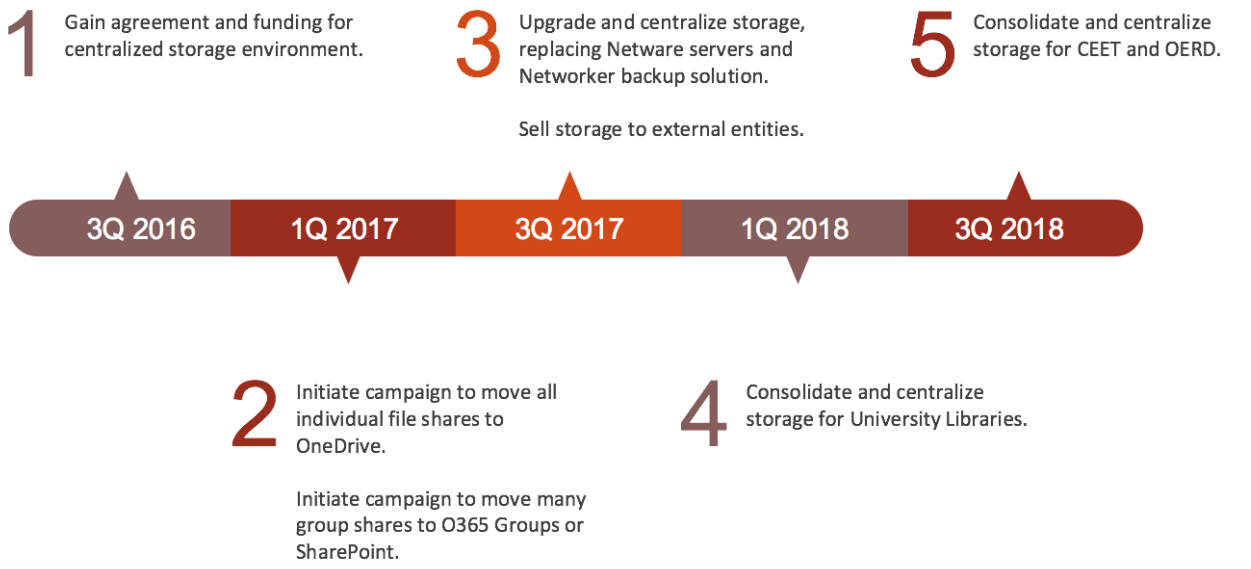
Response to the Recommendation: ☐No Action ■Routine Action ☐Significant New Action

- **Move all individual storage to OneDrive.** All NIU faculty, staff and students will be encouraged to move their individual work files to OneDrive by the end of 2017. It is a suitable location for even the most sensitive data and every file stored on this cloud-based offering means less money spent on internal storage and backup solutions.
- **Centralize and consolidate campus-wide file storage.** Economics of scale, both in purchasing and managing, are possible only with a centralized solution. An estimated 70% of file storage is currently housed on departmentally-owned Netware servers with directly-attached storage drives. Implementing a modern storage infrastructure will reduce the actual cost of storage by 92%-97% while eliminating single points of server failures and the immediate risk of storing data on out-of-warranty and out-of-service Netware servers.
- **Cancel extended maintenance on current storage platforms.** NIU could not afford to purchase new storage and data protection platforms in FY16, necessitating extended maintenance contracts at premium pricing. NIU currently pays $190,000 per year for these contracts *above and beyond the price of buying brand new*

gear. Purchasing new platforms is part of DoIT's FY17 budget request. If unfunded, DoIT will accelerate the move to cloud based storage.

- **Eliminate chargebacks for backup / data protection service.** The historic pricing model DoIT currently offers to customers does not begin to cover the actual cost of data protection. If new storage platforms are approved, chargebacks will be eliminated due to the reduced cost structure. If new storage platforms are denied, DoIT will raise backup storage rates in FY17 and request the elimination of the chargeback for this service in FY18.
- **Sell storage to regional customers.** Selling a new cost-effective storage offering to regional entities such as municipalities, school districts and police departments will enable procurement and management economies of scale, bring money into the university and enable large purchases, which will lower the cost of storage to the NIU community. Several hundred thousand dollars of sales are pending a decision from Finance on when and whether to approve the purchase of new storage.

Summary of Proposed Actions



REDUCE: Application Development and Hosting
Response: ACCEPT

This program provides software development and application support for 30+ vendor-purchased applications including: AIMS (Parking), Cascade Server (web content management), Mercury (Housing), NIU Calendar, and Ungerboeck Event Management (Outreach) and 40+ custom in-house-developed applications including Apply to NIU (Admissions), NIU Directory, NIU Shopping Cart, and Scholarship Finder. With over 70 applications and only 6 FTE, each of these important applications receives less than 10% of a developer's time.

Task Force Recommendation

The narrative describes an excess of customized applications being developed. The task force urges the campus to utilize more of the packaged platform software systems already available.

Associated Programs

This program relies on close relationships, interactions and in-depth knowledge of business practices within many campus departments. DoIT staff work as both application developers and business analysts to understand the ongoing business and operational needs and create effective solutions.

- DoIT works closely with **Marketing and Communications** in supporting Cascade Server, the web content management solution that serves over 300,000 web pages for the institution. Without DoIT, the Marketing and Communications staff would need to provide their own infrastructure and support that would shift focus away from their core creative competency.
- These applications interconnect with the **Student Administrative System** and **Identity and Access Control** to provide automated deployment of tools and a seamless and consistent user experience throughout the employee and student account lifecycles.

Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Create and implement a request, approval and prioritization process that ensures non-duplication, affordability and functionality.** This process, to be completed in 2016, will allow DoIT's minimal support staff to better plan for appropriate training and professional development time while making transparent the process by which NIU units request and receive customized applications for their own particular use cases.
- **Inventory, review and de-duplicate custom in-house developed applications.** Beginning in 2016, DoIT will review these 40+ applications, rank them in terms of strategic importance to the administrative or academic unit, and develop a roadmap to remove duplicate applications and evaluate moving in-house applications to vended solutions.
- **Inventory, review and de-duplicate vended applications.** Beginning in 2017, DoIT will review these 30+ applications, rank them in terms of strategic importance to the administrative or academic unit, and develop a roadmap to remove duplicate applications and consider moving some of these second-tier, departmental applications to our existing enterprise-wide environments such as PeopleSoft, Blackboard, and Office365.
- **Develop robust quality assurance and testing.** While no single application in this service warrants the development of a centralized QA team, the university could benefit from such a program. Not only are central functional offices such as HR and Purchasing unable to provide full and complete software testing during upgrade cycles -- leading to difficulty in keeping up with vendor provided feature releases -- these second tier applications often have no formalized test plan at all. Beginning in 2017, DoIT will evaluate creating a cross-

functional QA team of existing staff that could serve PeopleSoft as well as these second tier apps. This team could provide relief for functional offices and bring back into balance a professional standard of staffing and application management for the remaining second-tier applications that were found to be strategically critical to departments or divisions across campus.

- **Develop competence in mobile application development.** The best emerging practices in this area involve the custom development of mobile apps rather than some new way to manage the second tier systems like Titanium or Cascade. With DoIT's minimal staffing in this area, we cannot engage in mobile app development while doing the work to reduce the number of these custom and vended applications. Therefore, DoIT will create a plan in 2017 to create a cadre of student mobile app developers. These students could be given prominent space in HSC or the Library where they could emulate a small startup or incubator focused on developing niche mobile apps for professors or small departments. Through paid internships, students would receive marketable skills and NIU would have a greater supply of contemporary mobile apps that solve real research or administrative needs.

Summary of Proposed Actions

REDUCE: Document and Print Management
Response: ACCEPT

DoIT provides a set of complementary services designed around the transmission of documents. One provides for the professional design, finish, and delivery of print materials while the other seeks to modernize business processes by eliminating paper and providing electronic document workflow.

This program includes end-to-end support for both print and online document management:

- document **scanning**, indexing and secure data capture for easy access, intuitive content management and proper archiving;
- design, deployment and ongoing support of **OnBase** online forms and document workflow to aid in business process automation and improvement;
- design and production of **print materials**, optionally customized and personalized after free consultation and estimating;
- **AnywherePrints** printer and copier support for fee-based printing or management of print volume in classrooms, labs and offices; and
- implementation and support of **DocuSign** electronic signature software.

Task Force Recommendation

The university needs to reduce the quantity of documents moved around campus. In particular, the university must move to a more paperless system and develop a records management plan. Anywhere Printing does not seem to be working well (e.g., excessive wait times to fix printers) and should be reexamined. The university should consider moving Document Design Services to Creative Support Services to allow for more centralized design services and improve alignment with university branding standards.

Associated Programs

- DoIT builds advanced custom OnBase workflows into products that support a variety of documents for certification programs, as well as student engagement and recruitment functions for **Student Affairs and Enrollment Management**, the **Graduate School**, **Outreach** programs, **Alumni Relations**, the **NIU Foundation**, **Assessment Services**, the individual **Colleges**, and partnership programs like the Illinois Board of Examiners.
- Our printer and copier program has 300+ multi-functional devices that support the backbone of NIU administrative units and College offices.

Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

OnBase

- **Move to Incremental Parallel Upgrade Process (IPUP) for OnBase upgrades.** The OnBase support team has shrunk from 7 FTE to 2 FTE in the past two years. The team is interviewing for two positions and will transfer in an FTE from another DoIT team. Moving to incremental upgrades by the end of 2016 will reduce downtime for customers and ease the support burden for a reduced, but sufficient, team of 5 FTE.
- **Review OnBase workflows for duplication of existing functionality.** By the end of 2016, DoIT will revalidate existing OnBase workflows and ensure they are not enabling the creation of shadow systems across NIU. Where workflow already exists within PeopleSoft or Blackboard applications, DoIT will partner in 2017 with campus units to move the OnBase functionality into these other enterprise applications. Unfortunately,

without the implementation of already-purchased modules for PeopleSoft procurement, grants/contracts, time/labor, absence management, and performance evaluations, workflows will continue to be created in OnBase that would be more efficiently and effectively implemented within the PeopleSoft environment. Thus, progress in this area is dependent on functional progress towards implementing PeopleSoft modules.

- **Intensify back scanning efforts**. Document scanning is a labor-intensive process that should be streamlined through development and automation of existing software features in OnBase. Beginning in 2016, DoIT will partner with the Law School to scan and index their paper records and will continue this work across campus until our electronic archives meet federal and state regulations for records retention. DoIT is also beginning discussions with the State of Illinois Chief Information Officer and Chief Information Security Officer to seek modernization of the state's stance on paper documents. Currently state records that are born in paper can never be shredded. At best, they can be moved to microfiche but they can never become electronic. That's a stance we cannot abide.
- **Allow functional units to manage their own OnBase workflow.** Many departments across campus are capable of maintaining and even modifying their own OnBase workflow. Providing additional training and granting this heightened level of authorization would allow departments to more quickly modify and enhance OnBase to meet their changing needs. By the end of FY17, DoIT will pilot decentralized workflow management in its own Document Services and Business/Finance units and then grant this authorization to already competent staff in Admissions and Registration & Records.
- **Eliminate chargebacks for OnBase**. Annual usage fees now stand in the way of large scale adoption of automated workflows. Beginning in FY17, OnBase funding should be centralized to allow a larger user base to drive time and materials efficiencies while removing the complexity of volume license management. This was signaled in DoIT's FY16 budget narrative and requested in FY17. DoIT anticipates that the request will be accepted and work will begin following the elimination of chargebacks for wireless networking and most telephone charges.

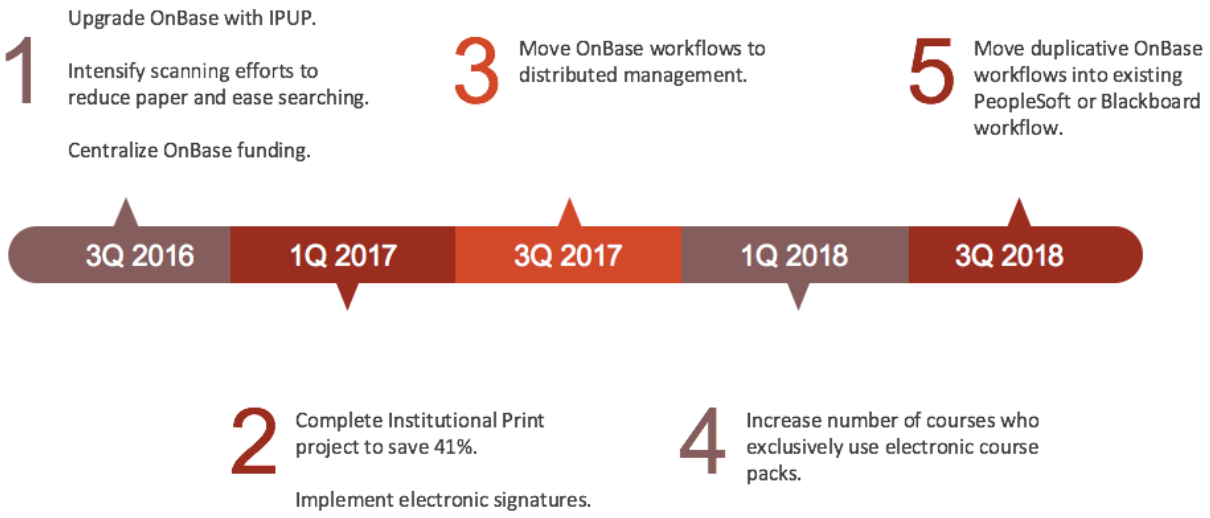
AnywherePrints

- **Complete the Institutional Print Management project to enhance service.** The task force mentions long wait times for printer repair and suggests a reexamination of this support. In 2016, DoIT will complete the first phase of the Institutional Print Management project that was approved by the IT Steering Committee. Through the redesign and expansion of our campus-wide managed print solution to any and all departments who agree to opt-in the campus can save $700,000 annually. DoIT, Student Affairs, and the Office of the President have been early adopters in the
- **Refocus support contracts.** An important element of the Print Management project is reducing the cost per page, not just reducing the total amount of printing on campus. New contracted rates for printing will bring the cost per page from $0.25 to $0.13 for color (a 48% reduction) and from $0.08 to $0.05 for black and white (a 38% reduction). DoIT will also review the service agreement and negotiate more favorable terms for printer repair.
- **Enhance Pharos cloud printing.** NIU enjoys a “print cloud” that allows printing to any of our cloud connected printers from any computer. Students, and soon faculty and staff, who have access to one of our AnywherePrints cloud printers can pick up the job securely by entering a PIN code. In FY17 DoIT will enhance the Pharos software that runs this print cloud to recognize both student and employee accounts on the same ID card, expand the number of cloud printers, and improve the visual interface for picking up cloud printed documents.
- **Complete the Institutional Print Management project to reduce print volume, cost of supplies, and support time.** As campus units agree to become centrally-managed, DoIT inventories their printer/copier assets and works to remove consumer-class printers from individual offices while enhancing the quality and capabilities of more centrally-located multi-function devices. By the end of 2017, NIU should see a reduction in print volume in managed units and a subsequent cost savings. The Gartner Group has determined that managed print initiatives can cut office print costs by up to 30%; research by the EDUCAUSE Center for Analysis and Research describes university print volumes cut by 30%-50% after implementing print management solutions.

Document Services

- **Implement DocuSign electronic signing.** By the end of 2016, electronic signatures will be piloted for documents exchanged between DoIT and Procurement Services. In 2017, electronic signatures will begin to be rolled out to other departments as they gain willingness and time to implement.
- **Increase the number of electronic course packs.** Currently, DoIT includes a free eBook of course materials with every faculty request for printed course packs for students. In 2017, DoIT will work with both Faculty Development and the NIU Bookstore to encourage faculty to substitute their printed course packs and move to online content only. This would decrease the cost of course materials for students while providing additional functionality like online notations, bookmarking, page zoom to view enlarged type, easy sharing of content, listening to embedded audio links, clicking on hyperlinks, and viewing embedded video. DoIT will also work with Faculty Development to explore the possibility of re-engaging Apple, who is eager to provide assistance in training faculty to develop electronic course materials.
- **Explore Creative Services consolidations.** DoIT is currently involved with Admissions and Marketing & Communication in discussions designed to yield a more satisfactory cycle time for large scale mailings of printed materials. All three departments have elements of the work and it is clear that process improvement is possible. As those discussions conclude in 2016, DoIT will work with other Marketing & Communication to evaluate the optimal location for the creative design portions of Document Services. Resulting actions could then be targeted for late FY18 or the start of FY19.

Summary of Proposed Actions



REDUCE: Broadband Development Services
Response: ACCEPT

DoIT provides the new and existing network infrastructure that delivers basic Internet connectivity for not only NIU but also its surrounding communities. This program also extends private network service to and between Community Anchor Institutions (CAI's) throughout the Chicago metropolitan area and northern Illinois. This program also serves many Illinois regional constituents, both civic and corporate, and provides broadband transport connectivity via regional networks. Moreover, the team offers broadband and technology consulting services to city, county, state, and commercial entities to promoting the reach and use of 21st-century technology.

Task Force Recommendation

This program helps to support the university's mission of being a regional institution and is impressive, especially in terms of resources generated from grants. However, the task force believes that, given the external funding received by this program, it can remain strong with reduced university resources.

Associated Programs

Creating next-generation research requires combining advanced technologies and engaging entities focused on the common goal of creating a robust environment that enables breakthrough discoveries. Some of the programs using NIUNet, via DoIT's 2015 Broadband Innovation Grant, are:

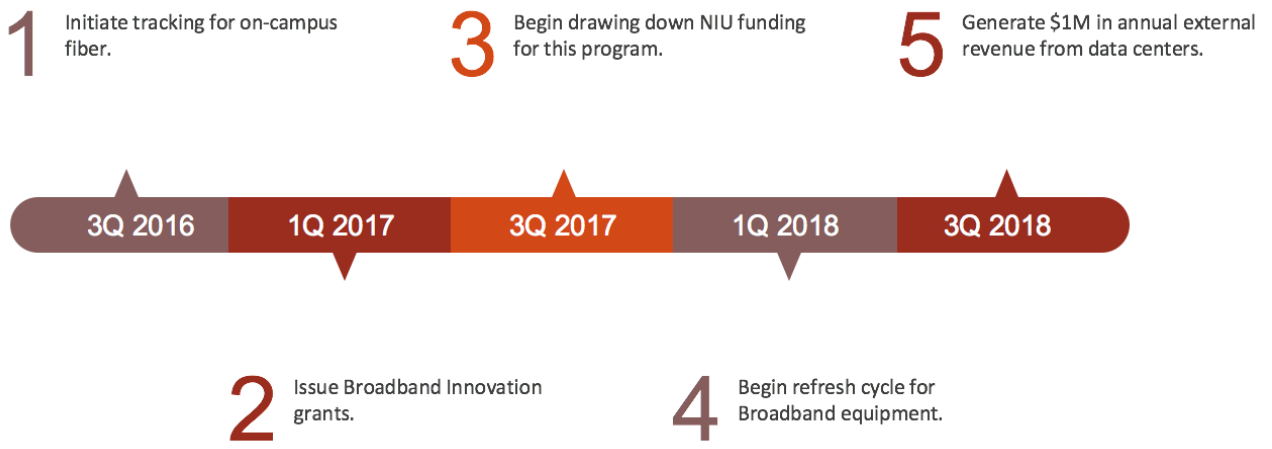
- Bereavement online training program for staff serving people with intellectual and developmental disabilities in healthcare facilities.
- A mobile app that connects citizens to community anchor institutions.
- The Next Generation of Financial Information Transparency (Next-Gen FIT) program that demonstrates the value of using a taxonomy to create and disseminate rich digital information to an open source environment, while demonstrating a means for reducing the cost of producing and consuming the information.
- Connectivity between NIU's high-performance computing cluster (GAEA) and Illinois-based research entities.
- The School of Music's program (LOLA) that conducts and delivers unique music programs worldwide.

Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Grow external revenue.** DoIT forecasts 50% revenue growth this year, bringing the total revenue from all sources to as much as $3M. This revenue will be used to fund expansion of services in the portfolio. Combined with financial model changes submitted as part of the FY17 DoIT budget request, would mean that beginning in FY18, DoIT can begin to draw down NIU central funding contributions. This plan supports the recommendation.
- **Continue Broadband Innovation Grants for faculty.** DoIT plans to continue this program using externally sourced funds as a means of promoting the delivery of scholarship and artistry to all areas of society through the use of technology. In FY17 DoIT will work with RIPS to properly source these grants.
- **Reopen grant submissions.** DoIT has been reluctant to aggressively pursue external grants due to the difficulty of finishing and operationalizing the technology and the not-for-profit organization associated with the large BTOP grant that created the iFiber network. In FY17-FY18, DoIT will renew its pursuit of these external funding opportunities.
- **Open data centers for external business.** NIU has multiple data centers that can be used directly as collocation facilities or disaster recovery sites. Similarly, NIU can take advantage of its significant broadband

connectivity to offer storage, servers, and even security services to other Illinois agencies. These opportunities are all part of the planned expansion of external revenue for this group and are tightly interconnected with DoIT's plan to move its existing data center workload to the cloud. Consider it an arbitrage of a bundled index of local skills and data center capacity between less mature agencies who need to contract with NIU to stay current and the global scale of data centers provided by Microsoft, Oracle, or Amazon.

Summary of Proposed Actions



TRANSFORM: Desktop and Media Technologies
Response: ACCEPT

DoIT provides secure, managed and monitored desktop and device support services for departments, classrooms, conference rooms, technology centers and labs.

This support includes:

- hardware and software purchase advice, troubleshooting, and retirement services for more than 1,500 users and nearly 2,000 **desktop, laptop and mobile devices** running Windows, Macintosh, iOS and Android operating systems;
- media equipment installation and support for more than 350 media-equipped **learning spaces** and conference rooms plus 14 **computer labs**;
- remote management and troubleshooting for desktops and laptops;
- maintenance and deployment of a cloud-based solution (AnywhereApps) that allows allow faculty, staff and students access to more than 60 applications from any computer on the planet; and
- maintenance and upgrades for more than 100 digital signage devices throughout the NIU campus.

Task Force Recommendation

It is important that faculty, staff, and students have access to highly-functioning computing resources. However, maintaining independent technology support units is creating unnecessary redundancies and increased costs. The task force calls for a systematic evaluation of all distributed IT support functions, including both personal/desktop support and classroom/computer lab support. The current organization and cost of a distributed model due to lack of central funding creates an inconsistent allocation of IT resources and support across the university. The task force does not have sufficient information or expertise to specify what configuration the university's IT support should have, but it recognizes that a transformation is required.

Associated Programs

- The support for desktop devices and media technologies underpins any program that works with faculty in **classrooms**, staff in **conference rooms**, and students in **lab spaces**. It is unthinkable that a modern organization would not require the most up-to-date management techniques for these critical devices.
- DoIT also provides software to distributed IT units throughout campus via Microsoft SCCM. This allows those smaller units that provide **IT Customer Support** to easily deploy software without the need for staff to package and test widely used software on their own.

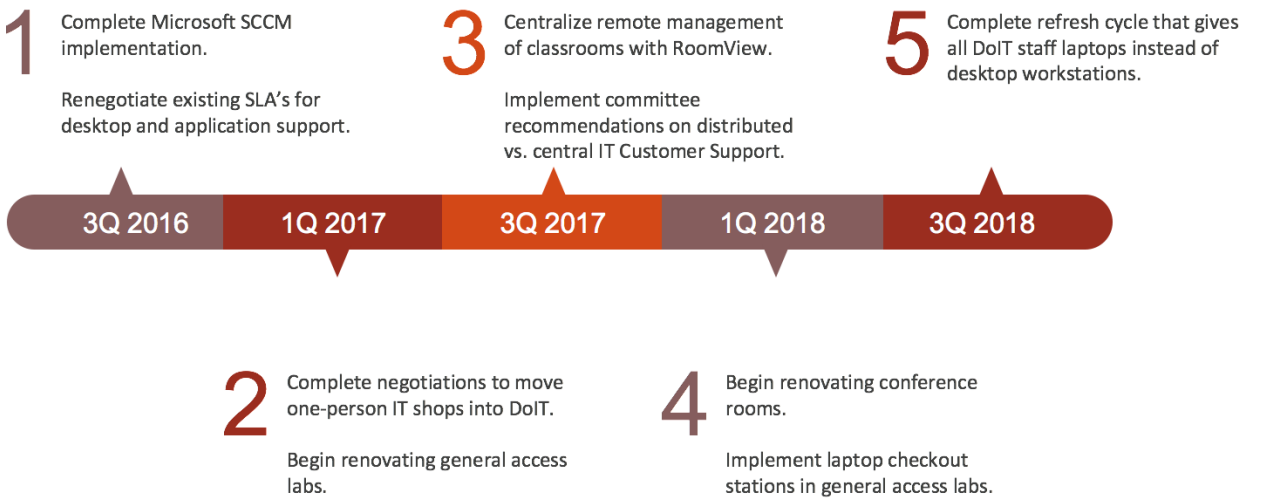
Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Implement remote desktop management**. By the end of 2016, all local IT departments will have automated their desktop management for ordinary, daily use computers. (Exceptions exist for special purpose machines that can be addressed in FY17.) Remote management provides quick, consistent and licensed software deployments and allows technicians to support more users. DoIT provides this service for other IT departments for free, though some have chosen to use their own.
- **Manage adoption of desktop standards.** FY17 marks the beginning of new desktop and laptop standards for the campus. The long negotiated standards and equally negotiated business practices for procuring approved machines have been posted but as with any new business process, continual improvement is needed, particularly during the early days. DoIT will be managing this process by exception, as raised by local IT

departments. New standards will be adopted at the end of FY17. The program itself will be evaluated for its overall success, ease of use, and cost savings at the beginning of FY18.

- **Renew and renegotiate Service Level Agreements (SLAs).** By the end of 2016, all current SLAs will be renegotiated for a fresh start in FY18. Note that as part of the SLA review, DoIT absorbed two Student Affairs employees, bringing to twenty-four the number of staff absorbed over the past two years. Six of those positions have been subsequently reduced through natural attrition that DoIT was able to accept after automating work processes and taking advantage of scale.
- **Systematically evaluate the balance of IT support functions.** Work to examine the balance between central and local IT departments is already underway with an endpoint expected in 2016. As that work concludes, DoIT will partner with IT support units on campus to implement any accepted or modified recommendations.
- **Evaluate distributed IT support functions.** The first round of recommendations resulting from the review of the balance between central and local IT will not contain in-depth analysis of each IT department. This review, for select units, can begin in FY18.
- **Move one-person IT shops to DoIT for constant and consistent support.** DoIT anticipates and supports a decision to centralize single-person IT departments. While not yet a recommendation, one person shops cannot provide coverage to the department while he or she is on leave or in training. Moving this person into the pool of DoIT support staff would allow that NIU department to take advantage of a team of resources with differing levels of expertise and experience, all of whom abide by security protocols and can take on the risk of security compliance with federal and state regulations. If this recommendation appears, DoIT will seek to complete discussions with these units by the end of FY17 and would likely will begin moving these staff into the DoIT organization at the start of FY18.
- **Renew the vision for learning spaces and renovate general purpose labs.** DoIT already has a vision and overall strategy for its learning spaces that will bring them into general parity with established good practices. Earlier progress towards renovation and improvement of these spaces has been hindered by a variety of factors both internal and external to DoIT. By the end of 2016, DoIT will share our renewed vision of 21st-century learning spaces with Facilities and other key stakeholders and seek commitment to work through a defined process for achieving that vision in specific areas around campus. By the end of FY17, a plan for the systematic improvement of our learning spaces will be approved with and through Facilities. This will, in turn, guide the renovation of DoIT general access labs in a four-year refresh cycle starting in 2017.
- **Create a vision for conference rooms and classrooms and centralize support.** There are still several colleges and departments who purchase and support their own media technologies in these rooms. NIU could save money by centralizing this hardware and software support within DoIT and gain an added benefit of more readily available spare equipment that could be quickly and efficiently swapped out after a failure. In 2017, DoIT staff will collaborate with IT Directors in NIU's Colleges to create a vision for classrooms and conference rooms that includes consistent equipment interfaces and audio/video capture technologies for recording, storage and playback.
- **Centralize management practices in classrooms.** Even if support for media technologies in classrooms or conference rooms is not centralized, all departments who manage their own spaces should take advantage of DoIT's RoomView license by the summer of 2017. RoomView allows for real-time remote control and management of classroom media equipment.

Summary of Proposed Actions



TRANSFORM: Financial Systems Support
Response: ACCEPT

DoIT provides the infrastructure, configuration, and custom development for NIU's core financial systems:

- **PeopleSoft Financial Management** (PS-FMS) provides financial information to over 200 NIU departments and over 4,400 cost centers. This is the foundational system for the Division of Finance for Accounting, Accounts Payable, Accounts Receivable/Billing, Budget, and Procurement.
- Custom software for sponsored **grants** is integrated with PS-FMS and manages over 530 grants.
- **Blackboard Transact** is the billing engine for OneCard, supporting 3.4M transactions each year and providing purchasing services with designated vendors and facilitates access to on-campus programs, sporting events and buildings.

Task Force Recommendation

The university is paying for modules that are not implemented in PeopleSoft and this must be fixed. Years of not implementing these modules have cost the university significantly in slow and redundant processing on top of the irresponsibility of paying for services it is not using, which the university simply cannot afford.

Implementation of these modules should be an immediate priority, and the processes or systems that kept the modules from being implemented should be analyzed and transformed to prevent such barriers in the future. Implementing these unused modules through one-time expenditures will save the university money in the long run.

The university must also make sure that Financial Systems Support, Human Resources Systems Support, and Student Administrative Systems Support interact to improve the campus-wide business practices/processes that go across all three systems.

Associated Programs

- As the enterprise accounting system, the financial systems integrate with other programs to provide reliable source data: **Human Resource Systems Support**, **Student Administrative Systems Support**, and **OneCard**. While DoIT manages the financial system implementations, maintenance and development projects, the data and process owners use these foundational tools and applications to facilitate all business operations throughout the university.

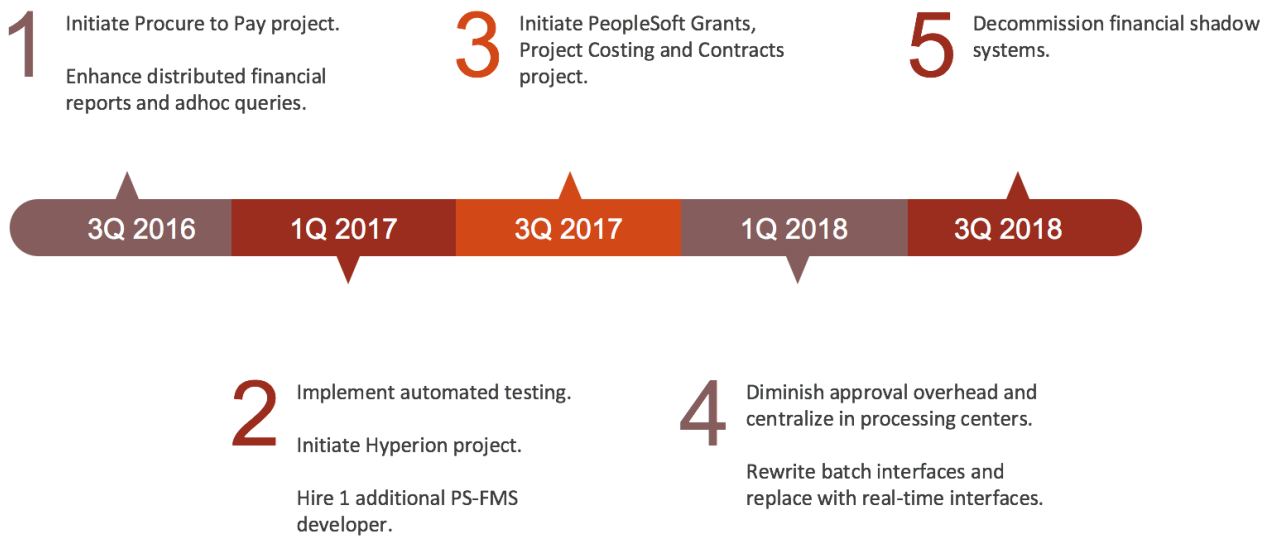
Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Adopt a common person model.** While obscure, the importance of bringing together the different data models for "person" inside the HR and the Student systems cannot be ignored if NIU intends to ensure that integrations and workflows can work correctly across all three PeopleSoft systems. Despite discussion, no business case has come forward. In FY17, DoIT will seek approval through IT Governance to add this to the scope of a separately approved project. The impact on the Finance system is minimal except that staffing choices are limited and every PeopleSoft project has the potential to impact another.
- **Implement semi-annual maintenance upgrades.** Waiting to upgrade every other year means that each upgrade results in a significant training and testing burden for both technical and functional staff and generally requires more impactful downtimes. In early 2016, DoIT sought and was granted approval by

financial staff and the PeopleSoft governance committee to move PS-FMS and the PeopleTools that support PS-FMS to semi-annual maintenance.

- **Initiate the Procure to Pay project.** Implementing workflow within PS-FMS will reduce the time delay that currently exists with manual paper based approvals. This project should be initiated before the end of 2016 to implement delivered workflow functionality and distributed data entry to remove current paper-heavy processes for requisitions and approvals, purchase orders, and invoices. DoIT cannot commit to timing as the next step is approval of funding through Finance.
- **Integrate PS-FMS with InfoEd for pre-award grants, then implement the PeopleSoft Grants, Project Costing and Contracts modules.** In 2016, PS-FMS and PS Human Resource System (PS-HR) will interface with InfoEd to provide a daily batch load of person data to eliminate dual entry in PS-FMS and InfoEd during pre-award processing. During the summer of 2017, this batch load will be discarded in favor of real-time integration using PeopleSoft's Integration Broker. At this time, the project to implement PeopleSoft modules for post-award grant processing should be initiated. Implementing the currently licensed Grants, Project Costing and Contracts modules will improve the end to end processing of NIU's 400+ grants and reduce time spent on reporting and manual data entry. At the end of the project, the antiquated and insecure Microsoft Access databases that currently manage post-award processing will be decommissioned. DoIT cannot commit to the timing of the Grants module implementation as the next step is approval of funding through Finance.
- **Enhance distributed reporting.** PS-FMS reports were originally created to be managed and maintained by PS-FMS developers with little to no authorization for financial staff to customize their own reports or create adhoc queries. This over-centralization of work means that anywhere from 20%-50% of a PS-FMS developer's time could be spent in report creation and troubleshooting. This is not a good use of technical resources. By the end of 2016, concerted effort by the PeopleSoft governance committee and the PS-FMS operational status committee should result in a more distributed set of reports and authorization granted to trained financial staff that allows them to run their own financial queries in 2017. By the beginning of 2018, NIU should see a number of financial shadow systems dismantled: systems created in large part to handle financial reporting and data visualization that could be done within a more open PS-FMS system.
- **Implement automated testing.** Defining and developing baseline test cases that are repeatable and can be run automatically will eliminate hours of testing by functional users thus freeing them to work on other priority projects. The PeopleSoft Test Framework will be implemented by the end of 2016 to begin automated testing in 2017 for PS-FMS.
- **Initiate the Hyperion project for budgeting.** Implementation of the currently-licensed Hyperion solution for budgeting and strategic planning will provide a robust analytic and reporting environment for the university budget processes. This project should initiate in early 2017 to take advantage of a competitively-priced cloud solution. DoIT cannot commit to timing as the next step is approval of funding through Finance.
- **Add at least 1 FTE for PS-FMS development.** We have the ability to operate in maintenance-mode only. The university must decide whether it needs to change the way it does business, particularly in its central offices. If the answer is yes, and either Hyperion, Grants, or Procure to Pay are initiated in FY17, then at least one additional FTE is needed in order to support the redesigned business processes in PS-FMS.
- **Improve PS-FMS interface for mobile devices.** The next upgrade to the developer tools underlying PeopleSoft will promote the use of Oracle's so-called "Fluid" technology which will allow modules configured to use Fluid to be used on multiple form factors such as tablets and phones. This upgrade can happen in FY17 but is dependent on the degree to which other projects are funded and initiated.

Summary of Proposed Actions



TRANSFORM: Human Resource Systems Support
Response: ACCEPT

DoIT provides and supports the infrastructure and custom development for NIU's core human resources system:

- The **PeopleSoft Human Resources Management System** (PS-HR) provides core functionality for payroll, job and position management, base benefits, and federal and state reporting.
- Distributed division, college and department offices use campus reports and queries to support local workforce management including job, position and budget tracking.
- Over 8,000 faculty, staff, and student employees access HR Self-Service through the **MyNIU Portal** to view their paycheck, W-2 data and verify their personal information.

NIU licenses, but has not implemented, the PeopleSoft Time and Labor module for time tracking and absence management or the ePerformance module for online performance evaluation and approval workflow.

Task Force Recommendation

The university is paying for modules that are not implemented in PeopleSoft and this must be fixed. Years of not implementing these modules have cost the university significantly in slow and redundant processing on top of the irresponsibility of paying for services it is not using, which the university simply cannot afford.

Implementation of these modules should be an immediate priority, and the processes or systems that kept the modules from being implemented should be analyzed and transformed to prevent such barriers in the future. Implementing these unused modules through one-time expenditures will save the university money in the long run.

The university must also make sure that Financial Systems Support, Human Resources Systems Support, and Student Administrative Systems Support interact to improve the campus-wide business practices/processes that go across all three systems.

Associated Programs

- As the enterprise human capital management system, the HR system integrates with both the **Financial Management System** and the **Student Administrative System Support** programs to provide reliable source data. While DoIT manages the HR implementations, infrastructure, maintenance and development projects, the data and process owners use these foundational tools and applications to facilitate business operations throughout the university.

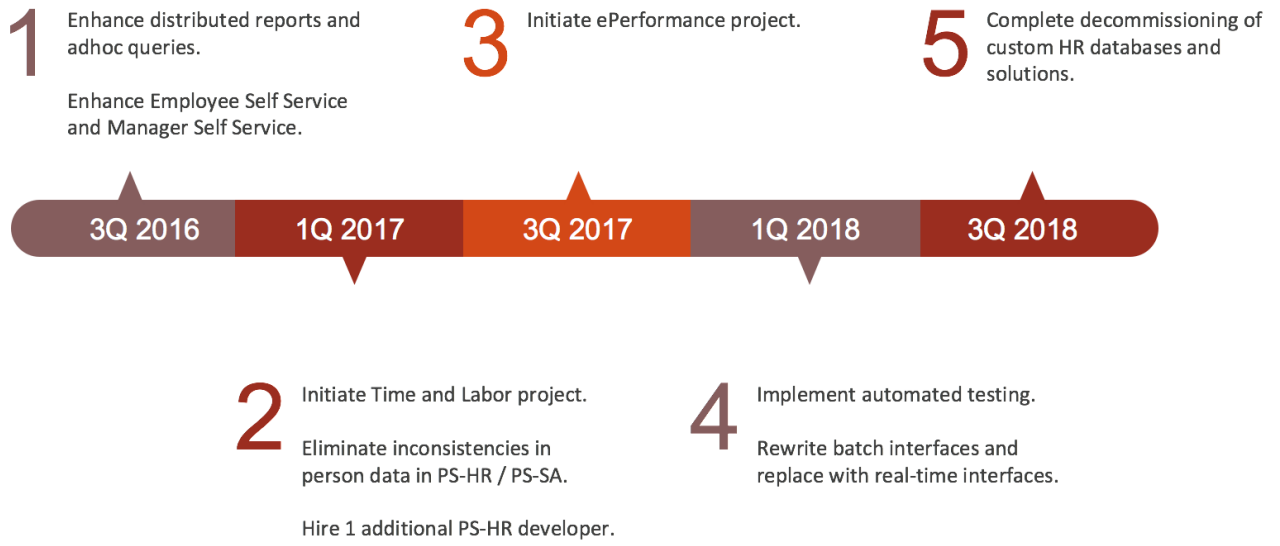
Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Implement quarterly maintenance upgrades.** Waiting to upgrade every other year means that each upgrade results in a significant training and testing burden for both technical and functional staff and generally requires more impactful downtimes. In early 2016, DoIT sought and was granted approval by human resources staff and the PeopleSoft governance committee to move PS-HR and the PeopleTools that support PS-HR to quarterly maintenance.
- **Implement automated testing.** Defining and developing baseline test cases that are repeatable and can be run automatically will eliminate hours of testing by functional users thus freeing them to work on other priority projects. The PeopleSoft Test Framework will be implemented by the end of 2016 to begin

automated testing in 2018 for PS-HR. The delay between implementation of the framework and initiation of automated testing in HR is due to the need to start with other PeopleSoft areas and finish with HR.

- **Eliminate duplication and inconsistency of person data that is currently maintained separately within HR and Registration and Records.** In FY17, a project should be initiated to review and recommend changes within the functional and technical areas that support person data in both PS-HR and PeopleSoft Student Administration (PS-SA). Currently, the inconsistencies in person data keep NIU from implementing automated and integrated processing in all three PeopleSoft systems.
- **Enhance Manager Self-Service and Employee Self-Service functionality.** Opening existing functionality in Manager Self Service and Employee Self Service would save thousands of hours per year in meaningless paper shuffling. Allowing units to make their own edits to the "Supervisor" or "Reports To" field are prerequisites to implementing this functionality required by PS-FMS procurement and approval processes as well as online performance evaluations in PeopleSoft's ePerformance module.
- **Enhance distributed reporting.** PS-HR reports were originally created to be managed and maintained by PS-HR developers with little to no authorization for human resources staff across campus to customize their own reports or create ad hoc queries. This over-centralization of work means that anywhere from 20%-50% of a PS-HR developer's time could be spent in report creation and troubleshooting. This is not a good use of technical resources. By the end of 2016, concerted effort by the PeopleSoft governance committee should result in a more distributed set of reports and authorization granted to trained human resources staff across campus that allows them to run their own queries in 2017. By the beginning of 2018, NIU should see a number of shadow systems dismantled: systems created in large part to handle reporting and data visualization that could be done within a more open PS-HR system.
- **Implement delivered and available workflow.** Implementing workflow within PS-HR will reduce the time delay that currently exists with manual paper based approvals. Delivered workflow functionality and frameworks have not yet been configured and implemented, but should at least be scheduled for implementation by the end of 2016.
- **Initiate the Time and Labor project.** Implementing the currently-licensed Time and Labor and Absence Management modules in 2017 will improve the end-to-end processing of time entry and benefit usage recording. The current process relies on Excel spreadsheets and requires both additional storage and manual approvals. Moving to Time and Labor will reduce time spent on reporting, facilitate ACA time-tracking compliance, reduce reliance on shadow systems, and remove redundant storage requirements and storage-based security overhead. DoIT cannot commit to timing as the next step is approval of funding through Finance.
- **Initiate the ePerformance project.** Once person data has been rationalized across PeopleSoft systems and the "Supervisor" or "Reports to" fields are available through Manager Self Service functionality, the ePerformance project should be initiated in 2017 to remove the paper-based performance evaluation processes across campus. DoIT cannot commit to timing as the next step is approval of funding through Finance.
- **Assist the PeopleAdmin effort.** HR has a multi-year effort underway to implement an online hiring application known as PeopleAdmin. DoIT is just beginning an effort to bring project management expertise to the table as a means of helping this project over the finish line.
- **Add at least 1 FTE for PS-HR development.** We have the ability to operate in maintenance-mode only. The university must decide whether it needs to change the way it does business, particularly in its central offices. If the answer is yes, and the Time and Labor project is initiated in FY17, then at least one additional FTE is needed in order to support the redesigned and implemented business processes in PS-HR.
- **Develop other solutions for HR custom databases and applications.** Currently DoIT supports database solutions for Civil Service Testing and NIU HR Correction and custom solutions for Position Review and the State Universities Civil Service System (SUCCS). Beginning in 2017, DoIT and HR staff must collaborate to review these solutions for replacement.
- **Improve PS-HR interface for mobile devices.** The next upgrade to the developer tools underlying PeopleSoft will promote the use of Oracle's so-called "Fluid" technology which will allow modules configured to use Fluid to be used on multiple form factors such as tablets and phones. This upgrade can happen in FY17 but is dependent on the degree to which other projects are funded and initiated.

Summary of Proposed Actions



TRANSFORM: Network Architecture and Support
Response: ACCEPT

DoIT supports NIU's enterprise network service to the campus and its remote outreach facilities. The enterprise network is composed of fiber infrastructure in and around the campus, core/distribution network equipment, more than 12,000 wired network ports and 1,400 wireless access points (APs).

DoIT staff provide 24/7/365 support for the entire network infrastructure which includes all provisioning, installations, troubleshooting and incident resolution. This team, in conjunction with elements of the DoIT Service Desk, also provides equivalent support for other networks including NIUNet, iFiber, DATA, and sometimes local school districts. Some of this work is performed on a contract basis while local schools often receive our help pro bono.

Task Force Recommendation

Comprehensive and working Wi-Fi coverage is essential on today's college campuses. Students, faculty, staff, and guests expect access to Wi-Fi in their living and working environments. The task force acknowledges that the financial model that supports this program is flawed and in desperate need of repair. The task force strongly recommends that campus-wide Wi-Fi be a centralized commitment of the university thereby eliminating the chargeback model to programs.

Associated Programs

DoIT supports NIU's enterprise network service to the campus and its remote outreach facilities. The enterprise network is composed of fiber infrastructure in and around the campus, core/distribution network equipment, more than 12,000 wired network ports and 1,400 wireless access points (APs).

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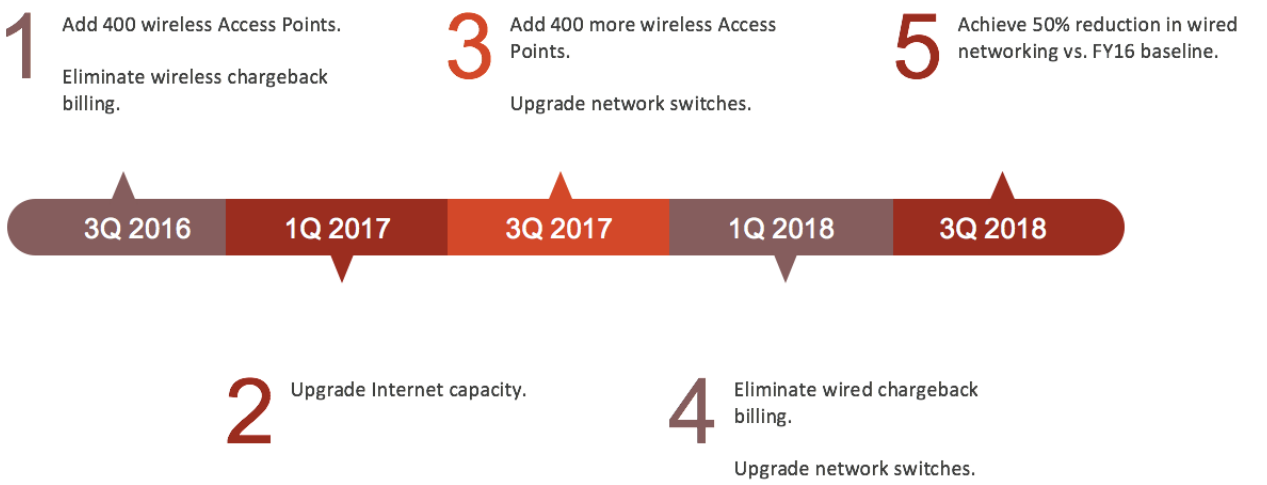
Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Eliminate chargeback billing for wireless networking.** At the start of FY17, DoIT has been approved to centralize wireless billing across campus and eliminate this chargeback model. Over the past ten years, charging individual units for wireless has led to slow adoption compared with other peer institutions. Centralized funding will reduce billing overhead within DoIT and in each department's administrative suite. It is cost neutral for departments and does not disadvantage early adopters who have previously paid for wireless. Changing the funding model will not address the uneven wireless capacity on campus; wireless expansion is needed for that. Pending decisions from Finance on how to treat Auxiliary units, this can begin in July 2016.
- **Eliminate chargeback billing for wired networking.** DoIT's original proposal (FY15) for eliminating chargebacks for services would have had wireless charging eliminated in FY17, telephones in FY18, and wired networking in FY19. Based on the strong recommendation, DoIT will seek FY18 approval to eliminate chargebacks for wired networking a year early, in FY18.
- **Expand wireless coverage.** Currently, DoIT is expanding wireless and improving its capacity to what might be called "multimedia-grade" wireless. The College of Health and Human Sciences, Research and Innovative

Partnerships, University Libraries, and Hoffman Estates are all beneficiaries of this program. In this expansion, due to finish in 2016, DoIT will install approximately 400 of the remaining 1800 (estimated) wireless access points needed to satisfy campus demand. DoIT's FY17 budget requested another 400 which could be installed in 2017 if approved.

- **Reduce wired networking.** Most areas on campus that have wired networking also have viable wireless coverage. Certainly all areas who work with technology desire to have robust wireless coverage, as noted in the task force recommendation. As part of wireless expansion, DoIT is requiring participating units to remove their duplicate wired connection as cost savings. Going fully wireless will save NIU hundreds of thousands of dollars per year in reduced wired networking costs. The full adoption of wireless will take several years and is dependent on central funding for WiFi expansion.
- **Complete network security improvements.** Security is a process, not a project; therefore it is never truly complete. In FY16 DoIT completed the work needed to install security devices at the perimeter of its network and inside the data center. The work was critical because it represented basic capabilities that were simply nonexistent (*cf. item 1 in the Eightfold Strategy.)* The next step is to use the network zones created by those security devices to separate risky users from sensitive data and then do the same inside the data center for risky servers and databases. This work begins in FY17 and continues into FY18.
- **Refresh out of warranty network switches.** NIU's wired networks have no source of funding for routine equipment replacement. DoIT's FY17 budget requests full network refresh. If any portion of that refresh is funded, one critical set of operational tasks to perform in FY17 is to replace equipment that is unsupported by the manufacturer. The next set of equipment due for replacement is a group of 38 devices that went unsupported between 2007 and 2011. FY18 refresh would address some but not all of the equipment that went unsupported between 2012 and 2015.
- **Upgrade Internet capacity.** Ordinary growth in faculty, staff, and student use of the Internet places FY17 as the ideal time to upgrade Internet capacity without pushing the boundaries. At the same time, a new network link will provide a redundant high speed Internet connection, alleviating the issue of having only one today. If unfunded in FY17, it will need funding in FY18 based on current growth rates and an expectation of increased network use as DoIT and places more of our applications in the cloud.

Summary of Proposed Actions



TRANSFORM: Server Hosting and Administration
Response: ACCEPT

DoIT provides support for 1,000+ virtual machines (VMs) and 150 physical servers. Housed in DoIT data centers to take advantage of climate control, power conditioning and redundancy, fire suppression systems, secure physical access and high-speed networks, these servers can be managed by the customer or DoIT administrators.

DoIT server administration includes consultations with customers, operating system installations, patching and upgrades, virus scanning and mitigation, monitoring and alerting as well as data protection options.

Base VMs are offered at a third of the price of a traditional server's network connection and can be customized to meet most requirements.

Task Force Recommendation

This program manages virtual and physical machines that provide computing support to the university. As with other DoIT functions, it is already undergoing substantial transformation and the task force encourages this change to continue. Centralization and standardization will improve this program's ability to function effectively.

Associated Programs

- DoIT's server infrastructure is available for any unit on campus to use for both production and development workloads. Servers are customizable and can be deployed rapidly at a reasonable cost. For any departments who have recently sunk costs into expensive physical servers, there is ample space in DoIT data centers for co-locating those servers and at least giving them the physical security and environmental controls often lacking in other campus buildings.

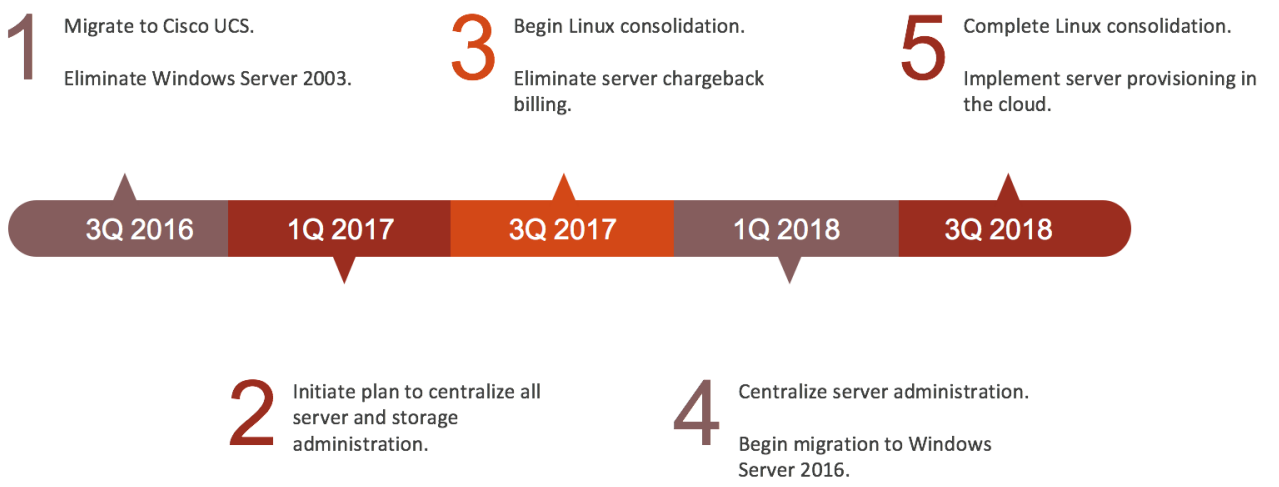
Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Prepare to move to the cloud.** Many of the items below, if not all of them, are preparatory to the work needed to host NIU's servers and storage in the cloud. Moving to the cloud is both necessary and advantageous but there is housecleaning that must be completed first.
- **Complete migration of virtual infrastructure to Cisco UCS platform.** DoIT has made good progress with moving from physical to virtual servers over the past five years and is now preparing to move those virtual machines off their aging physical host to brand new hosts. Configuration of the virtualization platform will be complete in 2016 with most servers actually migrating in 2016 as well. As an aside, this may be the most fascinating thing DoIT will do in recent memory. Hundreds of servers, many of them actively running, will be dragged and dropped from one physical computer to another without any disruption. This would be equivalent to watching a YouTube video on your phone then dragging and dropping it onto your TV without the video stopping. Work like this used to take 1-2 years before virtualization.
- **Centralize virtual server environments.** There are several departments on campus running their own virtual environments. DoIT will assist them in migrating to DoIT's virtual hosts by the end of 2017 to eliminate redundancy and realize savings on licensing costs, additional hardware and support staff.
- **Eliminate chargebacks for virtual servers.** DoIT will seek central funding for servers and storage in FY18. If approved, DoIT will implement early in FY18.
- **Centralize server administration and hosting services.** DoIT anticipates that one outcome of the local IT director recommendations regarding the balance of central and distributed IT will be that server

administration, along with server hosting, should be centralized. At present, DoIT is targeting the beginning of that effort in 2018.

- **Upgrade Windows Server**: NIU maintains a variety of outdated server operating systems running on modern hardware. This often happens when hosting obscure departmental applications. These smaller systems can sometimes be slow to move to newer platforms or departments may not care to go through the changes needed to stay current. Starting at the beginning of FY16, DoIT is forcing the move away from Windows Server 2003. In 2017, DoIT will eliminate all Windows Server 2008. All systems will move to Windows Server 2016 in 2018. Applications that cannot run on modern operating systems will be shut down as a security concern.
- **Consolidate on Linux.** NIU maintains a variety of non-Windows server operating systems. DoIT will standardize on a single version of Linux known as Red Hat Enterprise Linux (RHEL). System migrations will begin in 2017 and finish in 2018. Applications that cannot run on RHEL must be converted to Windows, hosted in the cloud, or replaced with an application that meets DoIT's architectural standards.
- **Automate virtual server creation.** Beginning in FY17, DoIT training plans for all infrastructure and applications teams must include training plans that offer our staff the chance to prepare to manage their work in the cloud. For system administrators, this entails learning to create servers via automated and remote tools that can "orchestrate" the sequence of processes that staff do by hand over the course of a week when working locally. Staff begin by practicing the automation and orchestration on our new UCS virtual environment. By FY18, some new development environments should start to be created offsite instead of on site.
- **Sell data center space to regional entities.** Business continuity and disaster recovery capabilities are enhanced by having equipment in geographically dispersed locations. DoIT has already sold space in our data centers to entities wishing to have an off-site location for their redundant equipment. By the end of 2016, DoIT will create a plan to expand this practice.

Summary of Proposed Actions



TRANSFORM: Software Licensing and Distribution
Response: ACCEPT

DoIT is responsible for negotiating and licensing software available as a site-wide license as well as many volume-license purchases for specific College or divisional use.

DoIT also maintains a program for both online and media distribution. Software licensing includes gathering user requirements, identifying appropriate software, then working with vendors to identify and negotiate appropriate levels of licensing. DoIT staff maintain the licensing database of the more than 5,100 software packages ever purchased through this program, ensuring that reporting complies with legal and audit requirements. Of these, only 90 can currently be ordered online from a DoIT website.

Software distribution includes maintaining a current software repository, managing orders, verifying use cases meet license restrictions, billing, and either electronic or physical media delivery.

Task Force Recommendation

Although this program will eventually be able to be reduced, the way the campus purchases software needs to continue to change before the reduction takes place. The program must continue moving toward more automation, which will eventually allow the program to function with reduced resources.

Associated Programs

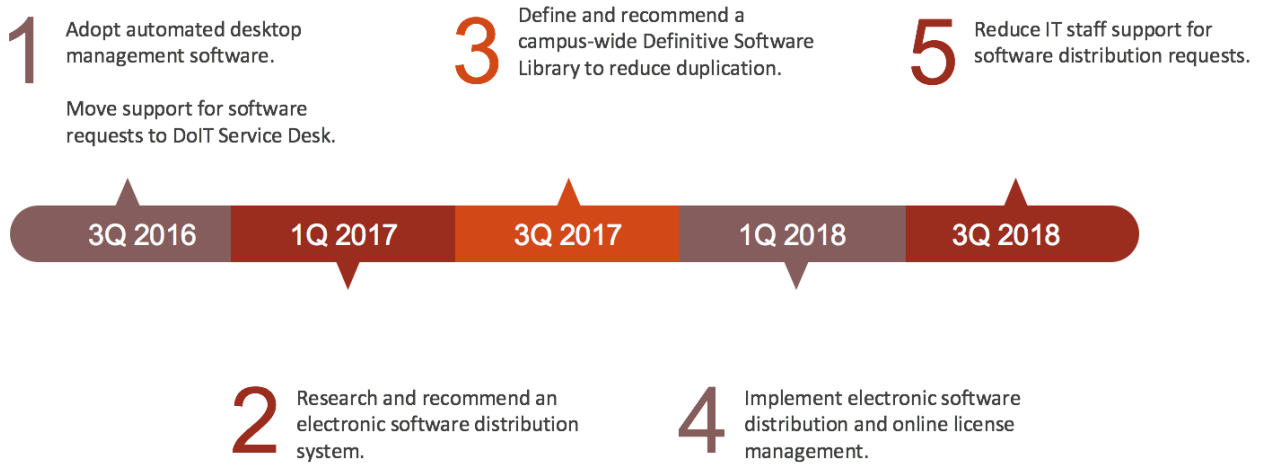
- Software licensing and distribution is dependent upon a high-speed, high-bandwidth, and highly-available wired and wireless data **Network Architecture and Support**.
- The program also requires a close partnership with NIU's Procurement Services to ensure appropriate vendor negotiations and purchases.
- For electronic distribution, integration with the **Desktop Support and Media Technologies** program is required.
- All volume purchases of software should coordinate with our cloud-based AnywhereApps in the **Academic Technologies and Support** program to make the apps available anytime, from anywhere.

Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Research, recommend and implement electronic software distribution.** In 2017, DoIT will begin researching applications that that would accept PS-FMS cost centers and/or Purchasing Cards and deploy both volume- and site-licensed titles, tracking assets and ensuring compliance with copyright.
- **Require use of automated desktop management software.** Inherent in the move to electronic software distribution is the use of desktop management software. Even if the purchased software is distributed electronically and installed by the purchaser, NIU still has a responsibility to be able to perform an audit of its machines for licensing purposes when requested to do so by the vendor. Desktop management automates this audit. The requirement to move all standard desktop and laptop platforms into an automated management platform has already been given with all local and central machines expected to be in place by the end of 2016.
- **Review, revalidate and consolidate a Definitive Software Library (DSL).** While electronic delivery and volume licensing are necessary and obvious steps, the real mark of excellence is consolidation. A cost-constrained institution with its eye on the ball would ideally be open to a serious conversation about pursuing volume

discounting by adopting a reduced set of software titles for similar sets of functionality. Just as the university only has one accounting system in PeopleSoft and one LMS in Blackboard, we should be open to the conversation about how many different statistics or videoconferencing solutions we need to buy and what emergent benefits could accrue from rallying around a common solution. In collaboration with staff from the University Libraries, DoIT will begin work in 2017 to define and recommend a campus-wide DSL.

Summary of Proposed Actions



TRANSFORM: Student Administrative Systems Support
Response: ACCEPT

DoIT supports and provides the infrastructure and custom development for NIU's student administration system known collectively as MyNIU. Over 55,000 students, applicants, faculty and advisors conduct business in MyNIU with over 5,000,000 logins annually.

- The **PeopleSoft Student Administration System** (PS-SA) provides core functionality for student financial billing, disbursing financial aid, advising, application processing, managing course rosters, grade records, and transcripts.
- Through **Self-Service**, students register for classes, pay bills, view and accept financial aid, use their admissions checklists, and accept offers of admission.
- The **MyNIU Portal** provides a single site to access campus systems and provides information regarding campus events, calendars and deadlines.

Task Force Recommendation

The university is paying for modules that are not implemented in PeopleSoft and this must be fixed. Years of not implementing these modules have cost the university significantly in slow and redundant processing on top of the irresponsibility of paying for services it is not using, which the university simply cannot afford.

Implementation of these modules should be an immediate priority, and the processes or systems that kept the modules from being implemented should be analyzed and transformed to prevent such barriers in the future. Implementing these unused modules through one-time expenditures will save the university money in the long run.

The university must also make sure that Financial Systems Support, Human Resources Systems Support, and Student Administrative Systems Support interact to improve the campus-wide business practices/processes that go across all three systems.

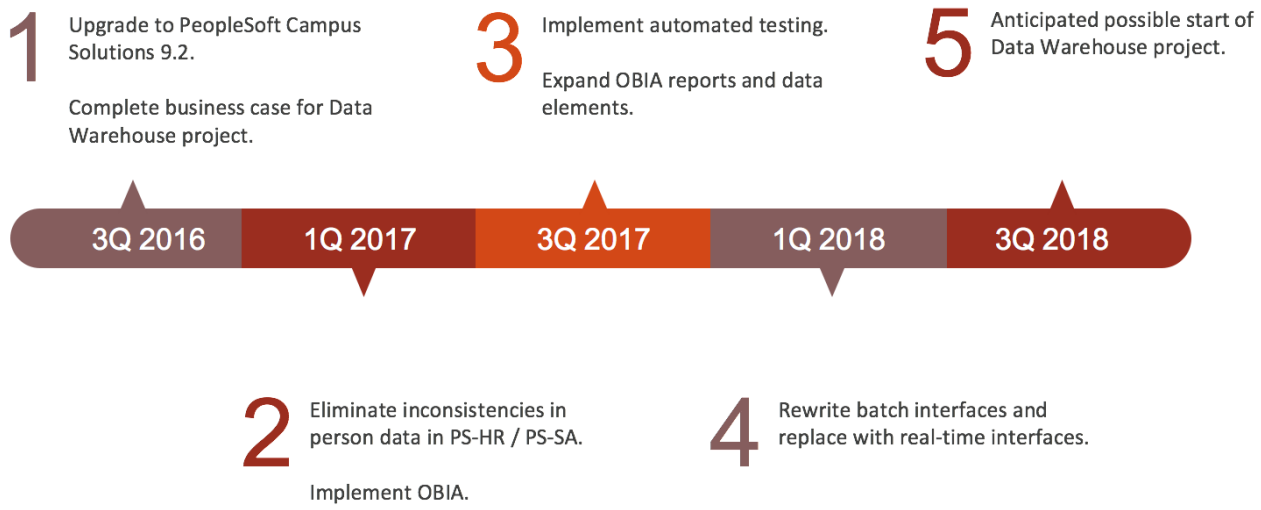
Associated Programs

- The enterprise-class student administration system integrates data from distinct operational entities and through shared data management promotes the collaboration which provides the foundation for business process efficiencies. The student administration system fully integrates with other enterprise systems and programs to provide reliable source data: **Academic Technologies (Blackboard)**, **Housing and Dining**, **Financial Systems Support**, **Institutional Research**, and **Human Resource Systems Support**. While DoIT manages the student system implementations, maintenance and development projects, the data and process owners use these foundational tools and applications to manage the entire student lifecycle from admissions to graduation and beyond.
- Additional integrations include the Student Success Collaborative (EAB), Hobsons Customer Relationship Management (CRM) system for Enrollment Management, CollegeNet applications, and Terra Dotta for NIU's Study Abroad Program.

Response to the Recommendation: ☐No Action ■Routine Action ☐Significant New Action

- **Upgrade to PeopleSoft Campus Solutions 9.2.** This upgrade scheduled to initiate in 2016 will promote the use of Oracle's so-called "Fluid" technology which will allow modules configured to use Fluid to be used on multiple form factors such as tablets and phones.
- **Adopt a common person model.** While obscure, the importance of bringing together the different data models for "person" inside the HR and the Student systems cannot be ignored if NIU intends to ensure that integrations and workflows can work correctly across all three PeopleSoft systems. Despite discussion, no business case has come forward. In FY17, DoIT will seek approval through IT Governance to add this to the scope of a separately approved project.
- **Improve reporting through OBIA.** Even without a defined data warehousing project, DoIT has made slow progress in its spare moments towards bringing rudimentary data elements from PeopleSoft Student over into a non-production data warehouse in anticipation of the day when the business was ready to proceed. While not ready for full data warehousing, there are starter elements in what is known as the Oracle Business Intelligence Applications. OBIA apps are a lightweight guide that could be implemented in FY17 as a prelude to more formal Student data warehousing that would begin in FY18.
- **Implement automated testing.** Defining and developing baseline test cases that are repeatable and can be run automatically will eliminate hours of testing by functional users thus freeing them to work on other priority projects. The PeopleSoft Test Framework will be implemented by the end of 2016 to begin automated testing in 2017 for PS-SA.
- **Initiate the Data Warehouse project.** Implementation of the currently licensed Data Warehouse will provide a robust analytic and reporting environment for PeopleSoft systems. The creation of a project charter stalled in 2013 and the project was deferred in early 2014 until a clear mandate and roadmap could be created. A business case to re-initiate this project will be completed by the end of 2016 and sent to IT Governance committees for review and further discussion. Any data warehouse implementation is a multi-year project and will require significant technical and functional staff time and effort.

Summary of Proposed Actions



TRANSFORM: Voice Services
Response: ACCEPT

DoIT supports NIU's campus telephony service, delivered by a 30+ year-old legacy Nortel/Avaya telephone switch with approximately just over 5,000 remaining phone lines. Advanced call features, including voicemail, are add-ons to the basic service. DoIT staff and an external vendor consultant provide 24x7x365 support for the entire telephony infrastructure which includes all provisioning, installations, troubleshooting and incident resolution.

Task Force Recommendation

Although some voice service system is still needed on campus, the demand for this service has declined substantially, in part due to the cost to departments to maintain phone lines. The current phone system is antiquated, and maintaining the equipment is expensive. The current model no longer appears to be sustainable. The task force strongly recommends that DoIT transform how voice services are implemented on the campus.

Associated Programs

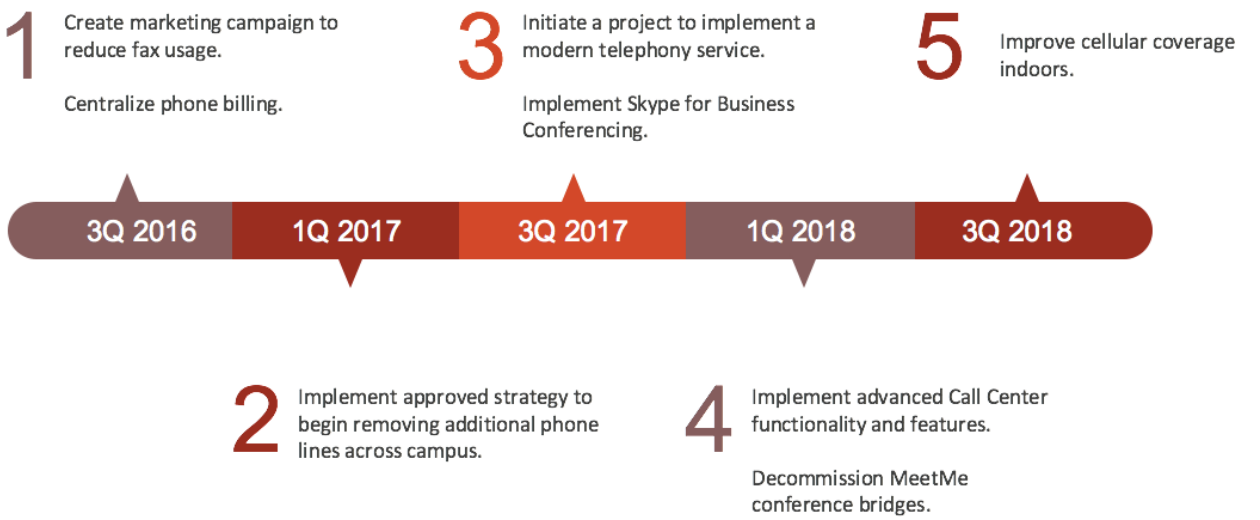
- Similar to other core technology infrastructure, telephony service is consumed by units all across campus in support of teaching and learning, public surveying, and administrative activities.

Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

- **Eliminate chargebacks for most phone services while continuing to diminish use.** At the start of FY17, DoIT has been approved to centralize billing for phone services across campus and eliminate this chargeback model. Users will no longer be billed for features like voice mail, call forwarding, 3-way calling, or domestic long distance; nor will users be billed to upgrade analog phones to Voice over IP (VoIP) or to disconnect phone lines. Any new telephony service must be implemented on a reduced footprint in order to be affordable and effective at NIU. Therefore, beginning in 2017, DoIT will work with the IT Steering Committee and the IT Planning Council to recommend and approve strategies (*e.g.* usage reports) that will inform decisions about how to continue removing phone lines across campus.
- **Decommission fax lines.** This 1980's technology can and should be replaced almost everywhere it exists. By the end of 2016, DoIT will initiate a marketing and communication campaign to make users aware of alternatives to fax communications wherever it is not strictly required.
- **Replace MeetMe audio conferencing with O365 Skype for Business.** DoIT has already piloted self-service reservations for MeetMe conference bridges in O365 calendars and this will be rolled out to the campus by the end of 2016. Following that, a concerted effort to move MeetMe users to Skype for Business Conferencing will begin with the goal of decommissioning MeetMe in 2017.
- **Improve in-building cellular coverage.** More than 90% of American adults now own a cell phone. Three converging trends make cellular coverage more important than ever. The first is that NIU must reduce its landline count because it cannot afford to buy a new phone system big enough to satisfy everyone's desire for a landline. The second is that the mid-range evolution of cellular technology should make it possible to consider eliminating WiFi in five to ten years, resulting in the potential for further capital and operating expense reductions worth several million dollars per year. The third, of course, is that our students demand it. Recent progress has been made towards completing the contracting phase of a project that would bring better cellular coverage from Verizon to the campus. FY17 could see the beginning of this project but improved coverage will likely not begin until FY18.

- **Implement a modern telephony service.** The initial business case to replace the current telephone switch was rejected by the IT Steering Committee in 2015. NIU simply cannot afford the millions of dollars it costs to purchase a replacement for the full scope of phone users it has today. Instead, the ITSC directed that a new business case be written that would provide full Call Center functionality while continuing to diminish the availability of phones for casual callers. An RFP has been issued to solicit solutions that require moderate capital costs and lower recurring operating expenses. There are several likely options that will be presented in a business case that the IT Steering Committee must approve before a project can be funded and initiated in 2017:
  - Keep existing infrastructure and spend at least $500K on facility and software upgrades;
  - Decommission existing infrastructure and move to a third-party service provider;
  - Upgrade to a new on-premises telephony solution that supports only 3K phone lines but includes Call Center functionality;
  - Upgrade to a new cloud-based telephony solution that supports only 3K phone lines but includes Call Center functionality.

Summary of Proposed Actions



REVIEW: Collaboration and Conferencing Support
Response: ACCEPT

DoIT provides collaboration and conferencing tools for hosting academic classes, training courses, webinars and demonstrations; attending virtual meetings through audio or video conferencing; and sharing documents and other files in real-time collaboration.

These collaboration and conferencing tools include:

- audio conferencing using either traditional phones or through the Microsoft Skype for Business offering;
- document sharing and collaboration using Google Docs (students), Microsoft OneDrive (faculty, staff and students) and Microsoft SharePoint; and
- video conferencing with Blackboard Collaborate, Microsoft Skype for Business, and the BlueJeans pilot.

Task Force Recommendation

This narrative is difficult to evaluate, and perhaps should not have been treated as a standalone program since it is more about future possibilities than a measurement of the quality and importance of an existing program. The university has an opportunity to look at distributed programs and consolidate licensing and support for videoconferencing services/systems.

Associated Programs

- As demand continues to grow from both academic and administrative units, this program will become more foundational to processes across the institution. Just as it is unthinkable today that faculty, staff or students would give up wireless network access, it is only a matter of time before these online tools become part of the fabric of teaching and learning at NIU.

Response to the Recommendation: ■ No Action ☐ Routine Action ☐ Significant New Action

DoIT agrees that the definition of a standalone program does not entirely map to the IT industry's concept of an IT service. The applications held within DoIT's Collaboration and Conferencing "service" are also part of other DoIT programs and services; therefore we agree that there is no need for a separate action plan for Collaboration and Conferencing.

REVIEW: Multimedia Production and Support
Response: ACCEPT

DoIT provides professional video recording, multimedia production and post-production editing for athletic events, special events at NIU's Convocation Center, campus events, and events for entities such as the Illinois High School Association. DoIT staff mentor and supervise 20+ NIU students who become prepared for careers in video direction and production.

This program also includes:

- Television camera work, event direction/production, audio and replays for athletic events on ESPN3;
- Extraction and production of athletic archival footage for use in sports marketing campaigns;
- Audio/video recording and editing for athletic press conferences; and
- Support for video coaching and analysis using video captured from robotic cameras used during football practices and games.

The program has growth opportunities but exists on shaky financial ground. Its viability depends on funding from external customers.

Task Force Recommendation

The narrative suggests the program cannot be sustained without additional resources, and the task force does not see evidence that the program deserves more resources. If this program is required to be maintained because of the contract with ESPN3, then the program should be moved to—and funded by—the intercollegiate athletics department.

Associated Programs

- This program works closely with **NIU Athletics** and the university's **Marketing and Communications** staff to provide professional-quality broadcasts and video content. It also relies on **Network Architecture and Support** and **Storage Administration** to distribute, store and retrieve video.

Response to the Recommendation: ☐No Action ☐Routine Action ■Significant New Action

Discussion between the CIO, CFO, and Provost earlier this year concluded that an external review was needed to fully assess the market and determine the ongoing viability of the program. That review was not done so a decision point for Multimedia Production must be reached in FY17 as DoIT absorbs the unfunded costs.

Three options exist:

1. If an external analysis can be quickly conducted that shows expansion as a means of addressing a large, unfunded capital equipment base then that expansion should be pursued either inside DoIT or inside Athletics as a way of maintaining the positive benefits associated with Athletic video.
2. Without the external analysis, it is possible that Multimedia Production can be re-imagined at a lower quality level and lower attendant costs. That option may not prove palatable for existing staff, but the function could be retained after addressing any staff turnover.
3. Because the cost basis for all current and deferred expenses is very well understood, there is no possibility that Athletics can run the program with lower cost. Therefore, absent the two options above, the program must be retired.