

## Software-as-a-Service (SaaS)

### Put the Focus on the KM/Knowledge Services Core Function

by Guy St. Clair

#### About the Author.

Guy St. Clair is a management consultant and serves as a special consultant to EOS International for KM/knowledge services. He is the author of numerous books and papers on the subject.

*When converged, information management, knowledge management, and strategic learning support knowledge development and knowledge sharing (KD/KS), ensuring organizational effectiveness.*

First, some questions. Not about the organization's specialized library (or other knowledge-management function, regardless of what it's called), but about the larger environment where you work:

- Is the company effective?
- Does it achieve its goals?
- Does it have competitive advantage?
- Are the business needs of its stakeholders and affiliates satisfied?

For most knowledge workers in today's workplace, it is pretty clear that organizational effectiveness is determined by how well the many elements of the organizational structure are managed. High on the list of management elements we characterize as *essential* is information flow. In the successful enterprise, information flow is critical, building on the coordinated convergence of information management, knowledge management, and strategic learning. Working together, these three activities enable higher-level research, strengthened contextual decision-making, and accelerated innovation, the very building blocks of organizational effectiveness.

The convergence of these three disciplines – managed until recent years almost exclusively as separate functions – is generally characterized as *knowledge services*. As a management and service-delivery methodology, knowledge services makes possible knowledge development and knowledge sharing (popularly described with the acronym KD/KS). While all of the organization's operational units seemingly work together to enable the achievement of the organizational mission (however that mission is described), it is through the successful development and sharing of knowledge that organizational effectiveness is accomplished.

Now, to make the connection between organizational effectiveness and the specialized library or information center more specific, we ask a few more questions:

- What part of the organization's effectiveness is based on information flow throughout and across the company?
- What role does the company's specialized library play in organizational information flow? That is, does the specialized library impact organizational effectiveness? How?

Each of the elements of information management, knowledge management, and strategic learning – both as individual disciplines and as converged in knowledge services – must be supported by a wide range of technology products and

*SaaS has an immediate attraction: companies and organizations can acquire software applications by subscription and outsource the management of the software infrastructure to the SaaS vendor.*

services. With the development of practical and affordable technology during the last thirty years or so, all organizations have been able to increase and enhance information flow, most obviously through the development and installation of software applications that meet the needs of the organization's many knowledge workers (and often external customers and associates as well). As a result, companies and organizations are always on the look-out for more efficient and cost-effective ways for dealing with software issues (acquisition, costs, security, up-grades, etc.). When one comes along that seems to have the answers – or some of the answers – we take notice.

Such has been the case with Software-as-a-Service (SaaS). The growth and development of SaaS has been a significant development in the delivery of software applications. Indeed, SaaS is a distribution system that some have characterized as a “revolution” in information technology. Just two years ago, Bill Gates of Microsoft was quoted in an article in *The Economist (US)* as referring to SaaS as “the next sea change” in the software business. The same article had other analysts referring to SaaS as a “tectonic shift” in the industry, so there's no question that SaaS is a subject managers want to learn more about. Whether it is a revolution or a natural evolution, SaaS has an immediate attraction: companies and organizations can acquire software applications by subscription and outsource the management of the software infrastructure to the SaaS vendor. That is a very appealing prospect to people who have financial and service-delivery responsibilities in the management community.

### **Managing Information Flow**

*The tasks for managing knowledge services are difficult, and information professionals must use methodologies and applications that are the least demanding and most cost-effective for their needs.*

That successful information flow is critical to enterprise success is not a subject for debate. In a study of some 26,000 people in 31 companies described in a recent issue of *Harvard Business Review*, four of the top six “fundamental traits of organizational effectiveness” – that is, traits that enable organizations to be effective in implementing strategy – have to do with information flow. In most organizations, and certainly in organizations in which information professionals and other knowledge professionals are employed to manage the flow of information, knowledge, and strategic learning, employees are required to identify and procure the most efficient and practical means for delivering these services and products. The tasks connected with knowledge services delivery are difficult and the work – sometimes performed through a functional unit such as a specialized library or information center, sometimes in functional units designated in some other fashion – does not permit much leeway in dealing with impediments to the workflow, particularly in terms of the flow of information. As a result, information professionals and their managers are drawn to methodologies and applications that are the least demanding and most cost-effective for meeting their needs.

For these knowledge workers, SaaS is the clear winner in the operational, time-management, and financial management sweepstakes. The idea of having an external resource responsible for providing support, training, infrastructure, and security for the software applications their business units require means that information professionals can concentrate their efforts on the work they were hired to do, partnering with their customers and providing them with the information, knowledge, and strategic learning that *the customers* require to do their work. By being able to focus less attention on day-to-day software applications and IT concerns, these information professionals are thus positioned to concentrate on holistic, enterprise-wide opportunities for

partnering and collaboration. When that happens, they can bring their talents as knowledge thought leaders and managers to the larger service sphere. As part of their job, these information professionals – with service-delivery responsibility for knowledge services for the entire organization – must identify and procure the most efficient and practical means for delivering the information, knowledge, and strategic learning their clients require. When they think about software (that is, as managers and knowledge thought leaders in the company), SaaS makes sense.

### **What is SaaS?**

*SaaS is simply an acronym for Software-as-a-Service, the process in which a third party (usually a vendor) assumes all risk for providing the software application to the enterprise or organization.*

Perhaps the quickest and easiest definition of the Software-as-a-Service model was provided in the article in *The Economist (US)* mentioned earlier: “the delivery of software as an Internet-based service via a Web browser, rather than as a product that must be purchased, installed, and maintained.” A more in-depth description comes from the Software and Information Industry Association. Prepared by the association’s Executive Council on Software-as-a-Service, the September, 2006 paper characterized the traditional software model as one with large upfront costs and annual support costs requiring hardware deployment, servers, backup and network provisioning. The description also noted that traditional software applications are customizable, with associated costs, and made reference to on-going maintenance and management, which must be provided by the customer.

Contrasted with this description was the Council’s clear explanation of the purpose and connected business value for clients moving to the SaaS model:

On-demand, Software-as-a-Service (SaaS) applications are based on a recurring subscription fee and typically are a pay-as-you-go model. ... A typical SaaS deployment does not require any hardware and can run over the existing Internet access infrastructure. ... The SaaS vendor assumes all the support, training, infrastructure, and security risks in exchange for the recurring subscription fees. The SaaS service model is designed to deliver business applications anywhere, anytime, which in turn requires the SaaS vendor to employ dedicated support teams and staff that make themselves available to customers on short notice. Along with the personnel comes reserve capacity to handle any spikes in usage, outages, or network mishaps and to do this continuously, globally, and securely. Architecturally, the preferred SaaS model is multi-tenant.

*SaaS is popular with small and midsize business functions because the vendor has responsibility for managing the technology.*

In thinking about how SaaS can contribute to management success, J. David Lasher notes that SaaS has been a popular option for small and midsize businesses (SMBs) for a number of years, and the reasons can be seen in his definition. He refers to SaaS as “Web-based software purchased on a subscription basis, allowing an organization to shift almost all technological responsibility to its vendor.” Lasher continues with a slightly sardonic twist, noting that “At the theoretical extreme, SaaS requires the customer to do no more than make sure (a) that the end users are getting Web access and (b) that the vendor is getting paid.” While the phrasing of that particular definition might be considered somewhat too specific, there’s no doubt that there are advantages in defining SaaS as Lasher does when he states that SaaS can be a “compelling option” if the general need is for process standardization, data centralization, and the like.

*The specialist librarian's core business is to serve as the organization's knowledge thought leader, not to manage back-office operations.*

For information professionals who manage specialized libraries in the corporate, medical, legal, government, and other fields of research, the attributes associated with these definitions practically dictate the terms of reference when they are looking for software solutions. Since many specialized libraries are – almost by definition – small operations (with many of them managed as one-person or “solo” libraries), and since the knowledge workers operating these libraries are far too busy with providing knowledge services for their users, their managers, and the larger body of stakeholders and affiliated persons demanding their attention, the ability to minimize their “back-office” work (e.g., developing database standards with the organization’s IT department) becomes an important objective. For these specialist librarians, their core business is to function as the organization’s knowledge thought leaders, to work with users to provide professional assistance as the users pursue their goals in research, contextual decision-making, and innovation. Dealing with the technical issues of building databases and catalogs is *not* their core business, and they are better able to do what they are hired to do if the distractions of that process are left to the specialists who excel at it. Some 27 years ago, EOS International came to their rescue. Today, the EOS SaaS model fits right into the scheme of things for busy specialist librarians. As Tony Saadat, EOS International’s President and CEO puts it, “Our service philosophy begins with asking clients, ‘How can we help you do your work?’ For them, dealing with IT issues is not their core business. We take care of that for them.”

### **The Road to SaaS**

Obviously the history of SaaS is a brief one, and it is still evolving. There seems to be general agreement that SaaS started to appear on the scene in the late 1990s, and Brad Kenney, writing in *Industry Week* in September, 2007, dates SaaS to about 1999, when Salesforce.com, a provider of customer relationship management (CRM) solutions, kicked off the SaaS sector. CRM was a natural place to begin, according to some industry analysts, and the strong connections between CRM and SaaS seem to have continued successfully.

For some, including David Greschler and Tim Mangan, the first signs of SaaS began to show up about 1998, with the emergence of the Application Service Provider (ASP). These vendors provided IT services for companies (usually SMBs) for which a sizeable investment in information technology was not particularly feasible, or desired. As a general rule, the software was bought and licensed by the user and that had become a major distinction when SaaS entered the picture. With SaaS, as Judith Lamont in *KMWorld* describes the service, “providers of SaaS applications are renting, to multiple customers, software that they own and maintain.”

Bryant Duhon, too, picks up on the connections with the customer base to distinguish between the ASP model and SaaS. The former, he writes, “is still a one-to-one customized solution delivered to a single customer over the Internet ... SaaS is one implementation of software running for everyone, [meaning that] as soon as new functionality is added, it’s available to all customers.” Duhon credits SpringCM (an enterprise content management company) with a slightly more focused definition for SaaS:

... a software delivery model, wherein a common code base is maintained in a multi-tenant instance. Customer configurations and connections sit in a layer above the core code and the complete

*SaaS providers rent one implementation of software to multiple customers – when new functionality is added, it is available to all customers.*

operation – development, deployment/hosting, maintenance, and upgrades – is provided by the software developer as a service and often priced as a subscription.

As it turned out, during this same timeframe – loosely from the late 1990s to the present – other conditions fell into place, making it likely that a workable solution like SaaS would find enthusiastic followers. Three in particular set the stage for SaaS in the specialized library or information center:

1. the development of an interest in the larger management community for outsourcing the IT function
2. the rise of services science as a management and career focus, and
3. the development of the digitized library as the operational standard and the transition from the traditional print collection as a resource for business and research.

*The Internet is ideal for delivering generic applications. Using the Web, clients can purchase software just as they purchase any other utility.*

As company leaders began to think about how they were investing in IT and what they were getting for their investment, the idea of outsourcing IT began to be talked about. Not in so many words, of course, and certainly not with any sense that the inherent capacity-building features of an organization's IT infrastructure should be replaced with any immediate action. Still, we began to see the beginnings of the "commoditization of IT," to use Nicholas G. Carr's phraseology. In a provocative article that led many IT experts and vendors to thinking more seriously about their future, Carr pointed out that once the Internet came along the commoditization of IT had a "perfect delivery channel for generic applications." Carr even found appropriate analogies to make the picture even clearer to managers who might not be giving much thought to the role of IT in their organizations. "More and more," Carr wrote:

...companies will fulfill their IT requirements simply by purchasing fee-based "Web services" from third parties – similar to the way they currently buy electric power or telecommunications services. Most of the major business technology vendors, from Microsoft to IBM, are trying to position themselves as IT utilities, companies that will control the provision of a diverse range of business applications over what is now called, tellingly, "the grid" ... the upshot is ever greater homogenization of IT capabilities as more companies replace customized applications with generic ones.

In this environment, it soon became clear that even if an organization was not outsourcing its entire IT operation, certain applications – especially those related to a particular operational function that had its own experts in place to handle service delivery – could acquire function-specific applications that would relieve them of dealing with technical issues that were, truth to tell, out of their purview. Given a quick route to a generic tool that could meet their needs, the service-delivery professionals in these operational functions (including of course an organization's specialized library or knowledge services center) could now concentrate on their primary work, and not worry about matters in which other people (their own service providers and vendors) had the required expertise.

In a parallel development, thinkers and leaders in career planning, higher education, and a number of corporations and government agencies began to give attention to a new field of study. Christened "services science" by some of these interested pioneers, this "hybrid" discipline – as it was called by Steve

*Services science – as a discipline or career focus – brings quality and an emphasis on excellence to workers in the 75% of the economy that provides service delivery.*

Lohr in an article in *The New York Times* – seeks “to use technology, management, mathematics, and engineering expertise to improve the performance of service businesses like transportation, retailing, and health care – as well as service functions like marketing, design, or customer service that are also crucial in manufacturing industries.” Picking up on a good thing, universities and colleges began to experiment with courses and research programs and to explore an academic approach to the subject. As a result, businesses and organizations began to give serious attention to services science, connecting it to their ability to sustain competitive advantage and to continue to provide the level of services their customers require or, for our purposes here, that of departments or specific functional units.

Indeed, since the service sector of the economy has become such an important factor in the overall economy of most Western countries (as much as 75% in the U.S., according to some estimates) and is expected to rise significantly at the global level, it might be that leaders recognizing the need for attention to services sciences are not pioneers at all, but merely realists and good business people. They understand that any branch of society and its economy that represents such large numbers can benefit from study and further education, and that it makes sense to provide ways for the people who provide services to provide *better* services.

In this environment, it can certainly be argued that the development of SaaS is an important step in the effort to provide better service delivery, and with the availability of SaaS as a means for permitting service providers in a specialized library or information center to concentrate on their primary work, its adoption is definitely a step in the right direction. In his report for *Business Week*, Paul Horn documents the key driver for services science, the “intersection,” he calls it, of business and IT. Horn suggests that the new discipline brings together work in such fields as computer science, operations research, industrial engineering, management sciences, and social and legal sciences, in order to develop the skills required in a services-led economy. These match well the thinking that supports the management of a specialized library, and bodes well for further attention and collaboration as information professionals seek service delivery enhancement in their own area of expertise.

To bring the consideration of SaaS nearer – and quite naturally – to the domain of the specialized library, the growth and now nearly ubiquitous digital library provides a logical link for information professionals. The argument that most research takes place in the digital environment is no longer being made. It is the accepted way of doing business. For specialized libraries, information and knowledge services centers, or any other knowledge-related business unit, the fact of the matter is that colleagues seeking information, knowledge, or strategic learning for research purposes, for better contextual decision-making, or to accelerate innovation are going to search first for materials that have been captured in digital format, either born digital or digitized from other formats.

This is not to disdain or dismiss print materials and other media, and serious searching begins (or should begin) with the premise that the process is unprejudiced with respect to format. Nevertheless, the ease of access to digitized information and the time constraints that come with many search activities build a strong case for the digital library. We now define the digital library as a library or (for our purposes) a specialized library or other

*Most research takes place in the digital environment – the first search is for materials captured in the digital format, either born digital or digitized from other formats.*

*The digital library is a specialized library or other knowledge-related business unit in which content is stored in digital format and access to the content is through computers.*

*SaaS vendors can provide broad and inclusive software applications, to ensure that both structured and unstructured materials – in multiple formats – can be managed for highest-level service delivery.*

knowledge-related business unit of an enterprise in which collections and materials are stored in digital formats (that is, not in print or other non-digital media). This digitized information, knowledge, and strategic learning content is accessed through computers.

For information professionals with management and service-delivery responsibility in specialized libraries and similar functional units, the construct proposed by Winston Tabb, Dean of University Libraries at Johns Hopkins University (and attributed to him by Sayeed Choudhury in his study of digital libraries) can be particularly useful. Tabb has stated that libraries are built on three pillars: collections, services, and infrastructure. If we think about the objectives managers of specialized libraries are seeking to achieve, we can readily conclude that most customers of the specialized library benefit from the excellence of service delivery offered through SaaS. The availability of digitized collections, with content delivered through an electronic infrastructure, and with service delivery levels established and provided by specialist librarians and information professionals all add up to an operational function that works. In linking together the technical and the personal in digital libraries, specialist librarians and their customers find themselves in a win-win situation and, not unintentionally, one that benefits the larger enterprise and its leaders as well.

In the real world, of course, the appeal of SaaS becomes even stronger as we recognize that there are (and will continue to be for some time to come) specialized libraries and information centers that are in what might be referred to as a state of transition. These functional units are moving toward the digital library framework, and their collections, services, and infrastructure are expected to be – at some point in time – primarily digital. Nevertheless, they continue to house print materials, often large and important collections of hard-copy materials, and these books, periodicals, and special collections must be managed. Of course these libraries benefit from the advent of SaaS as a delivery method. Additionally, for these customers vendors must provide a broader and more inclusive software application, a product that matches management tools for traditional and structured collections with linked products for handling any variety of unstructured materials in multiple formats, making them available to the customers of the specialized library whenever and wherever they are needed. EOS International continues to be the leader here, and with its EOS.Web product, connected at the service-delivery level with such product modules as EOS.Web KnowledgeBuilder, the company provides total integration services for its clients, regardless of format, medium, or even location of the materials being managed.

These influences – considerations about outsourcing IT, the rise of services science, and society's collective enthusiasm for the digital library – all seem to have come together with SaaS. Jeffrey M. Kaplan has noted that as the delivery framework was developed, SaaS providers began to work with a new design paradigm, which he identified as the multi-tenant application and data architecture. This model, which Kaplan then connects with "pay-as-you-go" or subscription pricing, permits clients to purchase applications and data storage as needed. Such has been the case with EOS International and its EOS.Web application, hosted at the EOS Global Data Center via the popular EOS e-Library Service®. Even before the SaaS acronym had been created, EOS International was selling its system in what would become the SaaS model, with EOS owning the software and providing global information access, significant cost reductions, and simplified operations for its clients with its product.

*Across industries – and particularly effective for specialized libraries – SaaS enables global access, significant cost reductions, and simplified operations for clients.*

*Clients taking advantage of SaaS as a delivery method are not required to reinvent or acquire an IT infrastructure for their specific needs.*

*Using Web-based access, SaaS clients can tap into content from any location at any time.*

## The Advantages of SaaS

Those benefits – global access, significant cost reductions, and simplified operations – might seem to add enough functional value to rule out any need for further consideration of SaaS for specialized libraries, but the case can be further strengthened when we look at how these SaaS benefits are realized in some other industries. These benefits naturally fit well into the goals and objectives information professionals seek to achieve in their work, and it is gratifying to note that some of the same concerns are being dealt with in fields that would not necessarily be associated with specialized libraries.

That reference to significant cost reductions, for example, is a good place to start. In his article on SaaS, referred to earlier, Bryant Duhon provides a good list of the cost benefits:

- Lower up-front capital investment in hardware and software
- Service can be up without the need to add server or any other internal infrastructure upgrades
- Pay-as-you-go pricing allows quick roll-out and ROI
- Maintenance costs are eliminated, allowing the IT department to focus elsewhere
- Updates to the software (and patches) occur without disrupting the organization

Not surprisingly, these benefits match those of EOS International's clients, and for 27% of EOS clients it is the systematic and timely software upgrades that make SaaS attractive. Similarly, 16.2% of EOS clients have identified cost-effectiveness as their primary benefit of the SaaS application delivery model.

Similar benefits are reported by other SaaS users, from different industries. In his description of Colorado Capital Bank's move into the SaaS picture some five years ago, Brian Fonseca reports that the company's success with SaaS has been so strong that the Castle Rock-based financial institution now makes use of more than 30 hosted applications, accounting for 60% to 70% of the financial institution's software library. The cost reductions can be tied to what was not needed, and Fonseca notes that when bank leaders were considering SaaS, they were impressed with their ability to scale without having to reinvent the IT infrastructure, seeing that savings along as a huge benefit. As the company grew, Fonseca writes, "the company would have had to spend significant amounts of money to bolster firewalls, hire a chief security officer, buy new servers and backup systems, and establish off-site disaster recovery facilities." With SaaS, these are provided by the software vendors, just as they are provided for specialized libraries using EOS International's EOS.Web product and its modules.

The beauty of global information access is another area where EOS International's specialized library clients match those of other industries. In the hospitality industry, SaaS is an increasingly popular model for back-office, property management, and stock control systems. In one example, a company in the U.K. with 26% of its customers in Europe, Africa, and the Middle East provides affordable and reliable remote delivery of point-of-sale and central reservation center support from the company's data center. So too does EOS International provide remote support for its global customers from its two data centers, in Carlsbad, CA and, for clients outside North America, from its data center in the U.K.

*A critical benefit of SaaS is an immediate increase in staff productivity.*

Simplified operations for clients is a key benefit of SaaS. Particularly for a small business – or a typical specialized library or information center – there is an immediate return on the investment simply because SaaS applications permit the library’s employees to be more productive. Equally important, even though personnel numbers may not be reduced (and probably should not be reduced) that increased productivity enables the library to raise the level of service delivery, benefiting new as well as current library customers. An additional benefit – recognized by 40% of the EOS International clients – is that in those organizations where hiring additional staff for the specialized library or information center is problematic, it is possible to manage the library with fewer staff if SaaS is the software delivery method.

Are there concerns and trade-offs? Not really, and certainly not if the vendor has a strong reputation for integrity and fairness in dealing with clients. With some prospective clients, senior management occasionally expresses worries about having a third party responsible for an application’s performance, and occasionally an organization (particularly in government agencies) will have issues having to do with security, firewalls, and the like, but these have proved to be minor situations, quickly and easily alleviated. As for concerns about having data outside the organization, Lamont notes that advances in security and the experience of the vendor seems to have taken care of these. In fact, since security is such a core concern of the vendors, they probably have stronger security safeguards in place than many of the clients, particularly if the client is a small organization.

*The vast majority of SaaS clients are satisfied, are planning to expand their use of SaaS, and expect to recommend SaaS as an application-delivery methodology.*

As for fears about any loss of data, with EOS International the company’s reputation speaks for itself. EOS International has a record of nearly thirty years of successful client relationship management, and there has never been any loss of data. As for concerns – expressed from time to time in discussions with potential clients – about the long-term financial viability of SaaS providers, again it is not an issue when dealing with established firms, and that has been the case with EOS International as well. In looking at the SaaS market at large, Kaplan in his report notes that “more than 80% of organizations currently using an SaaS solution are satisfied, are planning to expand their use of SaaS, and are willing to recommend SaaS.” EOS International, as a SaaS provider, reports the same levels of customer satisfaction and comfort with service delivery. With SaaS applications in corporate, legal, medical, government, and a wide variety of other types of specialized libraries and information centers, such as humanities organizations, associations, research facilities, and the like, EOS International is able to provide security and the assurance of quality and excellence in the delivery of its products.

### **And the Future of SaaS is...?**

Can we expect SaaS to be the application delivery method of the future? Predictions abound, and they all seem to look in that direction. Not surprisingly, several of the experts’ comments reviewed for this paper included forecasting or at least some generalized looking forward with respect to SaaS. While we dare not, in the current economic environment, characterize any future IT-related product or application with terms like “rosy” or “bright,” we can take note that almost all the people who speak and write about SaaS do so in very positive terms. Some people are expecting “35% of all new business software” to be deployed and delivered as SaaS by 2012. Another prediction is that 80% of public sector organizations will be using SaaS solutions by the end

*With SaaS,  
information  
professionals  
focus on their  
core function –  
connecting  
people to  
knowledge.*

of the decade, and a third crystal ball envisions that one-third of business application software spending will be for SaaS by 2012. As for the amounts that will be spent, one forecaster predicts that 25% of IT professionals will spend nearly a quarter of their applications budgets on SaaS within five years, and another predicts that the SaaS market will be \$19.3B by 2011.

Since this level of speculation is not usually part of their job description, most information professionals with management responsibility for their specialized libraries and information centers are probably not thinking in these “big-picture” market terms. Nevertheless, they *are* thinking about the products and applications they must use, and as these products and applications get better, become more accepted by the marketplace, and – not so coincidentally – become positioned to provide tangible and realistic ROI for sharing with enterprise management, these information professionals take note. At EOS International, a company committed to customer satisfaction, SaaS continues to be a successful and practical delivery method. For EOS, SaaS is a delivery method that enables their clients – those same information professionals with management responsibility for their specialized libraries – to move beyond the technical day-to-day routine and focus on working with *their* clients, the very people they have been hired to help. As that happens, EOS International is doing what it is there to do: helping its clients do their work, connecting people to knowledge.

## References

- Bentley, Ross. "Call in the SaaS." *Caterer & Hotelkeeper*. April 24, 2008.
- Carr, Nicholas G. "IT Doesn't Matter." *Harvard Business Review*. May, 2003
- Choudhury, Sayeed. "Integration of Digital Library Services."  
<http://www.library.jhu.edu/departments/librarydean/integration.html>.
- Duhon, Bryant. "Software as a Service: Why Buy When You Can Rent?" *AJIM E-Doc Magazine* 21 (5), September/October, 2007.
- Fonseca, Brian. "SaaS Benefits Starting to Outweigh Risks." *Computerworld*, May 5, 2008.
- Greschler, David, and Tim Mangan. "Networking Lessons in Delivering Software as a Service." *International Journal of Network Management* 2002 12: 317-321.
- Hall, Mark. "On the Mark: Microsoft Pits S+S vs. SaaS." *Computerworld*, May 5, 2008.
- Horn, Paul. "The New Discipline of Services Science." *Business Week*, January 21, 2005.
- Kaplan, Jeffrey M. "SaaS: Friend or Foe?" *Business Communications Review*, June, 2007.
- Kenney, Brad. "Life Beyond CRM: SaaS Grows Up." *Industry Week*, September, 2007.
- Lamont, Judith. "SaaS in Perspective." *KMWorld*, June, 2007.
- Lasher, J. David. "Are You Ready for SaaS?" *Customer Relationship Management*, February, 2008.
- Lohr, Steve. "Creating the Jobs of the Future." *New York Times*, April 18, 2006.
- McDougall, Paul. "SaaS Gold Rush." *Information Week*, December 3, 2007.
- Neilson, Gary L., Karla L. Martin, and Elizabeth Powers. "The Secrets to Successful Strategy Execution." *Harvard Business Review*, June 2008.
- "Proponents of 'Software-as-a-Service' Say it Will Wipe Out Traditional Software." *The Economist (US)* 379.8474, April 22, 2006.
- "Software as a Service: A Comprehensive Look at the Total Cost of Ownership of Software Applications." Software & Information Industry Association (SIIA) Executive Council on Software as a Service. September 2006.
- The SaaS Showplace. [www.saas-showplace.com](http://www.saas-showplace.com)