Distribute the Work—and the Resource: Syracuse University’s Distributed Computing Environment

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Technology and design of client/server systems have contributed to the new role our clients take in implementing and supporting information systems. Through a distributed work model, client departments assume a broader role in system implementation by distributing work. Support for both clients and IT staff helps to ensure success of the distribution of leadership and technology from a central to a local model.
EXECUTIVE SUMMARY

Evolving technology and the design of client/server systems have all contributed to the new role our clients take in implementing and supporting their information systems. We have witnessed a definite and deliberate shift of information leadership and technology from a central (IT) to a local (client) model. Syracuse University is working through a distributed support model which encourages client departments to assume a broader role in system implementation by distributing more than just the work. This shift to a distributed model of computing brings with it many advantages and challenges to both client departments and the IT organization as each area adjusts to its new responsibilities. This paper will focus on two initiatives which Syracuse University has developed to address the impact distributed computing has had on the client and the IT organization.

Distributed Staff Program.
When a client department hires a business analyst and/or computer consultant, the Distributed Staff Program (DSP) provides partial funding for the new staff member’s salary, training and equipment, and offers regular opportunities for support and interaction with the IT organization.

Job Broadbanding Model.
The IT organization has developed job broadbanding programs with the support of the University’s Human Resources department to encourage and reward staff members to retrain and develop new roles for themselves in preparation for a new environment.

This combination of support for both clients and IT staff helps to insure success in the distribution of leadership and technology from a central to a local model.

The New Role of IT Clients in Implementing and Supporting Information Systems

While our clients have always been very involved in the design and support of their information systems, mainframe technology constraints restricted them to be highly dependent upon the IT organization for technical leadership and delivery of information services. The client/server environment began to remove some of this dependence by providing user-friendly query tools, intuitive system development tools, and readily available desktop training for traditionally non-technical people. Software vendors jumped on the client/server bandwagon by marketing new information systems which used these new tools and which were designed to accommodate flexible rule-driven processes to be maintained by client offices. The mystery behind much of computing started to reveal itself resulting in an increase in the number of technically-savvy clients. These clients wanted to put their knowledge to use, be more involved with their information systems and supporting infrastructure, and be less dependent upon an IT organization that could not cope with the increased demand for its services. The clients gained timesaving advantages and self-sufficiency by directly interacting with their own information systems and by providing much of their own technical support.

The IT organization was not without its own incentives for encouraging the client departments to assume more system responsibility. IT had taken great pride over the years in developing first class information systems and achieving a high level of customer satisfaction. However, as clients became more computer literate and their demands for more information grew, the inflexibility of the mainframe systems became a barrier to meeting the client needs. Shrinking budgets and a decline in the centralized IT organization’s computer programmer staffing contributed to the problem, resulting in a backlog of requests for services. A solution needed to be found which would distribute the work and the resources throughout the campus, transfer the systems and technical knowledge from the IT staff to the client staff, and provide appropriate incentives to encourage clients to participate in this endeavor.
**Client Concerns**

Most of the departments, schools and colleges which were comfortable with technology were immediately receptive to the idea of becoming more involved in their information systems and the supporting infrastructure. Some already had staff on board supporting their local area networks and academic computing clusters and were willing to take on more responsibility. Other client offices, less comfortable with technology, were apprehensive about a distributed computing environment since they could not easily see the advantages—only the vision of an increased workload was coming in crystal clear. A major communication effort was launched to educate the campus about client/server computing and the new opportunities it would bring to the client. The advent of a data warehouse gave many client offices a positive first hand experience with writing their own queries. As the concept of distributed computing became more widely accepted, IT and the client offices worked as a team to help each other prepare for the future. They each recognized that distributed computing would change the way they work, but were not really prepared for the series of challenges they faced. The need and demand for department-based computer consultants and other knowledge workers exploded. Departments that wanted to operate and manage their own servers and/or information systems soon discovered how convenient it was to have someone dedicated just to them. As these computer consultants introduced information technology to more staff and faculty within the department, the need for more and improved information access grew. As the need and complexity grew, so did the need for upgraded workstations, new network connections, additional computer consultants, increased skill levels, higher salaries for technical staff - and bigger budgets. The demand for information needed to be balanced with the necessary resources. The client departments needed temporary financial support for new technical staff and updated equipment, as well as ongoing support and interaction with the IT organization during the transition.

**Distributed Staff Program**

The Distributed Staff Program originated several years ago when networked desktop computers were just beginning to proliferate throughout the University. The DSP was but the first of many initiatives undertaken by the central IT organization to distribute resources and support, as well as responsibilities, to the client community. The basic premise of the DSP was that as our computing infrastructure evolved from a centralized mainframe-based model to a more distributed client/server structure, so too must computing support for this structure be distributed if it is to be effective. While we recognized the importance of distributed support, we also were aware of the need to coordinate this type of support and back it up with centrally-supported IT personnel and equipment resources. The key elements of our present DSP are as follows:

- All DSP positions report to client departments as opposed to the central IT organization. Likewise, all DSP staff physically reside within the departments which they support.

- The central IT organization pays 33% of the salary for each DSP staff. The client department pays the remaining 67%.

- Job responsibilities and work assignments are set by the client department. The central IT organization plays a supporting role in defining and filling DSP positions.

- The central IT organization funds 50% of the cost for new or replacement desktop equipment for DSP staff, 50% of job-related training expenses, and 33% for other professional development expenses such as conference attendance.
Since its beginning six years ago, the DSP has grown from just two positions in 1991 to forty-six positions today that are spread across twenty-seven different academic and administrative units of the University. A majority of these forty-six are newly created positions which is quite remarkable when you consider that the University has undergone a workforce reduction of roughly 20% over the same time period. To have created all these new support positions under such difficult circumstances is indicative of the perceived value and success of this program.

The rapid growth of the DSP has certainly impacted the central IT organization. Funding for the DSP now consumes nearly 10% of the central IT budget. Most of the funding for the DSP has been derived by trading-off central IT positions on a three-for-one basis—three DSP positions funded by one IT position. This was accomplished either by transferring positions or eliminating non-essential IT positions. Either way, the result is the same—a smaller, more focused central IT organization working in concert with an energetic and expanding distributed support staff.

*Other Support Initiatives*

In addition to the Distributed Staff Program, the central IT organization has employed a number of other strategies to assist client departments faced with the increased support burden imposed on them in a distributed computing environment. Among those things we have done that departments have found most helpful have been the following.

*Desktop Seed Machine Fund*
We established a seed machine fund to assist departments in buying new or upgraded desktop computers suitable for use with the new client/server applications. This fund is intended to ease a department’s financial burden when buying new machines. While the fund is limited and not intended to even come close to addressing the total need, it has proven very useful in certain key situations where a few new machines could greatly facilitate the effort to implement new client/server applications. Since the inception of this funding program three years ago, we have acquired a total of just over a hundred machines distributed across thirty-five departments within the University.

*Centrally-Supported LAN Service Option*
We introduced an optional fee-based local area network (LAN) service to university departments which we refer to as SUMMON (Syracuse University Microcomputers Managed Over Networks). This centrally-supported network, application, storage and print service is offered as an alternative for departments that are unwilling or unable to manage their own server-based LAN. The typical monthly charge for SUMMON clients, which includes internet access and the Microsoft Office Pro software suite, is $16. In the four years since this popular service was introduced, the number of SUMMON clients has grown to over 1,100. Another positive by-product of offering this LAN service is that because it is centrally-supported, it greatly facilitates IT’s efforts to manage the roll out of administrative client/server applications to the desktop.

*Consolidated Help Desk Facility*
We resurrected our Office Technology Services (OTS) group after having disbanded this unit as part of a downsizing exercise. Not only did we revive the group, we went a step further and combined it with our Information/Help Center into a full-service help facility that is intended to serve as the initial point of contact for all of our clients—students, faculty and staff. With the help of a powerful problem reporting and tracking system (Apriori), this unit is able to respond efficiently to hundreds of information and problem assistance requests every week. In addition we encouraged distributed support staff to make use of Apriori in helping them to deal with problem calls. We also invested in a site license for remote control software (Timbuktu) to enable OTS and DSP staff to diagnose and correct desktop software problems without having to make an onsite visit. We discourage onsite support visits by charging a fee ($30/hr.) whereas there is no fee for our remote diagnostic and repair services.
More Resources Devoted To Client Training

Another important step taken in recognition of the increased responsibilities that a distributed computing environment imposes on client departments was to focus more IT attention and resources on client training initiatives. We have addressed this issue in a number of ways. We established a full-time Training Coordinator position within the IT organization. We created two training clusters each equipped with desktop computers capable of running any of the University’s client/server applications. We have arranged dozens of training classes in these facilities covering a wide range of applications and needs. More recently we have begun experimenting with the use of computer-based training materials in the training clusters as a free alternative to the fee-based instructor-led training. Finally, we have paid particular attention to training needs that must be met when implementing new administrative client/server applications. It is absolutely vital that adequate time and budget be allocated for this critical activity.

These are but a few examples of ways in which the central IT organization at Syracuse University has refocused its efforts and redistributed its resources in an effort to better support the expanding workload and responsibilities of the client community in our distributed environment.

IT Concerns

The IT organization fully supported and in some cases initiated the expanded role of the client departments. These clients view IT as an essential partner in meeting the growing information needs of the University community. While the focus was on the clients as they learned how to use the new tools and were assigned new and exciting projects in their client/server environment, the IT programming staff continued to support the mainframe systems. They saw their department shrink, with some of their more exciting job duties transferred to their clients. There was also pressure for the IT staff to keep up their mainframe skills as well as to learn new client/server skills. Many of the senior COBOL programmers were now at the same desktop skill level as their inexperienced clients. This resulted in low morale and a real fear of job loss. The IT staff needed a new program to encourage and reward them for retraining. In addition to having to learn new skills, they had to identify what their role would be in this new environment. They needed support to try new roles without fear of failure.

Job Broadbanding Model

The IT staff has made significant progress learning new skills and identifying new jobs. The increased emphasis on training has benefited the IT staff just as it has the rest of the University. However, we began to encounter problems with our existing job classifications and career paths. Most of these were established in the early 1980’s and did not apply to the current environment. Here is a sample of comments from the IT staff:

- I am at the top level of my career path and have no chance for promotion so why should I work any harder?
- If I spend extra time learning new skills, how will I be evaluated?
- What do I have to do to be promoted?
- How can I be a team leader when there are other team members who are at higher pay grades than me?
- What if I try a new job and fail?

There were many aspects of this transition that were outside our control, but providing a structure that would encourage and reward high performance was achievable. With the support of the University’s Human Resources department, we developed a proposal to pilot a job broadbanding model. This model met our objectives which were:

- to provide flexibility in matching jobs to changing technologies
The concept of broadbanding is to provide broad career bands and salary ranges for staff. This provides more flexibility to respond to our rapidly changing technical environment. Our proposal covered three areas: job descriptions, the evaluation process and compensation.

**Job Descriptions**
We combined our former 23 job descriptions into two—an IT Consultant and a Manager. Each of these jobs has a general functional description that meets the requirements of our Human Resource department. Instead of pay grades, for each description there are two bands, foundation and career, with an associated salary range. Foundation is an entry level for staff; it has a salary range that would encourage people to move on to the next level. Staff spend the majority of their work life in the career band. This band has a much broader salary range. For each of the bands there are a set of competencies—a core set and a negotiated set. A series of brainstorming sessions with IT staff produced a list of competencies applicable to all staff. These were placed under the heading of core competencies. Skills such as communication, facilitation, and creative thinking are core competencies. Negotiated competencies are those things that make each person’s job unique. The majority of these competencies are technical. A person is not required to have all of the negotiated competencies. IT is responsible for maintaining both lists of competencies and reviewing them annually.

**Evaluation Process**
The job description and competencies provided us with a base for the development of a new evaluation process. This procedure consists of goal setting and review sessions twice a year. In the goal setting session, a staff person meets with the team manager to decide which negotiated competencies are appropriate for the review. At this time goals that should be attained in the next six months are also set. These goals relate to specific project work, learning new technical skills, and professional development. At the end of six months an assessment of core competencies, negotiated competencies, and attainment of goals determines an overall performance rating. The weighting of these three categories is different in the foundation and career bands. At the foundation level, it is important to develop a solid base of technical skills for the job. At the career level, there is increased emphasis on drawing on those skills as well as developing excellent communication and creative thinking skills. This weighting reflects the reality of a distributed environment where everyone works with client staff. The new environment dictates that staff increase their non-technical skill level. Skills such as communication, teamwork, facilitation, negotiation The combination of competencies and goals also provides staff with the opportunity to learn new technologies without being penalized in the evaluation process. Maintaining the lists of competencies and goals for each individual alleviates ambiguity regarding performance expectations.

**Compensation**
Compensation is the third piece of our proposal. The evaluation process provides a base for determining compensation. There is a direct correlation between evaluations and raises. The existing annual raise and promotion funds were combined into a single pool to be allocated differently than our old model. There are no promotions but all staff are eligible for merit increases. These increases are for those staff who are performing well above expectations based on the results of evaluations.

While we have been planning this job broadbanding pilot for some time, we actually began the pilot in July of 1997. We have completed the first round of goal setting sessions and are in the process of refining the metrics for the evaluation process. We have, however, been able to provide extra compensation to staff members who are high performers. Because they at the top of their career path in the old model, there was no chance for promotion. One part of the pilot is to obtain feedback from staff
periodically. This allows us to continually improve the process. While staff still have concerns, indicators show they are much less fearful of trying new jobs.

**Conclusion**

The distribution of information technology and leadership from a central to a local model has effected many positive changes in the way clients and IT work together. We believe these changes are a positive outgrowth of initiatives such as the Distributed Staff Program and the Job Broadbanding Model. We are better prepared to migrate from a mainframe environment where client offices were dependent upon IT for computing services, to a new client/server environment where clients take more responsibility for implementing and supporting their information systems. Some key observations of the impact of this transition include:

**Client Led Project Teams**
System implementation project teams are frequently led by an individual from a client office as opposed to someone from IT. These teams are composed of a combination of client business analysts and computer consultants, as well as IT programmers and systems analysts. This shift in leadership has increased 'buy-in' and acceptance from the campus-wide users of the system, and has resulted in improved customer satisfaction with the delivered product.

**Higher Reporting Structure for Computer Consultants**
An increased number of computing professionals working within a department are now reporting directly to the academic dean or administrative director. These technical advisors work closely with their department's decision makers to incorporate technology and information solutions into the classroom and everyday business processing. Their opinions are valued and their recommendations are implemented.

**Alignment of Client and IT Goals**
Teamwork has played a vital role in finding solutions to information problems. The client/IT relationship is now more collaborative as both areas learn new technology and work toward the same goals. The challenge of dealing with so much change in a relatively short time frame has forced both areas to focus on priorities and work together in order to achieve success.

We believe that the distribution of work and the resources has had a positive effect on the success of implementing computing solutions on the Syracuse University campus. We continue to encourage our clients to be involved with technology and to look for additional supports that can be put in place to make change less traumatic and more rewarding.