THE eLEARNING GUILD™ Research

The Evolution of the LMS: From Management to Learning

Deep Analysis of Trends Shaping the Future of e-Learning

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Executive Summary

This report describes the current status and future direction of Learning Management System (LMS) use, paying particular attention to its use in e-Learning. It highlights key trends likely to affect learning management system adoptions and implementations in the next two years. The goal of the report is to provide decision-makers with information to evaluate the efficacy of LMS platforms for adoption and implementation considerations. It identifies trends that will influence what user communities and stakeholders need to consider when selecting a new LMS. It looks at key variables affecting the LMS industry, and reviews some of the challenges LMS systems vendors face. We include findings from industry reports, cull key data from the *2009 eLearning Guild LMS Survey*, and feature insights from leading Web 2.0 and LMS vendors on their views regarding the evolving worlds of learning management.

Overview: The Evolving Role of the Learning Management System (LMS)

Digital technologies continue to influence the way we find, create, share, and negotiate information and ideas – even influencing the ways that we think about knowledge itself. Learning, education, and training continue to extend the reach of classrooms and training rooms by including a more organic, integrated array of learning experiences and support – available "anywhere, anytime, and just-in-time." Perceptions of competence have expanded; today we balance demonstrating personal mastery of knowledge and skills on criterion-referenced tests with assessing how well someone can leverage their inter-connected networks of connections to resources, information, and subject matter specialists. Work styles are shifting from individual accomplishment to teams, communities of practice, and collaboration. Nevertheless, individual accomplishment is still important, providing a measure of the contribution that each individual offers. And smart enterprises understand that investments in people and in technologies that serve their needs can have a direct positive effect on business success metrics such as profitability, reduction of operational overhead, and employee retention, to name but a few.

In the midst of all these changes stands the Learning Management System – the LMS. Seen by many as the foundation for building today's enterprise e-Learning practice, today's LMS sits squarely in the evolutionary cross-fire as e-Learning matures from its 1.0, "publishing Web" antecedents to accommodate the demands of the 2.0, "participative Web" possibilities.

With the emergence of browser-based tools and platforms, the expectations of and for learning itself is in a state of transformation. These tools include RIAs, (rich internet applications), social media, SaaS (software as a service), BPMS (business process management systems), UGC (user-generated content, including photos, slideshows, and videos), the growth of commercially published apps and e-books, ECM (enterprise content management), semantic tools like Twine, and socially bookmarked resource sites like Delicious. Today, the rapid acceptance of open source software, and the growing influence of open source and open education resources, also challenges the so-called traditional LMS. Does the traditional LMS system stand a chance?

The immediacy of information, and the rapid transfer of knowledge via tools and services now available, is redefining the nature of, and expectations for, learning. Those

changes must obviously affect the management systems used in knowledge transfer and learning. The best learning organizations will take a holistic approach to causing shifts, through delivering content, creating access channels, and supporting dynamic containers, social networks, and resource locators. Managing learning content, experience, and investment in 2009 means something very different than it did in 1997, and it is vastly different from just two years ago.

At the heart of e-Learning 1.0

Learning management systems have been a part of the e-Learning ecosystem for more than 13 years. As noted in the other parts of this report, LMSs are one of the few innovations emerging directly from e-Learning that has sustained to the current day. In the first decade of e-Learning adoption, learning management systems were the hub of all online learning activities. As recently as 2006, more than 50% of *Chronicle of Higher Education*-surveyed readers reported that, in their opinion, a LMS was the same thing as e-Learning. In August 2009, a U.S. court again sided with Canadian LMS vendor Desire2Learn in its ongoing patent dispute with an American rival over educational software. It overturned a lower-court verdict from a Texas jury that Desire2Learn had violated three patent claims held by Blackboard Inc. Some learning technology pundits celebrated this decision by saying it was a great day for the e-Learning industry. Clearly, after more than a decade at the center of the online and learning industry it is hard to think of the LMS as being anything but mission critical.

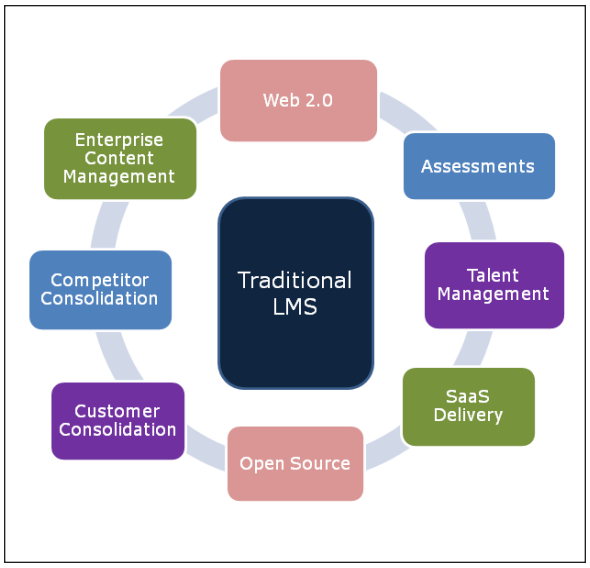
Going forward, relevant learning management systems will continue to expand core services so that "mission critical" includes many of the traditional capabilities learning enterprises have come to depend on. They will necessarily track user behavior across a wide variety of sites, and across multiple devices and distribution media. They will be flexible, and offered in the way LMS customers want. They will offer "on the fly" licensing (meaning that people will want to buy the rights to use software – or parts of software – on a per need or some other more ad hoc basis than traditional software licenses). This will reflect the changing nature of the workforce, and will need to be highly configurable and to easily integrate with the other software used to facilitate learning and talent development. Much like how competence is becoming defined by relationships to a set of connections, so too are LMS systems evolving to allow user direction such that users will get the same engaging, personalized experience they expect in all facets of digital business as well as in their digital consumer lives. Once this transition in core functionality occurs, many of the functions that formerly would have been associated with an enterprise learning management system may now come from the business process management system that samples data from across the entire IT organization. With better objective and subjective meta-data now possible, we can more easily find digital assets so that we can ostensibly re-use them later. Retrievals can now be based on objective accuracy via user-defined content classification, or subjectively based on how well we liked and ranked them when we last used them. Better search engine optimization (SEO) means making YOUR favorite assets easier to find when someone does a Google, Bing, or Wolfram Alpha search. Sampling preferences data and profile information, that come from different parts of our "digital fingerprints," help filter and prioritize query responses, making it less important to house functionality important to learning in a learning-specific platform. Semantic search will add an element of meaning to learning content and other assets, so that content management and learning management functionality will show a stronger and more direct connection.

The LMS, Circa 2009

Learning management systems are among the very few enterprise technologies emerging directly from the e-Learning industry. They first came on the market in the late 1990s when traditional classroom experiences were being "ported" online, redesigned (or at least reconfigured) for computer-mediated delivery, and distributed via the Internet. Commercial LMSs were purpose-built for the challenges that come from creating, distributing, and managing digital learning content and assessing those experiences. The earliest systems were specifically tracking *delivery*: keeping track of "messages sent" between system and user. In 1997, when the dominant Web browser was Netscape 4.0 and the Web was in its infancy, LMS leaders Blackboard and Saba were among some of the earliest participants in the emerging LMS market. Now, over a decade later, the LMS market is estimated by Mallon et al (2009) to generate over $750 million a year from sales to corporate training, government, higher education, and K-12 customers.

As Figure 1 notes, the content and mechanisms for delivering e-Learning have become more sophisticated, so too have the systems intended to manage e-Learning content, distribution, and experience. E-Learning organizations are looking to do more than simply measure the number of course hours taken, tests passed, modules completed, or certificates earned. Systems are beginning to shift from a focus on learning *management* to *learning* management, where the learning is finally taking center stage.

Figure 1
The trends and demands facing LMS systems and vendors.



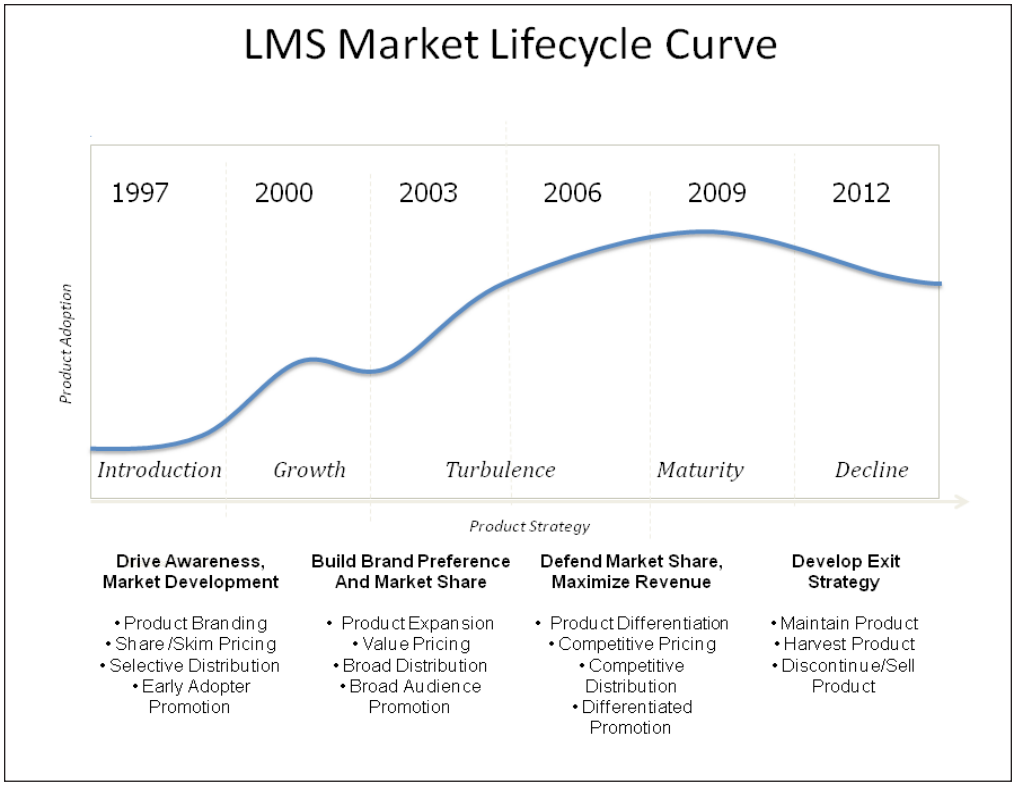
For organizations already deeply invested in Web 1.0-focused LMS products, or for those organizations that rely on third-party commercial software to satisfy regulatory compliance, the traditional LMS will continue at the center of the enterprise learning strategy for the next several years. Nevertheless, the traditional functionality provided by a "publish and distribute" LMS addresses only a part of today's ever expanding set of e-Learning delivery methods and media. We see shifts to new learning tools across enterprise, higher education, and K-12. Learners are leaping over firewalls, while new networks and knowledge are constructed and shared via Web 2.0 applications, such as social networks, Wolfram Alpha, Bing, Google Squared, and Caffeine searches.

Vendors are currently offering more than 100 commercial LMS solutions. Revenue largely consolidates in the top ten vendors. New entrants continue to enter, despite the ostensible maturity of the LMS market. The lack of standards around what organizations choose to measure or manage with their LMS is certainly a contributor to the millions of permutations that exist for learning management systems. However, a key reason that there is no Microsoft Outlook™ equivalent for learning management systems is that content is at the center of the learning container, and is uniquely bound with-

in each module within a LMS. In spite of some moves toward reuse, truly reusable and shared content is still not common. Despite the "cookie cutter" framework of LMS navigation and tools, we still tend to reinvent designs for access and assessment with each course, module, training, and workshop. For those looking ahead, and focusing on the continually adaptive learning organization, one knowledge container may no longer fulfill the varied needs of the enterprise.

Today's emerging LMS architecture allows enterprises to offer services, support inquiry, and track user behavior across a wide variety of sites and sets of devices. Comprehensively and simultaneously tracking success of informal and traditional learning activities creates an opportunity for new management solutions to take a foothold in a previously traditional market.

Figure 2
LMS products lifecycle by year (© 2009 Sage Road Solutions).

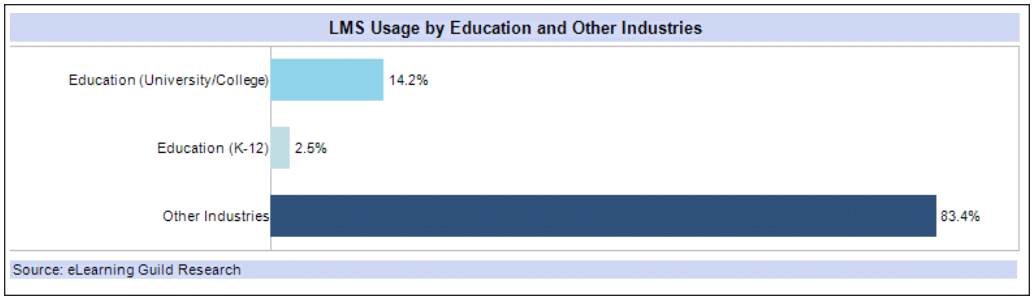


The product lifecycle diagram shown in Figure 2 suggests that LMSs, as we have known them until today, will likely start to fade from the learning ecosystem scene by 2012. Evidence compiled by Wainhouse Research (2007), suggests that over the next five years LMSs will look more like portals and less like platforms. They will feature Web 2.0 collaborative tools, including connected modular functionality, which organizations will select (either through licensing or from service subscriptions) as being most relevant for the management needs of the learning organization doing the purchasing.

LMS Highlights from the 2009 *eLearning Guild* Member Survey

Over the past 12 months, more than 700 respondents across a variety of industries reported on the LMS products they are using, on their intentions to switch LMSs, and how they license the software. Globally, more than 88% of *Guild* Members report that

Figure 3
Proportion of LMS usage across Education and Other Industries.



learning management systems are in use in their organization. As Figure 3 shows, the majority of respondents – 85% – come from the commercial sectors, with a small percentage of government customers included within the larger percentage.

Figure 4 shows respondents distributed across a set of industries, with the highest population of respondents working in Higher Education, followed by the e-Learning Tools and Service Provider space.

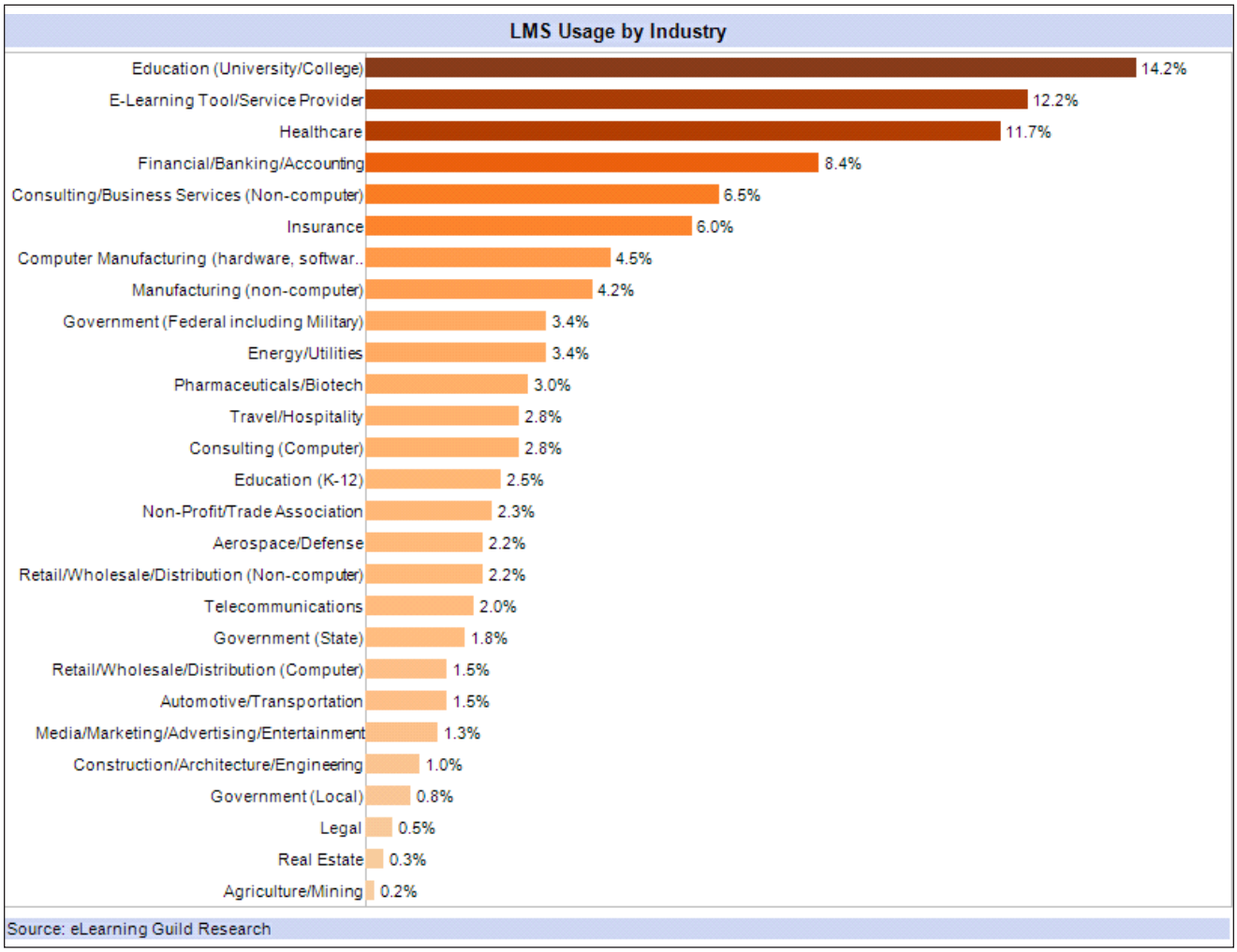


Figure 4 *LMS usage by industry.*

Ten Emerging LMS Trends that e-Learning Professionals Need to Know About

In addition to reviewing the *eLearning Guild* Member Database, this report includes an environmental scan that considered LMSs from the following three perspectives:

1. A review of some of the leading research published between 2006 and 2009 to establish a sense of LMS evolution through the eyes of the e-Learning industry itself. This review includes *eLearning Guild* data, research conducted by the analysts at Brandon Hall Research, and research conducted by the analysts at Bersin and Associates.
2. A review of relevant business research publications published by broad-market industry analysts, including Forrester Research, Gartner Research Group, and IDC.
3. Recognizing that requirements for educational LMS customers force a different set of considerations than those encountered in the commercial and government sector, this report factors in education-specific research on enterprise learning management by Wainhouse Research, the EDUCAUSE Center for Applied Research, Gartner Higher Education Research, and the Campus Computing Project.

Here are the top ten evolving LMS issues derived from these diverse perspectives and resources:

1. "Home-grown" LMSs are on the decline
2. Moodle™ moves to the front of the LMS adoption pack
3. Hosted options for LMSs are achieving popularity
4. Open source, open applications, and open education resources are on the rise
5. Blackboard gains corporate LMS market share
6. Commercial LMS customers: less formal, more holistic
7. Extensibility matters
8. Campuses and business alike are slow to adopt "Enterprise 2.0"
9. The recession continues to constrain
10. Revising standards, specifications, and structures

1. "Home-grown" LMSs are on the Decline

The Guild online survey captured LMS usage by organization size, as well as by individual respondent. Figure 5, on page 8, highlights that, while Moodle and Blackboard are at the top in aggregated implementations, Moodle now dominates for organizations between 1-500 workers, while Blackboard has the market-share lead for organizations with 501-2,000 workers. SumTotal™ and Saba™ are close competitors for the top position among organizations with more than 10,000 workers, while Plateau is favored among government and regulated enterprise customers.

Meanwhile, the percentage of in-house-developed share of LMS products has fallen sharply among respondents in organizations of every size. There are several explanations for this phenomenon. For one thing, absorbing the costs and liabilities associated with building a customized LMS platform are hard to justify when there are so many commercial products of varying degrees of complexity already available on the market. Changes in commercially available LMS products have made them simpler to deploy

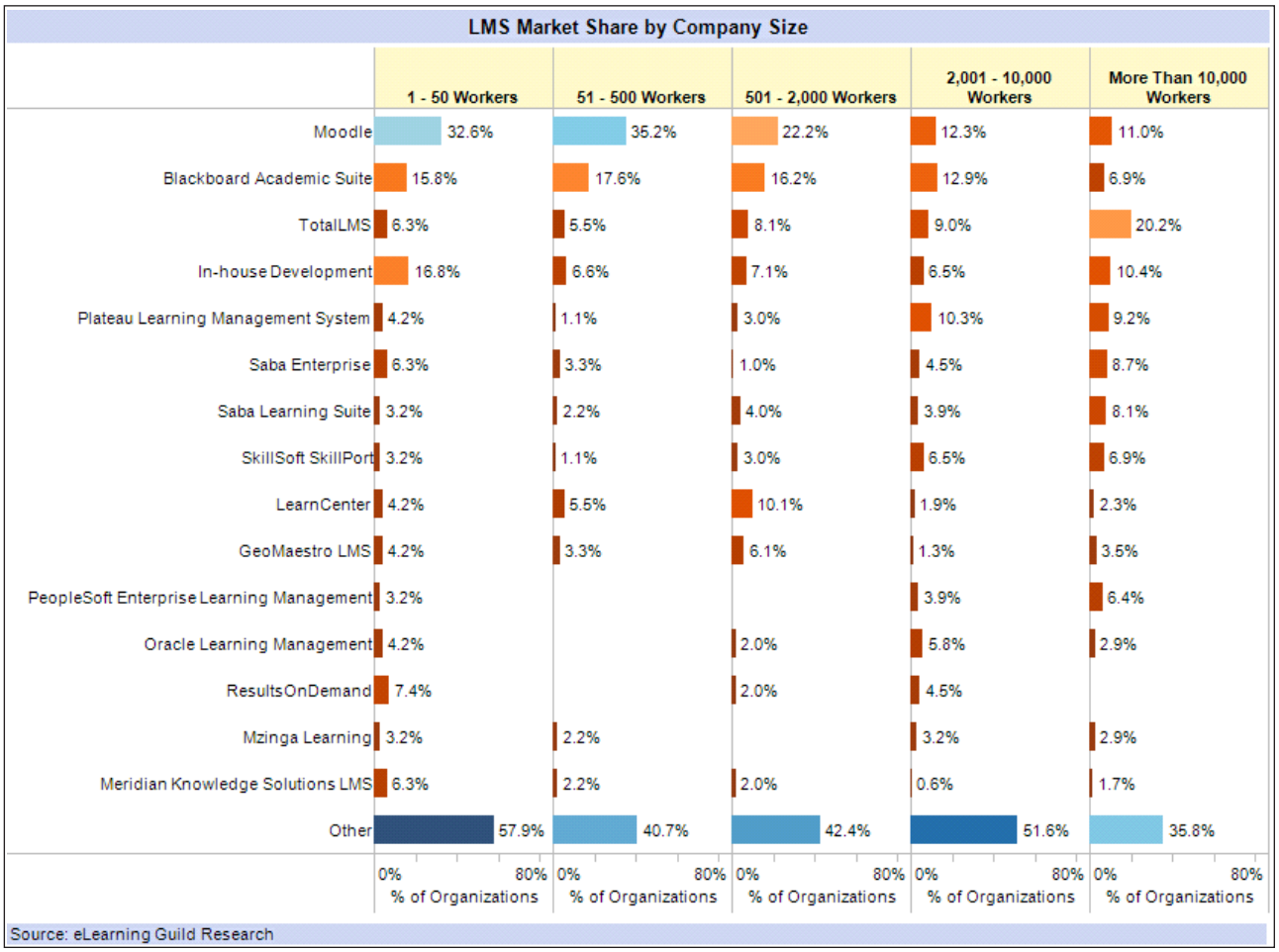
as a hosted service, and easier to configure to organizational needs. This suggests that the desire to build vs. buy is waning, as one would expect at this phase in the LMS life-cycle. Responses to the question, *"If you are considering switching LMS systems, which would you most likely use?"* offer further evidence: nearly 88% of respondents would aim for 3rd-party developed software, rather than build it themselves.

2. Moodle™ Moves to the Front of the LMS Adoption Pack

For the second consecutive year, the *eLearning Guild* survey, which measures use of over 100 professionally-developed LMS products and excludes in-house created systems, shows that Moodle™ is ranked as the #1 LMS product among *eLearning Guild* members with over 24% of respondents selecting it as their primary LMS. In the same data source, market share among *Guild* members for Blackboard™ was 17.5%. (See Figure 6 on page 9.) In May 2008, Blackboard and Moodle were neck and neck for the dominant position among *eLearning Guild* members for their LMS product usage, each with about 20% of the responses.

Blackboard recently purchased ANGEL Learning™, a small, privately-held LMS company funded in part by Indiana University, with a devoted following of several hundred clients, 25% of which are corporate customers. Although this purchase will increase Blackboard's enterprise market share to 21.02%, it is still only a close second to Moodle among *Guild* members.

Figure 5
LMS market share trends.



As Figures 7 and 8 show, on page 10, even when excluding education respondents from the sample, Moodle and Blackboard are still the #1 and #2 ranked LMS brands among all *eLearning Guild* respondents.

When considering the use of LMS systems among customers, exclusive of K-12 or Higher Education, Moodle remains the top position, but Total LMS from SumTotal takes over the second position at 12.1% market share, with a slight edge of Blackboard now in the number three slot with 11.3% market share. Despite no clear market-share LMS lead-

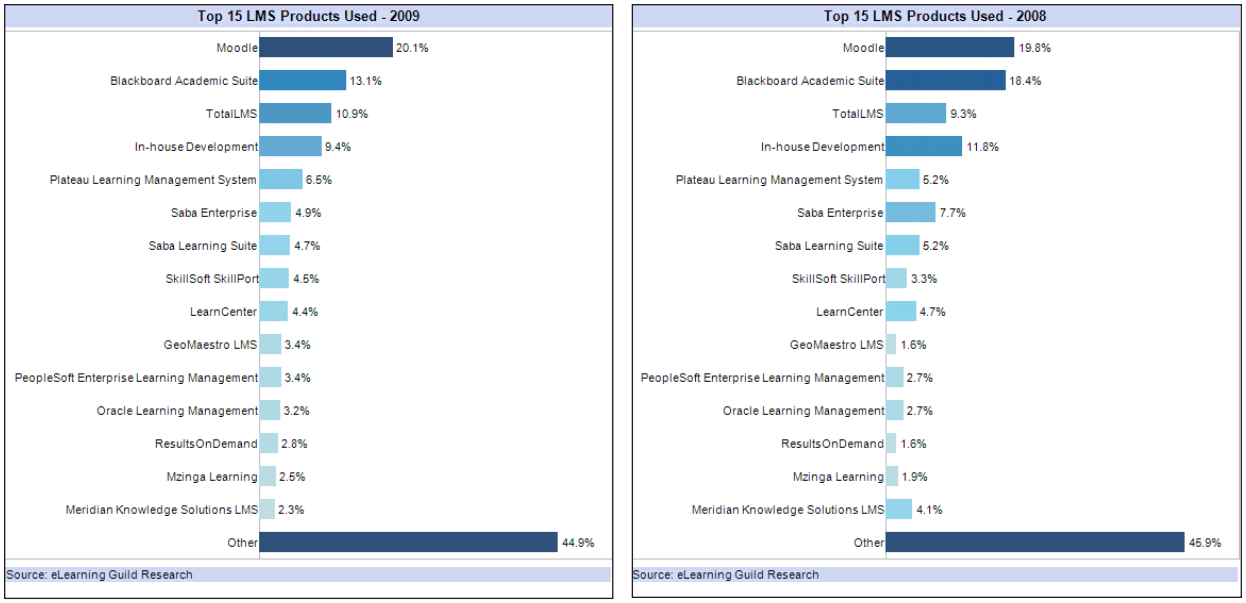


Figure 6
Comparison of LMS product usage for the May 2007–2008 vs. May 2008–2009 periods.

er across diverse corporate markets, pockets of preference are beginning to emerge. Of the 92 LMS products tracked by Brandon Hall Research (2009), we should continue to see acquisition, reduction, and mergers in the new economy. For learning professionals making a first time purchase or standardization decision, consider the very real possibility of certain smaller vendors going out of business, or of absorption by a competitor. It is important to have assurances about the possibility of staying on the product base of choice, and a contractual commitment from the vendor to support current software versions for a particular period into the future.

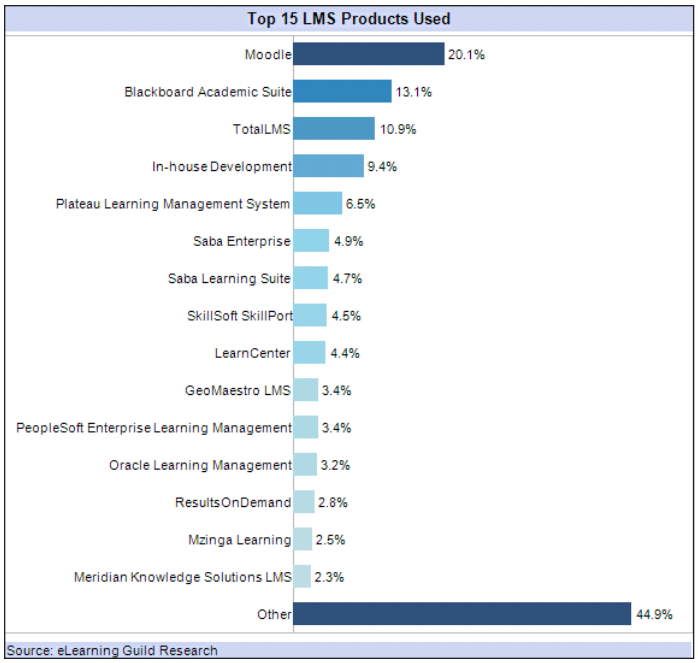


Figure 7
LMS product usage, including education.

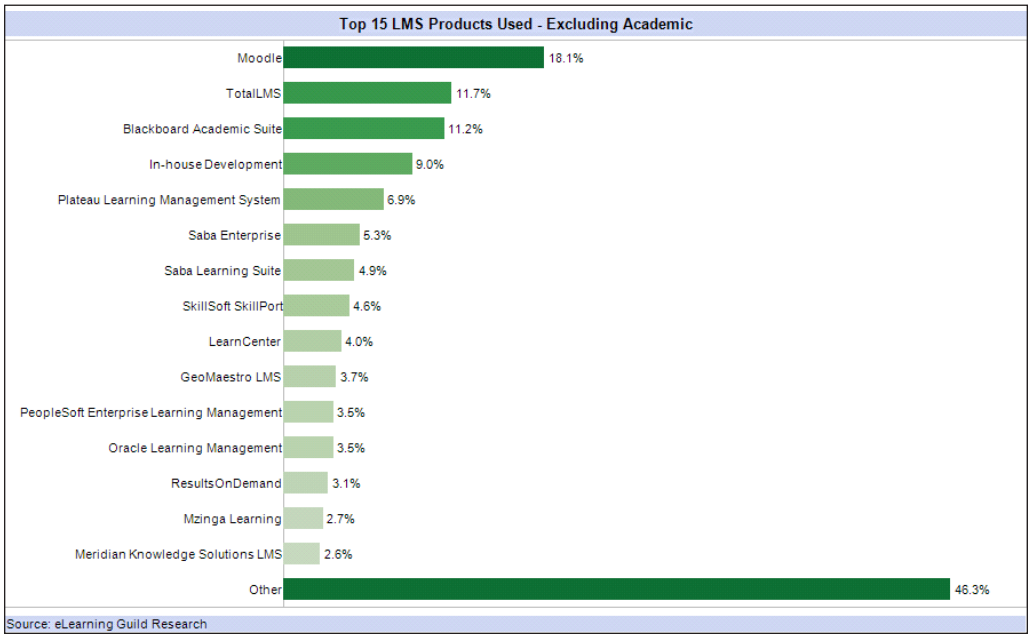


Figure 8
LMS product usage, excluding education.

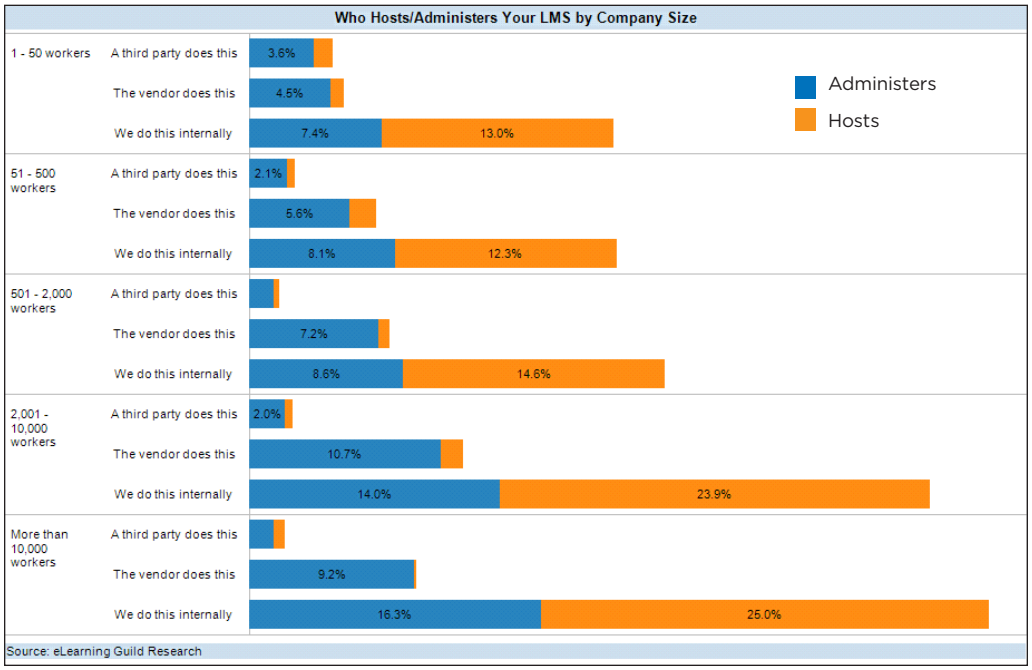
3. Hosted Options for LMSs are Achieving Popularity

Whether described as *Software As A Service* (SaaS, coined in 2001), *Application Service Provider* (ASP, most popular circa 2003), a *Hosted Service* (which combines an application service provider and an Internet service provider), or as *Cloud Computing* (2008), many LMS providers have listened to their small and medium customers and are now offering hosted LMS solutions. The ability for organizations to offload some of the burden of their LMS system is already common in the commercial sector; more than 40% of respondents across the board report that either their LMS vendor or

a third party hosts the LMS system. Figure 9 shows that companies with fewer than 50 workers have the highest penetration of hosted solutions, with 52% of those companies choosing to have their LMS hosted externally.

While the number of LMS users choosing to have their systems hosted externally is large and growing, there will always be customers for whom licensed software, managed inside the company's firewall, is the preferred, and sometimes only, licensing option. For example, Blackboard, Inc., which has a significant customer base among those who consider their training content classified and highly confidential, recognizes that offering both forms of licensing and delivery can be a competitive advantage. Blackboard executives have even suggested that many customers are seeking vendors who offer both hosted and licensed solutions.

Figure 9
LMS hosting and administering by company size.



4. Open Source, Open Applications, and Open Education Resources are on the Rise

It has been said that people share to: a) benefit others; b) promote ideology; or c) look smart. It should be no surprise that the software equivalent of sharing in the LMS world, *open source software*, came from and found its first home in the education sector. Examples of open source LMS systems include Moodle, Sakai™, and soon, the full-identity management, multi-institution, and multi-million dollar project, Kuali Student.

The variables that make open source attractive in education are increasingly relevant in the commercial market. These include cost-of-ownership, flexibility for meeting unique enterprise needs, and maintenance on terms favoring the customers. For example, in higher education, institutions are interested in selecting software they can modify to serve their particular needs and systems, and the university can make its own decision about whether or when to upgrade to a new version. Commercial customers are equally concerned about their ability to preserve the LMS environments that take years to roll out and fully implement.

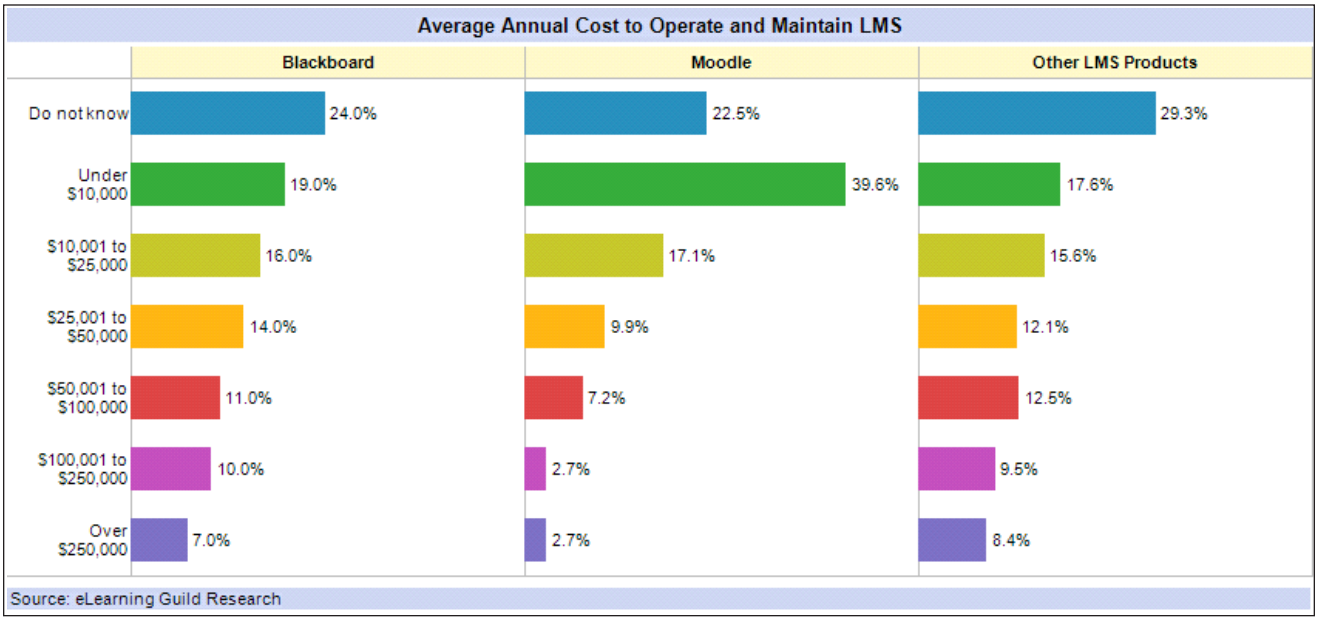
The Moodle Foundation reports strong growth in the small-to-medium business market – even though there is very small set of vendors who currently support Moodle. Sakai, a much larger and more complex undertaking to manage, continues to be quirky and somewhat problematic, and only the largest implementations seem to maintain stable sites. (Recently released, Sakai 3.0 is said to address many earlier problems.) Sakai emerged from several research universities' need to track research and scholarly activities, as well as education administration issues. Nevertheless, the desire for independence and better control over one's e-Learning destiny and budget continues to fuel the current growing interest in open, non-proprietary solutions. Once open source grows up and becomes vendor-supported (as SunGuard™ has done with Sakai), decision makers may feel as confident about open source solutions as they do about commercial products.

For many companies, the concept of not having to pay for the software license is a big part of the appeal of open source. Even the cost of using a 3rd party provider for hosting Moodle is relatively reasonable when compared to proprietary providers. For example, one vendor charges fees of between $1 and $5 per user per year. *Guild* members reporting on their knowledge of the costs to run their LMS stated that they spend less than $10,000 a year to operate and maintain their Moodle installations, as Figure 10 shows.

Given all the compelling data about open source, and the likelihood for further consolidation and evaluation in the industry, learning directors may find themselves asking (or being asked by their financial team) to decide on the point where it may make sense to consider switching its LMS system to something with fewer licensing restrictions or a lower cost of ownership.

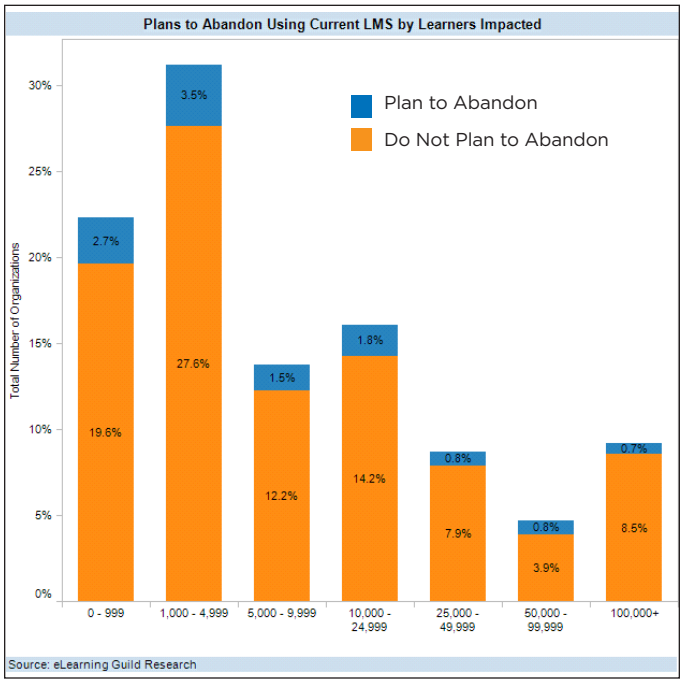
Even so, open source is not necessarily free. In a now-famous June 2005 Executive Forum, Sun Microsystems then CEO Scott McNealy quipped that open source was free "like a puppy is free," hinting at long-term costs and hassles, commitment, and occasional clean-up jobs. This means that true cost-of-ownership answers will vary for individuals based on the size of the company, the size of asset inventory, and on financial constraints, in addition to all the unique customizations they require in order to make the open source system meet their needs.

Figure 10
Average annual cost to operate and maintain a LMS.



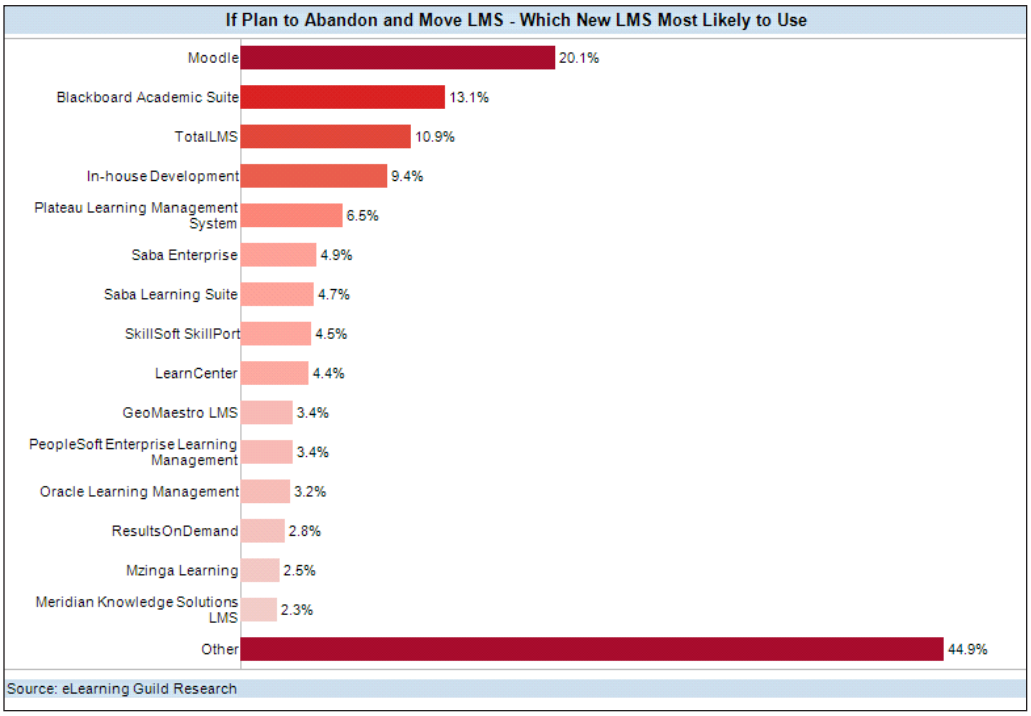
For some customers, the openness of the source code is the biggest draw – they want to customize everything about the system and make it uniquely their own. But certain elements of open source software make it a poor fit for commercial and government organizations. People don't hold open source accountable to the same kind of business standards as commercial systems. The risks of failure, and the concerns around it, pose challenges for learning organizations and IT managers who require control and controls. Things like support organizations and service agreements hold a certain appeal when learning is mission- or organization-critical.

Figure 11
Plans to abandon use of the current LMS vs. number of learners impacted.



While success stories around open source might stir up conversations about potentially changing LMS systems, actually switching a LMS creates strife, and not just on the part of the learning and IT organization; it requires involvement and commitment on behalf of the learners. It should be no surprise, then that only a very small percent of *eLearning Guild* respondents are even considering switching their LMS (see Figure 11).

Figure 12
Which new LMS are you most likely to use?



For those companies that are considering dropping their LMS and switching to a new system, the open source Moodle is at the top of the list, but commercial options in aggregate are still the more likely choice (see Figure 12 on page 13).

For Higher Education customers, responses in the 2008 Campus Computing Report show that more than one third of universities are considering a change to their LMS. Given that the end users of those systems are turning over at a consistent rate, higher

Figure 13
Total known Moodle sites. Source: Moodle Foundation (moodle.org/stats).

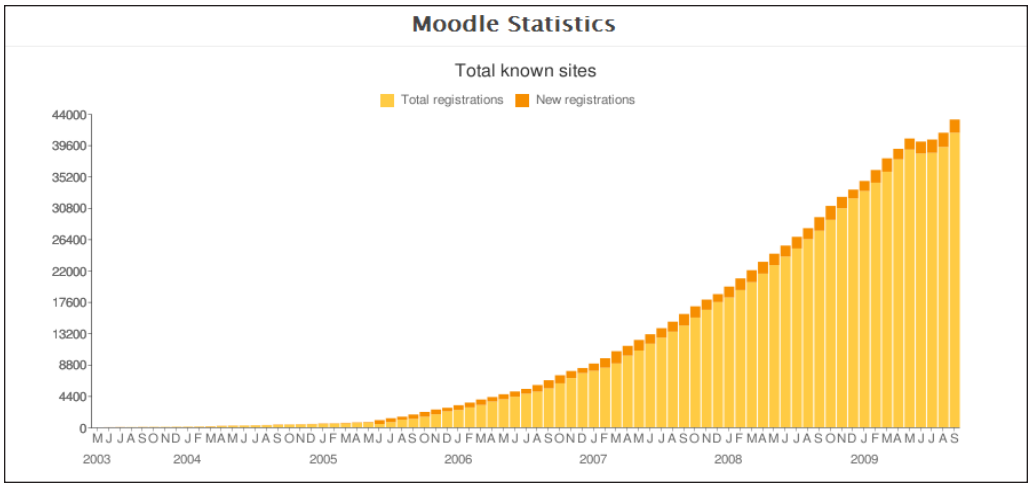
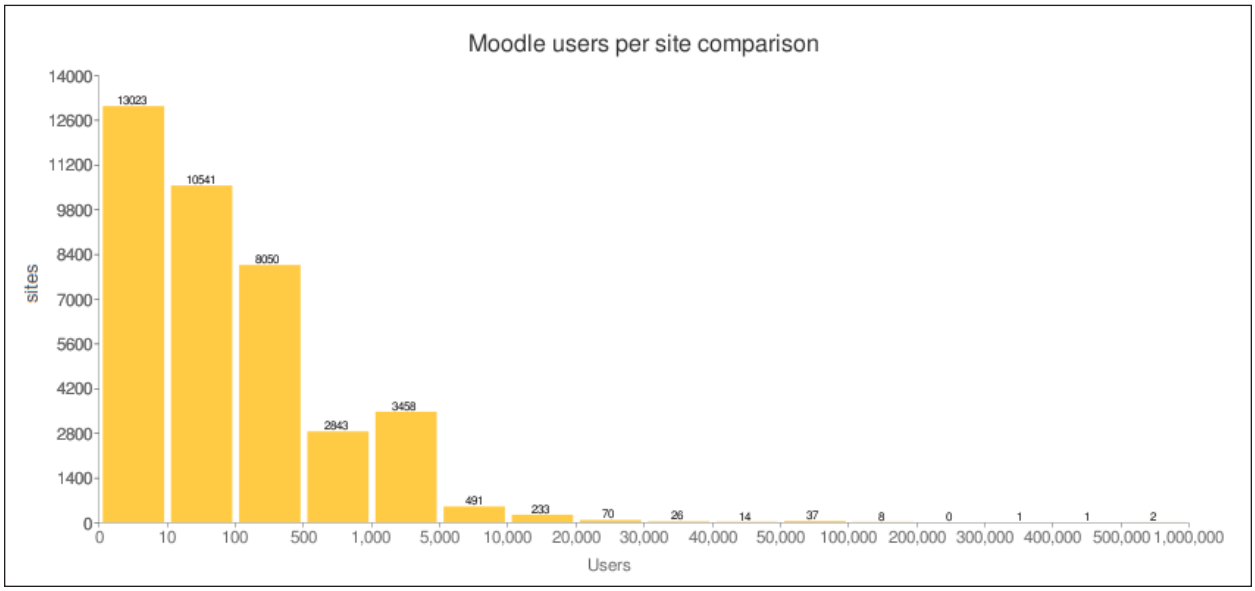


Figure 14
Number of users per Moodle site. Source: Moodle Foundation (moodle.org/stats).



Moodle: An Overnight Success *(after five years)*

Moodle is a software package for producing Internet-based courses and Web sites. It is freely available as open source software (under the GNU Public License). Moodle, first introduced in the early 2000s, has recently achieved a growth curve resembling what some like to call the hockey stick; the number of Moodle sites has risen rapidly, now numbering in excess of 46,000 installations (See Figure 13). Moodle software is free to use and download, and anyone, including traditional system integrators, can work with Moodle. Moodle has a network of independent Moodle Approved Partners who are for-profit vendors that enable Moodle use, offering services ranging from installation and hosting, converting courses from other systems, Moodle customization, and end-to-end solutions. Ten percent of the Moodle partners' revenue returns to Moodle as a royalty. As of May 2009, there are 42 Moodle partners throughout the world. There are more than 300 plug-ins available for download from the Moodle site, which range from certificates to online quizzes to wiki integration.

education institutions have more flexibility for changing their systems if they can negotiate faculty resistance. In commercial ventures, where the entire user base turns over with less predictable frequency, the ability to change is more constrained.

Moodle clearly has found a place for success in sites that facilitate small groups of learners. While corporate learning directors may tend to dismiss Moodle as a tool for these smaller organizations (the number of users per Moodle site has the highest frequency in sites between 5 and 125 users), nearly 30% of Moodle sites support 125 or more users (See Figure 14 on page 15). Moodle and *eLearning Guild* data also show that despite certain perceptions, Moodle is proving to be scalable.

Most of the business for Moodle partners today comes from Higher Education and K-12, but the inquiries from commercial companies continue to increase. Small and medium businesses with 500-1,000 learners represent the corporate "sweet spot," but, increasingly, large companies like Cisco, Novell, and ING are attracted to Moodle because of the level of customization that is possible.

5. Blackboard Gains Corporate LMS Market Share

The highest-ranking commercial LMS among *Guild* members comes from Blackboard, Inc. While Blackboard, with its reputation and the largest customer base, is heavily entrenched in the U.S. higher education market, its widespread adoption among commercial *Guild* members makes it worthwhile to see what trends Blackboard brought to the commercial LMS space.

Among its commercial customers, Blackboard has seen explosive growth in employee-facing applications. Customers recognize the ongoing imperative to develop proprietary, differentiated institutional content, and maintain it in a cost-effective way. For Blackboard customers, this is what creates long-term sustainable competitive advantage. Today, in order for content to be valuable, it needs almost continuous maintenance, which we can't leave entirely for the instructional designers to do. Blackboard, often in collaboration with strategic partners like Wimba™, designed its system to support learning "on the fly," with tools that enable the experts with the information in their hands to quickly get it into the minds of the people who need it.

Blackboard values the role of *Continuous Learning Environments*, the central place where learning happens, which continues to gain momentum. The ability to include social and informal learning as part of a learning management system is important, and for years they have incorporated it into Blackboard Academic Suite, and now into Blackboard Learn.

6. Commercial LMS Customers: Less Formal, More Holistic

Traditionally, commercial enterprises often equated regulatory compliance training with their ability to check-the-box on the learning delivered. Recently, commercial customers are starting to use the technology within their LMS, and available through social networks and Web 2.0 products, to supplement the point-in-time training they have been doing in the classrooms. LMS customers are realizing that they need to deliver to their learners a location online where they can find fresh information, SMEs, and collaboration, and can generate knowledge assets. Rather than just hearing about course launches and course completions, companies are tying their learning to business per-

formance metrics. Subsequent to the changing nature of delivering learning, the role of learning and development professionals is also changing. They are becoming more like facilitators who are moving performance within an organization.

7. Extensibility Matters

Openness, also known as extensibility, is fundamental to enterprise software in that it "talks" to other enterprise systems present in customers' computing environments. For example, Blackboard connects to Facebook and other social networking applications, has an active developer's network, building blocks, and a commitment to interactivity and integration, all done in a supported way. Today, CIOs are charged with transparency of information and transparency of systems, so the most important things a LMS platform can provide is transparency and interoperability with other systems.

8. Campuses and Businesses Alike are Slow to Adopt "Enterprise 2.0"

Like its enterprise counterparts, higher education enterprises face an evolving learning landscape. Quickly embracing the LMS, with 97% adoption in the past 8 years (EDUCAUSE CORE data), these institutions are now re-evaluating the systems chosen during the era of Web 1.0 in order to deal with 2.0 opportunities and requirements. Nearly 25% of them report a high-level likelihood of migrating to open source LMS systems for some applications or needs, but are unsure of their choices. Although Web 2.0 participation is critical to the next generation of students, and part of the lifeblood of generations X and Y, higher education campuses are slow to integrate Web 2.0 into their strategic IT planning. In 2008, only 9.5% of institutions reported a strategic plan for Web 2.0 resources. While this is double from 2007, it is reflective of the fact that understanding and wrangling Web 2.0 into strategic IT or academic plans is something that is in its early stages of adoption. Currently, only 34% of institutions are considering this strategy. From an adoption curve perspective, 21% of institutions have (and 39.5% are planning for) a strategic plan for Podcasting, which has been "mainstream" since about 2003 (Campus Computing Project 2008).

The challenge is in adopting enterprise systems that meet changing learning needs. Supported knowledge systems will need to be inclusive of the entire learning spectrum: traditional, social, informal, just in time, distributed, and user-generated. In order to generate a clear picture of information transfer (Shared Knowledge Project, New Media Consortium 2008), understanding of content containers and collaboration; tools and transactions; affordances, and assessments will be the work of the new knowledge designer. Relevant learning management systems will continue to include the traditional capabilities for determining need, measuring outcomes, and tracking learner activities, but will also measure and weight activities now happening outside instructional traditions.

9. The Recession Continues to Constrain

Given the current financial conditions the world economy faces, no industry, or department, is free from deep evaluations of budget, value offered, and relevance to long-term company performance. The downturn has already delivered a series of body blows to the LMS market. Smaller LMS vendors continue to lose hold on market share, as IT departments standardize on bigger, apparently more stable brands. Small LMS providers are being acquired, merging with publishers, with other IT enterprise platform technology, going out of business due to their own lack of funding, or because customers have relegated them to the bottom of their payment list. Only vendors with deep pockets, resilience, and the ability to drive innovation will remain.

We see this in higher education with Blackboard's purchase of its largest competitors, WebCT, and now ANGEL. From the industry side, acquisitions changed the LMS market when Oracle acquired PeopleSoft, SumTotal took over Pathlore, and Saba acquired both Thinq and Centra. Meanwhile, two companies are bidding for SumTotal, Saba and IBM are collaborating, and Cornerstone has announced a partnership with ADP. Publishers (e.g., Pearson and Thomson) are acquiring LMS companies (e.g., Frontier and eCollege) to help "package" content for e-Learning audiences. Despite all these movements and consolidation, according to numerous LMS analysts, unlike in higher education there are still no clear leaders in the $750 million dollar enterprise LMS market.

Of the almost 100 companies offering LCMS options, most will certainly see reduction of existing license revenue as industries are constrained, business more closely regulated, and heavily impacted markets like financial services and mortgage banking continue to consolidate. In those industries, the need for better content, better tracking, and better compliance management will create demand, but not for new or more expensive LMS licenses.

10. Revising Standards, Specifications, and Structures

In the old days, a careful decision-maker would choose a LMS that assured compliance with technical standards developed to help vendors understand customer requirements for e-Learning production, development, management, and distribution. One chose the industry-specific specifications based on the essential standards needed to ensure interoperability; the nature of the enterprise; and the level of integration expected with other systems. The Aviation Industry Computer Based Training Committee was the first professional organization to declare that training delivered via computers needed to conform to a specific set of guidelines. The Instructional Management Systems group that spun out of Educom (the precursor to EDUCAUSE) developed standards relevant for interoperating results of learning activities. The IEEE Learning Technologies Standards Committee contributed standards relevant to content exchange. All of these standards boiled down in some fashion or other to be included in a specification called SCORM, the Shared Content Object Reference Model, developed under the auspices of the U.S. Department of Defense Advanced Distributed Learning Initiative. SCORM emerged in direct response to the U.S. Defense department's demand for interoperable content distribution and learning results management protocols to get the more than 370 disparate learning management systems operated by the armed forces of the United States interoperating and sharing resources. Reasons included interoperability, reusability, and manageability in tracking user and content (Long & Tansey, 2005).

In recent years, there was talk of moving SCORM's oversight out from under the auspices of the U.S. Department of Defense, and turning it into a more open resource for the global learning communities. A group called LETSI, The Learning Education and Training Systems Interoperability committee, formed to assume SCORM oversight. At the same time, the newly energized IMS Consortium announced their development of a SCORM alternative called the Common Cartridge, making it possible to wrap commercially produced learning content with a manifest to guarantee interoperability with LMS providers who adhere to the IMS Common Cartridge standard. Today LETSI and ADL continue to collaborate on SCORM 2.0, a specification that today is looking toward enhanced interoperability with virtual learning worlds, games, and user-generated content, as well as with more conventional documents, animations, and videos.

Focus on standards in selection of the LMS container has recently dropped in priority in discussions of value and longevity. Hosted services and standard 3rd party content are driving market changes and dependence on Web standards and *cloud computing* take much of the responsibility off the IT group. Webware, proprietary standards, applications and services (Microsoft SharePoint™), SaaS, and hosted-elsewhere Webware from social media are the targets for many next generation learners. Response from the corporate side is less concern with interoperability or longevity as learners find, share, remix, mashup, and dispose of knowledge. Proprietary archival data is no longer stored or targeted to the LMS, and integration focuses more on consolidated search and less on resiliency of learning records. The LMS, now that it is a part of enterprise IT and distributed knowledge management, is more of a concern in relation to single-source authentication, synchronization, and mobile access to newer Web standards (Jafari, McGee & Carmean, 2006).

Where standards may have driven LMS core design in previous implementations, structures and security will be the decision drivers for the next generation of learning containers. Learners are exploring new sites and resources daily, and IT executives are wondering how to leverage the power of social media while continuing to protect data and keep information behind the firewall.

Another new understanding in the ROI conversation is a renewed focus on reusable, modular, and shared content. With more companies building depth in their e-Learning content bench by acquiring 3rd party content, the role of the LMS along traditional lines continues. There is greater steam coming from the often-neglected conversation of reuse. Particularly with regard to compliance-based content like ethics, sexual harassment, and safety, 3rd party content is becoming a relevant part of corporate e-Learning strategies, even for companies smaller than the LMS target companies. With the diversity of LMSs in use, designers working on library content for resale to multiple organizations will need to focus on interoperability.

Summary and Conclusions

The LMS industry is clearly at a tipping point in its evolution, with transformation taking place on two distinct fronts. On the technological front, expectations of the learning and IT marketplaces are bringing pressures to provide a better experience than that provided by systems designed to monitor and distribute online courses tracked by a departmental-level database that stores course files, some student records, test results, and course syllabi. In other words, learners expect to have as good an online learning experience as they have when satisfying online consumer experiences.

On the learning front, expectations related to driving value from enterprise learning and performance support solutions have become more sophisticated. As records of learner enrollment, retention, experience, and results are more readily available, it is easier to correlate investment in people and learning IT with business metrics that matter.

When LMSs first appeared in the learning world, they emerged to serve specific requirements for managing online courseware assets, tracking results of student tests and content completion, and making sure that the content used to represent the course itself is accurate and available on demand. They contributed to the value propositions of serving course content in a scalable, reliable, and consistent way to distributed learners, while making sure to keep track of the results of online learning sessions and making that data available to help target the learning programs more effectively. During the past decade, well over 200 companies purporting to sell learning management software solutions have given enterprises a wide range of learning management options. When LMSs first emerged, vendors had many opportunities to offer a wide variety of learning management features and solutions that eventually did help define our collective expectations for learning management. In the second phase of LMS evolution, customers started getting smarter about the value that they wanted their LMS to drive; consequently the market has compressed itself. Today, according to Brandon Hall Research, there are approximately 92 viable LMS platforms, offering essentially the same menu of features, with a number of attempts represented in different platforms to deal with the building blocks of online learning experience – content, assessments, collaboration, and operational artifacts. *Guild* members correlate these industry data, reporting up to 100 different platforms used for learning management – even if never intended for learning management in the first place. The emerging "next gen" LMS environment will need to accommodate user-navigated resources made up of commercial and user-generated content, working as "small pieces, loosely joined," connected by topical and pedagogical scaffolds, and held together by links and connections from social and semantic media.

Enterprise mobility, the growing use of semantic tools for personalizing and training search queries, techniques for navigating the many conditions faced by today's learners as they move from formal training programs to immersions, simulations, and just-in-time performance support, will all have significant impact on the systems that management provides for learning experience and assets. The perceived value of user-generated or informally-published content is going to begin to impact learning budgets and learning tools, as informal learning assets begin to take their place in the menu of options for supporting learning and performance improvement. Demands will increasingly call for a near-zero learning curve in using LMS tools, and for systems that are agile, easier to use, and end-user friendly for the facilitators. The next generation LMS will facilitate knowledge creation and sharing, such that learners come to the experience ready to use and embrace the systems that their employers deem necessary. It won't matter whether those employers use the systems to manage their compliance requirements, facilitate a learning culture, or create a workforce that benefits from traditional e-Learning, social networking, immersive experience, or whatever the next wave of content explosion brings. Using the appropriate media to best support learning is paramount, and while the learning professionals and the management systems they use have not necessarily managed to determine the best way to incorporate new interactive and social experiences, using technology makes this a more realizable LMS possibility.

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