Enhancing Collaboration Within the IT Community

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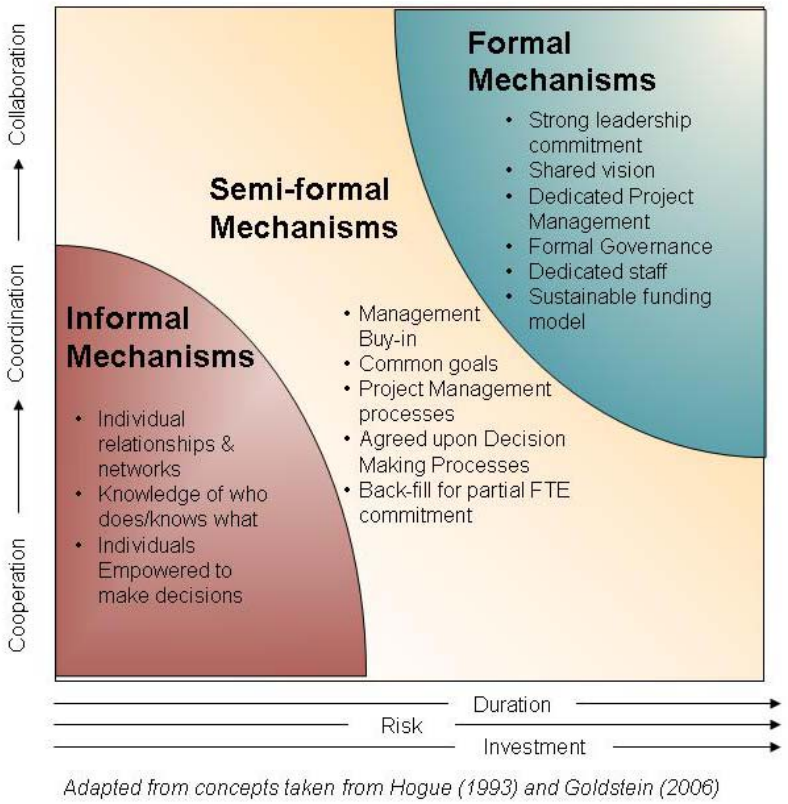

Adapted from concepts taken from Hogue (1993) and Goldstein (2006)

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Introduction

Our team came together around a common interest of enhancing collaboration within the IT community. Although we originally intended to review and respond to a model for service layering proposed by UCLA's CIO, as our team coalesced it became clear that our greater interest lay in developing a stronger understanding of the personal and organizational foundry within which IT collaboration would be forged both at the University of Washington (UW) and at other institutions of higher education. We conducted a qualitative investigation and analysis using the following assumptions as a starting point:

- Successful achievement of Institutional IT goals requires broad collaboration among Central and Distributed IT professionals.
- Collaboration, when undertaken to meet shared needs, is an appropriate and valuable venture.
- Successful collaboration is predicated upon participants' belief that collaboration will be beneficial to them.
- Collaboration done correctly unveils and harnesses the power of intellectual & physical resources located within distributed organizational units in a way that brings benefit to all contributing organizations.

This document presents our methods, critical outcomes, results, findings, and recommendations. We also present a brief analysis of our own collaborative process and conclude with plusses and deltas associated with our experience.

Investigative Methods

A primary goal of our investigation was to develop a deliverable based on broad community input that would be of value to IT leaders throughout the organization. The hope was to inform the cultural, political, and strategic intelligence for leaders forging successful collaborations that advance important institutional goals.

To understand motivators and barriers for IT collaboration within an academic setting, and strategies and tactics currently being implemented to support collaboration among IT professionals, we collected information through the following mechanisms:

- Explored our own experiences and exposure to collaborative efforts through development and discussion of case studies that included success factors and lessons learned
- Interviewed individuals participating in the UW's 2007 Regional IT Leadership Program (ITLP, MOR Associates)
- Interviewed individuals in key positions charged with increasing IT collaboration at the UW
- Conducted on-site focus group discussions and surveyed individuals participating in Pennsylvania State University's (PSU) 2007 Regional ITLP Program
- Surveyed graduates of the National ITLP program from University of Chicago, University of California-Berkeley, Indiana University, and University of Wisconsin-Madison

Interview and survey responses were considered through multiple perspectives, coded, and grouped into conceptual bins that allowed for qualitative analysis. The coding and binning was performed separately on each survey. Data from UW and PSU ITLP Cohorts were then combined and analyzed. From this, the team built the last survey delivered to the broader ITLP audience.

Critical Outcomes

An Open, Trusting Environment Enables Collaboration

Starting with self-reflection, four team members wrote case studies for collaborations they've participated in or been closely aligned with to better identify concepts we might explore with our peers. These writings provided a baseline understanding of our own experiences and attitudes that would shape our approach. By sharing our experiences so explicitly, we started to build trust.

Throughout this project, meeting time was dedicated to exploring our recent experiences and ideas related to collaborative efforts within our units and throughout the organization. Our goal was to maintain a constant, honest discussion within the team. Without this trust, we would not have been able to bring this project to fruition.

Motivators & Barriers Identified Through Interviews & Surveys

The team identified motivators and barriers to collaboration as key topics for investigation. We felt it important to understand why parties may participate in collaboration and what they believed prevented them from participating. From a leadership or decision-making standpoint, motivating people and eliminating barriers are first steps in promoting and developing collaboration.

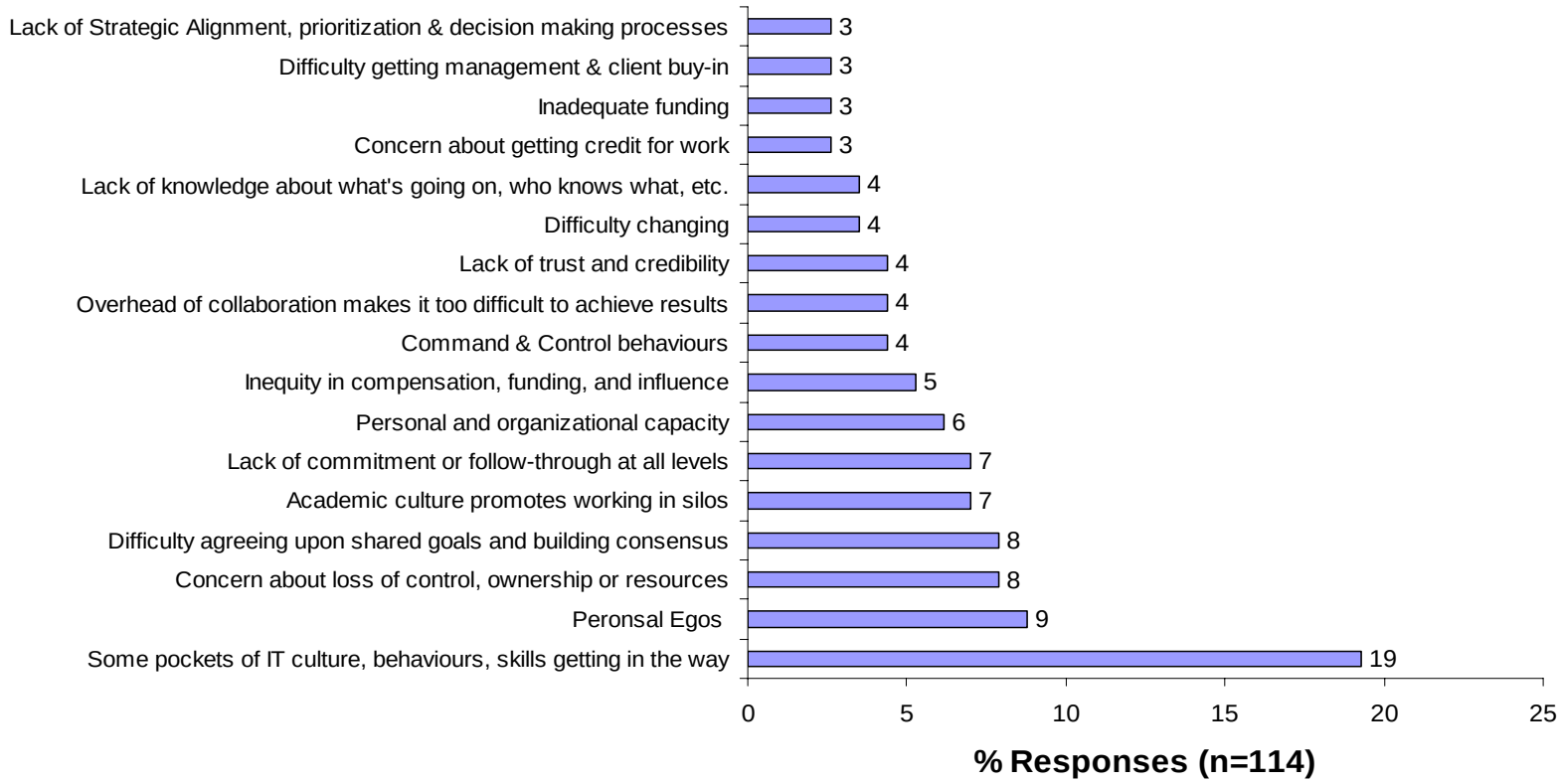
Motivators for Collaborations

Motivators for collaboration were explored through interviews with 27 participants from the UW Regional ITLP Program. As shown in the graph to the right, the top two motivators are 1) collaboration being inherently valued in the academy and 2) the ability to solve problems larger than one person or team could solve on their own.

Caveat: Unlike the barriers results that follow, motivators were only explored with members of the UW Regional ITLP participants.

Barriers to Collaboration

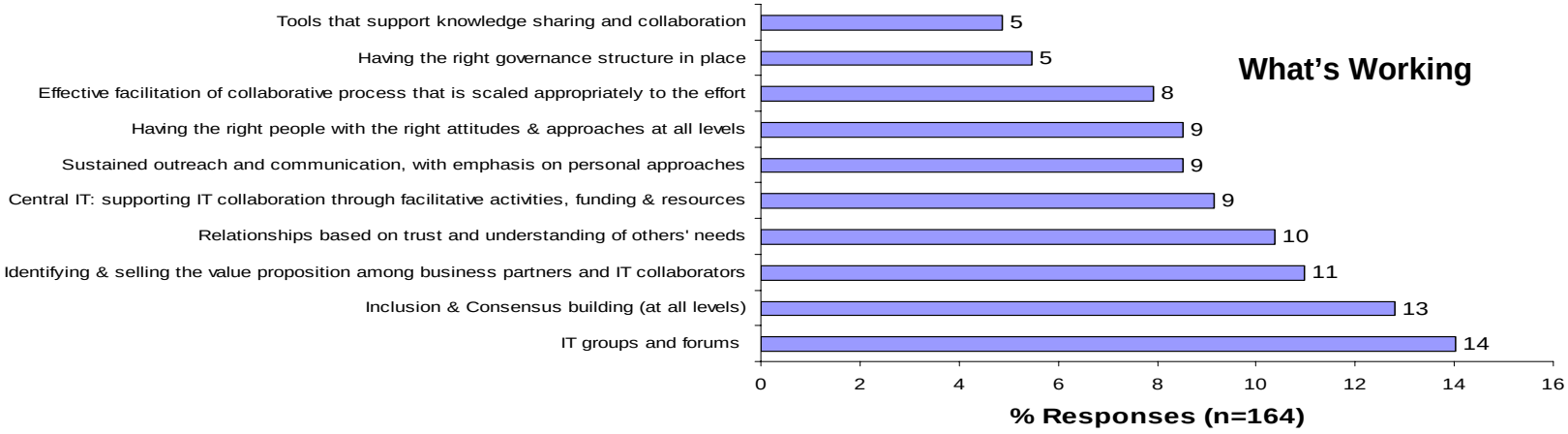
Barriers to collaboration were explored through interviews and surveys conducted with over 50 individuals participating in the UW and PSU Regional ITLP programs. The graph on the right shows the frequency of responses by conceptual areas. The top two barriers are related to organizational and personal behaviors.

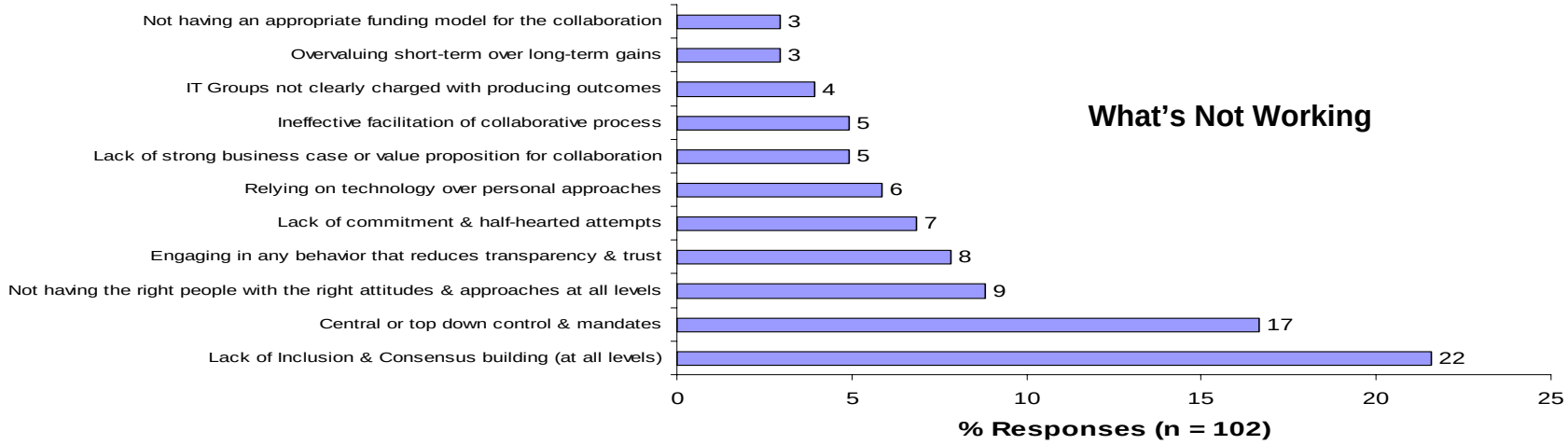


Both the UW and PSU Regional ITLP cohorts have significant representation from Distributed IT professionals. As such the motivators and barriers results, more than any other results from our investigation reflect the opinions and ideas of the broader IT community.

What's Working & What's Not Working

A leader needs to know what has and has not worked in other environments. In order to understand the strategies and tactics being employed by peer universities, we surveyed (with the help of MOR Associates) graduates of the National ITLP program from four universities. Of the 61 individuals that responded, 7 were from distributed IT organizations. The following graphs show what's working and what's not working by conceptual area:





Key Findings & Recommendations

People & Relationships Will Continue to Drive Successful Collaborations

Finding: People and relationships built on trust and mutual understanding of others' needs will continue to be the primary drivers of successful collaborations. Collaborations forged through individual relationships and informal networks have been the 'grey economy' by which the University accomplishes much of its work, and interview and survey results indicate that although more formal mechanisms may be put in place, informal modes will continue to dominate. The greatest success in increasing collaboration among IT professionals will be achieved by harnessing rather than sanctioning organic pursuit of collaborative relationships.

The finding that people and relationships, more than process, will drive IT success in higher education is strongly supported by preliminary findings on IT Governance presented by Yanosky and McCredie at an Educause Center for Applied Research (ECAR) symposium in December 2007. While the focus of their study was IT Governance, not IT collaboration, the fact that their preliminary findings closely align with ours lends credence to our analysis.

Recommendation – Institutions implementing new approaches to increasing collaboration among the IT community should focus on activities that support the professional and personal development of IT professionals, build relationships and shared institutional knowledge, and leverage and support emerging opportunities. Examples provided by survey respondents include:

- Holding regular forums for IT managers across campus to come together, talk about their organizations and discuss IT issues
- Implementing topical Special Interest Groups (SIGs) intended to support community self organizations
- Creating opportunities for conference-style knowledge sharing among IT professionals and organizations.

Recommendation – Institutions implementing formal governance processes aimed at aligning collaborative efforts to broader institutional goals should exercise caution and consider whether the proposed approaches will be viewed as beneficial or a way of exerting control over other organizational units. Messaging and consensus around these approaches will be critical success factors.

Recommendation – IT leaders at all levels must focus on building trustful relationships, based on open dialogue and delivery of outcomes, with business and IT partners. We recommend considering the following questions:

- Are you openly discussing difficult issues with business and IT partners, or are you shielding them from complex issues?
- Are you using transparent, agreed upon processes for making important decisions about funding and services?
- Do your actions align to key messages you're delivering (e.g., are you walking the walk)?

IT Professionals at All Levels Must Become Strategic and Facilitative Business Partners

Finding: Developing shared vision and goals, building consensus through inclusive decision making, and creating and selling the value proposition ranked high on the list of approaches that work well and high on the list of what's currently not working, which indicates that effort and growth in these areas may yield the greatest benefit. With the commodization of IT, it is no longer enough for IT professionals to deliver baseline technical solutions (Carr 2003). Instead, we must focus on identifying and facilitating strategic opportunities for IT to advance the core vision and mission of our organizations. Doing so will require many IT professionals to learn and hone what have traditionally been seen as 'softer' business skills. We recommend that IT professionals consider the following questions:

- How much time are you (and your organization) spending on commodity IT, and are there opportunities for shifting some of that time to more strategic initiatives?
- How can IT collaboration advance the unique vision and mission of your organization?
- What is the value proposition for the institution? For the collaborators?
- What shared goals or needs will be met?
- How will buy-in of key individuals and participating organizational units be achieved?

Recommendation – Invest in learning opportunities and experiential activities that increase the IT professionals' understanding of the University's distributed business needs. We recommend that IT professionals consider the following questions:

- Are you comfortable talking about technology solutions in ways that speak to the business need and resonate with non-technical professionals?
- Do you have experience documenting a business case and selling an approach?
- Are you empowered with the authority and responsibility to make decisions within the scope of your collaboration project?
- Are you comfortable facilitating group discussions and decision making?

Central IT Plays a Crucial Role

Finding: If increasing collaboration among IT professionals is an organizational priority, The Central IT Unit must play a facilitative role in affecting this change. Increasing collaboration among IT professionals and specifically among Central and Distributed IT organizations will require Central IT professionals to step out of a knowledge mode and into an inquiry and facilitative mode.

Recommendation – Develop funding and resourcing models that provide central support and incentives for important collaborative efforts. At the University of Washington, the Office of Research provides start-up and matching funds for faculty recruitments and important grants that will advance interdisciplinary research. Survey responses from National ITLP graduates indicate that at least one of the represented Universities has successfully implemented similar types of central funding program to seed collaborative IT projects.

Finding: Central IT units at the University of Washington (and we assume within other institutions) are undergoing major changes geared toward building stronger collaborative partnerships with distributed IT organizations. Several new positions and organizational units are being created to enhance engagement, facilitate partnerships, or develop technology approaches that support collaboration among central and distributed IT professionals.

Recommendation – Develop a Shared Vision and Roadmap for Increasing IT Collaboration

Over the last year, the University of Washington has added two positions whose charge is to increase communication and collaboration among central and decentralized IT groups, one in UW Technology, and one in the Office of Information Management. Additionally, other Central organizations are working on Service Oriented Architecture (SOA) and Data Warehousing to support distributed development and institutional business intelligence. While each of these positions and organizations has its own unique charge, the greatest value will be created by having these groups work together and with distributed IT professionals to develop a shared vision for IT collaboration at the UW, as well as clearer understanding of the roles that each will take in developing that vision. Key questions we recommend be considered:

- What new business problems are driving the need to increase collaboration among IT professionals?
- How will each of the new positions and organizational units contribute to increasing collaboration in ways that are additive to one another rather than redundant?
- What is the role of distributed IT leadership in increasing collaboration? Do all agree about this role?
- How will you know when you've achieved the right balance of collaborative and individual effort?

Positive Change that is Underway

Finding: Information gathered through Interviews and surveys with participants of the UW and PSU Regional ITLP programs indicate that there is strong recognition that positive changes are underway. The following quotes provide just a few examples:

- The new CIO is an advocate for collaboration"
- "ITLP is helping people understand the broader perspective"
- "Current efforts to institute support and standards for web services are positive – in a wait and see mode, but optimistic"
- "Special Interest Groups (SIGS) seem like a good idea. They're not quite up and running yet, but they look hopeful"
- "Some Central IT initiatives are now being run by Distributed IT managers"

Recommendation – Maintain momentum on current initiatives that are showing promise, and institute formal feedback mechanisms to assess which should transition to ongoing operational processes. For institutions just forging new collaborative relationships it will be especially important to stay the course and show commitment, as interview and survey responses strongly indicate that half-hearted attempts and lack of follow-through damage trust and credibility.

- What current initiatives are working, and how can we help them mature?
- How will we measure which initiatives are adding value? How will we sunset those that are not?

Recommendation – Take every opportunity to celebrate and showcase success stories! Find evangelists, willing partners, and low barrier opportunities for early success, produce visible outcomes, and celebrate success broadly.

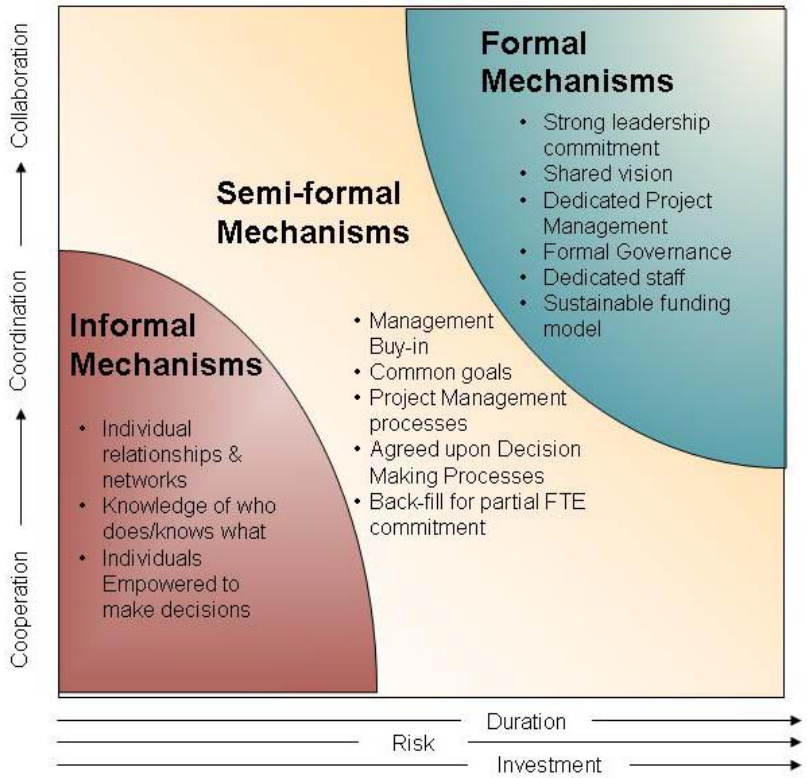
- How will we highlight and celebrate successful collaborations?
- How can Distributed IT partners help evangelize successful collaboration approaches?

Recommendation – Continue pursuing technology approaches that promote collaborative development. Recent successes with cross-institutional consortium development and service oriented architecture (SOA) are yielding promising results, and we believe that the fact that technical approaches did not emerge more consistently through interviews and survey responses speak more to maturity in this space than to potential. Key questions we recommend considering include:

- How will measure the effectiveness of these technical approaches?
- How will we create clear roles and responsibilities for how Central IT will work with Distributed IT professionals?

Resourcing, Decision Making & Supporting Processes Must Be Scaled Appropriately

Finding: People work together along a broad continuum, with collaboration representing only one mode of interaction. Collaboration is a cross-organizational activity that differs in scope and effect from personal, individual working partnerships and from cooperative or coordinated (usually process-defined) activities among organizations. All interactive work is important for an Institution's success, but a mature organization will reap the most benefit by constructively supporting collaboration at an institutional level.



Adapted from concepts taken from Hogue (1993) and Goldstein (2006)

Recommendation: Because each collaborative effort will have unique success factors, we recommend considering the following key questions during the formative stages of any effort being considered:

- Where does the effort fall on the cooperation – collaboration continuum?
- Where does the effort fall on the duration, risk, and investment scales?
- What resources (human, physical, and intellectual) are needed for the effort to be successful?
- Will decisions be made by individuals, teams, or through formal governance structures?
- How will the effort be managed? Is the effort large enough to require a dedicated project manager?
- How will issues and conflict be resolved?

Caveat: The figure on the left is intended to provide an illustrative framework for considering how best to support an interactive effort. Transitions along the interaction continuum are fuzzy, and decisions regarding appropriateness of informal or formal mechanisms are best made based on the unique success factors of the effort.

Future Work

The problem statement of increasing collaboration among IT professionals is multi-faceted, and our team explored only a small portion of the terrain. Results, findings, and recommendations presented in this report represent only a subset of the opinions and ideas shared by our ITLP peers. Although the remaining data does not point to contradictory results, there many other interesting concepts that could be explored further. Only upon nearing the completion of this project have we grown an understanding of individual strengths and how we work together. Some members of the team intend to continue working together to explore some of the more complex concepts.

- How does a leader find resources to create incentives (especially in a time of shrinking budgets)?
- How does one overcome the barriers to collaboration?
- Can we characterize how collaboration may save efforts in the long run, which translates into dollars?
- Given our own experience with different levels of commitment, how can we create an environment at UW that allows a collaborative project to evolve people in and out of the collaboration?
- What enabled us to trust each other? Could this process be replicated?
- What would the rules of engagement look like for collaboration?

These and other questions tease some of our team members into committing more spare resources to the further study and exploration of collaboration.

Additionally, we are happy to share our raw data (after mild scrubbing) with others who may be interested in further analysis and exploration.

Our Journey as a Learning Team

Our ITLP team, comprised of diverse individuals from 5 academic and administrative units within the University of Washington, had the unique opportunity to explore the question of collaboration through our own experience working together on this capstone project. As with any collaboration, we at times experienced difficulties with aligning differing opinions, balancing the additional effort requirements with the responsibilities of our full-time jobs, and effectively managing roles and responsibilities. Throughout our collaborative journey as a team, we found many of the concepts explored during the ITLP program helpful in maintaining a positive team dynamic and achieving our goal of producing a deliverable that has been helpful to our own growth, and that we hope is of value to our ITLP peers, the University of Washington, and participating institutions. In keeping with the spirit of the ITLP journey, we thought it appropriate to end with plusses & deltas.

What Worked Well (plusses)

- Agreeing on process and deliverables early on
- Actively assessing the process and team dynamic throughout, and maintaining flexibility to modify and evolve our work
- Being 'self aware' as individuals and as a collaborative team
- Actively listening and inviting all voices to engage
- Building relationships through laughter, honesty, and open discussion of issues
- Using a variety of participation modes: full group, sub-group, 'I time'
- Learning from our ITLP peers through open ended mechanisms meant to encourage thoughtfulness and an organic emergence of important concepts

Lessons Learned (deltas)

- Understand individual strengths, and intentionally focus those strengths in ways that are additive and most beneficial to successful team outcomes.
- Individuals who contribute more will have more influence on the process and outcomes – collaborative teams need to discuss this openly and either agree that it’s OK or determine course corrections to mitigate the issue.
- If individual team members disagree with how the collaboration process or expected outcomes are evolving, they need to speak up early and often so that the team can work to level set and rebuild consensus.

Acknowledgements

We would like to thank Brian McDonald, Chris Paquette, and Alexis Bywater from MOR Associates for their help administering the survey of National ITLP participants, the participants of Pennsylvania State University's Regional ITLP Program for allowing Darcy Van Patten to visit their ITLP session and sharing their experiences with us, and graduates of the National ITLP program that responded to our survey. Thank you all for contributing your time, honesty, and vision to this investigation. It is our sincere hope that the findings and recommendations of this study reflect broad views and ideas shared by our ITLP community.

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The Moving Images Collection Project

Gary Bissiri, Software Engineer, Streaming Media Technologies, University of Washington

PROJECT DESCRIPTION

The Moving Images Collection, MIC, Project, created a world wide, online catalogue of moving images.

PROJECT GOAL / MOTIVATION

A hard copy catalogue of known moving images, is published yearly. It is a massive compilation, published in book form, with a large footprint, a couple inches thick, printed on thin paper. The company publishing the catalogue had no interest in creating an electronic version.

The Association of Moving Image Archivists and and the Library of Congress identified a need for an electronic, on-line, version of such a catalogue. The MIC project was conceived to fill that need.

PLAYERS

- Association of Moving Image Archivists
- Library of Congress
- University of Washington, Advance Systems Technology team.
- Georgia Tech
- Rutgers University
- National Science Foundation
- Various media organizations including National Geographic, CNN, The Smithsonian, Research Channel, HBO.

Initial funding, a "Planning Grant", allowed for preliminary planning, project definition and grant writing. The resulting proposal was submitted to the NSF for a 3 year project. The system would be run by the LOC and managed and marketed by AMIA. The goal was to create a public facing online catalogue, along with multiple special interest web views, or "Portals" for accessing the catalog. The proposal was approved and the project was funded by the NSF.

- AMIA would be responsible for managing and marketing the collection.
- The LOC would be responsible for hosting and running the systems.
- The University of Washington Advance Systems Technology team, was responsible for development of the directory services and middleware.
- Georga Tech was responsible for web development and the internet portals.
- Ruttgers was responsible for project coordination and the content metadata database or "Union Catalogue".
- Beta testers included "Video Librarians" from, CNN, HBO, National Geographic, Research Channel, Smithsonian etc. These groups also provided "user" feedback regarding feature and design decisions.

PROJECT RESULTS

The project was well organized, planned and funded. Regular email, bi-weekly conference calls, quarterly status meeting, and reports to AMIA at their yearly conferences kept planning, design and development coordinated across the three development sites. Work proceeded with programmers and servers onsite at each of the three separate locations, the Directory Services at the UW, Web portals at Georgia Tech and the Union catalogue at Rutgers.

After 3 years the various software pieces worked together, AMIA was happy and the NSF was happy, the project was considered a success.

Success was attributed to considerable up-front planing, a well scoped set of deliverables, a reasonable time line, the necessary full time employees and rigorous communication.

A problem encountered during the development phase stemmed from technology changes. As a three year project, given the rate of of technology change, some of the initial assumptions regarding hardware platforms, operating systems and software, changed dramatically. In the case of the directory services, 2 years into the project IBM decided that they would no longer support the platform that the directory systems were written on. An attempt was made to move to the newer supported technology but this was never tested and never put into production, the current system still runs on an "unsupported" platform.

An oversight, and perhaps a much bigger problem, was the lack of a real long term sustainability model. It was assumed that the systems would eventually move to the Library of Congress, but as development wrapped up, the LOC was going through organizational restructuring. The "new guard" having little or no knowledge of this project had little or no interest in taking on maintenance responsibilities. As a result, the computer systems which comprise the larger MIC system reside in their original development locations, the UW, Georgia Tech and Rutgers University, with minimal support and little or no ongoing improvement.

LESSONS LEARNED

This was a large project involving several very high profile organizations, upfront planning was critical. Project organization and planning, a well scoped and reasonable timeline, communication and proper funding for full time employees contributed to the highly successful completion of this project.

However, lack of planning or scoping for technology change contributed to a system delivered on out of date, unsupported platforms. Lack of an up front sustainability model has relegated MIC to the project "doldrums" where the system hardware is spread out across the country, having no real home, receiving minimal maintenance with little or no interest in improvement or extended features. It is interesting to note that now, several years later, the NSF requires that a sustainability model be included in all grant proposals for projects of this type.

The Athena Project: Bringing Together Resources Under Common Infrastructure

Richard Coffey, Director of IT, Physics and Astronomy, University of Washington

For researchers, collaboration begins under one common infrastructure. This infrastructure is often a grant or paper wherein scientists use language to collaborate. Developing a common computing infrastructure where scientists could share resources and collaborate seems a natural step. However, sharing resources requires a level of trust, mutually beneficial outcomes, and open-mindedness to inspire the greater opportunity.

Physics, Astronomy, INT, and CENPA

The interplay of professional relationships within Astronomy and Physics sets these departments as leaders among their peer institutions. However, these relationships are nuanced and different for each unit or group within the family. Astronomy is a small department that engenders a tightly knit community. Physics dwarfs Astronomy and is so large that has two distinct, federally funded institutes within its general organization. These institutes, INT (Institute for Nuclear Theory) and CENPA (Center for Experimental Nuclear Physics and Astrophysics), are again, small tight-knit communities like Astronomy. While collaborative with many people within Physics proper, the institutes are organizationally separate. The Physics department itself is comprised of small groups that overlap, but due to the immense depth of field and the division between experimentalist and theorists, collaboration is much harder.

The Trouble with High-Performance Computing

In spite of the advances in cluster computing, (the method by which one builds a supercomputer out of a tightly connected set of standard desktop or server computing technology), the growing trend is to centralize large-scale supercomputing facilities within national labs and centers in a few places throughout the world. While this is good in principle, allocations at these centers for non-faculty or non-staff research are sparse (as low as 10% to non-collaborators.) Politics over innovation often governs the decision oversight committees make on who gets time. Some researchers can get time on these computers, but then they lose time in efforts to porting their research codes and often debugging this cutting-edge hardware.

To make matters more difficult, savvy researchers are always looking for a way to tune their jobs on clusters in order to maximize their allocation by "tricking" the scheduling system in giving them more time or higher priority than other users. This builds a culture of scarcity and selfishness around an already over-burdened and politically charged environment. The lack of onsite expertise in high performance computing also prevented entrée into higher stakes collaboration, as one needs a "translator" and "expert" to bridge the gap between science and computer science.

The Athena Cluster and a Research Scientist

In an answer to these problems, David Kaplan of the INT, Martin Savage of Physics, Tom Quinn of Astronomy, and I met in February of 2007 to discuss the possibility of bringing together a collaboration around hardware. David had received some funds for INT researchers, Martin needed more computational cycles than anyone else in the department, and Tom had been working on supercomputers since the first days of NCSA's golden years. I myself had been working for a cross-disciplinary visualization and high-performance computing research group at the University of Utah 10-years prior steeped in a tradition of building bridges via common needs, goals, and scientific interests.

In my first year as Director of IT I had come to understand that both the Physicists and Astronomers needed seasoned expertise in both HPC application development and cross-disciplinary computing. After my discussions with the team, it became obvious to the collaboration that we not only needed a big piece of hardware, but we also needed in house expertise from a trusted source. We decided we needed to hire a high performance computing research scientist to be our guide and interpreter in the HPC world.

The Grand Unification of Resources

The toughest problem in this collaboration was how we would get these disparate groups to work together under one hardware platform. Traditionally, supercomputing allocation and division of resources revolve around the distribution of cpu-hours or wall-hours. Groups are granted these hours by their buy in or centrally controlled allocation. In this model scientists often don't use their allocations and this type of resource lies idle. Also, people (and sometimes granting agencies) like to know they "own" physical hardware.

In our model, researchers "owned" the number of nodes they lobbied for. In our case, the cluster was cleaved up into 1/8 segments and distributed based upon funds received. 1/8 of the cluster was allocated for developing codes, benchmarking for future equipment grants, and incubating collaborations. The twist was that users could submit jobs on any part of the cluster. They're guaranteed their allocation and can preempt others on their allocated nodes, but can run jobs anywhere. This also enables researchers who did not buy in to run code on the cluster without complicated application processes or edging out other groups. This is similar to the Condor model of distributed computing, this time applied to a tightly connected supercomputing cluster. In essence, if you bought in to the cluster, you can claim your resources at any time; if you didn't, you can scavenge free resources without asking for permission. This insured a higher utilization of the resources.

Documents to Wrap the Collaboration Around

To win hearts and minds, it was important for the group to prepare a 5-6 page executive summary of what science needed to be done and what was required to do it. This document needed to be portable and readable by not only peers, but by colleagues in

other fields and administrators of grants and universities. The writing of this document framed the tone of the collaboration, if the group was successful at writing a document together, then they could move on to grant proposals.

After gaining interest and support amongst the program administrators of the grants and executive committee peers (peers at the national level), the team was able to start to incorporate the support and feedback into the overall narrative of the project. The monetary target was determined by externalities such as the funding climate and the agency missions. Scope was determined by what resources the collaborators had available to them or what they could pay for out of other resources.

With a polished executive summary and letters of support from key peers, it was time to approach the best sources of funding. At first there was a series of failed attempts at gaining funding. The current funding climate is on average 5% grants (need to verify) funded out of those applied, varying on the field. Often, thousands of grant applications arrive for these calls. Fortunately, the team was able to secure $750,000 in funding from 5 different sources.

The project then was evolved from the executive summary by a team of IT professionals within the three departments. In addition, we pulled resources from vendors and national collaborators at the University of Utah, Fermilab, Oak Ridge National Labs, and Jefferson Lab.

The People are the Collaboration

What really made this collaboration successful from inspiration to implementation were the attitudes of the team. On the administration side of things, knowing the political landscape and creating incentives not only for your project, but for projects and task that your project influences. For example, while CENPA did not directly contribute to the funding or search for funding, they are able to use Athena as an example of the growing need for large-scale computing in experimental physics.

On the technical side, garnering help from folks on campus as well as our industry partner was essential. Finding the middle ground in communications and expertise not only made it possible for the team to develop an innovative solution for the computational cluster, but the power, cooling, and emergency monitoring and shutdown systems as well. Our industry partner again improved the design of this cluster by doubling the core count per computational node and gave us a resource that would be useful for at least three years.

Most important to both sides was the idea that the technology and tools did not slow the momentum of the collaboration. In this experience, the project evolved via the individuals setting the priorities, this decentralized project management and increased accountability. Without the rigidity of a fully fleshed out project plan, the architects could soften the design constraints to fit the budget, facilities, and available managing resources.

Finally, we hired on a research scientist from the Pittsburgh Supercomputing Center. This position filled in the need of expertise in scientific computing. The role now bridges the gap between disciplines, not only Physics and Astronomy, but also Computer Science and Scientific Computing. We expect this research scientist to continue to develop long-term relationships between disciplines and actively contribute to campus-wide, cross-disciplinary scientific computing efforts.

Difficulties Along the Way

The biggest difficulty of this project was managing the complex interactions of budgets. This created a great deal of work between four administrators in the four organizations. The university's budgeting system is not designed to handle a cross-departmental budget management as budgets are traditionally managed top down. Hence fundamental infrastructure impeded a fast moving collaboration.

By negotiating the vendor for a better deal on the hardware, we sacrificed the vendor's internal project management processes. Because we didn't purchase the vendor's internal expertise, we needed to develop or extend our current knowledge base. This took an additional month of FTE, but paid off as members of this team are now resources for UW efforts and national collaborations.

The project's timeline slipped because of the lack of rigidity as well as the "cost savings" measures. Slippage sometimes stressed the collaboration and at one point impacted morale. Because the project slipped and facility upgrades ran over budget, we were forced to find an additional $30,000 of funding.

Conclusion

The Athena project met its goal of providing a significant computational resource to researchers in INT, Physics, Astronomy, and CENPA. In addition to meeting research needs, scientists integrated the use of a portion of this cluster into curriculum. In spring quarter 2008, a high performance computing and numerical methods graduate course leveraged the power of a research-grade cluster to solve real Physics problems in the classroom. Athena is used as a test platform for future science and grants within the departments, the University of Washington, and the national and international level. Finally, the University of Washington Office of Research eScience Initiatives team is evaluating the Athena project, hardware model, and collaboration as a test bed for future collaborations. By building a successful, shared infrastructure, we were able to bring scientist together and demonstrate that there are shared areas of interest, resources, and expertise.

Moving Toward a UW-wide Travel Expense Reporting System (the Early efforts)

Jan Sullivan, Technology Manager, Office of Information Management, University of Washington

PROJECT DESCRIPTION

This documents one of the early efforts to evaluate the need for and gather requirements of a UW-wide travel expense reporting/reimbursement system. A Travel Network Team was formed with members from various campus depts and central office units: APL, Botany, Environmental Health, Institute of Nuclear Physics, Travel Office, Payroll (facilitator), Computing & Communications.

This is the story of one effort to bring a University-wide system to fruition at the "University of a Thousand Years". In its long disjointed history, it capitalized on good collaborative energy from unit administrators, staff, and professors, at the same time illustrating the challenges of trying to create an enterprise-wide, one-system-fits-all solution for campus departments with widely varying needs, each with its own well-established way of handling its own processes for travellers.

The story begins 12 years ago. What came to be known as the Travel Network Team ("TNT") began meeting in Oct of 1996 (for 2 hrs every other week). And although the team never quite lived up to its acronym by being an explosive force for change of travel processes across the UW, it did plant the seeds for future travel-related initiatives. Leading up to publishing its final report in April 1999 and culminating in presentations to Financial Management leadership, executive sponsors, and the Faculty Council on Research (FCR), the team polled campus via questionnaires, hosted lively focus groups attended by a mix of administrators and faculty, looked at various travel systems in use at other universities, reviewed OFM travel regulations and IRS accountable plan rules, looked into various vendor offerings, built and evaluated a prototype system, attended a session of Executive Vice Presidents from 6 other peer universities (so-called "Six-Pack" meeting) to discuss travel at their institutions, and held concept review sessions on proposed future state (again well attended by faculty). One administrator sent this word of support: "This is innovative and clearly relied on input from the end user... We are actively encouraging our faculty to support these changes in the faculty senate and through a letter-writing campaign".

Unfortunately, we were not able to take advantage at the time of the momentum and good will generated by this project. No funding. In the intervening years since TNT was first formed, other group collaborations following TNT attempted to get some financial support and traction for an automated travel reimbursement system. The STRIDE (STRategIc DirEctions) team convened

in May 2003, and went through many of the same steps as TNT (focus groups, Catalyst surveys with accompanying presentations), and produced its own final report in Aug 2004 which found eTravel to be the #1 project of 7 other top-rated improvements in the procure-to-pay area. There have been several business cases / cost-benefit write-ups by clients and two approved-but-not-funded ITAC proposals. It has taken us a full 12 years to have a travel project finally moving forward which has undergone its own round of surveys, focus groups, and campus-wide outreach, and which still faces challenges to implementation.

PROJECT GOAL / PHILOSOPHY

Determine a blue-sky vision for making travel reimbursement simple, intuitive, faster.

INFORMATION AND TOOLS

Tools available in the late 90's: email, powerpoint

PROJECT CHARTER

This was an official project, with executive sponsors from Payables and Purchasing. Meeting minutes were sent to the sponsors, but otherwise the group worked pretty independently, with some guidance and meetings with the sponsors.

PROJECT RESULTS

This was a rare opportunity to gather requirements for a new system with direct feedback from faculty and travel administrators across the university. That aspect alone made for a feeling of positive collaboration. Faculty and staff were very engaged in focus group sessions, and very encouraging of our efforts. The disappointing part was that no money was ever found to take any steps towards realizing the vision for a new travel system. The most recent eTravel project effort, slated for pilot implementation Q2/Q3 2008 was also never funded, but is going forward with existing resources and may finally begin to achieve the vision of the original TNT team 12 years ago.

LESSONS LEARNED

We went through several (3) facilitators during the life of the project. This was somewhat disruptive, and it would have been preferable not to have had so much turnover in that role.

CAUP Digital Commons - Creating Futures Through a Student-Centered, Technology-Rich Environment

Mark Baratta, Director of Computing, College of Architecture & Urban Planning, University of Washington

If you walk into a typical student computing lab, you'll see a space designed for a specific form of student-computer interaction - students staring at screens, each alone in his or her private purgatory. When the College of Architecture & Urban Planning had the opportunity to create a new student computing facility by repurposing an existing unused space, we decided to pursue a more expansive vision - one which would provide many ways for students to interact with technology, and would leverage technology already owned by students.

While more of a construction project than a technology project, some aspects of the collaboration may be of interest.

THE PLAYERS

- UW CAUP: Dean, Administrator, Computing Director
- UW Capital Projects Office
- SHKS Architects
- Contractors / Subcontractors / Consultants

THE GOAL

To create a comfortable, flexible space that facilitates collaborative work among students, encouraging them to view computers and other technology as tools to be used in many different ways for collaboration, rather than as ends in themselves. There are two main aspects to this:

- The physical space is designed to accommodate various affordances - traditional computing classroom, workstations, conference and lounge areas with easy-to-use projection equipment, display space, and whiteboards.
- The technical infrastructure provides both devices (e.g. plotters, printers, scanners, workstations, video editing) and invisible services (e.g. pervasive wireless, file and application servers usable from student-owned laptops, a lot of specialized discipline-specific software) that students can't reasonably provide for themselves.

The underlying philosophy is that it's not about the technology - it's about the collaborative work that is enabled by the technology.

A secondary goal was to make more classroom and studio space available in Gould Hall by moving existing College computing facilities to the new space.

THE TOOLS

Software tools were pretty basic: Microsoft Project and Excel for schedule and cost management. Word for documents. Early communication was largely in the context of meetings, email, and hallway discussions. Most communication during the later design and construction phases was handled by formatted Word documents (e.g. meeting notes and Requests for Information (RFIs)) and email, and in the context of weekly group meetings.

THE PROCESS

Early stages of the project occurred within the College in conversations among stakeholders, principally the College's Dean, Administrator, and Computing Director, but including students, faculty, and IT staff across the College. Through these conversations, the "wins" for the various parties were identified, and the goals began to take shape. This could be considered the first phase of our process.

When the availability of funding was confirmed, we moved into the second phase by adding UW CPO and SHKS Architects, and eventually the contractor, subs, and consultants, to the mix. This led to a more formal series of discussions and periodic meetings to work through details of the design and, eventually, construction. One very important aspect of this formality was the use of standard formats for documents such as meeting notes, RFIs, plans, and Project Manual sections. While this may not seem like a big deal, even a relatively small construction project has an alarming number of details that need to be resolved and documented for construction to proceed in an orderly and efficient manner. Strict adherence to documentation standards allows this to happen.

The thing worth noting here is that collaborative practices changed significantly as the project progressed. Highly informal relationship-based practices, appropriate (if not essential) during the development of ideas and goals, were augmented by the highly formal document-based practices required to successfully manage the project's myriad implementation details.

THE RESULTS

It got built. Students love it. The collaborators are still speaking to each other (mostly), and have worked together in various configurations on subsequent projects. The College has several thousand square feet of prime studio and classroom space that it didn't have before.

The main contributors to the project's success, at least from a collaboration standpoint, were the trust relationships that were built among the participants early in the project, and the formalized documentation process that helped to keep all the collaborators on the same page.

THE LESSONS

Different phases of a collaborative project require different levels of communication formality.

Trust matters a lot. This trust is developed (or not) early on in the process. Untrustworthy collaborators add a lot of friction, although formal documentation coupled with contractual agreements go a long way toward keeping the process on track.

Appendix ll: Interview Outline Used With UW ITLP Participants

Each of collaborative team members interviewed one or more of our fellow ITLP participants. Although the following questions did not rigidly define these discussions, they provided an initial starting place for interviewers to work from.

- Within a public university environment, financial rewards for individuals are limited due to restriction in benefits. What are the key rewards and motivations for individuals involved in collaboration? (Took this idea from the Latour book.) - richardc
- What collaborations have you been involved with in the past? What either made them successful or unsuccessful? Who are you collaborating with?
- What are you general attitudes or assumptions about collaborating?
- What are some reasons why you might work on your own rather than collaborate?
- Are there cultural aspects at the UW that would either promote or discourage collaboration?
- Are there political aspects to working at the UW that would either promote or discourage collaboration?
- What could the UW do to promote and support collaboration?
- What's the quickest way to kill or damage a fledgling collaborative effort?
- Are there examples from other work environments or experiences where you've seen collaboration become part of the norm rather than the exception?
- What is the current state of collaborative ventures within the University of Washington IT?
- Is collaboration important to your work? Why or why not?
- With whom do you collaborate?
- What are the barriers to collaborator?

1. What type of unit do you work in? [pick one answer]

    - o Central IT unit
    - o Central business unit
    - o De-central IT or business unit

2. How is “inter-departmental” IT collaboration encouraged, supported and rewarded at Penn State?

3. What strategies have proved successful in increasing IT collaboration?

4. What strategies (if any) have proved ineffective in increasing IT collaboration?

5. What political, cultural or strategic factors create barriers to IT collaboration?

6. Any other insights, comments, or suggestions that would be helpful in identifying strategies for increasing IT collaboration?

Enhancing Collaboration Within IT Community
Appendix lV. Survey Questions Used with National ITLP Graduates

Invitation to Participate

We are hoping you might have a few minutes to respond to a short survey on the subject of collaboration in IT in higher education. While MOR Associates is lending a hand with the administration of the survey, this effort is the work of a UW ITLP group working on a project titled "Creating Collaboration & Teamwork Across the IT Community". An important component of their project involves understanding collaboration frameworks that work at other organizations. The survey is brief and all participants will receive a copy of the aggregated survey results.

The survey is confidential and all results will be reported in aggregate. MOR Associates will track responses, but only for the purpose of sending reminders to just those folks who haven't responded. It would be helpful if you could respond soon. The survey will be open until May 5, but we will be sending occasional reminders. If you do not want to participate and don't want to receive reminders, please let us know and we'll take care of it.

Thank you for your time and consideration (and collaboration).

Survey Questions

1. What type of unit do you work in? [pick one answer]
    a. Central IT unit
    b. Central business unit
    c. De-central IT or business unit
2. What strategies have proved successful in increasing IT collaboration?\
3. What strategies (if any) have proved ineffective in increasing IT collaboration?
4. Any other insights, comments, or suggestions that would be helpful for a large university trying to improve campus-wide IT collaboration?