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Introduction

Growth and understanding follow an ascending spiral rather than a straight line.

—Joanna Field, *A Life of One's Own*, 1934

The EDUCAUSE Center for Applied Research (ECAR) was created to foster a culture of evidence among information technology (IT) practitioners in higher education, thereby improving our understanding of our environment and helping us make better decisions. In its first two years, ECAR research has plumbed the depths of wide-ranging topics including faculty uses of course management systems, IT security, enterprise resource planning, wireless networking, and IT outsourcing. Clear and present opportunities or threats in the technical arena motivated these investigations. However, no topic is more dear to EDUCAUSE and ECAR than that of higher education's IT community. EDUCAUSE exists largely to foster higher education through the professional cadre of information technologists, librarians, and others who constitute our community. So it was only natural that as ECAR fellows gathered input from EDUCAUSE members to build the 2003 research agenda, a study of this community would rise to the top. Such a study might help answer questions such as "Is it just me, or is everyone suddenly getting older?" or "Does all of this feel-good stuff about mentoring and staff development really make a difference?" Such questions swirl around our professional community but, until now, have been addressed only by anecdote

or by a research literature focused on technologists in industry or government.

Our motivation for this study is somewhat grand. We asked whether we could

- ◆ describe higher education's IT community;
- ◆ identify the characteristics and behaviors of leaders within this community;
- ◆ quantify the relationship between leadership style and effectiveness and describe the condition of the community along these vectors;
- ◆ describe our working conditions and compare aspects of those conditions with comparable ones in other industries;
- ◆ evaluate the state of this labor market so as to foster meaningful discussion about the supply of and demand for IT professionals and leaders;
- ◆ describe the next generation of higher education's IT leaders and assess their capacities and willingness to lead;
- ◆ describe the climate for innovation in higher education's central IT organizations; and
- ◆ use this information and these analyses to formulate robust ideas about the future and to recommend actions for the future.

Our objectives are somewhat less lofty and revolve around our core drive to acquire, develop, and present information that will

enable ECAR subscribers to make decisions—in this case, about how they manage their careers, skills, and organizations.

The ECAR report *Information Technology Leadership in Higher Education: The Condition of the Community* is especially exciting for a number of reasons. First, although it does not draw on a random sample of IT practitioners and thus will always suffer some respondent and sample bias, a study with nearly 2,000 respondents cannot be easily dismissed. Thanks to EDUCAUSE members' generosity in responding to our online survey, this study permits unprecedented analysis of IT leaders and professionals across many dimensions. Second, this study incorporates numerous models and frameworks, which, having been previously developed and in some cases validated, let us discuss the higher education IT community's condition within the broader context of others who have answered the same questions, using the same models and frameworks. This is powerful because it helps us answer the question, "as compared to what (or whom)?"

From the Basement to the Executive Suite

Today's context for our research arises from our brief history. Higher education's IT leadership community emerged and has evolved within the past 50 years, transforming itself many times in the process. And with the continuing pace of technology change and the uncertainties in the global economic, political, and social climate, reinventing ourselves in shorter and shorter time frames will likely become the norm.

The Early Years

The role of institution-wide IT leaders evolved rapidly in the latter half of the 20th century. Beginning in the 1950s, as computers began to replace tabulating equipment in some universities, managerial positions with titles such as automated

data processing (ADP) manager or just data processing (DP) manager emerged. Such positions typically reported to the vice president for finance or the vice president for administration and focused almost entirely on administrative applications. The use of computers for instructional computing was almost nonexistent, although a few faculty members were beginning to use them for scientific calculations, and some leading universities had secured government grants for computer-based research.¹ The computing equipment's substantial size and weight usually relegated it to buildings' lower floors, sometimes the basement.

Institutions selected people from administrative application areas such as finance or the registrar's office or from private industry to fill DP manager roles. The DP department typically designed, programmed, implemented, and provided ongoing operation for the administrative applications without full partnerships with the administrative department managers. As basic skills for these positions, the depth of technical knowledge about computers and programming was considered far more important than an understanding of the administrative processes being automated. Project prioritization typically came from the DP manager's finance- or business-oriented supervisor. Few gave any thought to integrating administrative applications with each other; each application, in fact, helped to build the silos of higher education administration.²

The mid-1960s brought important changes that continued into the 1970s:

- ◆ Operational managers in the administrative areas became much more involved in systems design and development.
- ◆ The focus of new systems advanced from data processing to information management.
- ◆ The integration of separate systems came to be recognized as important.
- ◆ Large mainframe computers capable of

supporting database applications became the hardware standard.

- ◆ Courses in Fortran for scientific and engineering applications and in Cobol for business applications became commonplace.
- ◆ Time-sharing computers came into use for administrative, instructional, and research computing.³

In many higher education sectors, these developments led to the creation of directors of administrative, academic, and research computing. As networking became more important and expensive, and as overall duplication of effort became a significant problem, some institutions created executive director positions responsible for all computing and networking, and reporting to senior institution officials. Although broad-based technical expertise remained important, candidates for these new positions were also expected to manage people well, understand the institution, and work cooperatively with various people across the institution.

The advent of minicomputers, then microcomputers, in the late 1970s through the 1980s again radically changed the higher education computing and networking landscape. The focus rapidly shifted from the computer center's "big iron" and technical gurus of the computer center(s) to the end user. The role of the central IT organization became every bit as much as a provider of services as of cycles, application development, and implementation. Such services included training, consultation, support, and the development of institutional standards. Some colleges and universities distributed computing units throughout the institution in attempts to better serve end users. As computing became more widespread and IT costs increased, the movement toward information resources management began, and the need for a seamless infrastructure became apparent. The increasing importance of alignment between institutional and de-

partmental IT initiatives heightened the necessity for strategic IT planning.⁴ This evolution prompted a growing trend toward appointing a senior IT leader at the institution level.

The Path to Today

How has this generic CIO position evolved from the early days to today, and what responsibilities do current top-level IT leaders in higher education institutions have? Many people who began their careers as young professionals or students carrying decks of punched cards to the computer room late at night to get their "run" and then coming back the next morning to pick up the results on large pages of green-striped paper have made the journey from the basement to the executive suite. Over time, they've moved up the academic or administrative ladder to achieve positions as their college's or university's top IT leaders. They are, in many ways, higher education's first-generation IT leaders. As vice presidents, vice chancellors, vice provosts, CIOs, deans, directors, or any combination of these or other titles, their specific responsibilities vary widely, as does their involvement in institutional decision making. They share the distinction of providing leadership, however it might be institutionally defined, for IT planning, deployment, and operation at the college or university they serve. If they do their jobs well, they are recognized by all and encouraged by most; if they do their jobs poorly, they are recognized by all and criticized by most.

Whatever their formal titles, they are usually referred to in the profession, on campus, and by themselves as CIOs. This description probably doesn't fit the scenario William Synnott and William Gruber envisioned when they first coined the CIO title in 1981.⁵ Their concept of the CIO grew out of the information resources management movement that began in the 1970s. That concept called for a CIO to be a senior executive of the organiza-

tion responsible for IT policy, management, control, and standards, and it stated that the position would have responsibility for

- ◆ organizational IT planning,
- ◆ participating in institution-wide strategic planning,
- ◆ leading development of IT policy,
- ◆ management of information resources, and
- ◆ development of new information systems capabilities.

Synnott and Gruber stated that CIOs should have management and leadership skills, a visionary capacity, the ability to position IT as a strategic resource, and the ability to control the institution's information technologies. Applied to colleges and universities, these characteristics imply a presidential cabinet-level position.

In early 1990, a study of higher education IT leadership found that about 200 people fit this formal definition of a CIO.⁶ In summer 1992, a survey of "individuals identified as serving" as CIOs in higher education found that half of respondents (50.3 percent) were involved in institutional decision making and most possessed only three of the nine CIO roles Synnott and Gruber defined, but in general the span of operational units supervised was similar to the earlier 1990 study.⁷ This suggests the original CIO concept had quickly broadened in higher education to include operational IT officers with significant management responsibility as well as the strategic executive-level policy officers Synnott defined. More recent surveys indicate

that the number of IT leaders who would qualify as a CIO under the initial definition has grown significantly. Other IT leaders who would be generally identified as a CIO continue to operate outside the loop of official executive team decision making and often have a title of director.^{8,9}

Endnotes

1. J. Ryland, "Organizing and Managing Information Technology in Higher Education: A Historical Perspective," in *Organizing and Managing Information Resources on Campus*, B. L. Hawkins, ed., Academic Computing Publications, 1989, pp. 18–19.
2. *Ibid.*, pp. 19–20.
3. *Ibid.*, pp. 21–24.
4. *Ibid.*, pp. 24–27.
5. W. R. Synnott and W. H. Gruber, *Information Resources Management: Opportunities and Strategies for the 1980s*, John Wiley & Sons, Inc., 1981, pp. 66–68.
6. J. I. Penrod, M. G. Dolence, and J. V. Douglas, *The Chief Information Officer in Higher Education*, CAUSE Professional Paper Series, #4, 1990, p. 2.
7. G. M. Pitkin, *Leadership and the Changing Role of the Chief Information Officer in Higher Education*, 1993 CAUSE National Conference presentation, San Diego, Calif.; retrieved 24 July 2003, <<http://www.educause.edu/ir/library/text/CNC9305.txt>>, pp. 3–10.
8. D. Latimer, *A National Study of Chief Information Officers in Higher Education*, 2000, <<http://www.nd.edu/~dewitt/cio/>>.
9. M. R. Nelson and M. W. Green, *Study on Higher Education Information Management and Leadership: Questionnaire Results*, unpublished paper, Rensselaer Polytechnic Institute and University of Washington, 2003.