

# Strategic Planning for Technological Change

*Building technological change into the strategic planning process prepares an institution to anticipate, recognize, and adapt to change*

By **Bart Strong**

Strategic planning establishes who you are, where you are going, and how you plan to get there as an institution. This process can become downright treacherous if your institution depends heavily on technology, however, because technology changes course frequently. Ray Kurzweil, inventor, author, and futurist, is quoted as saying,

That the pace of change is accelerating may seem obvious, but most people fail to take it into consideration. According to my models, we are doubling the “paradigm-shift rate” (roughly the rate of technical progress) every decade, so we’ll see twice the change in the next decade that we saw in the last, four times the change in the next 20 years that we saw in the last 20, and so on.<sup>1</sup>

How is your institution coping with accelerating change? Have you reached the point where you feel a coin toss will give you the same chance of success as a well-thought-out strategic plan? Well, take heart! Technological change is somewhat predictable, and doing nothing is not an option.

## Anticipating Technological Change

A number of complex factors hasten technological change. Limits on performance, breakthrough technology, market competition, manufacturing capability, economics, and changing needs of consumers all play a role and must be watched closely if you are to succeed in developing a vision for your technology implementations.



Technologies eventually (or sometimes very quickly) reach the limit of their performance and become obsolete. If demand for the product persists, a new technology will soon replace the old. The new technology usually performs better than the old; sometimes it performs at a lower level but is cheaper to produce and becomes attractive from a price perspective.<sup>2</sup>

Can you anticipate technological change and adjust to it in your planning? I believe you can, despite the risks. If you track the major factors affecting technological change as they pertain to your institution’s needs, you will be much better prepared to accommodate them. This requires a fair amount of research before you begin your formal planning process. You need to ask “What is happening in higher education and in the world today that may affect what we do and how we do it over the next

three years?” Specifically, consider the following areas:

- Limits of performance in current technology you use
- Breakthrough technology on the verge of being introduced in the next year
- Technology and devices in R&D that could be deployed within five years
- Manufacturing capability and scalability of new technology
- Economic climate
- Changing needs of students

It is vitally important that you do your homework before you plan your future. You need good data and a means of analyzing that data in the context of your current technology plan.

## Sustaining Versus Disruptive Technology

In his 1997 best-selling book, *The Innovator’s Dilemma*,<sup>3</sup> Harvard Business School professor Clayton M. Chris-

tensen described a new technology that unexpectedly displaces an established technology as being disruptive, and a technology that relies on incremental improvements as being sustaining. Many IT departments have found themselves in crisis situations because they failed to recognize and plan for the effects of disruptive technologies.

How long can your current technologies sustain themselves with incremental improvements? Is a replacement technology in development potentially disruptive? What effect might a disruptive technology have on your current mission and vision? Be aware of what is happening in your field and stay flexible in adapting to change.

### Shifting Paradigms and Ropes of Sand

Thomas Samuel Kuhn first popularized the terms “paradigm” and “paradigm shift” in his 1962 book, *The Structure of Scientific Revolutions*.<sup>4</sup> In terms of technology, a paradigm describes a mature technology where virtually all of its practitioners share a set of fundamental assumptions, core beliefs, and commitments that make that technology dominant in its field to the extent that it exerts a subtle but powerful guiding or regulatory influence in the marketplace.<sup>5</sup> A paradigm shift occurs when that dominant technology is replaced by something new, and the whole industry, marketplace, practitioners, and consumers shift to accommodate new thinking and possibly a completely new infrastructure. You know a product has reached paradigm status when a brand name becomes synonymous with the industry (think of Kleenex or Aspirin).

Paradigm shifts involving replacement technology can upset the whole marketplace. Some technology paradigms on the verge of changing might include laptops to multiuse PDAs, wired to completely wireless communication, print to electronic paper, ISDN to VoIP, Web 1.0 to Web 2.0 applications, fair use to DRM to free use, proprietary to open source, and physical classrooms to virtual classrooms. The important thing is to recognize and anticipate when a shift is imminent and prepare for it.

Predicting technology changes is like holding on to a rope of sand. Ralph Waldo Emerson may have first used the term in an 1844 essay on politics: “But the wise know that foolish legislation is a rope of sand which perishes in the twisting.”<sup>6</sup>

I first held a rope of sand when preparing a workshop on electronic books. I gave the same workshop three years in a row, yet had to completely update the material and research the marketplace every time. In the electronic book industry it only took six months for the landscape to change. Hardware manufacturers went bankrupt or appeared out of nowhere, software standards and formats changed, mergers took place, new technology was introduced, consumer trends shifted, strategic partnerships were formed and broken with book publishers, but the use of electronic book media continued to skyrocket in the education markets.

If you see a new technology as a potential rope of sand, you might want to delay any large-scale investment until the market settles—unless, of course, you see yourself as a risk taker and a technology leader. One strategy might be to probe the viability of the technology with small trial investments until its direction becomes more sharply focused or you have recognized a pressing need among your faculty, staff, or students.

### When Postplanning Becomes Preplanning

How do you develop long-term plans around ever-changing technological landscapes? First, long term doesn’t mean today what it meant 10 or 15 years ago, when strategic plans ranged from 5 to 10 years with some minor tweaking every few years. If your plan can be sustained for two to three years, consider yourself lucky. Keep in mind

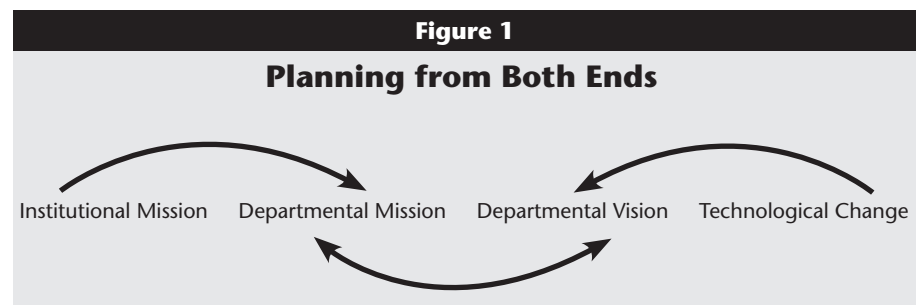
that computer performance doubles every 21 months. Consider what that alone does to your technology plan.

Accept that you can’t deny or delay technological progress. If your institution depends heavily on technology, I suggest you consider a strategy that can at least partially anticipate and quickly adjust to technological change. The strategic planning process establishes your mission or purpose, your vision, and how you plan to achieve your goals, usually in that order. Consider a process where institutional mission and technological change inform your departmental mission and vision from both ends of the planning process. At a very high level, the process would look like Figure 1.

Many frameworks can help you strategically plan for technological change. The trick is to ask the right questions in the right order so that the answers build on each other and all participants in the planning process arrive at the same place at the same time. The following basic framework can be modified to suit your needs. It works well with groups having capabilities built on mutually dependent technologies. Of course, the key is to review and revise your plan continually as new information becomes available. This can’t be done with an inflexible plan unless you start over each time you identify a crisis situation. Building technological change into the process makes it more of a strategic preparation model and thus better equipped to help you recognize, anticipate, and react to change.

### Model Planning Framework

1. Mission: Who are we?
  - 1.1 What is our present purpose, and how will the future impact that if we do not change?



- 1.2 What is the mission of our institution? Break down into key words and phrases.
  - 1.3 What should our principal functions and services be as they relate to the needs of our institution?
    - Primary (non-negotiable, core)
    - Secondary (negotiable)
  - 1.4 What in-house and outside groups, individuals, organizations, manufacturers, or vendors do we depend on or interact with in order to get our work done? How are they changing?
  - 1.5 What are our guiding principles (the written and unwritten rules that govern our actions, how we complete tasks, and how we deal with each other and with our constituencies)?
  - 1.6 What do we want to be known for from this point on?
  - 1.7 Using all of the above information, develop a list of key elements that define who we are and what we think we should look like as an organization.
  - 1.8 Prioritize the key elements and use the top three or four to develop a new mission statement.
  - 1.9 Use the remainder of the key elements as a basis for a “service strategy” that outlines how we will accomplish our mission.
  - 1.10 Develop measurable goals and objectives with timelines, responsibilities, resources, and costs that will ensure all the elements of our mission and service strategies will be dealt with in a timely manner.
2. Vision: Where are we going?
    - 2.1 What is happening in higher education and in the world today that may affect what we do and how we do it over the next three years in the following areas?
      - Limits of performance in current technology we use
      - Breakthrough technology on the verge of being introduced in the next year
      - Technology and devices in R&D that could be deployed within five years
      - Technology in a parallel field that may someday converge with ours
      - Market competition, mergers and closures affecting us
      - Manufacturing capability and scalability of new technology
      - Economic climate
      - Changing needs of our students
    - 2.2 How might the environmental changes noted above specifically affect what we do and how we do it?
    - 2.3 S.W.O.T analysis—break into small groups and, in light of the previous information, determine strengths, weaknesses, opportunities to take advantage of a changing environment, and possible threats.
    - 2.4 Who are our current clients, and how might our base change over the next three to five years?
    - 2.5 To what do we need to give additional resources and energy in the future to position ourselves to meet our students’ needs and our institutions’ goals? (prioritize)
    - 2.6 Draft a vision statement using key elements noted in the previous answers.
    - 2.7 Develop measurable goals and objectives with timelines, responsibilities, resources, and costs that will ensure all the elements of our vision will be dealt with in a timely manner.
    - 2.8 Review regularly and revise yearly.

### Changing Needs of Students

Who would have thought even five years ago that in 2007 students would use e-mail to keep in touch with their grandmothers and Facebook or MySpace to interact with friends? Who would have thought that a virtual world called Second Life would have over 7 million users worldwide and that many educational institutions would have a virtual presence there, along with many libraries and businesses? Who would have thought we could find out more about people we meet or potential employees

through their blogs or YouTube submissions than by talking to them?

The technological landscape is changing the way people interact with and perceive the world. Technology providers need to understand how today’s students learn and how to distinguish between a technological fad and a sustainable trend. Today’s college students have been described as preferring learning experiences that are digital, connected, experiential, immediate, and social.<sup>7</sup> Technology is capable of supporting the learning preferences of today’s students, but we should not automatically conclude that it is the only answer. Again, it comes down to asking the right questions in your planning process. In the book *Educating the Net Generation*, Diana Oblinger and James Oblinger pose these very important questions<sup>8</sup>:

- Who are our learners?
- How are today’s learners different from (or the same as) faculty/administrators?
- What learning activities are more engaging for learners?
- Are there ways to use IT to make learning more successful?

### Throwing Away the Box

For a number of years we have heard recommendations for “outside the box” thinking in our strategic planning forums. Early on, this method of brainstorming was highly successful in generating new ideas and better service. Unfortunately, administrators eventually found that outside-the-box thinking often took them into unprofitable, time- and resource-wasting dead ends. The general advice returned to thinking inside the box, especially when dealing with your mission. Concentrate on your core business and what you do best, goes the theory, and play around on the cutting edges with your spare time and cash.

That approach inhibited creative thinking and allowed critics to reign. Now we can acknowledge that there really is no box, and if you think there is, please throw it away. Creative thinking and critical thinking must work in tandem to get the most from your planning process, particularly when new and

exciting technology is involved. Only by allowing both types of thinking to flow freely can you get all points of view and examine them objectively. The people sitting around your planning table are likely very experienced, deeply motivated, highly trained, and exceedingly intelligent. Gut feelings can be just as important as facts when generated by such a group. As Harry Beckwith wrote in his book, *Selling the Invisible*, "Don't value planning only for its results: The Plan. The greatest value is in the process: The Thinking."<sup>9</sup>

As a strategic planning facilitator, my greatest satisfaction comes from seeing individuals functioning collaboratively. When planning team members unselfishly start pooling their knowledge and experience and build on each other's ideas, I know the outcome will be the best that group has to offer, with a high probability of success. Applying this approach in the framework of a strategic planning model that incorporates adapt-

ability to technological change leverages institutional knowledge and resources in impressively effective ways. Whether you call it strategic planning, strategic preparation, or strategic thinking, the strength of the process lies in the collaboration and the freedom to speak openly. That's what makes it strategic. *e*

### Endnotes

1. R. Kurzweil, "Embracing Change," an editorial in *The Philadelphia Enquirer*, July 16, 2006.
2. Adapted from Strategies2innovate.com, "Anticipating Technological Change," which referenced M. L. Tushman and P. Anderson, "Technological Discontinuities and Organizational Environments," *Administrative Science Quarterly*, Vol. 31, 1986, pp. 439–465; and C. M. Christensen, *The Innovator's Dilemma* (Boston, Mass.: Harvard Business School Press, 1997).
3. Christensen, *ibid.*
4. T. S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1992).
5. "Ethical Issues in Engineering," Stanford Center on Ethics, <<http://ethics-dev.stanford.edu/engineering/citicorp.htm>> (accessed April 19, 2007).
6. R. W. Emerson, "Politics," from *Essays: Second Series*, 1844.
7. C. Lomas and D. Oblinger, "Student Practices and Their Impact on Learning Spaces," in *Learning Spaces*, D. Oblinger, ed. (Boulder, Colo.: EDUCAUSE, 2006), Chapter 5, para. 3, <<http://www.educause.edu/books/learningspaces/10569>>.
8. D. Oblinger and J. Oblinger, "Is It Age or IT: First Steps Toward Understanding the Net Generation," in *Educating the Net Generation*, D. G. Oblinger and J. L. Oblinger, eds. (Boulder, Colo.: EDUCAUSE, 2006), <<http://www.educause.edu/ir/library/pdf/pub7101b.pdf>>.
9. H. Beckwith, *Selling the Invisible—A Field Guide to Modern Marketing* (New York, Warner Books, 1997).

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