Oracle iLearning 4.2
Product Overview

An Oracle White Paper
January 2003

ORACLE

Oracle iLearning 4.2 Product Overview

PRODUCT SUMMARY

Oracle iLearning is an enterprise Learning Management System that provides effective, manageable, integrated and extensible Internet based learning solutions to anyone, anytime, anywhere, with the added benefit of optional integration with Oracle Corporation's own e-Business Suite. Oracle iLearning brings learners, instructors, content providers and learning stakeholders (e.g. managers) together in a collaborative learning community that can be set up very quickly. It provides the standard capabilities that characterize learning management systems – managing content; prescribing, delivering and tracking learning; and monitoring and managing the learning process – while offering an innovative approach to the processes of learning and administering. With Oracle iLearning, self service access is provided not just for the learner, but also for administration and content management, offering more speed and a lower cost of implementation for managing the learning environment.

Figure 1 Oracle iLearning's Home Page (customizable)

WHY ONLINE LEARNING?

"An organization's ability to learn and translate that learning into action is the ultimate competitive advantage." *[Jack Welch, former CEO of General Electric]*

Globally, organizations are trying to cope with the increasing problems of unfulfilled training needs and limited resources. In today's knowledge economy, an organization must be able to manage, distribute and absorb relevant knowledge in an efficient, fast and inexpensive manner. The benefits of using the Internet as a vehicle for learning are substantial, as outlined in Figure 2 below:

Drivers for Online Learning	Benefits of Online Learning
Pace of change	• Provides additional "just enough" training to keep skills updated. • Ensures quicker time-to-market for product training, so that employees, such as sales staff, are ready sooner. • Enables easier updating and maintenance of courseware. • Offers individualized direction and access to the appropriate resources (based on job role/position).
Skilled labor shortages	• Provides efficient means of re-skilling the workforce. • Self-paced and role-specific instruction enables "just enough" training for individual needs.
Reduction of training costs	• Enables learning to be provided in digestible chunks to a workforce unable to attend a 5 or 10 day class. • Eliminates cost of travel to physical training locations, and cost of employees' time away from day-to-day responsibilities.
Workforce longevity and desire for life-long learning	• Enables re-skilling of employees. • Learners control their own pace.

Drivers for Online Learning	Benefits of Online Learning
Shift to knowledge economy	• Enables rapid distribution of critical knowledge and continuous learning. • Ensures consistent delivery of knowledge and learning resources across the enterprise. • Offers access to best instructors and subject matter experts.
Global workforce	• Delivers learning as a continuous experience versus a time focused event, regardless of location. • Provides anytime, anywhere access in any location around the globe, including home, or a remote office. • Brings learning to people, not people to learning. [Masie Center] • Reduces costs of global material production and distribution. • Analyzes test results to assess learner knowledge, ensuring consistent learning standards across a global organization.
Accountability of training effectiveness	• Provides detailed data about each employee's training progress and performance. • Can integrate with HR applications to update employee's skills inventory. • Automates administration, tracking, and reporting tasks.
Acknowledgment of preferred learning styles, or modalities (visual, auditory, interactive)	• Enables a mix of offerings and collaboration to support cognitive, social and personal learning. • Can provide tailored learning, specifically designed and created for access by an individual learner.

Figure 2 Online Learning Drivers and Benefits

LEARNING IN AN E-BUSINESS

"It took a while for me to understand that changing technology was the easy part of becoming an e-Business. Convincing people to change the way they worked, that was the hard part." *[Larry Ellison, Letter to our Shareholders, Nov 17, 2000]*

A successful e-Business transformation requires a profound change in the technology, the structure, the processes and the culture in an organization. e-Learning needs to be an integral part of every facet of this change – it offers speed, consistency and cost-effectiveness for educating employees, customers, partners and suppliers, who need to be aligned with the changes introduced by the e-Business transformation.

An organization embarking on an e-Learning transformation must deploy on the same infrastructure as the e-Business it supports to be successful. The e-Learning infrastructure needs to be integrated with the back office applications (HR and Financials) and CRM applications – for skills gap analysis to gauging success of initiatives to growing markets and retaining customers, while reducing complexity and risk.

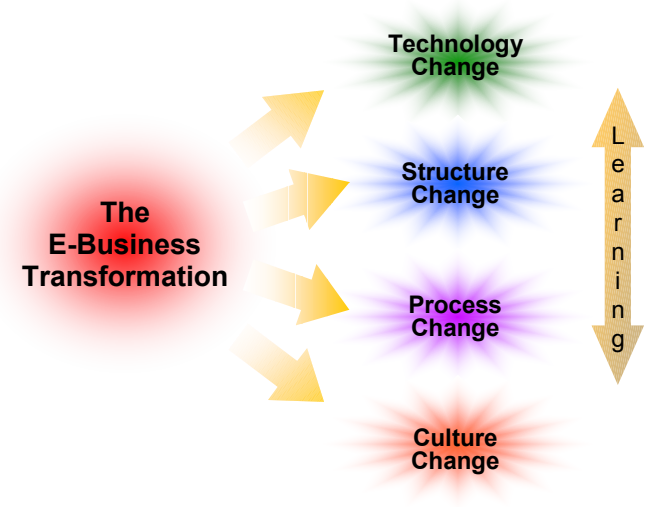

Figure 3 e-Business Transformation

MARKET SEGMENTS

The driving factors and the benefits of online learning, as outlined above, have created an enormous opportunity for training providers. Companies are enthusiastically entering the online education market in many guises, which can be broadly broken up into content, technology and services.

Figure 4 shows the breakdown of the market and product segments for online learning. The content providers author and publish courseware (both off the shelf

and custom courseware) for online delivery in varying degrees of sophistication. The market for technology is focused primarily on providing authoring tools, delivery platforms, and learning management systems (in a myriad of flavors). Learning service providers offer a variety of learning-related services from hosting to aggregating and distributing content, and bundling additional services targeting specific market segments. The line between what is content, infrastructure and services is blurring as the online learning market continues to mature.

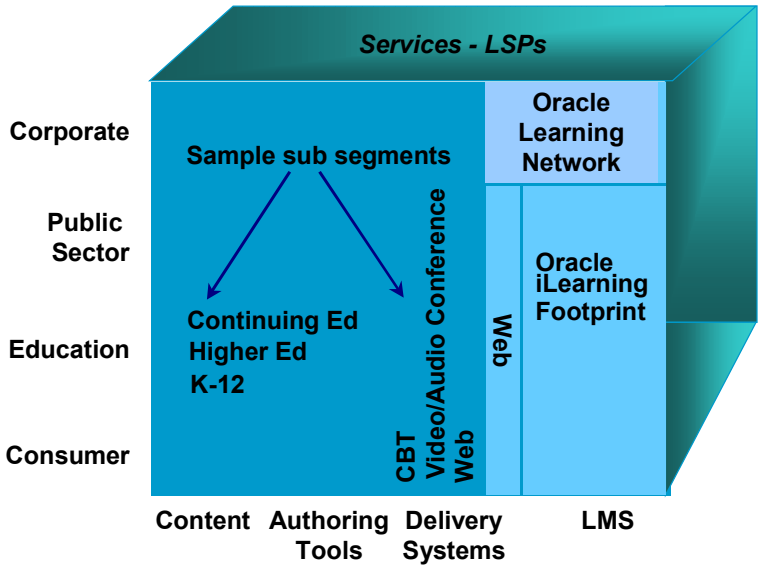

Figure 4 Online Learning Market and Product Segments

LEARNING MANAGEMENT SYSTEMS

Today's training organizations have an urgent need to create an effective online learning environment. The goal is to provide a learner-centric system that supports scheduled, self-paced and blended learning. By taking advantage of the Internet, it becomes possible to go beyond formal learning styles. In addition to pre-defined courseware modules, learners can access more dynamic and interactive content on the web. They can also interact with instructors and collaborate with each other, from anywhere in the world, in real time or asynchronously.

A Learning Management System (LMS) is the technology component of an enterprise online learning implementation. Most learning management systems to date have been very limited in scope, with a focus on offering different flavors of self-paced learning content, or on bringing traditional resource management and

booking functionality to the web. But an LMS needs to go far beyond these simple approaches.

To be truly effective, an LMS must provide an integrated platform for content, delivery, and management of learning. There should be a single user interface that supports a range of users, including learners, managers, content assemblers, instructors, and administrators. The LMS should provide a full range of services for managing both users and content. It should be sufficiently flexible and extensible to meet the needs of diverse organizations, and it should scale to many thousands of concurrent users. In addition, the LMS should complement and integrate with the underlying e-Business infrastructure of an organization.

Any learning management system with this kind of capability will clearly be an extremely large and complex software program, requiring significant technical expertise and IT resources to implement and maintain. In fact an LMS is frequently compared to an ERP system in terms of the complexity and cost of implementation. There is a move towards the Application System Provider (ASP) model, where a third-party manages the IT infrastructure but, unless an LMS is designed from the ground up for this kind of deployment, the costs may still be prohibitive.

ORACLE ILEARNING

Oracle iLearning is an enterprise learning management system, offered as a subscription service, as an outsourced solution, or as a licensed product. The subscription service offers a very convenient and cost effective, corporate-wide ASP learning solution to deliver personalized education on the Web. For large corporations unwilling or unable to take advantage of the ASP approach, Oracle iLearning is also offered as an outsourced solution, where customers pay for their own environment and Oracle manages both the hardware and software, performing any necessary product maintenance. Oracle iLearning licenses are also available to those corporations desiring to implement their own eLearning environment in-house.

The Oracle iLearning application permits learners to interact with content, instructors and peers at their own pace. From a global organization's perspective, Oracle iLearning allows widely dispersed staff to be trained in a consistent fashion, leading to time and cost savings while maintaining corporate standards of quality education. It is currently available in 16 languages – Brazilian Portuguese, Chinese (simplified and traditional), Czech, Dutch, English, French, German, Hungarian, Italian, Japanese, Korean, Polish, Spanish, Swedish, and Norwegian. Oracle iLearning distinguishes itself in the following areas:

- **Speed of Implementation**: Oracle iLearning enables learning communities to be set up very quickly, with low implementation costs and with minimal impact on IT infrastructure. All users of Oracle iLearning (be they learners,

instructors, or administrators) require only a browser to access the Oracle iLearning application. (URL: http://ilearning.oracle.com/, self-register on the site named TryMe)

- **Oracle e-Business Suite Integration*:*** Oracle iLearning is ideal for offering learning at every part of the customer relationship cycle. Oracle e-Business Suite training is provided via Oracle iLearning. This is a good incentive for Oracle Application customers to standardize on Oracle iLearning as their LMS so they can have a single integrated site for all of their learning needs. Oracle iLearning is integrated with the Oracle e-Business Suite using a generic integration framework based on XML/SOAP/AQ technologies.
- **Third Party Systems Integration:** Oracle iLearning provides Web services for integration with existing HR systems.
- **Object Level Access and Security**: Oracle iLearning combines a powerful permissions model and browser accessibility to enable self-service content assembly, management and delivery. The same permissions model also enables managing the instruction, user administration and system configuration/ customization.
- **Effective Online Learning Environment:** Oracle iLearning provides a personalized learning environment for online delivery with learning content tailored to the specific needs of the learner. It also offers integrated learning, blending the best of traditional classroom based training with online self-study and collaboration in a structured manner. Oracle iLearning not only supports the formal learning process, but also enables quick and accurate knowledge delivery for time critical subject matter by enabling end users to learn from the expert, compressing the otherwise lengthy 'knowledge supply chain'.
- **Content Management for Reuse and Syndication:** Oracle iLearning supports the ability to design content once, in granular chunks of information, suitable for reuse across different learning paths that can be personalized to individual users or groups of users. The content can also be 'syndicated' across multiple target populations or learner communities, offering powerful capabilities for learning service providers servicing multiple organizations. The actual authored content can be distributed on one or more content servers that may be located separately from Oracle iLearning, either inside or outside a customer's firewall. You can also create assessment questions once, categorized in test item banks, and reuse them multiple times.
- **Support for Learning Standards:** Oracle iLearning provides very comprehensive support for the IMS specifications – from content packaging to question and test interoperability (QTI) to user specifications – allowing for easy XML based import and export between applications. Oracle iLearning is compatible with the AICC standards for Computer Managed Instruction/Learning Management Systems (CMI/LMS) JavaScript based

APIs. Oracle iLearning also adheres to the SCORM specifications – allowing for a one-click import/export in SCORM format for content.

SPEED OF IMPLEMENTATION

The Oracle iLearning application has been designed from the ground up for delivery as a subscription service, providing powerful features without the complexity of IT administration. This offers a sustainable advantage in the speed and cost of implementation. New communities can be set up very quickly with this model, and multiple independent sites can be hosted on a single installed instance.

The benefits of a subscription service model are evidenced by the number of organizations that are hosted on Oracle iLearning – having full access to the application, and with all the knowledge to administer in a self-service manner – no IT department involved, no hardware to procure, and no software to install or configure!

While the subscription model of Oracle iLearning promises to be the fastest speed of implementation, corporations choosing to implement their own enterprise wide eLearning initiative can install Oracle iLearning in a few hours.

SUBSCRIPTION SERVICE TO MULTIPLE COMMUNITIES

Oracle led the industry in moving from the client/server model to the Internet platform, shifting the complexity of managing applications from the desktop to the IT departments in each organization. The paradigm is shifting again to subscription services, where the technology infrastructure provider manages the application, thus minimizing the impact on your IT infrastructure and staff. Oracle.com offers application services for all businesses to deliver Oracle applications as a service, right to your browser – from the Oracle e-Business Suite Online to subscription services like Oracle Exchange, Oracle Sales Online, and Oracle iLearning.

Oracle iLearning is provided to subscription customers on http://ilearning.oracle.com/. Oracle handles the maintenance of all hardware, software, database security and backups. The flexibility of the architecture enables the actual content to be managed either as part of the Oracle iLearning application, or independently by the customer or content provider, either inside or outside their firewall (see section on Oracle iLearning Architecture).

The subscription service model also allows Oracle, as the technology provider, to be more innovative, offering new features to customers quickly and seamlessly, without having to wait 12-18 months for each new major release. This model ensures that users always have access to the most current features and

enhancements, bypassing the delays and costs of traditional product patches, upgrades, and rollouts.

ORACLE E-BUSINESS SUITE INTEGRATION

Oracle iLearning is ideal for deploying learning at every point in the customer relationship cycle, integrating learning as part of both a pre-sales and post-sales strategy. For example, Oracle deploys courseware for the Oracle e-Business Suite using Oracle iLearning.

This is a good incentive for Oracle Applications customers to standardize on Oracle iLearning as their learning management system, so they can have a single integrated site for all of their learning needs.

The capability to integrate Oracle iLearning efficiently with other Oracle applications has been a key design objective. Because Oracle Applications are developed on a common technology platform and self-service user interface design, this kind of integration is relatively straightforward. In most cases, we define a loosely coupled, XML based integration as the first logical step, followed by a tighter integration as a second phase.

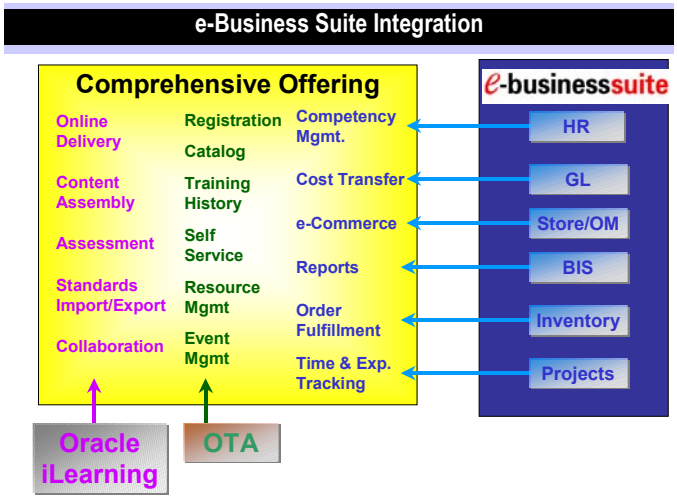

Figure 5 e-Business Suite Integration

User data can easily be exported from Oracle HR (or other non-Oracle HR applications), using the IMS-based XML templates to facilitate data transfer, and imported into Oracle iLearning. The import supports incremental changes (update, delete) as well as bulk insert of data.

Oracle iLearning 4.2 includes integration with back-end financial modules for e-Commerce capabilities, as well as resource management applications (Oracle Training Administration) for managing physical classrooms.

Open APIs enable you to integrate with your own payment server, and, for existing OTA customers, Oracle iLearning functionality is seamlessly accessible to learners within the OTA self-service interface.

E-COMMERCE INTEGRATION

For Learning Service Providers who require customers to purchase one or more offerings, rather than providing free access to their learners as a corporation might do for their employees, Oracle iLearning provides a comprehensive integration solution, with a choice of two business models, depending on whether you require front end or back end integration with your existing systems.

Oracle iLearning does not aim to store or manage detailed financial transactions, for which there are already other well-tried and dedicated applications, including Oracle Corporation's own Order Management software. Instead, Oracle iLearning acts as a fulfillment engine that enables you to manage purchasable orders of learning, and provide automatic access to learners once they have been validated by your financial systems. As mentioned above, the integration between Oracle iLearning and your choice of e-Commerce software, either Oracle or a third party, is achieved through open APIs.

As we build further integration points, the aim of the product is to continue to support industry standards and generic integration solutions through open APIs and reusable solutions, rather than requiring that every customer incur the full cost of a comprehensive one-off integration implementation.

THIRD PARTY SYSTEMS INTEGRATION

Oracle iLearning provides Web services for integration with existing HR systems. Through Web services, Oracle iLearning can automatically maintain user and training history data that exists in external systems. Learners are able to view all their training events from one centralized location.

OBJECT LEVEL ACCESS AND SECURITY

With Oracle iLearning, self-service access is offered not just on the end user side, as with most applications, but also for administration. All components, including content management, user administration, and system administration are completely web-based. No additional plug-ins or client applications are required to use or manage Oracle iLearning.

A powerful capability in Oracle iLearning is the ability to quickly delegate administrative authority to a learning community administrator who can, in turn, further delegate and divide administrative authority to other community members. Learning communities can be created based on learner interests, organizational relationships, or management needs. This is enabled by a fine-grained permissions model and browser-based access to all administrative capabilities, allowing portions

of the administrative process to be doled out, self-service style, to site level administrators in a flexible, secure manner.

For example, if one specific organization has unique education requirements, an HR manager can be responsible for administering all the employees in that organization, while all other employees are handled as a group. Another example is the ability to easily limit the access of individual content assemblers. Each content assembler would have full permissions for the content in their own area of expertise, but would not have permissions to view or modify other content areas, or to view or modify user information.

Most learning management systems establish pre-defined roles. These are typically inflexible and provide access to all users, or all content, or all learning events in the system. Oracle iLearning offers a flexible permissions model to define the responsibility users can have in Oracle iLearning, including the standard roles of content developers, instructors, and site administrators. The ability to grant a granular permission (or collection of permissions) on an object (an individual object or a container of objects) to a user (individual user or groups of users) offers a very compelling solution for administering with Oracle iLearning.

Consider the example of a training department where third-party content is made available to employees. The content developer role can be assigned to each third-party content provider, allowing each to assemble and manage (self-service style) specific content with just a browser. The third-party content provider will not have a view into any other part of the application.

EFFECTIVE ONLINE LEARNING MANAGEMENT

Oracle iLearning offers an intuitive interface for the learner to perform the typical tasks of searching for, enrolling and launching offerings. Oracle iLearning has been designed as a unified means to access and manage multiple modes of learning – from self-paced material (eStudy, recorded eClass or eSeminar, Offline), to scheduled or synchronous classes offline or online (inClass, eClass, eSeminar), to collaborative learning (forum, chat). Figure 6 describes each learning style.

Learning Styles	Description
inClass	Leader-led scheduled physical classroom event
eClass	Leader-led scheduled virtual event (or recorded, self-paced)
eSeminar	Broadcast of scheduled virtual event (or recorded, self-paced)
eStudy	Learner driven self-paced delivery of content over the Web

Learning Styles	Description
Chat/Forum	Collaboration components for ongoing and informal learning
Offline	Learner driven self-paced offline delivery of content (CDROM, Video)
Integrated Learning	Collection of offerings (mixed delivery types), grouped together in a logical sequence to provide an integrated, or blended, learning solution

Figure 6 Learning Styles

Instructors can deliver mixed-mode learning experiences using integrated (or blended) learning offerings, discussed in the next section. Oracle iLearning also enables personalized learning, by allowing fine-grained targeting of specific learning offerings to specific individuals using rules based on reporting structure, group affiliation, and custom learner attributes defined by the administrator.

INTEGRATED LEARNING

Traditional learning models have primarily been focused on an 'either/or' approach to learning, in which learners either attend a set of scheduled classes or take a series of self-paced courses. The former are 'point-in-time' occurrences, with the learning officially considered accomplished at the end of the event. There is typically a gap of a few months between two sets of offerings, for example an introductory and a more advanced level course. The onus is usually on the learner to identify a 'support system' for ongoing learning. In a typical scenario, learners will often informally interact with their peers to discuss topics of interest relevant to this skill set, or will take the initiative to search for discussion groups, study guides etc. ensuring they get from skill level A to skill level B.

Oracle iLearning offers an environment for mixed media learning, in addition to standard scheduled or self-paced learning. This enables you to take advantage of the most appropriate medium for each subject area, even at a topic-by-topic level, by creating an integrated learning event that may span days, weeks or months.

With Oracle iLearning, you can offer an infrastructure that will provide the learner with the ideal environment to get the best of auxiliary materials - such as a library of resources, study guides, assessment tests, hosted labs and recorded lectures - to augment and reinforce the standard classroom content. In addition, a collaborative environment - including standard features like email, forums, and chat rooms - offers interaction with peers or mentors in discussion groups and chat sessions on

contextual topics of interest. This helps to reinforce learners' understanding, aided by a learning community that extends the level of support available during the learning process. Learners are also able to provide feedback on the quality of the learning content and experience through the use of star ratings and free-text comments.

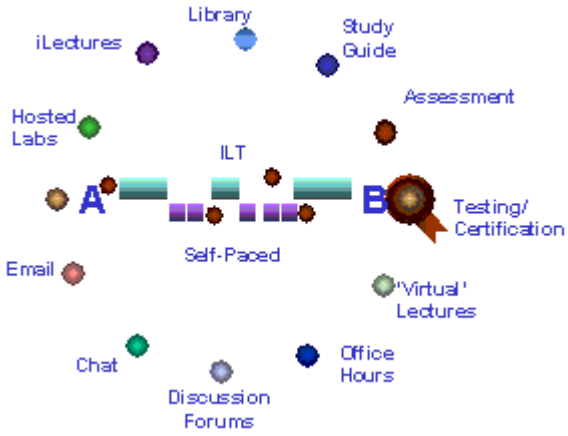

Figure 7 Integrated Learning

Figure 7 illustrates the integrated learning curriculum model that includes mixed-mode learning, combining learning resources to support the acquisition of targeted knowledge and skills.

In effect, learners can benefit from a 'learning ecosystem' that enables them to interact with other learners in the same environment. By taking advantage of the medium of delivery that best meets the learning needs, an organization can also optimize the cost of delivery. This integrated (or blended) learning model has been tested within Oracle University through its popular DBA and Java tracks, and has proved to be highly effective.

PERSONALIZED LEARNING

Oracle iLearning has a very powerful user object model that allows fine-grained targeting of specific learning offerings to specific individuals. Within each community, Oracle iLearning not only models the standard hierarchical user relationships, such as organizations and managers, but also allows for logically grouping users based on some common property that can be established through the use of custom attributes.

Consider the simple example of a custom attribute called 'Job Role'. A learning offering on Budget Planning could be targeted only at those learners whose job role is Senior Manager. Other learners in the site with different job roles would not even be aware of this offering. As another example, a learner may choose to

view offerings available only in a certain language. Learners can set their preferred language (another custom attribute), so that only the offerings available in that language will be made visible to that learner.

When learners log on to Oracle iLearning, they see a personalized home page with course listings and enrollments. A search engine enables the learner to select courses from a personalized online course catalog by searching for offerings, or by browsing category listings. Learners have easy access to the details of a course: its description, outline, additional reference materials, collaboration resources, and any prerequisite courses, if applicable. Oracle iLearning also offers a calendar capability to provide a view of scheduled events for the learner.

Logical user groups can also be created by combining user properties in a variety of ways for finer grained targeting of learning offerings. We will also discuss later how reusable content objects can enable further personalization for the learner.

As traditional corporate hierarchies adapt to modern business needs, with roles and responsibilities merging between groups, users often move between a number of temporary virtual teams that meet specific project needs, without changing the underlying reporting structure of individuals. With Oracle iLearning, the logical user grouping not only enables targeted learning offerings, but also provides a very flexible and powerful mechanism for administering users, content and learning events.

SPEED OF KNOWLEDGE DELIVERY

Oracle iLearning's unique permissions model and browser accessibility, coupled with the content management capabilities, enables self-service content assembly and delivery. This allows a very direct, informal channel from subject matter experts to learners. As a result, one can compress the lengthy and unreliable 'knowledge supply chain' in which curriculum developers, content assemblers, and production/delivery staff sit between the expert at the front of the supply chain and the learner at the other end. Thus, Oracle iLearning not only supports the formal learning process, it enables quick and accurate knowledge delivery for time critical subject matter by enabling end users to learn from the expert.

Consider the example of delivering new product training quickly to the sales force. An organization needs to manage and distribute the knowledge from the subject matter experts to the sales force quickly and efficiently, in order to succeed in the marketplace. With Oracle iLearning's self-service administration capabilities, the subject matter expert, possibly a product manager, can be given content assembly permissions in a certain section of the Oracle iLearning application. The expert can also be given the permissions to schedule the learning for a specific target group of users. The expert will not need to have access to any other content objects or any other view of the system.

The formal learning process can then take advantage of the seed content created by the expert, reuse relevant components, and build a robust and instructionally well designed course for general availability.

CONTENT MANAGEMENT FOR REUSE AND SYNDICATION

Traditional courses are typically created as one large monolithic unit, with a rigid structure that ties the content to a single delivery type, either classroom based or any of the flavors of technology based training. What is desired is the ability to design content once, in discrete chunks of information, that can be reused across delivery media, and personalized to individual users or groups of users.

Oracle iLearning enables the assembly of content that makes use of mixed media, and multiple learning modalities, to suit different learning needs and preferred learning styles. Content can be developed for delivery over the Internet; yet the same materials might be made available as print documents, or published as CD-ROM-ready files, to take advantage of the same content for different learning styles. With efficient reuse, existing content can be combined with new content to design multiple learning paths.

An additional benefit for content providers and learning service providers serving multiple companies and organizations is the ability to syndicate the same content for different learner populations. Different tiers of learning can be offered based on learner needs, pricing models, etc. using the same content.

Learners benefit from reuse by having a tailored set of offerings to acquire the necessary knowledge and skills. The same content can be made available to suit the individual learning style of the learner. Reusable content objects also can be available as a learning aid, for 'just enough, just in time' access to relevant information.

CUSTOMIZABLE CONTENT TYPES

In Oracle iLearning, content assembly involves creating or reusing content objects and structuring these in an organized hierarchy of topic groups and topics (see Figure 8 for an example), to form a unit of enrollment (for example, a course) that is then offered to learners.

> Curriculum
>> Course
>>> Topic Group
>>>> [Topic | Topic Group]

Figure 8 Default Content Types in Oracle iLearning

A topic can be considered as an aggregation of content that supports a specific learning objective. Content at the topic level is normally indexed by metadata for quick retrieval and reuse. Topic groups are logical collections of topics, while a course is typically a minimum unit of sale/enrollment. Curriculum could be defined as a structured sequence of courses to get from one skill level to another. Content objects can be reused at any level of the hierarchy.

Oracle iLearning also allows a customizable object hierarchy and naming conventions that are defined during the initial setup of each Oracle iLearning site. For example, a training organization might define the content object hierarchy shown in Figure 9.

> Track
> Theme
> Section
> Topic

Figure 9 Customized Content Types Example

A higher education customer might prefer *Curriculum→Course→Unit→Lesson→Topic*. Another more specific example is the Air Force model of *Course→Block→Module→Lesson→Learning Objective*. One corporation might be happy to allow nested objects to an infinite level, whereas another might choose to restrict the hierarchy to two or three levels.

Oracle iLearning's flexible and customizable hierarchy supports the Advanced Distributed Learning (ADL) Shareable Courseware Object Reference Model (SCORM), as defined by their *curricular Taxonomy* element, which is designed to accommodate a wide variety of courseware models. For more information about SCORM, go to http://www.adlnet.org/.

CONTENT ASSEMBLY

Oracle iLearning provides the ability to reuse content objects at any level in the hierarchy, and to organize them with other content objects to provide customizable content for personalized learning. When building content and creating objects, assemblers are able to define reusable content objects either by creating new content objects, or by copying or referencing existing content objects.

Content assemblers usually work within a restricted area of the overall site content, and are therefore given access to create, modify or reuse only those content objects within their control. By grouping users into physical organizations or logical user groups, and carefully structuring the content in folders, you take full advantage of the permissions model in granting access to selected users on selected content. Content assemblers can choose to design the structure of their course outline in Oracle iLearning prior to developing the content material, or they can create a

structure to match the design of legacy material. Oracle iLearning dynamically updates the underlying content files for existing courses, without adversely affecting the learners.

Oracle iLearning is designed to support a customizable and extensible superset of IMS metadata that provides sufficient flexibility to identify and manipulate content objects in any learning environment. The metadata includes information about content that facilitates its labeling, indexing, search, storage, retrieval, execution, display, licensing, maintenance, and/or use. Oracle iLearning enables content assemblers to enter and maintain these metadata values easily, for each reusable content object.

Oracle iLearning supports any web-playable content, whether supplied by outside vendors or authored in-house. Content types range from standard word processing and presentation packages to sophisticated multimedia authoring systems. Oracle iLearning is compatible with the AICC standards for CMI/LMS (Computer Managed Instruction/Learning Management Systems) APIs. As a result, all AICC CMI compatible content will play and be tracked within Oracle iLearning.

AUTHORING ASSESSMENTS

Content assemblers can build assessment tests quickly and easily using Oracle iLearning's integral assessment builder to meet a wide variety of needs in terms of control, display, feedback and scoring. Oracle iLearning adheres to the IMS QTI (Question and Test Interoperability) specification version 1.1, and has worked closely with IMS in establishing the practical implementation of this standard.

Oracle iLearning provides a model, similar to that for content objects, that supports controlled access during development and easy reuse of test items. Test item banks store related collections of test items, which can be published and used in the creation of many individual tests. Numerous attributes at test and section level provide flexibility in the design and appearance of your tests.

You may create tests as standalone offerings, such as for certification, or incorporate pre- and/or post-tests into an offering, to assess learners' skills either before or after a specific topic or lesson.

You can even define surveys or evaluations, to gain valuable feedback from learners. The choice of test type, and its occurrence within the structure of a course or curriculum, is entirely flexible to support your specific instructional design needs.

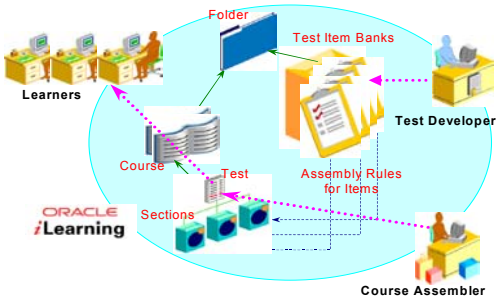

Figure 10 Oracle iLearning Assessment Model

Oracle iLearning's assessment builder provides additional options to control user access. Included are features particularly suited to the stricter requirements of certification, such as setting time limits for tests, alerting learners of the approaching time limit, restricting the number of attempts and imposing a time delay between repeated attempts. Administrators can view the test status for individual learners and can adjust the time allowed if desired.

CONTENT DEPLOYMENT

In Oracle iLearning, an offering is typically associated with the top-level content object (e.g. curriculum or course) of completely assembled courseware. Forums and chat sessions can be associated with the offering to facilitate collaboration for learners. Reference materials (in the form of FAQs, books, related URLs, etc.) may also be defined and associated with the offering. Preferences can be set for each offering to define how the content and associated menu options will be displayed in the Oracle iLearning player. Enrollment conditions are defined to establish the target learner population for the offering. The offering is then published, at which point it becomes available to the learner for enrollment. Figure 11 illustrates the creation of an offering in Oracle iLearning.

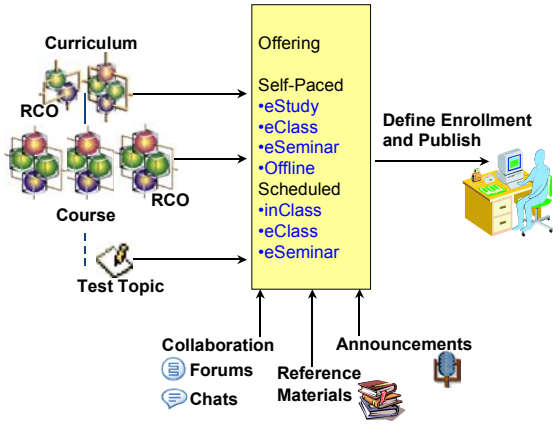

Figure 11 Publishing Content

REPORTING AND BUSINESS ANALYSIS

The comprehensive reporting facilities provided within Oracle iLearning enable users to obtain information relevant to their user status: learner, manager, or administrator.

Learners view their Transcript screen to display the status of all their courses and, for each completed course, can display and print a certificate that includes completion information and results of incorporated assessments. Learners may also have access to specific end-user reports if provided by the administrator.

Managers are users who have one or more employees reporting to them in the Oracle iLearning user hierarchy. They may have additional management reports available to them if provided by the administrator. Managers also have access to a view of their employees' learning status and performance.

Administrators may have access (depending on their privileges) to analytical reports from within the administration user interface. These are community-specific reports that can be modified to define business-specific reporting requirements.

Administrators have the option of altering the template (appearance and formatting) of their reports at runtime, and can choose to give learners access to selected reports.

The administrative user interface provides help in creating, modifying and running reports. You can use reports to provide details on enrollments, content, assessments, site specific usage, and can make these reports available for specific users based on the Oracle iLearning permissions model. In addition, you can create Extensible Stylesheet Language (XSL) templates to support a variety of output styles, or save the report output in XML format for uploading to other web-based applications.

SUPPORT FOR LEARNING STANDARDS

An organization embarking on an e-Learning implementation typically uses disparate content from multiple vendors, along with different technologies and tools that complement the learning management system. To ensure access, reuse and interoperability across multiple platforms, standards for online learning are being guided by several organizations, including IMS, AICC and SCORM. IMS is a consortium of learning institutions and vendors, including Oracle Corporation, that together develop and promote open specifications for online learning. AICC, The Aviation Industry CBT Committee is an open forum of training professionals that develops guidelines for interactive learning technology. SCORM (Shareable Content Object Reference Model) defines a set of interrelated technical specifications built upon the work of the AICC, IMS and IEEE to create one unified content model for web-based learning.

Oracle iLearning provides very comprehensive support on content packaging – allowing for a one-click import/export adhering to the IMS and SCORM content packaging specifications. For assessments, Oracle iLearning conforms to the IMS Question and Test Interoperability (QTI) specification, allowing for easy XML based import and export between applications. Oracle iLearning supports all

mandatory calls for web-based tracking specified in the AICC standards for Computer Managed Instruction/Learning Management Systems (CMI/LMS) JavaScript based APIs. This ensures that AICC CMI compatible content will play within Oracle iLearning and will provide tracking capabilities. Oracle iLearning also uses the IMS Learner Information Package specification to facilitate import of and extraction of learner data.

PORTAL INTEGRATION

Customers are able to access Oracle iLearning directly from their own unified portal, providing a single sign-on across applications.

For existing Oracle Portal customers, we offer a choice of portlets for the Oracle Portal administrator to provide to your learners; an example of which is shown in Figure 12. For other portal users, we enable you to identify trusted URLs that are recognized by Oracle iLearning without requiring a separate sign on.

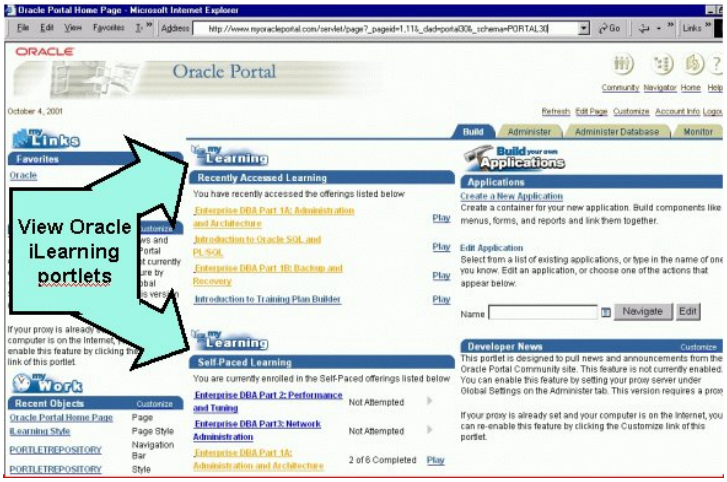

Figure 12 Oracle iLearning portlets in Oracle Portal

RESOURCE MANAGEMENT

If your training needs are for asynchronous, self-paced, web training only, there is often no need for comprehensive resource management capabilities beyond the management of collaboration (forums, chats) and the provision of reference material, which are all basic features available within Oracle iLearning. However, you have the option of managing additional resources for any style of learning, which enables you to set up and schedule items of any resource type you choose to define, such as training materials, instructor allocations, etc.

For those administering a large quantity of synchronous learning, including instructor-led training in multiple physical locations as well as blended learning solutions, your requirements for resource management features may be more complex. While Oracle iLearning enables you to manage resources within the application, you may prefer to integrate with your existing system, such as Oracle Corporation's own established HR training software, Oracle Training Administration (OTA).

For existing OTA customers, a predefined integration of Oracle iLearning and OTA provides seamless administration and access to data for OTA administration staff and learners. Data can be transferred between the two systems, to take advantage of OTA reporting and administration, while still controlling and tracking the progress of learners playing content within the Oracle iLearning player. OTA users are imported directly into Oracle iLearning – there is no need to register users separately. Figure 13 shows the three types of data that are transferred between the two systems.

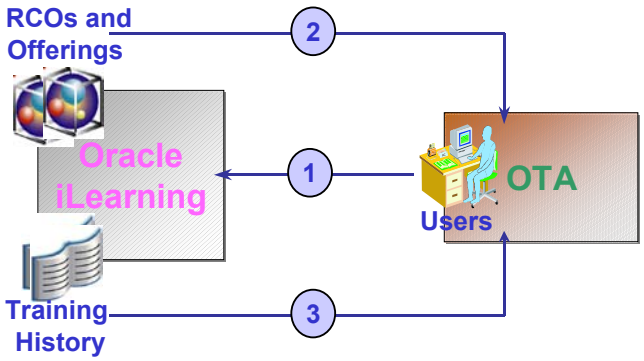

Figure 13 Data Transfer between Oracle iLearning and OTA

On a day-to-day basis, learners continue to use self-service OTA as the single catalog for all learning (including online learning), and invoke the Oracle iLearning player from OTA seamlessly for online delivery.

Learners, administrators, and managers all have self-service access to training functionality from within OTA, with access dependent on their job roles.

Administrators create and manage online content inside Oracle iLearning using the administration UI. The Oracle iLearning catalog is then automatically synchronized into OTA.

ORACLE ILEARNING ARCHITECTURE

Oracle iLearning is built on industry standard technology for web applications, which includes the Oracle8i Internet Platform and Java. The production environment is currently standardized on Sun Solaris systems.

The Oracle iLearning multi-tier architecture consists of Apache Servers, JavaServer Pages, Java and Oracle9iAS. This is described below and illustrated in Figure 14.

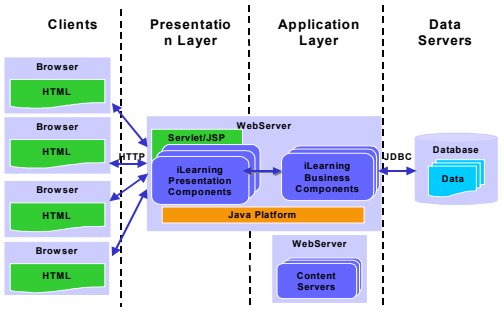

Figure 14 Oracle iLearning Architecture

- Client Tier: Users (learners, administrators or content assemblers) require only a standard Internet browser on their client machine, where HTTP is used to access Oracle iLearning. All the Oracle iLearning functionality is on the server, except for simple JavaScript-based validation on the client.
  Note: Third-party content may require plug-in applications to play the content files (e.g. Shockwave, Real Player).

- Oracle iLearning Applications Servers: A pool of web servers with HTML and Servlet capability that provide access to Oracle iLearning. There can be one or more servers at this level to provide scalability, reliability, and load-balancing (managed as part of the Oracle hosted services). A set of Java Server Pages (JSPs) serves as the graphical interface for the Oracle iLearning application. The application layer interprets user requests, calls appropriate action routines within business logic components, and returns HTML output back to the client. The application layer is written using Business Components for Java (BC4J). BC4J is a 100%-Java, XML-powered framework that enables productive development, portable deployment, and flexible customization of multi-tier, database-savvy applications from reusable business components. More information on BC4J can be obtained from the BC4J white paper

  The application includes optional functionality to establish secure HTTPS communication between the browser and the application server and also between the application server and payment server.

  Reporting capabilities are built into the application. Standard reports can be run immediately, without requiring any configuration. Reports can also be

created and modified easily to meet the specific business analysis needs of each community.

- Content Servers: One or more web servers that provide access to the actual courseware files. This content is usually created and maintained by the content provider, and is referenced by the Oracle iLearning application. The content servers can be geographically distributed, and can be located inside or outside customer firewalls, depending on who needs to access the content.
- Database Server: All the Oracle iLearning data is stored in, and retrieved from, an Oracle8i database. This includes site and user names, permissions to manage users, content and learning events, content metadata, learner progress, etc. The server tier also leverages Oracle Workflow to provide email and/or web-based notifications to users, and to automate other business processes.

  The database has been configured to run in a hot standby mode for high availability.

Oracle iLearning is designed to extend Oracle Corporation's expertise in supporting very large database applications on the Internet. Content access and user administration can be scaled across global enterprises to meet security and performance needs. Rigorous performance testing and application tuning are a critical component of the Oracle iLearning development process.

With the subscription service model, Oracle Corporation manages the entire infrastructure, providing customers with the flexibility to manage their proprietary or third party content, within or outside the firewall, and eliminating their responsibility for hardware maintenance or management. With the licensed product model, Oracle Corporation provides most systems management services including application product support, functional implementation, applications and database management, while the customer's organization is responsible for the hardware (including its location) and facility management. Alternatively, customers can opt for an outsourced solution, in which Oracle Corporation maintains, upgrades and supports the customer's dedicated system on Oracle premises.

ORACLE ILEARNING FEATURE LIST

Key Oracle iLearning features are represented below in the context of the functions typically assumed by a user of the Oracle iLearning application. Oracle iLearning offers reporting capabilities for learners, managers, and various levels of administrators, which help measure the effectiveness and ROI of online learning.

Oracle iLearning also offers self-service customization of each learning community, to enable easy, screen-based modifications to your site design and login page, customization can extend to possible modification of the presentation layer. Customers who adopt Oracle iLearning's subscription service approach benefit from a steady stream of additional features on a frequent basis.

In addition, Oracle iLearning meets the standards of 508 (ADA), to ensure product usability by persons with disabilities such as the blind, low-vision, deaf, or physically disabled.

LEARN

- Access the Oracle iLearning site in a secure manner – logging in as a registered user or a guest, or being able to self-register.
- Easily access the most important activities on the system, such as searching for and launching offerings.
- Identify and enroll/unenroll in offerings that do not require approval.
- Select one or more offerings from a dynamically updated list of most popular and/or 'promotional' offerings.
- View the components of the integrated learning offerings in an organized user interface that provides visual cues about how each piece fits into the overall learning program.
- Visually identify prerequisites that the learner must complete before playing an offering.
- Play or resume a self-paced Oracle iLearning assembled offering from the same point that a learner was viewing when they last exited the course.
- Take assessment tests that are tracked and scored either as topics within a course, or as standalone assessments.
- Access collaboration resources contextually – that is, access discussion groups, chats and other resources that are related to the current offering only.
- Submit evaluation forms to provide valuable learner feedback to administrators and content developers.
- View transcripts to monitor personal progress, and print completion certificate.
- View reports approved by an administrator.
- Manage personal data, including custom attributes that are editable.

ADMINISTER

- Manage users, content and learning event objects following flexible, fine-grained permissions model.
- Leverage the flexible permissions model to create and modify roles including multiple levels of administrator access and capabilities.

- Perform all administrative tasks, including content and test assembly, within a browser (not requiring any client-side tools).
- Manage test item banks to enable extensive reuse of test items.
- Support large user populations, organized into flat and/or hierarchical structures.
- Support extensible attributes that are defined at various levels of user and content objects.
- Customize logos, and other style sheet elements for each site easily, through a self-service configuration UI.
- Maintain multiple customization themes - build and preview new themes. For example, experiment with a new corporate logo or color scheme without affecting existing learners. Activate the new theme when ready. (Only one theme is active at one time, for a site.)
- Integrate with Oracle E-Business Suite.
- Support integration withthird-party systems through the user of web services and open APIs.

INSTRUCT

- Maintain office hours and instructor home page information, providing support and information to learners.
- Moderate forums to prevent misuse, and facilitate various collaboration events, both chats and forums.
- Moderate ratings to prevent misuse and inappropriate comments.
- Monitor learner progress.
- Review assessment results and analyze trends.

USER MANAGEMENT

- Support multiple communities (independent sites that are completely walled off).
- Support hierarchical structure to model physical organizations within learning communities.
- Support cross-organizational, rule-driven groupings of users across organizations to model virtual teams (of learners, content developers, administrators, etc.).

- Create, edit, and deactivate/retire users, including logical and hierarchical groups of users.
- Define default roles for common tasks performed in the Oracle iLearning system - for example, content developer, instructor, manager, learner, learning administrator.
- Provide mandatory attributes at the user, user group, organization and site level to support a superset of the IMS enterprise information model.
- Support managed and automatic self-registration options.

CONTENT MANAGEMENT AND ASSEMBLY

- Provide secure access to Oracle iLearning managed content based on permissions model.
- Organize content in hierarchical folders with cascading attribute inheritance, for example., Topics within Topic Groups within Courses within Curricula.
- Associate mandatory IMS attributes with content objects and support optional IMS attributes.
- Support content hosted on geographically distributed external (non-Oracle iLearning) servers.
- Customize content types and define flexible content hierarchy structure.
- Support content assembly across multiple delivery media.
- Define prerequisite relationships between content objects at all levels of the hierarchy.
- Support content assembly across multiple authoring tools.
- Reuse content objects by copy or by reference with associated attributes and links.
- Reorder and re-parent content objects in content hierarchy.
- Create content-specific announcements to target the specific learning audience for that content.
- Create test items, organized into multiple test item banks.
- Choose from a selection of popular test item types, such as multiple choice, true/false, fill-in-the-blank.
- Create tests – pre-tests, post-tests, quizzes - either scored or not, using a flexible assessment builder with provision for a variety of display, feedback, and scoring options.
- Create timed tests. Restrict time period allowed to complete test.

- Optionally restrict repeated attempts of a test, and set a time delay between attempts.
- Create resumable tests – enabling a learner to resume an interrupted attempt.
- Import/export content and assessments using IMS XML bindings.
- Simplify tracking of third party content - provide a "wrapper" page that can be installed on the same machine as the content, to manage CMI tracking of external content.

LEARNING EVENT MANAGEMENT

- Set up learning events with associated collaboration resources and content.
- Enroll and unenroll users (or groups of users) manually or automatically.
- Limit number of enrollments for an event.
- Maintain a waitlist for events with limited enrollment. Allow administrators to reorder waitlist. Automatically move learners from waitlist to enrolled status as space becomes available.
- Provide authorized enrollment approval process, implemented by Oracle Workflow. A learner requests enrollment for an offering, and the approver is notified of the request. Once approved, the learner is notified that the enrollment has been approved.
- Provide standard 'out-of-the-box' features (forums, chats, email) to enable peer-to-peer and peer-to-mentor collaboration.
- Create announcements associated with specific learning events, to provide timely information to applicable learners only.
- Integrate with third party online synchronous delivery platforms (like Centra, Interwise, Mentergy) to provide events with application sharing, hand-raising, whiteboard, immediate feedback, etc.
- Support prescriptive learning - allow completion of one content object to automatically mark other content objects as complete. For example, successful completion of an assessment might automatically mark a course as completed.
- View offerings assigned to an instructor to identify the instructor load and assign instructors appropriately.
- Adjust time allowed for tests on an individual learner basis during a test attempt, to allow for unusual circumstances.

RESOURCE MANAGEMENT

- Manage classroom and instructor resources, using predefined resource types.
- Optionally create custom resource types (e.g. computers, projectors, etc.) required for your training needs.
- Assign available resources to events. For example, specify the classroom and instructor for an event.
- Manage resource scheduling - view schedule for resources. Search and edit resources.
- Manage resource scheduling conflicts - prevent conflicting resource bookings or double booking on confirmed resources. Allow double booking on planned resources (resources that are not confirmed for an event).

REPORTING AND BUSINESS ANALYSIS

- Provide reports to analyze user activity, content usage, offering effectiveness, etc., to meet business needs unique to each site.
- Accept parameters in reports – both manual and automatic substitution. Enable values for one or more parameters to be entered at the time of running the report, or use custom attributes within the report, whose values will be automatically substituted based on the user.
- Enable targeted reports – provide reports for learners, managers, and administrators. Administrators make reports available to learners or managers, or target any specific audience (such as event administrators).
- Provide multiple report templates - offer administrators a choice of report formats while generating and saving reports.

E-BUSINESS SUITE INTEGRATION

- Integrate with Oracle HRMS, to provide seamless self-service learner access to online learning through OTA (Oracle Training Administration). See separate section below.
- Manage training orders to identify purchased offerings, or bundles of offerings.
- Optionally send email notification of access codes to customers.
- Automatically enforce business rules for training orders, including maximum number of users and subscription start and end dates.

- Enable back-end integration through open APIs (supported in the licensed product model only).
    - Allow orders to automatically be imported from an order management system into Oracle iLearning.
    - Provide documentation on use of open APIs.
- Enable front-end integration through open APIs (supported in both subscription service and licensed product models).
    - Optionally enable learners to purchase courses from the Oracle iLearning catalog (pay courses have a 'Buy' button instead of an 'Enroll' button).
    - Enable access to offerings when order is accepted/processed.
    - Offer an out-of-the-box solution kit for customers with Oracle iPayment. (Note that Oracle iPayment is a separate product, not part of Oracle iLearning.)
    - Provide documentation of payment server APIs for those wishing to integrate with some other payment server software.

PORTAL INTEGRATION

- Access Oracle iLearning from Oracle Portal pages
    - Provide Oracle iLearning portlets that can be accessed from a customer's Oracle Portal pages.
    - Enable Oracle iLearning portlets to be personalized by the end user. For example, a learner can modify the number of offerings shown in each portlet.
- Access Oracle iLearning from a company website
    - Enable site administrators to configure an Oracle iLearning site to allow seamless access from their own secure website. For example, allow learners to log on once to their company website, then jump seamlessly and securely to Oracle iLearning (trusted sign on).

OTA INTEGRATION

- Single catalog
    - Use self-service OTA as the catalog for all learning (including online learning).
    - Invoke Oracle iLearning player from OTA seamlessly for online delivery.
- Single training history

- Synchronize online training history from Oracle iLearning into OTA.
- Access competency information from Oracle HRMS.

CONCLUSION

The Internet is dramatically changing the efficiency of information dissemination and human communication. There is an increased recognition by managers and employees of the effectiveness of skills and know-how acquisition through information and training delivered to the desktop, just in time, with 24x7 availability. In the emerging convergence of technology with the science and art of learning, the application of technology will be used to enable better application of the classroom paradigm.

Oracle Corporation is uniquely positioned to deliver learning products that fulfill this promise. We are leading the way by providing the products and services that enable an e-business transformation, including the move from installed products to fully hosted solutions. These are the same solutions that Oracle Corporation uses to drive its own e-business transformation, including its customer, partner and employee training organizations.

Today, Oracle iLearning offers learners a personalized, learner-centric experience that can easily be tailored to the individual learner and the desired learning outcome. The learner can also make use of the Oracle iLearning collaborative environment to enhance the formal learning process with reference materials, discussion groups and chats, and easy online access to mentors and peers. Oracle iLearning offers content developers powerful reuse and rapid update of content, shortening the knowledge supply chain. Administrators have a simple self-service interface for partitioning and managing their learner community, organizing content, controlling course enrollment, tracking learner progress, and reporting on learning activities.

Going forward, Oracle iLearning will continue to evolve in two ways. First, as Oracle Corporation and others find innovative new ways to leverage the Internet to improve the speed, cost, and effectiveness on online learning, Oracle iLearning will add new functionality to support those innovations, with the goal of providing complete support for all the processes and people involved in an e-Learning solution. These innovations will be made available seamlessly, reducing the total cost of ownership. Second, as Oracle Corporation continues to expand its capabilities for transforming traditional businesses into e-businesses, Oracle iLearning will blend more transparently into the Oracle E-Business Suite, so that online learning fits seamlessly into an organization's overall strategy.

Oracle iLearning 4.2 Product Overview
January 2003
Author: Louise Barnfield

Oracle Corporation
World Headquarters
500 Oracle Parkway
Redwood Shores, CA 94065
U.S.A.

US Inquiries:
Phone: 1 800 529 6279

Worldwide Inquiries:
Phone: +1.650.506.7000
Fax: +1.650.506.7200
www.oracle.com

Oracle Corporation provides the software that powers the internet.