

Lorenzo Associates, Inc.
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**INFORMATION TECHNOLOGY
GOVERNANCE (ITG)
IN HIGHER EDUCATION**

by George Lorenzo

**President and CEO of Lorenzo Associates, Inc.,
& Editor and Publisher of Educational Pathways
<http://www.edpath.com>**

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Editor's Note: In early 2008, I had the opportunity to work with the EDUCAUSE Center for Applied Research (ECAR) on the development of a chapter inside a research study that was published in June 2008, titled "Process and Politics: IT Governance in Higher Education."¹ Part of my duties entailed interviewing IT professionals in higher education about their views on the future of Information Technology Governance (ITG). What follows is an overview about what I learned, what some of the literature says, and what some of these IT professionals said about ITG. It does not reflect the views of ECAR. I am extremely grateful to ECAR for giving me the opportunity to learn about ITG through this assignment. A special thank you goes to Ron Yanosky, Jack McCredie and Richard Katz.

Perhaps the most concrete, and redundant, statement that can be made about Information Technology Governance (ITG) in higher education is that its time has come of age. Strong, sophisticated and effective ITG structures and processes in higher education have evolved significantly over the past decade.

Intelligent Perspectives On ITG

ECAR is a leading source of information about ITG in the higher education sector. In addition to the report mentioned above, ECAR has published a good number of highly informative and educational research studies and papers about ITG.²

On the corporate side, the Information Systems Audit and Control Association (ISACA) is a widely known intelligent source of information about ITG.³ In 1998, ISACA formed the IT Governance Institute (ITGI) to focus on original research, publications, resources and symposia on IT governance and related topics.⁴

Defining ITG

ECAR defines ITG by referring to MIT researchers Peter Weill and Jeanne Ross, who wrote that IT governance means "specifying the decision rights and accountability framework to encourage desirable behavior in using IT."⁵

ECAR also provides its own informal description of ITG:

IT governance describes who makes which decisions, who provides input and analyzes the issues, who sets priorities, and who settles disputes when there is no clear consensus. Good governance processes are actively designed and well understood by participants, and foster timely decisions that are communicated effectively. Ultimately "desirable behavior" in using IT means behavior that is aligned with and helps achieve institutional strategic goals.⁶

Central to Teaching, Learning, Administration, Outreach and Research

Anywhere from five to ten years ago, information technology (IT) was often categorized as institutional "plumbing," draining funds and never quite getting enough real attention at the executive level until the "pipes" broke down or started to malfunction. IT's new twenty-first century stature, driven by effective governance, places it central to the support of teaching, learning, administration, outreach and research in higher education. The people leading and managing IT efforts at colleges and universities – namely CIOs and VPs of IT – sit on executive cabinets where institutional-level goals and challenges are discussed and debated, and where decisions are ultimately made that affect students, faculty, staff and administrators at all levels.

Hard to Predict

As the growth of technological innovation moves quickly, future ITG scenarios are difficult to predict. In addition, the ways in which ITG develops at colleges and universities differs vastly from one institution to the next, making it difficult to report on this topic from a singular, overarching point of view. For instance, a relatively wealthy private research institution might have funds, infrastructure and staff for developing and governing strategic initiatives around high-performance research computing projects, while another financially strapped institution cannot even begin to look at or govern such initiatives, as it struggles with keeping its basic IT services up and running efficiently under the pressure of budget cuts.

Change, especially when related to the IT industry, can be hard to keep up with, not to mention expensive and risky to implement. In the modern world of IT, with Moore's Law still alive and well, ITG decision-making processes can be complex, hesitant to move forward quickly enough, and overly political. Nonetheless, decisions must be made, because, to put it simply, IT development and maintenance issues on every college and university campus are vitally important. Put in another way, both the academic and administrative computing sides of higher education have come to rely on ITG to provide critical guidance and solutions to a wide swath of management-level tasks and issues more than anytime in the past.

Pertinent Issues

There are numerous decision-making processes that fall under the realm of ITG today. Here's a short list of important ITG-related issues based on the interviews and literature reviewed for this assignment:

- security and privacy issues;
- data and network infrastructure development, including work related to the cyberinfrastructure;
- the adoption of customer relationship management (CRM) systems, new student information systems and teaching and learning software and services;
- the implementation of disaster recovery systems;
- managing the growing use of network-connected mobile devices and gadgets increasingly finding their way on campuses;
- understanding the possibilities for outsourcing IT services;
- facilitating closer collaborations with library systems;
- facilitating better communication among all campus constituents whom are affected by IT-related decisions; and
- keeping up with the latest IT innovations related to the so-called "cloud".

Building Security Measures

Security and privacy issues are ranked very high in importance among senior IT administrators, requiring strong ITG processes. The 2006 EDUCAUSE Current IT Issues Survey ranked security and identity management at the top of the list of strategic challenges facing IT leaders.⁷ The 2007 EDUCAUSE Current IT Issues Survey ranked security number two and separated out identity/access management as the number four strategic challenge facing IT leaders.⁸ The 2008 EDUCAUSE Current IT Issues Survey had security at number one again.⁹

"IT security and privacy continues to be a significant issue for us, and I do not see that decreasing in importance in the next five

years,” says Patrick J. Burns, vice president for IT at Colorado State University. “The whole area of security is going to become more important,” explains Betty Leydon, vice president for information technology and CIO at Princeton University. “We are implementing a new security and identity management system right now. This is one area that will grow and change and become more important.”

Burns identifies three primary areas that fall under security that he claims are getting more difficult to manage, requiring the development of new ITG processes for better management and control: the possibility of database injection attacks on campus web servers, individuals not following IT policies and procedures, and how to provide services for and secure the burgeoning mobile computing environments that carry unencrypted files on portable media. “We don’t have good solutions for cell phones, which are becoming computers, but they do not have the protection of computers in terms of anti-spam, anti-spyware, anti-virus, firewalls and encryption of files,” Burns explains.

Ubiquitous Computing

Another important issue for ITG – one that is related to mobile computing issues – can be lumped under the topic of “ubiquitous computing,” a term first coined by Xerox as far back as 1988. Also referred to as “ubicom” or “everywhere,” ubiquitous computing, as Information Architect Peter Morville notes in his book “Ambient Findability,” refers to the electronic, Internet-connected devices that have become more commonplace in our everyday lives, and, accordingly, on every college and university campus. Wireless laptops and web-enabled smartphones, including the popular iPhone, are part of the modern student’s backpack. The

growth of ubicom also takes into consideration newer devices, such as smaller and more sophisticated GPS receivers, the growth of location-sensing and surveillance technologies, and more.¹⁰

It’s easy to see that smaller and thinner ubicom devices are being utilized by campus constituents as their personal choice for computing, bringing new challenges for ITG. The role of ITG shifts as end users increasingly take advantage of outside web-based services and expect to tie their mobile devices into the campus network. This gives ITG more issues to resolve, such as the development of mobile/handheld carrier relationships, policy questions and security challenges.

An interesting case in point relative to ubicom can be found at Abilene Christian University (ACU), where a mobile learning pilot called “ACU Connected” has recently started. This fall 2008, iPhones or iPod Touch tools will be distributed to 1,000 students and faculty for a wide variety of uses, including the development of “curricula that incorporate the phones to handle podcasts, flashcards, polls and live assessment for use in classes across the university.” First-year students will be the primary participants. Some of the goals of the pilot include making “computing easier for students, and to strengthen enrollment and retention as a result.”¹¹

Are similar ubicom-oriented initiatives in the cards for other campuses? Dan Updegrave, IT consultant and former VP for IT and CIO at the University of Texas Austin, explains how innovative technologies can start out as relatively small issues and suddenly become vitally important, requiring immediate solutions. As an example, he refers back to the days when e-mail usage, wireless connectivity and course management systems were all pretty much in

experimental phases and relatively untested only to become absolutely necessary campus-wide IT components over a short period of time. “Wireless is a good example,” Updegrove says. “We spent a fortune running Ethernet cable to every pillow in our dormitories. Now students can’t be bothered with having a 20-foot Ethernet cable. They want wireless in their dorm rooms.” He adds that in many ways CIOs are getting what they always wanted: ubiquitous access to information resources anytime, anywhere. The question becomes can the university afford to respond to these kinds of demands in which there is a disconnect between what students and faculty expect [e.g., 24 x 7 ubiquitous computing access] and the cost implications and IT staffing and maintenance challenges that come with such demands. The overall effect is that IT services, in general, become more challenging to maintain.

The Cloud

The expectations and services that come with ubicomp are part of “The Cloud” or “cloud computing.” *

What is cloud computing? Here’s a definition from Wikipedia:

Cloud computing means Internet-based development and use of computer technology. It is a style of computing where IT-related capabilities are provided “as a service,” allowing users to access technology-enabled services without knowledge of, expertise with, or control over the technology infrastructure that supports them. It is a general concept that incorporates software as a service, Web 2.0 and other recent, well-known technology trends, where the common theme is reliance on the Internet for satisfying the computing needs of the users. ¹²

Nicholas Carr, author of “Does IT Matter?” and most recently “The Big Switch” is a popular, well-informed voice on matters related to cloud computing. Carr writes in “The Big Switch” that computing, like electricity, can be delivered over a grid, shared by many people simultaneously.

The network – the Internet, that is – has become, literally, our computer. The different components that used to be isolated in the closed box of the PC – the hard drive for storing information, the microchip for processing information, the applications for manipulating information – can now be dispersed throughout the world, integrated through the Internet, and shared by everyone. The World Wide Web has truly turned into the World Wide Computer.

Carr goes on to say that Eric Schmidt coined the term for the World Wide Computer when he called it “the computer in the cloud.” ¹³

So, what does all this have to do with higher education and ITG?

Theories About Commoditization

Ubicomp and cloud computing have a lot to do with theories about the possible commoditization of IT products and services – similar to Carr’s comparison to electricity – and its possible influence in the education sector. Again, a definition from Wikipedia is in order: The majority of cloud computing infrastructure currently consists of reliable services delivered through next-generation data centers that are built on computer and storage virtualization technologies. The services are accessible anywhere in the world, with The Cloud appearing as a single point of access for all the computing needs of consumers.

Many cloud computing offerings have adopted the utility computing model, which is analogous to how traditional utilities like electricity are consumed, while others are billed on a subscription basis. By sharing “perishable and intangible” computing power between multiple tenants, utilization rates can be improved [as servers are not left idle], which can reduce costs significantly while increasing the speed of application development.¹⁴

The theory can be interpreted to mean that much of IT is becoming commoditized through such new technologies as Google Apps and other freely available web-based software, new open source environments, and server virtualization offerings. Taking this theory into higher education could mean that although ITG has evolved into being central to the overall strategies and progress of colleges and universities today, the pendulum may be in an early stage of shifting to the past when ITG was not so prominent.

For example, the aforementioned ACU Connected initiative utilizes Google Apps. In addition, a well-publicized, commodity-oriented scenario in relation to e-mail services happened at Arizona State University (ASU) in late 2006 [and is now happening at other institutions], when it was determined to outsource the university’s student e-mail system to Google. The decision raised some eyebrows within the academic community because it resulted in saving ASU an estimated .5 million dollars per year, and, as noted by its technology officer, has actually provided better security and privacy than the internal e-mail service ASU continues to offer its 65,000 students as an alternative option to the new Google-hosted and maintained system.¹⁵

ITG Reoriented

As noted on the [Google Apps Education Edition website](#), their hosted services will free up IT departments to focus on more important issues, are easy to deploy, and will save you money. In short, everything you need is in the cloud, making ITG irrelevant. But, the reality of all this, at least right now, is that it means exactly the opposite, primarily because making any kind of decision about such things as outsourcing e-mail, as well as other types of new and innovative IT-services-oriented outsourcing models, is a complex endeavor, requiring ITG to mediate and solve.

James Hilton, vice president and CIO, University of Virginia, provides a good explanation of how things are changing for ITG when he says that he does not know “how much longer we are going to be in the storage business – at least internally provisioning and sourcing storage, or provisioning and sourcing all of the commodity services that are currently out there. I envision in some ways a central IT shop going forward that is supremely good at managing relationships and provisioning from whatever source is the best deal at the time. So, you become more of an integrating unit than a source unit.”

“Sooner or later we are going to have to reorient what the role of IT is on campus – whether it is central or local IT – to take into account what people are calling the cloud,” says Ron Yanosky, ECAR deputy director and senior fellow. “This brings up some fundamental questions tied to governance. It used to be easy to govern IT when there weren’t many users on campus, and they were sophisticated users. Now everyone is a user, including people who are naïve about technology. And we may be evolving to a state where most users do not get their IT resources from campus.”

Trent Batson recently wrote that “campus IT organizations might start thinking of themselves not as service providers, but as service enablers. In other words, the IT unit should help campus constituencies get the technology services they need, whether on campus or on the Web.” He then asks if central IT units are, indeed, at a tipping point, “shifting to services out there.” His answer: “Probably not.” Why? Because Internet applications are too numerous and innovate too quickly and they reside in a perennial beta-land. In short, they are too unstable for an education sector that must always have technology stability at basic levels. ¹⁶ So, ITG is here to stay, just in a different form.

Cyberinfrastructure

In addition, ITG’s staying power stretches wide. For instance, another highly important area of interest that requires ITG processes is the growing development of the cyberinfrastructure. Issues related to the cyberinfrastructure correlate to the challenges faced by higher education to manage the large amounts of data that come with the territory of scientific research, as well as with the management of overabundant rich media files [video, audio and digital imagery] that flow across the lines both internally and externally between higher education institutions and others.

How higher education ITG is currently dealing with cyberinfrastructure, as well as data management, issues and challenges is a topic for an entirely separate report. Cyberinfrastructure has been touched upon in past issues of *Educational Pathways* and plans are to continue covering this topic in more depth in future issues. *The Chronicle of Higher Education* consistently publishes articles about the cyberinfrastructure. Also see the

National Science Foundation Office of Cyberinfrastructure website. In addition, the EDUCAUSE Net@EDU Initiative has a **Campus Cyberinfrastructure Working Group website**.

Customer Relationship Management Systems

Another area of interest that cries for ITG processes is the adoption of customer relationship management (CRM) systems. Janice Rickards, pro vice chancellor (Information Services) at Griffith University in Australia, mentioned customer relationship management as a very high priority at the highly centralized [in terms of overall governance] multi-campus Griffith University system.

The CRM initiative is a new item in the overall Griffith University budget. It is basically a small but important fraction of an Electronic Infrastructure Capital Plan (EICP) for 2008-2010 that was created by Rickards in collaboration with colleagues in IT units from across the Griffith campuses. The EICP was used as the basis for a series of discussions with the university’s Executive Group, which Rickards belongs to along with the vice chancellor, two deputy vice chancellors and seven other pro vice chancellors. The Executive Group decides on a funding list and respective funding amounts, which, in this case, Rickards says turned out to be “somewhat less than the [original] figure requested” in the EICP. Once the Executive Group agreed upon the funding, it was endorsed by the university’s Finance and Resources Committee and finally approved by the executive-level, centralized Council of the University as part of a final three-year \$96 million Capital Plan for the entire Griffith University system.

The CRM initiative was allocated a substantial budget. “We haven’t got a CRM system

at the moment, and we consider that a business priority,” Rickards explains, particularly in relation to some of the university’s strategic objectives around student retention. It complements our student administration system and is really about managing an ongoing relationship with students.”

Communication and Organizational Management are Key

Managing ongoing relationships, not only with students, but with all campus constituents and stakeholders is another important element related to ITG. Facilitating effective communication and collaboration between all campus constituencies and stakeholders is basically on the top of the list of issues that keep most ITG leaders awake at night.

The job of the CIO is increasingly becoming dependent upon his or her ability to communicate creatively with and recruit faculty, department and program heads and other staff members throughout the institution into the fold of the ITG structure and processes. The University of Virginia’s Hilton, for instance, has created informal advisory groups in which he invites faculty to help sort out what’s really needed, what’s feasible to implement, and to play a more vital role in actual decision-making. Hilton has created an informal advisory group on computational intensive science, another on digital humanities, and another on course management and collaboration software issues.

“Where I see a focused need, I go out and recruit and invite a set of faculty,” he says, adding that once inside the group, “I preach ambition and practice pragmatism. I bring faculty together and say let’s dream, let’s blue sky. We set the ambition and then say, if somebody walks in with the funds, we are good to

go, but assuming that they don’t, what is the first thing we want to do to make tomorrow better than today? That gets us closer. How do we start prioritizing?”

Hilton also finds it extremely important to develop a very close relationship with library staff at the University of Virginia. Historically, there has frequently been tension between the library community and the IT community on any given campus. However, “if you want to know what faculty are doing, talk to librarians,” Hilton says. “My closest collaborator here is the university librarian. Both worlds [library and IT] are changing, and the blur between the two is becoming much less distinct. Making sure that they are coordinated and collaborating is critical.”

Fred Siff, vice president and CIO, University of Cincinnati, adds his take on ITG communication and collaboration issues, saying that CIOs will increasingly be required to take on the responsibility of making IT initiatives “compelling and interesting to the community.” Examples of this kind of strategy are driven by the CIO’s ability to present IT issues in a way that gets more people on campus engaged. “Governance is about giving people an opportunity to speak, to have a hand in things. Everybody wants a hand in computing. Everybody has their own perspective. I don’t see that changing.”

Some examples for facilitating more active engagement in IT issues across campus include presenting security issues by stating to campus constituents that vulnerable systems, no matter where they might reside on campus, are going to be taken off the network, Siff says. “That has gotten a lot of discussion. We put it out to the public, and we got a lot of interesting comments back. Almost all were supportive. Community engagement ought to be a positive

process not a C-Y-A thing.” Another example entails funding allocations. “Everybody can get energized about that,” Siff adds. “We have a technology fee that generates about \$7 million a year. This year we are proposing a different way of allocating that money. That gets peoples’ attention.” Or, on the topic of business continuity, Siff says the term alone typically does not garner much attention. Instead, “if you say you are going to take all of the systems and rank order them in importance for protection and being made up to date with back-up and recovery sites ready for them – that gets people interested because they want their system to be number one.”

Princeton’s Leydon claims that “ITG should not focus on IT for IT’s sake.” For example, when talking about IT as it relates to academic affairs, the discussion should be about how IT can improve teaching and learning. When talking about IT as it relates to finances, the conversation should be about how to improve auditing and compliance through IT.

UCLA’s Davis talks about the governance process as necessarily being distributed by strategic, functional, technical and investment views and challenging to manage from presentation, communication and coordination perspectives. For example, “we look at strategy, function, investment and architecture in different ways with different governance groups,” he says. “This is very important because it is where you not only make decisions, but were you get buy-in. We spend a lot of time with how to structure various discussions for different groups and keep them oriented to the purpose of the group.”

Davis adds that proper presentation techniques and meeting management procedures are important to achieve real acceptance of a decision. “It is very easy to make a presenta-

tion that is too granular or too high level, missing the real purpose of that particular part of the governance structure.” In addition, Davis says that the Office of Information Technology, has three FTE and four student employees supporting the administrative function of the campus governance process. A management team of eight directors/managers, who work on the critical campus technology projects, are spending more time conducting background, analysis and planning work and documenting processes. “We have been taking votes, documenting meetings and taking a variety of steps to ensure that a decision, when made, remains a decision.”

Another part of the ITG structure and processes – one that brings together stakeholders at UCLA into defined decision processes – entails the establishment of Analysis and Project Oversight Groups. Davis provides one example of how this worked for a UCLA Common Collaboration and Learning Environment Initiative (CCLE), which, in November 2006, ultimately came to the decision to choose Moodle for its campus-wide course management system. A cross-disciplinary Functional Specifications Group, comprised of faculty, and a corresponding cross-unit Technical Specifications Group, comprised of IT experts, conducted separate systematic analyses from the two perspectives. The analyses were merged, and the UCLA Faculty Committee on Education Technology made the decision on Moodle as the campus environment.

A Project Oversight Group (POG) – comprised of IT staff from humanities, social sciences, physical sciences, engineering, the library, the management school, public affairs, the Office of Information Technology and the Office of Instructional Development – was established to oversee the implementation of

Moodle and develop campus outreach and participation processes that basically engage the UCLA community in its implementation. The (POG) has subsequently evolved into formal campus management entities – a Standards and Practices Group (S & PG), responsible for policy, direction, outreach and assessment, and a Systems Operations Group, reporting to the S & PG responsible for the campus Moodle system operations.

Survey Paints Portrait of ITG Effectiveness

These notable examples from the University of Virginia, Princeton, the University of Cincinnati and UCLA are all representative of effective ITG structures and processes that are having a positive influence campus wide. Are similarly positive results happening at most institutions today? A generally positive portrait of IT governance effectiveness in higher education was revealed in a 2007 ITG web-based survey conducted by ECAR, which generated 438 responses from EDUCAUSE-member-institution senior IT administrators, of whom 83% were CIOs.

Almost two-thirds of respondents strongly agreed that ITG was effective, and the overall agreement was 3.64 on our 5-point scale. When asked if ITG balances institutional and local or departmental needs, 71% agreed or strongly agreed. Nevertheless, we found considerable variation among institutions in their evaluation of IT governance effectiveness and noted a number of associations between overall effectiveness and other variables.

Among the factors we found most strongly associated with higher agreement about ITG effectiveness were

- active design of IT governance;
- perceived ability of key IT participants to describe ITG accurately;
- higher overall mean frequency of participation in providing input and taking part in decision making;
- incorporation of measurement and review in IT governance;
- ITG involvement in formal project review and approval; and
- ITG participating in institutional budgetary processes.¹⁷

In conclusion, ITG has transformed into something that is indispensable for helping higher education meet its needs and goals. A common consent that came out of this project was that ITG effectiveness depends on the ability of CIOs and VPs of IT to identify all the people who really are responsible for the myriad of functions and services that fall under the jurisdiction of IT, and, with them, build meaningful involvement and engagement in order to tackle strategic initiatives that ultimately benefit everyone on campus.

Endnotes:

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** I have been conducting an informal survey with some friends and acquaintances, all of whom are not educators but are computer literate and web savvy. None of them have even heard of the so-called cloud. Thus, I have come to the conclusion, at least temporarily, that the average intelligent citizen who uses a computer and goes online regularly does not have any clue about cloud computing and what it means in relation to the future of web-based services, Internet access and our constantly changing lives in the Digital Age.*