

IT Workforce Planning Recommendations

OVERVIEW

IT support at Cornell has grown and evolved hugely over the last 15-20 years, but most of that development has taken place without conscious design. As the IT Workforce Planning Committee met with IT professionals across campus we heard and recorded a long list of ideas for how we could improve the overall effectiveness and efficiency of our operations. The most obvious of those suggestions are presented below as recommendations.

In an effort to review the reasonableness of the recommendations before final submission, Gartner Consulting was hired to determine if the recommendations were valid as an appropriate industry best practice and to assess the potential cost savings that could result from implementation. All recommendations presented below are deemed valid by Gartner Consulting. In terms of cost savings, Gartner estimated the potential savings in IT expenditures could total \$9.8 million if all recommendations were fully adopted and implemented in the most effective manner possible. Gartner summarized the potential savings as follows:

- Immediate savings of \$1,400,000/year through better use of Cornell's purchasing power;
- Labor savings of \$2,400,000/year are available through the centralization of IT within the organization units and by creating a more coordinated operation of Cornell's decentralized IT organization; and,
- Larger but long-term savings of \$6,000,000/year are available through the establishment and use of an appropriate IT architecture within all Cornell organizations.

Although the IT Workforce Planning Lead Team and the University Workforce Planning Team question the reality of realizing the full potential savings of \$9.8 million, clearly the effective implementation of these recommendations are expected to result in significant financial savings.

RECOMMENDATIONS

Primary Enabling Recommendations

We recognize that each operating unit (i.e. college or administrative division) may be at a different starting point in terms of how IT resources are organized and managed and therefore the applicability and impact of some recommendations will vary by unit. Each operating unit has primary responsibility to implement the first two recommendations and equally shared responsibility with CIT and central functional offices to adhere to the defined roles and responsibilities in recommendation #3. Despite the variable starting points, the full adoption by all units of these first three recommendations in particular is critical to achieving a cost efficient and effective IT support system for local end-users and the university as a whole. The remaining two enabling recommendations, #4 and #5, are equally important, but primary responsibility for implementation rests with CIT.

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1. Units (colleges and administrative divisions) should create an IT organization.

The most important recommendation about organization structure is that there should be one. With the exception of CIT and a couple of other major units, IT staff is not consistently organized into a unit focused on IT services within the college or major unit. Many of the staff are the only IT persons reporting to their supervisor. About 40% of the departments are served by a single IT person. It would be better for these staff and the end users they support to be part of a group of IT staff rather than isolated.

Major operating units (colleges and administrative divisions) should each consider consolidating all or most of their IT positions into a single IT unit within their respective organizations. Doing so will allow them to provide more consistent services, support each other for vacations, sick leave, etc. and allow for career opportunities for promotions within the group. In addition, with organization it will be possible to support a greater level of specialization and efficiency within the group. The restricted-funded IT positions are possibly an exception to this recommendation if they are dedicated to sponsored projects and do not provide more general IT services. Consolidated management does not mean physical location away from those whom they support, nor does it mean that priorities should be set independently of local needs.

Gartner Assessment: Gartner assumes Cornell will be able to conservatively remove 5% of its FTE's out of non-centralized areas. Expected savings total \$1.2 million. Successful execution of this recommendation is predicated upon implementation of recommendation #2.

2. Units should designate a Manager of IT to supervise IT staff in the unit.

At present, it isn't uncommon for individual IT staff to report to an administrative staff person who may not fully understand the technical decisions being made on behalf of the department by the IT staff. By aggregating these staff within an IT unit and designating a qualified manager for the IT operation, major units can better ensure that the administrator charged with managing IT resources does understand the issues and can provide appropriate oversight and support. The consolidation of IT staff in major units under a Manager of IT will also facilitate coordination and communication across the campus since it would be clear which IT person had authority and responsibility to speak and act on behalf of the unit, which is not now the case.

Gartner Assessment: Although there are no quantifiable benefits, implementation of this recommendation is a key enabler for other actions.

3. Units should adopt and support the IT Roles and Responsibilities described in *Information Technology Roles and Responsibilities* (<http://www.cit.cornell.edu/oit/Reports/2003>) unless a special Memo of Understanding between the Vice President or Dean and Vice President for Information Technologies is agreed upon.

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4. Establish an IT Managers' Council (IMC) with membership of the designated IT Manager for each major unit.

This group should meet regularly to share information, plan and establish standards for technologies on campus. CIT should convene and support the activities of the IMC. The biggest issue we heard from IT staff across the campus was the need for more/better communication. Once major units organize their IT support staff as recommended above, we recommend that CIT appoint a Manager of Distributed Support whose job it will be to actively support and facilitate communications among the Managers' and between them and CIT. The primary reporting line for the Managers' would be to the office of the Dean or Vice President (or designee) with a secondary informal link to the Manager of Distributed Support. This secondary link will function to help the manager, in addition to supporting his/her own major unit, focus on issues important to Cornell as a whole. Reviewing and making action recommendations on the list of suggestions received during this workforce planning review would frame the agenda for this group initially.

Gartner Assessment: No significant direct cost savings expected. However, an effective IMC can serve as a critical enabler of financial benefits generated through architecture, governance and adoption of best practices.

5. Assign, support and hold accountable CIT/Director of Business Information Systems for developing and promulgating a vision and architecture for administrative systems that includes not only the central functional systems but also the school/college and departmental level systems.

CIT should provide the institutional leadership for establishing and implementing a vision and architecture for administrative systems that most effectively addresses campus-wide needs. In addition, the definitions of roles and responsibilities clearly differentiates the roles of CIT vs. central functional departments with respect to university administrative systems. CIT should be responsible for technical design, execution, development, and operations while central functional departments should be responsible for business analysis, policy, systems priorities, training, testing, and should participate in systems projects to represent their business needs. This definition will require change in all areas, but most significantly in the Division of Finance. This recommendation reinforces the report from the External Review of Administrative Computing and the Workforce Planning recommendations about needs in this area.

Gartner Assessment: Gartner estimates that given the multiple IT organizations and the lack of an overall IT organization or control structure, architectural complexity and diversity will be at a maximum. If Cornell were able to reduce complexity and adopt a consistent architecture it would be possible to reduce IT spending by 10%-20% in areas where architecture compliance is possible. Total possible savings are estimated to be \$6 million.

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Efficiency and Service Enhancement Recommendations

The following recommendations (7-15) will generate improved services and cost savings if implemented by each major unit. The implied support from CIT will be provided.

6. Harvest and redeploy the “fractional IT person” and establish a review process for open IT positions.

Probably the opportunity for greatest economy is to be achieved through improved organization and management of IT staff within operating units. Individual programs and departments have established single positions to provide most or all of their IT support. By creating IT organizations at the major unit level, the fractions of “spare” capacity in each individual can be put to use by the unit in a way that cannot be done when a department only has one IT support person. Aggregation of staff positions may also result in opportunities to reduce the number of IT support positions required. We urge Deans and Vice Presidents to establish procedures for thorough review of any vacant IT positions before refilling.

Gartner Assessment: Gartner estimated a possible reduction of 16 FTE’s resulting in a total savings of \$830,000. Gartner further commented that the future existence of professionally run organizations delivering dependable service will discourage departments from creating fractional resources and the resulting inefficiency in the future.

7. Units should cross-train their IT staff so they can provide back-up coverage.

Organization of IT staff also will allow the manager to assign individual staff members as backups to each other when positions become vacant or individuals take vacation or are ill. Cross training should focus on the most critical functions performed by the IT staff within the group, where most of the benefits will be found.

Gartner Assessment: No significant direct cost savings expected.

8. Maintain high priority commitment to IT staff training and aggregate and coordinate necessary training resources to permit economies of scale and mutual support.

The IT Managers’ Council should annually develop a plan for staff technical training and CIT/Purchasing should assist in providing training resources for at least the most common requirements. At present there is no consolidated planning of training to meet the needs of IT staff and users across the institution. Since the half-life of IT knowledge is short, it is really essential that each IT staff person have access to specialized training on an annual basis. If these needs are aggregated institutionally, it will be much more cost effective to provide for them. Units will need to budget both time and fees for their IT staff training, but they should see improved effectiveness of staff in proportion to appropriate training. Learning new technologies by trial and error alone is inefficient.

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Gartner Assessment: Better training is a critical success factor to realizing efficiencies from other recommendations. No cost savings are expected and it is likely that overall costs could actually rise given the many unmet training needs that currently exist. However, aggregation of training needs is estimated to save \$300,000 as compared to the “one-off” purchase strategy that currently exists.

9. Units should provide for career development of IT staff.

With organizational consolidation comes the opportunity for specialization and career progression within the unit. This is good for the staff, but it also is good for the unit in that it benefits from the greater efficiency of specialists and it can retain staff within the unit as they grow instead of continually hiring new people as they move on to more challenging opportunities elsewhere.

Gartner Assessment: No significant direct cost savings expected.

10. Operating units should take advantage of opportunities to aggregate hardware and software purchases.

The Purchasing Department and CIT should develop programs to facilitate the aggregation of hardware and software purchases campus-wide. Today the majority of IT purchases, for example desktop computers, are made in isolation. Even though Cornell has a contract with a major hardware vendor that increases the discount for purchases in larger lots, no office within the institution is responsible for developing programs that would help units participate in aggregate buying. CIT does attempt to coordinate software purchases on a voluntary basis but it does not have a budget to pay for site licenses. Aggregation of purchases would also promote standardization.

Peer institutions that have successfully aggregated purchases claim to have achieved an additional 50% discount over the standard educational discount on bulk hardware purchases. Since Cornell spends over \$10 million per year on desktop hardware there would appear to be potentially significant savings to be achieved.

Gartner Assessment: Total estimates savings are \$500,000 for computer purchases plus additional cost savings for software license purchases. This savings estimate is based on a 10% price reduction for 50% of Cornell’s total annual hardware purchases of \$10,000,000.

11. Operating units should actively manage the life cycle of computer hardware and software.

While it may appear to units that passing on outdated hardware from one user to another is economical, the savings in purchase costs is generally more than offset by the added costs of human support. Operating units should adopt a 4-year replacement cycle for typical desktop machines. Further, CIT, the Cornell Store, and Purchasing Department should explore a leasing program for desktop and notebook systems that would help to

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manage the life cycle of this equipment and software. A leasing program that automatically replaces systems after three or four years can be an effective incentive for units to more actively manage their inventory. In addition, a program of this sort will help promote standards and aggregation of purchases.

Gartner Assessment: Gartner recommends adoption of a 4-year replacement cycle for computers rather than 3 years. Total annual savings estimated to be \$640,000.

12. Cornell should more aggressively designate and manage its portfolio of hardware and software standards.

Even a decade ago it was necessary to carefully configure individual personal computers to meet the unique needs of their users. Today desktop hardware and personal productivity software products have capabilities so profound, that most of what members of the university community need could be performed by a small number of standardized configurations.

This recommendation recognizes the need for multiple standards, for example, Windows, Macintosh, and some flavor of Unix. But within these platforms, we should strive to better standardize the specific operating system and personal productivity software versions. A “normally supported file types list” should be published in order to facilitate the exchange of formatted documents as email attachments. The “trailing edge” of the hardware and software life cycle should also be aggressively pruned. Designation of a single officially supported browser across the platforms for university administrative applications and general infrastructure would also significantly save on the cost of Cornell development and testing of new applications to be delivered through the web.

The IMC should oversee the development and management of the standards portfolio and this work should be supported and facilitated by CIT. Individual units should actively participate in developing the recommendations about standards to ensure that they are not overly restrictive, but, once designated, they should not adopt standards of their own that are outside the Cornell standard except as a specific exception. Of course they could further narrow the field by only supporting a subset of the university standard. CIT would attempt to guarantee that university-wide IT services would work on all devices designated as Cornell standard. It is understood that specialized and research needs will always exist and it is not the intent of this recommendation to restrict those choices except that Cornell may not guarantee that all institutional applications and services will be provided to these specialized platforms.

Gartner Assessment: The estimated savings from implementation are accounted for in recommendations #4, #10, and #11.

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13. Units should take advantage of central server farm machine room and operating systems support services.

CIT should more aggressively develop and promote centralized server and mass storage services and it should also offer hosting services for databases and web sites. The space, technical expertise, as well as hardware/software economies all argue for aggregation of services in a central secure 24/7 machine room. CIT currently does offer server farm facilities as well as operating systems support. It is developing a mass storage service. These services should be used whenever an application is delivering institution-wide service or when it requires 24/7 availability. They also would be economical for local services in many cases.

Gartner Assessment: Potential savings is unknown, but it is believed to exist. Savings through consolidation of server environments can reach 10%-20%, if units are willing to cede control.

14. Units should take advantage of the institutional electronic mail and calendar services rather than operating their own.

Some units have valid requirements for products not supported university-wide, but other units could benefit from using the generally supported services. CIT should understand the requirements of units for these services and take steps to meet as many as possible within the general purpose framework.

Cornell's central email services currently support approximately 32,000 users at a cost of about \$23 per account per year. There are currently about 7 separate departmentally run email systems that together support about 5,000 accounts. One estimate of the cost of these local systems was \$53 per account per year. In addition, data from one peer institution that supports approximately 80,000 accounts indicate a cost of roughly \$10 per account per year. While these are "back of the envelope" estimates at this point, they do indicate the possibilities of economies of scale that should be exploited. In addition, CIT has upgraded and expanded the central email services and it indicates that it could easily handle the additional 5,000 accounts with no added costs. If all of these accounts were migrated to the central email service, savings of approximately $\$53 \times 5,000 = \$265,000$ per year would be possible.

Gartner Assessment: Gartner agrees with Cornell's estimated savings of \$265,000 per year.

CIT and Central Administration Recommendations

In addition to the foregoing, the following recommendations pertain mainly to CIT and/or the central administration and either already have been or will be implemented as indicated.

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Administrative Systems

15. Cornell should identify a champion for administrative systems. (President, Provost)
16. Unit administrators should participate with the VP's in a governance structure to establish priorities and recommend decisions about investments and strategies for administrative computing. (Identified Champion)
17. CIT should engage directly with schools and other campus units to develop and support information systems for their use. (Director, Business Information Systems, CIT)
18. Cornell should focus on harvesting benefits from systems investments. Adjust the SPAR to make the plan for harvesting benefits explicit and measurable. (Identified Champion)
19. SWAT teams should work with local units after new systems are installed to support effective deployment. (Vice Presidents)
20. Modify practice of hourly billing for CIT time on administrative systems projects. (Vice President for Information Technologies)
21. Develop a plan for eliminating the mainframe. (Director, Systems and Operations, CIT)
22. Build CIT staff skills around project management, PeopleSoft, and customer service and ensure that CIT staff are providing full value. (Director, Business Information Systems, CIT)
23. Continue to develop benchmarks for costing administrative computing. (Director, Business Information Systems, CIT)
24. Reduce the number of PeopleSoft instances supported by CIT. (Director, Business Information Systems, CIT)
25. Explore off-shoring of programming. (Director, Business Information Systems, CIT)

General Computing and Support Issues

26. CIT should offer more services to units such as data administration, web hosting, server administration, desktop support. (CIT Directors).
27. CIT should develop and publish service standards and regularly report actual performance against those standards for services to campus such as electronic mail

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and calendaring. (Director, Systems and Operations, CIT).

28. **Technology Special Interest Groups (SIGS) should be formally recognized and supported** - with the goal of improving mutual support among support providers, providing deep expertise to each other, identification of promising new technologies, and identification/exploitation of synergies across units.

DOCUMENTATION

<http://www.cit.cornell.edu/oit/Reports/2003/>

IT Workforce Planning Report Memo (November 2003, pdf format

IT Workforce Planning Recommendations, Phase I/Phase II (October 2003, pdf format)

IT Roles and Responsibilities (November 2003, pdf format)

Workforce Planning - IT Unit Plan (Draft) (pdf format)

IT Workforce Planning Data Summary - Comprehensive Summary (November 2003, pdf format)

IT Workforce Planning, Phase III - Cornell Data and Voice Network Benchmark Plan (pdf format)

Gartner Group Assessment (August 2003, MS PowerPoint format)