In the spring of 2005, I was asked to keynote the EDUCAUSE Western Regional Conference. The conference theme was “Winds of Change: Charting the Course for Technology in Challenging Times.” What that brought to my mind was the era of the great sailing ships of the eighteenth and nineteenth centuries, a topic that has always held great interest for me. So as I sail into the sunset, I’d like to update that presentation and offer ten nautical maxims for charting the course of higher education IT in the twenty-first century.
1. View IT from the Crow’s Nest

The first maxim is to view IT from the crow’s nest. The crow’s nest is a place high upon the ship’s tallest mast. A sailor would climb up the rigging to the crow’s nest, in order to view the horizon from that higher vantage point and look for enemy ships or breaching whales. For those of us in higher education IT, this view from the crow’s nest is essentially the issue of vision—of having a sense of where we are going, where the new technology is taking us, how we can provide better IT services, and what IT can do to transform higher education. This vision is critical to effective leadership.

Perhaps this was best said by the character of Bloody Mary in Rodgers and Hammerstein’s wonderful musical South Pacific: “You’ve got to have a dream, if you don’t have a dream, how you gonna have a dream come true?” Leaders need to have a dream, a vision, but more important, they need to make sure that this is a shared dream. It can’t be the IT office’s dream or the CIO’s dream; it needs to be a dream that the campus shares and to which the entire campus is committed. It needs to understand the motivating influence that talking about the vision has on staff and on colleagues. Unfortunately, on all too many campuses, the IT vision is considered to be the responsibility of one individual, the CIO, rather than the responsibility of the entire executive team.

In a meeting held in 2004 Charles Vest, who was then president of MIT, commented on the IT issues facing higher education. There had been a discussion of funding, ERP implementations, security, and many other IT concerns. In his summary comments, Vest acknowledged that all these issues were important, but he added: “The number one issue is that today’s concerns might obscure our view of the future.” He was suggesting that the implementation of a given project, or concerns about the funding or about security, could cloud the focus on the transformational role that IT can have on higher education. That is, getting caught up in the dailiness of routines could cause IT leaders to lose their vision, their view from the crow’s nest.

2. Seek Signs of Being on the Right Course

In navigating any organization, a leader must seek signs of being on the right course. It would be lovely if IT leaders had lighthouses to help steer them in the right direction and keep them on the right course. But since no physical lighthouses exist, the key to this navigation is alignment, with the campus IT plan being shaped by the campus plan and vice versa. One of the things the CIO and the IT organization have to do in order to be aligned is gain the respect of the broad governing structure. IT leaders need to work on developing campus buy-in, need to develop that shared vision, need to focus on successful boundary spanning, but most of all need to be a respected part of the senior administration, part of the “admiralty,” having regular discussions with the other officers and the other units in the institution to make sure this alignment is occurring.

In 2002, Harvard Business Review published an article entitled “Six IT Decisions Your IT People Shouldn’t Make.” The authors were not suggesting that IT people should not be involved in decisions about how much is spent on IT or about what security or privacy risks should be accepted. They were saying that these issues should not be left to IT professionals exclusively. The authors were making the point that strategy is defined by the CEO and the primary functions of the organization, not by the IT unit. Therefore, IT leaders need to make sure that IT is part of the discussion, that it is a means for carrying out that strategy.

This goal of alignment comes through constant communication and through participation in key decision-making groups. Governance structures are changing in terms of the number of CIOs who report to the president or the number who sit on the president’s cabinet. Becoming part of the institutional leadership team is important, but again, technology is the means, not the end. To stay on the right course, IT leaders should focus not on the technology itself— the latest gadget or system—but rather on using the technology to achieve the goals of the institution.

3. Have a Strong Captain at the Helm

An IT unit, like any other organization, needs to have a strong captain at the helm. St. Thomas Aquinas said, “If the highest aim of a captain were to preserve his ship, he would keep it in port forever.” For leaders of all kinds—whether in the IT world or in the corporate world—the biggest challenge is finding a balance between being too far out front to see a problem and being too far behind to react. Lee G. Bolman and Terrence E. Deal, the authors of Reframing Organizations: Artistry, Choice, and Leadership, a wonderful book
on organizational behavior, wrote: “Like surfers, leaders must always ride the waves of change. If they get too far ahead, they will be crushed. If they fall behind, they will become irrelevant.” How do leaders find that balance and avoid being crushed? How can they define that middle ground appropriate for the institution? The wave at a major research institution is different from that at a small liberal arts college: where is the best place to ride the wave, depending on the institution? It takes courage to get out front, but that is where leadership occurs.

Several years ago, Linda Fleit wrote an article about the qualifications needed for a CIO. She said that first and foremost, the person must have a vision regarding IT. She then added that a CIO must also have excellent communication skills, must be able to form alliances, to work collaboratively, to make hard decisions, and to manage resources, and finally must have deep expertise in at least one aspect of the technology itself. For IT to make a difference on campus, the key is not having the greatest technology but, rather, having a collaborative team that envisions and sets a goal within an organizational context. The key is having a strong leader at the helm who has the courage to take a risk and who can marshal other leaders on campus to believe that this is a desirable risk to take.

4. Remember That the Crew Wasn’t Shanghaied
The fourth nautical maxim regards staffing: remember that the crew wasn’t shanghaied. In the mid-nineteenth century, it was common for those in search of a sailing crew to find somebody having a beer at the local alehouse and knock him unconscious; when the victim awoke, he would be in the middle of the seas, on his way to Shanghai or some other part of China. In higher ed IT, there was a time, in the 1970s and early 1980s, when IT units likewise held their staff “captive” to some degree, since academic computing skills were relatively nontransferable to the corporate world. But those times are long in the past. The skills of higher ed IT staff are just as versatile in the corporate world, and this has created staffing challenges over the last few years. It is therefore critical to invest in staff training and professional development. Some staff may leave even after this investment, but without it, they will surely go someplace else.

Marc Prensky has written—quite provocatively—about the new generation of tech employee. Prensky talks about how this new breed of employee craves more information, seeks out more information, instead of trying to figure out what to do with the overload. Prensky suggests that there is an end of the command and control structure and that employees in this new generation are motivated in a very individualistic way. Different organizational demands and needs are now required to retain these employees and to create a meaningful work environment, breaking down some of the barriers and the customs. Leaders need to start including staff in organizational processes, because they were not shanghaied and they won’t necessarily stay until the boat trip is over. IT leaders need to create an enabling environment, one that enables others in the user community to achieve their goals.

5. Beware . . . There Be Dragons!
On the old maps and sea charts that explorers and sailors used, the regions of unexplored territory were often adorned by serpents and sea monsters, along with the cautionary warning about the area beyond the known seas and lands: Beware . . . there be dragons! These unknown areas were known as terra incognita. These were the uncharted lands, the unexplored territories. Those of us in higher ed IT explore these lands every day: the world is changing; we are often not completely clear as to where we are going, and we don’t know what some of the challenges might be. There is a lack of predictability in the world we live in and a lack of known areas on the maps that we have (or can expect to have in the future). What’s over the horizon? What is the new application? What is the next killer app? IT leaders need to take some risks but also need to be careful that these are calculated and prudent risks. The only way to take no risks at all is not to sail the seas that need to be sailed.

The one thing that seems to be missing most often in leaders today is courage—not only in terms of integrity but also in terms of being willing to take risks and stand by them. The higher ed IT field needs leaders who do that and who can build teams that also are willing to take risks. If a leader has that courage, how does he or she encourage and develop that courage in others? One way to encourage staff to take risks is to develop safety nets for them. After all, why do acrobats put that net under the trapeze? The answer is so that if performers miss the trapeze, they will get caught by the net instead of falling to their death. How can IT leaders create safety nets so that staff can develop a pattern of taking some risks and exploring? Our culture seems to have become very risk-averse. Certainly constraints, including limited budgets and other organizational challenges, are real and shouldn’t be denied. But transformation of the institution is not going to occur through incremental changes that merely keep up with the status quo. John Paul Jones, the U.S. Revolutionary War sea captain, noted: “It seems to be a
law of nature, inflexible and inexorable, that those who will not risk cannot win." The possibility of dragons must be faced, considered, and risked.

6. Hold Steady in Rough Seas
The sixth maxim states that in turbulent times, the IT leader needs to hold steady in rough seas. There have been a number of difficult budget years recently, and IT has certainly felt this pressure, especially since some senior administrators think that IT is the financial black hole for a college or university. It is critical that IT leaders know their IT costs, including the distributive costs outside of the central IT organization. Both operating and capital costs must be clearly understood, and more important, the functions that these expenditures support and how these lead to institutional goals need to be carefully and clearly communicated. Realistic replacement cycles for hardware, software, and the network must be defined, and the campus needs to understand how and why these have been determined. Most important, these ongoing replacement costs need to be built into the base budget. According to the 2005 EDUCAUSE Core Data Service (CDS) survey, just under half of campuses do not have such expenditures built into their base budget, thus making it quite difficult to thoroughly plan for and control costs. Replacing infrastructure costs includes the entire IT capital plan, meaning the network optics, the campus-owned desktops, the wireless hubs, and all other areas that require ongoing repair, replacement, and deferred maintenance—just as for other parts of the campus physical plant. These are institutional issues, not IT issues: technology has become ubiquitous and is an expectation of every student—and also every faculty and staff member—entering the college or university.

In addition, it is critically important to have an appropriate balance in funding between hardware and support personnel. One of the most interesting and striking findings in the EDUCAUSE CDS survey results for several years now is that expenditures on technology (hardware, software, licenses, etc.) and the costs of support personnel are almost identical across Carnegie classes. The percentage of total centralized IT funding that is spent on centralized IT staff compensation is almost 50 percent in all types of institutions as identified by Carnegie class. Investing too heavily in technology without adequate support leads to dissatisfaction in the community, as does also doing the opposite. Balance is critical—a premise that all involved senior officers need to understand and accept. This may not necessarily result in more money, but it does usually result in acceptance of the IT budget and the tradeoffs that must be made.

In a very interesting article, Bob Weir talked about IT investment decisions that defy arithmetic. He suggested that direct senior management and ownership of both the selection and the implementation of a project is essential if the project is going to succeed. He argued that a functional IT partnership has to be based on a common view of projects and that a thorough and early articulation of projects should be conducted by forcing all major questions and issues to be addressed early in the process. Essential to success is the creation of a common IT lexicon or language—not IT jargon but the language of the business officer, the development officer, or whoever else owns the project. Weir’s experience (and indeed that of many CIOs) was that other senior officers of the institution did not want to get involved. They felt that an IT project was the responsibility of the CIO. Weir created a process and a methodology for measuring the value of an investment. In his process, he involves the members of the senior team, asking them to evaluate all major IT projects in terms of (1) the importance of a given project in achieving the defined institutional goals and (2) the probability of the success of the project. Doing this on an annual basis forces the senior team into a discussion, thus avoiding the all-too-common result of doing a little bit of what everyone wants in terms of IT but not optimizing the IT resources. Using Weir’s strategy, the senior team and the CIO at Northeastern University evaluated thirty-six projects, and they collectively decided on fourteen that were most important to the institution. In each case, the end user for the project was the institution, as defined by the senior administration. Northeastern has used this methodology for several years and has found it to be tremendously successful for understanding where IT resources are going.

Such an understanding is critical to holding steady in rough seas. There still won’t be enough resources to meet everyone’s goals, but this approach is a way to perhaps start thinking about the resources that are available and how they can best be used to meet the institution’s goals more effectively.

7. Depend on the Rest of the Convoy
No single ship wins or is the sole factor of success in a naval battle; success depends on a whole set of ships, whether they be British Admiral Lord Nelson’s at Trafalgar or the great U.S. convoys of the Second World War. IT leaders likewise need to learn to depend on the rest of the convoy. Campuses never have enough money, time, or resources for user support, security, libraries, distributive learning, content creation, network support, or procurement. The notion that each campus can provide for its own IT resources in a self-contained manner is passé. New models of support need to be considered and adopted.

In a study conducted by the EDUCAUSE Center for Applied Research (ECAR), participants were asked to identify their preferred methods of cost reduction. Outsourcing was one of the least-popular strategies for cost reduction, before layoffs and after salary freezes. Even though approximately 57 percent of all campuses use some type of outsourcing, according to a finding of the EDUCAUSE CDS survey, this appears to be an unpopular direction to pursue, perhaps because of a perceived loss of control. Another reason may be the perception that outsourcing means buying sources from a commercial vendor, which adds concerns of financial gouging. However, institutions cannot afford the steeper cost of increasing FTE staff to do a job that may require only a fraction of one FTE’s time. IT leaders need to ask themselves several questions: What functions could we scale and leverage if we could overcome some of our traditional processes? What price are we willing to pay for doing it ourselves? What mistakes could we avoid if we looked at the best
practices of others and if we looked outside the institution? If current models are not working, and will never be able to work again, it is imperative for IT leaders to explore new alternatives and to work together in a collaborative nature. This is the only way to get the needed resources to support institutions and IT structures in the future.

It is ironic that campus officials talk about providing educational opportunities anytime, anywhere, but cannot use the same enabling technology to support the higher education community. Collaborations cannot be based on the generosity of wealthier institutions or on goodwill. Instead, new business structures need to be developed in which institutions contract with a third-party entity that is working for the best interests of higher education. This is essentially the model that JSTOR has successfully implemented—for example, establishing Ithaka to work in areas where a market isn’t yet mature enough. The current conditions in which higher education finds itself call for new and innovative models and means to facilitate collaboration, allowing the higher education enterprise to support itself. The need for collaboration is becoming increasingly obvious, as resources continue to diminish.

The community needs to “get over” its traditions, histories, and the many excuses as to why colleges and universities should try to replicate each other’s resources. To achieve this goal of collaboration requires a simple and easy way to find collaborators, to compensate these collectives (or vendors) for services rendered, and to allow these entities to morph themselves to provide services in wider and wider spheres. Only through collaborative efforts will higher education be able to provide all of the services needed by faculty, students, and staff on college and university campuses. Business structures must be created to facilitate collaboration and to leverage campus resources, using the strengths of the rest of the convay to provide greater support for all.

8. Navigate by More Than the Stars
To effectively navigate the challenges of IT, a leader must navigate by more than the stars: “Books are the compasses and sextants and charts which other men have prepared to help us navigate the dangerous seas of human life.” It is the knowledge in those books—the information and data—that we need to become more and more dependent on in making the decisions required to navigate and manage IT directions on campus. Richard Katz has suggested that IT needs to create “a culture of evidence.” According to Katz, with everything on campus undergoing transformation, IT leaders should draw upon the proven and respected practices that faculty have long used, namely the data-supported evidence of research and inquiry. He contends that instead of making decisions based on anecdotes, tradition, and stories, as done in the past, IT leaders need to make informed decisions based on data, evidence, and rigor.

One of the problems faced by those of us in higher education is that all too often, we judge ourselves based on input measures rather than on the impact of our processes and on the outputs. As written elsewhere, we need to develop a new kind of assessment model that not only uses input measures but recognizes the even greater importance of evaluating outcomes in higher education. For instance:

Although … efforts [using input measures] may have leveraged additional funds (appropriately or not), they do not include measures that offer insight into how technology is enabling new and better research, whether or how technology is enhancing teaching and learning, or whether administrative functions are easier for students to access or less expensive to operate. The problem is that in order to effectively measure the success or value of an IT investment, we must come to grips with evaluating these functional outcomes of the college or university. However, we have thus far successfully avoided grappling with these difficult challenges of assessing learning outcomes, administrative efficiency, effectiveness, and so on. Without working in tandem with others on campus to identify and evaluate these outcomes and then to understand and describe the enabling role of IT in facilitating these accomplishments (or the failure thereof), we will never be able to assess the return on IT investment reasonably and meaningfully.

Only with this kind of focus can institutions even begin to address return-on-investment or cost-benefit measures—measures that governing boards are increasingly asking for. Understanding trends, understanding market segments, understanding the differences in institutional control (public vs. private), understanding the impact of institutional size and what things do not scale linearly; all of these are issues that data and evidence can shed light on. These issues are the very reasons that the EDUCAUSE Core Data Service (CDS) and the EDUCAUSE Center for Applied Research (ECAR) were established. These initiatives—along with the COSTS Project, led by Dave Smallen and Karen Leach, and the Campus Computing Project, led by Casey Green—have provided some basic data sources to understand IT practices, IT funding, and how IT dollars are invested on campus. If IT is to enjoy the confidence it serves, then new measures and a new commitment to data collection, metrics, and
outcome variables will be essential. The past practice of navigating by the stars is no longer adequate or appropriate.

9. Navigate to the Correct Shore
The ninth nautical maxim is to navigate to the correct shore. In his book *Walden*, Henry David Thoreau says of technology: “Our inventions are wont to be pretty toys, which distract our attention from serious things. They are but improved means to an unimproved end.” Technology can be the engine that can drive the ship to any shore. The effective use of technology demands that the IT strategy be fully aligned with the goals, vision, and mission of the college or university if one is to get to the correct shore, resulting in an improved end as well as an effective means.

On a micro level, college and university boards of trustees often ask IT leaders: “What is the return on the investment for this ERP system? for this course management system? What's the value that will be accrued? What's the cost benefit ratio?” Most boards of trustees consist of businesspeople—men and women who have been successful in corporate America in some small or large organization. But most IT people cannot show the cost and the savings and the return that will occur in the IT unit, and they’ll never be able to do so. They could probably do a pretty good job of defining the cost part of the ratio, but the benefits accrue in terms of students’ satisfaction, better learning, and all sorts of things that occur elsewhere in the institution. So, the return in the IT unit has to be dealt with instead in terms of the qualitative goals of the institution.

One of the major problems with higher education is that we have largely avoided the issue of developing metrics of effectiveness for our institutions. If we don't find a way to evaluate ourselves, other people will come up with the metrics for us. Only when we can define success in teaching and learning, in research and discovery, and in the service and engagement mission of our institutions can we fully understand the appropriate deployment of resources. Only then can we talk meaningfully about the benefits of an IT investment. Until these goals are defined and it is clear that these are the correct shores to navigate toward, IT investments are “only improved means to an unimproved end.”

10. Know When the Ship Passes
The last maxim is to know when the ship passes. The painting that is shown below is “The Fighting Temeraire,” by J.M.W. Turner. It is displayed in the National Gallery in London, and a copy also hangs above my fireplace. The sailing ship *Temeraire* was the last ship from Admiral Nelson’s force at Trafalgar, and in this painting, it is being hauled into port to be decommissioned. It is being passed by a steamboat. The painting shows the end of the sailing era and the beginning of the steam era. Off on the horizon is the sun, which may be setting or may be rising. For me, this painting represents technological change. One technology is coming to an end, and another is rising. Change is a given, a constant. Several years ago, my
Brian Hawkins is retiring after ten years as the founding president and CEO of EDUCAUSE.

great friend and colleague Patricia Battin and I wrote: “Ironically, the strongest barriers to creating an affordable and efficient array of digital information resources are the existing organizational and financial structures that have created and supported the development of our internationally admired higher education system.”

In the new economy, the new globalization, we are all being held back by the way we did things yesterday. In this age of uncertainty, all of us in IT need to plan and budget for the unanticipated. Who would have foreseen the viruses and the cybersecurity problems in the world today? Upgrades are inevitable. We don’t know when they’re coming, but they’re coming, and we need to establish reserve capacity. That means not allocating every person and every resource, since some will be needed in reserve. If we do not plan for reserve capacity, we will be always over budget and, therefore, always deemed incompetent and irresponsible.

Such constant change calls for a different kind of planning, a different kind of flexibility, a different kind of budget. The dot-com world grew, then it exploded, and now it’s starting to grow again. Those who survived were those who were nimble, agile, and flexible, which are not characteristics that have historically characterized higher education institutions and their governance structures. New, adaptive governance structures are needed if colleges and universities are going to compete effectively. The rate of change is increasing, and in many areas, the ship has already passed.

Conclusion

I’d like to share a couple of final thoughts about a different kind of ship. I grew up in central Illinois just a short drive from Hannibal, Missouri, which is on the Mississippi River and is the home of Mark Twain. Twain wrote extensively about paddle-wheelers on the Mississippi, and about how pilots of paddle-wheelers had to understand that the river was continually changing, that the sandbars were being created and eroded on a constant basis, and that the river itself took new channels every day. He made it clear that navigating such a river cannot be done the same way over and over again. He suggested that the sign of a true pilot was to understand the changes in the colors of the water and the measures taken by the deckhands, to constantly evaluate that data and information, and to adapt. I think Twain’s description of a successful paddle-wheeler pilot has great meaning for those of us in higher education IT. In navigating our seas, we need to remember that IT never stops changing.

My goal at EDUCAUSE has been to help provide a view of some of the changes that are coming over the horizon, to sound an early warning signal just like the sailor in the crow’s nest. But ultimately it is the responsibility of the IT leaders on each campus to provide that “long view,” that vision of where the ship of IT should be headed. For some of us, the sun is setting. We’ve been thirty-plus years at sea in this business. For others, the sun is just coming up. As Mark Twain wrote: “Twenty years from now you will be more disappointed by the things you didn’t do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore! Dream! Discover!” On your journeys, I hope some of the above maxims have meaning for you, and I hope the winds are with you.

Notes

6. Ibid., 18.