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Executive Summary

What well-appointed leader fronts us here?
—William Shakespeare, *Henry IV*

Those who have long been active in EDUCAUSE have understood the complex difference between a profession and a professional community. Professions are jobs organized around a corpus of knowledge that is typically transmitted through an undergraduate (for example, accounting) or a professional (such as librarianship, medicine, or law) education. Professions are often distinguished by credentials, and some (for example, attorneys, CPAs, and medical practitioners) require jurisdictional certifications and licenses.

The practice of information technology (IT) management is, for practical purposes, less than 50 years old. It's intellectually diverse (in the extreme) and is characterized by rapid change and redefinition. The nature and scope of this practice are shaped and paced by information technologies themselves, making formalization and codification in the strictest sense of a profession difficult. Responsibility for educating this professional cadre is shared among certificate providers, computer science departments, schools of business, and schools of information.

A professional community, on the other hand, is more permissive. The word *community* first appears in English in the 14th century to mean a gathering of people who share a sense of common identity and characteristics. Of course, people sharing a common cause can and often do evolve formal bodies of knowledge and certifications, creating professions.

The Contours of a Community

As the number of early information technologists practicing their craft in higher education began to grow, so grew their need to exchange experiences, insights, and methods. In 1956, many of these leaders organized and assembled at the first College and University Machine Records Conference (CUMREC), forming a gathering of people sharing a common identity and characteristics. The organization continues to this day.

As the need for community grew, professional associations and consortia evolved to nurture these new practitioners. CAUSE grew out of a users' group at an annual CUMREC meeting in 1962. In all, 22 college and university data-processing directors called themselves the College and University Systems Exchange, and their objective was to share information about the new administrative information systems they were beginning to develop. Around this time, a different

group of medical school deans and vice presidents from Duke, Harvard, SUNY, and the Universities of California, Illinois, Michigan, Pittsburgh, and Virginia met in Ann Arbor, Michigan, to found an organization dedicated to the idea that digital computers offered an incredible opportunity for sharing among institutions of higher education. The organization they founded, the Interuniversity Communications Council Inc., is better known by its trade name—Educom.

EDUCAUSE, the successor of Educom and CAUSE, continues to thrive today. Among other things, it works to provide educational opportunities, collaborative projects and spaces, events, and integrative relationships with other IT and higher education communities to foster this 50-year-old community and ensure its continued relevance and leadership within higher education.

Perhaps it's fitting that as formal efforts at community building among information technologists and allied professionals approach the 50-year milestone, EDUCAUSE should undertake a study of this community. This ECAR study reflects the most comprehensive effort to date to chronicle, analyze, and evaluate the condition of this relatively young professional community. Using qualitative and quantitative techniques, this study reviews the

- general demographics of the IT community in higher education,
- workforce climate,
- workforce mobility,
- leadership styles of higher education's IT leaders,
- climate for innovation in higher education central IT organizations,
- effectiveness frameworks and markers within this community, and
- the next generation of IT leaders and the possible shape of this professional community's future.

This study surfaces hundreds of interesting and significant findings about the condition of the IT community in higher education. Among the most important findings:

- Higher education is, for many, a calling.
- Colleges and universities and the study respondents' work environments are good places to work.
- Leadership style matters, and higher education's IT leaders have effective leadership styles.
- Survey respondents describe IT environments that don't strongly foster innovation, especially at research-intensive institutions.
- Perceptions along various studied dimensions vary widely, depending on how far the respondent is from the "executive suite."
- IT leaders who are members of their president's cabinet report a considerably broader role at and impact on their institutions.
- The community is not diverse.
- The community is graying, which might pose issues of leadership continuity.
- Community members share a unified culture, including many common attitudes and values.
- Mentoring makes a difference.

Methodology and Study Participants

ECAR used a multifaceted research methodology to collect both quantitative and qualitative data from nearly 2,000 IT professionals. This methodology included

- a literature review to identify and clarify issues and create a working set of hypotheses to be tested;
- a study of numerous leadership models, frameworks, and survey instruments to compare higher education IT leaders with those in the general population, incorporating the validated Multifactor Leadership Questionnaire (MLQ)[1] to classify leadership styles, the Rusaw multifactor assessment of innovation

climate in central IT organizations,[2] and the "Creating the CIO Executive Success Cycle" self-assessment questionnaire developed by Gartner and Korn/Ferry;[3]

- a Web-based survey of more than 13,000 individuals in the EDUCAUSE database whose job titles are coded CIO, senior IT professional, or support IT professional;
- qualitative telephone interviews with 28 higher education IT executives, directors, and managers;
- a focus group and roundtable discussion among six nationally recognized community leaders; and
- three in-depth case studies.

IT Leader Populations

Although the study looks at respondents as a whole, we found it useful to segment the sample population into subgroups that help us to better understand the leadership community and the key leadership issues. Of the 1,850 respondents, 330 were senior-most IT leaders with overall responsibility for IT at their institutions, and 286 others said they aspire to such a position at some time in their career.[4] We use these subgroups and the related terminology extensively throughout this report. (See Figure 1-1 and Key Definitions sidebar.)

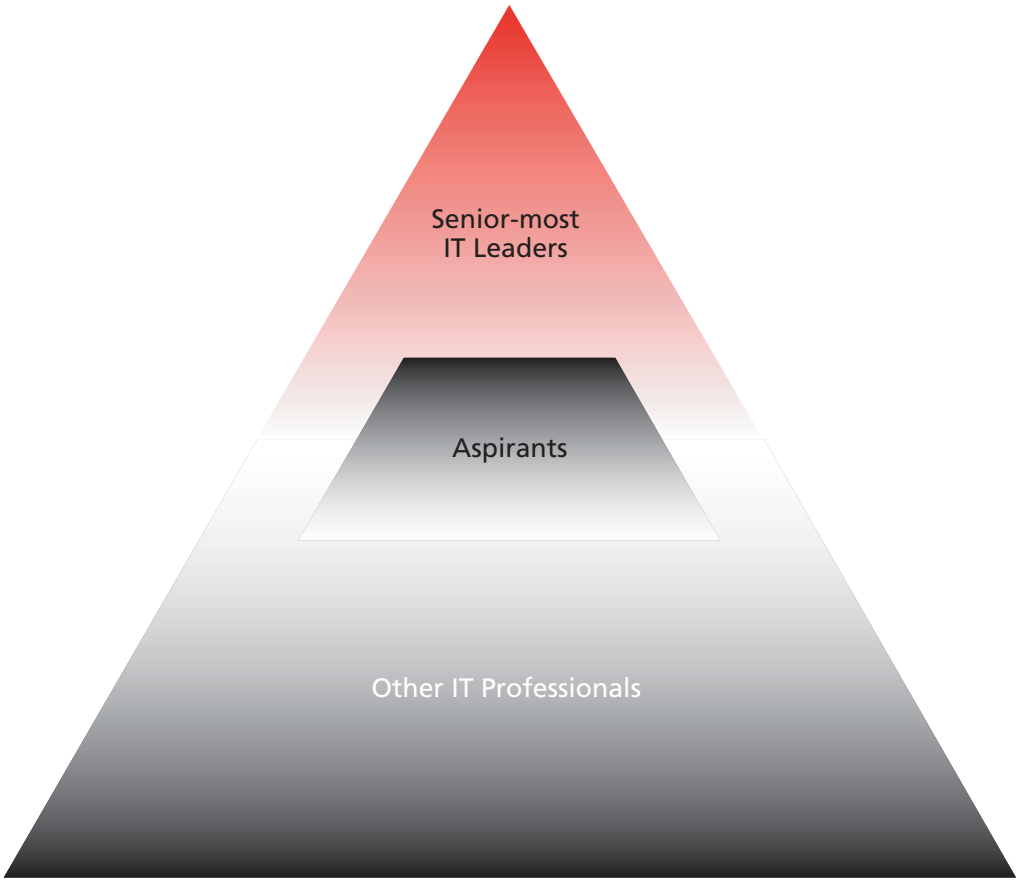

Figure 1-1. IT Leadership Roles

Key Definitions

Senior-most IT leader (18%)—respondents who hold the senior-most IT position at their institution and say they have overall responsibility for IT

Other IT professionals (82%)—all respondents who are not senior-most IT leaders as defined above

Other IT professionals: Aspirants (15%)—respondents who say they aspire to the senior-most IT leadership position

Key Findings

We learned or confirmed much about higher education's IT community. Several engaging themes emerged that are not only interesting in their own right but can also provide insight and guidance for the future. These themes cover a wide range of issues, from pure demographics to leadership styles to work environment characteristics to perceptions of IT effectiveness.

Higher Education Is a Calling

Respondents show a remarkable loyalty to higher education and often to specific institutions. Nearly half of respondents have worked at their current institutions for 10 years or more, and 21 percent have worked there for 20 years or more. Moreover, 76.7 percent of respondents' previous positions were in higher education. Not only have respondents been loyal in the past, but they also say they plan to stay in higher education. Professionals under the age of 41 (61.2 percent) and aspirants to CIO positions (59 percent) plan to stay 15 years or more.

What's the draw? Some respondents expressed their passion for students and higher education's mission. Others mentioned their sense of increased job security compared with that in the private sector, found the academic lifestyle appealing, or acknowledged attachment to their alma mater. One succinct survey respondent said, "It's taken so long to understand this institution, I'm loath to leave it."

Within this loyalty to higher education in general, respondents expressed strong institutional preferences. Some are loyal to a specific institution and some prefer a specific type of institution (such as small private institutions where one can become part of the community, or large, complex research institutions). Also, higher education is often a family affair: 23 percent of respondents have a spouse or partner who currently holds a faculty or staff position in a higher education institution.

Another call to higher education is the academic environment. In fact, survey respondents are highly educated. Close to 14 percent (13.4 percent) of respondents have earned a doctorate degree, and 60.7 percent have a post-baccalaureate degree. The senior-most IT leadership subgroup is most likely to have earned a doctorate (22.4 percent). We also noted a generational difference in education: respondents under 55 years of age are less likely to have earned a doctoral or other terminal degree. Although we didn't specifically ask how many respondents graduated from the institution where they now work, respondents often mentioned that they became enamored of the higher education environment as a student and decided to stay.

We also noted a strong influence from the academic side of the house: 5.7 percent of respondents are tenured faculty members, and slightly more than 25 percent hold some kind of faculty appointment. Of the senior-most IT leaders, 13.7 percent claim tenure and 34.9 percent hold an academic appointment. We found that IT professionals were inclined to participate in teaching and other academic pursuits, and we noted mobility from academic positions into IT administration. Some argue this trend will likely increase.

Work Environment Is Appealing

The salary question always comes first, and salaries seem, overall, to be holding ground for higher education's IT professionals. Respondents' median annual salaries of between $75,000 and $100,000 compare favorably with Gartner, Inc.'s 2003 figures, which put median base annual IT salaries at $68,800, median cash compensation including spot bonuses and other nonsalary cash items at $73,200, and median bonuses at $7,000.[5] Nearly 60 percent (58.3 percent) of those with overall responsibility for IT earn more than $100,000 per year. Despite the senior-most IT leaders' higher salaries, higher education's top IT leaders likely earn less than their industry counterparts. In 2002, private-industry CIOs reportedly earned an average of $186,000 per year. Of course, those salaries vary widely by company size.

Survey respondents in central IT organizations rated their direct managers positively in key areas of managerial performance—much higher than do IT staff members in industry.[6] These performance areas include dealing with conflict, keeping employees informed, providing feedback on job performance, and creating an open atmosphere. Particularly notable is that respondents largely agreed (77 percent) that their direct manager creates an atmosphere in which they feel free to speak openly, compared with only 47 percent in industry. Higher education's open nature might contribute to its appeal as an employer.

Respondents also reported having opportunities to learn new skills and experience new occupational roles, even though more than 44 percent of senior-most IT leaders reported spending 1 percent or less of their central IT operating budget on staff training. Nearly all respondents (93.5 percent) attended at least one professional conference in the past two years, and 47.1 percent attend training sessions fairly often or frequently. Most important, nearly two-thirds (63.2 percent) reported that they fairly often or frequently have opportunities to develop new skills on the job. The technology environment's dynamic nature—new technologies, and new job functions necessary to implement and manage them—apparently creates ongoing opportunities for respondents to learn and grow professionally. Indeed, 62 percent of survey respondents said they served in their current position for four years or less, and more than half (53 percent) said they held three or more different jobs in the past 10 years.

Respondents also work long hours: 28 percent of all respondents and 45.8 percent of senior-most IT leaders report working more than 50 hours per week. Respondents from public institutions reported working as many hours as those at private institutions.

Leadership Style Matters

The subject of leadership has been of keen interest to academics and practitioners for decades and is a well-established area of research. One set of leadership behaviors—dubbed transformational leadership—has been associated in this research with organizational effectiveness.[7] Transformational leaders are good role models: they inspire, empower, and motivate staff; encourage creativity; and effectively communicate a shared mission and vision. The ECAR survey used the MLQ survey instrument,[8] which measures transformational leadership behaviors, to compare our IT community with other leadership communities.

The MLQ revealed that higher education IT leaders tend toward effective leadership profiles. Transformational scores were quite high for the respondent pool: 37.5 percent had high scores, and another 61.2 percent had moderate scores. This suggests that higher education has strong IT leaders who make good role models and can intellectually stimulate and motivate their followers.

The findings are robust across the spectrum of institutions, including Carnegie class, institution type (public versus private), and institution size (small versus large).

As one might expect, the senior-most IT leaders display significantly more effective leadership profiles than other IT professionals. Half (51 percent) of senior-most IT leaders had high transformational leadership scores, compared with roughly 35 percent of other IT professionals. Importantly, 49 percent of the respondents aspiring to the top IT leadership positions also showed high effective leadership profiles. These findings suggest that respondents with transformational leadership skills have moved to top-level positions, and a pool of aspirants has developed similar skills.

A Surprisingly Cool Climate for Innovation

Innovation is key to successful IT initiatives and depends greatly on IT leadership. ECAR used the Rusaw multifactor assessment instrument to look at this issue.[9] Respondents reported that their central IT organizations, overall, are not environments that are very supportive of innovation. From a research perspective, we found this surprising. Prior research on innovation provides evidence that organizations with transformational leaders usually have organizations with stronger innovation climates. Here we have a higher education anomaly: although the IT leaders surveyed showed effective leadership profiles, they seem to be working in IT climates perceived as not conducive to innovation. Clearly we need more study in this area.

Those from doctoral institutions reported significantly lower support for innovation in their central IT units. This suggests that these IT leaders face additional barriers to creating environments that support IT innovation. Doctoral institutions are often larger and extremely complex, with highly challenging regulatory environments. These factors may influence the strength of the innovation climate that can be created in IT organizations in these institutions.

Does a positive innovation climate in the central IT units positively impact the institution? Our data say this is likely. Overall, those respondents who feel they work in institutions where central IT units have higher support for innovation see their IT environment very differently from respondents who feel their IT units have lower support for innovation. For example, they're more likely to agree that their IT organization is increasingly influential, that IT figures prominently in institution-wide strategic plans, that the institution's leadership understands IT's value, that IT initiatives result in positive cultural change, and that the institution has a reputation for being forward-thinking in the use of IT. This provides strong evidence that developing IT leaders who can help foster environments supportive of innovation will likely have high payoffs for their institutions.

Distance from Executive Suite Makes a Difference

What impact does IT leadership have on the effectiveness of central IT organizations and the institution as a whole? We asked respondents how they perceived IT effectiveness, using 41 opinion questions covering a wide range of IT topics: governance, strategic planning and alignment, general management, organizational change, technology, and measurement. We found that perceptions varied little on the basis of Carnegie class, institution type, or institution size. Nor did they vary much with gender, age, or other demographics.

However, perceptions differed greatly when we looked at respondents' placement in the institution. In fact, distance from the executive suite matters—a great deal. Where you stand on organizational issues reflects where you sit in the organization. One example illustrates this general finding.

We asked respondents to rate their level of agreement (from 1 = strongly disagree to 5 = strongly agree) with the statement, "The central IT organization delivers high-quality services." Looking at the mean scores and standard deviations (see Figure 1-2), we saw a clear stair-step pattern. Senior-most IT leaders are most positive, followed by central IT staff, IT professionals working in central administrative units, and finally IT professionals out in the academic units—schools, colleges, divisions, and departments.[10] Indeed, we saw this pattern consistently across all questions about perceptions of IT effectiveness.

Why do these perceptions of IT effectiveness erode as one moves down the organizational hierarchy and outward from the institution's center? Do role differences explain these perceptual differences? Do they indicate significant misalignments of IT implementations on campus? Or is it intrinsic to the decentralized and loosely coupled nature of college and university governance? We can't confidently answer these questions in this study but suggest the need for additional research. Whatever the case, in these times of growing pressures, these differences in perspective can become increasingly problematic, and understanding them and how to better align the institution if necessary deserves our attention.

A Seat at the Table Is a Plus

The lively and ongoing conversation about the nature of the CIO position has reiterated the importance of establishing high-level reporting relationships, and especially an official place on the executive team.[11] Remarkably, nearly 40 percent (38.5 percent) of the senior-most IT leader respondents report to the CEO, and half (50.6 percent) are members of the president's or chancellor's cabinet. Comparing these IT leaders who have a seat at the table with top IT leaders who don't revealed striking differences.

Cabinet-member IT executives report much more interaction with senior management—especially with the president/chancellor, the board, and academic leadership. They more often have responsibility for the library and voice communications. They more strongly advocate IT planning processes and the use of IT planning models. They report more involvement in IT governance, chairing the top IT steering committee more frequently. And they have slightly more formal education and earn higher salaries than their counterparts.

Perhaps most significant, IT leaders who sit on the cabinet see themselves as having a much greater impact on the institution than those who don't. Those with a seat at the table report that they participate significantly

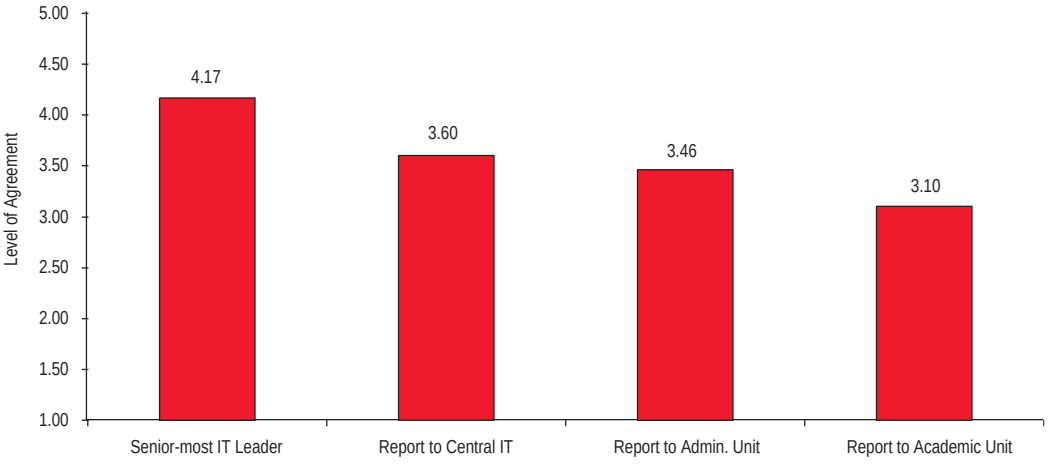

Figure 1-2. The Central IT Organization Delivers High-Quality Services: Mean Score

more in shaping the institution, influencing both academic and especially business directions. With respect to IT, they report more interaction with other executives about IT's implications in institutional decisions, and they feel their institutions have a better understanding of the campus IT infrastructure's value. This makes sense, as cabinet-member IT executives operate within the executive suite, where they have the opportunity to develop a broader, enterprise-level perspective as well as a forum for educating the executive team about IT.

The IT Professional Community in Higher Education Is Not Diverse

There is no question that the IT community, overall, is still predominantly white (92.9 percent) and male (62.7 percent). The senior-most IT leaders are also white (92.4 percent), and even more are male (78.6 percent), with only 21.4 percent of the senior-most IT positions held by women. While these numbers do represent an improvement over the past decade, the percentage of women aspiring to the top IT position (16.4 percent) is still low compared with 28.2 percent for men.

Nationally, as of February 2002, women IT professionals earned on average 12 percent less than male IT professionals. Our female survey respondents also generally earn less than male respondents: while only 40 percent (39.6 percent) of male respondents reported salary levels under $75,000 per year, nearly 60 percent (57.1 percent) of women reported such earnings. Gender disparities also exist at the high end of salary levels: 27.4 percent of male respondents reported salary levels over $100,000 per year, while only 17.8 percent of female respondents reported such income levels. Although some of this discrepancy results from the male survey respondents' being generally older than women respondents, differences are primarily explained by the fact that males hold more of the top positions.

Women, not surprisingly, also reported differences in educational attainment and career goals. They were less likely to have earned a doctoral degree but more likely to have earned a master's degree. They were more likely to have part-time jobs and work fewer than 40 hours a week, and more likely to agree that their spouse or partner's career limits their own career mobility. Although their plans to take higher-level positions within their institution were similar to those of the men we surveyed, women were somewhat less likely to plan a career move to a different higher education institution.

These differences between men and women aren't surprising. What's much more revealing and interesting is where we *didn't* find gender differences in our data. Almost across the board on leadership characteristics and perceptions, men and women showed similar profiles. They didn't differ significantly in leadership behaviors; both displayed a tendency toward effective leadership styles. Both also perceived their central IT organizations' innovation climates as generally low. When asked their opinions on a broad set of IT topics ranging from governance to planning to architecture and measurement, they again showed no significant disagreement.

Leadership Continuity May Become an Issue

We see a potential erosion of leadership stability in the community over the next five to 10 years. This suggests a significant shift in institutional memory and experience—a hard thing to replace. The higher education workforce, as elsewhere, is graying and actively planning for retirement or alternative career moves. As older leaders vacate their positions, there may not be enough people interested in moving into more senior lead-

ership positions—especially into the top IT leadership position.

More than one-quarter of all survey respondents, including senior-most IT leaders, expressed intentions to leave higher education in five years or less. And of the 40 percent of respondents over 50 years of age, 39 percent plan to leave in that time frame. With these leadership jobs opening, what does the pipeline of aspirants for these positions look like? Approximately one-third of respondents have no ultimate career goals or say they plan to stay in their current position. Another third, however, do intend to move to a higher-level position in higher education, and of these, more than half plan to stay at their current institution.

The senior-most IT leaders from our survey alone plan to vacate 175 of their current positions in the next five years. Although some do plan to move to a similar or higher position at another institution, most do not plan to continue in this role. Yet, of the 286 other IT professional respondents who aspire to a CIO position, only 157 said they would be ready to apply for these positions within this five-year time frame. Further, only 25 percent of the top IT leaders agreed that their successor would come from within their institution. Indeed, the overall aspirant pool is small relative to the number of positions likely to become available, and, as in any applicant pool, many fewer will actually be qualified and hired.

What did those respondents not inclined to pursue the CIO position say about their lack of interest? Most commonly cited were the long hours and personal commitment required to be an effective CIO, the job's distasteful political requirements, the perceived need for a doctoral degree, and a personal preference for maintaining hands-on technical work or remaining close to the users.

We can reasonably conclude that a potential imbalance exists in the pipeline of future IT leaders. A recent American Association of Retired People (AARP) study suggests some mitigating factors, including the stock market's decline and more retirees who wish to continue working during retirement. However, it would be judicious to start now to strengthen and expand this future leadership cadre. One strategy is to identify potential candidates early and establish stronger programs and mentorship for them. Another is to rely increasingly on the nontraditional leadership pipelines such as faculty, libraries, and institutional research—areas that have exposure to technology and work to fulfill the institution mission.

Mentoring Makes a Difference

One factor that bubbled up throughout our findings was the importance of having a mentor. Nearly half (47.2 percent) of survey respondents reported having (or having had) a mentor. Our data indicate that mentoring may benefit survey respondents by offering subtle but potentially important associations with salary, industry commitment, and other expressed behaviors and preferences. While 54.5 percent of women reported having had a mentor, only 42.4 percent of men said they've had a mentor. Only 45.2 percent of survey respondents earning less than $100,000 per year report they have or had mentors, while 54.8 percent of those who earn more than $100,000 per year report being mentored.

Nearly half (45.6 percent) of respondents who have a mentor plan to remain in a higher education career 15 years or more, while only 37 percent of those without mentors intend to do so. A mentor's presence may help younger IT professionals remain in higher education. Just over 58 percent of respondents under 41 years old without

mentors plan to leave higher education in the next nine years, whereas only 41.7 percent of those with mentors plan to exit higher education in the same time frame.

Mentorship may also help IT professionals develop desirable transformational leadership behaviors. More respondents with high transformational leadership scores had mentors (55 percent) than those with low transformational leadership scores (only 26 percent). Respondents under 51 years of age in particular may be gaining transformational leadership skills in part due to a mentor's presence. This indicates that mentoring could have a high payoff for developing future generations of leaders. Further research to identify the critical success factors of mentoring in higher education IT and make recommendations for effective mentoring programs would be invaluable.

Conclusion

Information Technology Leadership in Higher Education: The Condition of the Community concludes that, after 50 years, our professional community is strong. The frequently similar responses by gender, ethnicity, institution type or mission, geography, or other variable suggests a strong community culture that is rooted in and committed to higher education's purposes. Despite the community's aging, we continue to work hard (in fact, the eldermost respondents reported the longest work weeks) and adapt to the rapidly changing roles and responsibilities imposed by the technologies we steward. The data confirm what we already know: this is a community that cares about higher education and about making a path for our successors. We are mentoring people with an increased urgency and investing in our workforce's development despite the lack of dollars dedicated to that purpose. We are, in the words of one colleague, "wired and tired."[12]

Our eyes do not deceive: the next decade will witness the exit of many who have shaped the destiny of their institution and of our community. Newcomers will assume positions of well-deserved responsibility. They've earned a place at the decision makers' table, but the proof of their ongoing value will be their ability to configure IT infrastructure, architecture, services, and information resources to meet their institution's ever-evolving needs.

Our community is strong and committed. Programs that fortify these strengths while focusing on enhancing adaptability and intimate knowledge of higher education will ensure the community's continued prosperity.

Endnotes

1. The MLQ short form (MLQ-6S), developed by Bernard Bass and Bruce Avolio, is available through Binghamton University's Center for Leadership Studies and several other sources.
2. Adapted from A. C. Rusaw, *Leading Public Organizations: An Interactive Approach*, Harcourt College Publishers, 2001.
3. Gartner, Inc., published in conjunction with Korn/Ferry International as an *EXP Premier Report*, October 2001.
4. Two hundred eighty-eight respondents share the senior-most IT position at their institution and don't have overall responsibility for IT. We treated these respondents as senior-most IT leader respondents and therefore didn't ask if they aspired to a CIO position. We believe many of these respondents may also aspire to CIO positions and that our percentage of aspirants would be higher had they been included.
5. Gartner compensation figures include salaries at the entry level. As EDUCAUSE is largely a management-oriented organization, the EDUCAUSE sample will likely have a disproportionate representation of managers. Hence, median salaries in the EDUCAUSE sample will likely be higher than median salaries for all higher education IT workers.
6. L. C. Ware, "What Do You Think of Your CIO?" *CIO RESEARCH Reports*, 15 Sept. 2003, <http://www2.cio.com/research/surveyreport.cfm?id=63>.
7. J. M. Burns, *Leadership*, Harper & Row, 1978.
8. The MLQ short form (MLQ-6S), op. cit.

9. Rusaw, op. cit.
10. The differences in "stair steps" aren't statistically significant for all 41 opinion questions, but the general stair-step pattern is consistent.
11. W. R. Synnott and W. H. Gruber coined the term CIO and defined the position as responsible for information technology policy, management, control, and standards, implying an executive team position, in *Information Management Resources: Opportunities and Strategies for the 1980s*, John Wiley & Sons, Inc., 1981, pp. 66–68.
12. Speech delivered by Jeanette Cureton at the 2002 ECAR Symposium, San Diego, Calif. Cureton was referring to today's college and university students, but her description accurately describes the higher education IT community.