

PeopleSoft Enterprise Learning Management: Achieving Enterprise Integration

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PeopleSoft Enterprise Learning Management: Achieving Enterprise Integration

PeopleSoft delivers an integration strategy founded on accommodating changes quickly and cost-effectively, connecting with multiple technology platforms without requiring platform changes, and seamlessly connecting all the applications across the learning infrastructure

EXECUTIVE SUMMARY

PeopleSoft Enterprise Learning Management (ELM), a learning management system (LMS), is at the core of the technology infrastructure required to manage and deliver enterprise learning. It is from this center that all learning delivery is launched and tracked. It is to this system that all other learning technologies and enterprise applications must be integrated.

Learning technologies must be extended and embedded into everyday business processes for learning to be pervasive and deliver the required business benefits. When seamlessly integrated with enterprise applications such as Human Resources, Customer Relationship Management, Supply Chain, and Financial Management Systems, learning can be targeted and aligned with the achievement of business objectives. The need for a well-constructed, flexible, and cost-effective LMS integration approach is critical.

PeopleSoft delivers an integration strategy founded on accommodating changes quickly and cost-effectively, connecting with multiple technology platforms without requiring platform changes, and seamlessly connecting all the applications across the learning infrastructure.

The delivery of this strategy is through the PeopleSoft Integration Model, featuring the Service Oriented Architecture-based PeopleSoft Integration Broker, which meets an organization's integration needs today and has the structure and flexibility to grow with them for years to come.

The PeopleSoft ELM Integration Model:

- Provides more value from the chosen PeopleSoft platform
- Increases learning process efficiency
- Reduces costs

INTRODUCTION

Business is changing at an ever increasing pace. The shelf life of knowledge is short. Talent shortages are looming. Technology advances are continuous. Ongoing workforce development is essential. The “extended enterprise” is blurring the traditional corporate boundary. This is the knowledge economy. In this environment, the ability to effectively manage through change, develop the workforce, leverage knowledge, and deliver training across the extended enterprise creates a competitive advantage and supports long-term business success.

For the training department, a talent shortage translates into an increased need to develop workplace competencies, solve real business issues, improve job performance, and align the workforce with business objectives. To achieve results, the training organization must be tightly aligned with human resource operations and be able to track and report on the human and financial results of their initiatives. The challenge is to seamlessly connect skill and competency profiles, learning objectives, performance and succession planning data, employee development plans, training metrics, and financial tracking with the LMS.

For learning to be pervasive and deliver the required results, the bounds of learning technologies must be extended and embedded into everyday business processes. Learning can be targeted and aligned with the achievement of business objectives when integrated with enterprise applications such as HR, CRM, supply chain, and finance. The LMS is at the core of the learning technology infrastructure required to manage and deliver enterprise learning. It is from this center that all learning delivery is launched and tracked. It is to this system that all other learning technologies and enterprise applications must be integrated.

The true challenge of this endeavor becomes apparent when we consider the numerous and diverse systems and processes that need to be integrated, the cost of connecting and maintaining integrations across the diverse systems, and the current state of transition in the learning technology market today. The need for a well-constructed, flexible, and cost-effective LMS integration approach is critical.

PeopleSoft ELM, Human Resources Management System (HRMS), and Financial Management System (FMS) solutions deliver the in-depth level of integration required to achieve business results. Addressing these challenges, PeopleSoft developed PeopleSoft ELM with an integration strategy founded on:

- Accommodating changes quickly and cost-effectively.
- Connecting with multiple technology platforms without requiring platform changes.
- Seamlessly connecting all the applications across the learning infrastructure.
- Delivering all these features with a built-in integration framework “out of the box.”

PeopleSoft ELM, Human Resources Management System (HRMS), and Financial Management System (FMS) solutions deliver the in-depth level of integration required to achieve business results

PeopleSoft Integration Broker intelligently transforms and routes data across business processes regardless of the underlying technologies

At the core of the PeopleSoft ELM Integration Model is the PeopleSoft Integration Broker, the hub through which all applications are connected. Designed to integrate both PeopleSoft and external applications, PeopleSoft Integration Broker intelligently transforms and routes data across business processes regardless of the underlying technologies. It includes prepackaged and vendor-maintained integration points and interoperates with legacy integration investments. This proven and well-executed integration strategy provides true value that supports organizations, for the long term, through the ever changing technology landscape.

PeopleSoft ELM exceeds the boundaries of traditional learning management solutions. Oracle understands the nature of an enterprise-level solution and the underlying technologies and vision required to develop and sustain a long-term client solution. This solution not only meets the needs of the independent training department with best-in-class LMS functionality but also supports the ongoing evolution of a learning organization with a market-leading integration approach that facilitates an organization's ability to address its enterprise training needs in the knowledge economy.

The PeopleSoft ELM integration strategy:

- Supports the achievement of overall business objectives and maximizes the ROI of learning.
- Improves business opportunities and relations across the extended enterprise with customers, suppliers, and other business partners.
- Minimizes investment risk, addresses future system requirements, and supports long-term growth by remaining flexible, adaptable, and easily upgradeable.
- Improves decision-making capability by delivering better, more accurate information across enterprise systems.
- Reduces total cost of ownership by leveraging existing technologies, platforms, integrations, and skill sets.
- Provides a Service Oriented Architecture for ongoing technology integration capability

This white paper examines PeopleSoft ELM's ability to effectively address the requirements for integration with the PeopleSoft suite, other enterprise applications, diverse learning technologies, and learning content - all with a comprehensive enterprise perspective and vision for the future.

My Learning

Search Learning Catalog

Select Search Category: [Activities](#) [Catalog Items](#) [Programs](#) [All](#)

Search the Catalog:

[Advanced Search](#) [Browse Catalog](#) [Request New Learning](#)

My Learning Activities					Customize	1-5 of 5
Title	Type	Status	Date	Action	Launch	
Writing Concisely and Accurate	IBS Self Paced Learning	<input checked="" type="checkbox"/> Enrolled	02/20/2007	<input type="button" value="Drop"/>	<input type="button" value="Launch"/>	
The Negotiation Process	IBS Self Paced Learning	<input checked="" type="checkbox"/> Enrolled	06/23/2003	<input type="button" value="Drop"/>		
Navigating the Change Process	IBS Self Paced Learning	<input checked="" type="checkbox"/> Enrolled	06/23/2003	<input type="button" value="Drop"/>		
Professional Development	Curriculum	<input checked="" type="checkbox"/> Registered	05/27/2003	<input type="button" value="Drop"/>		
Basics of Management	Curriculum	<input checked="" type="checkbox"/> Registered	05/27/2003	<input type="button" value="Drop"/>		

[All My Learning](#)

My Learning Objectives						Customize	1-4 of 4
Title	Proficiency	Status	Target Completion	Assigned By	Learning		
Sales and Marketing	<input checked="" type="checkbox"/>	In Progress		William Lee	The Negotiation Process	<input type="button" value="Delete"/>	
Adaptability to Change	<input checked="" type="checkbox"/>	In Progress		William Lee	Navigating the Change Process	<input type="button" value="Delete"/>	
Managerial Efficiency	<input checked="" type="checkbox"/>	In Progress		William Lee	Basics of Management	<input type="button" value="Delete"/>	
Communications Skills	<input checked="" type="checkbox"/>	In Progress		William Lee	Professional Development	<input type="button" value="Delete"/>	

[All My Learning Objectives](#)

*Display DIF for Job:

Figure 1: The ELM learner homepage

THE CHALLENGES

Market Trends

Over the last few years, traditional training departments have been undergoing a radical transformation as companies have come to recognize the impact of Learning and Development on the bottom line. This transformation, from a back-office department to a strategic business partner that supports business success, demands a more rigorous approach to learning. The resulting impact on the training department and its selection of learning technologies is dramatic.

As organizations face talent shortages, a new approach to the corporate learning and development strategy is essential. The organizational development demands are multiplied when we consider the increased global competitive pressures, the rapid

Learning and Development impact the bottom line in every organization

**LMS integration strategy
is more important than ever**

obsolescence of knowledge, the emergence of the knowledge economy, the need for cost reduction, and the ever increasing pace of business change.

To capitalize on the human potential within an organization and leverage enterprise knowledge resources, the bounds of learning technologies must be extended and embedded into everyday business processes for the creation and sharing of knowledge. For true success, however, this approach must be taken one step further. The emerging knowledge economy demands that the entire value chain (including employees, suppliers, customers, partners, and distribution networks) be incorporated into the learning process. Finally, the learning strategy must encompass not only today's requirements but also must take into consideration the vision and potential of tomorrow: new business partners, corporate mergers, new markets, new technologies, and more.

Throughout the evolution of the learning market, the LMS has remained at the heart of the learning business. As the glue that holds learning technology components together, the LMS delivers learning and required results to the organization. In the LMS industry, where the feature and function capability across the competitive landscape has reached an equilibrium, the need to extend the learning strategy beyond the traditional corporate boundaries is growing. The underlying LMS integration strategy is more important than ever.

Consider, for example, a new-product launch. People across the organization are affected and require updated training on how to deal with the new product. Some of these internal training demands include sales training on product features, functions, and benefits; in-depth product maintenance training for service engineers; troubleshooting and product issue training for call center customer service representatives; and tracking of related client product issues that may trigger further training requirements.

External training requirements place demands on the organization that can include product usage training for customers and certification training for distribution channels that are involved in installing, servicing, and selling the product.

After examining the diverse system and process integrations needed to address these training requirements, the true challenge becomes apparent. HR systems house core employee data such as skill and performance information to drive training needs. CRM systems provide customer data for extending and delivering training to customers. Supply chain and vendor management tools track relationships with suppliers and distribution channels. Learning technologies required to create and deliver the training content to the appropriate audience abound. Compounding the complexity, each of these technologies develop at a different pace, must adhere to evolving standards, and could be replaced at any time by a new solution better suited to meet corporate objectives.

The creation, delivery, and management of learning content are multifaceted, requiring numerous and differing technologies to achieve a desired learning objective. The greatest challenge facing organizations today is that the present

learning technology market is in flux. Changes are rapid, and new players are emerging, while others collapse or join forces. Learning technologies are converging with other management information tools. There are simply no clear leaders or industry standards established in many of these arenas. Furthermore, corporations need a variety of learning technologies, not one silver bullet, to meet their learning and corporate objectives.

Integration Requirements

With application integration costs consuming an increasing percent of the overall IT budget, it is imperative to have a well-constructed, enterprise-wide LMS integration strategy in place

Integration is essential. Streamlining learning processes, through deep integration across systems, delivers bottom-line results, whether it's bringing new products to market faster, increasing sales, or reducing product installation and service problems. With application integration costs consuming an increasing percent of the overall IT budget, it is imperative to have a well-constructed, enterprise-wide LMS integration strategy in place.

To navigate for the long term through changing currents, the LMS must provide an open, adaptable integration infrastructure that specifically addresses the following integration points:

- Integration with enterprise applications
- Integration with diverse learning technologies
- Delivery of learning content

Only when the LMS can integrate with multiple enterprise applications and learning solutions in a cost-effective, flexible manner is the organization prepared to address the matrix of enterprise learning requirements and deliver real business results in the long term.

To achieve true enterprise learning, an LMS must be able to integrate easily with any enterprise application or learning solution within and beyond the enterprise, including HR, finance, supply chain, and customer relationship management. When enterprise applications are connected to the learning infrastructure, learning and development demands from any area of the business can automatically trigger a learning event, business processes are streamlined, and information transfer is timely and accurate. It is in this way that learning can be effectively aligned and prescribed to achieve overall business objectives.

THE PEOPLESOFT INTEGRATION SOLUTION

The PeopleSoft ELM integration framework provides flexibility for interchanging applications, managing upgrades, and preserving existing integration investments across the extended enterprise.

For an organization to be an effective “learning enterprise,” disparate systems within the organization must work together seamlessly. Balancing the competitive needs of the business with the internal resource limitations of IT, the PeopleSoft integration strategy is designed around a hub-and-spoke integration model.

In the past, connections between applications were created by hard-wiring direct connections between systems. We call this approach point-to-point integration. Organizations realize the downside to this paradigm when they update an integrated system or contemplate adding a new system to the environment. The point-to-point model requires each and every connection to be individually and programmatically created, which means a single addition to the network causes a corresponding, and exponential, development effort.

Conversely, the hub-and-spoke model allows a new application to integrate once to a hub and leverage the existing connections, rather than create new ones. This new paradigm is possible because every system communicates directly to the hub, allowing it to do the work of translating and routing messages between systems by using predefined rules and definitions.

With PeopleSoft integration technologies, an application is integrated once to the hub. Other applications simply publish data to that application or subscribe to receive data from that application via the hub. No additional work is required. This capability provides tremendous time savings from a development, time-to-market, and maintenance standpoint.

Additionally, the hub-and-spoke paradigm adds adaptability value to the ever changing learning arena. For example, if the application changes the way it stores or transmits information, use of the hub-and-spoke model dictates that only the logic within the hub needs to be altered. None of the other systems will even be aware of the modification, and, most important, they won't need to be altered in any way due to the change.

PeopleSoft ELM was developed with a focus on both external and internal integration. Internal integration is defined as two products from the same vendor functioning seamlessly together. There are many integration points between PeopleSoft ELM and other PeopleSoft products.

With PeopleSoft ELM's integration framework, complex connections between legacy systems, multiple enterprise applications, learning technologies, and training partners are easily created and maintained. The hub-and-spoke framework eliminates the need for expensive and time-consuming point-to-point integrations between applications and provides an infrastructure focused on reusability and performance. This framework is the foundation on which the organization can transform itself into a learning organization, addressing the need for continuous development across the extended enterprise. Every area of the organization can realize the benefits of a well-constructed integration strategy. Please see Appendix A for integration opportunities and impact.

**PeopleSoft ELM was developed with a
focus on both external and internal
integration**

PeopleSoft ELM technology delivers a true enterprise learning infrastructure that enables customers to move from learning efficiency to learning innovation in the support of broader corporate objectives

PEOPLESOFT ELM INTEGRATION BENEFITS

The PeopleSoft ELM integration strategy provides customers with robust and flexible integration capabilities. These capabilities include the best integration within the PeopleSoft application family as well as with external entities.

PeopleSoft ELM technology delivers a true enterprise learning infrastructure that enables customers to move from learning efficiency to learning innovation in the support of broader corporate objectives.

The PeopleSoft ELM integration strategy:

- Aligns learning initiatives with business objectives and competency requirements, supports the achievement of overall business objectives, and maximizes the ROI of learning by:
 - Tracking the results of learning investment—and their impact on business results—through financial systems, thereby providing an enterprise perspective on learning and development requirements, programs, and results.
 - Allowing a learning event to be triggered from any management solution such as CRM, HR, or supply chain.
 - Improves business opportunities and relations across the extended enterprise by:
 - Extending learning offerings beyond traditional corporate boundaries to improve supplier and partner skills and relationships; increase customer satisfaction; and better educate distributors, installers, and service providers.
 - Quickly integrating new customers, partners, and suppliers to ensure rapid and real-time knowledge transfer across the extended enterprise.
- Improves decision-making capabilities by:
 - Delivering better, more accurate information across enterprise systems. The elimination of redundant systems and duplicate data records reduces the risk of outdated or corrupted data affecting business decisions.
 - Simplifying data migration and providing real-time data synchronization with PeopleSoft HRMS.
 - Delivering immediate updates and validation of transaction entry to the finance department.
 - Eliminating lag time between application changes to PeopleSoft Enterprise HRMS, FMS, or ELM and integration updates typical of external vendor integrations. The delivered integration between PeopleSoft ELM, HRMS, and FMS provides immediate usability at installation and when new versions are released.

- Minimizes investment risk, addresses future system requirements, and supports long-term growth by:
 - Remaining flexible, extensible, and easily upgradeable. Learning Management integrations can rapidly adapt to changing business demands and incorporate new technologies as they evolve. The ability to change technologies without losing all previous integration investments reduces the risk of market uncertainty as new technologies appear while others merge or disappear from the market.
 - Reducing the risk of being locked into outdated learning technologies. Learning teams can take advantage of the newest learning technologies, confident that the integration framework will support them. The simplicity of Virtual Class integration is a perfect example of Oracle's commitment to reducing the risk of technology selection in a rapidly changing market. Any Virtual Class provider can be implemented with the same integration structure, without requiring any new coding.
 - Supporting modular deployment. This capability allows organizations to evolve their learning initiatives at their own pace, select from an array of learning technologies, and have confidence that the PeopleSoft ELM integration framework will support them for the long term.
- Reduces total cost of ownership by:
 - Leveraging existing investments in PeopleSoft and other technologies, platforms, integrations, and skill sets. By standardizing the integration approach with a single toolset across the learning ecosystem, the PeopleSoft ELM approach reduces training requirements and implementation time frames, simplifies maintenance, and increases adoption rates.
 - Simplifying integration development and maintenance and maximizing reusability through the use of the hub-and-spoke model and XSLT transformation layer.
 - Delivering the complete integration solution out of the box with PeopleSoft ELM. No additional platform investment is required.
 - Prepackaging integration points to HRMS and FMS. Oracle-developed and maintained integrations dramatically reduce the cost of implementation and maintenance while improving business processes and productivity. Furthermore, the integration is non-intrusive.
 - Providing SOA capability – today.

Effective integration with a variety of external systems allows an organization to extend learning and development initiatives across the corporate value chain to suppliers, customers, distribution partners, and even public institutions, regardless of the underlying technologies.

PROOF POINTS

PeopleSoft ELM and PeopleSoft HRMS Integration

Via integration with HRMS, PeopleSoft ELM customers benefit not only from current and valid learner profile, job, manager, and competency data but also from a deep and detailed understanding of the learner

Via integration with HRMS, PeopleSoft ELM customers benefit not only from current and valid learner profile, job, manager, and competency data but also from a deep and detailed understanding of the learner. Data such as organizational structure, country, state, currency, position, and role, along with many other data elements, provides organizations with the ability to meet their own unique learning requirements. For example, these fields may be exposed and used for refined searches, reporting, and more in-depth analyses. Integration points include:

- Learners can update their HRMS profile by completing learning courses and certifications.
- Learners can view their Learning Objective gap analysis based on Job Role Objectives.
- Learners can view the approval chain and status for each step.
- Learners can have multiple jobs.
- Learner can view his or her DIF (Droit Individuel à la Formation), per French Training Law Requirements.
- Administrators can utilize shared data:
 - Catalog Types/Items.
 - Job Profiles.
 - Person Profiles.
- Administrators can prepare the 2483 legal report, per French Training Law Requirements.
- Administrators can manage Training Hours (DIF and hours outside the working schedule) and the payroll impact, per French Training Law Requirements. Note: PeopleSoft HRMS is integrated with PeopleSoft Global Payroll for France to provide this capability.
- Administrators can utilize a shared Approval Monitor to expedite the approval process.
- Administrators can define approval requirements (including Multi-Level Approvals and Special Approvers) for Activities, Programs and Supplemental Learning requests.

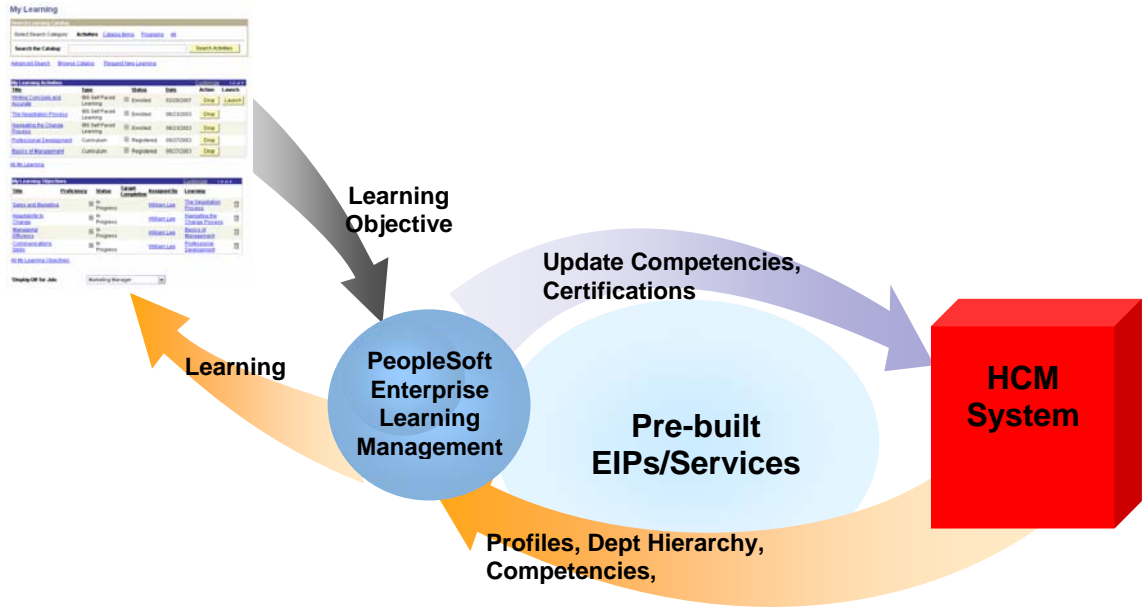


Figure 2: Example PeopleSoft ELM and HCM Integration

The profile integration is particularly valuable when you are pursuing an enterprise Talent Management strategy. The HCM system is the single place of record for all profile information, including job profiles and person profiles. Other Talent Management applications such as PeopleSoft Talent Acquisition Management (TAM) make use of the profile information as does ELM. The single repository of profile information provides efficiency as well as the ability to leverage the HR information investment by using the information in multiple other applications.

For customers needing external integration, PeopleSoft ELM is both a consumer and provider of SOA Remote Services. Please see Appendix D for a complete listing of the SOA services delivered with PeopleSoft ELM.

PeopleSoft ELM and PeopleSoft ePerformance (Performance Management) Integration

Workforce performance management is one of the fastest growing segments of the Human Capital Management (HCM) software market. PeopleSoft ePerformance can help your organization retain and motivate top talent by gaining insight into top performers across the enterprise. By streamlining the performance management process into one web-based, real-time solution your organization can cut costs. The benefits of an integrated Learning and Performance solution include:

**Learning and Performance
are Better Together**

- Learners may locate programs and activities to help them meet a particular performance objective.
- Learners have visibility to learning within the context of a performance evaluation.
- Learners have learning objectives automatically created based on gaps between person profile & current job profile.
- Learners have their person profile automatically updated upon creation of learning plan, course enrollment, and course completion.
- Managers view the status of planned, current, and historical learning within the performance evaluation process.
- Managers assign learning based on development objectives.

PeopleSoft ELM and PeopleSoft Enterprise Financial Management (FMS) Integration

PeopleSoft ELM leverages the proven PeopleSoft General Ledger solution to create a sub-ledger that streamlines the financial aspects of the learning business. It provides the ability to allocate charge-backs between departments; track purchase orders; validate training unit balances; and process checks, credit cards, and cash payments on account. The ability to drill down into the financial details of the sub-ledger, such as business units, departments, projects, and programs, enables organizations to more efficiently track the impact of investments in training and employee development on operating and financial results. Please see Appendix B for a complete listing of the delivered PeopleSoft FMS EIPs.

PeopleSoft ELM and Virtual Classroom Integration

To maximize the flexibility and usability of the system out of the box, PeopleSoft ELM delivers special pre-built integrations for Virtual Classrooms. This integration is based on Service Oriented Architecture Protocol (SOAP), a protocol for exchanging XML-based messages.

PeopleSoft ELM's innovative, industry-leading integration process allows clients to easily integrate their personal choice of Virtual Classroom technology. By creating an agnostic interface using metadata-driven configurations, customers can add another Virtual Classroom vendor without any additional effort. The PeopleSoft Web Services integration framework uses the XSLT transformation layer to convert the Virtual Classroom vendor configurations to the appropriate PeopleSoft ELM messages to send and receive data.

All transactions are initiated through the LMS and automatically passed to the Virtual Classroom vendor. No double entry is required.

PeopleSoft ELM delivers pre-built integrations for Virtual Classrooms based on Service Oriented Architecture Protocol (SOAP) standards

This integration process is built to work seamlessly with Oracle Web Conferencing and additional vendors such as WebEx, Centra, and Interwise

This integration process is built to work seamlessly with Oracle Web Conferencing, providing you more value from your Oracle investments. The SOAP framework, however, is generic enough that no new code is required to support additional vendors such as WebEx, Centra, and Interwise. A single Web Service supports all Virtual Classroom vendors, versus the time-consuming and costly alternative of using proprietary interfaces with each individual vendor. If changes to the existing vendor configuration are required, the customer simply uploads the new configuration file provided by the vendor without any code changes. With the integration broker managing the connection, the following SOAP transactions are supported:

Message	Description
WEBCASTCREATESESSION	Creates a webcast session on the vendor system.
WEBCASTEDITSESSION	Modifies a session previously created with Create Session.
WEBCASTREMOVESESSION	Deletes a session on the vendor system.
WEBCASTGETRECORDEDURL	Gets a Recorded URL from the vendor system.
WEBCASTENROLL	Enrolls users in a session.
WEBCASTUNENROLL	Unenrolls users from a session.
WEBCASTGETLEARNERURL	Retrieves the URL for the learners.
WEBCASTGETHOSTURL	Retrieves the URL for the instructor.
WEBCASTADDUSER	Adds learner as the user to the Webcast system.
WEBCASTEDITUSER	Modifies an existing user on the vendor system.
WEBCASTGETGRADES	Retrieves the scores of all the students for a single session.
WEBCASTGETPOLICYTOKEN	Used to request RTC Authentication Service tokens using a valid Session Token.
WEBCASTAUTHENTICATION	Used to request RTC Authentication Service tokens using a valid Session Token.
WEBCASTGETREDIRECTURL	Gets the URL to redirect the current user to.

PeopleSoft ELM and Calendar Integration

PeopleSoft ELM also delivers special pre-built integrations for Calendaring based on XML-based SOAP messages. This integration process is built to work seamlessly with Oracle Web Conferencing, and is generic enough that no new code is required to support other vendor solutions.

Enrollment events create calendar entries for the learners

These services are designed for use during the learning enrollment event to create calendar entries for the learners. During create session upon assigning an instructor this service can be initiated to create calendar entry for the instructor. Similarly, the SOAP integration can remove the calendar entry for the learner if the learner drops the activity session. With the integration broker managing the connection, the following SOAP transactions are supported:

Message	Description
CalendarCreate	Creates an entry into the target calendar system of an activity session.
CalendarDelete	Deletes an entry from the target calendar system of an activity session.

PeopleSoft ELM is certified to meet both AICC and SCORM industry standards

PeopleSoft ELM and Learning Content Integration

Learning content is the most diverse element within the learning ecosystem. There are customer-specific, industry-specific, government-regulated, management-related, technology-focused, degree-related, and personal development content options, to name a few. Furthermore, this content is continuously updated, developed, and delivered with ever changing technologies to meet new market needs. Content derived from any tool, simulation, or assessment (traditional authoring tools and content management systems included) is easily launched and tracked by PeopleSoft ELM.

PeopleSoft ELM is certified to meet both AICC and SCORM industry standards to support the broadest range of off-the-shelf and custom content. Furthermore, PeopleSoft ELM supports the launch and tracking of the completion status of noncompliant learning content. Finally, to better facilitate integration, the solution enables customers to pre-validate AICC content structure at the time of course setup in PeopleSoft ELM. Please see Appendix C for a complete listing of supported AICC and SCORM commands.

The PeopleSoft ELM integration framework is easily extended to incorporate new enterprise applications cost-effectively

How it works – The PeopleSoft Integration Broker

The hub-and-spoke Integration Model allows for new applications to integrate once to the hub and leverage the existing connections. This means that the integration structure easily supports a modular integration process. As a business's learning strategies evolve and mature, the PeopleSoft ELM integration framework is easily extended to incorporate new enterprise applications cost-effectively. The PeopleSoft Integration Broker hub provides the building blocks on which to grow.

From this broader perspective, the opportunities for improving and developing business opportunities are endless. You can deliver new products to market more quickly, improve customer product knowledge and satisfaction rates, strengthen vendor relationships, and achieve overall organizational development objectives.

With a seamlessly integrated learning process across the enterprise, you maximize your return on investment for learning initiatives.

Regardless of the underlying technology, PeopleSoft Integration Broker connects an array of management solutions. The broker supports Web services and numerous other integration standards (such as Java, MQSeries, SOAP, and file interfaces). Pre-built connectors (such as JMS, HTTP, FTP, and e-mail) and development tools to build custom integration points support communication between PeopleSoft ELM and any other solution. To complete the integration, the mapping schema within the XSLT transformation layer is updated, transforming the incoming system message into the PeopleSoft ELM-required format.

Integration efforts with external HR and financial systems are substantially reduced by leveraging enterprise integration points delivered with PeopleSoft ELM. Leveraging the application integration broker technology, PeopleSoft ELM provides prepackaged, Web Service-ready Enterprise Integration Points (EIPs) for integration with PeopleSoft Enterprise HRMS, FMS, and Enterprise Portal. Additionally, Oracle provides the tools to build new integration points to communicate with other PeopleSoft applications as needed. Please see Appendix B for a complete listing of the EIPs delivered with PeopleSoft ELM.

System-to-system integration is a critical element of any enterprise integration backbone, and the hub-and-spoke model is the preferred integration paradigm. PeopleSoft Integration Broker is the hub used to handle those complex system-to-system interactions, offering a solid foundation for integrating applications. It intelligently transforms and routes requests across business processes, includes prepackaged integration with business applications, and interoperates with legacy integration methodologies.

PeopleSoft Integration Broker is designed to integrate with PeopleSoft and non-PeopleSoft systems, regardless of the underlying technology. Thus, it provides a variety of tools that allow customers to address any integration scenario, including:

- **Web services:** Web services represent the most flexible of the integration options. They are the foundation of the integration approach throughout the PeopleSoft ELM solution. PeopleSoft Integration Broker facilitates the use of Web services for interacting with other systems, as well as exposing the business logic in any PeopleSoft applications. The independent nature of Web services simplifies the integration process, lowering the cost of integration and making it easier to integrate applications than techniques used in the past. Further, implementing integrations with Web services solves cross-platform integration issues. These Web services can be invoked from applications developed in Visual Basic, Java, C/C++, Perl, and so on.
- **Enterprise application integration (EAI) vendors:** Oracle has strong partnerships with enterprise application integration (EAI) vendors. PeopleSoft Integration Broker offers EAI users a choice of integration to PeopleSoft Web

PeopleSoft Integration Broker is designed to integrate with PeopleSoft and non-PeopleSoft systems, regardless of the underlying technology

services, Java Messaging Service (JMS), or whatever satisfies their preference. Regardless, existing integrations and skill sets are leveraged, not lost.

- **MQSeries integration:** Oracle recognizes that many companies have standardized on IBM MQSeries for messaging and integration technology. By using PeopleSoft Integration Broker, PeopleSoft ELM can invoke mainframe services (MQSeries) as Web services via a Java Messaging Service (JMS) connector. This capability allows both asynchronous and synchronous integration. Previous investments are not lost.
- **Component interfaces:** Component interface technology is used to address API-based synchronous integration from third-party applications to PeopleSoft applications. It is also used as a means to apply business logic to application messages.
- **File interfaces:** Although the once predominantly file-based integration methodologies have been outpaced by more-extensible technologies, the option to use flat files still exists to meet certain integration needs. Oracle delivers a robust file-processing capability to support existing and new integrated processes.
- **Java integration:** Java is a common approach used to address integration. Oracle offers a bidirectional PeopleSoft/Java interface. PeopleSoft programs can invoke Java objects, and the Java objects can invoke PeopleSoft objects.
- **SOAP messaging:** Service Oriented Architecture Protocol (SOAP) is a protocol for exchanging XML-based messages, in which one network node (the *client*) sends a request message to another node (the *server*), and the server immediately sends a response message to the client. PeopleSoft ELM uses SOAP messaging for integration with external systems including calendaring and web conferencing systems.

PeopleSoft Integration Broker is composed of four key elements: connectors, intelligent routing, transformation, and a development and monitoring environment

To deliver this level of integration flexibility, PeopleSoft Integration Broker is composed of four key elements: connectors, intelligent routing, transformation, and a development and monitoring environment.

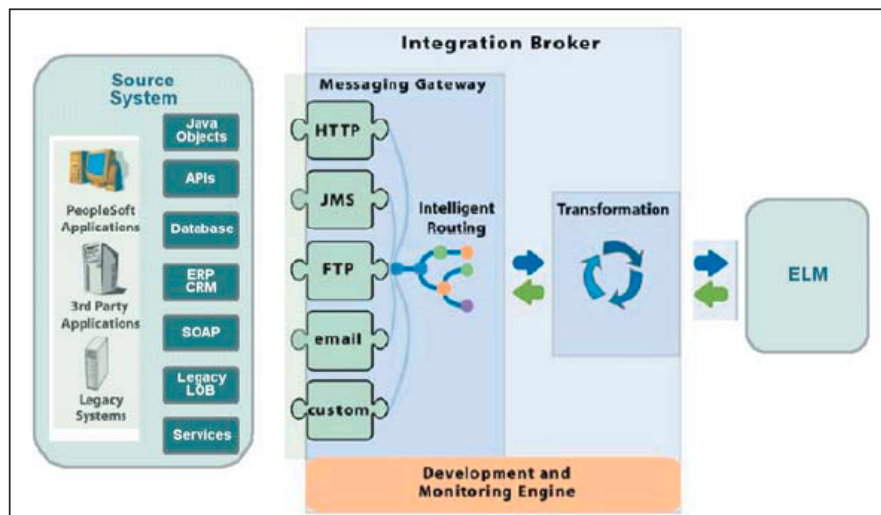


Figure 3: PeopleSoft Integration Broker Concept

Connectors

Connectors interface PeopleSoft Application Messaging with other technologies

Connectors are a means to interface PeopleSoft Application Messaging with other technologies. Although Web service interfaces are growing in popularity, not all applications support them. Web services aren't always the answer to building a collaborative business process. Connectors bridge that technology gap to transport your data to the subscribing system.

Messages entering or leaving PeopleSoft Integration Broker pass through a single mechanism, known as the gateway. The gateway is delivered with pre-built connectors to receive and transmit traffic by using various standard protocols, including HTTP, JMS, e-mail, and FTP. It is possible to send SOAP messages through all these protocols.

Oracle also provides an environment for the development of custom connectors to use other interface technologies and protocols.

Connector example: The records for vendors that require training may be housed in a legacy mainframe system, or the customer files for customers who attend training may be stored in a different CRM package. The connectors bridge the gap and allow these different platforms to communicate with PeopleSoft ELM.

Intelligent Routing

Routing ensures that the incoming message is delivered to the right receiving system

Routing ensures that the incoming message is delivered to the right receiving system(s) and that the requesting system has the appropriate security privileges.

PeopleSoft Integration Broker also understands if the message needs to be sent in real time (synchronous) or if it is deferrable (asynchronous) and manages the queuing of deferrable messages. The queue can also be set up to handle message

delivery based on predefined rules that assign differing priorities to message or system types (for example, always handle customer order data messages first).

Intelligent routing example: The data from PeopleSoft ELM must be directed to the appropriate receiving system. When an employee completes a class, data can be sent to the HR system to update competencies and department billing data must be sent to the finance system to handle the interdepartmental chargeback. Routing directs these messages to the appropriate system.

Transformation

Transformation translates a message between different systems

Transformation is required to translate a message between different systems.

This process is much like translating a sentence from one language to another. The meaning of a sentence is the same in French and English, but unless someone translates it from French to English, an English speaker won't understand the message. Similarly, PeopleSoft Integration Broker takes a system message and converts the data from one system's format into another.

PeopleSoft ELM's transformation logic is defined by use of XSLT, which is an open standard for data mapping. With PeopleSoft Integration Broker, mapping definitions are stored in one place. If the data model of an application changes, these changes are reflected outside the PeopleSoft ELM application. Having fewer points to change means lower cost in maintaining integrated systems.

Transformation example: From our course completion example earlier, if your finance system has a different name or structure for departmental billing codes, the XSLT transformation engine takes the code from PeopleSoft ELM and converts the information so that it is then loaded into the appropriately named field in the finance system.

Development and Monitoring Environment

Integral to the PeopleSoft Integration Broker architecture is a development and monitoring environment.

Business analysts and system analysts use the development environment to map the complex relationships between systems. Developers determine how the broker transforms and routes messages, taking care to understand the various data schemas and business process rules that must be managed.

The monitoring environment provides a dashboard for the entire messaging process

In addition, the monitoring environment provides a dashboard for the entire messaging process, giving the user a picture of all messages that move in and out of PeopleSoft Integration Broker. From this dashboard, administrators can view original messages, transformed messages, and delivery status and perform higher-level operations such as canceling delivery or resubmitting a message.

Development and Monitoring Environment example: "Is anybody listening?" is a fundamental question for any form of communication. Without an understanding of an external system's receptiveness to messages, we could be talking to ourselves

and no one else. The Monitoring Environment of PeopleSoft Integration Broker provides a comprehensive dashboard for identifying the status of those external systems and, ultimately, troubleshooting various symptoms in order to identify whether it is a system-wide or isolated problem.

Furthermore, the Development Environment of PeopleSoft Integration Broker allows for more-flexible integrations. For example, when one or more systems will be upgraded, the Development Environment allows analysts to clone, modify, and/or extend existing communications to support both the existing and new systems' integrations. Upon upgrade, the switch over from the legacy system to the new system can be automated and seamless to users, administrators, and technicians. It is as simple as finishing one sentence and beginning another.

Data Synchronization

To simplify the implementation process and increase data accuracy, PeopleSoft ELM offers two synchronization processes. Used for installation, the new full-sync architecture efficiently loads person, basic, and workforce data directly into the program. Data is transformed to the learning management name structure by use of the PeopleSoft ELM transformation architecture. To improve the speed and accuracy of data installation, data is loaded into staging tables from which an application engine process is run to validate the data and load it into the PeopleSoft ELM application tables. By use of multithread processing, multiple data elements are transported simultaneously, greatly improving performance. Accuracy increases because data errors can be viewed and corrected immediately.

Ongoing data synchronization is handled by advanced near-real-time incremental sync. This solution avoids the pitfalls of true synchronous updates that often lock systems from processing while synchronization occurs.

The product suite's integration means immediate usability at installation and when new versions are released. Unlike external solutions, lag time is eliminated between application changes to HRMS, FMS, or PeopleSoft ELM and integration updates. The holistic view of the product suite means that integration points are maintained and new ones are added with each new release.

CONCLUSION

PeopleSoft delivers an integration strategy founded on accommodating changes quickly and cost-effectively, connecting with multiple technology platforms without requiring platform changes, seamlessly connecting all the applications across the learning infrastructure, and delivering all these features with a built-in integration framework "out of the box."

The delivery of this strategy is through the PeopleSoft Integration Model and PeopleSoft Integration Broker, delivering an integration solution that meets an organization's needs today with the structure and flexibility to grow with them for years to come.

ELM delivers an integration solution that meets an organization's needs today with the structure and flexibility to grow with them for years to come

The PeopleSoft ELM integration strategy supports the evolution of training from a back-office expenditure to a strategic investment, driving business results and building competitive advantage.

APPENDIX A - Organizational Impact of Integration Opportunities

The PeopleSoft ELM integration framework extends the bounds of learning technologies and embeds them in the everyday business processes for the creation and sharing of knowledge. In a variety of ways, this structure affects the entire enterprise. PeopleSoft ELM provides integration of learning into the following processes.

Who's Affected?

Integration Opportunities

Employees

- Learning objectives prescribed from multiple management systems based on performance indicators or other criteria
- Training directly related to individual and corporate development needs
- Quality of learning experience, single sign-on, consistent user interface, improved user acceptance, reduced ramp-up time
- Delivery methods and technologies aligned with the audience, their e-learning maturity, and the overall readiness of the organization

Managers

- Access to information regarding teams' skills, competencies, and learning objectives from a single integrated HR and learning solution
- Learning triggered based on performance review objectives

IT

- Simple creation, deployment, and management of integration points
- Lower cost of ownership, leveraging existing technology skill sets and customizations
- Simplified out-of-the-box implementation
- Reduced cost and time to implement and maintain
- Simplified data migration/transfer and ongoing synchronization
- Preserved integration and technology investment through ability to incorporate legacy systems and diverse management systems into the structure and manage them with the same integration toolset
- Technologies interchanged without major disruption and recoding of integrations
- Balanced infrastructure demands and capability
- Leveraging of other enterprise solutions already in place, such as Web content and document management solutions to manage learning content

Training Department

- Avoidance of redundancy of data tracking and entry; no unnecessary employee record management
- Alignment of training initiatives with corporate objectives and competency requirements
- Detailed financial tracking, accurate costing, and ability to demonstrate training ROI
- Ability to track changes to overall employee competency and skill base
- Immediate validation of accurate data loading
- Business partner approach that supports corporate objectives
- Delivery of business results
- Ability to track impact of learning initiatives
- Enterprise view of training needs, regardless of system
- Maximized return on learning investment
- Variety of tools to best address content and audience needs
- No disruption from learning market changes
- Newest delivery technologies
- Reduced risk of technology orphans in a volatile learning technology market
- Ability to easily address new industry standards as they evolve

HR and Organizational Development

- Streamlined, accurate data transfer
- Single system of record for skills and competencies
- Closed-loop organizational development
- Learning to close competency and skill gaps and track learner progress as new objectives are set and achieved
- Immediate feedback on results
- Performance reviews that drive learning objectives
- Deeper integration between learning and competencies
- Integrity and centrality of competencies for use by multiple business processes, including recruiting, call centers, workforce planning, career and succession planning, resource scheduling, and contractor management
- Control of and insight into the organization's competencies

Supply Chain or CRM

- Learning extended to customers, partners, and suppliers
- Employee training needs triggered by performance indicators or organizational changes
- Employee learning objectives prescribed based on system indicators from customer or supplier interactions
- Training of customers and suppliers triggered based on their profiles, purchasing history, or changes in the CRM or supplier records

Finance

- Streamlined, accurate data transfer, common chart of accounts, and proven ledger structure
- Consistent and effective management of learning as a profit center
- Immediate updates and validation of transaction entry
- Detailed tracking and analysis of learning investments and financial impact
- Consistent, accurate, timely reporting
- Streamlined management of departmental charge-backs, fees, and invoice data

Extended Enterprise

- Technology selections based on best-in-class solutions to meet business needs
- Training prescribed, requested, and tracked beyond the enterprise
- Connection to external partner systems
- Ability to use content created by numerous sources, including custom content from suppliers, partners, and customers

APPENDIX B - PeopleSoft Enterprise FMS and HRMS EIPs

PeopleSoft Integration Broker technology provides these Web Service-ready EIPs:

HRMS EIPs

- Business unit HR, currency, position, state, country, job code, set ID workforce data
- Employee personal data, employee job data, competency setup data
- Rating models, competencies, role competencies, employee competency data
- Employee competencies (inbound/outbound)
- Employee objectives met (outbound)
- Person of Interest (new in 9.0)
- Company (new in 9.0)
- Department (new in 9.0)
- All Learning (new in 9.0)
- DIF Balance (new in 9.0)
- Student Cost Acknowledgment (new in 9.0)
- Training Hours Acknowledgement (new in 9.0)
- Publish Student Cost (new in 9.0)
- Publish Training Hour (new in 9.0)
- Catalog Types (new in 9.0)
- Catalog Item (new in 9.0)
- Catalog Type Properties (new in 9.0)
- Profile Types (new in 9.0)
- Profile Items (new in 9.0)
- Learner Profile Item (new in 9.0)

FMS EIPs: Setup

- Tableset control, SETID initialize, business unit GL, journal generator template accounting entry
- Export accounting entries to GL (outbound)
- Receive journal ID and journal data for accounting entries (inbound)
- Charge back posting to the general ledger and real-time combination editing validation for journal entries

FMS EIPs: Chart Fields

- Account; chart field 1, 2, and 3; class field; product; alternate account; fund code; program code; budget reference; operating unit; project; HR department

Note: For customers, Oracle strives to ensure success with this functional area by providing product-specific User and Implementation guides, functionality-specific Redpapers, and global technical support.

APPENDIX C - PeopleSoft ELM AICC and SCORM Support

PeopleSoft ELM adheres to the AICC and SCORM industry standards to support the broadest range of off-the-shelf and custom content. Furthermore, PeopleSoft ELM also supports the launch and tracking of the completion status of noncompliant learning content. Finally, to better facilitate integration, the solution enables customers to pre-validate AICC content structure at the time of course setup in PeopleSoft ELM.

Certified to Meet Aviation Industry CBT Committee (AICC) Standards

Learning Management offers AICC Level 1 certified tracking of bookmarks, score, session time, and lesson status, along with some optional elements, including objectives status and registering the status of each quiz or mastery of an assignment. AICC courses and PeopleSoft ELM communicate by using HTTP calls that contain the following specific commands:

- The `GetParam` command is sent by the AICC course to get data from the LMS. The following data is requested: student ID, student name, credit, lesson location, lesson status, score, total time, and objective scores.
- The `PutParam` command is sent by the AICC course to return tracking and bookmark data to the LMS for persistence. The following data is sent by the AICC course through `PutParam`: lesson location, lesson status, score, session time, objective scores.
- The `ExitAU` command is sent by the AICC course to indicate the end of the lesson.

The integration framework enables customers to pre-validate AICC content structure at the time of course setup in Learning Management.

Certified to Meet Sharable Content Object Reference Model (SCORM) Standards

PeopleSoft ELM supports SCORM 1.1 compliance and is SCORM 1.2 certified.

The SCORM course and PeopleSoft ELM communicate through a SCORM API by using standard JavaScript calls. The LMS's implementation of the API is responsible for carrying out persistence of tracking data and retrieval of any data requested by the SCORM course. SCORM commands include the following:

- `LMSInitialize` initializes the API.
- `LMSGetValue` gets the value of the parameters: student ID, student name, lesson location, lesson status, score, total time, objective scores.
- `LMSSetValue` sets the value for the parameters: score, session time, lesson status, objectives score.
- `LMSCommit` instructs the LMS to persist the new values in the database.
- `LMSFinish` indicates the end of the lesson.
- `LMSGetLastError` gets the error code.
- `LMSGetErrorString` gets the error string for the error code.

Note: For customers, Oracle strives to ensure success with this functional area by providing product-specific User and Implementation guides, functionality-specific Redpapers, and global technical support.

APPENDIX D - PeopleSoft ELM and SOA Support

The table below lists SOA-based remote services that ELM utilizes:

Service	Service Type	Description
CreateLearningRequestService	Provider	This service is currently called by ELM Enrollment engine. It assigns a learning request for all learners specified in the collection collLearningRequestLearners.
RemoveLrnFromLrngReqService	Provider	This service is currently called by ELM Enrollment engine. It removes learner from all learning requests for the activity specified.
LearningService	Provider	This service is currently called by external systems, i.e. PeopleSoft HCM 9. It provides all completed and current learning information for a given learner.
GetChildrenDepartmentIDs	Consumer	PeopleSoft HCM 9 provides this service to get the children department IDs for a given parent department ID. The service returns as output a list contains the parent department ID as the first list element.
SetPersonProfileItems	Consumer	PeopleSoft HCM 9 provides this service to get the Profile Items from a Person Profile. It takes in the Person -ID and a Profile Type and returns the collection of Profile Items that match the Profile Item ID.

Note: For customers, Oracle strives to ensure success with this functional area by providing product-specific User and Implementation guides, functionality-specific Redpapers, and global technical support.



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