Campus IT Planning Committee – Cost Savings Subcommittee Report

Conditions Leading to the Review

The Campus Information Technology Plan (CITP) Cost Savings Subcommittee (CSS) was formalized at the first meeting of the CITP on February 2, 2010. The subcommittee was charged with identifying cost savings approaches that will generate at least $15M recurring over time while providing high quality information technology (IT) services to meet the University’s strategic goals. The timeline for the work was very aggressive, requiring a final report by March 30, 2010.

Goals

Consistent with the goals referenced in the CITP Charter, we propose cost savings approaches that will generate $15M recurring over time. We focused on the recurring target of $10M recurring by fiscal year 2012 since the timeline for the last recurring $5M is not specified.

IT General Funds Cost Savings Goal Illustration

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<thead>
<tr>
<th>Dollar Amount</th>
<th>FY2011 (Non-recurring)</th>
<th>FY2012 (Recurring)</th>
<th>Beyond (Not Defined)</th>
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The actual savings in IT energy consumption, IT related strategic sourcing and the impact of potential consolidation will have a significant impact on the strategies selected for the last $5M. While the
recurring targets were defined in our charge, our desire to capture opportunities for efficiency while insuring responsiveness to IT needs of all units was unconstrained.

Cost Saving Recommendations

Several clear themes emerged from the strategies adopted by our peer institutions, those proposed by professional IT consultants, reports from the IT Management Operations Review Team (MORT) and ideas generated within our own campus community. The first initiatives we explored were:

- Data center management
- Computing lab management
- Print management
- License agreement management
- IT strategic sourcing

Each group used some combination of reaching out to IT professionals in the content area and diving deeper into existing reports and recommendations. Leveraging existing resources was a key component of our strategy given the compressed timeline. Details of each initiative were documented in a standardized recommendation template to ensure consistency in our full assessment of each issue. While we made significant progress assessing each initiative, we stopped short of suggesting detailed implementation plans. The sequencing of implementation, as well as related financial implications, will be determined once a decision is made to pursue a specific initiative.

Next, we split some of the existing initiatives into finer sub-initiatives and pursued some additional areas. The second round of initiatives were:

- Virtualized desktop infrastructure (VDI)
- Software license management
- Renegotiation of current major IT contracts
- Desktop energy savings
- Video conferencing solutions
- Cost savings realization
- On-going assessment of new initiatives

Our recommendations provide a high level definition of and proposed course for action of the initiatives we believe will yield significant savings and maximize our opportunities to achieve our goal within the desired timeframe. Implementation details will vary depending on the final decision and the timing of the CITP sponsor.

Recommendations

Details for each recommendation will be included as attachments in our final report.
Data Center Management

A data center is a facility to house computer systems and their components.

We recommend:

- identifying existing data centers,
- anticipating the future need for data centers,
- establishing standards and processes for creating new ones, and
- developing plans for consolidating existing data centers and for a data center energy plan.

As technology has spread throughout campus, data centers have been created in an ad hoc fashion to meet the immediate needs of departments and colleges. These facilities were developed by adapting existing rooms, placed in the corner of laboratories or offices, or included in new building projects. The resulting patchwork of small data centers has increased the complexity of providing adequate utilities to buildings, managing the institutional utility costs, and meeting the continuing growth of cyberinfrastructure.

Computing Lab Management

This recommendation proposes review and analysis of campus computing labs to determine the optimal number, management, and type of labs maintained. This effort will attempt to strategically locate high quality computing labs and embrace innovative approaches to learning while striving to consolidate or repurpose underutilized labs to save equipment and support costs along with space recovery for other uses.

With nearly 280 computing labs on the West Lafayette campus, Purdue makes a significant investment to supply, manage, and upgrade these labs, both centrally and at the unit levels. There is currently no overall plan that addresses the changing needs, emerging technologies, funding, or space within these labs.

Three categories of computing laboratories emerged from an inventory taken late last year. General Purpose Open Computing Labs are defined as spaces providing access to computers for individual or group work on a non-scheduled, walk-in basis. Instructional Computing Labs are spaces providing instructors access to computing resources for the purpose of instructing students, usually on a scheduled basis. These computing labs are considered instructional whether they are scheduled for one class or multiple classes. Specialized Computing Labs are spaces typically providing non-standard hardware configurations, specialized or customized software, or space needs that are not provided centrally. Estimates of the number of computers and labs are as follows:

- General Purpose Labs – approximately 1,200 computers in 60 rooms
- Instructional Labs – approximately 3,500 computers in 180 rooms
- Specialized Labs - approximately 800 computers in 40 rooms
**Print Management**

The management of print material is currently distributed across campus. The level of active print management and the types of equipment and expendable items used to meet printing needs varies significantly across organizations (sometimes to the individual office level). Leveraging effective practices that are currently implemented in some areas and standardizing a number of activities surrounding the printing of materials creates the opportunity to realize efficiency savings while protecting flexibility and enhancing print functionality in strategically important areas. The print management initiative includes a broad set of recommendations:

- Identify opportunities to consolidate printers, copiers, scanners, and fax machines into networked, multi-function machines (energy savings and strategic sourcing)
- Evaluate service/maintenance contracts for printers, copiers and faxes, and use output to create recommendation for consolidating and/or reducing service/maintenance contracts (strategic sourcing)
- Propose a standardized printer and multi-function machine and maintenance contract factoring in efficiency rating (energy and strategic sourcing)
- Propose a strategy for sustaining progress in proactively managing printing after initial implementation of core ideas
- Investigate the advantage of providing a service to management printers
- Establish a strategic sourcing program for paper and toner for desktop and networked printers.
- Add print release stations to networked printers. This promotes a greener Purdue by reducing wasted paper and toner. Several times a day multiple print jobs are sent to a printer just to be thrown in the recycle bin. This can be due to a person realizing they have one more change to make or because they just forget to go pick up the print out. This waste will be eliminated by adding print release stations. Print release stations also increases security at the printer as no print jobs will print until a person walks up to the printer and enters their career account ID releasing the print job to print; and increases the viability of reducing some of the desktop printers that are there for security reasons.
- Identify effective print management practices such as dual sided and monochrome printing and establish them as defaults for printers.
- Implement a system for tracking the number of pages printed by individual. As noted in the student based print management system on average Purdue is printing approximately 40% fewer pages per day as a result of print tracking.
- Analyze ways number of pages could be reduced over time (less printing).

**License Management**

With IT playing a significant role within the University’s strategic goals, and with the newly formed Purchasing Strategic Sourcing department, we have an opportunity to leverage the dynamics and synergies of IT procurement, University strategic goals and strategic sourcing. At the heart of leveraging these dynamics for the University is the need to have a central IT discipline and focus. The license management initiative includes a broad set of recommendations:

- Centralized License Agreement Management
  - IT Strategic Sourcing - Ideally, this would be positioned under the responsibility of Purchasing Strategic Sourcing and would incorporate all IT contract life cycle administration. This would involve developing strategic sourcing opportunities,
developing strategic partnerships and the administration of contract life cycle management (RFx, negotiations, contract execution, contract performance, renewals, terminations and the management of an online software license database) of all IT related contracts.

- Centralize software management and license administration. In order to be able to save money on software purchases, it is imperative that we have a centralized software database that allows us to identify existing license agreements, right size licenses based on need, and identify the kind of licenses that are most cost effective. As part of the purchase process, IT will be expected to check with this database to determine if there is an existing agreement or if there may be some benefits as well as registering the new purchase in the database. The other part of this recommendation is for some IT governance mechanism to oversee the offering of license servers on campus so that application usage can be well understood and that as usage drops, licenses can again be right sized which could include discontinuation. All of this helps us stay in compliance as well as pay what we owe, not overpay. It also allows us to get the best pricing for all of campus.

- IT Contract Renegotiation
  - Currently, contracts are reviewed and renegotiated on their anniversary dates. They are renegotiated by the individual, group, or Contracts and Licensing. In the future, there needs to be a process that includes negotiation to the payees’ satisfaction and a point of IT approval for contracts, licensing, hosting, in-house support, and associated centralized data collection.

Contracts and Licensing currently maintains a portfolio of more than 900 software contracts for a total worth of more than $8,000,000 with various IT related vendors. As soon as practicable, review all contracts and licenses maintained by the Contracts and Licensing group, prioritize based on annual renewal costs and likelihood of savings, and then renegotiate.

- Software License Management
  - Currently, any software license management that occurs is done locally, at the department level. We recommend consideration of collaborative software license management to take advantage of the existing software licenses. This will produce a level of savings, due to fewer needs to purchase individual or multiple licenses. In addition, we recommend consideration of collaborative purchases of site licenses to capitalize on the potential for strategic sourcing.

We recommend that consideration be given to collaborating across all units by sharing information regarding software licenses. Tracking and inventory systems should be used to determine when software is no longer being used and put back into the central pool for re-use. Future software requests should be compared against the database to determine whether the needed software license is already on campus when possible, and cost effective site licenses should be established, and contract information maintained in a centralized database.
IT Strategic Sourcing

According to data published by the Office of Institutional Research, Purdue employed 15,668 on the West Lafayette campus in fall 2009. Based on a conservative estimate, more than 13,000 of these employees use a computer, software, printer, surge protector, copier and other consumables as a regular part of their job. Currently, employees use a variety of mechanisms for purchases, and the vendor selection is virtually unlimited to the end-user. As a result, it is likely that we are missing the opportunity to leverage our purchasing power. Leveraging the IT spend has the potential of saving the University significant dollars without negatively impacting the quality of equipment and consumables used by Purdue employees. In fact, it is possible that coordinating and consolidating appropriate IT spend may actually increase the quality of products purchased by end-users.

The Sustaining New Synergies Task Force has submitted a request for proposal (RFP) for a consultant with expertise in strategic sourcing to help analyze Purdue’s spend. Because we anticipate that IT related commodities will show up in the high spend category, we recommend that we stand ready for the output of the group. To maximize the impact of strategic sourcing, we believe it is imperative for the IT governance structure to be in place. In the short-term, we are including strategic sourcing as a component of a number of our targeted recommendations (data centers, print management, license agreement management, etc.). Until a University strategy for strategic sourcing is finalized, we will limit this initiative to the sub-components of other recommendations.

Virtualized Desktop Infrastructure

The purpose of the Virtualized Desktop Infrastructure (VDI) project is to evaluate the suitability of thin client and virtual desktop technologies to replace some portion of desktop computers. From Information Week magazine, “VDI is a server-centric computing model that borrows from the traditional thin-client model but is designed to give administrators and end users the best of both worlds: the ability to host and centrally manage desktop virtual machines in the data center while giving end users a full PC desktop experience without limitations.”

A virtual desktop can be thought of as simply taking a desktop PC and moving it to a central server that hosts a large number of these “virtual” PCs. A thin-client replaces the desktop PC providing connections for networking, monitor, mouse, speakers, and keyboard, and managing some portion of the interaction with the virtual desktop to enhance performance and provide a user experience similar to that of a desktop PC.

Potential benefits of VDI include but are not limited to reduced total cost of ownership when compared to desktop PC deployments, level of reduced energy consumption, ease of virtual desktop and thin-client management, session mobility to allow users ease of access from multiple locations, level of help desk requests, thin-client and virtual desktop performance measures, user groups for which this approach is and isn’t suitable, and the ability to provide a secure environment from personally owned machines.

A detailed recommendation will be developed at the conclusion of the VDI pilot project, most likely in May 2010. If the VDI approach is determined feasible beyond the pilot, a cost analysis comparing VDI to desktop PC deployment will be developed, user groups will be defined for which this technology is most appropriate, and campus organizations will be encouraged to consider this approach to save money, energy, and management effort using these technologies.
Desktop Energy Savings

There are approximately 20,000 computers on desktops on campus. When plugged into an electrical outlet these workstations and associated monitors consume energy. This recommendation proposes an energy reduction solution by managing the amount of time a machine is running during a 24 hour period.

Manage the number of hours a computer is turned on during a 24 hour period and minimize the amount of energy consumed when the computer is not in use. This could include maximizing the number of hours the computer is in use by lending its computing cycles to the pool of resources used for research computing (Condor pool) or shutting down the machine. An optimal solution would be to actively manage turning the machine off when not in use for periods of time (actual time to be determined but not less than one hour.) In addition, we recommend establishing an RFP for software to manage machine up-time.

Video Conferencing Solutions

Currently the West Lafayette campus lacks a campus-wide strategy to deliver video conferencing. Capabilities are limited to video conferencing solutions on a departmental basis. Where effective video conferencing solutions have been established they typically are not shared beyond the school/college area.

There is potential in saving travel expenses by establishing video conferencing capabilities accessible to any group or department on campus. Classrooms could be scheduled and the internet used to make a video conference meeting. We recommend a group of rooms at the University be made available for scheduling by any department. Any video conferencing solution should be easy to use. Expanding and advertising the Adobe Connect site license for this purpose and providing some basic training could go a long way towards this solution.

Cost Savings Realization

As noted in the governance section, the current IT structure resulted from expanding demands and specialized needs found in diverse groups at the institution. The lack of IT governance caused various IT units to seek alternative solutions to "common good" needs, and resulted in building areas of expertise around new core technologies such as server virtualization, storage, etc.

We recommend the governance structure and cost saving initiatives found in this report be used to yield opportunities to reduce unnecessary IT redundancies, duplicated and under-resourced efforts, unnecessary expenditures, poor coordination and limited integration.

As we develop the new model placing emphasis on communication and collaborative teamwork, we expect to find opportunities to leverage resources and skills. There are a number of cost savings ideas that will require resources to investigate, to implement and that may result in the creation of new positions. Other cost saving strategies are expected to generate savings that may be realized through reductions in positions that no longer meet our IT operational needs.

We propose this cost savings realization phase be postponed until year two of the planned implementation to provide the governance body sufficient time to fully assess the impact of these initiatives. An on-going process should be established to ensure continuous improvement and responsiveness to the evolving needs of the IT client.
On-going Assessment of New Initiatives

Throughout the process, the cost savings subcommittee solicited input from a number of stakeholders. Through forums, web-based feedback channels and individual conversations, new ideas emerged throughout the process. This spirit of continuous improvement is an important part of IT governance going forward. The culture must recognize this as the standard way to approach business at Purdue. While the timeline did not allow us to assess all ideas, Appendix A includes a list of suggested ideas that deserve future assessment and could play a role in meeting the $15M target.

We recommend the governance structure review the list to prioritize those initiatives that they find merit further investigation. A process should be established to facilitate input into a fresh list of ideas on an on-going basis to promote continuous improvement.

Implementing the Plan

Several of the initiatives that have the highest savings potential will only happen through significant coordination across traditional boundaries. The strategic and operational bodies within the new IT governance structure will need to prioritize the recommendations and charge multidisciplinary teams to implement recommendations. The financial plan for some initiatives may include non-recurring funding to help remove the barrier of up-front costs. The strategic governance group should develop a pool of funds to invest in initiatives that show high potential for sustainable efficiencies. Teams of IT professionals and financial professionals will provide the needed expertise to establish detailed cost savings estimates for initiatives that show significant promise.

Proposed Implementation Sequence

Many high potential ideas were generated and captured during the planning process. The ideas are in different phases of assessment. Many of the ideas that have risen to the recommendation stage benefited from work done in fall 2009 as part of the MORT-IT initiatives. The implementation recommendation timeline is driven largely by the chronology of assessment. Those ideas that have high potential for success and that are further along in the assessment process are reflected earlier in the proposed implementation sequence.

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<th>Recommendation topic</th>
<th>Pre-CITPC work</th>
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The list of ideas is finite, but we expect the spirit of this activity to continue as a part of ongoing IT business at Purdue. The new IT governance structure will provide the platform to share ideas across traditional boundaries. The structure will also create accountability for implementation results. Success in realizing operational efficiencies in IT will allow dollars in all parts of the organization to go further.
Appendix A - Additional "potential" cost saving initiatives gathered through feedback*.

- Funding model for hubs
- Sell intellectual property for example Signals
- Selling advertising on screen savers
- Rental space at Ross
- In-sourcing e-mail services for athletics and alumni
- Sell e-mail services and other technologies (like video conferencing) to local schools
- Maximize implementation of server virtualization
- More effective energy management (green) for computing, establish a policy for all machines to be turned off at night or used in Condor pool, use central managed services to wake-up machines for patching for those turned off.
- Increase the condor pool instead of additional server purchases
- Review cost models and service levels. Today ITaP provides centralized services for back-up, file storage, co-location, etc. but departments don’t require and/or can’t afford the costs associated with enterprise-level service.
- Establish recruiting, hiring, training, and career path for IT personnel.
- Standardize on job descriptions, skill levels, and pay scales
- Look at outsourcing web hosting services or consider consolidating internally.
- Offer a low-end machine through SMARTcomputing
- Augment staffing with student labor.
- Redesign IT areas around services instead of departments.
- Leverage existing inventory systems. This increases visibility of our “footprint” of hosts and provides statistics on age, power/efficiency and space usage. This would also identify hardware and software purchased but not implemented/used.
- More integration of help desks across campus.
- Reassess any consulting and determine if the functions can be brought in house for less.
- Eliminate/consolidate duplicate/multiple services.
- Smart licensing – coordination and inventory of licensing or a central point through which all software must be purchased, maintained
- Reduction in number of phones.
- Cloud computing
- Review telecommuting. A savings on space, power, and tools (computer) would be a result of telecommuting if some positions worked from home.
- Review the management structure to determine if we have a well served management to staff ratio.
- Recognition/reward strategy for sharing best practices across units
- Review current processes and practices and eliminate anything that's not necessary
- Allow employees to contribute dollars through payroll deduction to help with energy costs.
- Record and make available training classes online rather than through multiple group training sessions.
- Determine the value of selling used equipment between departments and eliminate the practice if it's not cost effective.
- Extend services to the regional campuses
- Expand SMARTcomputing to include software deployment for the University as a whole
• Expand the use of community clusters

* Non IT related suggestions were forwarded to the Sustaining New Synergies committee
• Outsource Boiler TV to Comcast and do more external advertising with some funds coming into Purdue.
• Eliminate hard copy for Inside Purdue, etc.
• Remove individual microwaves, refrigerators, coffeepots, crock pots, etc from offices.

Appendix B – Core Principles

To achieve this ambitious target, we approached our work quickly and carefully. In order to keep the proper focus, our work was guided by the following principles:

• Our plan will seek collective leverage of Purdue’s total investment in IT.
• We will be transparent and inclusive in our effort to develop the optimal approach for meeting the $15M challenge.
• We must work quickly to meet the Campus IT Plan Committee deadlines.
• Although there are many areas of cost savings, we will focus our efforts on those savings that yield maximum return.
• The strategy behind cost savings will be first and foremost focused on redesigning and streamlining processes, strategic sourcing and energy savings.
• IT Governance will enable the IT enterprise to maximize cost savings.
• We will seek as much campus-wide feedback as is feasible.

Appendix C – Approach

Our committee sought opportunities for cost savings while maintaining and improving our IT capabilities. In other words, we kept a keen eye managing the natural tension between efficiency and effectiveness. The following ideas guided our approach:

• Our approach will insure responsiveness to IT needs of all units; we are not seeking a one-size-fits-all approach, as needs across units differ.
• Input for identifying cost saving initiatives will be based primarily on the MORT IT reports, input from the IT Community as represented in the MORT IT Org report Appendix A, input that was gathered in late Fall from the sustainability web site and input gathered recently through CITP feedback mechanisms.
• Our approach will be to recommend and define cost saving or revenue generating initiatives, identify potential impacts, and establish high level cost/revenue estimates for proposed initiatives.
Appendix D – Cost Savings Committee

Committee membership:

Cost Savings Committee:

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Martin, Chris (Co-Chair)</td>
<td>Sustaining New Synergies Task Force</td>
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<tr>
<td>Kercher-Updike, Julie (Co-Chair)</td>
<td>Associate Vice President, IT Customer Relations – ITaP</td>
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<tr>
<td>Arighi, Mimi</td>
<td>Director of Vet Teaching Hospital</td>
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<tr>
<td>Carmichael, David</td>
<td>Director of ECN and Information Technology – Engineering</td>
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<tr>
<td>Cui, Wei</td>
<td>Professor of Physics</td>
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<tr>
<td>Hare, Steven</td>
<td>Director, Administrative Computing - Science</td>
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<td>Nichols, Jaylene</td>
<td>Secretary, SMAS</td>
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<tr>
<td>Rivera, Miguel</td>
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<tr>
<td>Shelby, Carol</td>
<td>Senior Director Environmental Health &amp; Safety, Physical Facilities</td>
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<tr>
<td>Wagstaff, Sam</td>
<td>Professor, Computer Science</td>
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Appendix E – Review Process

Our subcommittee was charged with working quickly and carefully. All members were asked to complete a pre-reading assignment prior to our first meeting. The goal of the pre-reading was to familiarize all subcommittee members with bodies of work that have already been done in the IT domain and to become aware of the recommendations that were collected through the Management Operations Review Team (MORT) efforts and the Sustaining New Synergies web feedback process. This activity allowed a very diverse group to start with a common information base. In our first meeting, we used the pre-reading and professional experience of the IT personnel in the group to generate a list of high potential initiatives. We discussed the initiatives in terms of 1) potential financial impact 2) viability to implement and 3) timeliness.