

# Enterprise E-Learning Integration: *What Works*<sup>TM</sup>

*The challenges of creating an enterprise-wide e-learning  
infrastructure*

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## Table of Contents

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<b>Table of Contents.....</b>	<b>2</b>
<b>Introduction .....</b>	<b>3</b>
The Content Integration Challenge .....	4
Industry Standards Fall Short.....	5
<b>The Modern E-Learning Infrastructure .....</b>	<b>7</b>
<b>The Vision of an Enterprise-wide Learning System .....</b>	<b>9</b>
<b>The Obstacles to an Integrated E-Learning World.....</b>	<b>12</b>
Industry Standards .....	13
Industry Fragmentation.....	15
Distributed Systems.....	16
<b>The Implications for Training and Learning Executives. 18</b>	
Integration Costs .....	18
Limited Vendor Choices.....	20
System Upgrade and Testing .....	20
Long Deployment Timeframes.....	21
Usability Issues.....	21
Data Integrity .....	21
Operational Workarounds .....	22
<b>How to Reduce E-Learning Integration Issues.....</b>	<b>23</b>
Recognize that Standards are Not Enough.....	23
Conduct Your Own Research .....	23
Establish Preferred Vendors .....	24
Get Stakeholder Support .....	25
Consider Single Source Solutions.....	25
<b>Conclusion.....</b>	<b>26</b>
<b>About Bersin &amp; Associates.....</b>	<b>27</b>
<b>About This Research.....</b>	<b>28</b>

## Introduction

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E-learning and its associated infrastructure is now in use by a significant percentage of large- and medium-sized enterprises. Bersin & Associates research shows that nearly 70% of large organizations have deployed some type of e-learning program today, and more than 60% have a Learning Management System (LMS)<sup>1</sup>.

While e-learning and blended learning become even more popular and demonstrate even greater success there is one significant technology problem that has yet to be solved: the integration of the various software systems that ultimately make e-learning work.

As e-learning grows, companies have gone beyond e-learning alone and found clever ways to combine online learning with more traditional forms of training such as instructor-led training (ILT). We call this combination of learning methods “blended learning.” On its own, e-learning cannot always address every learning need or situation—but when blended with other forms of training and support it can deliver scale, reach, and results to nearly every training organization.

While e-learning and blended learning become even more popular and demonstrate even greater success there is one significant technology problem that has yet to be solved: the integration of the various software systems that ultimately make e-learning work. In this context, the term “systems” refers to CD-ROM-based content, internally-hosted Web content, externally-hosted Web content, LMSs, Learning Content Management Systems (LCMSs), live synchronous learning, and testing and assessment tools.

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<sup>1</sup> Spring 2004 Study of LMS market penetration

### The Content Integration Challenge

According to a recent Bersin & Associates survey of e-learning content buyers, 81% cited “better content integration” as a critical problem they felt should be solved.<sup>2</sup> From multiple content sources to multiple LMSs to high integration costs, many factors contribute to the challenge of content integration:

- **Multiple sources of content**—Most large organizations have 10 to 30 different sources of e-learning content, each with its own custom software interface, presenting unique integration and upgrade challenges. Bersin & Associates estimates that large enterprises (those with 10,000 or more employees) have an average of 16 suppliers of e-learning content and many have 30 or more.
- **Multiple LMSs**—According to our latest survey of LMS buyers, 34% of large organizations have more than one LMS. It is not uncommon for larger enterprises to have 15 or more systems holding training information. The more systems a company has, the more complex and costly is the problem of integration.
- **Formidable content integration costs**—It is not unusual for a content integration project with an off-the-shelf library of courses to cost \$150,000-\$300,000 and take two to three months to complete (not to mention updates that can each take an additional month). Some projects take up to five months to deploy and others simply never get off the ground because the technology challenges make them too costly to complete and/or the vendors involved don't make them a priority. The cost of content integration can sometimes equal the cost of the library itself.

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<sup>2</sup> Bersin & Associates study of content purchasers, Spring, 2004

### Industry Standards Fall Short

Over the last five years, the expectation among buyers of e-learning systems was that industry standards (e.g. AICC and SCORM) would solve many of these integration challenges. While the standards have made progress in making integration a reality, today they are not able (for a variety of reasons) to provide a comprehensive solution. In almost every major e-learning project there is some type of custom integration needed to make content work correctly. Even after the integration is complete users often report unreliable or incomplete tracking and/or reporting.

When LMS buyers are asked “What is your biggest challenge in LMS implementation” their #2 issue cited is content integration.

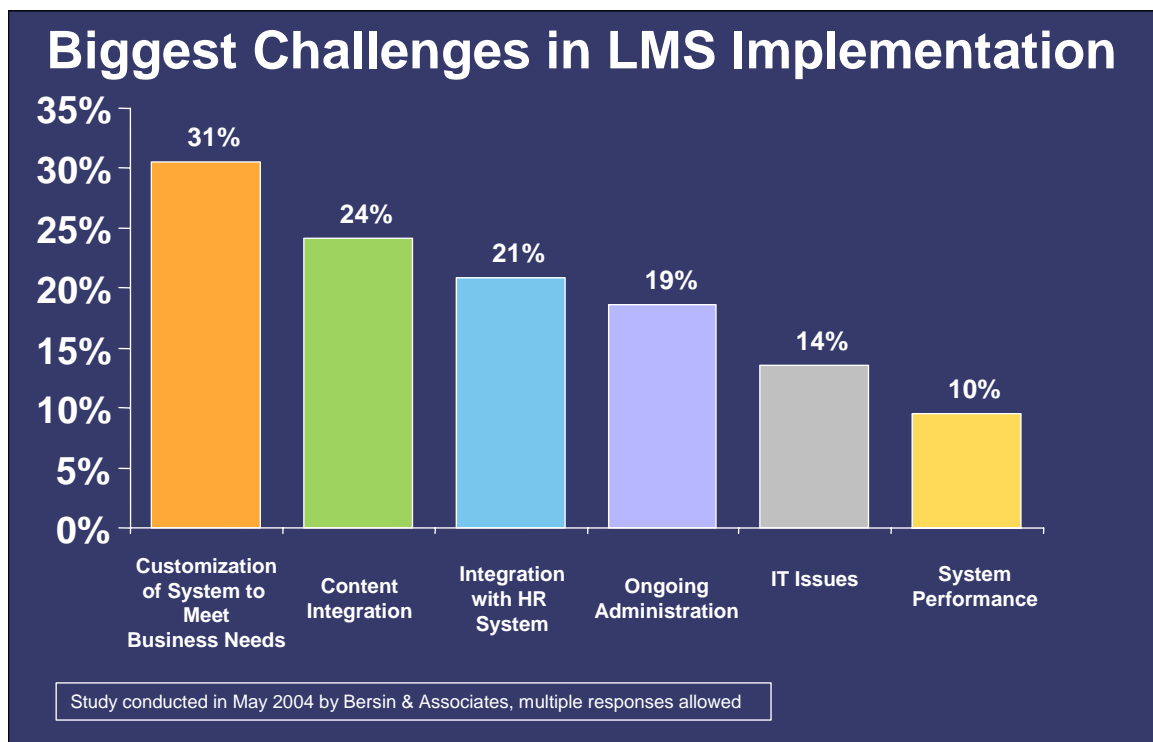


Figure 1: Content Integration is the #2 Challenge for LMS Buyers

We find that content integration issues are not well understood by buyers, resulting in surprises at the complexity and cost involved. The purpose of this paper is to explore the challenges organizations face with technology integration in e-learning and provide some guidance to buyers for dealing with the issues.

## Challenges of Enterprise E-Learning Integration

To validate our perspective on this topic, we spoke with a number of executives that manage large, successful e-learning programs. As you read, you'll discover the results of these discussions along with some specific data points.

*Bersin & Associates believe that the issues around integration are not well understood by buyers and they are often surprised by the complexity and cost involved*

## The Modern E-Learning Infrastructure

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Most organizations that have modernized their training infrastructure typically have one or all of the following components:

**Learning Management System (LMS)** – LMSs serve as the administrative and management environment for the deployment of distributed training initiatives. Functionalities include learner registration, course catalog management, assignment of learning, user progress tracking and monitoring.

**Learning Content Management System (LCMS)** – LCMS's are to content what LMSs are to users and courses. Functionalities include content creation, asset management, content development workflow management, assessment creation, and content delivery.

**Externally hosted e-learning content** - To reduce deployment and maintenance costs many organizations access custom and off-the-shelf courseware from systems managed by Application Service Providers (ASP's) such as Skillsoft, NETg, ElementK and others. In some cases, the content is also augmented by LMS and/or LCMS capabilities.

**Internally hosted e-learning content** – the majority of e-learning content resides on internal servers or may be distributed via CD-ROM to locations with limited or unreliable Internet access.

**Human Resource Management Systems (HRMS)** – Many organizations use the HRMS as the system of record for enterprise-wide training initiatives. Often, the LMS is integrated with the HRMS for purposes of exchanging data on users, organizations, and training completions.

While these systems are adding business value in and of themselves, the difficulty for many organizations is that they have too many of them and they don't easily integrate because standard interfaces are not available.

This is not unusual in the world of business applications. They all go through periods of maturity and eventually reach a point in which they are easier for customers to deploy and manage. E-learning systems will evolve along this path.



## The Vision of an Enterprise-wide Learning System

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The advent of e-learning and Learning Management Systems (a term coined in 1999 to replace Training Management Systems) has led to a whole new vision of making learning more accessible, visible, integrated and accountable to the organization.

Prior to the late 1990's, automating the training process in most organizations consisted of Training Management Systems and content deployed on CD-ROM. Training Management Systems were typically used only by HR staff to enter training records and by training administrators to schedule classes. While these systems have had some impact on organizational effectiveness, most companies had little visibility into their training processes and how they were affecting the bottom line.

The advent of e-learning and Learning Management Systems (a term coined in 1999 to replace Training Management Systems) has led to a whole new vision of making learning more accessible, visible, integrated and accountable to the organization. For our purposes, the relevant aspects of this vision include:

1. **An enterprise-wide system for the management of all formal training activity regardless of delivery type.** This system, now called an LMS, is accessible not only to training managers but also to individual learners and business line managers. This better enables training to be distributed and more actively managed by all participants in the process. Training interventions can also be better integrated into other business processes.

2. **Standardized interfaces that give buyers a choice of on-line content.** The challenge of using online training content is that it has historically been implemented with its own back-end system for tracking and reporting on learner performance. The goal of industry standards (among others) was to make the interfaces between content and tracking systems consistent so that they are interchangeable. Buyers would have choices and not be locked into a particular content source or LMS vendor. These interfaces, in theory, would apply to both custom and off-the-shelf courseware.
  
3. **Leveraging information to maximize the training investment.** LMSs provide access to much more data about training activity across the enterprise than was previously available. Because of the rapid distribution capabilities of e-learning, this data is also available more quickly than ever before. Online learning can be instantly tracked and monitored to ensure compliance and identify popular offerings. Early adopters of LMSs are now using this information to better manage their training programs, make decisions about the delivery mix, and correlate business performance with training investments.

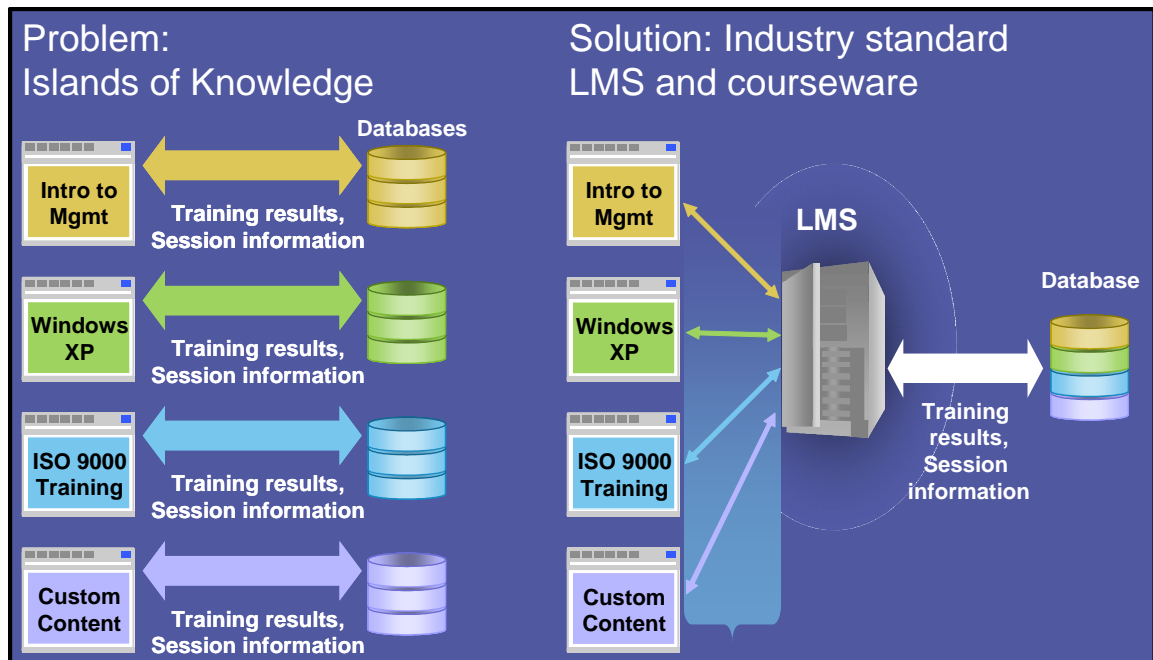


Figure 2 - The promise of industry standards remains unfulfilled to a large extent

This vision is coming in stages, however, and the immaturity of the technology and industry fragmentation has led to disparate systems and solutions that create integration headaches along with the promise. As we'll discuss, the reality of today's e-learning initiatives is that achieving this vision is more costly than many training executives realize. And in many cases, the technology limitations are simply making it impossible to achieve some of these goals.

## The Obstacles to an Integrated E-Learning World

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E-learning technology is no different than any other – it evolves in stages. Within each discipline of enterprise application automation (e.g. financials, manufacturing, customer service), it was not uncommon to find disparate systems that were not well integrated. Companies acquired a purchasing system from one vendor and a general ledger system from another – then they spent time and energy to integrate them. These integration challenges are eventually solved for customers in one or more of three ways:

1. Vendors consolidate in the interest of creating more value for customers and alleviating the integration headaches;
2. Industry standards that enable interoperability develop and mature;
3. Software is created to bridge the gap between the two – often called integration technology or middleware.

Content and tools vendors live in the world of instruction, presentation, and easy-to-deploy systems.

LMS vendors live in the world of data, transactions, and scalable performance.

The same phenomenon is happening in e-learning today. The most obvious abyss in the world of e-learning is the division between content and learning management. Content and tools vendors live in the world of instruction, presentation, and easy-to-deploy systems. LMS vendors live in the world of data, transactions, and scalable performance. As customers are discovering, these two worlds are coming together – albeit very slowly. Almost all content vendors provide some type of learning management for customers that don't have their own system or need to get a solution up quickly. This only perpetuates the problem of having many disparate sources of training data.

## Industry Standards

Cynics of emerging standards have commented “the great thing about standards is that there are so many of them”. This cynicism is well placed in the e-learning industry. There are at least four major initiatives under way and an even larger number of minor efforts across the world<sup>3</sup>

The truth is that support for industry standards cannot be relied upon to ensure interoperability. In fact, experienced e-learning managers do not rely on these specifications to help them make vendor choices.

Major E-Learning Standards Organizations & Specifications	
Organization	Major Specifications
Advanced Distributed Learning (ADL) <a href="http://www.adlnet.org">http://www.adlnet.org</a>	Shareable Content Object Reference Model (SCORM)
Aviation Industry CBT Committee (AICC) <a href="http://www.aicc.org">http://www.aicc.org</a>	CMI001
Institute for Electrical and Electronic Engineers Learning Technology Standards Committee (IEEE LTSC) <a href="http://www.ltsc.ieee.org">http://www.ltsc.ieee.org</a>	Learning Object Meta-data (LOM)
IMS Global Consortium (IMS) <a href="http://www.imsproject.org">http://www.imsproject.org</a>	IMS Meta-data, IMS Content Packaging and IMS QTI (Question and Test Interchange).

Figure 2: E-Learning Standards and Specifications

These efforts are touted by vendors as the key to interoperability in the e-learning industry. The truth is that support for industry standards cannot be relied upon to ensure interoperability. In fact, experienced e-learning managers do not rely on these specifications to help them make vendor choices.

<sup>3</sup> These groups have made significant headway in the last few years by cooperating on some projects but there is more work to be done before e-learning standards can be compared to, for example, TCP/IP in the networking world and HTTP for internet communications.

## Challenges of Enterprise E-Learning Integration

However, standards have made some progress. The most prominent and viable contributions today are:

- ADL Shareable Content Object Reference Model (SCORM)
- AICC CMI001 Guidelines for CMI Interoperability

Bersin & Associates believe that these efforts have not borne more results for several reasons:

1. **Progress has been too slow.** Internet technology has moved much faster than e-learning standards. Standards do take time to evolve; however since its founding in 1997, the ADL initiative has focused on a few limited areas dealing mostly with content objects and not the system integration and system reliability challenges that plague e-learning buyers. *The majority of e-learning executives with any degree of complexity in their systems are not obtaining enough benefit from industry standards.*
2. **Standards organizations don't focus on the practical realities of implementation.** The reality in today's world is that systems and content will be located all over the world – not in a single location. To date, most of the efforts have focused on content and instruction standards but very little on the practical realities of deploying large-scale e-learning solutions (e.g. user authentication, security, content on different domains, catalog synchronization, reliable data tracking). Standards groups should address these issues or endorse the efforts of more generic Internet standards to provide industry guidance.

Current e-learning standards (or more appropriately specifications) do not provide enough guidance for vendors to be specific in their implementations.

Vendors create their own interpretations of each specification. As a result, e-learning system suppliers and customers are constantly extending these capabilities to make them work together.

3. **Most are, in fact specifications not standards.** Standards in the most pure sense of the term are unambiguous. They enable true “plug and play” between systems. Current e-learning standards (or more appropriately specifications) do not provide enough guidance for vendors to be specific in their implementations. So vendors create their own interpretations of each specification. As a result, e-learning system suppliers and customers are constantly extending these capabilities to make them work together. The standards provide a base line, in some cases, but don’t provide a viable solution. This is not the expectation of buyers when vendors tout their support of standards.

There are notable exceptions. Some products do provide “out of the box” interoperability. Authoring tool vendors seem to have made the most progress in this area as several of them work quite smoothly with LMSs (e.g. Trainersonline, Authorware, Flash). And the SCORM packaging specification has made content portability a reality for some applications, which provides buyers the capability to move objects between systems and perhaps reuse them, but it has yet to solve the interoperability problems. There is clearly more work to do in order for customers to feel comfortable when vendors say “yes, we support standards.”

While there will be consolidation in the LMS and LCMS arenas, it will not happen quickly. There will always be vendors targeting specific market niches so consolidate to a handful of suppliers is unlikely.

### Industry Fragmentation

Compounding the ambiguity in the standards arena is the fragmented nature of the e-learning industry. Each category of technology including LMS, LCMS, and content suppliers is filled with hundreds of vendors. (*Our breakthrough report, LMS-2004 (available at <http://store.bersinassociates.com/lms-2004.html> ) describes the LMS market in detail.*) It is not practical for each one of these vendors to adequately support and maintain compatibility with each other. The result is that even large suppliers on both the content and systems side of the solution have trouble keeping up with new vendors and product releases. Often, customers are left to navigate the lack of compatibility on their own or must put constant pressure on vendors to ensure support.

While there will be consolidation in the LMS and LCMS arenas, it will not happen quickly. There will always be vendors targeting specific market niches so consolidate to a handful of suppliers is unlikely.

It's also worth noting that significant consolidation in the content arena is not likely and is perhaps not even desirable. E-learning content (like all other forms of learning) covers thousands of topics. There will always be a need for organizations to pick and choose among suppliers and create custom e-learning content for their own purposes.

*A longer term solution that helps bridge this gap is needed.*

### Distributed Systems

Another important characteristic has made integration difficult for organizations: a varying array of technology deployment and acquisition scenarios. We noted above that there are many different content sources and, in some cases LMSs, all within the same enterprise. They may be scattered across departments or business units. Some content sources are hosted externally while others are on CD-ROM, a network file server, or perhaps have been downloaded to an employee's PC for off-line learning.

Buyers who are more advanced in their e-learning technology systems are also integrating them with other business applications including HRMS, CRM, Document Management, Financials, etc. These integration points are adding even more complexity to the challenges of creating a reliable e-learning infrastructure.

Hosted content, in particular can present difficult challenges for several reasons. The content vendor has sometimes optimized their product for use with their own LMS. While they may offer connectivity to other systems (e.g. an LMS residing inside a corporate network) the actual implementation may be costly, unreliable, or potentially not possible due to firewalls and other security constraints. In this case, manual workarounds (e.g. regular batch loads) may be required which need to be implemented then monitored on a regular basis.

Of course, a hosted platform has its advantages and Bersin & Associates believes that this scenario will become easier for companies to support as web services technology becomes more pervasive.



## Challenges of Enterprise E-Learning Integration

Another scenario which is particularly difficult to support in a reliable and non-proprietary fashion (again, no standards yet) is that of content that can be downloaded, played back locally, and have results automatically synchronized with the LMS. This feature is popular with mobile workers that don't always have a network connection. While some vendors do provide this capability it is often not integrated with an enterprise-wide LMS.

Buyers who are more advanced in their e-learning technology systems are also integrating them with other business applications including HRMS, CRM, Document Management, Financials, etc. These integration points are adding even more complexity to the challenges of creating a reliable e-learning infrastructure.

## The Implications for Training and Learning Executives

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One of the biggest areas of impact is simply added cost. Lack of standards-based interoperability in the e-learning world is costing companies time and money.

In our ongoing research in the field of e-learning technology, we constantly hear about the challenges of e-learning integration from participants. In conducting our research for this paper, an executive of a large telecommunications provider (over 150,000 employees) indicated:

*“Content is our biggest headache in switching LMSs – even after the third time! We are still surprised at the problems we have with content integration.”*

As mentioned above, in a recent survey conducted by Bersin & Associates, content integration was cited as a significant challenge by 81 percent of respondents.

But how, exactly, are organizations impacted by integration challenges?

### Integration Costs

One of the biggest areas of impact is simply added cost. Lack of standards-based interoperability in the e-learning world is costing companies time and money. Our research indicated that the typical courseware integration project for a sizable content library of several hundred courses costs between \$150-300K and takes two to three months to complete (some take as much as five or more months if vendors cannot resolve technical difficulties). An e-learning manager at a large financial services company commented:

## Challenges of Enterprise E-Learning Integration

*“Content integration is an expensive challenge for us. We estimated that a recent project to integrate our custom-built LMS with an off-the-shelf library of courses would cost about \$300,000.”*

Upgrades, either to courseware libraries or LMSs, generate additional costs in testing and quality assurance – estimated at 10 percent of the cost of the original integration project. In some cases, buyers are able to leverage the integrations already completed and funded by vendors. Customers using a custom-built LMS will need to fund these integrations themselves or negotiate with content developers to provide a solution.

Content integration data for sample enterprise LMS installations <sup>4</sup>	
Typical cost to integrate a large courseware library	\$150-300K
Typical integration time frame	2-3 months
Number of content sources	10-30
Full time staff typically devoted to content integration and maintenance	1-2
Percentage of e-learning systems budget devoted to content integration	15 percent
Time required to test new courses for interoperability	3 days to 1 month

Figure 3: Typical Costs of Content Integration

Buyers are often unprepared for the initial and subsequent costs of integrations. There are other hidden costs (described below) that are associated with the difficulties of content integration.

<sup>4</sup> Source: Bersin & Associates interviewed training executives responsible for learning technology at Fortune 500 enterprises

### Limited Vendor Choices

As mentioned above, one of the most valuable benefits of truly open and interoperable technologies is choice for buyers. Choice levels the playing field and requires vendors to compete on value instead of locking their customers in with proprietary and expensive solutions.

Unfortunately, e-learning managers indicate that this is not the case in the their world. Once they get their systems integrated and working (which respondents indicated is a big job in itself) they are reluctant to switch vendors. One of the e-learning managers we interviewed indicated:

*“We try to stick with a limited set of suppliers but it doesn’t always work. One vendor that was not on our approved list took five months to get their content working in our LMS. These challenges really limit our choices in the marketplace.”*

Many enterprises have lists of approved vendors whose technology has been tested and approved to work with their systems. While this can reduce procurement costs, it limits the choices for buyers. It may also backfire and increase costs as e-learning managers are likely to stick with vendors that that are “approved” instead of obtaining competitive bids from other vendors. Training executives also report that some groups ignore the list of approved suppliers and select vendors that require a new cycle of integration and testing. Or, even worse, the content may be delivered from a system outside of the enterprise LMS creating yet another source of data.

### System Upgrade and Testing

Upgrades to IT systems most often require some type of quality testing; upgrades to an LMS or courseware library are no exception. In order to ensure quality, every course may need to be checked to ensure that it is launching and tracking correctly. For a large enterprise this may involve thousands of courses that need to be retested when system upgrades are performed. This can be a big job and buyers we interviewed indicate that this can be a time-consuming process that interferes with more strategic projects.

### Long Deployment Timeframes

Lack of reliable interoperability poses another hidden cost to e-learning managers: it slows down the process for getting courses online. The time to launch a new library can range from two to three months with some taking as long as five months. Others reported that they were never able to get integrations working and either gave up or switched vendors.

### Usability Issues

Disparate e-learning systems are not only a challenge for those who manage and implement them. Often, users are impacted as well. Poor integration and testing may result in scores, bookmarks, and other important tracking information not being recorded. One manager we spoke with (who is using large well-known vendors for both courseware and LMS) indicated that they regularly receive a substantial volume of complaints from their users that their scores are not being recorded after completing an online course. Again, this was a frequent complaint voiced by those with experience on this topic. Another manager indicated that his company runs regular reports for the sole purpose of monitoring that data is, in fact, being reliably tracked.

Poor integration and testing may result in scores, bookmarks, and other important tracking information not being recorded.

These factors add considerably to the time and cost of managing corporate learning by requiring dedicated staff to support manual workarounds. A cost that is difficult to measure is the loss of confidence from the user community when they spend hours taking training and the systems don't capture their progress.

### Data Integrity

Indeed, getting complaints from users that their scores are not being accurately captured can usually be fixed with manual data entry. This is obviously an inconvenience for users and does little to bolster their trust in online training. But the implications of poor data integrity can be more significant. *How can the organization rely on the accuracy of its training records? What is the impact of unreliable training data?*

Many organizations are now using online courseware and testing for compliance and regulatory training. Accurate and reliable record keeping is obviously paramount to the success of these programs. In some industries, the inability to produce rapid and accurate training records can result in expensive interruptions in business and/or steep fines.

In some industries, the inability to produce rapid and accurate training records can result in expensive interruptions in business and/or steep fines.

### Operational Workarounds

Some enterprises choose not to automate the integration of their courseware systems either because it's too difficult or they have other priorities. In still other situations, security may prevent systems from being integrated. This is especially problematic for hosted systems that reside on external networks, yet need to share information with systems that reside inside the enterprise.

In this case, manual workarounds can be a continuous drain on an enterprise technology budget. As mentioned above, many companies have several dedicated staff members that are responsible for monitoring the reliability of their integrations and performing manual data exchanges that could be automated. The cost of maintaining workarounds can be measured mostly in staff members (e.g. IT, administrative) and could be \$150K/year or more (for a large enterprise with many suppliers) depending on the complexities of the systems being managed.

## How to Reduce E-Learning Integration Issues

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Along with the challenges described above, our research on the topic of e-learning integration also uncovered strategies that organizations are using to minimize their negative impacts. We present these ideas for your consideration as you make technology and purchase decisions in your organization.

Vendors are well intentioned when they tout their claims regarding support for standards but they are simply not enough to guarantee that products will work together.

Standards are in fact currently specifications, leaving too much room for interpretation by individual vendors.

### Recognize that Standards are Not Enough

Don't rely on support for industry standards when making vendor choices. Vendors are well intentioned when they tout their claims regarding support for standards but they are simply not enough to guarantee that products will work together. Standards are in fact currently specifications, leaving too much room for interpretation by individual vendors. Additionally, the standards don't address all the critical technology issues you will encounter.

### Conduct Your Own Research

Take steps to verify integration prior to purchasing. *In today's market, the most effective way to verify product integration is to speak to customers that have used the products together (make sure these references are using the same version of the products that you plan to buy).* Some vendors have already established relationships that you can leverage; however, this is just a starting point. When talking to customers you'll need to ask very specific questions about:

- How long the integration took
- How successful it was

## Challenges of Enterprise E-Learning Integration

- The upgrade process
- The customer's technology infrastructure (e.g. hosted internally or externally)
- The nature of the integration and what type of data is being captured (course launch, score, completion status, bookmarks)
- The reliability of data capture once integration was complete.

If you determine that you will require custom work to ensure interoperability you should ask the vendor(s) to fund the integration. Ask about the escalation path for support issues. Will the vendors cooperate if a problem arises? Which vendor should be contacted first? Problem resolution processes should be documented for bigger contracts so that you don't end up with vendors pointing fingers at each other while you are stuck in the middle.

If you determine that you will require custom work to ensure interoperability you should ask the vendor(s) to fund the integration. Ask about the escalation path for support issues. Will the vendors cooperate if a problem arises? Which vendor should be contacted first?

Also be sure to define in your requirements exactly what you mean by integration. For example, one e-learning manager we interviewed has established clear specifications for data capture on all e-learning courseware (e.g. score, completion, date completed). Vendors are contractually obliged to verify that they can make their courses work according to the specifications. These specifications should be provided to vendors as a written standard that makes clear exactly what you expect from the courseware and/or LMS.

Demanding an integration test from the vendors to demonstrate the integration works before you purchase is something to consider.

### Establish Preferred Vendors

Establish a list of preferred vendors that you know will integrate with your infrastructure. Such a list can encourage the various groups that procure content to work with vendors that will provide some degree of interoperability and support (when things go wrong!). Many vendors are establishing certification programs that validate the interoperability of their products. While these programs are not a guaranteed solution, they are a step in the right direction.



### **Get Stakeholder Support**

Many projects involving online training require support from other groups – procuring online content is no different. You may need to involve IT, for example, to ensure that there are no security roadblocks. If the learning infrastructure is centrally managed by Human Resources, then they should be consulted on your content decisions. You don't want to find out after the contract has been signed that the integration obstacles are insurmountable.

### **Consider Single Source Solutions**

Although probably not a solution for most large enterprises, some vendors offer one-stop shopping for both LMS and content. In theory, one vendor is responsible for both courseware and LMS which should reduce or eliminate “finger pointing” between vendors. Content vendors are the most likely to offer this type of solution. In this case buyers should be aware that the LMS may not support your own custom content or content offered by another vendor.

Some LMS vendors are also offering single source solutions that support third-party and custom content. Buyers should ensure that the solution is truly single source and will enable you to support all of your content needs.

## Conclusion

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The status of e-learning content integration remains a mystery to many training managers. Industry commentators and vendors have encouraged buyers to seek support for industry standards (e.g. AICC, SCORM) as a stamp of approval. Experienced buyers know that there is much more to the complexity of dealing with many different e-learning systems and technologies.

The challenge of poorly integrated systems is costing companies time and money by requiring dedicated development and custom projects to compensate for these inadequacies. Unfortunately, many e-learning managers report that throwing money at the problem does not always solve it. Often, the technological hurdles involved simply make the projects infeasible.

Buyers are encouraged to work with vendors that have demonstrated integration capabilities (both products and services) and can adhere to pre-determined specifications for what integration means.

Bersin & Associates believe that the challenges posed by e-learning integrations will eventually be resolved through (1) industry consolidation (2) maturity of the standards efforts (3) development of middleware solutions that broker information between courseware and enterprise learning systems.

## About Bersin & Associates

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Bersin & Associates is the only research and consulting firm focused solely on What Works™ e-learning research. With more than 20 years of experience in e-learning, training, and enterprise technology, Bersin & Associates provides a wide range of services including industry research, trends analysis, corporate workshops, corporate implementation plans, and sales and marketing programs. Some of Bersin & Associates' innovations include a complete methodology for LMS selection and application usage, an end-to-end architecture and solution for e-learning analytics, and one of the industry's largest research studies on blended learning implementations.

Bersin & Associates offers the industry's first e-learning research subscription, "The E-Learning Research Center," which offers up-to-date research, product selection guides, case studies, white papers, extensive industry studies and access to experts online. This service gives corporate training managers, vendors and consultants access to best practices, trends, and product information to make faster and better decisions. (<http://www.elearningresearch.com>) Bersin & Associates can be reached at <http://www.bersin.com> or at (510) 654-8500.

## About This Research

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