The Soft Side of SaaS:
Implications for IT
in Higher Education

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Overview

Software as a service (SaaS) establishes a new paradigm that requires a profound shift in our way of thinking—our mindset—about how we use technology to deliver value to the institutions and constituencies we serve. It has far-reaching implications for information technology (IT) organizations and the skills of the professionals they comprise. Moving slowly at first, the new SaaS archetype has gained momentum and will supersede the current paradigms sooner than we think.

Current Paradigms

Systems analysts and technologists today are primarily system providers. As providers we generally take either of two approaches:

1. Develop. We develop and maintain homegrown applications locally and obligate our institutions to sustain them for years to come. In so doing we achieve a result specifically tailored to the needs of our own institution.

2. Acquire-and-host. We acquire, download, and install vendor applications and host them locally—aka, “on-premises software.” Vendors do much of the work—developing and maintaining the applications—but institutions do a great deal locally themselves.

The professed advantage of the acquire-and-host approach over local development is that vendors providing the software ordinarily have a greater capacity to change their applications—all to the advantage of their clients. However, the on-premises model significantly diminishes the advantage of a vendor-supplied system. When institutions consider only these two options, they bind themselves to an ongoing, heavy burden.

Ideally, an IT organization continuously increases the value of its institution through services to its primary constituencies while lowering the burden (cost, effort) of providing those services. This could be expressed as the IT value proposition.

So it is wholly relevant to ask these questions of ourselves: Does the burden of our systems strengthen or weaken this value proposition? Do these burdens enhance or create a drag on our ability to focus on creating strategic advantage for our institutions in the competitive world of higher education? Or, putting it yet another way, is it in the best interest of our institutions to run a systems shop?

While both the “develop” and the “acquire-and-build” paradigms can contribute to the core mission of your institution, they dictate an ongoing commitment to the following:

- Server and server software acquisition, deployment, and maintenance
- Storage acquisition, deployment, and maintenance
- Network and network switching acquisition, deployment, and maintenance
- Security and firewalling acquisition, deployment, and maintenance
- Database administration, high-availability performance tuning, backup, and version control
- Physical housing (electrical power, air conditioning, backup, redundancy, server room, and so forth)
- Application changes (patches, enhancements, and new features), installation, and testing
- Synchronization of local modifications to vendor changes
- Troubleshooting

Continuous staff attention obviously must be focused on tasks related to these responsibilities rather than other tasks of potential value. While value to the institution generally increases slowly, staff members are generally locked into an ongoing maintenance burden (see Figure 1). Significantly, this translates into generally increased cost, an inability to assign staff to other tasks of value, and longer queues and lead times to realizing other desired results. These factors are major drivers that make SaaS alternatives attractive.\(^2\)

![Figure 1. Current Paradigms](image)

The concern is less with the vendors than it is with our mindset toward our responsibility (and therefore our work) in higher education. When our mindset is always, automatically, do-it-yourself, the resulting burden is very high and necessitates an ongoing drain on the core mission—and therefore technology value proposition—of an IT organization. The SaaS opportunity challenges our way of thinking. Our mindset will even determine how we measure the benefit we provide against the cost of our decisions.

Thomas Friedman asserts in his bestseller *The World Is Flat* that successful 21st-century institutions will be highly focused and purposeful. They will not allow themselves to fall prey to high costs yielding marginal gains, especially costs that prevent them from delivering on their mission and focusing on their core competencies.\(^3\) In higher education, expenditures that do not truly differentiate an institution or that do not appreciably enhance service to constituents fail to create anything other than operational value.

**The SaaS Paradigm**

While there are no panaceas, SaaS might help us better manage our precious resources. Also called “the hosted solution,” a SaaS application turns the vendor into the system provider. Institutions don’t buy software as an asset but contract with the provider for a periodically renewable, fee-based subscription service. The vendor deploys the application over the Internet instead of on our premises, and the application...
is run at a remote, firewalled vendor location accessed via the vendor’s remote network. The vendor assumes responsibility for most of the activities listed above, including application upgrades (see Figure 2). Through contractual arrangement, one requires the vendor to abide by institutional and industry standards for security, PCI, FERPA, and so on, thus protecting restricted and sensitive information. Insisting on a service level agreement obligates the provider to guarantee high availability, performance, and support.

Figure 2. SaaS Paradigm

As an industry strategy, SaaS is being adopted at an energetic pace both by business units acting independently and by IT organizations. In a survey conducted by ECAR in 2009 of IT leaders from over 370 colleges and universities, nearly half of all respondents (49.8%) indicated some form of SaaS presence already on their campuses. SaaS use for applications was also the form of cloud computing that indicated the strongest immediate impact. However, Gartner Research, using its five-point “Industry Scorecard Scale,” rates it “Promising”—i.e., certainly not negative but not yet the “Strong Positive” it is anticipated to become. One of the very promising factors is the potential for cost reduction. The Burton Group survey of IT organizations (previously cited) concluded, “The good news is that SaaS efforts delivered on overall financial expectations 96% of the time. 65% of respondents reported that SaaS lowered overall software costs, with a substantial number of respondents indicating hard cost reductions.” Nevertheless, institutions should be judicious and selective in deploying the SaaS approach. One of the keys to success will be selecting vendors that will be responsive to your needs and identifying use cases on your campus with a strong likelihood for success. Clearly, IT organizations will have to take SaaS seriously and use it appropriately for all the benefits it provides.

This bulletin provides an understanding of how the evolution of SaaS will impact the relationships and roles of business and IT organizations in our colleges and universities. SaaS will have a direct impact on the value of an IT organization to the campus communities it serves, but close attention must be paid to the skill sets and motivations of the staff at hand, coupled with those that will be needed, in a heterogeneous environment that includes significant SaaS deployment.

**Highlights**

For several years, the Stanford University Registrar’s Office has used software for event and space management provided by a major West Coast software vendor specializing in
the higher education marketplace. Until recently, Stanford deployed the vendor’s software using the acquire-and-host paradigm, with software objects downloaded to servers purchased, housed, and maintained locally at Stanford. Since the software is used to schedule spaces for academic and non-academic events, Stanford downloaded and installed additional vendor software to link room reservations to its campus student information system (SIS).

SaaS in Stanford Student Affairs

While the vendor software was effective in performing these tasks, over time the following problems with our acquire-and-host approach became apparent:

- Capable staff were assigned to local support but were untrained in the software.
- The software did not enjoy a high priority within Stanford’s administrative systems department, which was also charged with taking care of other complex modules.
- With a somewhat lower priority, response to a growing set of problems was often slow and not always effective.
- The server hardware and operating system on which the software ran were not upgraded and ran very old versions.
- Stanford experienced frequent problems in the interface between its SIS and the scheduling software.
- Stanford staff spent excessive time fixing resulting data problems.
- Internal IT costs charged to the systems department for housing the servers were very high.

Despite extraordinary individual effort, the situation proved suboptimal. Stanford realized that it also needed its administrative systems support to focus on its SIS, which for obvious reasons could not be compromised and which required increasing attention in its own right.

On learning that the vendor was developing a SaaS model, Stanford inquired about the costs of switching to this model. To its surprise, Stanford discovered costs less than those it was incurring. Who should better be able to understand and operate the scheduling system than the vendor itself, Stanford reasoned, and it made the switch.

Meanwhile, the enterprise applications landscape has been changing at Stanford. For one thing, Stanford Associate Vice Provost and University Registrar Thomas Black now uses 15 different vendors’ applications, a list he believes will grow. Whenever feasible and practical, Black now acquires services using the SaaS model.

Stanford and the West Coast vendor have established a unique relationship over the past three years. Stanford now uses three of the vendor’s systems, all delivered via the SaaS model. In addition to the scheduling system, Stanford uses the following systems:

**Course Evaluation.** The vendor initially developed this web-based course and faculty evaluation system for Stanford, and the vendor soon turned it into a hot seller on other campuses. Stanford brought the idea to the vendor, and the two organizations worked
closely and very successfully together. The vendor runs the system and manages all infrastructure, software, security, and data. Stanford provides information from its SIS sufficient to manage the system and pays an annual subscription fee for the service.

**Admissions.** The latest joint effort between the vendor and Stanford is an admissions application management system that went live in September 2010. The vendor’s admission system, used by over 600 institutions to facilitate the admissions application process, is deployed using the SaaS model, with all infrastructure, software, and data handled by the vendor on a subscription-fee basis. Students from all over the world apply to schools using the vendor system. Stanford had been using another vendor for years but was dissatisfied with its lack of responsiveness. As Black asserted, “Any vendor that doesn’t meet our needs can be fired.”

But Stanford faced another long-term challenge that the vendor could not yet solve: Admission to campus graduate study is fiercely decentralized. Decisions about whom to admit are made by each department independently and tracked independently using a variety of (mostly unsatisfactory) methods—spreadsheets, local databases (one very good one developed by the electrical engineering department), and manually passing piles of folders among faculty. Stanford’s first inclination was to refine this homegrown system. Then it considered the burden of going it alone.

Having successfully partnered with its vendor before, Stanford turned to it again to see if it could help address this challenge. Additionally, Stanford reasoned, “If we have this challenge, other institutions probably do too.” The vendor saw the same opportunity Stanford did to develop a solution that could facilitate decision making at the departmental level. It agreed to create a new module, called **Admit**, that works with its regular admissions system. Built collaboratively with focused input from Stanford, **Admit** enables evaluators to view applications online, add comments, establish applicant rounds and pools, and rank candidates. The system is flexible enough to support a wide variety of divergent departmental evaluation and decision-making processes. Demonstrated first at Stanford and then at the vendor’s conference in June 2010, **Admit** not only meets Stanford’s precise needs but has become another successful module the vendor is already licensing to other institutions. The vendor and Stanford have decided to keep a good thing going and are planning a “phase 2” set of enhancements. One of these is to establish a consortium of institutions that will be the first to collaborate on sending a digitally secure transcript when a student from one institution applies to a consortium member. Ultimately, this could eliminate paper transcripts entirely, a dream shared by Black and the vendor’s founder and president.

**Changing Relationships, Changing Roles**

These stories and the use of SaaS clearly illustrate a changing relationship between Stanford and this particular vendor and the movement of a progressive business unit in terms of how it acquires its IT support. The Stanford story could be a microcosm of something larger. Industry trends around cloud computing, SaaS, and the perceived value of IT all point to a new zeitgeist that defines how technology is provided and who provides it. In higher education we must inform ourselves of these trends and understand how they affect us.
What It Means to Higher Education

Emergent trends with respect to IT service delivery are having a direct impact on how higher education handles its vendor relationships, IT roles, and professional services. Some services, once considered the purview of the IT department, might now be provided by “facilitators” from business or other units of the institution.

Relationships

Institution and vendor. Obviously, vendors and institutions both enjoy greater advantage when they authentically cultivate a mutually beneficial relationship. Black is making it clear to vendors that those who strive to work more in active partnership with Stanford have preference over those that do not. As demonstrated above, the opportunity to partner can be viewed not only as an opportunity to create value for Stanford but one that may extend value across higher education. Vendors that take advantage of this opportunity will likely cultivate a better reputation in the industry than those that remain more distant and aloof. Institutions like Stanford that present opportunities to vendors that increase their value across their customer base will likely enjoy greater vendor attention. This means working together more and thinking larger than we typically do.

Business and IT. Does SaaS threaten the very existence of IT? Not necessarily. Alert campus IT organizations can seize the opportunity to adjust how they relate to business units. From evolution we learn that surviving species adapt. A significant aspect of an IT adaptation strategy is manifest in the changing roles of technical staff. The way an IT organization relates to its business units in a SaaS-capable world is key. If IT attempts to assert dominance and control, it is likely to lose both. However, if IT learns to authentically facilitate, partner, and lead through a proactive approach, its value to business organizations should be apparent. Business should drive technology, not vice versa. A technologist who embraces business drivers and plays a role in enabling the business to succeed can be the business unit’s new best friend. In addition, when technologists can use technology to lower their own costs and do more for the institution, IT’s value to the institution is likely to be apparent.

Furthermore, both vendors and local IT units can help themselves by identifying progressive business units looking for opportunities to be more efficient and improve service. As Everett M. Rogers asserts in his seminal work, Diffusion of Innovations, “Lead users have needs for innovations that are well ahead of those of the general market, and play an important role in the innovation-decision process.”

The System Facilitator Role

It is obvious that as SaaS becomes more prevalent in higher education, it will have a profound impact on technologists (programmers, database analysts, business analysts, systems analysts, and so on). Successful innovation, SaaS or otherwise, is like an arc to a new, hopefully higher level of institutional capability (see Figure 3).
In fact, the need for a new role is emerging, and the role is system facilitator. This role can serve various institutional change efforts (typically serially rather than simultaneously). Facilitators have several attributes that distinguish them from traditional technologists. At Stanford, system facilitators serve in roles that can be characterized with the following descriptors:

**Weatherman.** Someone on our campus had to anticipate what is needed. This did not mean developing consensus about what is needed; instead it meant anticipating an opportunity. It is like a golfer who throws a few blades of grass in the air to see how the wind is blowing. The weatherman must see into the institutional environment and assess need. The standard by which the weatherman is measured is different from that by which an operational role is measured. The weatherman is expected to exceed institutional expectations by noticing institutional needs and actually defining them. This is the mark of an innovator who is both a leader and risk-taker.

**Visionary.** Stanford has needed individuals who can develop and articulate a vision of what technology can do for us and who can become catalysts for change. While the day-to-day grind and challenge of running operational units preoccupies most of us, individuals are needed who truly challenge the status quo and light a fire in the institutional belly.

**Scout.** Someone on our campus must scour the marketplace for solutions, arrange for vendors to show their products, learn from other campuses about their experiences, translate those to our setting, and conduct rapid purchasing and deployment processes. The scout is also on the lookout for a vendor willing to partner, or co-create, with Stanford.

**Collaborator.** Someone on our campus must effectively influence a vendor to make needed changes and must also influence Stanford to adopt the result. This individual is skilled in creating authentic partnerships with vendors for significant enhancements, such as the new Admit module discussed above. Similarly, someone must create partnerships locally among service units to collaborate on technologies whose impact spans organizational boundaries and to accept new capabilities coming their way. Since we required integration of Admit into the existing software infrastructure and application suite, we had to influence a decentralized admissions community to be open to the new
software and adopt it. Significantly, our vendor worked extremely well with our decentralized community by continuously seeking their input on design.

**Influencer.** Institutions will want, and need, to benefit from the explosion of marketplace applications and technologies. Stanford needs individuals to represent its needs more broadly across our industry. It will no longer be adequate for institutions to exist in relative isolation, focusing mostly on their own settings with merely a casual and friendly relationship to each other at conferences. Building upon our long history of sharing knowledge and techniques, we have important work to do together. Technology in the 21st century gushes forth like hot lava from a volcano. Every day the face of the volcano looks a little different from the day before. We need to face these volcanic technological eruptions together. They will not subside, we cannot ignore their impact, and we must up our ante by partnering more and more. Someone is needed to represent each of our institutions in a wider technology dialogue that includes both other institutions and vendors. This entails more than talk, and it is about much more than small increments of change. It requires active doing and collaborating to get the attention of the best vendors and to ensure they assist us.

**Team builder.** Someone on campus must convene local stakeholders, stimulate questioning and dialogue, foster teamwork, engage policymakers, build positive vibes, and establish a can-do atmosphere.

**Integrator.** Some campus technologists will have to shift from being exclusively in-house developers or on-premises providers to being quilt-makers who stitch together a variety of vendor and local applications into an effective mix of functionality supporting the institution. These people must become proficient, or at least conversant, in the enabling technologies such as web services, RSS feeds, XML, SOA—the quilting frame, sewing kit, and cloth, if you will, used for this purpose. They must learn to perform their stitchery with quickness and agility, since more will be asked of them, not less.

**Standard bearer.** At one time, standards mostly focused on the infrastructure layer (hardware, communications, network). While these evolutions continue, standards are creeping into the application layer. The rise of the Postsecondary Electronic Standards Council (PESC) and the InCommon Foundation, for example, indicates that standards and collaboration will eventually be the glue tying our systems together. Our institutions need representation on the standards councils.

**What To Do?**

The long and short answer is to work with vendors, our IT organizations, and each other more strategically and successfully to define and implement new technology strategies such as SaaS. It is clearly to our advantage to incorporate the following in our collective futures:

- Develop strategic partnerships with vendors to provide greater value.
- Where practical, let vendors do more of the heavy lifting in terms of running our software.
- Redirect some of our savings to using technology to develop the boutique software that will authentically help to differentiate our institutions.
- Define a new level of partnership between business and IT.
- Cultivate the growth and development of technology facilitation within our institutions.
- Work together as a community more effectively.

Each of us in higher education technology should seek ways to partner with vendors and each other to raise the level of the conversation. These conversations should pose and answer the question, What is the appropriate technological response to the challenges of higher education emergent in the 21st century?

When thinking of the massive changes that confront higher education in the 21st century, the analogy of evolution seems apt. As scientists observe, the environment always dictates the nature of the change of the species within it. SaaS is one of those technological forces changing our environment. Our task is to understand the nature of the change required and adapt.

**Key Questions to Ask**

**For CIOs and CTOs**
- What are the skill sets and interests of my IT staff? Do I have the makings of the right team already in place, or are there significant gaps? Who are the individuals in my organization most likely to be facilitators?
- How will my IT strategic plan have to be altered in order to accommodate SaaS?
- Do my key partners on the business side of the university already use SaaS? What support can I provide them? Do any of them need help from IT? Who among the business leaders might be willing to partner?

**For Business Leaders**
- In the technology landscape I see, who among the IT and vendor leaders can help me explore and use a SaaS approach?
- What business units in other institutions have implemented SaaS, and what can I learn from them?
- Which of my business drivers most align with the potential that SaaS offers?

**Where to Learn More**


**Endnotes**

1. Note that open source is really a hybrid of these two models. Institutions normally do not contribute development to an open-source application, but they can, and they certainly bear the responsibility to acquire and host the application.


6. Ibid., 58.


About the Author

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