

Why IT Matters to Higher Education

January 27, 2020 er.educause.edu

EDUCAUSE

REVIEW

TOP 10 IT ISSUES 2020

The Drive to Digital
Transformation Begins



SPECIAL REPORT

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Trees, Forests, and the 2020 Top 10 IT Issues

By John O'Brien

T

he 2020 Top 10 IT Issues are both familiar and new. I'm sure no one will be surprised to see that *Information Security* sets an unprecedented reign as the #1 issue for the fifth year in a row. Meanwhile *Privacy*, which appeared in 2019 for the first time in the Top 10 (as #3) moved to the #2 issue this year—a move that will surprise no one who has been reading the media headlines about privacy. These predictable placements are joined at #3 by *Sustainable Funding*, which has waxed and waned over the years but remains a recognizable feature of the Top 10 landscape. These are familiar trees in the topography of higher education information technology, but this year you'll notice a distinct “forest view” as a handful of the Top 10 IT Issues are less about technology and more about broader institutional efforts in which technology plays a role—but not necessarily the *leading* role.

Without a doubt, issues like *Student-Centric Higher Education* (#5), *Improved Enrollment* (#7), and *Higher Education Affordability* (#8) are crucial institutional issues for 2020—and they are fundamentally top IT issues because technology issues and opportunities are increasingly inseparable from the larger grand challenges that keep presidents, provosts, board chairs, and other campus leaders awake at night. Clearly, institutional leaders' ability to respond to these grand challenges will depend on technology solutions that are supported by the culture and workforce shifts required as part of a larger digital transformation.

These more expansive, forest-sized issues are not completely new to the Top 10 IT Issues list. *Higher Education Affordability* was on the list last year, for example. The difference this year is an important change in perspective: for the first time, we interviewed twenty campus presidents, provosts, and other senior-level leaders, asking about *their* priorities and intentionally framing our consideration of the Top 10 IT Issues by focusing on the forest and not the trees.

We've never done this before, and now that we have, I must confess that our omission seems remarkable. How can we tell a story about the strategic value of technology and its crucial role in

The 2020 Top 10 IT Issues may be less about individual technologies than in the past, **but as we start this new decade, it is clear that IT leaders need to take a broader, forest view.**



For more information on the EDUCAUSE Top 10 IT Issues, go to educause.edu/2020issues

addressing campus grand challenges if we start the conversation with the technologies themselves? At EDUCAUSE, we are typically the first to say, “It’s not only about the technologies.” Now we’re putting that statement into motion.

This is what happens with digital transformation.

Technology does not “save the day.” Rather, technology is part of the solution to extremely complex problems and notoriously hard-to-move needles. In many cases, technology is a proven/promising new lever to try for efforts in recruitment, marketing, student success, research, and operational efficiency and effectiveness.

An excellent example is the #5 Top 10 IT Issue: *Student-Centric Higher Education*. There’s nothing easy about “creating a student-services ecosystem to support the entire student life cycle, from prospecting to enrollment, learning, job placement, alumni engagement, and continuing education,” yet it is the right thing to do. In our work to address this essential campus priority, technology can connect the dots and accelerate the effort.

Finally, this “forest focus” also underscores the importance of the #10 issue: *The Integrative CIO*. While the role of the CIO has appeared in the Top 10 IT Issues list in one form or another over the years, the sense of urgency this year is impossible to miss. For those of us in the higher education IT profession to reframe our priorities in terms of institutional priorities and to move from “digital transformation” as a rhetorical flourish to an irreversible reality, we need leaders who are prepared to work effectively in this role. As stated in the report: “Not every institution is ready for an integrative CIO, and not every CIO is ready to be one. One or both circumstances will have to change if institutional leaders want to realize the full value of digital technology.”

The 2020 Top 10 IT Issues may be less about individual technologies than in the past, but as we start this new decade, it is clear that IT leaders need to take a broader, forest view. For college and university leaders to achieve their strategic goals and solve their grand challenges, they will depend on technology more than ever before. ■

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TOP 10 IT ISSUES 2020

The Drive to Digital Transformation Begins

By Susan Grajek and the 2019–2020 EDUCAUSE IT Issues Panel

Illustrations by Brian Stauffer



2020 Top 10 IT Issues



#1. Information Security
Strategy: Developing a risk-based security strategy that effectively detects, responds to, and prevents security threats and challenges



#6. Student Retention and Completion: Developing the capabilities and systems to incorporate artificial intelligence into student services to provide personalized, timely support



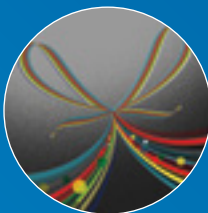
#2. Privacy: Safeguarding institutional constituents' privacy rights and maintaining accountability for protecting all types of restricted data



#7. Improved Enrollment: Using technology, data, and analytics to develop an inclusive and financially sustainable enrollment strategy to serve more and new learners by personalizing recruitment, enrollment, and learning experiences



#3. Sustainable Funding: Developing funding models that can maintain quality and accommodate both new needs and the growing use of IT services in an era of increasing budget constraints



#8. Higher Education Affordability: Aligning IT organizations, priorities, and resources with institutional priorities and resources to achieve a sustainable future



#4. Digital Integrations: Ensuring system interoperability, scalability, and extensibility, as well as data integrity, security, standards, and governance, across multiple applications and platforms



#9. Administrative Simplification: Applying user-centered design, process improvement, and system reengineering to reduce redundant or unnecessary efforts and improve end-user experiences



#5. Student-Centric Higher Education: Creating a student-services ecosystem to support the entire student life cycle, from prospecting to enrollment, learning, job placement, alumni engagement, and continuing education



#10. The Integrative CIO: Repositioning or reinforcing the role of IT leadership as an integral strategic partner of institutional leadership in supporting institutional missions

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Colleges and universities today face numerous and varied challenges. Higher education leaders know that with so much at stake, perhaps even their own institution's survival, transformational change is needed. Leaders are hoping to serve different types of learners, offer more flexible credentials and learning opportunities, expand research efforts, and develop new partnerships with employers, industries, and local schools and communities. They are, in short, seeking to adapt and even radically alter their business models and the value delivered by their colleges and universities.

Technology has a significant role to play. In the past twenty years, digital technology has advanced rapidly enough to evolve from enabling back-office operations to expanding access to businesses and institutions, delivering new kinds of products and services, adapting offerings to specific needs and interests, and generally providing a competitive advantage to organizations that can use technology innovatively and well. This use of technology is being described as *digital transformation* (aka Dx). Higher education too is embarking on Dx, which EDUCAUSE defines as “a series of deep and coordinated culture, workforce, and technology shifts that enable new educational and operating models and transform an institution's operations, strategic directions, and value proposition.”¹

The EDUCAUSE 2020 Top 10 IT Issues tell a story of how higher education is beginning its digital transformation journey. Colleges and universities are working to unmake old practices and structures that have become inefficient and are preparing to use technology and data to better understand and support students and to become more student-centric. They are working to fund technology and to sustainably manage and secure data and privacy. Higher education institutions are applying data and technology to innovate student outcomes and experiences. Finally, the role of the CIO is undergoing its own transformation in order to advance institutional priorities through the use of technology. Higher education's drive to digital transformation is beginning.

These ten issues cluster into four themes:

- **Simplify:** Higher education can no longer operate in growth mode. Institutions must do more with less by simplifying practices and working across the entire institution. At the same time, they need to rearchitect digital resources so that data can inform decisions, supply the fuel for artificial intelligence (AI) to help predict and manage, and make possible new sources of value.
- **Sustain:** The IT organization can help the institution develop a sustainable approach to technology investments and also use technology to reduce or contain costs. That requires aligning IT investments with institutional priorities and developing a sustainable approach to funding the ongoing technology investments that everyone knows are needed. As the value of data increases, information security risks and privacy concerns multiply. A sustainable strategy to secure data and protect privacy is essential.
- **Innovate:** Institutional leaders know they need to innovate to achieve a competitive advantage in today’s complex marketplace. Whereas *simplify* is about doing things differently, *innovate* is about doing different things. Much innovation today is centered on students.

- **Drive to Dx:** The role of the CIO has never been more significant to the institution. CIOs can help their institutions develop and attain digital transformation objectives if institutional leaders are ready to involve them at the most strategic levels.

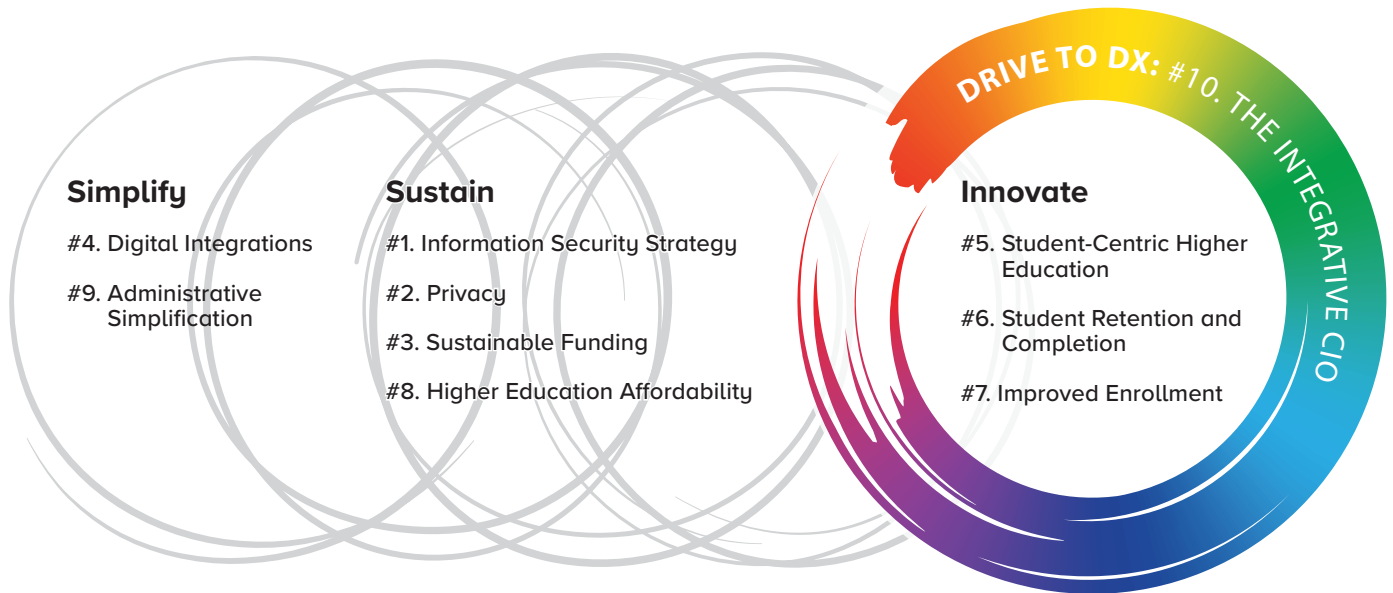
Simplify

Two issues compose the *Simplify* theme:

- #4. **Digital Integrations:** Ensuring system interoperability, scalability, and extensibility, as well as data integrity, security, standards, and governance, across multiple applications and platforms
- #9. **Administrative Simplification:** Applying user-centered design, process improvement, and system reengineering to reduce redundant or unnecessary efforts and improve end-user experiences

Digital transformation represents a third-generation digital revolution. In the first, the mere movement of information from analog to digital format was groundbreaking. Paper books and journals assumed electronic formats, student and financial records moved online, and research data was digitized. The second revolution put

Figure 1. The 2020 Top 10 IT Issues: Four Themes



Additional Resources on the EDUCAUSE Top 10 IT Issues Website:

- An interactive graphic depicting year-to-year trends
- A video summary of the Top 10 IT Issues
- Recommended readings and EDUCAUSE resources for each of the issues
- More subject-matter-specific viewpoints on the Top 10 IT Issues
- The Top 10 IT Issues presentation at the EDUCAUSE 2019 Annual Conference

educause.edu/2020issues

that data into motion by digitalizing processes. Grant proposals could be submitted electronically, prospective students could apply online, and ERPs could help maintain the institution's financial and human resources. Each of the first two revolutions gave administrators and academics new ideas for using and connecting the growing sources of data, but those new ideas and the data were bolted on to the original systems with the elegance and efficiency of a flea market. The result was as difficult to use as it was expensive to maintain. Students and faculty, expecting their institution's applications to function as smoothly as the consumer apps they use, became disappointed and frustrated not just with their institution's systems but with their institution itself.

Today's higher education leaders recognize that they cannot build on existing processes to meet constituents' expectations and to gain more value from data and technology. They need to unmake in order to remake. Remaking has two dimensions. The first focuses on remaking the work of the first digital revolution: the data itself. IT and data professionals are concerned with developing stronger, more intentional data foundations that better inventory, classify, organize, and protect data. The second dimension of remaking is a response to the ad hoc nature of the second digital revolution and aims to make digital processes not only more efficient but also more effective.

Sustain

Sustain is the largest theme, addressing four of the Top 10 IT Issues:

- #1. Information Security Strategy:** Developing a risk-based security strategy that effectively detects, responds to, and prevents security threats and challenges
- #2. Privacy:** Safeguarding institutional constituents' privacy rights and maintaining accountability for protecting all types of restricted data
- #3. Sustainable Funding:** Developing funding models that can maintain quality and accommodate both new needs and the growing use of IT services in an era of increasing budget constraints
- #8. Higher Education Affordability:** Aligning IT organizations, priorities, and resources with institutional priorities and resources to achieve a sustainable future

Sustainability is a newly popular term, often applied to the environment but extending to other finite resources as well. Sustainability is "the ability to be maintained at a certain rate or level" or "the ability to exist constantly."² The sustainability of higher education was once in no doubt. Though rarely lavish, supplies of funding—from governments, families, donors, and funders—were seemingly secure. Choices certainly had to be made, but the challenge was never existential. Until today. Sustainability has become the new prosperity. All higher education institutions are working harder than ever to do more with less, and some are struggling even to survive.

But to describe sustainability only in terms of colleges and universities misses the larger point, which is how to make higher education

affordable to students. A sustainability approach that encompasses students will consider not just the institution's financial health but also students' immediate and long-term financial prosperity.

IT leaders are trying to work with financial leaders to develop new funding models that can respond to both changes in IT sourcing and the growth of initiatives and operations that depend on technology. The growing popularity of cloud-first strategies can reduce the need for campus-based IT expenses, but these strategies come with a funding shift (from capital to operating funds) that institutions are struggling to accommodate. More problems and opportunities can be addressed with technology, but technology solutions generally have shelf lives that are alarmingly brief, from funders' perspectives. A sustainable financial strategy requires focusing on the highest priorities and, increasingly, centralizing technology investments to avoid duplicative spending.

Sustainability also has a new dimension. Data is often described as a new currency,³ meaning that higher education now has two currencies to manage: money and data. Data storage may be cheap, but little else is inexpensive in the process of managing and securing data and using AI and analytics to ethically support students and institutional operations.

A sustainability strategy for data requires information security to preserve data confidentiality, integrity, and availability, and it requires privacy to safeguard personal information from access by unauthorized parties and to ensure that students and others have control over their personally identifiable data. Institutions' struggle to protect information security has become a forever war: *Information Security* has placed #1 on the EDUCAUSE Top 10 IT Issues list for the last five years. Privacy is more newly urgent, a reflection of just how valuable and ubiquitous individual information has become.

Innovate

The three issues in the *Innovate* theme focus on students:

- #5. Student-Centric Higher Education:** Creating a student-services ecosystem to support the entire student life cycle, from prospecting to enrollment, learning, job placement, alumni engagement, and continuing education
- #6. Student Retention and Completion:** Developing the capabilities and systems to incorporate artificial intelligence into student services to provide personalized, timely support
- #7. Improved Enrollment:** Using technology, data, and analytics to develop an inclusive and financially sustainable enrollment strategy to serve more and new learners by personalizing recruitment, enrollment, and learning experiences

Simplification and sustainability help institutions and constituents work more efficiently and effectively, as well as contain risks. They result in a better version of the present. Innovation, on the other hand, develops a new future for the institution. Done well, innovation enables colleges and universities to serve more and new types of learners, cultivate emerging partnerships, and

Figure 2. Four Challenge Areas for Higher Education



Student Success

- Persistence, retention, completion
- Engagement
- Outcomes



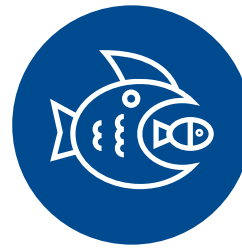
Financial Health

- Enrollment
- Costs
- Funding
- Natural disasters



Reputation and Relevance

- Affordability
- Political climate
- Teaching
- Academic programs
- Research



External Competition

- Alternative credentials
- Employer-based learning
- Talent
- Global higher education

support expanded and original lines of research.

Innovation is an offer that higher education can't refuse, as institutions increasingly recognize that yesterday is no template for tomorrow. Institutional leaders are working especially hard to change students' experiences and outcomes and to attract more and new types of learners. They are asking technology to make two contributions.

First, institutions are applying AI and analytics to improve students' outcomes and to strengthen enrollment. This is innovation at its most rewarding and most challenging. Analytics, AI, machine learning, and related technologies and techniques are changing rapidly. The learning and investment curves are steep and short-lived. Our ability to use analytics and AI today needs to keep pace with our understanding of how to use them ethically and for maximum benefits.

Second, technology can enrich and expand students' relationships with higher education institutions. Institutional leaders are using technology to provide a consistent, continual, and valuable set of experiences across the student life cycle, supporting a "60-year curriculum."⁴

Drive to Dx

The *Drive to Dx* theme consists of a single issue:

#10. The Integrative CIO: Repositioning or reinforcing the role of IT leadership as an integral strategic partner of institutional leadership in supporting institutional missions

Every journey has a destination, and some navigational help is always handy. This is especially true when traveling off-road or to new destinations. Higher education, like every other industry, is venturing into uncharted territory with digital transformation. The CIO can help navigate by providing guidance on how technology can

realistically contribute to institutional ambitions and by ensuring that the IT organization can effectively execute its work.

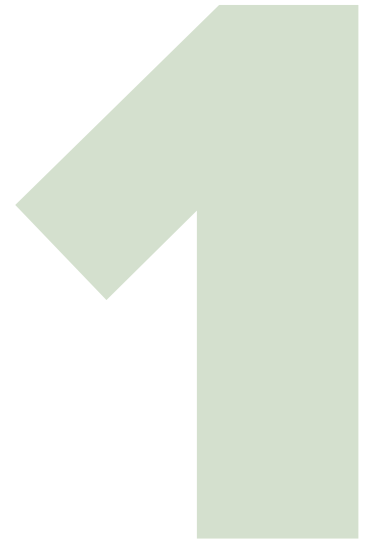
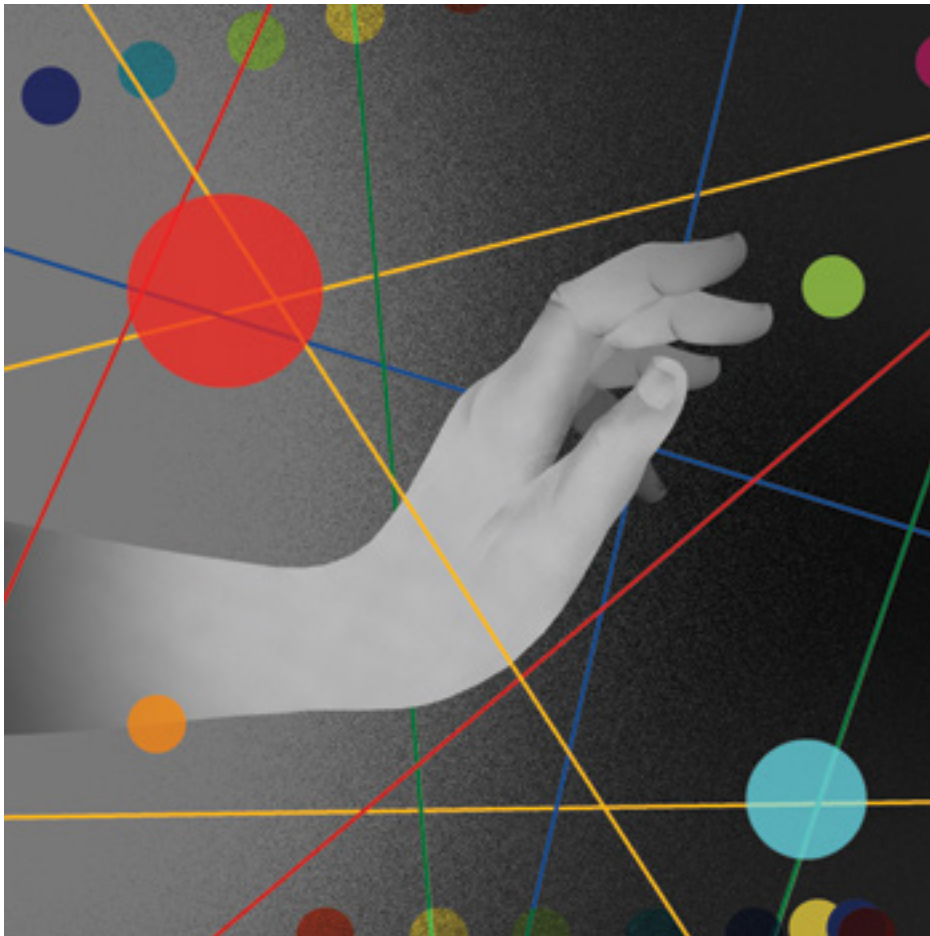
Not every institution is ready for an integrative CIO, and not every CIO is ready to be one. One or both circumstances will have to change if institutional leaders want to realize the full value of digital technology.

Major Challenges

The contributions of technology to higher education have expanded and deepened over the years. The great majority of today's CIOs help shape and influence their institution's administrative, academic, and overall strategic directions.⁵

To acknowledge the growing impact and influence of technology on all higher education missions and activities, EDUCAUSE refactored our Top 10 IT Issues initiative to incorporate the voices of non-IT leaders. We began our work this year by interviewing twenty presidents, provosts, and other senior-level leaders representing the institutions of members on the 2019–2020 EDUCAUSE IT Issues Panel. Asked about their current and near-term priorities, they identified sixteen challenges, which we grouped into four areas (see figure 2). Then we asked the Top 10 IT Issues panelists to consider the contributions that information technology is making to address each challenge. Their ideas, along with last year's Top 10 IT Issues list, formed the slate of issues from which the EDUCAUSE community identified the 2020 Top 10 IT Issues.⁶ The list of leaders we interviewed can be found in the online version of this article.

For higher education to meet these challenges, nothing less than transformative change will do. Dx is the mechanism for such change. The journey will be long and unpredictable. It begins with shoring up existing foundations via simplification and sustainability. It picks up speed with innovation. The integrative CIO will help ensure a smooth ride to the right destination. Thus the drive to digital transformation begins.



Information Security Strategy

Developing a risk-based security strategy that effectively detects, responds to, and prevents security threats and challenges

Tariq Al-idrissi, Janet Heslop, Cathy Hubbs, and Albert Stadler

Do you know where your institution's data is? Technology and compliance risks continue to increase with the rapid growth in the rate of phishing and ransomware attacks. Institutional data moves across networks on and off the premises with an unmindful click of a button. And no one can be mindful all the time. Any incident has huge reputational, operational, and legal implications for an institution. To rely on perfect behavior from perfectly informed end-users using perfectly safeguarded systems, devices, and networks is . . . perfectly foolish. And yet we do.

The solution is not to look for the holy grail of protection but, instead, to adopt a risk-mitigation strategy. Cybersecurity is about mitigating operational, legislative, and reputational risk. A formal security program provides opportunities to support institutional strategic goals, prioritize efforts and resources, and avoid costly and embarrassing security incidents.

Obstacles Ahead

Until or unless a higher education institution has been burned by a major breach, institutional leaders can easily consider the issue (a) a technical issue to be

“The University of San Francisco has spent a significant amount of money over the last three years on cybersecurity—to guard against the illegal transfer of funds away from the university and the theft of student, parent, employee, and alumni data and to strengthen the development process. We are thinking about all kinds of measures. Every year, some university takes a huge hit to their reputation as well to as their bottom line.”

—Paul Fitzgerald, President, University of San Francisco

handled by the IT organization and not discussed at a leadership level and (b) an expense to contain rather than an ongoing investment to strategically manage risk. The expense of good cybersecurity can easily deter institutions that are struggling to make ends meet, and presidents and boards may be unmotivated to find time to discuss an information security strategy until after an incident has occurred.

Not having a strategy for information security also likely means not having clear objectives, executive sponsorship, or identified authority and responsibility for information security. Those gaps generally position information security as a bottom-up change effort administered by the IT organization. This is not the way to go.

Finding the balance between encouraging innovation and open inquiry and implementing proactive security processes and features is particularly challenging for higher education. Security requirements are often among the last considerations when new systems are added, and they tend to be seen as a barrier to innovation. Additional challenges include ensuring that every end-user is trained and is acting on that training by coordinating security across multiple units and responding to the relentless need for new protections and investments.

Hopefully, in 3 to 5 Years . . .

- Our sector will adopt a common framework that works for all kinds of data and requirements in higher education.
- Higher education will collaborate more effectively to centralize the sharing of threat intelligence.
- EDUCAUSE cybersecurity maturity benchmarks will be used and successfully achieved by 90 percent of EDUCAUSE members.

Advice

To get started:

- Attend the annual EDUCAUSE Security Professionals Conference to learn about the latest innovations and strategies and to build a network of colleagues. Team up, and find a mentor to help guide you along the way.
- Get an assessment of your maturity and the threat landscape. Prioritize and agree on top initiatives with executive sponsorship.
- Make sure you have an incident-response plan, including communication escalation for the incident, campus updates, and public updates.

To develop further:

- Don't assume that you're doing well: the best CISOs are always looking over their shoulder.
- Repeat the maturity assessments, and work with leadership to establish the institutional risk appetite.
- Introduce institutional metrics for the cybersecurity program.
- Calculate costs, including the cost of not mitigating by examining similar cases and how much they've cost institutions.

To optimize:

- Acquire back-end tools to ensure that everything is being monitored and evaluated on a timely basis.
- Teach and mentor others, become part of your community, help others achieve what you have achieved, and show them what you have learned along the way.
- Assess your program, and discuss it with a cross-section of your institution's top leadership. Where does optimization make the most sense?

PERSPECTIVES

Information Security and Privacy

By Brian Kelly and Valerie Vogel, with Michael Corn, Micki Jernigan, Patricia Patria, and Kent Wada

Looking back at the Top 10 IT Issues from 2002 through 2020, we see a transformation of the idea of “security” in higher education. Most recently, the word *strategy* has been added to *information security*. This addition is important and very different from the management and operational connotations of previous years and signals that a transformation is under way. Privacy is also in transition. Whereas there has long been a focus on compliance with regard to privacy, we are now seeing a shift toward the ethical use of private data. In higher education today, privacy discussions are looking at the societal expectation of privacy.

Four members of the Higher Education Information Security Council (HEISC) Advisory Committee offer their perspectives on these shifts.



Michael Corn
Chief Information Security Officer, University of California, San Diego



Micki Jernigan
Chief Privacy Officer, University of North Carolina at Chapel Hill



Patricia Patria
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Kent Wada
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Please share your thoughts on the importance of Information Security Strategy being #1 on the Top 10 IT Issues list again this year.

Patria:

As both threats and regulations continue to increase, it becomes increasingly important to have a security strategy based on risk that is established in accordance with acceptable thresholds set by senior leadership, not by the IT organization. If campus leadership establishes acceptable levels of risk for the institution, information security professionals can focus their efforts on the risk that the institutional leadership

deems most important and can then build long-term strategies to address those risks. This approach moves from transactional security to strategic security.

Corn:

It’s impossible to review the news without seeing some discussion of information security and how it’s playing out on the national and international stage. Coupling this with the increasing challenges of regulations, such as CUI (controlled unclassified information), leaves me not at all surprised that security remains at the top of the list. I was really happy to see the word “strategy” appear this year. As practiced, security creates so much pressure toward tactical thinking that it’s healthy for those of us in the field to try to step back and ask: “What the heck are we doing, and where are we going?”

Can you discuss your approaches to and thoughts on risk-based security strategies?

Patria:

The first step in building a risk-based strategy is to create a risk register, which is a prioritized listing of all of your risks. Once you have that in place, you need to review it with the senior leadership team at your institution and determine risk threshold and buy-in. From that point, you can create a security strategy around those prioritized risks.

Corn:

Most of us instinctively take a risk-based security strategy. But creating a register and allowing the prioritization of it to drive your annual work plan applies a higher level of discipline toward making your program risk-centric. We do need to acknowledge, however, that this tacitly codifies our security strategy as “prioritize risks and tackle them in that order.” This is operationally appropriate but really just reframes strategy as a series of tactics.

Information security professionals have long advocated for having a “seat at the table” and for security being considered earlier in

the process (rather than as an after-thought). Is being #1 a point of pride? Does this recognize security as an enabler? Is security vital to the success of other institutional issues?

Patria:

If you have a defined governance process, information security professionals should have a seat at the table, and you should be able to vet the security of products before they are selected. Although this is an important part of the process, I see security shifting even more. Boards are becoming more aware of cybersecurity as a risk, and I think many boards will start to ask more questions around how institutions are managing cyber risks. This elevates the seat at the table to have much larger conversations. Having a seat at the table elevates the conversation and engagement.

Corn:

Don't overlook the idiosyncratic nature of leadership at our institutions. Being able to communicate with campus leaders, in their own terms, about information security and risk builds trust. Formal processes of governance are helpful, but that trust results in a larger embrace of the role of information security.

How do we shape the future of information security strategies?

Patria:

In the past decade, many IT organizations built programs that focus on protecting devices and the perimeter. That perimeter no longer exists; ubiquitous devices and cloud computing have added complexity to the threat landscape. Over the next few years, I think we will see a shift in how employees interact with soft assets like data and an increased use of behavioral analytics tools that leverage artificial intelligence to find threats on the network. Because security resources are very scarce and hard to find, I also foresee a shift to managed service providers for security.

Corn:

We're going to have to retool in order to reflect the tactical realities of highly skilled state actors becoming our most threatening high-risk threats. But as we mature as a field, we're going to need to develop a strategy that allows us to focus our resources on mission activities. If we don't, we face becoming entrenched as merely a cost center for our institutions.

Working in information security can be a highly stressful job that sometimes leads to burnout. What words of wisdom or encouragement can you share with other higher education information security professionals?

Patria:

There is no question that security is a 24x7 job and that burnout is real. I think it is important to build redundancy among security teams where possible, allowing staff to take time for vacations and professional development. I also see some organizations looking to outsource basic Security Operations Services (SOC) so that third parties can deal with the off-hours, low-end threats, leaving on-site staff to deal with the more complex work that needs to be done during normal office hours.

Corn:

We need to change the framing of this issue. Sure, burnout is a challenge, especially with limited resources. But we need to stop talking about how expensive security is, especially with staff. We're not expensive: we're valuable.

Wada: Mike's insight ties this directly to the #10 Issue: *The Integrative CIO*. The CISO is not just the cyber-plumber looking for the cheapest way to avoid an immediate problem; the CISO is an enabler of the path forward.

Privacy means many things to many people. What does it mean to you, and what does it mean to higher education?

Wada:

Privacy is about people. It can mean the privacy we expect in the bedroom, the ability to keep our thoughts to ourselves, or the quiet enjoyment of a life not under constant surveillance by paparazzi. Often, we mean *information privacy*, the control over and use of data about ourselves—data generated as we go about our daily lives, data-radiant devices and services in hand. The vast opportunities for innovation from a data-rich world benefit both individuals and institutions alike, but both also suffer the risks and consequences of failure. Nowhere is this more evident than with big data and algorithms, which hold promise for great human benefit, potential for basic infringement of individual autonomy, and implications for our efforts in diversity, equity, and inclusion. Finding an appropriate balance, in real time with technological advancement, is the challenge for those of us working in colleges and universities.

Jernigan:

Privacy is a concept that governs the access, use, and disclosure of data. Generally in higher education, laws, regulations, and policy guide these actions. Too often, however, those inside higher education focus on the disclosure aspect because that is generally the highest risk for fines, penalties, civil actions, and reputational harm. Other areas of concern are the inherently internal access and use of the volumes of data that a college or university possesses. Higher education institutions should not focus strictly on student data privacy. Vendor contracts should be closely scrutinized to ensure that the institutions' data, especially identified data, is not being inappropriately used or accessed by that vendor.

Corn:

I feel we're at the point where we need to tease apart what privacy means within higher education as distinct from the broader conversations about privacy in the public sphere writ large. Our use of data in higher education is fundamentally distinct from what Facebook or a credit agency

does with personal data. We need to tune our approach to privacy to reflect that.

Over the last eighteen months, there has been a bifurcation in the privacy conversation, with a focus on regulatory privacy (e.g., GDPR) and a shift toward ethical use. What do you see? Is there another way to frame the conversation?

Corn:

In general, the field seems to be tending toward compliance. The response to (or embrace of) GDPR as a rallying cry underscores that.

Jernigan:

The privacy discussion often begins with the regulatory requirements, but it should not end there. Attorneys general provide the answers to specific questions and no more. Privacy officers go beyond that, into data governance principles. Data governance necessarily includes the ethical concept of “should we” allow something to occur with the data. Each institution must define what it deems appropriate regarding regulatory requirements, ethical considerations, reputational risk, and general risk-tolerance. A privacy officer must be able to balance all of these aspects to build, grow, and maintain a privacy program.

Wada:

In the 2019 Top 10 IT Issues list, 94 percent of institutions indicated agreement or strong agreement that they respected privacy rights in conducting student success studies. On the surface, this is difficult to reconcile with the explosion of discussions (or arguments) around the appropriate use of the vast troves of student data in student analytics. These discussions are happening at every level of the educational sector—by state governments passing legislation and, of course, by our own institutions, if in no other way than asking the pointed questions about how private-sector partners derive value from these data assets. These are some of the “should we?” questions.

Last year *Privacy* was #3 in the Top 10 IT Issues list. This year security and privacy move even closer together, with *Privacy* at #2. In 2019, Valerie Vogel and Joanna Grama proposed that risk brought the two together.¹ What do you think?

Jernigan:

Privacy and security are very closely tied but do have different risks associated with each. As a privacy officer, I have worked to protect both the institution and the data. By default, this is a protection for individuals as well. The internal use and access of data, or use and access by entities we share data with, are the areas that need continued focus. One example is an IT vendor that has template language in its contract allowing full access to and use of the data entered into its system. Some vendors add the ability to combine the data with that of other customers. Some even state that they may sell or lease the data they create to other parties. How often is this being challenged in your institution? Is this practice seen as an issue, or is it simply the cost of doing business?

Other examples are cameras or scanners on campus. There is generally a stated purpose for each of these (e.g., physical security and tracking), but once the data is collected, can it be used for other purposes? Should it be? Generally the answer is “maybe.” Are there policies in place to define this use? Privacy is a very fact-specific discipline in which the situation and types of data can influence the recommendations from the privacy officer and, ultimately, the decisions made.

Wada:

Information security and information privacy working hand-in-hand to safeguard information about people is a smart, tactical approach to enhancing operational effectiveness. However, risk to the institution and risk to the individual are not always aligned. Using Micki’s example of an agreement, the remote possibility of a privacy breach *could* be acceptable risk to an institution—based on contractual

financial remedies and cyber-insurance. But for affected individuals whose data would be out in the wild, there is no actual cure. As a privacy officer, I also consider myself a voice of those not at the table and try to ensure that we consider both risk equations explicitly.

How important is trust in terms of privacy in higher education?

Wada:

I’d argue that privacy is a basis for trust, rather than the other way around. Privacy also underpins other words: *respect* and *dignity*.

Jernigan:

I agree. Students trust that an institution will do what it is “supposed to do” with their data. Patients trust that their health providers will do the same. And so on . . . Strong data governance processes or programs are inherently built on the trust of the individuals from which the data is derived.

Note

1. Valerie Vogel and Joanna Grama, “The Yin and Yang of Security and Privacy,” *EDUCAUSE Review* Special Report, January 28, 2019.

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Privacy

Safeguarding institutional constituents' privacy rights and maintaining accountability for protecting all types of restricted data

Tariq Al-idrissi, Janet Heslop, Cathy Hubbs, and Philip Wilhauk



Privacy concerns are front and center, with incidents such as Facebook's ongoing privacy issues⁷ and with legislative actions such as the EU's General Data Protection Regulation (GDPR), California's forthcoming Consumer Protection Act, and discussions of federal privacy law. Higher education institutions need to assess their public and internal policies, processes, and preparedness to respond to a request or to an incident involving privacy violation. Loss of private information can expose institutions to a myriad of litigation risk. Many lawsuits brought forward today are directly due to the loss of private information held by colleges and universities.

Privacy is essential to admissions, student support, human subjects research, and many other core activities. At the end of the day, this is a question of trust. Demonstrating trust requires clear-cut privacy guidelines that specify who has access to data, how complete the data inventory is, and where the data is stored. Institutional leaders need to know the trade-off they are willing to make between protecting privacy and providing easy and deep access to data across numerous systems, stakeholders, and compelling use cases.

Obstacles Ahead

Effective security can be both good and bad for privacy. Security platforms, such as closed-circuit cameras, may collect information that is needed for security in an identifiable fashion, but they also increase the possibility of exposing someone's private information. Institutional leaders need to take care when concluding that some privacy rights should be relinquished in the name of security. They also need to pay close attention to the technologies being deployed and the privacy implications and litigation risk if the data they collect and store is lost. It helps to have a clear idea of which privacy standards are guiding the institution.

Institutions often lack good process with data. Few have conducted a comprehensive inventory or have adequately defined the assets that most need protecting. All sorts of contemporary devices—phones, home assistants, wearables, and other IoT (internet of things) technologies—are collecting, creating, and processing personal data in ways that inevitably erode privacy and

“I think there’s a greater awareness among everyone in society about the trade-offs of giving up information and having a data-rich culture—and of what these trade-offs mean for privacy. And that doesn’t end when you come to work.”

— Philip Wilhauk, Director of Teaching and Learning Technologies, University of Kansas Medical Center

are far from well understood. Rapid advances in new data frontiers are exacerbating the challenge.

Unintended consequences of collecting student data may trip up institutions the most. Using ID cards and badges to automatically take class attendance or to track students’ participation in events or use of facilities and resources can provide extremely useful data in the support of student success, but the privacy loss that could result from potential misuse or inadvertent disclosure of such information needs to be considered very carefully. Once again, a current inventory of data—including its points of collection, storage information, and users—can help.

People, process, and technology all present major challenges. Staff often lack awareness of privacy rights and requirements, such as when data can or cannot be shared with other institutions or with vendors. Staff also need to question which data they need access to and how much data they have inadvertently retained on individual computers or in shadow systems.

Hopefully, in 3 to 5 Years . . .

- Institutional leaders will recognize that they can ensure security without compromising privacy by developing good processes and practices for collecting, curating, governing, and using the vast amount of information they have.
- Privacy will rise to the same level of awareness and importance in our campus discussions as information security, the usability of systems, and accessibility.

- Institutions will adopt guidelines and agreements that protect individuals’ data when it is shared beyond the institution, including with vendors.
- Institutions will move beyond passwords to adopt technologies such as tokens, which better safeguard privacy by limiting access.

Advice

To get started:

- Establish a steering committee of executives (e.g., General Counsel, Compliance, Privacy, Risk, Information Security, Registrar leads) to define privacy standards, decide what is needed, and determine the best approach.
- Know what you have so that you can start. Inventory your data, and classify it according to privacy levels that you set when you defined privacy.
- Start a training awareness program. Just like information security, privacy becomes everybody’s job.
- Work with other institutions that have been through the process to estimate timelines, resource requirements, and the kind or type of help that might be needed with the phases and stages of the implementation.

To develop further:

- Understand where the data is going and how it flows into and out of your organization, especially regarding third parties. Require data-sharing agreements to protect privacy.
- Verify that you have the right controls (e.g., least privilege, encryption, tokens) in place.
- Create an executive steering committee that can review and measure the current status, reassess the next steps, and reaffirm the goal.

To optimize:

- Ensure that the training and knowledge base is continual, especially for new hires.
- Establish continuous inventory and monitoring of all data stores.
- Give power back to individuals so that they can control their own data. Question what data you need to collect. Be purposeful and intentional, and destroy what you do not need.

3 Sustainable Funding

Developing funding models that can maintain quality and accommodate both new needs and the growing use of IT services in an era of increasing budget constraints

Kevin Lipscomb, Madhavi Marasinghe, Ernie Perez, and Beth Schaefer



Although the IT organization is not a profit center, every part of the college or university—from dining services to research—needs information technology. The investment in information technology is an investment in the business of the institution. The funding requirements and cycles of technology have changed, but IT funding models are still based on assumptions that technology upgrades are infrequent and often optional. Today, continually evolving features and security requirements and cloud sourcing have upended IT funding, requiring higher operating budgets and reducing the opportunities to use capital spending. Many institutions were never very good at planning for cyclical technology upgrades (e.g., of networks and desktops), and that has left them with inferior IT services at a time when excellence in technology has become a basis of institutional differentiation. IT, finance, and other institutional leaders need to re-create the IT funding model, consider new funding sources, and identify predictable funding options for innovation.

Obstacles Ahead

Today all of higher education is struggling to make ends meet. Public institutions are trying to meet performance mandates while absorbing steady reductions in state funding. Private institutions that depend primarily on tuition income are trying to avoid operating under deficit budgets as enrollments decline. And we have not identified a funding model for technology other than through operating funding, capital funding,

grants, and student technology fees—all sources that are increasingly stressed to meet baseline needs.

Because the value of technology is digital, not physical, that value can be difficult to sell to funders. Donors generally want recognition for major gifts, and we have not yet figured out where to put the sign on an endowed network or student success system. Further, the lifespan of technology is much shorter than that of a building or professorship or scholarship. Presidents, boards, and institutional advancement officers know how to raise funds for those, but not for technology.

Institutional leaders can't develop sustainable funding models if they can't understand the total costs of technology. To do so requires adopting different financial planning and management practices. Technology managers should be included early and often in projects with any type of technology component (from new buildings to new services to new programs) so that they can advise on the most efficient way to meet technology needs and estimate the true ongoing funding requirements. At many institutions, the total IT spend is hidden in individual departments. This can be a source of duplication when these IT costs aren't focused primarily on unique departmental needs. What can't be measured can't be managed.

Finally, institutional leaders need to recognize the difference between budget cuts that increase efficiency and those that generate hidden debt or degraded services that will eventually drive away students, faculty, and grantors. IT leaders need to be able to demonstrate that difference, and institutional leaders need to be willing to see it.

Hopefully, in 3 to 5 Years . . .

- Institutional leaders will understand the value that technology contributes to their business models and missions and will fund it accordingly.
- Institutional leaders will establish more meaningful priorities, more effectively. They will place a few big bets on the future and fund those bets accordingly, rather than satisfice by sprinkling a bit of money across the entire enterprise.
- Society and governments, with the help of articulation and advocacy from higher education, will have placed a contemporary value on the higher education experience and product, leading to increased enrollments and more stable support.

Advice

To get started:

- Set financial baselines and goals for the institution as early as you can.

“I’ve been in meetings over the years in higher ed where people will say, ‘Oh my gosh we just put money into that technology stuff last year, and now you are asking for all that again?’ Well yes, because in order for us to keep up, this is what we have to do. You start to worry about where that money is coming from. Because there are lots of other needs.”

—Marilyn Sheerer, Provost, University of North Carolina Wilmington

- Make sure that you have a very good relationship with your provost and your chief financial officer (CFO). Prioritize your wish list, and use those relationships to advocate for the top priorities.
- Use the EDUCAUSE Core Data Service to learn from peers.

To develop further:

- Use the EDUCAUSE Core Data Service to benchmark against peers, and present the findings to both the CFO and the provost to show the gaps between where you are and where you should be—that is, the objectives that institutional leaders have set and that require underlying IT investments.
- Advocate relentlessly for a sustainable funding approach, because one of these days financial leaders may just say yes.
- Continue to participate in professional networks, like EDUCAUSE and NACUBO, to share your successes and learn about emerging practices.

To optimize:

- Use sustainable funding to advance an innovation agenda.
- Share your successes internally and with the profession by documenting examples.
- Help advance the entire profession by chairing a working group to develop new resources (e.g., ways to translate industry best practices to higher education).

PERSPECTIVES

Enterprise IT

Betsy Tippens Reinitz, with Jay Eckles, Brad Hough, and Sean Moriarty

Each year, members of the EDUCAUSE Enterprise IT Advisory Committee comment on the EDUCAUSE Top 10 IT Issues list. In this article, three committee members consider the need to increase the efficiency and flexibility of IT areas that support everything from daily transactions to long-term innovation, including innovation that leads to digital transformation. They also describe how the connection between institutional strategy and enterprise IT goals can play a critical role in advancing the institutional mission. Three committee members shared their thoughts.



Jay Eckles
Interim Chief Information Officer, University of Tennessee



Brad Hough
Vice President of Information Technology and CIO, Logan University



Sean Moriarty
Chief Technology Officer, State University of New York (SUNY) at Oswego

Committee members responded to three of the 2020 Top 10 IT Issues:

- *Digital Integrations* (#4)
- *Administrative Simplification* (#9)
- *Integrative CIO* (#10)

Taken together, these three IT issues suggest ways that IT leaders can prepare their institutions for the kind of flexibility, agility, and resilience that is required for innovation and digital transformation.

What is your institution doing to ensure that systems and data are integrated in a way that provides the kind of interoperability and adherence to data integrity and governance called for in Issue #4: *Digital Integrations*?

Eckles:

At the University of Tennessee System, the focus for digital integration has been primarily through the lens of business intelligence. In one way, focusing on business intelligence as the

driver of digital integration completely walks around the issue of application-level integration by extracting data from the system and joining those data outside the application environments. This approach makes decision support, reporting, and similar functions much easier, though admittedly it leaves challenges remaining for day-to-day functional operations.

In another way, focusing on business intelligence gives us a way to digitally integrate the campuses and institutes in our system, transcending the boundaries of individual information systems or networks. We've focused our attention on giving campuses a secure means of transmitting necessary data to the system office while maintaining their local autonomy and control over who sees what data in their applications. It has also given us an opportunity to provide data-quality checking services that give campus constituents insight into their own data and ultimately improve service delivery to students and others.

How have efforts toward *Administrative Simplification* (#9) improved operations at your institution?

Hough:

Like most other institutions, Logan University is trying to make use of automation to make things work better. Ironically, it isn't the technology that makes the biggest difference in our efforts to simplify operations; it is the quality of project management. One of the best things we have done to help with operational streamlining of projects is to identify the primary goal up front. For us, the goal is to make the students' experience the best that it can be. When we approach projects through the lens of that goal from the beginning, the whole team gains clarity about what is important and how to make decisions. For example, we just went through the student orientation process while looking for ways to improve it. By being clear from the beginning that we were focused on improving the students' orientation experience, and not primarily our employees' experience of student orientation, we were able to get everyone "pulling in the same direction" from the start. It doesn't matter what technology we are implementing; for us, the basics of establishing the goal up front, spending time in good planning, and communicating throughout the project help us improve operations.

Eckles:

About six months ago, the University of Tennessee president and the CFO launched a task force on efficiency and effectiveness of

administration and management. The task force looked at multiple areas of operations, not just information technology but also human resources, capital projects, procurement, and communications. An initial goal was to clarify the role of the university system office and the services delivered there vis-à-vis the functional offices at the campus level.

The resulting inventories and analyses of services put us in a good position to consider the quality of those services, the appropriateness of the delivery points, and the complexity of the processes involved. We have since engaged a national consulting partner to help us review those items and consider how we might make different choices that could lead to better service delivery with less overlap and a more effective deployment of resources.

What have the CIO or other IT leaders at your institution done to ensure the alignment of technology planning with institutional strategy and goals, and what impact has that alignment had on progress toward institutional goals?

Hough:

Aligning technology with institutional strategy and goals begins with the understanding that whereas technology can help an institution accomplish its goals, the technology itself can never be the goal. There are so many IT elements at a higher education institution that it is easy to get caught up in the shiny new technology and lose sight of how it might (or might not) help the institution achieve its mission. IT leaders need to regularly reground themselves in the “big picture” goals and initiatives of their institution and then align their technology plans with those goals. We get increased buy-in, better cooperation, and more successful technology projects when we make it clear how our projects help the institution successfully accomplish its goals.

Moriarty:

At SUNY Oswego, senior leadership views technology as instrumental in creating

an environment for people to work efficiently, make data-driven decisions, enable student success, and make a mark on our community. To ensure alignment, we do the following:

- Involve all stakeholders in the design and execution of plans. The campus strategic plan (“Tomorrow: Greater Impact and Success”) and the IT Strategic plan (The Digital Campus) were both developed with extensive discussion and input from the campus community.
- Create and maintain strong partnerships with business units and academic departments. This is done throughout the planning and execution of projects. Success is usually achieved when the project management and technology acumen of the IT staff is brought together with the business process and subject matter expertise of the implementing unit.
- Develop appropriate guiding principles, processes, and guardrails for departmental staff to know how they can implement technology that integrates into the technical ecosystem, so that the institution achieves its goals and receives value from its investments.

Eckles:

At the University of Tennessee System, the campus CIOs are convened monthly by the system CIO for a conversation on local priorities and projects. We work together to find ways that we can support one another, share contracts and products, collaborate on solutions that fill needs at multiple campuses, and jointly prioritize system-wide initiatives.

A recent example is the system-wide rollout of two factor authentication (2FA). The campuses and the system office all had this project on their “wish list,” but it wasn’t until one of the campuses made it a local priority that things really got moving. Other campuses were not necessarily ready to pursue 2FA. But recognizing the importance of a single system-wide solution, the other campuses adjusted their priorities to

support the initiating campus. The result was a far more secure computing environment that directly supports information security policy and the goal of protecting the privacy of our students, employees, and constituents.

What advice do you have for other enterprise IT leaders who are trying to align their systems and services with institutional goals?

Eckles:

Sometimes the simplest methods are the most effective. If you haven’t already done so, write down and publish on your website a list of the services your IT organization delivers, as well as a list of the projects you are pursuing. Along with each of those services and projects, identify the institutional goals that the service or project supports. I am occasionally surprised to find that when I’m forced to put words to paper, I can’t muster a reasonable connection that I assumed would be easily made.

Things get difficult once you identify services or projects that do not directly support an institutional goal. You may know that the right thing is to let go of that work, but that work almost certainly benefits someone (otherwise you wouldn’t be doing it). One tough part of the job of an IT leader is declining to dedicate resources to an endeavor because you know the greater good is served elsewhere.

Moriarty:

The following actions work for us at SUNY Oswego:

- Have clear communication with senior administration on major campus initiatives and on prioritization of institutional objectives. Knowing the priorities defines the alignment of resources.
- Ensure that the IT organization has proactive, mature processes and that its communication with the community meets the needs of stakeholders. This has helped give the IT organization

confidence and standing in ensuring strong partnerships.

- Partner with departmental leaders who want to utilize technology and bring their units to the leading edge in service and efficiency. Their success acts as a model of how we can deliver value when we work together.

Hough:

In today's modern work environment, we often try to accomplish everything through technology and avoid human interaction as much as possible. I think it is critically important to have face-to-face conversations with the people who developed the institutional goals with which we are trying to align. When we don't make time for these conversations, too much information gets lost and we make too many assumptions and jump too often to conclusions about the purpose and importance of these goals. The skill of asking good questions, and then following up with more good questions, leads to understanding. Try to discern why the institution needs a particular goal, and then find the technology to help meet the need. One of my mentors once said to me, "The most powerful technology of all is the question." He was right.

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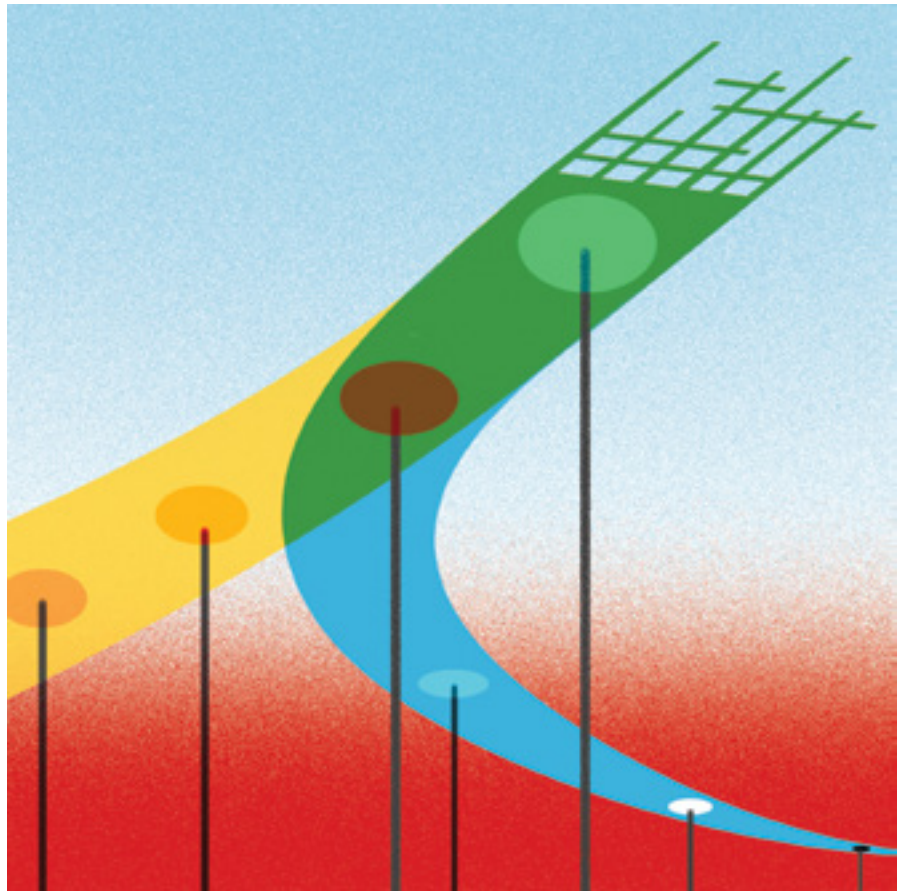


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Digital Integrations

Ensuring system interoperability, scalability, and extensibility, as well as data integrity, security, standards, and governance, across multiple applications and platforms

Beth Schaefer, David Weil, and Philip Wilhauk



We are in the data era, when data is the most valuable commodity of higher education institutions. But data doesn't deliver value on its own; it needs our assistance and intervention. Institutional leaders can't afford to think of their data systems as independent products or services. They need to think of these systems as one interconnected whole. Institutions derive value from data by ensuring that it can flow to where it needs to be in order to inform decisions. Digital integrations are key to empowering institutional leaders to leverage the

“Technology assists our internal operations. How well integrated are these systems? The reality is the technology world is moving so fast, but we have systems that don’t talk to each other as well or as effectively as they need to.”

—Mark A. Mone, Chancellor, University of Wisconsin—Milwaukee

information they’re collecting as a way to make decisions, plan, and help deliver services to students. That holistic approach must be reflected in every step of system implementation and support, including needs assessment, purchasing, data governance, security review, and enterprise architecture.

Obstacles Ahead

The most challenging aspect of digital integrations is the need for the institution and the ecosystem to advance from an ethos of independence to one of interdependence. Within the institution, optimizing at the individual or the departmental level is no longer ideal. Yet the ensuing loss of autonomy involved in becoming interdependent is often unwelcome. It needs to be reframed as a gain: new insights, functionality, and productivity.

Integrations across systems are much easier to achieve when those systems share architectural standards. These standards exist but are still evolving, and multiple standards for educational and other kinds of data may compete.

Institutional leaders need to think about their information and technical architecture. We’re still emerging from a period of siloed applications that have been deployed by different departments with no consideration about how systems tie together. Siloed applications don’t need much in the way of information or technical architecture, but integrated applications and data require both. Ideally, integrated systems can build strength upon strength, but poorly implemented integrations just multiply the problem. The impact of a security vulnerability or data loss can quickly spread across multiple systems.

Data governance is another potential sticking point. Roles, responsibilities, and policies need to be clear, including data stewardship or ownership, retention, classification, and security and privacy policies and standards.

Hopefully, in 3 to 5 Years . . .

- Standards and tools will continue to evolve to simplify out-of-the-box integrations, reducing the volume of interface development work. The resulting “plug and play” applications and data will enable institutions to more effectively use data and analytics to address recruitment, retention, and other urgent student issues.
- The partnerships between higher education institutions and with vendors will become deeper, and vendors will better recognize that adopting common standards and offering out-of-the-box solutions for major systems are good practices both for higher education and for their bottom line.

Advice

To get started:

- Learn about digital integrations, enterprise architecture, and data and IT governance so that you can recognize what’s good and better and best in higher education and what other people are doing.
- Consult all the key stakeholders to learn about the present and ideal states of data integration (e.g., the ways in which data can be used to advance institutional priorities).
- Establish data governance (to get a clear idea of what data you have, where it is, who owns it, who’s maintaining it) and IT governance (to ensure you have a good process for understanding what systems are being put in place).

To develop further:

- Become involved with Itana, the community supporting enterprise, business, and technical architects in academia.
- Having established the people and the process pieces, research and invest in tools such as iPaaS (integration Platform as a Service).
- Use the EDUCAUSE Core Data Service to benchmark your IT governance.

To optimize:

- Be aware that data foundations are not something you complete and then let run. Mature governance and architecture are needed for your environment and optimal maturity level.
- Help bridge the gap between industry and institutions. These two parts of the ecosystem need to collaborate, and leading institutions can play a huge role.
- Understand that integration tools are evolving rapidly. Be sure to stay updated, and consider the ROI of changing or upgrading your tools.

5

Student-Centric Higher Education

Creating a student-services ecosystem to support the entire student life cycle, from prospecting to enrollment, learning, job placement, alumni engagement, and continuing education

Kellie Campbell, Farhat (Meena) J. Lakhavani, Ernie Perez, and Sasi K. Pillay



Perceptions of the value of higher education, once a given, have shifted. Higher education has to adapt in order to restore its reputation as an indisputable public good. A large component of that shift is viewing post-secondary education from the learner's, rather than from the institution's, perspective. To do that, we need to ensure that students can engage with the institution to chart their own progress, request support and services, and further express and meet their needs. We require a student services ecosystem that will give students access to the information and services they need from wherever they are geographically, from whatever device they are using, and at whatever point they are in their relationship with the institution. To provide that, we must work and think and design differently.

Obstacles Ahead

This work requires learning how to transcend individual departments to work holistically. Higher education institutions are not structured that way, and the cultural change that is needed to optimize at the institutional level will be the biggest challenge. Unless senior management is uniformly committed to prioritizing the institution above the silos, the project will falter.

“The student’s start-to-finish experience is the bread-and-butter of the financial stability of this institution. We are trying to create a new structure and new business processes that address the experience that our students have from the minute they begin to explore the college all the way through graduation and their transition to alumni status.”

—Penny Howard, Executive Vice President for Administration and Finance, SUNY Erie Community College

Failing to take a comprehensive, multidimensional approach to student success and to the data needed to understand and achieve student success can trip institutions up. As institutional leaders focus on supporting students throughout the student life cycle, they need to take an institution-wide approach to student services, processes, systems, and data. This involves retiring as much as is created, since a more holistic approach to student success is likely to be incompatible with existing practices.

Leaders may find themselves struggling to grasp the value and impact of the initiative as they better understand the ongoing commitment it requires. Integrated, personalized, digital student services are not even remotely close to most institutions’ offerings today, and leaders may question whether this work is truly core to the institutional business model.

Hopefully, in 3 to 5 Years . . .

- Based on the foundations established when developing student-centric services, institutional leaders will have learned how to work differently, enabling them to reimagine the higher education business model to meet current and emerging generations of learners. As institutions pivot to becoming student-responsive, leaders will begin to see how many of their credentials, or “products,” need to be refactored, as well as why and how.
- Institutional leaders will use their experience of learning how to partner within their institutions as a way to deepen consortial and other cross-institutional partnerships so that the greatest challenges of higher education can be addressed collaboratively.

- Institutions will advocate and partner more effectively with industry, and vendors will have learned to value the benefits of operating within a culture of collaboration, rather than one driven primarily by competition.

Advice

To get started:

- Gather the key stakeholders throughout the institution to set a strategic vision, develop a common definition of *student-centric higher education*, and establish and prioritize broad goals for the institution.
- Socialize your platform for change throughout the institution, and adapt based on feedback.
- Find institutions that are far ahead, and use them as role models and mentors. Look beyond your peer group for ideas.

To develop further:

- Learn by doing. Set smart goals, and improve governance and project management as you gain experience with this kind of cross-institutional change initiative.
- Help the entire institution see the progress that has been made and the impact it has had.

To optimize:

- Help others come up to speed.
- Advocate with vendors to collaborate with institutions as a way to avoid a proliferation of point solutions.
- Help undergraduate curriculum leaders identify opportunities and needs, by sharing with them where this field is heading.

PERSPECTIVES

Student Success

Kathe Pelletier, with Tina Balsler, Jeff Grann, Maggie Jesse, Kal Srinivas, and Karen Vignare

Student success has occupied a prominent spot in the Top 10 IT Issues for the past few years. Whereas this year's results are no different, the issues related to student success have become more nuanced. In 2020 "student success" as a monolithic category has been deconstructed into three potentially more meaningful issues: *Student-Centric Higher Education* (#5), *Student Retention and Completion* (#6), and *Holistic Student Success* (coming in at #11, just missing the Top 10 list).

Five community members shared their reactions to the 2020 Top 10 IT Issues in the context of their work in student success.



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Jeff Grann
Credential
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Engine



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Kal Srinivas
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The community members were divided about the placement of student success issues in the Top 10 list this year. Some saw the change from the 2019 list—which had *Student Success* at #2 and *Student-Centered Institution* at #4—as a sign that higher education might be deprioritizing student success as a whole.

Srinivas:

Technology is revolutionizing higher education and should start and end with our concern for student success within and beyond our campuses. Implementation of learning analytics initiatives supports *Student Retention and Completion*, which can be powered by artificial intelligence (AI) to drive these holistic systems to scale. To lose a focus on student success as a top priority could threaten *Sustainable Funding* (#3) and the

importance of strategic *Digital Integrations* (#4). The top two issues—*Information Security Strategy* and *Privacy*—are indeed important but are derived from a utility positioning and not a strategic positioning. Don't get us wrong: risk management and data stewardship are important, though increasingly challenging due to the complexities of our technological society.

Balsler:

I'm not surprised that *Student-Centric Higher Education* and *Student Retention and Completion* are on the list for the first time, but in my opinion they should be #1 and #2. Leading with a student services ecosystem model will change the way in which we operate our daily work, programming, funding, IT infrastructure, and support for students to be "world ready." It's not about just sustaining the IT enterprise but, rather, is now about being more inclusive of the whole student experience.

Jesse:

Student Success was called out as the second-highest priority in 2019, which provided high visibility of its importance. Not seeing those specific words highlighted on the 2020 list was a bit shocking—at first glance. However, this year's list includes three very

specific student concerns: *Student-Centric Higher Education*; *Student Retention and Completion*; and *Higher Education Affordability* (#8). While all three of these require institutional resources and focus on student success, they all feel more like the means to that end and not necessarily as "the" issue.

At the same time, several members view the student success issues and the more purely technical issues in the Top 10 list as an ecosystem with parts that must work in sync to ultimately support students and learning, particularly in relation to strategic data collection, management, and application.

Balsler:

With the increase of student success management tools and data that is now captured, institutions have a great opportunity and challenge to identify their campus-wide data ecosystem and to leverage the data to scale services like never before. As a result of understanding such an ecosystem, those of us in higher education can be most effective by understanding gap areas as a way to improve the student experience at all stages. We need to know more about what our students want and how they want us to reach them. As our institutions continue to scale student success efforts and incorporate new technologies, we are faced with a moving target in understanding and communicating with our Generation Z students, especially when we discuss AI student services. In addition, we have an opportunity to harness data like never before and move into data-rich and data-informed organizations.

Grann:

Given this urgency, it's frustrating that *Digital Integrations* is still a Top 10 IT Issue in higher education. Solutions are in hand. Standards are available. Technology has been developed. The institutional incentives are aligned. Multiple industries, including travel and financial services, have successfully solved these problems. Yet, *Digital Integrations* is still a significant issue, one that I sometimes hear expressed as exasperation over data access and business models that lock customers into using specific products. This issue isn't just talk. Digital integration problems take real resources (both time and money) away from addressing other issues and reduce the capacity of IT leaders to support much-needed innovations.

Solving the *Digital Integrations* issue could also connect higher education with other sectors via multiple emerging IT issues, such as career pathways, workplace-based learning, performance-based assessments, comprehensive learner records, curricular feedback loops, and ROI-based quality assurance mechanisms. Competencies encoded as digital data via open standards have tremendous potential to promote these cross-sector connections. Major employers and government agencies are increasingly defining data strategies and are motivated to partner with education providers. There has never been a better time for educational technologists to make substantive contributions in areas of national importance.

Srinivas:

For the IT organization to truly become a strategic partner in higher education, its vision and mission should include student success and should support strategic objectives that work across divisions in higher education. These partnerships will make good institutions become great, thereby moving the IT organization beyond just support and utility. These innovations will be disruptive in nature but will help schools and colleges scale and sustain holistic student success.

Some members focused on the student learning aspect of student success and urged for action and investment even amid emerging technologies.

Vignare:

Seeing student success issues move from #2 and #4 in 2019 to #5 and #6 in 2020 was slightly disappointing. Our IT colleagues are incredibly important to student success in designing and supporting the work through infrastructure and improved processes. I think many of us in higher education are still overly fascinated with how AI may disrupt teaching and learning in the distant future and are not focusing on the improved design and tools we can put into place now. By leveraging some current-state tools (e.g., adaptive courseware) and focusing on supporting faculty, we can improve student success in many general education courses. We don't have to wait until everyone understands AI and the user experience. We need to leverage what we know and think about priorities, such as how students entering academic courses get through administrative processes more easily and also how we can improve their learning experience.

Jesse:

To state the obvious, it's not surprising that *Information Security Strategy* topped the list again. Information security is consistently at the top of the list for discussion and funding at my institution. Yet though it's not a surprise, I do look forward to the day when we can put that issue further down the list and focus more on student success concerns.

I would particularly like to see greater focus on supporting the delivery of instruction and improvements in learning delivery. What happens in the teaching environment is core to why our institutions exist. Support for improved teaching, increased engagement, and the use of new technology and data opportunities for learning analytics and innovative teaching and learning applications of AI are exciting developments that deserve the investment of more resources.

Finally, change management was viewed as a missing priority.

Balser:

We must recognize that there is a huge opportunity to confront the barriers ahead and that many change management conversations still need to take place before we can truly move the needle on student retention and completion goals.

Srinivas:

A critical missing issue is change management. Information technology becomes diluted and marginally effective if change management is not intricately woven into the fabric of our higher education institutions, where culture always trumps strategy.

Ultimately, after carefully considering the EDUCAUSE 2020 Top 10 IT Issues, these members of the student success community call for the following from higher education IT professionals:

- Forming partnerships across campus to keep the student experience in mind
- Paying attention to change management and culture
- Investing in a strategic data ecosystem that can reveal insights about institutional performance and students' progress as a way to drive future action
- Not losing sight of the critical goal of student success

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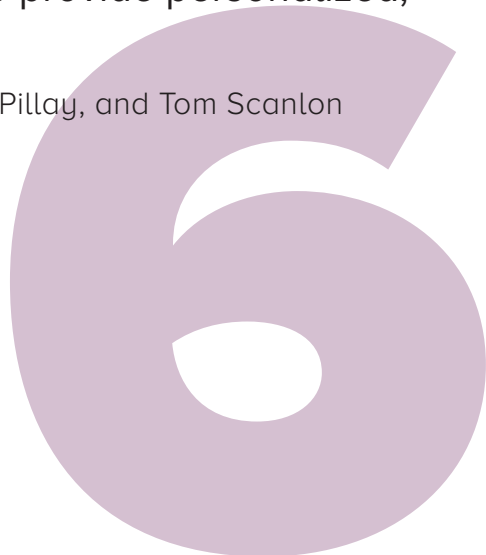
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Student Retention and Completion

Developing the capabilities and systems to incorporate artificial intelligence into student services to provide personalized, timely support

Opinder Bawa, Sasi K. Pillay, and Tom Scanlon



Student success is institutional success is societal success. Yet institutional levels of retention and completion show a gap between what students hope for and expect and what they often receive. No one wins: The institution wastes its investment in recruiting and enrolling students who don't complete, the well-documented benefits of higher education to the economy and society go unrealized, and most importantly, students' time, treasure, and talent are squandered.

Today we have new tools acting on new insights about the complexity of student success. Whether this is tutoring, additional course materials, better onboarding, or supports for students' mental health, many faculty, advisors, and others are acting early and often to help students stay enrolled and successfully attain meaningful credentials. Student success technologies have gained market share and sophistication rapidly throughout the past decade.

Obstacles Ahead

A comprehensive focus on student success won't be productive without cultural change, from boards to presidents to academic and institutional leaders and on through faculty, student success professionals, and CIOs. A new institution-wide mindset is required to recognize that data about students is institutional data, not departmental data, and that a great deal of data is required. Institutional constituents need to consider student success as a business outcome that can be measured, monitored, and used to hold people accountable. This can be scary stuff for administrators and faculty whose careers, to date, may not have not prepared them for such change.

Institutions that haven't implemented data governance and data architecture will need to do so in order to begin using AI and analytics to deliver personalized, timely student services. Data governance can help stakeholders sort out data roles, responsibilities, and

definitions. Data architecture will enable project teams to define data sources, flows, and integrations. Understanding the profile of students who would do well in their institutions is another key factor. The aim is to allow students to be the best judges of what they would like to achieve and where.

Hopefully, in 3 to 5 Years . . .

- Higher education will achieve better success rates and completion rates across the board.
- Student success will become less of a struggle due to earlier interventions with students at risk.
- Institutions will be more effective at admitting the students who can achieve affordable credentials. Institutions will be focusing on different types of students and on developing student portfolios that will enable a differentiation of offerings.
- Higher education institutions will work with others—whether community colleges, high schools, or even elementary schools—earlier in the pipeline to help students develop the behavioral habits to achieve the prerequisite skills for postsecondary success.

Advice

To get started:

- Find the right starting point for your role at your institution. This is not an issue the CIO can lead individually, but the IT organization does have an important role to play. Outline that role. Depending on your relationships with institutional leaders and on your personal comfort level and expertise, you might also advocate directly for benefits and risks to the institution. Be careful not to stray beyond your circle of influence.
- Identify exemplars who are using AI to provide personalized, timely support.
- Use EDUCAUSE data showing the benefits of personalization on student success.

“Retention, from the university’s point of view, is persistence from the student’s point of view. Student access was the marching order of the 1960s, 1970s, and 1980s. Today’s problem is success—to get them through. We have far too many students who start and don’t finish nationwide. That is the real challenge.”

—Alan D. Marble, President, Missouri Southern State University

To develop further:

- If you haven’t already, establish a vision and milestones for how AI can be used for retention and completion.
- Develop the case for AI and analytics as an institutional competitive advantage. Link information technology and AI contributions to institutional KPIs for retention and completion to help identify the value-add of these investments.
- Promote progress with your institutional and external peers to help advance this practice.

To optimize:

- Learn about cutting-edge uses of AI and analytics in other industries, and translate those to your institution.
- Consider how to extend the use of data and AI into additional areas, such as admissions, enrollment, the first-year experience, and individual academic programs.
- Cultivate potential partnerships—with vendors and other institutions—that could make additional investments more affordable.

Improved Enrollment

Using technology, data, and analytics to develop an inclusive and financially sustainable enrollment strategy to serve more and new learners by personalizing recruitment, enrollment, and learning experiences

Ed Aractingi and Albert Stadler



Six in ten first-time, full-time undergraduate students who enrolled in four-year institutions in 2011 attained a bachelor's degree within six years. Obviously, this leaves four of those ten falling short, and those aren't great odds. There are many reasons for higher education's enrollment problem, including its poor record of completion. As institutional leaders realize their responsibility for student success, they are finally giving thought to which types of students thrive at their type of institution. Persistence—the probability that students who enroll will continue and won't switch to another institution or drop out—drives completion, and completion constitutes the most basic definition of student success. Institutions want high rates of student success, so they want high rates of persistence and retention, which naturally leads back to an institution's enrollment strategy. Retaining students is a lot less expensive than recruiting them, and knowing which students are most likely to succeed can streamline recruitment and reduce the total cost for institutions and students alike.

This is where technology comes in. Institutions are using data to develop algorithms to help them identify which students are more likely to thrive, as well as the root causes when students leave or fail to graduate. In the former case, algorithms help institutions target potential candidates more effectively. In the latter, institutions learn how to adjust their offerings to better serve a larger number of aspiring graduates. This is not about recruiting the smartest (or richest) students; it's about optimizing the fit between the institution and the student. These days, all analytics roads lead to the IT organization, which can help the institution understand the type and level of investment required to improve enrollments and which can provide the technical leadership for any approved analytics initiative.

“Right-sizing and right-sourcing the institution is guided by a bold and inclusive enrollment strategy to meet the needs of students today and tomorrow. I think technology will play a major role. I would like to think if our enrollment strategy is expansive and inclusive, it will stretch us in how we define what a residential undergraduate experience is going to truly be in America going forward.”

— Shirley Collado, President, Ithaca College

Obstacles Ahead

Institutions can lose their way if they focus on recruitment or enrollments. The goal is to find students who can succeed at the institution, rather than to increase the number of students who matriculate. Data can help guide institutional leaders by clarifying which students will thrive at their institution, enabling enrollees to graduate and become successful citizens and loyal alumni.

Although higher education’s superpower is its willingness and ability to collaborate, this may be a problem when one institution’s solutions don’t translate easily to those of another institution. Improving enrollment involves defining and optimizing the fit between the student and the institution. The formula will differ for each institution and for different types of students within an institutional pool. That requires not just special knowledge but also special nuance and skills for working within a particular institution and with the particular prospective learners.

The shelf-life of today’s successful practices will be limited, and institutions will need to find innovative strategies to address new students and changing circumstances. The challenge may only increase as demographics change and as competition from alternative educational programs and credential providers expands, potentially reducing the unique value of a college/university degree.

Hopefully, in 3 to 5 Years . . .

- The importance of simple completion metrics will recede and give way to quality measures that capture the contribution that postsecondary education makes to people’s ability to thrive in life, however they define thriving.

Advice

To get started:

- Do your research by learning from all prospective students, both those who have enrolled and those who were accepted but did not enroll. Learn why they made their choices.
- Find the niche that will attract learners to your institution and only your institution. Try not to be everything for everyone.
- Learn how customer acquisition/retention industries outside higher education use technology and AI to personalize their services. Find higher education institutions that are far ahead and use them as role models and mentors. Look beyond your peer group for ideas.

To develop further:

- Start measuring results to identify trends, problems, and successes. Take action based on what you learn.
- Be patient, and take a long-term view. These efforts have a gestation period of a year (for quick wins) or several years (when culture change is needed).
- Allow time for innovations to take hold. Don’t try one thing, drop it and move on to something new each year.

To optimize:

- Find the small things you need to improve. If there are groups of learners you should be attracting but are not, learn why not.
- Share back to the profession. Abstract your learnings so that others can adapt and adopt them.
- Continue to keep abreast of cutting-edge practices and technologies to ensure that your accomplishments don’t become stagnant.

PERSPECTIVES

Teaching and Learning

Malcolm Brown, with Rob Gibson, Linda Jorn, and Phil Ventimiglia

From a teaching and learning perspective on the 2020 Top 10 IT Issues, *integration* is the key theme. This theme consists of multiple layers: technology integration, certainly, but also integrations of cross-organizational collaboration, leadership, learning ecosystems, and learner and instructor success. For 2020, integration emerges as the single most important avenue leading to overall institutional academic success and also as the critical prerequisite for institutional transformation.

Three community members talked about the 2020 Top 10 IT Issues most relevant to the teaching and learning community.



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University



Linda Jorn
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Vice Provost
for Learning
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Phil Ventimiglia
Chief Innovation
Officer, Georgia
State University

Digital Integrations (Issue #4)

Since 2014, EDUCAUSE has been working with the academic community on the idea of the next generation digital learning environment (NGDLE) or ecosystem. The integration of educational platforms, applications, resources, and data by means of open standards lies at the core of this concept. Such an architecture remains the key technological foundation for teaching and learning success. Technical integration, in turn, provides the basis for achieving architectural agility and for designing an interconnected user experience for learners and instructors alike. This entails, as Linda Jorn notes, “knitting together enrollment, course selection, teaching and learning, assessment, and advising tools into a student-centered ecosystem that makes the student life cycle—the learning journey—a delightful student experience.”

Such ecosystems also present new challenges. Rob Gibson points out that the constant influx of teaching and learning

applications that enable the learning environment to support disparate modes of learning can provide the institution with a “competitive advantage.” But this also means that the IT organization can no longer control what technology learners and instructors use. So, Rob asks: “How do we balance the need for technologies that are used in the conduct of teaching and learning with the security risk they may present? Clearly, strategies must be developed that balance these two interests.”

The integration of a digital learning environment means not just connecting applications but also enabling the flow of learning data. An ecosystem of integrated applications generates a good deal of detailed learning data, which of course connects to Top 10 Issue #2: *Privacy*. Gibson warns: “This so-called ‘big data’ is at once promising and concerning.” Lurking within the issue of privacy is also that of equity. Gibson refers to an “uneasiness” that can result “from student data . . . being captured and repurposed in ways that are not always transparent—or equitable.” These issues of privacy and equity are of such magnitude that they call for an institutional approach coordinated through governance and policies.

Finally, the technical challenges posed by building a standards-based digital learning environment may not be as formidable as the culture adjustments it will require. Addressing *Digital Integrations*, Susan Grajek and the 2019–2020 EDUCAUSE IT Issues Panel explicitly identify the “most challenging aspect” of such integrations as “the need for the institution and the ecosystem to advance from an ethos of independence to one of interdependence.” This will be the case on both the academic and the administrative sides of the higher education institution.

The Integrative CIO (Issue #10)

The findings about *The Integrative CIO* also pertain to the chief academic technology officer (CATO). The academic side of some institutions also have officers with titles such as chief innovation officer or chief learning innovation officer. No matter the title or specific focus, all of these positions must work across the college or university with disparate campus groups in order to reach strategic academic goals.

First is the task of developing the campus digital learning ecosystem. According to Phil Ventimiglia: “Technologies such as chatbots, CRM, AI, and adaptive learning are a few of the critical items that we are integrating into a new student-centric platform and that higher education can leverage to facilitate student-centric learning and help students progress across the student life cycle.”



This kind of complex orchestration clearly requires an integrative and collaborative approach from the outset. As Jorn puts it: “In order to design a student-centric and services ecosystem, an ‘Integrative CIO’ as well as an ‘Integrative CATO’ must have a *daily partnership mindset*.” Gibson adds: “The CIO’s ‘role at the table’ has evolved to be one that is less about the mechanics of the IT organization and more about how IT can serve as a strategic partner in helping the institution execute its mission.” The same can be said for CATOs and learning innovation officers: a crucial job skill is leadership and consensus-building to hold together key campus coalitions and partnerships.

Student-Centric Higher Education (Issue #5) and Improved Enrollment (Issue #7)

The transformative currents within higher education are perhaps most conspicuous in the area of student success. What is most powerfully transformative is the 360-degree perspective on the student experience. While focused on the vital concerns about retention and completion, over the past several years this has expanded to include all aspects of the student experience, especially well-being, equity, and inclusion. This perspective recognizes the importance of students’ learning experiences not only for enabling degree completion but also for outfitting learners for their careers. Ventimiglia notes that his institution, Georgia State, “has been on a journey to embed digital

literacy skills into the core curriculum, and experiential learning opportunities provide a path for deepening . . . skillsets.” He cites, for example, two Georgia State programs: Digital Learners to Leaders (DLL) and Experiential Project-based and Interdisciplinary Curriculum (EPIC).

The broadening of the definition of student success to include all dimensions of the learner experience is also reflected by Issue #7: *Improved Enrollment*. Moving beyond the mechanics of shuttling learners from course to course and enabling matriculation, the concept of enrollment has expanded to embrace the full lifetime of students’ involvement with their institutions, from prospect to alum, as well as the need for “setting the stage” for their entry into the workforce.

Echoing the overall theme of integration, these expanded enrollment practices can contribute to a transformed student experience. Gibson sums up this point: “The goal for all institutions is improved enrollment, improved retention, and personalized learning experiences.” The EDUCAUSE Learning Initiative (ELI) *7 Things You Should Know About Enrollment Management* noted: “Today’s enrollment managers are responsible for a complex spectrum of services that extend across the student life cycle.” Using campus strategic priorities as the target, expanded enrollment practices enable “institutions to connect activities in student recruitment and marketing, admissions and enrollment, financial aid and scholarship administration, course registration,

institutional planning and analytics, and student life and leadership.”²

Vital to the future of improved enrollment practices are the standards coming into focus for the comprehensive learner record (CLR) and the practices they enable. The CLR augments the traditional transcript by recording and verifying learning across a student’s full campus experience, including co-curricular activities and competencies. Pioneering work is already under way at institutions such as Johns Hopkins University, the University of Central Oklahoma, Elon University, and Loma Linda University.

Summary

The efforts described above (as well as many other initiatives) have the potential for transformative impact that will enable higher education to navigate its 21st-century challenges and opportunities. Jorn summarizes the importance of this integration: “In the IT world we have many ‘chiefs’—CIO, CATO, CISO. It is time for CIOs to have a Chief Usability Officer at their leadership table to ensure a user-centered design approach to all technology systems.” User-centered design may be the acme of technology design. The goal of a user-centered learning environment calls for integrated—perhaps even transformed—technology, workforce, and cultural components.

Notes

1. Susan Grajek and the 2019–2020 EDUCAUSE IT Issues Panel, “Top 10 IT Issues, 2020: The Drive to Digital Transformation Begins,” *EDUCAUSE Review* Special Report, January 27, 2020
2. ELI, *7 Things You Should Know About Enrollment Management* (Louisville, CO: EDUCAUSE, 2019).

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The Road to Digital Transformation (Dx)

The EDUCAUSE 2020 Top 10 IT Issues tell a story of how higher education is beginning its Dx journey. The highways and byways of digital transformation, driven by *The Integrative CIO* (Issue #10), have multiple stops along the way. Below, take a trip through some of those stops—and see where institutions are as they travel their varied paths.

Simplify

- #4 Digital Integrations
- #9 Administrative Simplification

Sustain

- #1 Information Security Strategy
- #2 Privacy
- #3 Sustainable Funding
- #8 Higher Education Affordability

Innovate

- #5 Student-Centric Higher Education
- #6 Student Retention and Completion
- #7 Improved Enrollment

0% **LIMITED**

Development tools to support key platforms

Support for accessibility tech

Use of APIs

20% **EMERGING**

Incorporating open standards into enterprise IT



User-centered design

40% **GROWING**

Changing enterprise architectures, integrations, workflows

Simplifying administrative services/tech

60% **MAINSTREAM**

Institution-wide data management/integrations



Privacy-enhancing technology

Open educational resources (OER)

DNS security

Cloud-based identity/security services

Campus safety

Compliance environment

Enterprise risk management

Privacy

Internet of things for teaching/learning

CRM covering student life cycle

Predictive analytics for student success

Digital transformation of research and scholarship

Evaluation of tech-based instructional innovations

Agile approaches to change

Blending of roles between IT and other areas

Online and blended degree/certificate programs

IT as an agent of institutional transformation and innovation

Data-informed decision-making

Student success focus/imperatives

DIGITAL TRANSFORMATION

To learn more about the **EDUCAUSE 2020 Top 10 IT Issues**, visit edUCAUSE.edu/2020issues. To access the latest publications from the **EDUCAUSE Center for Analysis and Research**, visit edUCAUSE.edu/ecar.

Source: ECAR, *Higher Education's 2020 Trend Watch and Top 10 Strategic Technologies*: edUCAUSE.edu/2020trends-techs

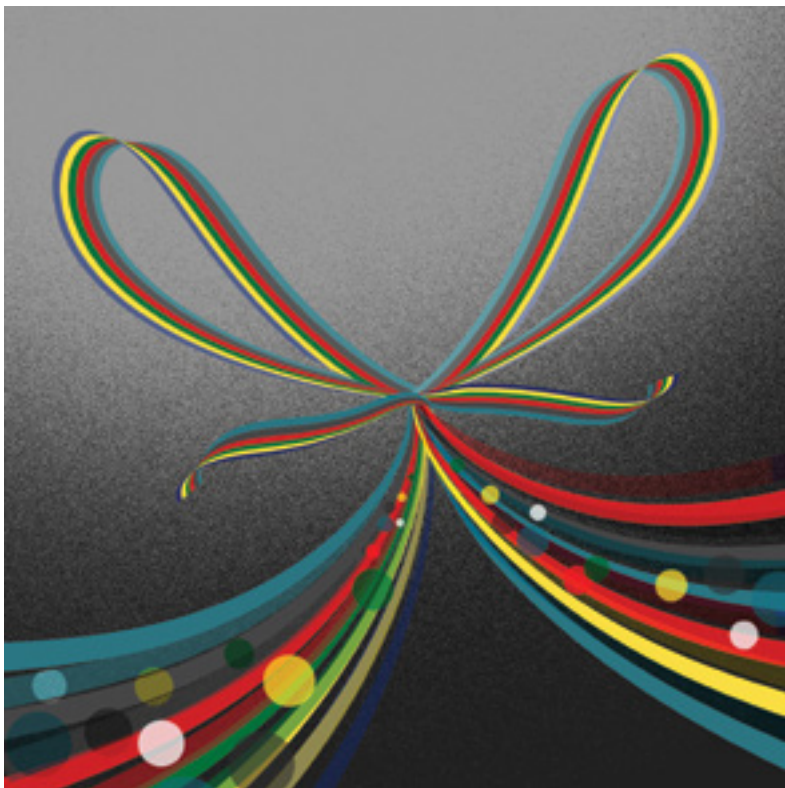


Digital Transformation: Is your institution ready?

The journey of digital transformation within higher education is underway. Leaders must prepare their institutions now to take strategic advantage of the coming shifts in culture, workforce, and technology.

Get going!

Explore the steps you can take to guide your progress.



Higher Education Affordability

Aligning IT organizations, priorities, and resources with institutional priorities and resources to achieve a sustainable future

Ed Aractingi, Helen Chu, Ernie Perez, and David Weil



Higher education has an affordability problem. With US student debt in excess of \$1.5 trillion, it's not surprising that people ages 18 to 29 years old ranked an affordable education above all other issues in the 2018 midterm elections.⁸ Although technology introduces new expenses, it can also help to reduce costs overall and make possible new solutions to improve affordability.

Affordability not only entails providing access to people who cannot afford to go to college but also extends to supporting students' academic success and reducing their financial stress. Many colleges and universities are investing in online learning to provide degrees at scale for students who can't afford higher education in any other way. Libraries and IT organizations can supply open educational resources, electronic materials, and educational platforms to reduce barriers to postsecondary education.

But the contributions of technology go beyond the classroom. With increasing numbers of students reporting food and housing insecurities,⁹ IT leaders are aligning their priorities to help their institutions address affordability in a comprehensive way. They are introducing solutions to enable meal-sharing, are offering technology loans for tablet devices and internet services (as well as the more traditional laptop loaner programs), and are implementing software to help match students to available scholarships. IT organizations are becoming partners in addressing the need for higher education affordability.

Obstacles Ahead

If institutional leaders try to address this issue on too many fronts at once, they risk diluting the effectiveness of everything they take on. Focus and coordination across the institution are key to avoiding duplicative or counterproductive efforts that waste time and resources.

Finding a balance between containing/reducing

costs and offering students value for the investment they're making is challenging institutions the most. Simple, drastic choices, like across-the-board cuts, are likely to backfire by reducing value. A more nuanced approach is needed, and that requires leadership that is able to develop a strong vision and effect the required changes in institutional culture. Some areas will need new investments, and others will have run their course. Only leaders with clear and compelling visions can make the case for the structural changes and difficult choices that institutional leaders need to make. The vision needs to translate to the changes and outcomes required of institutional units, of which the IT organization is no exception.

Hopefully, in 3 to 5 Years . . .

- Other parts of the higher education ecosystem will share accountability for affordability as a societal good:
 - Publishers, to work collaboratively with institutions to reduce the costs of scholarly and educational materials
 - Vendors, to provide meaningfully discounted technologies and other services to the higher education industry and to creatively partner with institutions to otherwise help lower the cost of attendance, such as by providing educational opportunities in concert with institutions
 - State and the federal governments, to provide funding to make public institutions affordable regardless of a student's income
- Institutional leaders will look to their IT organizations to provide leadership in reducing cost and adding value.

Advice

To get started:

- Talk to students, and listen to what they say they need and how you can help.
- Learn from what other institutions are doing to use

“If you had asked me three or four years ago about the major concerns and initiatives around the university, I would have spoken more explicitly to budget issues. Now I am looking at budget issues through the lens of moving the needle on student success.”

—Matthew Cahn, Interim Vice Provost,
Academic Affairs, California State University,
Northridge

technology to lower students' costs, such as OERs, device checkouts, and technology-supported food pantries.

- Implement an open educational resources program.
- Consult with your peers to learn if you're getting competitive bids on contracts.

To develop further:

- Use IT governance and vendor management (in collaboration with procurement) to review and manage the portfolio and cost of applications on campus. Eliminate duplication, and explore partnerships to further reduce costs.
- Look closely at institutional data to identify barriers and opportunities that offer the biggest ROI for increasing students' academic success and reducing their costs.

To optimize:

- Realize that affordability is a long-term and difficult issue that will take ongoing effort, so don't expect fast, dramatic improvements.
- Understand that the skills you need to optimize might not be the skills your workforce has. Identify where you need to invest in training or talent.
- Recruit students to suggest and work on affordability-related projects. Ask them to advise on and help improve existing projects.

PERSPECTIVES

Libraries

Karen Wetzel and Joan Lippincott, with Karim Boughida, Salwa Ismail, Sarah Pritchard, and Keith Webster

Bringing in librarians' perspectives on the 2020 Top 10 IT Issues is a natural focus for EDUCAUSE. The Coalition for Networked Information (CNI), a joint initiative of EDUCAUSE and the Association of Research Libraries (ARL), advances collaboration between library and IT organizations in order to promote the use of information technology to advance research and education.

Four library leaders contributed their thoughts.



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Northwestern
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Keith Webster
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Emerging and
Integrative
Media
Initiatives,
Carnegie
Mellon
University

We selected three of the 2020 Top 10 IT Issues to represent the range of topics in which library expertise and initiatives could be important for an institutional IT program:

- *Student-Centric Higher Education* (#5)
- *Sustainable Funding* (#3)
- *Privacy* (#2)

For each issue, we asked the library leaders to identify challenges and opportunities for collaboration between libraries and the central IT organization.¹

Student-Centric Higher Education (Issue #5) **How are libraries working with the central IT organization to optimize students' experiences?**

Webster:

I'm trying to position the library as the primary non-classroom academic space here on campus, with a recognition that the student life cycle needs different types of activities. When students arrive on campus, they are in a formative stage, looking for guidance on how to be successful and to find their community. At the start of the semester, we try to create an environment at the CMU Libraries so that students are primed for success early in their studies. As the semester unfolds, there is a focus on laboratory and group work, so we are developing high-quality group study and maker spaces that are strongly linked with academic programs. We see more demand for individual study spaces as exams approach, so we disassemble group spaces. Another perspective is that CMU students are looking for the same type of information services that we are building for our researcher community. The skills in working with data are so paramount that the library is becoming known as a central destination for basic data science skills. We will be introducing our first data science course from the library next semester.

Pritchard:

At Northwestern, libraries and the central IT organization have a strong, collaborative relationship that has evolved over the last ten years. Those of us in the libraries are working in an ecosystem where we are engaged in an array of outreach and partnership with multiple campus units. We are coordinating across diverse academic units that may have their own IT staff, so it becomes highly complex to initiate and maintain constantly changing relationships. We've also been restructuring our liaison program so that librarians can more readily expand beyond just acquisitions—for example, to research data support, digital literacy, and OER.

Even if all of us on campus ultimately have a shared vision, the work is decentralized across campus, and implementing the vision and consistent policy can be a challenge. The ecosystem is both the challenge and the opportunity. It's both an amoeba and a jigsaw puzzle. There are multiple pieces that tie together, but they are flowing.

Ismail:

Libraries contribute a lot to an improved user experience as services are rolled out, ensuring that services are user-centric and providing a place for collaboration. It's very important for libraries to coordinate with the central IT organization, and at the UC Berkeley Library, we've done this for a long time. One way is to

provide seamless enterprise access to tools. Libraries already offer many tools for research and teaching and learning, and the central IT organization can help. Also, libraries often work with other campus units on pilots and then work with the central IT organization to scale them. This work runs the gamut, from very basic technological needs (e.g., access to specific software, logging in, printing, Wi-Fi support) to more complex issues.

Boughida:

At the University of Rhode Island, we are now paying much more attention to student success and retention, partly as a result of less funding and partly because of how higher education itself is being questioned. The libraries' role in student success is larger, deeper, and broader than just information provisioning and management. Student success and retention are part of our mission, and we are also trying to align with enrollment, counseling, and other services. Student success and retention will depend on diversity and accessibility. If we want to be ready for this, if we want to take diversity, equity, and inclusion very seriously, we need to consider how we are offering services and which services. This will involve repositioning and moving outside our comfortable box.

Sustainable Funding (Issue #3)

How are libraries developing funding models that can maintain quality and can accommodate both new needs and the growing use of IT services in an era of increasing budget constraints?

Boughida:

All of us in academic library administration struggle with the library funding model, and we are all trying to find a sustainable model. We have to reprioritize constantly. We have to work within constraints because the landscape is complicated. Colleges and universities cannot increase student fees and/or tuition forever. The library is part of the infrastructure of the institution, so library administrators have to work to support more and collaborate more. This applies in areas such as research and open data; we still struggle to find the best model to fund data management. But unless we have national help, we will never have truly regional or even national hubs for research data.

Ismail:

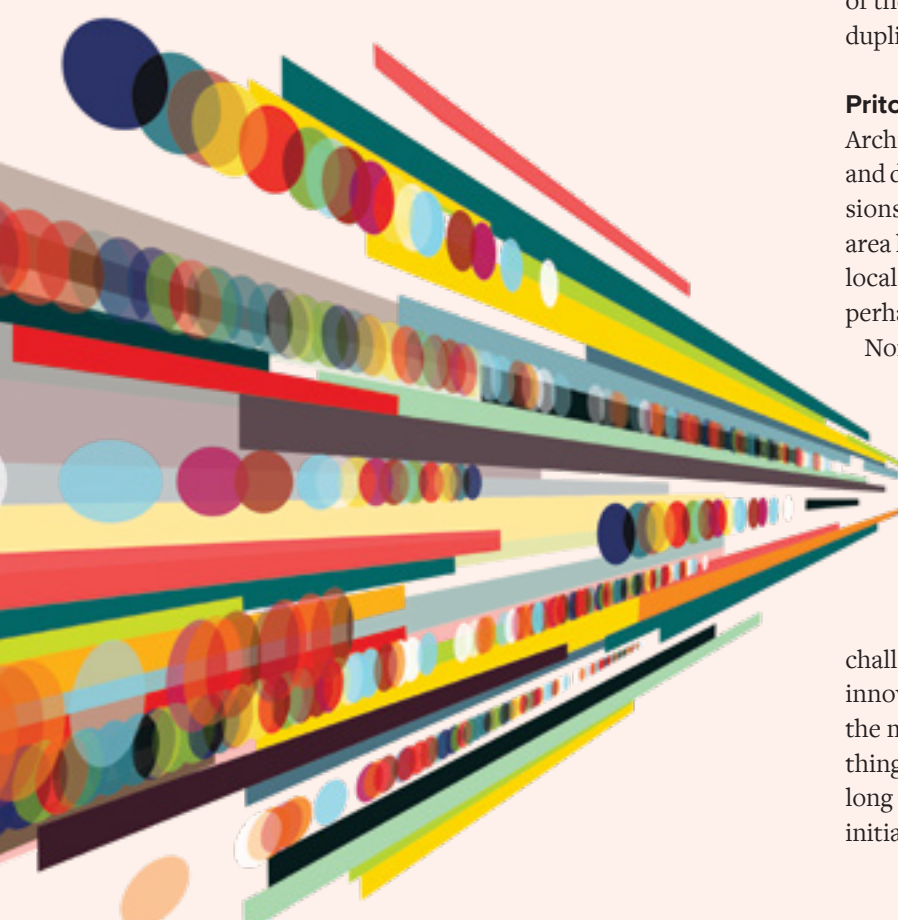
An important thing that libraries are doing is to account for changes in users' behaviors and then adapt services so that library budget models can change based on users' needs. As users change their behaviors, current services may not be so integral, so how does the library shift? One approach is to look at predictive analysis and trends—what is happening with services and patterns of use—and then tweaking the budget models accordingly. Funding issues are about not just sustainable funding but also efficiencies of scale.

There are also opportunities. For example, at the University of California, Berkeley, the Office of the CIO has launched a “Reimagining IT” strategic plan. Part of that plan is the “One IT” initiative, in which all of us on campus work together to advance the mission of the institution. This program works to ensure that we’re not duplicating efforts.

Pritchard:

Architecting a model spread across all sorts of budget categories and differing departments that make budget and personnel decisions in different ways at different times is very complex. In an area like data management, which may include a number of both local and external stakeholders, documenting who does what is perhaps possible, but ensuring that the work gets done is not. At Northwestern this year, we’re celebrating the 150th anniversary of admitting women to the university—an event preserved through print records. What about 150 years from today? At present, we have no long-term strategy for collecting and preserving institutional digital content. There is opportunity for a more holistic sense of archiving, but budget fragmentation makes that problematic.

This question touches on quite a range of activity. The challenge in our environment is that Northwestern is both very innovative and very decentralized. We are constantly caught in the middle of evolving enterprises. Historical trends also shape things enormously. New concepts, like digital archiving, take a long time to socialize. Sometimes we have to pick and choose an initiative—we can’t do it all.



Webster:

I'd love to say that at CMU we have a sophisticated, multiyear approach to funding, but we don't; we've largely had to be practical. From the perspective of areas such as data management, campus research, and information systems, my approach has been to formulate a business case with our provost (now president). This business case involved identifying the unmet needs I could see across campus and describing the cost of doing nothing. Recently I presented the first university transformative performance agreement between the large, commercial publisher Elsevier and our board. This agreement dissolves the traditional readership license and replaces it with a new model that incorporates scholarly research as an activity versus just readership. This is the beginning of a true shift in cost basis for publication of and access to journal articles.

Planning for future services means understanding the drivers of change today, in order to understand digital transformation. Almost anything is *possible*, but at a time of rising tuition costs, fewer research grant opportunities, and softening corporate sponsorship, how can academic libraries afford the future growth?

Privacy (Issue #2)**What role does the library play in educating the college/university community about privacy issues?****Ismail:**

Helping to educate the community about privacy needs to be a collaboration between the central IT organization and other groups on campus. One key step is to start conversations with constituents to help them understand what their *data rights* and *data choices* are and help them make more informed choices as both consumers and creators of user data. Libraries also need to balance these questions with the immediate needs of using data for reporting and predictions while maintaining anonymity and privacy. Libraries are partners in many initiatives on campus. All of us on campus have learned each other's strengths; coming together makes for a stronger institution.

Webster:

At CMU, we are looking to offer more programming on privacy issues—something that can be done from multiple places in the university without having people feeling overwhelmed. This includes helping stakeholders to better understand how their own data is being collected by the university and to be aware that the library is protecting their data, though there are risks too. There is a need for campus debate about what is *possible* and what is *acceptable*.

I'm co-chair of our data governance council. Building bridges between technical siloes may be arduous, but building bridges between cultures is much more difficult as higher education institutions source vast amounts of data into data-informed decision making, from deciding on students for admission, to analyzing where faculty publish, to identifying at-risk students.

Because the library is a neutral space—a trusted broker—I could imagine the library being the player that would aggregate data from across the institution.

Boughida:

I'm the chair of the group for data governance at my institution, and I brought up this issue of privacy with student representatives. Many students were in favor of data being monitored to ensure well-being or to prompt mental health checks, but others were not. We need a balance between privacy, on the one hand, and access and openness on the other. Librarians often see privacy in black-and-white, but the issue is more complicated. I'm trying to be in the middle—valuing both privacy and student success.

Pritchard:

The library has an emerging role of educating students and faculty to help them be good digital citizens. Students and faculty need to acquire the skill of managing their digital lives. At Northwestern, the library has been a part of two different grants—one related to learning analytics and another related to privacy—in which we have been interviewing students about their awareness of the data they are sharing through learning analytics systems and external sites. We're also educating them about reusability, since many students are engaged in creating content and need to be aware of privacy issues related to intellectual property. We've been looking for opportunities to offer presentations, focus groups, and discussion sessions with students on these issues and to lead awareness in the policy issues of digital citizenship, "fake news," and privacy.

Note

1. This is the second year that library leaders have been interviewed for their perspectives on the EDUCAUSE Top 10 IT Issues. See Joan K. Lippincott and Karen A. Wetzel, with Peggy Ann Seiden, Jeff Steely, Kristin Antelman, and Jon Cawthorne, "Library Perspectives on the EDUCAUSE 2019 Top 10 IT Issues," *EDUCAUSE Review*, February 11, 2019.

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PERSPECTIVES

US Federal Policy

Jarret Cummings, with the EDUCAUSE Policy Advisory Committee (EPAC)

The EDUCAUSE Policy Advisory Committee (EPAC) provides community members' insights into federal policy issues that impact information technology in higher education. Committee members span a variety of senior leadership roles and help the EDUCAUSE Policy Team identify, understand, and respond to legislative or regulatory developments that could have significant implications for our community. With this mission in mind, the EPAC dedicated its last formal meeting of 2019 to exploring where current federal policy issues connect with the EDUCAUSE 2020 Top 10 IT Issues.

Not surprisingly, concerns about information security and data privacy at a national level dovetailed with the top two issues for 2020: *Information Security Strategy* (#1) and *Privacy* (#2). The committee reflected on the substantial time that EDUCAUSE members and staff spent this year evaluating the sweeping changes to the Safeguards Rule proposed by the Federal Trade Commission (FTC) as well as efforts by the National Institute of Standards and Technology (NIST) to introduce "controlled unclassified information" (CUI) guidelines specifically for federally funded research projects designated as "critical programs" or "high value assets." In light of these and related developments, the committee stressed the importance of understanding legal and audit compliance in order to effectively manage security and privacy. EPAC members expressed particular concern about the growing tendency of legislative and regulatory proposals in these areas to emphasize prescriptive "checklists" of requirements, as opposed to supporting

compliance based on risk management, which is widely recognized as effective practice. The committee agreed that EDUCAUSE should continue to actively work with its higher education association partners to press for a focus on prioritizing and managing risk as the key to preserving information security and data privacy.

Turning more specifically to the issue of CUI requirements as a particular subset of security and privacy challenges in higher education, EPAC members noted how US Department of Defense (DOD) developments may presage a wider federal trend toward more direct mandates. While compliance with the NIST Special Publication (SP) 800-171 CUI standards has been incorporated into DOD grants and contracts for almost two years, the department's dissatisfaction with the progress of security assurance among its contractors has led it to propose a Cybersecurity Maturity Model Certification (CMMC) program. This program would incorporate the 800-171 requirements, along with a mix of other guidelines and standards, to define the level of information security that a given organization has achieved, with certification based on external auditing.

While the impact that the CMMC process may have on affected colleges and universities is not yet clear, EPAC members believe that an audit-based certification program would have the unfortunate effect of reinforcing a requirement "checklist" mindset. To illustrate this problem, a committee member cited a DOD effort to incorporate CUI requirements into an institutional contract regardless of whether the project actually involved CUI. Such a move would create unnecessary compliance costs that an industry-standard, risk-based

approach might largely avoid. Likewise, the originator of federal CUI guidelines, NIST, may itself serve as an example of the mechanical application of "checklist" requirements, despite the references in its various publications to the importance of risk-based approaches. The EPAC discussed the example of an institution that faces a NIST-proposed contract that would require the institution to adopt NIST SP 800-53 federal agency information security guidelines, which are much more stringent than the 800-171 standards, even though the project has no major security implications.

On the plus side, the committee noted that the proposed "critical program / high value asset" CUI guidelines (NIST SP 800-171B) remain on hold, pending the resolution of Office of Management and Budget (OMB) reviews of related regulations. Committee members expressed hope that this will give NIST and DOD, which worked with NIST on the proposal, time to fully consider the problems with the draft guidelines that the higher education community raised. In particular, higher education groups asked NIST and DOD to resolve the major ambiguity regarding the timing and basis for designating a grant or contract as involving a "critical program" or "high value asset," including how other agencies might apply those guidelines in ways that NIST and DOD may not have anticipated.

The committee discussed the extent to which the general federal CUI guidelines (NIST SP 800-171) have already influenced agencies' compliance expectations. For example, while the implementation of the guidelines on the non-defense side of the federal government continues to be delayed, committee members cited US



Department of Education (ED) guidance (dating from 2015 and 2016) that strongly encourages institutions to follow 800-171. With that in mind, and given the existing application of 800-171 to DOD contracts, EPAC members agreed that institutions should be incorporating the 171 guidelines into their security programs in anticipation of an eventual ED mandate.

Committee members also explored the link between the impact of federal policy on the top two 2020 IT Issues and its implications for *Higher Education Affordability* (#8) and *Administrative Simplification* (#9). For example, the committee as a whole worried about the increased complexity and costs associated with the mandates-based “checklist” approach to security and privacy and what those rising costs could mean for institutional budgets and, ultimately, tuition rates. From the committee’s perspective, the potential for increased institutional burdens to become increased financial burdens for students further reinforces the necessity for federal agencies to recognize risk management as the basis for effective security and privacy management.

Looking at these issues in the context of academic research, EPAC members argued that agencies should allow institutions to charge the expenses for security and privacy mandates related to a federal grant or contract as a direct cost to the project. In addition, the committee suggested that funding agencies should add a direct percentage to institutions’ indirect cost rates to account for the impact of sponsored research security and privacy requirements on overall technical and compliance environments. The EPAC expressed concern that costs for research security may already be outstripping the resource capacity of many institutions and that the situation will only get worse without changes like those suggested. Members acknowledged that the committee’s proposals would reduce the grant or contract funds available for the sponsored activity. Nevertheless, they consider these proposals—or other means of increasing resources for security and privacy—as essential for keeping institutions from cutting corners on compliance or from sacrificing research opportunities.

The discussion of security issues related to academic research gave way to a

conversation about balancing the implications of institutions’ broader engagement with the world. The committee agreed that advancing academic programs and research increasingly entails international collaboration and cooperation, with people, knowledge, and data moving freely across campus and national borders. This, unfortunately, can also expose institutions to nation-state efforts to exploit such openness for illicit gain and influence. Reconciling the need to appropriately secure institutional communities while sustaining the openness and international connections on which they often thrive remains a challenge uniquely relevant to higher education, and the committee noted that this challenge has financial impacts as well. Committee members indicated, for example, that immigration and national security concerns appear to be driving steep reductions in foreign student enrollment, particularly from China. As evidence, a member cited the case of an institution that has already lost \$30 million in tuition revenue due to declining foreign student enrollment, leading to program cuts and layoffs.



Reflecting on these concerns, the committee coalesced around the need for strengthening a “whole institution” perspective that would facilitate *Administrative Simplification* (#9) and contribute to resource efficiencies and, ultimately, college affordability. The committee noted that such an approach could also benefit internal systems and processes, which often remain unnecessarily complex and therefore costly. Campus compliance offices, with their existing institutional perspectives, would be natural partners in this holistic approach.

The committee also discussed how the intersection of *Higher Education Affordability* (#8) and *Student Retention and Completion* (#6) presents a major challenge for all but the most well-resourced institutions. Members noted the extent to which students at many institutions have little financial cushion for even small, unexpected expenses. The committee indicated that these problems are manifested in the growing rates of food and housing insecurity among their student bodies. For example, at one committee member’s institution, well over 15 percent of students are food-insecure. EPAC members

“While research continues to show that the value of higher education to students’ economic prospects has never been higher, negative anecdotes about individual cases of excessive debt and lack of career progress have created and sustain a national narrative about how colleges and universities lack a commitment to student achievement.”

— Jarret Cummings, Senior Advisor for Policy and Government Relations, EDUCAUSE

talked about institutional efforts to respond, including the creation of special funds carved from institutional budgets and endowments to provide small emergency loans as well as food and housing assistance.

The potential for institutions to enhance student success by taking a more holistic view of student services and support (*Student-Centric Higher Education*, #5) was also discussed. One EPAC member noted, for example, that facilitating more stable access to food and housing could be just as impactful in helping students succeed as “nudges” from learning analytics programs. Another committee member cautioned, though, that the scope and complexity of a “whole institution” approach

may vary widely based on the relevant aspect of the institutional mission or goal and noted that working to address compliance risk on an institution-wide basis involves factors and processes that are much more within the institution’s control, as compared with trying to help students cope with socioeconomic factors that extend far beyond campus.

The committee closed its review of where federal policy and the 2020 Top 10 IT Issues intersect by discussing the corrosive effect of public skepticism regarding the value of higher education on achieving *Sustainable Funding* (#3) for the institution and its IT needs. While research continues to show that the value of higher education to students’ economic prospects has never been higher, negative anecdotes about individual cases of excessive debt and lack of career progress have created and sustain a national narrative about how colleges and universities lack a commitment to student achievement. The resulting skepticism impacts the willingness of the public to fund higher education. This only heightens the need for the EDUCAUSE community to meet the challenges presented by the 2020 Top 10 IT Issues, all of which either directly or indirectly influence the capacity of colleges and universities to foster student success.

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Administrative Simplification

Applying user-centered design, process improvement, and system reengineering to reduce redundant or unnecessary efforts and improve end-user experiences

Mara Hancock, Cathy Hubbs, Kristy Rhea, and Albert Stadler



Today's administrative services and applications have all the elegance of a Rube Goldberg machine. They were generally designed to conform to the convenience and habits of back-office staff, and as new systems, functions, and requirements were integrated, the user experience receded further and further into the background. Those days are gone, but the systems and services live on.

IT organizations have been learning how to place the end user at the center of the requirements-gathering experience and how to design and test new solutions to ensure the users get what they need and enjoy from the experience. IT staff have also gained skills for process simplification and improvement and can work with business units to engineer complexity out of systems and processes. They can help vendors and business units meet in the middle to clarify and negotiate requirements and features. They can also institute enterprise architecture standards to ensure that end users' experiences are consistent across a suite of applications and that the processes and data underneath the applications integrate to serve business unit and institutional goals.

Administrative simplification isn't just good for constituents; it's good for business. In higher education today we have fewer resources to do more with. Rather than cut value, administrative simplification offers an opportunity to reduce redundancy, engineer unnecessary code and steps out of systems and processes, and improve the quality of service.



Obstacles Ahead

Change a Rube Goldberg machine at your own peril; that little part you remove could turn out to be a lynchpin. Or you could be focused on the wrong part of the device entirely. Such is the difficulty with administrative simplification. The obstacles include getting lost in the weeds, not getting far enough into the weeds, and being unable to imagine a more efficient way to do the work.

Change management is the biggest challenge. Institutions that are adept at change management will have the easiest time with administrative simplification. Staff will resist losing what they've grown accustomed to and adept at. They will argue eloquently against the foolishness of the changes, and those with informal or formal influence will be formidable detractors. Involving staff from the beginning, helping them see the need for change, and including them in designing and testing changes can help soften resistance. Change management activities should begin early and continue through initial periods of deployment. Introducing continuous-improvement activities into the project can help staff see that the initially redesigned service is not cast in stone but, rather, is something they can adjust as needed over time, based on key performance indicators that include cost-effectiveness and user satisfaction.

Institutions must recognize that administrative simplifications will take years. Leaders need to establish and clarify the scope of each simplification project so that it doesn't metastasize into an expensive endeavor whose purpose has lost its way. Process-improvement efforts that start in one department can easily lead to other departments, where the root cause may (or may not) actually lie. The project team members must understand whether they've taken a massive detour or found the real problem. And institutional sponsors must have good sense and good relationships in order to negotiate a change in focus with their colleagues.

Understanding that today's workflows are flawed is one thing; imagining a more ideal state is another. Many of us lack the ability to figure out how to work differently. New ways of working need to be cocreated by cross-functional teams and end users.

Hopefully, in 3 to 5 Years . . .

- Institutions' administrative services will become as easy to use as consumer apps.
- Institutions will be directing more of their efforts toward students' needs—from student mental health to retention, to recruitment, to debt avoidance, and to job placement.

“We are improving processes, structures, and technology to make people’s ability to do their job easier so they can focus more of their time on substantive matters and less on process or technology navigation.”

—Seth Grossman, Chief of Staff and Counselor to the President, American University

- Staff throughout the institution will view themselves as a community of interdependent colleagues focused on what's best for students and the institution.

Advice

To get started:

- Complete an inventory to see what you're using and why. Expect this to require some digging.
- Find your champions, and organize them to address the topic. Talk with peers at some trusted organizations that are ahead of you, and possibly include them in the group.
- Organize the work in a way that clarifies who participates, how decisions get made, and who has decision rights.

To develop further:

- Make sure you have developed partnerships across the institution. Communicate the rationale, objectives, and progress to the campus community.
- Check on how you're measuring success. And if you aren't doing so already, establish some ways that you're going to measure that progress.

To optimize:

- Get an internal or external assessment to understand where you stand and what optimization looks like now.
- Build a culture of continuous improvement, so that you can continue to optimize. Institute mechanisms for continuous feedback.

The Integrative CIO

Repositioning or reinforcing the role of IT leadership as an integral strategic partner of institutional leadership in supporting institutional missions

Mara Hancock, Farhat (Meena) J. Lakhavani, Sasi K. Pillay, and David Weil

IT services are used by all aspects of the higher education institution. CIOs' range of access provides them with insights into operational and strategic initiatives, strengths, and pain points across the entire institution. This allows the CIO to make connections and develop strategies that can link together aspects of the institution in ways that other senior administrators may not see. It also allows the CIO to provide technology-based solutions that can directly support and advance the institutional mission.

The concept of the integrative CIO builds on this broad range of knowledge and contributions and leverages it for the good of the institution. Many of the serious and complex issues facing higher education will require holistic solutions that leverage multiple aspects of an institution, often cutting across academic and nonacademic units. The integrative CIO brings in-depth knowledge of the institution, an understanding of technology solutions, a foundation in business process reengineering and project management, experience with numerous vendor partnerships, and many other skills and knowledge sets.

Obstacles Ahead

The dualism of IT contributions, and therefore of the CIO's responsibilities, can mislead the institution about the role of the CIO and can also cause mismatches in people who take on this role. IT organizations serve two functions at the institution: they manage and deliver operational excellence through technology infrastructure and services, and they enable transformational capacities that help translate innovation into new business value. Far too many institutional leaders today persist in believing that their IT leaders are responsible for only the former. Indeed, not many CIOs are ready to confidently deliver the latter. At this time, 29 percent of CIOs report to the president, chancellor, or CEO, and 58 percent sit on the cabinet—both of which are strongly associated with more CIO involvement in institutional strategy.¹⁰

The biggest challenge for the integrative CIO is changing the trajectory of IT value from infrastructure management to innovation management. This requires a change of mindset, a change of CIO competencies and experience, and a change in IT funding.



“Moving forward, CIOs have to be viewed as business partners: they need to understand the challenges of a large organization and then how to bring about significant change to advance the mission of teaching, research, and outreach.”

—Sasi K. Pillay, Vice President and CIO,
Washington State University

Institutional leaders need to learn more about running enterprises and about the important role of innovation, especially today. That kind of business knowledge can highlight the strategic importance of the technology function, beyond its standard operational importance.

CIOs themselves need to stop admiring the problem and start delivering the solution by developing the personal competencies and experience required. They also need to advocate for the value of the new role. Without trust that the CIO is working for the good of the entire institution, that advocacy can backfire and be interpreted as callous personal or departmental boosterism. CIOs can succeed in this new role if they have already built good relationships, are viewed as advocates for others, and have shown a willingness to give up some things for the greater good.

Finally, funds become tighter as more priorities compete. The view and work of the IT organization can devolve to reducing costs and keeping the lights on. Sometimes an institution has to spend money (in technology) to save money (in other areas). Institutions that are well-managed with CIOs who have a lot of social capital can do what others cannot.

Hopefully, in 3 to 5 Years . . .

- CIOs will understand the incredible privilege they have to be at the intersection of so many aspects of the campus and will have gained the transformation skills and strategic mindset necessary to provide solutions to propel institutions and higher education forward.
- Institutional leaders will recognize the broad experiences and perspectives that CIOs bring to the table, even for discussions that don't directly

involve information technology (or have a solution that includes an IT component).

- Innovation will become a common capability of higher education institutions, rather than being limited to just a few institutions that are willing to leverage the uncommon CIO who can contribute strategically.
- Institutional leaders will extend their successes beyond their institutions to collaborate as cross-functional teams at the national level or at the international level.

Advice

To get started:

- Consider having the CIO sit on the president's cabinet, so that the rest of the institutional leaders will see the CIO as a peer and colleague.
- Be sure the CIO is brought into some discussions that aren't focused strictly on technology, and listen to what the CIO can contribute.
- Find ways for the CIO to serve on institution-wide efforts. Identify projects in which the CIO can partner with other institutional executives.
- Learn from integrative CIOs and from other industries where that role is long-established.
- Look into coaching or mentoring to develop integrative CIOs.

To develop further:

- Continue to find ways to bring the CIO into broader discussions, such as those about the institutional budget committee, facilities planning, and academic committees.
- Take advantage of leadership programs, like the Leading Change Institute, which can help prepare CIOs to take a “chin-up” approach to looking at their institutions and developing strategic partnerships and solutions.
- Develop IT staff to provide the same sort of leadership across the different levels of the institution, so that the IT organization, and not just the CIO, is a strategic partner.

To optimize:

- Become an educator and promoter, and help develop other leaders in the profession.
- Look outside the higher education industry. Learn how to assess and communicate IT contributions to institutional outcomes.
- Initiate or contribute to collaborative institutional projects related to student retention and student success and other pressing priorities.

How Colleges and Universities Are Driving to Digital Transformation Today

Susan Grajek and the 2019–2020 EDUCAUSE IT Issues Panel

Like the observation about the future often attributed to the science fiction writer William Gibson, digital transformation (Dx) is already here, but it's not yet evenly distributed. EDUCAUSE research shows that 13% of colleges and universities are engaging in digital transformation today, 32% are developing a Dx strategy, and another 38% of higher education institutions are exploring Dx.¹ With only 16% of institutions investing no time in Dx, higher education truly is driving to digital transformation. EDUCAUSE defines *digital transformation* as a series of deep and coordinated workforce, culture, and technology shifts that enable new educational and operating models and transform an institution's operations, strategic directions, and value proposition.

So, what shifts in workforce, culture, and technology are under way in higher education today, and how do those shifts relate to the EDUCAUSE 2020 Top 10 IT Issues? The 2019–2020 IT Issues panelists discussed each of these shifts in the context of the Top 10 IT Issues.

#1. Information Security Strategy: Developing a risk-based security strategy that effectively detects, responds to, and prevents security threats and challenges

Workforce Shifts

The need for skilled cybersecurity leaders continues to outpace the supply in higher education. Some institutional leaders are applying more flexible solutions, such as hiring contractors. Others are recognizing that effective cybersecurity leadership requires strong change and people management skills. They are focusing on recruiting people with those soft skills and then providing cybersecurity training to help new hires acquire the needed technical skills on the job.

Culture Shifts

Institutional leaders are realizing that they share responsibility for effective security. People are more accepting of added constraints and more willing to learn and act on what they've learned.

Technological Shifts

Artificial intelligence (AI) is providing more effective network analysis and threat-hunting capabilities.

#2. Privacy: Safeguarding institutional constituents' privacy rights and maintaining accountability for protecting all types of restricted data

Workforce Shifts

Colleges and universities are more likely to appoint privacy officers, a new role that was in little evidence several years ago.

Culture Shifts

New compliance requirements like the EU's General Data Protection Regulation (GDPR), along with the burgeoning use of people's data, have made faculty, staff, and students very aware of the privacy trade-offs of giving up information in order to gain a data-rich culture. People are bringing that consciousness to the workplace, where it is entering discussions and influencing decisions about the use of individuals' data.

The scope of data architecture and analytics oversight has expanded beyond enterprise data to departmental and other local systems and data stores. Data owners and administrators throughout the institution are being held more accountable for the data they create and manage.

Technological Shifts

With this newfound awareness of and commitment to privacy, institutional leaders are more willing to invest in technologies to protect privacy, and end users are more willing to adopt data-protection practices that they would once have considered too onerous (e.g., tokens, centrally managed laptops).

Technologies, especially those that employ AI to identify and act on sensitive data, are getting more effective and automated.

#3. Sustainable Funding: Developing funding models that can maintain quality and accommodate both new needs and the growing use of IT services in an era of increasing budget constraints

Workforce Shifts

Two widespread workforce shifts—shared services and cloud-first strategies—are changing the way staff work, enabling a reduction in and/or more effective use of funds. When done well, shared services can consolidate resources to deliver common services at consistent,

negotiated service levels, freeing up staffing and funds to use for other needs or for savings. Cloud-first strategies can move IT staff closer to the end users as they transition from supporting technologies to supporting services and missions.

A sustainable IT funding model can and should include funding for training staff, again ensuring that staff are more relevant and productive.

Culture Shifts

More institutional leaders are willing to make the often difficult decisions to sunset services that are duplicative or underused. Those decisions can help defray other funding needs without eliminating important services or reducing service levels.

Technological Shifts

As noted above, cloud computing has significantly changed IT funding and service delivery. Although cloud infrastructure and services have brought new costs, they can make service levels and budgeting more predictable and enable institutional technology staff to focus more closely on mission-related needs.

#4. Digital Integrations: Ensuring system interoperability, scalability, and extensibility, as well as data integrity, security, standards, and governance, across multiple applications and platforms

Workforce Shifts

Skill sets are changing. IT leaders are ensuring that their technical staff receive the training and opportunities needed to be able to work within the new technical environments. For example, recognizing that the development work is shifting toward integrations, institutional leaders are moving to hiring more solution-integration developers rather than application-specific developers.

Culture Shifts

The institutional community sees that systems and data can no longer live in independent silos. Early data governance efforts that may have devolved into parallel, siloed data management activities are being reinitiated at campuses to achieve truly integrated data governance models. What goes for data also goes for organizations, and departmental leaders are beginning to see the necessity and the value of working collaboratively. This pertains to both business departments and distributed and central IT organizations.

Institutional procurement is partnering more closely with the IT organization to ensure that technology purchases, wherever they occur throughout the institution, are coordinated with IT staff to determine the need and potential for digital integrations before a purchase occurs.

Technological Shifts

Integration tools are evolving considerably and rapidly to make digital integrations easier and more powerful. End users' needs are starting to move IT staff to adopt better processes and technologies.

For example, end users are pressing for technologies, such as multifactor authentication, to better and more seamlessly manage and protect their digital identities.

#5. Student-Centric Higher Education: Creating a student-services ecosystem to support the entire student life cycle, from prospecting to enrollment, learning, job placement, alumni engagement, and continuing education

Workforce Shifts

Institutional leaders are looking at ways to deliver lifelong learning at scale. Colleges and universities are offering flexible degrees and continuing education and are partnering with companies and organizations that can connect students directly to the workforce.

Culture Shifts

Applications and services are being redesigned with the student experience in mind. More information and services for students are available via mobile apps. Institutions are creating integrated services to help students connect with their classes through the learning management system, find and enroll in classes, and pay their tuition bills.

Technological Shifts

Institutions have better customer relationship management tools to help tailor the student experience from high school through graduation. These tools provide additional functions to track and assist students. Technologies and services are being reengineered to enable a consistent experience that onboards, educates, and connects students and that offers lifelong learning.

#6. Student Retention and Completion: Developing the capabilities and systems to incorporate artificial intelligence into student services to provide personalized, timely support

Workforce Shifts

Student success initiatives are changing roles and responsibilities of faculty and staff alike. The need for business intelligence and analytics competencies is growing across roles. For example, faculty are spending more time advising students and contributing information about their work with students to student success efforts. All staff supporting students are learning how to respond to early alerts and warnings.

Culture Shifts

Higher education institutions are building student success and retention cultures that hold all stakeholders accountable. For many colleges and universities, managing and measuring engagement is the starting point. This forces the institution to define engagement in measurable terms—for example, library visits, attendance at athletic or social events, time spent in dorms or cafeterias, or the

colleagues with whom students are most likely to work in classes. Institutions are focused on becoming more responsive and nimbler in understanding and meeting students' needs, viewing students as customers.

Technological Shifts

Institutional leaders are building real-time, comprehensive data warehouses to support the data needs of student success initiatives. They are also investing in analytics and AI technologies to move into predictive analytics and geo-technologies to give students information based on the time, their location, and their interests and needs.

#7. Improved Enrollment: Using technology, data, and analytics to develop an inclusive and financially sustainable enrollment strategy to serve more and new learners by personalizing recruitment, enrollment, and learning experiences

Workforce Shifts

Enrollment and student success initiatives are leading to new roles, expectations, and organizational structures. Institutions are centralizing more services, including advising. Student workers are valued not just for what they do but also for their ability to understand and advocate for students' needs.

IT professionals are more deeply involved with the business of enrollment than previously because they can provide analytics and AI solutions. Enrollment leaders are relying on technology professionals to help them develop, interpret, improve, and apply data models.

Culture Shifts

Enrollment, recruitment, and student retention and success are becoming everyone's responsibility in higher education. Faculty and staff are encouraged to connect with and support disaffected or struggling students. IT staff have jobs and skills that students may desire; a conversation with an IT professional can thus help students get excited about their future and better understand the relevance of their education to attaining that future.

Institutional leaders are also encouraging staff to question both the status quo and the rationale for new initiatives. The result—whether it is a staff member's deeper understanding and acceptance or an organization's recognition that change is needed—is beneficial and empowering.

Technological Shifts

Greater and more sophisticated applications of analytics and AI technologies are the primary technological shifts that institutions are making. Internet of things (IoT) technologies are among the sources of new data to help model student retention and apply that model to predict successful enrollment. Institutions are also meeting students where they are, by using social and mobile technologies to recruit and communicate with students.

#8. Higher Education Affordability: Aligning IT organizations, priorities, and resources with institutional priorities and resources to achieve a sustainable future

Workforce Shifts

Affordability management is becoming a new competency. Leaders and supervisors are being asked to use initiative and creativity within their areas to reduce waste, increase value, and make higher education more affordable.

Faculty are no exception. Faculty are becoming co-owners of affordability and are being asked to prioritize it in their choices about educational materials. Some institutional leaders are taking a default approach to adopting open educational resources (OER) by advocating for their use whenever possible. When degree programs require specific equipment, such as iPads instead of textbooks, the equipment must be used in enough courses to offset the device cost by demonstrating the elimination of at least the equivalent expense in previously required textbooks. When faculty recognize such guidelines as strategies to increase affordability for students, rather than as strictures to reduce their pedagogical autonomy, they are motivated to change.

Culture Shifts

Institutions are using two persuasive levers to change hearts and minds. When presidents personally address costs as a top priority, especially by using positive language (e.g., "Let's see how we can make our school an affordable school"), they help everyone in the institution to view the challenge not only as reducing costs but also as addressing many of the root causes of affordability (e.g., food and housing insecurities).

The student voice is the most eloquent of all. Student senates are voting to address affordability and are advocating directly to institutional leadership. Students are speaking up—and being heard—about both the traditional (e.g., tuition and expenses) and the nontraditional (e.g., transportation, childcare, planning and scheduling) drivers of affordability.

IT organizations are being viewed differently as well. Increasingly, they are being asked to help address cost issues in other departments or to partner in developing programs or implementing software services to facilitate scholarship matching or in enabling access to open digital materials. This is shifting the perception of information technology from a cost driver to a resource for affordability and cost management.

Technological Shifts

Technology has much to offer in the realm of cost management and reduction. Students' suggestions can guide the choices, such as using technology to optimize scholarship distribution by auto-granting awards or matching student profiles to scholarships to ensure that all scholarships are awarded.

Many shifts entail more powerful uses of existing technologies. Online learning, of course, can be used to increase affordability, provided that is the focus rather than to increase institutional income.

Online master's programs are particularly popular, to expand enrollment for working students who want to earn this additional credential without leaving the workforce for two years or incurring significant debt.

OERs, long advocated by libraries, are becoming key to an institutional affordability strategy. Some institutions are building zero-textbook-cost, known as “Z-degrees.”

Finally, laptop loaner programs are entering a new generation. For example, vending machines can dispense laptops to students for several hours at no cost, providing both convenience and affordability to students who can afford an inexpensive desktop more easily than a laptop.

#9. *Administrative Simplification: Applying user-centered design, process improvement, and system reengineering to reduce redundant or unnecessary efforts and improve end-user experiences*

Workforce Shifts

Institutions are attracting fewer young staff than in the past. As administrative simplification efforts lead to modernization, the work environment will include fewer legacy technologies and more innovative technologies that can appeal to younger workers.

Culture Shifts

Simplification changes the work, and that changes the culture. Staff are becoming more open to initiating change, streamlining work, and working within teams. Many are motivated by the lack of resources. As budgets tighten, administrative hires are less likely to be approved than academic hires. Introducing efficiencies that save staff time can be just as helpful as adding new staff.

Change begets change. As staff gain experience with change, they are more open to the ongoing change that continuous improvement brings, which increases the likelihood that administrative simplification itself will evolve from a series of initiatives to simply the way work gets done.

Technological Shifts

The dominance of the enterprise application portfolio by enterprise resource planning (ERP) systems is waning as institutions acquire and integrate new best-of-breed solutions. This diffusion of functionality across applications lends itself to adding useful special-purpose applications, provided the institution has sufficient integration resources and capabilities.

Data is more useful than ever. User-focused services that bring data to the end users, at the right time, empower both the institution and the end user. Institutions are revisiting end-user license agreements to ensure they meet today's newfound needs.

#10. *The Integrative CIO: Repositioning or reinforcing the role of IT leadership as an integral strategic partner of institutional leadership in supporting institutional missions*

Workforce Shifts

Growing numbers of CIO job descriptions include the requirements and experience to serve as an integral strategic partner with institutional leadership in supporting institutional missions. Some colleges and universities are recruiting CIOs differently and are prioritizing strong business skills over IT skills. Some are hiring academic leaders, who bring an understanding of how the institution may and could work as a whole.

The IT workforce is also adapting. IT organizations are becoming more consultative, gathering requirements and needs from instructors, researchers, students, and administrators to identify “the best, brief solutions” rather than relying primarily on monolithic enterprise solutions. CIOs are asking their staff to develop business analytics and data competencies in order to grow the analytics capabilities of the IT organization.

Institutional leaders who hire integrative CIOs have started to think differently, which influences expectations of the entire institutional workforce. Everyone at the institution should have at least digital literacy, and perhaps digital fluency, to respond to the digital revolution. All institutional faculty and staff must also become comfortable with undertaking continual learning as a core component of their jobs and with adapting roles, jobs, and organizations as a core condition of the workplace.

Culture Shifts

Partnerships and cross-functional teams are becoming commonplace, and much needed, to address institutional priorities such as student retention. Where partnerships thrive, silos dissolve, and the institutional culture becomes more flexible.

Innovation isn't possible without experimentation, involving trial and error. Continuous improvement is becoming an essential part of the culture at some higher education institutions, and many are adopting design strategy approaches and the mantra “fail faster” as shorthand for flexibility, learning, and innovation.

Technological Shifts

Technological shifts (e.g., the move to cloud computing) have made it possible for CIOs to step away from the technical weeds and build teams and personal skills to focus on business and mission value. By itself, commoditizing IT services could have marginalized the IT organization. But thanks in large part to the explosion of analytics technologies, CIOs have a new super-power: they know how to harness data, predictive analytics, and AI for such core institutional priorities as management decisions, personalized admissions and student support, and research and scholarship. They know what's possible better than most other, or perhaps any other, institutional leaders. Analytics has helped CIOs position themselves strategically.

Note

1. Preliminary results from the forthcoming EDUCAUSE study on the digital transformation landscape.

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Reflections and Conclusion

Changes from Last Year

The 2020 Top 10 list consists of six issues from 2019 and four new issues. *Information Security Strategy*, *Privacy*, *Sustainable Funding*, *Digital Integrations*, *Higher Education Affordability*, and *The Integrative CIO* were all on last year's list. All except *The Integrative CIO* moved up in ranking. The consistency of the list in any given few years is not at all surprising. The list is made up of major issues, and most major issues take years to address.

More interesting are the four new issues, all of which connect directly to institutional priorities: *Student-Centric Higher Education*, *Student Retention and Completion*, *Improved Enrollment*, and *Administrative Simplification*. Information technology has a great deal to contribute to these challenges, and it is exciting to see IT priorities continue to converge with institutional priorities.

Difficulty

The Top 10 list is ordered by importance. We also asked panelists to view each issue from another dimension: difficulty. We used the *Horizon Report* difficulty ratings¹¹ and asked panelists to pick one of these three options:

1. We understand and know how to solve the issue, even though the solutions are hard.
2. We understand the issue, but the solutions are elusive.
3. The issue is complex to even define, much less address.

Of course, every issue on the Top 10 list is difficult to solve (see figure 3). Even when the issue is well understood, significant barriers exist to addressing it. The least-difficult issues are *Information Security Strategy*, *Student Retention and Completion*, and *The Integrative CIO*. Hardest by far is *Higher Education Affordability*. Money is always the toughest nut to crack.

Emerging Technologies and Major Trends

EDUCAUSE research examines the impact of emerging technologies and major trends on higher education. Each year we ask CIOs which emerging technologies they plan to focus the most attention on and which trends are having the greatest influence on the institution's IT strategy. In 2020, several emerging technologies and major trends are reinforcing higher education's drive to digital transformation through the three Top 10 themes of simplification, sustainability, and innovation (see table 1). A forthcoming EDUCAUSE report will provide more information about these emerging technologies and major trends, as well as 42 additional trends and 76 additional technologies.

And what do CIOs think about digital transformation itself? Almost half (48%) report that Dx is exerting a major influence on institutional IT strategy.

Standards and Silos

As the panelists discussed the issues, they often mentioned standards. They advocated for working across the higher education

Figure 3. Difficulty of Finding a Solution

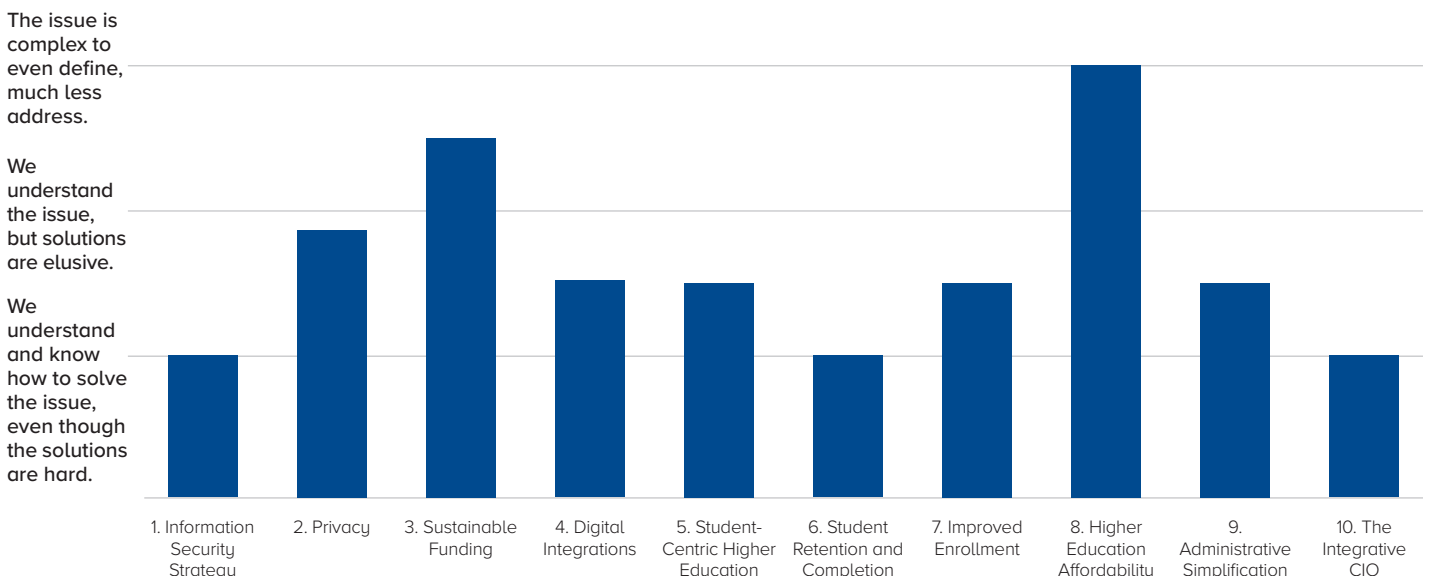


Table 1. Emerging Technologies and Major Trends

Top 10 Theme	Emerging Technologies	Major Trends
Simplify	<ul style="list-style-type: none"> ■ Use of APIs ■ Blended data centers ■ Mobile apps for enterprise applications 	<ul style="list-style-type: none"> ■ Institution-wide data management and integrations
Sustain	<ul style="list-style-type: none"> ■ Security analytics ■ E-signature technologies (e.g., DocuSign, Adobe Sign, and SignNow) 	<ul style="list-style-type: none"> ■ Enterprise risk management ■ Privacy ■ Growing complexity of security threats
Innovate	<ul style="list-style-type: none"> ■ Incorporation of mobile devices in teaching and learning ■ Open educational resources (OER) ■ Technologies for improving analysis of student data ■ Integrated student success planning and advising systems ■ Predictive analytics for student success (institutional level) ■ CRM covering the full student life cycle ■ Technologies for planning and mapping students' educational plans 	<ul style="list-style-type: none"> ■ Data-informed decision-making ■ Student success focus/imperatives



ecosystem to define and adopt standards related to privacy, data, and outcomes as a way to simplify initiatives, help make credits and credentials portable and transferable, meet and attest to privacy practices, and improve the quality and relevance of data. The ability of higher education to use standards is still very low. Often higher education lacks standards, or they exist but adoption is low, with multiple, competing standards.

The panelists also talked about silos. Should institutional operations be centralized or distributed? Medium and large institutions particularly struggle with this dilemma. Centralization is more efficient in many ways, but local needs and innovation thrive best when control and funds are distributed across areas of the institution. The pendulum today is swinging toward greater centralization. Many priorities must be undertaken at the institutional level if they are to be affordable and have widespread success. Investments in analytics, customer relationship

management, and information security are too expensive and complex to warrant multiple departmental initiatives. In addition, institutional leaders care about student success overall, not just about the success of nursing or English or engineering majors. Data about students and spending swirls around the institution. Local data management and governance leads to a lack of institutional data management and governance. Every individual at the institution has a role to play in student success, data management, privacy, and information security, but those roles need to roll up and contribute to a holistic effort.

Ethical Sustainability

Digital ethics may be this year’s missing issue, the shadow cast by so many of the others. Like other industries, higher education is relying on gathering and using increasing amounts of data. For higher

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“Dear Vendor Partner”

Requirements, wish list, or wishful thinking? We asked the IT Issues panelists to tell us how industry might help address each of the 2020 Top 10 IT Issues. Some of their answers will be familiar, several are new, and all could, the panelists believed, help higher education considerably.

Issue	Industry Contribution
1. Information Security Strategy	<ul style="list-style-type: none"> ■ Help with assessments, share knowledge of other industries, and facilitate bi-directional communications. ■ Directly help institutions protect themselves against attack, in exchange for public recognition. ■ Offer bigger educational discounts.
2. Privacy	<ul style="list-style-type: none"> ■ Recognize that privacy is good for business. Keeping information private will attract more customers and users. ■ Adopt higher education standards of privacy, such as sharing data and information about who is using their solutions, as the cost of doing business with higher education.
3. Sustainable Funding	<ul style="list-style-type: none"> ■ Fund research, with both monetary and in-kind support. ■ Work with companies to co-create new credential programs for their current workforces and for the institutions’ future graduates. ■ Acknowledge and set prices with the recognition that nonprofits can’t necessarily make back what they spend. ■ Help technologists who don’t always understand finance, and finance leaders who don’t always understand technology, develop feasible funding models.
4. Digital Integrations	<ul style="list-style-type: none"> ■ Elevate finding the right solution above completing the sale. Help higher education customers better articulate their integration requirements up front, and demonstrate whether and how those requirements can be met by the off-the-shelf version of a product. ■ Help develop and then adopt a common, portable set of open data standards.
5. Student-Centric Higher Education	<ul style="list-style-type: none"> ■ Co-create products that can optimize the student experience; improve existing products to better meet students’ expectations. ■ Help develop and then adopt a common, portable set of open data standards. ■ Share best practices in data governance from other industries. ■ Meet the three Ps: Powerful Products at the right Price.
6. Student Retention and Completion	<ul style="list-style-type: none"> ■ Develop early-warning mechanisms as a standard feature to enable institutions to identify students who need extra help or interventions. Share the algorithm with the institution so that faculty and staff know the basis of the warnings and can explain it to students, parents, and other stakeholders. ■ Agree to payment based on results. Student retention and student completion are measurable, and so is the impact of new solutions on those metrics. ■ Help develop and then adopt a common, portable set of open data standards.
7. Improved Enrollment	<ul style="list-style-type: none"> ■ Show how other institutions have successfully used an industry product for recruitment and enrollment in ways that don’t violate trust (e.g., limiting the tactics shared to institutions that don’t draw from the same markets). ■ Provide marketing insights from other industries, and suggest how they could be translated to a college or university. ■ Participate in, and even initiate, innovation councils that include industry experts, faculty, and institutional staff to develop new technology-enabled enrollment strategies.

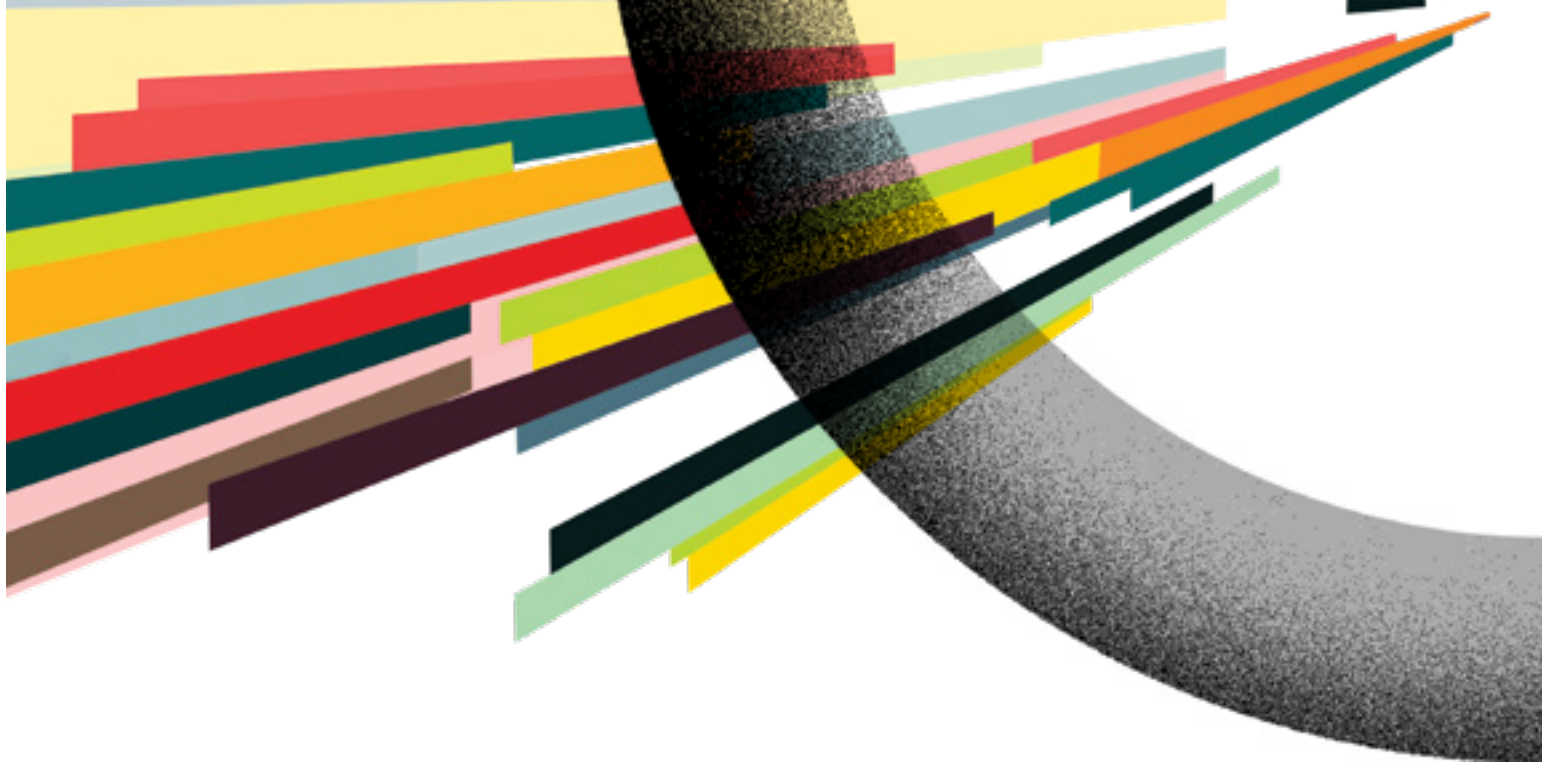
Issue	Industry Contribution
<p>8. Higher Education Affordability</p>	<ul style="list-style-type: none"> ■ Take up the challenge of helping institutions reduce the cost of attendance for their students by providing solutions that can (1) lower the expenses of providing services, (2) create new opportunities for increased institutional revenues, and/or (3) disrupt existing business models to result in substantially reduced costs for students. ■ Help customers make the best uses of your products and services to deepen the value they deliver. Transform the relationship from vendor-customer transaction to partnership relationship in more than just a change of terminology. Identify each other's objectives, third rails, and the common ground. Look for ways to add value and deepen the partnership. Price is important, but it should be one component of the relationship. ■ Determine the primary institutional customer, and work with that unit to optimize institutional affordability, rather than working with multiple individual departments to optimize profits. ■ Demonstrate exactly how the product or service will directly achieve institutional objectives, such as reducing the cost of attaining a degree. ■ Mentor institutions in the kinds of changes they are struggling to make, such as change management and innovation at scale. ■ Reach out to IT and library leadership to partner at an institutional level instead of going directly to faculty.
<p>9. Administrative Simplification</p>	<ul style="list-style-type: none"> ■ Provide repositories of information, best practices, workflows, and codes. Adapt the repositories to different regions or institutional types because each has its own nuances. ■ Continue and expand user groups and customer councils to help customers directly influence product development and also learn from one another. ■ Work with multiple institutions, and leverage the similarities. Help institutional leaders understand implementation models and best practices that have the function or outcome your solution supports. ■ Adapt to today's solution architectures by building open solutions that support data flows and integrations.
<p>10. The Integrative CIO</p>	<ul style="list-style-type: none"> ■ Provide educational opportunities to talk about the big picture and how industry solutions, or a combination of solutions, can help address institutional issues. Offer opportunities for CIOs and non-CIOs to gather so as to share experiences and approaches. ■ Partner with institutions on product development. Many products weren't designed for higher education and need to be adapted. Institutions can help shape a product to make it more valuable and work better for many different types of institutions. ■ Help higher education learn about and adopt promising emergent practices, such as more flexible organizational designs or new development methods.

Collaborating to Make Progress Faster and Better

Panelist Kellie Campbell predicts: “Partnerships, collaborations, and consortia are going to be absolutely fundamental to how higher ed survives.” Higher education has always been open and collaborative, and this is no time to stop. Some panelists worry about that, including Sasi Pillay: “As the future looks more and more competitive, I’m hoping we will not give up the collegial collaborative spirit that we have in place right now.”

Issue	Collaboration Ideas
1. Information Security Strategy	<ul style="list-style-type: none"> ■ Partner with peers at other universities and colleges in your region. Start with regular information sharing, and then establish some very specific objectives for the group, like sharing staff expertise, holding joint education programs, conducting and reviewing maturity assessments together, and establishing a sharing agreement for reciprocal threat intelligence feeds. ■ Participate in the EDUCAUSE Higher Education Information Security Council (HEISC) to showcase and share successes and approaches.
2. Privacy	<ul style="list-style-type: none"> ■ Collaborate with nearby institutions. Start with regular information sharing and then establish some very specific objectives for the group, like sharing best practices and policies, conducting reciprocal benchmarking, and jointly defining standards of privacy.
3. Sustainable Funding	<ul style="list-style-type: none"> ■ Partner with similar institutions to share commodity enterprise solutions. ■ Approach institutions with centers of excellence in niche areas, like research computing, to become a partner-customer of those services. ■ Publish and share your experiences with the EDUCAUSE community. ■ Create or join an EDUCAUSE Community Group (CG) to develop a national or international network on this issue.
4. Digital Integrations	<ul style="list-style-type: none"> ■ Share experiences, and develop and adhere to shared standards. ■ Gather a group of institutions, jointly develop standards, and approach solution providers with a consolidated, shared set of integrations requirements.
5. Student-Centric Higher Education	<ul style="list-style-type: none"> ■ Use EDUCAUSE as a sounding board. Attend EDUCAUSE community conferences or the annual conference to start the conversation and to move it forward. ■ Be clear about the most-effective things that can be done as a group and the things that can be done only locally. The practices that are most difficult to adopt will be those that clash with your culture. If you’re trying to change the culture to fit emerging practices, get advice from colleagues on how to do that.
6. Student Retention and Completion	<ul style="list-style-type: none"> ■ Share expertise and technologies with a group of like-minded peers. If shared services is a step too far, even adopting the same solution as your colleagues will enable you to learn from one another and share staff expertise. ■ Get advice from colleagues on how to change the culture to fit emerging practices. ■ Share your algorithms and data elements for colleagues to tweak based on their populations and objectives.
7. Improved Enrollment	<ul style="list-style-type: none"> ■ Partner to make credits transferable and transcripts portable among institutions. Find programs your institution doesn’t offer, and vice versa. Share students by collaboratively offering degree programs that build on strengths of multiple institutions. Technology can help—for example, by using blockchain to make transcripts and credentials portable or federated identity management to facilitate cross-institutional authorization.

Issue	Collaboration Ideas
8. Higher Education Affordability	<ul style="list-style-type: none"> ■ Use consortia that focus on different areas (e.g., Midwestern Higher Education Compact, OpenOregon, NERCOMP, HESS) to get advice when you're buying or researching an acquisition and negotiating contracts. ■ Collaborate with like-minded peers to help the vendor community recognize and respond to the fiscal limitations and business models of higher education. ■ Use EDUCAUSE Community Groups (CGs), events, and publications to learn from others and to share your successes. ■ Explore shared services agreements with other institutions to be able to reduce the resources required for certain commodity solutions.
9. Administrative Simplification	<ul style="list-style-type: none"> ■ Move beyond “snowflake syndrome,” in which every difference is immutable. Find institutions that are a similar size, with similar cultures, using similar tool sets, and share business processes. ■ Find implementation partners who are willing to work across institutions and help you leverage one another, rather than reinventing the wheel each time. ■ Help colleagues be successful by being open and honest during reference calls about vendors and consultants.
10. The Integrative CIO	<ul style="list-style-type: none"> ■ Find your peers, and develop enduring relationships with them, whether via EDUCAUSE or other consortia and conclaves such as the Association of Independent Colleges of Art and Design (AICAD), the Big Ten Academic Alliance, the Northwest Academic Computing Consortium (NWACC), and the Research University CIO Conclave (RUCC). Use them to develop CIO skills, new perspectives, and a broad understanding of the issues facing higher education today. ■ Enroll in an EDUCAUSE Institute Program. ■ Attend a conference or leadership program from a different professional organization to broaden your understanding of the complexities of your institution.



Continued from page 55

education, the data is on students, and the goal is to achieve the outcomes that both students and institutions intend. The more we know about students, the better able we are either to help them or, if we aren't careful, to mislead or even harm them. Even assuming that everyone involved in analytics and AI student success initiatives has the noblest of motives, realistic concerns remain.

Data is inert. Humans are the ones who decide what to do with data, and humans in higher education are still learning how to do that. We have spent years looking at institutional performance dashboards with glazed eyes; suddenly, we have specific signals about specific students, and we need to overcome our inertia while thinking carefully about which signals to look for and what actions to take.

Data doesn't make decisions. Humans are the ones who create algorithms or design machine learning, deep learning, and other AI applications. Humans are the ones who program nudges and determine consequences. Examples of the implicit biases that have been unconsciously programmed into algorithms and AI are widespread.¹² Addressing AI bias with algorithmic governance and hygiene, greater accountability, more discussion within and across professional communities, and other methods will be a difficult, ongoing, and utterly necessary struggle.¹³

Leaders at each higher education institution will have to decide if, when, and how to use analytics and AI. The promise is immense, but we must move carefully and operate transparently. One or two missteps will drown out hundreds of successes. We must remember that, notwithstanding slippage in public confidence,¹⁴ higher education remains a trusted industry. Higher education is held to higher standards than other industries. The outrage over the covert collection and misuse of student data by some college admissions offices should be a wake-up call to institutions with initiatives relying on ambitious data collection.¹⁵

Solution providers are playing a major and growing role in the student success space. Conversations and accountability must be extended as institutions rely on solution providers to support increasingly consequential outcomes.

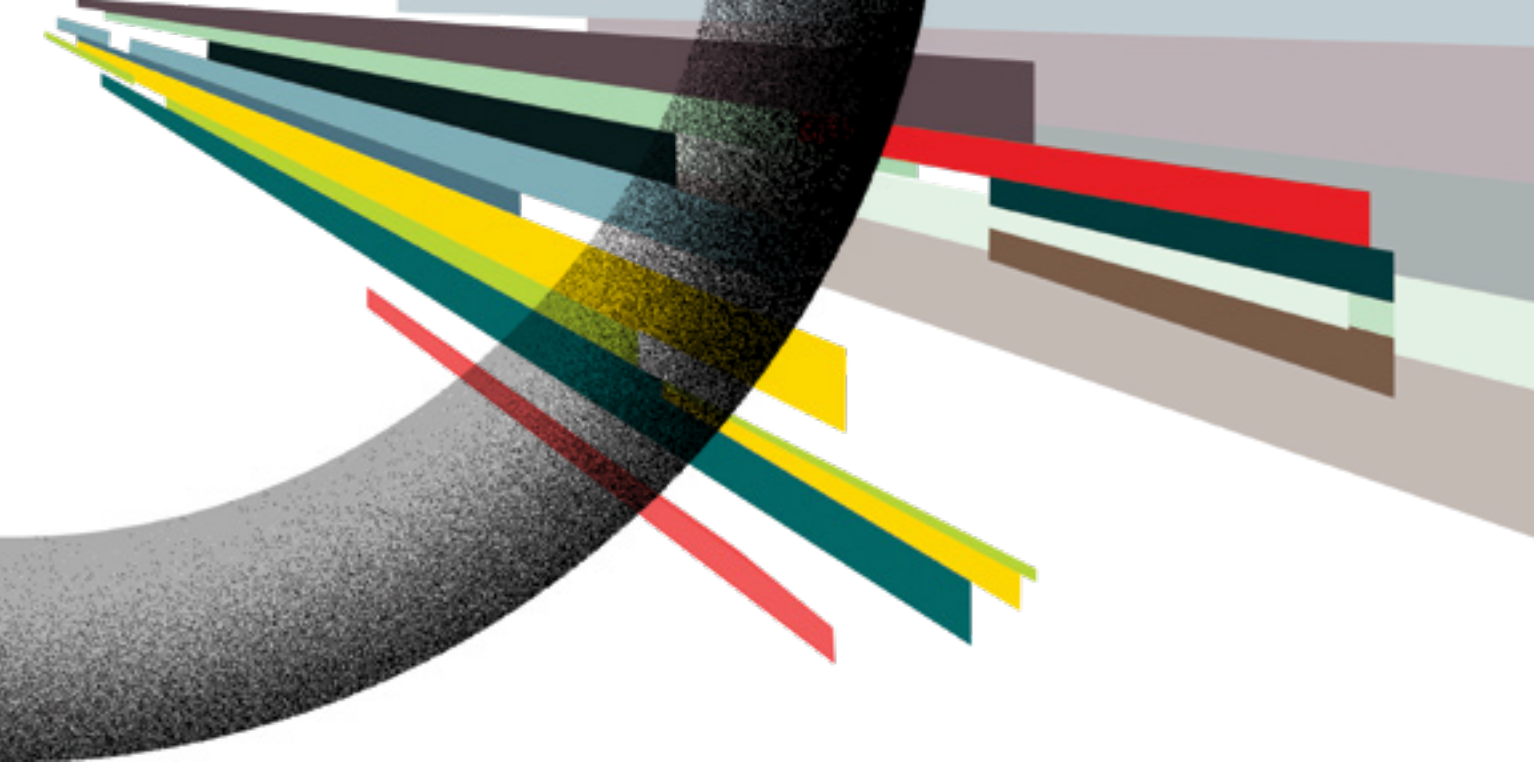
Dither or Drive

The road to digital transformation is not well marked. According to Gartner, many organizations feel they are not moving forward confidently and have not committed to digital investments deeply enough to attain significant results. They are stuck in "digital dithering." Gartner advises organizations to take multiple three-to-four-year journeys to digital transformation—journeys with different objectives that build on one another.¹⁶

The road to digital transformation is full of potholes and other hazards, and it is most definitely not a straight line. But as Mikhail Gorbachev, former president of the Soviet Union, said: "If you don't move forward, sooner or later you begin to move backward."¹⁷ The college and university leaders we interviewed know this, and they are committed to moving forward with bold actions to keep their institutions healthy and their students successful. Higher education CIOs are looking ahead as well. According to EDUCAUSE data, 75 percent of CIO respondents predict that digital transformation will be more important in two years.¹⁸

The road to digital transformation is sure to be uncomfortable and unpredictable. But unlike most other industries, higher education has an inherent advantage: it is highly collaborative. If you don't want to venture on the road to digital transformation by yourself, you can join a caravan of like-minded peers at institutions supported by systems, consortia, and/or professional associations like EDUCAUSE.

Dither or drive? It's time to get moving. ■



Acknowledgments

The Top 10 IT Issues initiative involves the entire EDUCAUSE community, both EDUCAUSE staff and members. All provide some form of input or support, and I am deeply grateful to all. Some individuals deserve special thanks, starting with this year's panelists, who kindly and generously helped us by reimagining the process used to identify the Top 10 IT Issues, taking our new process on test drives, and giving us access to leaders at their institutions. I have enjoyed working with everyone on the panel.

Jamie Reeves is my partner, lifeline, and confidante on this project. She has simplified the work, anticipated and then removed obstacles, and has, quite simply, been a lot of fun to work with. Although Teddy Diggs doesn't join the project until later in the year, she takes the raw drafts and rough thinking and makes them unrecognizably good. Working with Teddy is one of the highlights of my year.

Many others in EDUCAUSE contributed to various aspects of the work. Mark McCormack and Ben Shulman ensured that we fielded a good survey and that the data got back to us quickly and accurately, despite many other conflicting commitments. Lisa Gesner used her storytelling prowess to help shape the narrative and main points of the article. Malcolm Brown, Betsy Reinitz, and Karen Wetzel have helped develop and refine EDUCAUSE's understanding of digital transformation, and Christopher Brooks generously shared early data from our Dx research. And finally, John O'Brien has been relentlessly encouraging of all I do and of this project in particular, and I owe him much appreciation and respect, always.

Notes

1. Susan Grajek and Betsy Reinitz, "Getting Ready for Digital Transformation: Change Your Culture, Workforce, and Technology," *EDUCAUSE Review*, July 8, 2019.
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17. Gorbachev speech quoted in *Harvard Magazine*, December 5, 2007.
18. Preliminary results from the forthcoming EDUCAUSE study on the digital transformation landscape.

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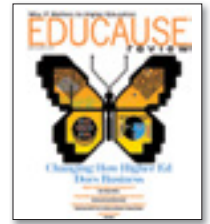
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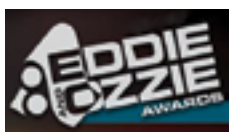
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