Vision, Data, and Analysis: An Administrative Structure for Decision Making

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Much of higher education shares the dilemma of recognizing that modern information technology (IT) is essential to the health and competitiveness of the institution while at the same time finding it increasingly difficult to fund and adequately support it. In research conducted by Goldstein and Caruso, this scenario poses serious challenges to institutions planning the IT environments of the future in that “current IT fiscal circumstances could undercut higher education’s longer-term ability to meet rising technological expectations and requirements of students, faculty, and staff” (2004, p 1). In this environment, IT planners are forced to make difficult choices among priorities, and support is often not included in the final cut.

When Indiana University (IU) prioritized support to match the demands posed by an expanding environment of pervasive computing, it put its decision-making strategies to the test. This research bulletin discusses the decision-making process that enabled the IT organization to recognize the need for a new support system, determine the structure of that system, find the capital to create it, and bring it from concept to production in less than two years. These principles, and the thinking behind them, have relevance to other colleges and universities.

**Highlights of an Administrative Structure for Decision Making**

The increasingly important role of IT in advancing the university’s mission places high stakes on IT support. The IU strategy called for elevating IT resources to among the best in the nation. This meant improving the access, efficiency, and quality of support for IU’s large and heterogeneous customer base of 98,000 students and 15,000 faculty and staff, who depend on some 200,000 IT devices.

Before IT became pervasive, IU’s help system focused on one-to-one user/consultant interactions. IT’s evolution from a university tool to a strategic asset required a concomitant growth in support. The absence of new university resources to fund such an expansion called for creativity. Earlier ECAR research bulletins (Elmore, Holloway, & Workman, 2004, 2005) detail the planning and negotiating behind the build of IU’s new support system.

IU’s support initiative required a change in direction. The IT leadership recognized, in leadership guru Max De Pree’s words, “that we cannot become what we need to be by remaining what we are.” Various factors critical in charting a new course for IT support include

- an overarching institutional vision for IT;
- an IT strategic plan that includes goals for support;
- tactical decisions and implementation plans for realizing the vision;
a clearly defined leadership structure, with group goals and manager responsibilities tied to these decisions and plans;

- commitment to precisely defining services delivered, measuring the costs of services, and encouraging user evaluation and feedback; and

- developing systems for tracking performance against these measures.

The Vision and the Plan

The framework for the support vision is IU’s comprehensive IT strategic plan, *Information Technology Strategic Plan: Architecture for the 21st Century* (Indiana University, 1998), which was developed in 1997. Its 10 broad recommendations and 68 specific actions are paths to meeting the goals it sets out for IT. When resources of money, time, or personnel become scant and projects compete for resources, the strategic plan provides a constant against which to measure and to set priorities. At IU, each unit of the IT support organization, University Information Technology Services (UITS), is responsible for meeting the goals that fall into its area of expertise, and its leaders are accountable for the unit’s progress. Each year, the vice president for information technology and IT senior leadership elevate certain goals to priorities. Building IU’s online IT service and support system became the highest priority for the IT support division; this provided the framework for management to reallocate needed resources to the initiative.

Data and Measurement

For 15 years, IU has gathered data about its IT resources, including detailed information about usage, cost, and user feedback (Indiana University, 1991–2005). IU analyzes these data to calculate the relative cost and quality of each resource and service. Data collected and analyzed over time provide a picture of how well the organization is using resources to meet user needs and how well services are evolving along with the technology and its users. The many ways data are collected and analyzed are detailed in Elmore et al. (2005). At the same time, more-subjective measures, such as user comments to consultants and IT staff, are collected and considered. The organization’s commitment to collecting and analyzing data has built a strong culture of evidence, service awareness, and responsiveness, where each customer comment is considered.

A user comment prompted UITS to conduct a critical review of its Web site, which at the time focused on the organization’s structure, plans, and initiatives. The associate vice president (AVP) responsible for support demonstrated the site’s shortcomings to senior management by comparing the UITS Web site with a successful user-centered corporate model. He selected the following problem as an illustration: the AVP’s printer, an obsolete HP model, had begun to feed multiple sheets rather than single sheets while it was printing. His initial search of the HP site netted a Web page dedicated to the particular printer. The page included an ordered list of typical problems encountered at various stages of the printer’s life cycle. It explained the multiple sheet feed problem and a solution that involved installing a small part. The next click took him to the order form for the complimentary part. Moments after he placed the online order he received e-mail from HP with the expected time of delivery. HP’s help was clear, quick, and user friendly. From a single login, the AVP received explanation, solution, part, illustrated descriptions.
of how to install the part, delivery date, thank you, and the phone number of a support contact if he experienced unexpected difficulties, all within minutes. Further, all this help (and reassurance) was delivered for an obsolete printer from a complex, international, 160,000-person organization as if it were one person to another.

The AVP demonstrated a similar search on the UITS Web site for a common task at IU: buying a computer. In recent years, UITS had worked with schools and departments to modernize more than 15,000 desktop systems and ensure that each was included in a life-cycle replacement program. The AVP reasoned that assisting customers in buying a computer was a fundamental UITS service, not unlike HP’s providing printer solutions. On the UITS home page search box, he typed “buy computer.” Search results returned the portion of the IT strategic plan that discussed support for student technology. Other options provided information about UITS plans and statistics but no help for the user. Repeating the search, this time with a note of frustration, he typed, “I am very angry, but I still want to buy a computer,” and arrived at a collection of “pressure cooker” interview questions. The search engine picked up on the emotion but failed to find the purchasing Web site. Next, he tried to navigate to the target service page for “Buying a Computer.” Although a well-developed page existed, it was impossible to find it through the maze of organization-focused links. The power of the side-by-side comparison highlighted the disconnect between IU’s goals for support and what a model Web site provided. The HP experience seeded a vision for a self-service site that would provide service information as well as a clear and comprehensive self-help strategy.

Realizing this vision required a major shift of direction. What enabled IU to accomplish its goal without an infusion of new resources, and in a relatively short time, were the key aspects of IU’s management practices, especially a detailed plan for realizing goals, data-driven management, and a system of routinely reviewing priorities. These practices—or the thinking behind them—may be applicable to support contexts in many different organizational structures.

**How Do You Know If You’re Making the Right Decisions?**

In any level of decision making, a clear set of institutional goals, along with a means of measuring progress toward them, provide a constant against which initiatives can be prioritized and decisions made. IU’s strategic plan provides a framework for choosing among multiple and competing priorities. It provides guidance in setting broad service targets and serves as a reference point against which to measure results.

**Collecting Data**

Data collection is fundamental to any measurement system. The more kinds of data gathered, the richer the possibilities for comparison and analysis. IU gathers data through many sources, some of which are automated, including:

- An independently administered annual survey of several thousand users. This gathers data on the user experience with the IT organization and its resources and services, and allows for data comparison and trend tracking from year to year.
- Suggestion boxes on all major systems, such as Oncourse, IU’s course management system.

- Hits to Web sites and Knowledge Base (KB) articles. For every KB entry, the question “Did you find your answer?” has a checkbox option of “Yes,” “No,” or “No, and I’d like to speak to a consultant.”

- Software downloads from IU’s online software distribution system, IUware.

- Questionnaires sent randomly to every sixth user after interactions with a support consultant via phone and in person to inquire about customer satisfaction.

- Ombudsman reports that provide anonymous and valuable feedback about operational, personnel-related, and service-related issues.

- Casual remarks made around the water cooler informally gauge user satisfaction.

A culture of openness to user feedback of all kinds and from all sources means more information will flow into the support organization.

The more the IT organization can do to automate data collection and reporting, the less time it will spend on problem detection and resolution. IU therefore created a centralized User Support Dashboard, shown in Figure 1, where metrics gathered from many IT service and support areas for specified date ranges are simultaneously displayed.

**Figure 1. Indiana University USO Dashboard—IUB and IUPUI**
Such automation conserves staff time while constantly marking and illustrating changes in user activity. Consider this pre-dashboard scenario: The VP wants to know how many people contacted the help desk during a problem with IU’s course management system. He calls the support AVP, who must call the support director, who asks the help desk manager, who runs a report. When the research is complete (a matter of several hours or even days), the answer climbs back up the ladder. By contrast, the continually refreshed data on the dashboard obviate this extended period of research and make it possible for staff and managers at all levels of the organization to instantly access information.

Analyzing Data

Data as a management tool are only as effective as the uses to which they’re put. The support dashboard is like its automotive cousin. Its utility depends on the type of information presented and a driver who can interpret its clues. A temperature gauge on an automotive dashboard is much more useful to an alert driver than a “Hot Engine” light that illuminates after the engine has already overheated, simply affirming what the driver already knows. Data points in support systems, like a changing gauge, are prompts to ask the right questions and take actions.

One of the most powerful UITS analytical tools is its annual cost and quality process. This exercise combines user survey data with an itemized list of the cost of IT resources to produce an annual online report on cost and quality measures of every IT resource and service. “Reports on Cost and Quality of Services” is invaluable for comparing costs and seeing fluctuations in user perception of quality (Indiana University, 1995–2005).

These data allow comparisons that can set directions. In IU’s case, data vividly showed the cost difference per interaction between delivering help electronically ($0.11) and in person ($14.19). This fact was a watershed. For IU, delivering excellent support required defining “excellence” in concrete measures: how many, how good, and at what cost. Managing by data helps create a culture of evidence and of excellence.

Data gathering and analysis also promote flexibility. If cost and quality data show a decline in user satisfaction and/or an increase in cost, for example, managers are provided with a concrete impetus for further analysis. Comparing appropriate data (for example, the cost of human delivery or online delivery, increase in user base over time, user satisfaction with various help delivery modes) often points to a clear direction for change.

Prioritizing

Processes for setting and evaluating priorities are fundamental in matching support with user needs. Data are central here as well. In an ongoing and iterative system, data about support usage, problem resolution, and challenges flow continually up the chain, from frontline staff to manager to director. This information is informally and continually analyzed. During the quarterly and annual executive-level priority setting process, it plays a formal role.
The continual measurement of outcomes against goals builds a culture of accountability and provides a mechanism for keeping services in line with goals and priorities. The priority review system supports and contributes to the strategic planning process and to a climate of assessing, adjusting, planning, and prioritizing. Establishing these processes as part of the business culture encourages leadership and staff to stay focused on priorities.

Managing Change

Another important element in IU’s IT business toolkit is the change management process, which evaluates user impact before a change is made, ensures that plans are developed for communication and support, and alerts the entire IT organization about pending changes. For example, if the division that provides a certain research computer plans to decommission that device, a division representative brings the proposed plan to the weekly change management meeting where the implications for user communication and support are discussed. The support organization plays a user advocacy role and presents anticipated reactions from faculty, students, and staff before final decisions are made. It doesn’t take long for the change management team to realize the importance of involving the support division in developing these plans. This division has become a partner in any service change, driving the process for writing help files and user information and influencing the timeline for readiness. If you introduce a new system without adequate user communication or before the help files are in place, technical staff will spend their time helping users instead of refining machine performance.

Finding Resources for a Large Support Initiative

IU had no additional resources to dedicate to building its online help system, so it had to find other means of funding the initiative. Here again, the solution included strategic vision, data-based business practices, and a culture of objective review.

When important priorities are defined without new funding, the VP may invoke an Expenditure Review Committee (ERC) as an aid to executive leadership. The ERC comprises high-level leadership from the IT organization and sometimes the broader university community and brings an objective voice and view to decisions that are large in either scope or cost and that have cross-campus or cross-divisional organizational impact. The ERC always includes the senior leadership of the services potentially impacted and the chief financial officer. Before launching the support initiative, an ERC reviewed the allocation of IT support resources and looked for efficiencies of cost and structure across organizational boundaries. UITS leadership relied on ERC objectivity to suggest options and make recommendations on a bolder scale than might have been possible in a purely departmental or unit review.

The ERC did find resources to dedicate to building the Online Support Environment (OSE), but they came from savings gained by reorganizing the IT support division into a more efficient structure. The division previously spanned two campuses, with a director on each campus leading parallel organizations focused on service and support for the respective campus, Bloomington or Indianapolis. The ERC recommended a single consolidated support structure, with the previously divided support groups and initiatives
merged into one university-wide department. At the same time, the role of support was expanded and new initiatives were added to the support portfolio. A related ERC recommended that telephony customer services and telephone-attendant services be merged with the computer, media, network, and classroom-support organization. Savings gained from this reorganization (open positions not filled, capital expenses recouped, and so on) funded the development of the second phase of the support initiative and offered the obvious advantage of providing a single help desk number for all technologies.

While reorganization presented its own set of challenges, a culture of decision making by evidence makes it possible to embrace tough changes. The information-rich foundation for these decisions also makes them easier to present to staff. Because all IT decision making begins with and tracks back to the strategic plan and current priorities, staff see that the changes that affect their work environment also contribute to a common set of goals. A business plan based on a shared vision and regular measures of progress contains reassurances that make living with difficult decisions more acceptable. These accomplishments are reported annually in a university-wide publication (see <http://uits.iu.edu/scripts/ose.cgi?anvz.ose.help>). Now that the OSE has been in place for some time and the benefits are clearly emerging, the hard decisions have proven valid. This cycle of analysis, decision, and justification repeated over time works to reinforce a culture of trust and reward, with staff knowing that major accomplishments have been achieved.

Making Good Decisions Objectively and Quickly

Good decisions depend on data; sound decisions are rooted in fact. While instinct can lead to good decisions, sustained success depends on being able to understand—and replicate—the convergence of ideas and decisions that led to that success. IU might have made the decision to build an online support and services system without knowing the underlying cost and quality data that confirm the wisdom of that move. Knowing those data, however, meant that IU could construct a system that served not only the user but also the business practices of the organization, which focus on access, quality, and efficiency.

Good decisions are made with data that are current, plentiful, and accessible. If you provide a service, collect data about it and measure it. Computers are effective data collectors. They ensure consistency and quality, and with good system design, they can present data in an immediately usable format.

The real value of data in decision making is revealed in how information is used. Value is gained when people ask such questions as, What does this number mean? What was going on during that spike in calls to the support center? Can additional evidence support a claim? While an immediate answer might seem plausible, sometimes only by drilling deeper does the real answer emerge.

Data must be considered in context. When a new version of IU’s 100,000-user online course management system went live, the dashboard registered a spike in calls to the help desk. The support director assumed the extra 200 calls per day were related to the
new resource. Her investigation showed instead that the calls came from users whose DHCP leases had expired. UITS had timed the expiration of those leases to coincide with a break between semesters, believing fewer people would be affected. Campus life had slowed as expected, but research showed that the callers were graduate students who stayed on campus to work and needed their IP connections. Rich data, coupled with experienced people to interpret, analyze, and provide context, are fundamental to sound decision making.

Knowing What to Measure

IT professionals are often motivated by something they want to learn or know and by their hypotheses, which lead them to ask the right questions. As questions arise, they suggest clues about the data needed. Good questions generally have more than one dimension. For example, instead of asking how many contacts the new course management system has generated, we might ask:

- How do these questions differ from those asked about the old system at this time last year?
- What problems are faculty reporting at the beginning of the semester?
- What kinds of help do students tend to need during finals?

Data properly combined, analyzed, and probed for meaning can lead to a gold mine of information. Conversely, linking the wrong pieces of data can yield misleading information. It’s easy to draw mistaken conclusions from data that on the surface may seem correct but on closer examination suggest fallacies. In interpreting any kind of measurement, it’s important to probe for environmental factors that could affect the data.

A cluster of questions or calls to the support center could be a sign of interest or a sign of trouble; volume itself isn’t necessarily a key indicator. An improvement in satisfaction scores for a service over time could indicate more satisfaction or some kind of change, including the possibility that frustrated users have abandoned the service, leaving only the loyal supporters behind to respond to the survey. A portion of any university audience is mobile, and a simple change in demographics could account for change. The key in using data is to ask the right questions, perform the proper analyses, and draw conclusions carefully.

What It Means to Higher Education

Gathering and analyzing data allows for accurate targeting of support dollars. For example, at IU a locally developed system called Get Connected lets 13,000 residential students patch their computers and safely connect to the campus network. This system also collects and aggregates information about hardware and operating systems. Knowing what operating systems are used most often on student computers helps focus enterprise license dollars on the right security software for those machines.
Data gathering enables support priorities to change with need. For instance, a spike in the number of users who need help with security issues may signal a spreading virus as well as a need for more staff or help resources. Comparing data over time allows support organizations to spot trends. The academic calendar is especially useful in spotting trends from one year to the next. When the unexpected is seen, it prompts managers to ask why.

Knowing actual support costs helps leadership choose among priorities. At IU, comparing the per-transaction costs of delivering help in various ways (in person at $14.19; by phone at $6.41; by e-mail at $6.36; and online at $.11), made it clear that investments had to be made in online self-help to curb the growth in support personnel.

Knowledge of user satisfaction with support and areas of perceived need puts planning on a fact-based foundation. The slump in user satisfaction with a very cost-effective e-mail system at IU prompted the support organization to find a GUI-friendly client, even at higher cost.

By analyzing data from multiple sources, support organizations can drill down to better understand the real costs of support. The impact of an IT event may go beyond the support organization and imply costs to other divisions or organizations. To the extent that these costs can be tracked, better decisions can be made. Clear priorities for the use of scarce IT support dollars help advance the contribution information technologies make to the academic mission. Using IT systems and techniques to run the support business stretches funds, which is critical in times of flat budgets. Aligning IT spending with institutional priorities enables universities to achieve better value for expenditure. A sound IT infrastructure and its support are increasingly important in being competitive among today’s universities.

**Key Questions to Ask**

- In your support organization, what means are you already using to collect data?
- Of all the possible data streams, which are worth tracking?
- How do metrics support decision making?
- Which metrics does your institution consider to be key performance indicators of successful IT support?
- How, how often, and for whom does your IT organization collect, measure, and report the results of its key performance indicators?
- How are staff involved in collecting information, analyzing it, and getting priorities from their services or departments? What role does executive management play in this process?
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References


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