The information contained in this document is subject to change without notice. If you find any problems in the documentation, please report them to us in writing. This document is not warranted to be error-free. Except as may be expressly permitted in your license agreement for these Programs, no part of these Programs may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose.

If the Programs are delivered to the United States Government or anyone licensing or using the Programs on behalf of the United States Government, the following notice is applicable:

**U.S. GOVERNMENT RIGHTS**

Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are “commercial computer software” or “commercial technical data” pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the Programs, including documentation and technical data, shall be subject to the licensing restrictions set forth in the applicable Oracle license agreement, and, to the extent applicable, the additional rights set forth in FAR 52.227-19, Commercial Computer Software--Restricted Rights (June 1987). Oracle Corporation, 500 Oracle Parkway, Redwood City, CA 94065.

The Programs are not intended for use in any nuclear, aviation, mass transit, medical, or other inherently dangerous applications. It shall be the licensee’s responsibility to take all appropriate fail-safe, backup, redundancy and other measures to ensure the safe use of such applications if the Programs are used for such purposes, and we disclaim liability for any damages caused by such use of the Programs.

The Programs may provide links to Web sites and access to content, products, and services from third parties. Oracle is not responsible for the availability of, or any content provided on, third-party Web sites. You bear all risks associated with the use of such content. If you choose to purchase any products or services from a third party, the relationship is directly between you and the third party. Oracle is not responsible for: (a) the quality of third-party products or services; or (b) fulfilling any of the terms of the agreement with the third party, including delivery of products or services and warranty obligations related to purchased products or services. Oracle is not responsible for any loss or damage of any sort that you may incur from dealing with any third party.

Oracle, JD Edwards, and PeopleSoft are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

**Open Source Disclosure**

Oracle takes no responsibility for its use or distribution of any open source or shareware software or documentation and disclaims any and all liability or damages resulting from use of said software or documentation. The following open source software may be used in Oracle’s PeopleSoft products and the following disclaimers are provided.

**Apache Software Foundation**

This product includes software developed by the Apache Software Foundation (http://www.apache.org/). Copyright 1999-2000, The Apache Software Foundation. All rights reserved.

THIS SOFTWARE IS PROVIDED “AS IS” AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE APACHE SOFTWARE FOUNDATION OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

**OpenSSL**

Copyright 1998-2003 The OpenSSL Project. All rights reserved.
This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT “AS IS” AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

**SSLeay**

Copyright (C) 1995-1998 Eric Young. All rights reserved.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com). Copyright (C) 1995-1998 Eric Young. All rights reserved. THIS SOFTWARE IS PROVIDED BY ERIC YOUNG “AS IS” AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

**Loki Library**

Copyright 2001 by Andrei Alexandrescu. This code accompanies the book: Alexandrescu, Andrei. “Modern C++ Design: Generic Programming and Design Patterns Applied”. Copyright (c) 2001. Addison-Wesley. Permission to use, copy, modify, distribute and sell this software for any purpose is hereby granted without fee, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation.

**Helma Project**

Copyright 1999-2004 Helma Project. All rights reserved. THIS SOFTWARE IS PROVIDED “AS IS” AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE HELMA PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Helma includes third party software released under different specific license terms. See the licenses directory in the Helma distribution for a list of these license.

**Sarissa**

Copyright 2004 Manos Batsis

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.
You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA.
This Red Paper is a practical guide for technical users, installers, system administrators, and programmers who implement, maintain, or develop applications for your PeopleSoft system. In this Red Paper, we hope to provide some insight and guidance into PeopleSoft Enterprise Learning Management 9.0 and how it integrates with third party content and testing engines so as to give a seamless access to the content to the users of ELM. ELM manages the catalog, registration of courses and scheduling of activities for the third party content and then allows a user to launch and view it through launch links in ELM. For SCORM and AICC compliant content, ELM tracks information like bookmark and scores. This red paper covers the following topics:

- The need for compliance and the level supported by ELM 9.0
- The architecture for importing content into ELM
- The architecture for launching compliant content
- The architecture for tracking data
- Special configuration setups required.

This red paper is primarily intended for learning administrators interested in integrating compliant content with ELM and for field consultants implementing the integration with compliant content.

We would recommend that this Red Paper be reviewed prior to beginning the upgrade process, and then used as a resource throughout the process. We hope that it will be useful, and have made it as inclusive and accurate as possible as of the time of this writing.

**RELATED MATERIALS**

The ELM development staff have also authored a number of other technical Red Papers that, while not specific to Upgrade, may also be beneficial to you in understanding the new architecture and functionality of ELM 9.0
By being compliant with SCORM/AICC content, ELM provides the following advantages:

- Low cost of integration for the customer.
- Higher reliability since the ELM e-learning integration architecture is common across all the content vendors.
- Wide choice of content since most major content vendors support SCORM/AICC compliant content.
Chapter 3 - Level of compliance

ELM is:

- SCORM 1.1 minimum level compliant
  
  Elements tracked are:
  
  • Student_id
  • Student_Name
  • Credit
  • Lesson_Location
  • Lesson_Status
  • Score
  • Total Time

- SCORM 1.2 minimum level compliant
  
  Elements tracked are:
  
  • Student_id
  • Student_Name
  • Credit
  • Lesson_Location
  • Lesson_Status
  • Score
  • Total Time

- AICC-HACP level 1 compliant  (with additional support for objectives_status element)
  
  Elements tracked are:
  
  • Student_id
  • Student_Name
  • Credit
  • Lesson_Location
  • Lesson_Status
  • Score
  • Total Time
  • Objective Scores
ELM also supports AICC Logout function provided AICC-compliant content uses this function. To enable AICC logout, navigate to Set Up ELM > Catalog > Content and check the Enable Logout checkbox.

**Content Setup**

<table>
<thead>
<tr>
<th>Setup Options</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp Content Directory</td>
<td>C: \Temp\</td>
</tr>
<tr>
<td>Export Content Directory</td>
<td>Content\</td>
</tr>
<tr>
<td>SCORM DTD File Path</td>
<td></td>
</tr>
<tr>
<td>JavaScript Doc Domain</td>
<td></td>
</tr>
</tbody>
</table>

- [x] Structure Validation Enabled
- [x] Bookmark Tracking Enabled
- [x] Override Session Timeout
- [ ] Enable AICC Logout

Once enabled and if the content send a logout command, learners will be logged off ELM upon exiting the content window.
In AICC, the lesson sends back tracking data (scores, statuses, bookmark) using HTTP POST calls. The Peopletools Authentication code authenticates these calls and if they’re from the same session as the PIA session, the calls are allowed to go through. However, for some of the content, when the content is launched, a new session is created. When this happens, the calls made from the content to pass the tracking data will fail authentication. To circumvent this problem, a bypass user profile needs to be created and security settings need be changed in the PeopleTools Web Profile configuration.

### To Create a Bypass User Profile

- In order for the Launch and Track feature to seamlessly integrate with external systems, ELM must be enabled to bypass some of the normal PIA signon functionality. This requires the use of a default User ID and Password that can be used invisibly in the background to sign on to PIA in the case of a new content session. PeopleSoft delivers a role that incorporates the appropriate permissions to do this, but you must create a User Profile that makes use of this role.

- Navigate to User Profile administration feature: PeopleTools, Security, User Profiles, User Profiles

- Add a User Profile with a user ID of your choosing, e.g., LTUSER.

- On the Roles tab, add the following roles from the available list:
  - LMLELM_ELM_User
  - PeopleSoft User

- NOTE: The only permission the bypass user needs is full access to WEBLIB_LM_LEM. Open the permission list assigned to your bypass user and go to the Web Libraries tab. Add WEBLIB_LM_LEM and ensure that all LM_ISCRIPtS have full access permissions. This is the only thing needed to accept AICC tracking calls.

- Fill in the remainder of the User Profile data as appropriate.

Note: For more information on PeopleTools Security, including User Profiles, Roles, and Permission List, please consult your PeopleTools PeopleBooks.

### To Modify the PIA Configuration

- The PIA Configuration of the Launch and Track control site needs to be modified to allow for seamless background signon. If you have created a second PIA site to serve as the Launch and Track control site (see above), you will need to create a new Web Profile for it and modify the bypass credentials. If you are using your primary PIA site as your Launch and Track control site, the PIA Configuration for your primary site (default Web Profile) should be modified.

- For PT 8.44 and later the bypass user is configured in PIA directly. Navigate to PeopleTools > Web Profile > Web Profile Configuration. Select the active web profile for the current PIA site (the default value is typically DEV). The currently active web profile
can be determined by checking the configuration.properties file under
<PS_HOME>/webser\<your_WebLogic_domain_name>\applications\<application_name>
\PORTAL\WEB-INF\psftdocs\<your_site_name>.

- On the General tab ensure that CompressResponses checkbox is unchecked (False)
- Click the Security tab and modify the following parameters in the Public Users group box
to the values indicated:
  - Allow Public Users – checked (True)
  - User ID = <LTUSER>
  - Password = <LTUSERPWD>
- Where <LTUSER> and <LTUSERPWD> are the User ID and Password you create in the
  procedure above.
- Save the page.
- After these changes are completed, the webserver should be stopped and restarted.

Note: For more information on these parameters and the configuration.properties file, please consult your
PeopleTools PeopleBooks.

Changing the above settings will cause all pages and component accesses to bypass the security. For example, in a system
with the above settings made, accessing an email notification will login the user with the above credentials automatically.

In order to avoid this problem, the following configuration is recommended.

As seen above, the AICC content is launched from the main ELM server (Server which is used by learners and admin to
use ELM). However, the tracking data is sent back to a parallel server setup only to receive this data. So, only this ELM
communication server needs to have the configuration.properties set. The configuration.properties entry for the main ELM
server can be left untouched.

**TO CREATE A LAUNCH AND TRACK CONTROL SITE**
For details on creating a PIA site, see the PeopleTools 8.4x Installation and Administration PeopleBook.

Note: The Node name Portal name for the web server hosting the Launch and Track control site should match those for the webserver hosting the primary PIA site.

Warning: You must use a second PIA site as a Launch and Track control site if:

- You are using AICC-compliant content AND
- Your location of the Launch and Track control site is on a webserver separate from the webserver handling your primary PIA site.

Please refer to the To Modify the PIA Configuration section to configure the web profile for the Control Site.

**TO CONFIGURE THE LAUNCH AND TRACK COMM SERVER URL**

In order that the content knows the location of the ELM communication server, a URL entry found under PeopleTools > Utilities > Administration > URLs, LM_LT_COMM_SERVER, in the ELM main server must contain the URL of the ELM Comm server.

For example, if the ELM Comm server is hosted in http://comm.elm.com:7777, then the LM_LT_COMM_SERVER entry will be: **http://comm.elm.com:7777**

Chapter 5 - Architecture for importing content structure

**SCORM 1.1/1.2**

As shown above, the CSF Course Structure File Processor takes either the SCORM 1.1 CSF xml or the SCORM 1.2 imsmmanifest.xml file and parses the file. It identifies the scos and blocks in the file and then submits it for validation to the CSF data validator. The CSF data validator checks for validity of the various elements. After validation, the tokenized course structure data is persisted in the database.
The AICC course structure files can be uploaded through an admin page in ELM. After the files are uploaded, the files are sent to the AICC Course structure processor and validator which runs validation on these files to ensure consistency. After successful validation, the tokenized course structure data is persisted in the database.
Clicking on the launch link in the Current Learning or Learning History page will invoke the Table Of Contents Page Generator. This generator will read the tokenized content structure data from the database and then based on the hierarchy of blocks and scos, will then generate the Table Of Contents page dynamically. When the user clicks on any lesson link in this page, the AICC/SCORM content is launched with the appropriate parameters. In case of SCORM/AICC, the Table of Contents page contains the SCORM javascript API.
The Table of contents page contains the javascript SCORM API that communicates with the SCORM API of the content. Any data that is required by the content is obtained using the DataTracking Form which resides in the Table of Contents page. Similarly, any data that is sent back by the content is persisted to the database using the DataTracking Form.
The AICC lesson is launched with all the required AICC parameters. Tracking data sent back from the lesson is sent to an IScript which parses the data and then persists it in the database.
Chapter 8 - SCORM cross-domain issue

SCORM communication takes place using javascript calls from the SCORM content to ELM. Internet Explorer has a restriction that does not allow cross-domain javascript calls. These are the scenarios:

**Scenario 1: The content and ELM are both hosted in the same web domain.**

**For ex:**

Content is hosted on http://elm.peoplesoft.com and ELM is also hosted on http://elm.peoplesoft.com

The above scenario will work without any configuration changes since the web domains for the content and ELM are the same

**Scenario 2: The content and ELM are both hosted in the same second level web domain.**

**For ex:**

Content is hosted on http://content.peoplesoft.com and ELM is hosted on http://elm.peoplesoft.com

In the above, the second level domain, peoplesoft.com, is common to the content as well as ELM

The above scenario will not work out of the box since the web domains for the content and ELM is not entirely the same.

The following needs to be done:

- In Setup ELM-> Catalog-> Content, set the Javascript Doc Domain to peoplesoft.com
- The content vendor needs to set the ‘document.domain’ in their javascripts to peoplesoft.com

**Scenario 3: The content and ELM are hosted in totally different web domains.**

**For ex:**

Content is hosted on http://content.abc.com and ELM is hosted on http://elm.xyz.com

Since the domains are entirely different, SCORM communication cannot take place between the content and ELM. Such a situation cannot be supported without the network administrator making network mappings on the user’s workstations.