Strategic Technology Planning: STP for IT

by
Thomas L. Franke, Vice President of Information Technology and Research
Ray Wawro, Director of Information Technology Planning

Lansing Community College
Lansing, Michigan

Lansing Community College (LCC) is a public two-year urban institution, occupying seven square blocks that anchor the northern boundary of the downtown Lansing business district. The College’s more than 18,000 students (8,000 FTE) have access to college transfer programs, career training programs and a variety of community service programs. LCC’s Business and Community Institute provides corporate training and non-credit courses for area residents. Lansing Community College is the most diversified community college in Michigan, offering associate degrees or certificates in more than 300 different academic programs. In addition to the main campus in Lansing, Michigan, LCC offers programs at Capitol City Airport, Fort Custer in Battle Creek, twenty-nine extension centers in Mid-Michigan and an overseas program in Otsu, Japan. From a technology standpoint, LCC is a networked campus with approximately 2,500 desktops and 70 servers. (See Appendix A for a detailed description of the campus technology environment).

Abstract

This presentation describes the purpose, process, and product of strategic technology planning at Lansing Community College. The advantages of planning in a hectic IT environment will be reviewed along with issues such as the use of a consultant and the relationship of strategic technology planning to college-wide strategic planning. Planning assumptions will be presented, along with strategies for involving key stakeholders. Methods for estimating the cost of initiatives will be discussed. The presentation will conclude with lessons learned.
Strategic Technology Planning: STP for IT

Introduction

“When will Office 2000 be loaded on my computer”
“When will the college do something about document imaging?”
“What is IT doing, and why haven’t my needs been met?”

If these questions sound familiar, Strategic Technology Planning for information technology —STP for IT— may be an important part of the answer. This paper presents Lansing Community College’s recent Strategic Technology Planning (STP) process. Our process was eclectic—we did not attempt to follow a formal model. Those who are likely to find our analysis most valuable are those who do not have a current, effective strategic technology planning process. We have admittedly struggled some in developing a plan. Our purpose here is to provide insights from experience that may help other colleges embarking on a similar endeavor.

Starting a Strategic Technology Plan

Information technology support units suffer from a problem that is in some ways enviable: the demand for our services is nearly limitless. Feeling needed can be wonderful, but it can also be stressful for users and technical staff alike. The Information Technology and Research Division (ITR) at Lansing Community College is constantly bombarded with questions starting with when. Unfortunately, the people asking the question don’t always receive the same answer from ITR, and staff frequently feel under pressure to do the impossible. In an attempt to better communicate with the user community and to set reasonable priorities, we began a planning process we referred to as a strategic technology plan. We started by listing all of the tasks that the leadership of ITR could identify as needing to be done over the next three years, and then we assigned an approximate start date, end date, priority level and resources to each of these tasks. We quickly discovered that although this task list was extremely helpful in managing day-to-day activities, it really wasn’t a strategic plan. It did not set an agreed upon sense of direction for the division. It did not guide ITR as to where it wanted to be three, five, or ten years down the road. And finally, it did not relate to any other planning processes at the college.

At this same time the Board of Trustees and the President began a strategic planning process for the college. A consultant was hired who helped the college develop a college-wide plan that evaluated the status quo, identified strategic initiatives, and incorporated plans for facilities and distributed education. The college-wide plan focused on the cost of these initiatives and determined methods for funding them. This plan provided ITR a foundation upon which its strategic plan could be built. By building a STP based on this college-wide plan, it assured integration with the direction in which the institution was headed.

Consultants vs. no consultant

One of the first decisions we had to make was whether to utilize a consultant or do the plan entirely in-house. In the early 1990s we had a very positive experience using consultants from The Robinson Group to develop a strategic technology plan. This time, however, we decided to proceed on our own. The following considerations helped in determining whether a consultant was needed:

1. Role of the planners: How does the strategic planning group fit within the institution as a whole? At our college, IT support is centralized. It is natural for us to take on the role of collecting input from the entire college and refining it into a plan. At colleges with decentralized IT functions the first step may be gathering the necessary representatives of diverse constituents, and a consultant, if chosen by the representatives, could be a unifying force, especially if there are sharp differences in technology directions likely within the group.
2. Credibility: How credible is the unit doing the planning with those who will need to endorse and follow the plan? If the planning group represents the central IT function of the College, an honest assessment must be made to determine if there is broad respect for it or if central IT is viewed as isolated and removed from important constituencies? If the planning group represents a functional area of the college (an academic division or service area such as the registrar’s office) does it have sufficient IT expertise to be credible? Keep in mind that local gurus in any area may not hold the same respect outside their areas. An outside consultant can add credibility. A candid assessment of the planning group is needed to determine their potential to be viewed as objective and informed leaders of the process.

3. Human Resources: Are there people within the College who have technology planning as a formal part of their job descriptions? In other words, has the College valued IT planning enough to recognize it in its resource allocations? STP is unlikely to be completed if it is an “add-on” to someone’s job. As a result of the earlier consultant’s recommendation, IT planning at our college was clearly assigned to the VP/CIO, and we had established an Information Technology Planning Team that included a Director of Information Technology Planning, a Director of Academic Computing, and a Director of Project Planning. In the years since the earlier plan, it had become fairly well accepted that decisions about technology direction come from us. We also worked hard to establish a reputation for involving other constituencies in decision-making processes. If there are not staff with planning as part of their job responsibilities, use of a consultant is probably essential.

Technology Assessment and Assumptions

As with any major IT project, the STP requires an evaluation of current status. We asked questions such as these:

1. How many PCs and servers do we manage, and what is their age and capacity?
2. What is the age and capacity of our network infrastructure?
3. What is the knowledge and skill level of our college users?

Although these questions might seem self-evident, we were surprised by the difficulty in answering them. We had been working unsuccessfully for over two years, for example, to get an accurate inventory of pc types through an on-line system. Even as these data were being compiled, we engaged our Division of Information Technology and Research Leadership Team in developing a list of planning assumptions—the “givens” that we were not willing to reconsider within a one-to-five year timeframe.

We accepted these assumptions for our planning process:

1. Service to students is our highest priority.
2. Instructional support is a priority.
3. Central IT support & purchasing will continue.
4. ITR determines the specific technologies implemented to assure integration and compatibility.
5. The College, not individual divisions and departments, “owns” the technology. ITR maintains the option to distribute it in the best interest of the institution.
6. Technology cost will be defined as hardware + software + support.
7. SCT Banner, recently implemented, will remain our enterprise business system.
8. The Northern Telecomm phone switch will be retained.
9. Windows/Wintel will continue as the predominant platform.
10. A networked information environment (including wiring of all work areas) is the de facto standard.

Among the assumptions we rejected for our planning process are these:

1. Novell will remain as the primary network operating system.
2. Lotus Notes will remain as the primary groupware.
3. Networked printers will remain the standard.
4. Fewer, larger servers are preferable to many, smaller servers.
5. Unix will remain as the primary server operating system.
6. Netscape Navigator will remain our default browser.
7. MS Office suite will be retained.
8. Support of Macs will continue in select environments.
9. Computer literacy will be a criterion for all new hires at the College.
10. We are committed to a robust desktop machine (no thin client).

We knew that some of these rejected assumptions were very likely to be reaffirmed by our planning process. However, we were cautious to limit our assumptions to ones that we, as the central IT unit, could legitimately dictate. We remained open to persuasive voices from other areas who might bring forward compelling reasons for change.

As we took our assumptions into a broader context, we discovered another, unstated assumption we had made. We had assumed that our technology plan involved only information technology. A few others at the college wanted the plan to include all equipment and its support. One person even advocated for inclusion of anything used in the delivery of instruction, including chalk in the classroom. Although we made some initial efforts to compile the college’s non-IT equipment needs, we found the broadest definitions of technology to be impractical within our timelines. We also found ourselves intruding in an area being handled by another office which was implementing a fixed assets inventory system. Nevertheless, the broader perspective has some merit. Increasingly, equipment is either computer driven and managed or contains digital components. As a practical matter, we limited our definition to technology that attached to, or operated on, the college’s voice/video/data network.

With definitions and assumptions established, we started by determining the technology needed to support each initiative the college-wide planning process had identified. This provided the foundation for our STP and reinforced that it is driven by the college’s overall plan. In addition, however, we determined that there are technology-based strategic initiatives. We evaluated the task list developed early in the process to identify “major tasks” that had significant impact on the institution but had not been identified as part of a strategic initiative, facilities upgrade, or distributed education plan. We then tied those tasks to major college initiatives. In other words, we identified both those IT initiatives needed to support the college’s plan and those needed by the college that were perhaps only apparent to those of us in the IT profession.

**User Involvement**

User involvement in the planning process is essential, but the form such involvement takes is a tactical decision. In our earlier STP process, our consultants held open meetings and interviewed important groups. In the implementation phase, we designated committees of volunteers from around the College. Our more recent STP process began at a point in our college’s history when faculty and staff had become weary of involvement through committees, teams, and governance councils. This fact, along with an aggressive timeline, dictated more efficient forms of input collection. We identified the following constituencies and sought their ideas. It is important to note that we did not ask them what computer resources they wanted (although some chose to tell us) but what information and support they needed.

General users included the faculty and staff of the college, who use computers and phones on a routine, daily basis. We e-mailed a simple survey to this group, which included these questions:

1. What do you like/not like about current LCC information and technology systems?
2. What problems or concerns do you have that you would like LCC information and technology systems to help you with?
3. Over the next 3-5 years, how do you think information and technology systems will change your office, profession, and curriculum?
4. What plans do you have for use of information and technology systems in your office, profession, and curriculum?
5. Do you have any creative ideas for using computers, phones, or information systems to help students? If so, please describe.

There was no dominant pattern to the general users responses, but some intriguing perspectives were shared. For example, one administrator wrote that “I would like to see the College be more sensitive to the human aspect of increased technology in our workplace.” Respondents also used the survey as an opportunity to both praise and criticize our support services.

Special users included those programs or offices that have highly specialized technology needs, either because they teach the use of the computer as such or have very unique needs. Input from these groups was sought on a direct basis by attending their meetings or meeting with their leaders.

Students were surveyed at a variety of times and locations to ensure a diverse, if unscientific, sample. Student participation was encouraged by offering a free candy bar to any student who completed the survey. Students were asked these question, with the major responses summarized in parentheses:

1. What information is hardest for you to obtain from LCC? (Registration, financial aid information)
2. How could LCC improve its systems for hearing student opinions, complains, concerns? (Web page, chat room, e-mail improvements, suggestion boxes placed around campus)
3. What do you like about LCC’ computer and phone systems? (24/7 hours available, easy access, friendly & knowledgeable staff)
4. Please describe any problems you have had related to LCC’s computer or phone system. (Server slow or down, e-mail went down for a week)
5. How could we improve our computer systems to better serve you as a student? (faster computers, more RAM, faster internet connections)
6. Do you have any creative ideas for using computers, phones, or information systems to help students? Please describe. (Remote access, register on-line).

Although some of the responses were predictable, we feel it is important that we asked students for their information needs, not their technology wants. Since this survey on-line registration has been accomplished and on-line information access improved for students. Another question we asked challenged some widely held assumptions about student information preferences at our college.

If you could choose, what would be your preferred method for getting college information? (Rank from 1= most preferred to 5=least preferred)

- Over the Internet (web pages) Rank:____
- E-mail Rank:____
- US mail Rank:____
- telephone Rank:____
- in person Rank:____

Many at the college assumed that students preferred a “live” person, and many service area administrators placed emphasis on real-time phone responses as the measure of excellent service. However, students rated computer-based communication methods equally with the in-person mode and higher than either telephone or US mail modes as shown in the following chart:
Figure 1: Student Preferences in Communication Modes

Product

Lansing Community College’s strategic plan evaluates alternate future scenarios and recommends specific directions for timeframes consisting of one to three years, three to five years and five years and beyond. The STP follows a similar approach.

The college also recognized that identifying a direction for the institution was wishful thinking unless a firm plan was developed to finance the initiatives. The first step in planning to finance an initiative is determining a realistic cost for the initiative. Since the STP was built upon the college’s strategic plan, it was important to build an accurate and realistic cost for the technology that supported the various initiatives. In order to accomplish this, when possible ITR built the technology costs from the ground up. Cost estimates were established for most routine technology equipment at the college, desktop PC, laptop, workgroup server, telephone, TV, etc. These costs were then used to develop average costs for college facilities, such as classrooms, computer classrooms, offices, computer labs, etc. Strategic initiatives were then priced using the college averages that were determined.

Using the above approach ITR believed that it was also imperative to look at the “total cost of ownership” (TCO), not just the initial expenditure. In order to accomplish this the plan estimated the following costs for each piece of technology.

1. Hardware
   a. One-time costs
   b. Annual maintenance costs
   c. Amortized replacement costs
2. Software
   a. One-time costs
   b. Annual maintenance costs
   c. Amortized replacement costs
3. Support for implementation
Some of these costs were rather easy to establish. Others were much more difficult. Where possible we used existing information to calculate an estimated cost. For example, we determined our support costs but evaluating our annual expenditure for personnel and determining what percent what percentage was used to support PCs, workgroup servers, or enterprise servers. We then divided these costs by the number of PCs, etc. to determine a per-unit cost. Our maintenance costs were determined by again evaluating annual expenditures and dividing by the number of units. Finally in some cases we simply estimated a per-unit cost if there was no other basis for establishing the cost.

In developing our TCO model we discovered that in some cases LCC’s costs were substantially lower than published industry standards that depict the total cost of ownership. This may be due to replacing equipment when the warranty expires, spreading the cost to other types of equipment, lower labor costs, or some factor we have not identified.

The following table is a sample of the cost estimates developed by LCC:

<table>
<thead>
<tr>
<th></th>
<th>Hardware</th>
<th>Software</th>
<th>Support</th>
<th>Training</th>
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<tbody>
<tr>
<td></td>
<td>One-time costs</td>
<td>Annual maint costs</td>
<td>Amortized replace costs</td>
<td>One-time costs</td>
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<tr>
<td>Desktop PC</td>
<td>$1,400</td>
<td>$7</td>
<td>$280</td>
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<td>High End PC</td>
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<tr>
<td>Laptop with Port Replicator</td>
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<td>$18</td>
<td>$700</td>
<td>$64</td>
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<tr>
<td>Laptop academic use</td>
<td>$2,000</td>
<td>$10</td>
<td>$400</td>
<td>$64</td>
</tr>
<tr>
<td>Workgroup Server</td>
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<td>$1,000</td>
<td>$3,333</td>
<td>$500</td>
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<tr>
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<td>$13</td>
<td>$0</td>
</tr>
<tr>
<td>Fax Machine</td>
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<td>$0</td>
<td>$207</td>
<td>$0</td>
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<td></td>
<td>$8,000</td>
<td>$0</td>
<td>$1,600</td>
<td></td>
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<td>------</td>
<td>--------</td>
<td>---------------</td>
</tr>
<tr>
<td>Projection</td>
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<tr>
<td>System</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High End</td>
<td>$0</td>
<td>$0</td>
<td></td>
<td>$35</td>
</tr>
<tr>
<td>ITV Room</td>
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<tr>
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<td>$35</td>
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<tr>
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<tr>
<td>Data Drop</td>
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<td>$33</td>
<td></td>
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<tr>
<td>Phone Drop</td>
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<td>$56</td>
<td>$25</td>
<td></td>
</tr>
<tr>
<td>Video Drop</td>
<td>$250</td>
<td>$38</td>
<td>$17</td>
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</tbody>
</table>

Table 1: Sample Cost Estimates for Strategic Technology Planning

In order to improve future planning processes, we believe it is necessary to evaluate the STP. After some deliberation we determined that the evaluation had to answer one overall question: “Was this a good plan?” Although our plan has not been in place long enough to present an evaluation at this time, we will be evaluating it annually based on the following questions:

- Did we do what we planned?
- Did it get us where we wanted to be?
- Did it cost approximately what was estimated?

Lessons learned

As we reflect on our planning process—its false starts, delays, and occasional bursts of insight—we have learned some lessons.

1. A task list is not a strategic technology plan. Our tendency as IT professionals is to view the world in relation to our “to do” lists, and we initially defined the STP as a list of tasks. To bring coherence to our effort, we had to force ourselves to think strategically, to get beyond the technical elements of implementation and think about where our college needs to go.

2. A project is not a strategic initiative. An initiative is defined in terms of institutional needs. “Implementing a document imaging system in the financial aid office” is a project. “Automating business processes” is an initiative.

3. A plan is not a project. Often we tended to view the plan itself as a project. Our goal at several points was just to have it done. However, a meaningful plan is never completed in the sense that a project is completed. An effective plan should actually change the ways in which we do our work and communicate with our user communities. It is an on-going process.

4. Planning for information technology is front-end heavy. We can elaborate with specifics many of the features planned for the next two years. However, as we move further into the future, the dynamic and volatile nature of IT makes it difficult to project with the same certainty that might apply, for example, in projecting the physical plant.

5. Financial estimates are essential to an effective strategic technology plan. Costs (including hardware, software, and human resources) are key parameters, along with technical feasibility, in determining what is possible. More importantly, financial considerations will drive the institution to make critical choices. Without a competent financial analysis, the college will want everything. Cost projections must include start-up, replacement, and support estimates. We find our users
quick to accept (and even to generate their own) start up costs estimates. Without replacement
and support—which are inevitably much higher than start-up—the initiative is headed for disaster
with the blame likely to point in the direction of IT.

STP is not a panacea for the problems created by insatiable IT demand. However, we believe it offers
hope to slow down the wear and tear felt by IT professionals and perhaps lead to smoother operations.
Lansing Community College’s
Technology Environment
(Appendix A)

The campus network is the nucleus of Lansing Community College’s technology infrastructure. The data network consists of an ATM (Asynchronous Transfer Mode) backbone (155megabit) using IBM 8260 Backbone Hubs, with Ethernet (10baseT) or ATM (25 megabit) to the desktop. The voice network consists of distributed Northern Telcom PBXs. Video is distributed using broadband. All wiring on each floor is Category 3 UTP for voice, RG6 plenum coaxial for video, and Category 5 UTP for data and complies with the EIA/TIA 568 Commercial Building Wiring Standard. TCP/IP and Netware IPX protocols are supported across the network.

Network Associates’ ZAC software, and Novell’s Netmanage are used to manage the network. These products provide the following functions:
- Virus Protection (Server and desktop)
- Hardware Inventory
- Software Inventory
- Software Distribution
- Remote Control

Network servers run a variety of operating systems including Netware 5.0, Windows NT 4.0, Unix (AIX 4.2.1 or 4.3.2), and Compaq’s VMS. The college uses SCT’s Banner 2000 for administrative systems (finance, student, financial aid, and human resources. The SCT software is running on an IBM RS6000 under AIX and supported by an Oracle 7.x database. The Compaq Alpha machine is used for Academic Computing, running in-house developed applications and Campus America’s LMS (Learning Management Software) course management software. All servers, except the VAX Alpha are backed-up via a Commvault Backup System.

Other major applications include an Innovative Interface Inc.’s Library System, ACEWare for non-credit registrations, TouchNet’s kiosk system, Lotus Notes for Email/Calendaring and other groupware applications, Universal Algorithms Schedule 25 for room scheduling, Prism’s FAMIS software for facilities management and Network Associates Help Desk software.

The college’s website is connected to the Internet via two T1 lines (approximately 3Mb) and is comprised of a network of web servers using various operating systems and application servers. The main web host is an IBM RS6000 running AIX (version 4.2.1) using Netscape’s Enterprise Server (version 3.6). Oracle’s Web Application Server (version 3.0 Advanced Edition) is also on the main server and is used for SCT Banner’s web registration. LCC’s virtual college course offerings are supported by Blackboard (version 4.08 with migration to 5.0 in progress) running under Linux, with some courses on an IBM RS6000 under AIX and Netscape’s Enterprise Server. Course and Section syllabi are available via the web and are running on a Windows NT platform using Lotus Domino (version 5.1). Other web applications include Student Email instructions on a RS6000 (AIX, Netscape’s Enterprise Server), the facilities web interface (Windows NT, Oracle Applications Server 4.0 Enterprise Edition) and Cold Fusion is used for Input forms (Windows NT). No databases reside on the web servers.

Employee and student computers consist of Intel based machines and Apple MACs. Intel based machines run Windows95, Windows98 Windows ME or Windows NT. The MACs run MAC/OS 7.5 or higher. All computers are connected to the network. Standard software includes:
- Microsoft Office (version 95 or 2000)
- Netscape (version 4.08) and/or Internet Explorer (version 5.0)
- Lotus Notes (version 5.1)
- Novell Netware Client
- QVTVnet for VT100 emulation
- Citrix client software
Network attached Konica copiers and Lexmark Optra printers support shared printing.