



Empowering the Effective CIO in Higher Education

The drivers and factors every CIO must embrace in 2023

WHITE PAPER

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EXECUTIVE SUMMARY

The challenges facing Chief Information Officers (CIOs) in higher education have grown well beyond providing technology support for institutions. CIOs face challenges ranging from monitoring and ensuring data security to providing expanded services for diverse populations, delivering student success improvement initiatives, modernizing user experiences, supporting the evolution of teaching and learning in a digital age, and providing technology infrastructure to support a growing remote workforce. While expectations for technology support and strategic guidance are increasing and evolving, CIOs are also facing severe budget constraints and staffing shortages.

Many institutions are now facing competition for students, with an urgency to increase enrollment yields by finding new potential populations to recruit from or improving retention and persistence rates among existing populations. Meanwhile, campus leaders expect CIOs to maintain operations while delivering cost-effective, best-fit technology tools and services to support institutional priorities, such as building advanced analytics solutions. The digital transformation era is ushering in significant change, with implications for organizational structures, staff roles, and responsibilities.

To navigate this increasingly complex landscape effectively, CIOs must leverage relevant data, adopt emerging industry products and best practices, and partner with industry and institutional leaders to develop and execute their strategy to achieve institutional goals. While the CIO cannot achieve those goals alone, the CIO is in the best position to orchestrate and enable transformational initiatives. Consequently, to successfully lead digital transformation efforts, CIOs must accurately assess the standing of the IT organization, adopt the relevant practices, and develop key institutional partnerships.

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DRIVERS IMPACTING TECHNOLOGY CHANGES

Digital transformation throughout the higher education enterprise is imperative, as institutions face a demographic cliff from declining birthrates resulting in a significant shortage of traditional college-aged students. This is coupled with more students enrolling in higher education from diverse backgrounds, resulting in an increased demand for enhanced services for these populations. Against the backdrop of cyber threats, data silos, budget constraints, and the need to align information technology (IT) with the institutional mission, leaders look to CIOs to advise, deliver, and determine implications for emerging technologies.

From a technology perspective, digital transformation includes a plethora of technologies, including cloud computing, big data, artificial intelligence (AI) based analytics, identity and access management (IAM), integration platform as a service (iPaaS), and software as a service (SaaS) models, particularly for aging administrative systems such as finance, HCM/payroll and student information systems. The CIO should not assume that institutional leaders understand the relevance and criticality of the need for these major investments. This might be the case if the institution's IT organization is not viewed as aligned with the institutional mission or, worse, is viewed as an internal vendor whose only purpose is to serve customers. When IT is viewed as an internal service organization, institutions miss the opportunity to work strategically. For institutions to succeed with major transformation initiatives, the IT organization must be viewed as a strategic partner.

Both internal and external factors influence and impact decisions regarding the timing, selection, and disposition of systems and tools. Current age and adequacy of systems and equipment, end-of-life support timelines, technology advances, student expectations, departmental leaders' expectations, industry directions, budget constraints, institutional strategic plans, institutional culture, and other factors are all at play.

Internal Factors

As CIOs look inward to survey and assess institutional resources and dynamics, key factors may influence their financial and operating decisions, including

- Building a unified data model to support data-informed decision making
- Supporting student engagement and success initiatives
- Serving a more diverse student body
- Facilitating remote workforce skills and training

To ensure successful implementation and adoption, investments in modern technology must align with the institutional mission, strategic plans, and leadership vision. The CIO who has developed the required institutional and industry partnerships and educated institutional leadership on the IT value proposition will garner the institutional resources and support necessary for this level of transformation. With broad consensus supporting these efforts, it is a much smoother path to gaining project buy-in when the value proposition is well understood, and the initiative is aligned with the institutional mission and strategic plans.

However, even with leadership support, the effort required to adopt modern technology will still be substantial. Software applications; finance, HCM, and student systems; and constituent relationship management (CRM) systems are typically long-term investments that can last for decades. IT staff often have maintained and customized these “legacy” systems to support institutional operations, with significant input from departmental staff across the organization. Over time, bolt-on improvements or additional specialized systems may have been installed to enhance functionality. Manual and paper processes may accompany the systems to accommodate exceptions, special processing, and traditions. Faculty, office, and information technology staff have learned and lived with the systems for many years and are comfortable and confident using them for their daily jobs. Consequently, the CIO should be aware that the urgency regarding modernization may not be shared among institutional stakeholders, and a comprehensive change management program sensitive to the institution’s culture will be critical for success.

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External Factors

CIOs also look outward to assess potential impacts from growing trends in the local, national, and international arenas, including

- Cyber threats such as ransomware, phishing, and other techniques
- Declining enrollment’s manifestation in the Demographic Cliff, creating the potential for competition for enrollment
- Employer, job, and licensure model updates with digital literacy requirements
- Growing interest in online learning opportunities
- Requirements for mobile, secure, and timely access to information
- Student expectations for an “Amazon-like” experience for institutional services
- Students questioning the value of higher education
- The pandemic’s impact on student learning, teaching, and institutional operation

The Campus Backdrop

During the past decade, particularly during the past few years due to the pandemic, collegiate campuses have experienced rapid technology changes that have challenged the status quo. IT staff hurried to provide tools and services to expand and support remote working, leveraging new videoconferencing programs and increasing the use of virtual private networks. Industry and institutional leaders promoted online learning tools and techniques while addressing data privacy and security implications. Employees who were comfortable with routine were thrust into a new normal—trading paper forms for inbox items, moving front desks to Zoom rooms, and redirecting telephones and voicemail to chatbots. In addition to sustaining the abrupt move to a remote working environment, CIOs need to consider additional expectations and technology infrastructure status and trends, including

- **Cloud computing** to enhance functionality, security, and support for enterprise teaching, learning, and operating tools
- **Advanced analytics, including machine learning (ML) and natural language processing (NLP)**, to build predictive models to support enrollment yield, persistence, and retention efforts and assess marketing campaigns, student success markers, and operational effectiveness
- **Modern integration platform (iPaaS)** to securely link multiple software applications and platforms
- **Security and identity management solutions** to support secure data management via tools such as
 - Identify and access management (IAM)
 - Identity governance and administration (IGA)
 - Single sign-on (SSO)
 - Multifactor authentication (MFA)
 - Privileged access management (PAM)

The Central Role of Data in Digital Transformation

Critical to digital transformation and innovation is data. A recurring theme with colleges and universities desiring to modernize their systems is the lack of access to meaningful data to drive decision making. This is a central focus area that every higher education CIO needs to recognize and develop expertise in. Simply put, data must be treated as a valuable institutional asset. Being able to mine data from across the organization allows an institution to analyze and act upon trends. Whether the purpose is to improve student retention or optimize financial aid,

the ability to access and use data from multiple sources to build models that can uncover anomalies or trends is key. This is a major shift for any organization to ensure that decisions are driven by facts instead of speculation.

The creation of a data-driven organization is the essence of digital transformation and can provide measurable value throughout all functional areas. New artificial-intelligence-driven models are now being developed and deployed that are providing insights into enrollment trends, student success, and engagement. Such solutions are providing real value as many institutions struggle with declining enrollments and creating meaningful interventions to improve student success. This is the value the CIO and the IT group can provide through partnerships with leaders of functional areas within the institution.

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PLANNING, TRANSITIONING, AND OPERATING

Partially fueled by the pandemic, recent advances in technology solutions have accelerated the planning, transitioning, and operating phases. Technology vendors usually assist with implementation or deployment; however, adoption is the end goal, where confident use of the system by faculty, students, staff, and other stakeholders results in enhanced operations. Strong change leadership and promotion of digital literacy throughout the project are essential for a successful outcome.

Planning involves defining strategic alignment, budget, human resources, timelines, and project outcomes while gaining and maintaining executive and mid-manager support for technology initiatives. The absence or presence of an IT governance process with cross-institutional participation can significantly impact funding and greenlighting technology decisions. This is markedly different from an IT management process that is the sole responsibility of the CIO. IT governance can take the form of a technology planning group or steering committee, ideally composed of leaders from various departments across the institution. Establishing this interdisciplinary technology governance structure is a significant step in aligning the IT group's strategy with the institution's mission and goals. With this structure in place, projects selected should reflect institutional priorities and mission alignment, rather than focusing primarily on IT infrastructure requirements. Broad participation promotes open and honest communication between departments. It also provides opportunities for the CIO to discuss how the project may benefit the entire organization while defining and aligning IT strategy toward technology modernization.

Transitioning involves providing the time and resources to learn, design, build, convert data, and, most importantly, test the new systems and tools. Potential shifts in roles, responsibilities, and organizational structures may surface during this phase as new automated tasks replace or refine existing processes. Previously siloed areas may now be connected electronically through automated business processes. The CIO and technology staff can help facilitate interdepartmental discussions and work with departmental managers to prepare for change by developing guidelines, training materials, and project communications and refining data governance processes.

The CIO should recognize that users who are not as technology savvy may only be able to envision the new application once they can see it and react to it. For this reason, CIOs should be familiar with agile development methods. While predictive or "waterfall" methods certainly have their use, agile methods are a better approach for software development initiatives. Essentially, agile methods provide the opportunity to fail quickly! Building a prototype early in the process will allow user feedback and is more cost-effective than discovering a solution that does not meet institutional needs further down the road.

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Operating involves the onset or “go-live” of a new system and ongoing operation, testing, updates, and support. Information technology staff roles may also change, depending on the technology solution, particularly with modern cloud solutions that are highly configurable but not customizable. In some instances, new technologies will operate simultaneously with older solutions for a prescribed time, when implemented in a phased approach. At other times, there will be an immediate shutdown of the old when the new system or tool is turned on. In either case, planning for and providing time and resources for ongoing learning and support is critical.

Front and center for the CIO is understanding the difference between implementation and adoption. Successful implementation is undoubtedly a significant milestone but does not necessarily ensure the desired organizational change. A change management strategy with a comprehensive training plan will be critical to meeting the initiative’s goals. Allocating significant and ongoing resources to change management and training will help ensure the desired outcomes. Each institution will need a customized plan specific to the initiative.

THOUGHTS AND CONSIDERATIONS FOR CIOs

For higher education CIOs, some elements must be analyzed and answered honestly. Perhaps most important is the degree to which the leadership team believes the IT organization can contribute to delivering on the vision they have for the organization. The reporting structure may contribute to the degree to which this is understood. Does the CIO have the opportunity to engage in meaningful discussions concerning the value IT can bring to delivering on the institutional mission? In many institutions today, the CIO often has a seat at the Cabinet table, but this may not be the case on some campuses. If the CIO is not at the planning table, it is imperative for them to internally market the value that IT can bring to the organization. This requires communicating a clear, compelling, and comprehensive vision for digital transformation, leading to institutional support, alignment, and adoption of technology goals and initiatives.

There is a subtle shift between being viewed as internal vendor versus institutional partner in delivering value across the institution. CIOs should develop a keen understanding of college-wide operations to effectively market the value and contributions IT can bring to attaining operational efficiency, improving student engagement, and delivering new learning models. The IT team's value should be well understood; otherwise, getting the buy-in required to support significant investments needed for digital transformation will be challenging. Compounding this, the CIO will compete for funds against many other priorities, such as hiring staff, renovating buildings, and the myriad requests accompanying every budget cycle.

Partnering with institutional leaders at all levels is well worth the time spent. One strategy is to physically embed yourself and your team members into functional areas to experience their issues firsthand and advocate for the value that modernization efforts can play in making improvements. This can dramatically change the institution's mindset regarding the importance of technology investments. Furthermore, it will enhance the view of the IT organization as a trusted partner rather than the perceived role of an internal vendor.

Modern technologies usher in fresh opportunities and challenges for CIOs. While learning and implementing the nuances of new technology solutions is essential, it is equally consequential to recognize the human elements and potential impact on current job tasks and organizational structure.

Responsibilities and boundaries may blur, merge, and evolve with this change, and CIOs should recognize that

- Issues are rarely technology-only problems
- Solutions need to align with the institutional mission

- Building skills and relationships is necessary for moving forward
- Ongoing collaboration with stakeholders is critical to long-term project success

For example, with the adoption of modern finance, HCM, and student systems, Student Services and Academic Departmental Services areas may hire and embed staff with “technology” support roles traditionally performed by IT staff. The new responsibilities may include providing “user support” for students and employees, troubleshooting data and process issues, serving as subject matter experts, ensuring data integrity, and performing reporting and analytics tasks. Does this provide an overlay of support within the department? Now the department has a subject matter expert with technical skills.

Upstream data processing changes, such as personal information updates in the Student Records area, may have immediate downstream impacts for student billing and financial aid, as well as considerations in the human resources, institutional advancement, and financial areas for individuals who contemporaneously serve in student, employee, alumni, and vendor roles. Consequently, structures supporting ongoing institution-wide, cross-functional collaboration are increasingly important to maintaining the quality of information, systems, and service.

Likewise, specific IT staff responsibilities may shift from managing hardware and customizing code to integrating systems and maintaining data security. Increasingly, IT staff will facilitate testing and upgrades, handle advanced reporting requirements and business process configurations, ensure robust, reliable connections, and serve as business partners.

To accomplish this, CIOs must effectively partner with institutional staff to

- Foster collaboration by organizing team structures with key users in lead project roles
- Facilitate cross-functional data governance in support of the desired student and team member experience
- Focus on information, systems, and service quality, and provide learning and support resources to ensure the successful adoption of new technology tools
- Factor in the prevailing campus environment, competing projects, and priorities when implementing new systems and tools

CONCLUSION

Technology is always changing and, most recently, at an accelerated pace, creating significant complexity throughout the ecosystem. A trusted partner is critical to navigating this increasingly complicated landscape. Determining the proper fit of people, processes, data, and technology can be challenging and requires knowledge of the industry and trends; technical, business, and political acumen; and collaboration with institutional leaders. A CIO must bring measurable value to the organization. Having a vision for what modern solutions can provide and being able to sell and deliver on that vision is essential to success.

Whether they are making continuous updates to existing systems and tools or introducing innovative solutions, CIOs must ensure reliable operations while delivering new and innovative solutions. Partnering with trusted advisors and institutional leaders will be critical to successfully managing transitions for strategic technology projects. As the campus technology landscape evolves to incorporate more cloud offerings with enterprise-wide implications, it is increasingly important to provide support and learning resources; ensure system, information, and service quality; and deploy systems and tools that will help propel the institution forward.

CIOs must evolve to be leaders of change for the institution, and their teams should develop expertise in business process management and reengineering. CIOs must bring value to the organization and not simply implement technology solutions for their own sake. CIOs need to honestly assess how their IT organizations are viewed through the institution's lens and respond with the appropriate solutions to build partnerships and consensus for successful digital transformations. In this ever more complex technology landscape where vendors are continuously shortening development cycles to add functionality, it is worth evaluating the value an advisory team can provide to help reduce complexity and shorten time to evaluate, select and implement these modern solutions. Assessing the current state of technology and readiness for transformation can greatly accelerate the timelines for modernization efforts.

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METHODOLOGY

Tambellini maintains, updates, and delivers the most comprehensive database of institution technology profiles available. The company began tracking this data in 2001 in response to client requests, and today provides data to global organizations and institutions. Tambellini gathers and maintains publicly available data on higher education technology selections from a variety of sources, including press releases, institution materials (e.g., project websites, presentations), news articles, and vendor case studies. Tambellini conducts primary research including surveys and interviews with institutions. Institutions provide updates to technology profiles through online research portals on various Tambellini websites.

While other firms have historically provided some information and opinions regarding market trends, the data to support these opinions has typically been provided by vendors minus detailed customer lists or by survey responses, which have limited response rates. Without the benefit of detailed, verified technology profiles, institutions, vendors, consultants, and financial analysts were generally left on their own to try and find enough critical technology data to support important decisions. Tambellini's Education Institution Technology Profile Database® is used by institutions to find peers with similar technology implementations, for benchmarking comparisons, and vendor references. Vendors, consultants, financial analysts, investors, and venture capitalists also utilize the database to gain insight into market-share data and other facts about vendor sales history that are not available from any other single source. Prior to the availability of this database, it was difficult to track and understand market-share data by vendor and vendor product.

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This research would not be possible without the research and support of our analysts and staff. Since 2001, the Tambellini Group team has been researching and cataloging technology decisions in higher education. Every effort is made to provide accurate and timely information.