Reinvesting the IT Dollar:

From IT Firefighting to Quality Strategic Services

By **Andrea Stern**

The right approach to reinvesting IT funds moves institutions from crisis management to achieving goals

Imagine ensuring that your IT services aligned with the organization's strategic plan and were funded accordingly.

Imagine making consistent decisions about IT — knowing the cost, value, and impact — to meet the organization's requirements as well as users' needs.

Imagine IT professionals and users routinely agreeing on how to meet and fund the rising demand for services, and measuring those services against agreed upon targets.

Imagine increasing available funds by improving your current processes to provide existing services more cost effectively.[1]

The Information Technology Infrastructure Library (ITIL)[2] set of service management best practices helps organizations such as the University of Sydney Library (USL) reinvest its IT dollars to reach these goals. Using ITIL, over a two-year period USL reduced the amount of its firefighting by almost 50 percent and reinvested the resources saved into enhancing services and developing strategically targeted new ones.

Targeting, Managing, and Evaluating IT Investment

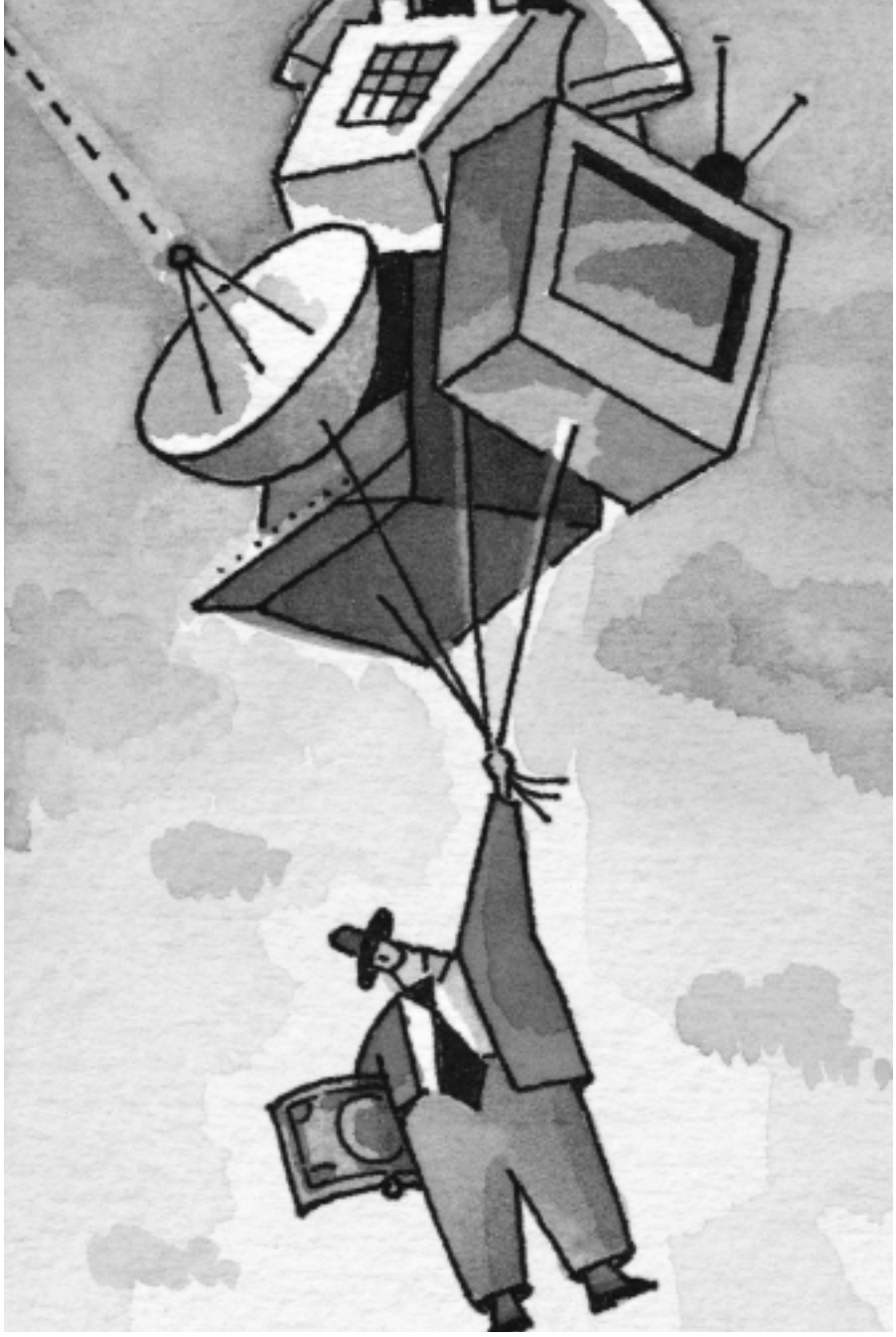
"In spite of decreasing costs of technology in the marketplace, college and university budgets for information technology and IT support systems continue to increase," wrote Chair Paul Gandel and the Current Issues Committee in *EDUCAUSE Quarterly*, introducing the list of 10 top IT challenges for 2000.[3]

Of that ever-increasing budget, organizations typically invest around 30 percent to develop and implement new IT services.[4] Using established project management processes, most organizations already manage this part of the IT budget well. Project management processes align resource allocation with organizational goals, monitor resource allocation, accommodate changing needs and circumstances, and evaluate outcomes during the development phase of a service.

However, when the outcome of a development project is an ongoing service, the remaining 70 percent of the IT budget goes to managing those services during their lifetime. This entails firefighting, fixing errors, maintaining

legacy systems, keeping the infrastructure up to date, dealing with multiple standards, making changes requested by users, and enhancing and improving services to meet the growing demand.

By using service management processes, organizations can become effective, efficient managers of the larger, maintenance parts of their budgets. Service management processes align this ongoing expenditure with organizational goals, manage change, and evaluate outcomes. Adding service management processes to project management processes thus increases an organization's chance of realizing the goals we imagine for IT services.



ITIL Service Management

ITIL defines an IT service as "a set of related functions provided from the IT infrastructure in support of one or more business areas perceived by the customers as a coherent and self-contained entity."[5] The related functions may be in-house and/or outsourced. Examples of services include provision of financial, student, and office automation systems.

At USL we provide, for example, desktop, public access gateway, printing, reporting, and document delivery services. These services use a variety of hardware and software components, some unique and some shared. The criterion for their definition as a service is the customer's perception of coherence, not the nature of the hardware or software involved in providing the service.

ITIL defines service management as "a set of related processes … for the management and operation of the IT infrastructure in order to promote optimal service provision to the customer of the services at justifiable costs."[6] ITIL processes underpin the strategic goals of an organization and provide quality services cost effectively. They enable the IT provider and its customers to agree openly and realistically on the services provided, the level at which they are provided, how much they cost, and how they can be changed.

As an additional benefit of the ITIL approach, roles (sometimes multiple roles) and responsibilities for each process are allocated to individuals in an organization. However, "the purpose of the role is to locate responsibility rather than to create an organizational structure."[7] This makes it possible to introduce a process approach to service management within existing organizational structures.

The Gartner Group says of this methodology that it is "one of the more comprehensive sources for IT managers undertaking process improvement."[8]

Service Level Agreements — An Ongoing Contract

Central to the success of service management is the Service Level Agreement (SLA). Just as the reference point for the development of a new service is the contract between the developers and the customer, the SLA is the reference point for all decision making and activities relating to the service during its lifetime. It defines the ongoing contract between the service provider and the customer.

And, just as organizational goals and funding are incorporated in the contracting process for development of a new service, so can organizational goals and funding be incorporated in the contracting of an SLA. Doing so keeps the organization focused on what it intends to achieve with an IT service and why, and helps determine the value of that service to the organization.

Service level management is the process that coordinates this incorporation and monitors compliance with the SLAs. The diagram in Figure 1 shows this.

Making Realistic SLAs

The SLA needs to be open, honest, realistic, and measurable. A contract negotiated between the IT service provider and the customer, the SLA defines the boundaries of the service, the level of the service, the service's relationship to organizational objectives, its availability, the responsibilities of both user and provider, procedures for change, and benchmarks for measurement. It provides a standard by which to measure costs, changes, exigencies, and opportunities. It is an open statement of shared understanding or "keeping the cards on the table," for which John Bucher argues in *EDUCAUSE Review*.[9]

Peter Block, writing about the entrepreneurial contract, advises promising reality, admitting mistakes, and being truthful without blaming. The openness of a contract itself, he suggests, can be a self-correcting mechanism against actions not in the best interest of people or the organization, so "ill-advised projects or practices [do not] continue because of a community of silence."[10]

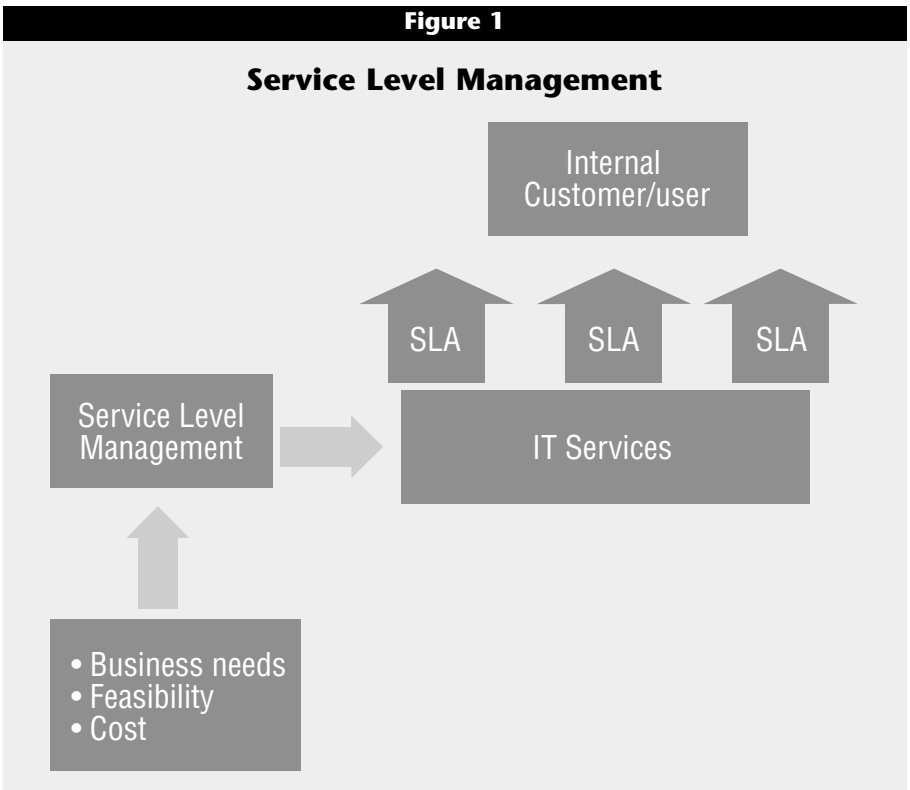
As with any contract, the person commissioning the service must define what's needed and make resources available for setting up the service, for customizing it, and for changing it during its lifetime. Equally, the the provider of the service must realistically assess the feasibility and cost of meeting these requirements.

For this type of contract, ITIL distinguishes between customers and users. "Customers" are the people in an organization who commission and fund the IT services (generally senior managers or business unit owners). "Users" are the people who use the services on a day-to-day basis.[11] A benefit of this definition is that ownership of the service clearly lies with the customer for negotiating the terms of the service, for coordinating user requirements, and for managing user expectations.

At USL, we find that clarifying these roles and processes, combined with the transparency provided by posting the SLA on the intranet, reduces help desk calls because it reduces the need for individual negotiations between users and the help desk about requirements and expectations. This process improvement has yielded significant cost-efficiency gains for us. The clarity and openness also reduce the emotional valence that often accompanies the supply and use of IT services, and has reduced frustration and increased staff morale at USL.

Figure 2 shows an example of an SLA from USL's intranet.

Figure 1



Making the SLA Work

Four things are critical to making the SLA work:

- processes for delivering the services
- identifying and managing the infrastructure, that is, the variables involved in delivering the service (configuration management)
- controlling change to those components (change management)
- identifying and correcting errors in the infrastructure (help desk and problem management)

Delivering the Service. The processes we use to deliver services follow.

Service level management manages the quality of our IT services in the context of changing needs, through negotiating, formalizing, and recording requirements for service with, and evaluating performance against, the levels agreed to in the SLA.

Availability management ensures that users can use IT services when they need them, at the level agreed to in the SLA, by managing factors such as the reliability, complexity, serviceability, and maintainability of software, hardware, contracts, and procedures.

Capacity management ensures the appropriate size and type of IT infrastructure to meet the organization's current and future needs.

Contingency planning protects IT support services to agreed upon emergency service levels in the event of failure or disasters. It employs techniques such as impact analysis, backing up of data, redundancy in equipment, and emergency power supply.

Cost management identifies cost for cost/benefit analysis and charging.

Controlling the IT Infrastructure. To control the IT infrastructure at USL that provides the service, we keep an authoritative, current record of all the components used to provide services. This infrastructure includes hardware, software, communications technology, policies, procedures, contracts, SLAs, skills, roles, and responsibilities necessary to support the provision of IT services.

The *configuration management* process identifies, manages, and reports on all these components and their relationships to each other through a single database, the Configuration Management Database (CMDB).

Policy is also part of the IT infrastructure, as Kent Wada and Paula King pointed out in *EDUCAUSE Review*,[12] and so we include that, version controlled, in the CMDB.

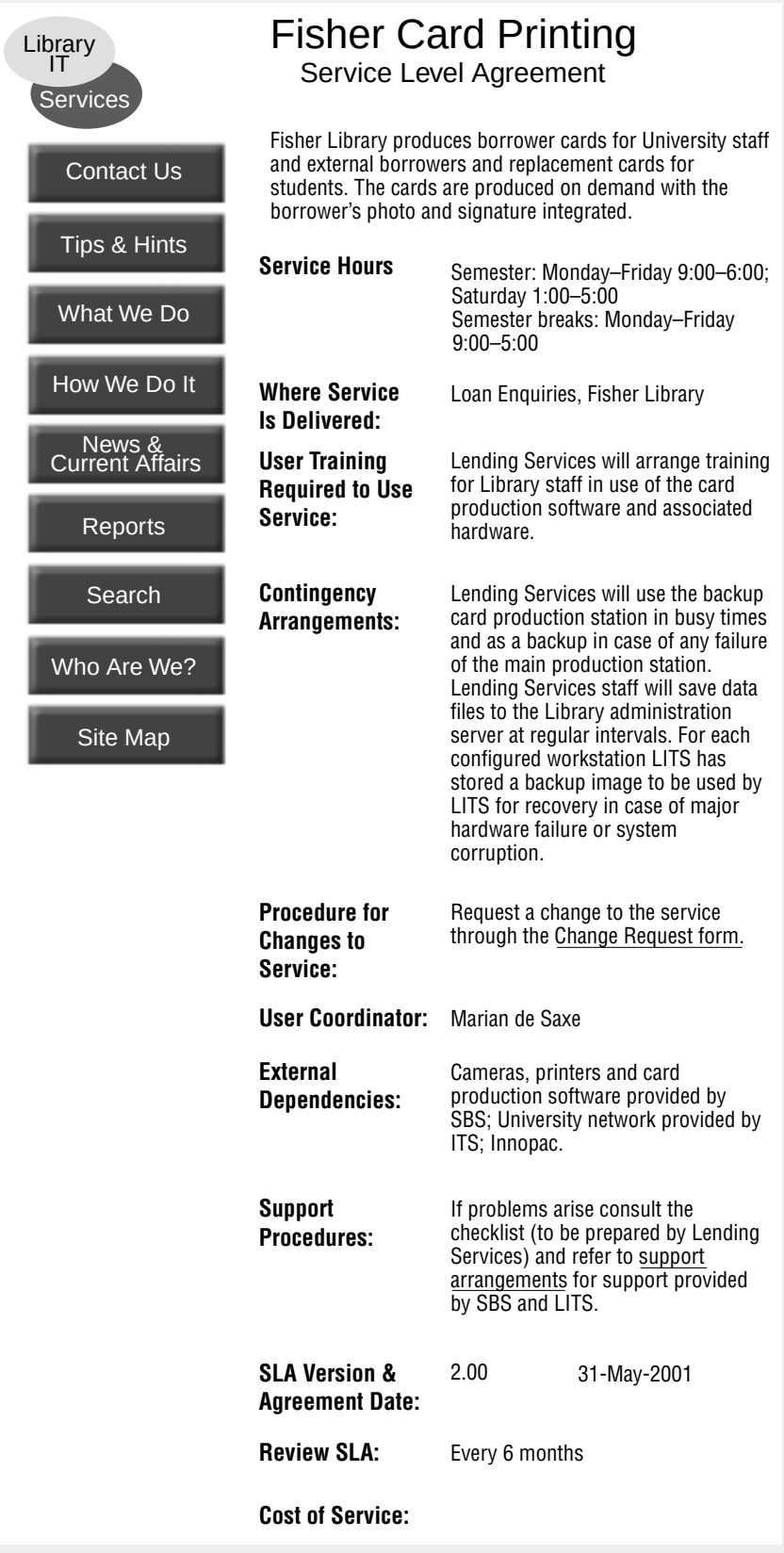
For a particular piece of hardware, for example, we include its type, location, owner, status, history, lease termination date, conformance to standard, support agreements, and relationship to other components. For software, we apply version control procedures within a standard operating environment.

Our CMDB is also integrated with the help desk and change management, so we know the history of all calls, problems, solutions, and changes affecting any component. This "self-learning" database is the core of the knowledge management processes supporting our services. Its accuracy and completeness are critical to the success of service management.

Change Management: Balancing Stability and Flexibility. Change is a natural part of any IT service — we both initiate and react to change. We initiate change to take advantage of opportunities, to improve organizational processes, to support strategic objectives, and to prevent problems. We mine our data to see where prospective change might bring improvement. We also make changes in response to user needs, technological innovation,

Figure 2

An SLA from USL's Intranet



suppliers' software and hardware upgrades, and changed procedures, and to correct errors.

Any change to the IT infrastructure introduces new variables. At USL, therefore, before making a change to a service or to a part of the IT infrastructure, we assess the risks, costs, and benefits of the change through our change management process.

Briefly, it works like this. We have a committee of stakeholders, the IT Committee.[13] For significant changes, any internal customer or the IT Services department submits a proposal to that committee for assessment, funding, planning, scheduling, and authorization (with provision for fast-tracking urgent changes of high organizational impact). After a change is implemented, we review the actual outcomes against the planned outcomes. All requests for change, their impact analyses, and their status are accessible through the intranet.

An example of a recent significant change at USL involves the migration from Macintosh workstations to thin-client technology for our public access gateway service. Increasing breakdowns caused by aging workstations degraded the level of service the IT Services group could deliver to the organization and its clients. Even with help desk support, this meant we could no longer meet the required levels of service at the existing cost.

Change had already begun and needed to be managed. IT Services submitted a request for change (migration to thin-client technology) to the IT Committee with an impact and cost/benefit analysis. As part of standard procedure, we published this on the intranet for comment and discussion. The committee subsequently approved the migration, plus funding and ranking in organizational priorities, and conducted a post-implementation review.

Because any change to the IT infrastructure introduces new variables that may affect service levels, our change management process also has procedures for minimizing that risk and impact. The CMDB plays a crucial role here, since it reflects the infrastructure and relationships among its components and makes it possible to anticipate the unintended impact of change.

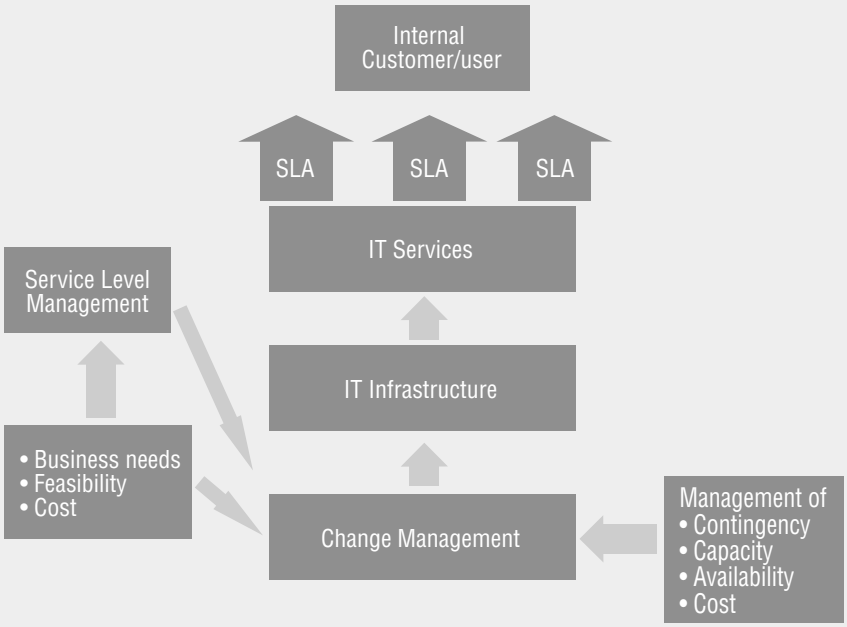
Change management therefore helps us maintain the balance between flexibility and stability — key factors in providing quality services that align with our organizational goals.

The relationship among SLAs, the CMDB, and change management underpins successful service management because it enables the ongoing contract to be open, realistic, and adaptive to change. It also enables the service, through the contract, to be specific and well defined.

Figure 3 illustrates the relationship among these elements.

Figure 3

Relationship among SLAs, CMDB, and Change Management



Finding Errors and Fixing Problems. The help desk identifies errors and restores service; problem management fixes the underlying cause and prevents further occurrences. This simple description offers a useful way of looking at these two processes.

Like all IT providers, we've spent a lot of time firefighting — using the help desk to restore services by fixing errors that have disrupted services and affected the organization.

Three years ago, however, we turned our attention to fire prevention as a means of reducing our firefighting costs. Now, while our help desk restores services as quickly as possible in response to the logging of an incident, we also take the ITIL view that faults or disruptions to service are symptoms of problems in the IT infrastructure. Reports from our help desk identify problems, inform our impact and cost/benefit analyses, and help us measure the quality of our services and processes. With the help of a multi-tiered call classification and analysis process, our help desk has now also become a quality filter.

These views of the help desk have received increasing recognition. The Gartner Group reports, "There is a growing recognition that [help desk] tools are not going to provide all the answers, that customers have to develop a set of processes and workflow to allow them to deliver total quality of service at a lower cost."[14]

Applying the process of problem management involves looking at the underlying causes of incidents and

initiating action to improve or correct the situation, with the goal of minimizing adverse impacts and preventing recurrence. It works both proactively — by identifying and solving problems before they affect the organization[15] — and reactively — by solving problems indicated by patterns of incidents. Whenever solving a problem requires changing the infrastructure, a change request goes to change management.

An example of the relationship between the help desk and problem management would be multiple incidents logged at the help desk of workstations freezing while running a particular software package. Problem management identifies this as an error in the installed version of the software package, and advice goes back to the help desk — publish procedures on the intranet for users to work around the problem by rebooting. At the same time, the person handling problem management initiates a change request comparing the impact of the recurring disruption to service with the impact of migrating the organization to a new version of the software package. If such a migration seems cost effective and beneficial, problem management recommends the migration.

Integrating the Processes

While an implementation of ITIL best practices can be staged, with benefits at every step, USL derives the maximum benefit from integrating the ITIL processes.

Figure 4 shows how the processes I've described are integrated at USL.

Implementing Service Management at USL

Many issues arose from our implementation at USL. Two issues in particular, which I'll address briefly, involve funding and changing organizational culture.

Traditionally, organizations fund and implement new processes from the top down. Indeed, ITIL is usually implemented in this way. However, we didn't do that at USL for a variety of reasons.

We made the changes first within the IT Services department with only "seed" funding, which led to an interesting and somewhat unusual organic approach. We persuaded key staff to change their mental model of IT service provision, then redesigned processes to embody the new model. As the model matured, two things happened. First, because of the process improvement inherent in adopting this practice, we provided better and more cost-effective services, thus engendering greater user satisfaction. Second, our interface with users changed in a way that influenced not only how they related to us but how they saw their own services.

Benefits of Service Management Processes at USL

Investing in improving the processes that underpin our services helped us reduce costs, increase the level of service, and increase cost effectiveness; gave us stability and flexibility; and freed resources for enhancements. For example, we

- reduced the amount of time we spent firefighting by almost 50 percent and funneled the savings into enhancing services, increasing the time devoted to that by 50 percent;
- halved our incident call rate to the help desk despite expanding our range of services;
- reduced backlogs;
- implemented remote management and troubleshooting of desktops;
- gained complete control of our assets, including support and leasing information;
- introduced stage 1 of a standard operating environment;
- reduced resolution and response times by roughly 50 percent; and
- reduced the complexity of incidents.

The redirecting of staff resources and the major improvements in our services and processes between 1998 and 2000 appear in Table 1.

Best-practice service management processes therefore provide USL with IT services that support strategic goals, cost effectively and flexibly. They do this by achieving

- improved quality of services that better support the organization's business,
- improved planning with better understanding of current IT capability and costs,

Figure 4

ITIL Processes Integrated at USL

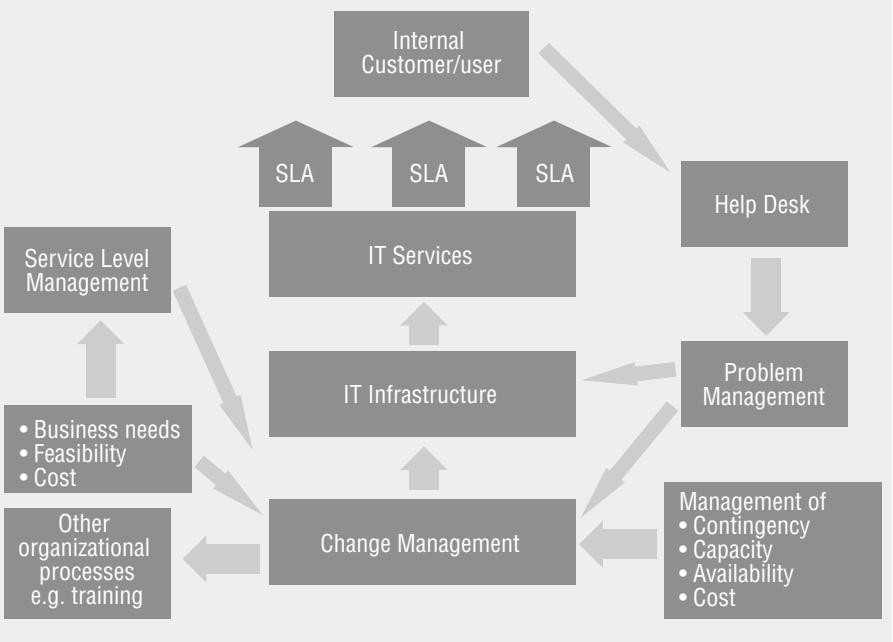


Table 1

Improvements in USL Services and Redirection of Staff

1998	2000
Services did not meet demand — reflected in a high rate of calls and long queues at the help desk • 3.5 help desk technical staff	Call rate halved, response and resolution times reduced, queue reduced • 2.0 help desk technical staff
High reliability, availability, and capacity of servers but low reliability of desktops; unmanageable diversity of hardware and software at desktop contributing to delays, workload, and downtime • 2.0 staff allocated to capacity, availability, and problem management, and software control and distribution	High reliability, availability, and capacity of servers and the standardized, managed desktop • 2.8 staff allocated to capacity, availability, and problem management, and software control and distribution
No change-management procedures or coordination of priorities, contributing to user frustration • 0.2 staff allocated to change management	Change procedures set up for Library IT Committee to coordinate requirements and priorities • 0.5 staff allocated to change management
Incomplete control of assets • 0.3 staff allocated to configuration management	Complete control of assets • 0.8 staff allocated to configuration management
Long queues for change requests • 0.6 staff for enhancements	Near reversal of ratio of incidents to change requests satisfied • 1.4 staff for enhancements

- more flexibility in adapting to changing needs and opportunities,
- more motivated and satisfied IT staff, as expectations are clear, frustration is lowered, and time spent is productive
- enhanced customer satisfaction because expectations are clearer and shared,
- increased productivity of IT and user staff,
- strategic decision making about change, and
- measurable service quality.

Implementing these processes isn't quick — many of them involve fundamental cultural change. For one thing, ITIL best practice doesn't rely on forms, instead introducing a new way of thinking and a common terminology for clearer communication. You can use it in different ways according to need.

An implementation of the ITIL methodology at USL can be viewed at the IT Services Web site: http://www.library.usyd.edu.au/itservices. The site is an internal working tool of the organization and still a work in progress. Comments and queries (to andrea@library.usyd.edu.au) are welcome.

While we've achieved much, we have much yet to do. Along the way we've had some salutary learning experiences. Nevertheless, we have no hesitation in recommending this best practice as a way to prepare for the top IT challenges for 2001. *e*

Endnotes

1. I selected these challenges from the EDUCAUSE Current Issues Committee's 2000 report as the ones best served by Information Technology Infrastructure Library (ITIL) service management processes. See the following note.
2. Originally developed by the UK's Central Computer and Telecommunications Agency (CCTA) and enhanced in association with Exin, the Netherlands Examination Institute for Information Systems, ITIL provides a cohesive set of best practices drawn from the public and private sectors internationally, and supported by a comprehensive qualification scheme, accredited training organizations, and implementation and assessment tools. It is widely used in the UK and Europe.
3. EDUCAUSE Current Issues Committee, P. B. Gandel, Chair, "Top 10 Challenges of 2000," *EDUCAUSE Quarterly*, 23 (2), 2000, 10–16.
4. M. Vitale, keynote address, EDUCAUSE Australia, 1998.
5. *An Introduction to ITIL and the IT Infrastructure Library* (London: HMSO Books).
6. Pink Elephant, *ITIL Service Essentials*, 1999.
7. CCTA, *Service Support* (London: HMSO Books, 2000), xv.
8. Mingay et al., "The Five Pillars of Organizational Effectiveness," Gartner Strategic Analysis Report, Nov. 18, 1998.
9. J. Bucher, "IT Service and Users' Expectations: A Balancing Act," *EDUCAUSE Review*, 36 (3), May/June 2001, 62–63.
10. P. Block, *The Empowered Manager* (San Francisco: Josey-Bass, 1987), 74.
11. The term "user coordinator" identifies the role of customer to align with local custom.
12. K. Wada and P. King, "IT Policy: An Essential Element of IT Infrastructure," *EDUCAUSE Review*, 36 (3), May/ June 2001, 14–15.
13. Although we at USL call this committee the IT Committee, ITIL refers to it generically as the Change Advisory Board.
14. "Help Desks Are Go," *The Australian*, Feb. 9, 1999.
15. The availability and capacity management processes also prevent problems.

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