Adoption Readiness Tool – ART

SCORM and AICC Support in Adoption Readiness Tool™

This document is intended to provide a general description of how the Micro Focus Adoption Readiness Tool™ (ART) supports the goals of the Sharable Content Object Reference Model (SCORM) and the Aviation Industry CBT Committee (AICC).

Overview

Simulations in the Adoption Readiness Tool

The Adoption Readiness Tool includes software simulation functionality that records authors' actions as they work through a particular task or application. As an author uses the application, these products "watch" and record all interactions including menu selections, data entry, and mouse clicks. In addition, the products provide easy-to-use editing functionality that allows the author to supplement a recording with notes or voice overlays.

Once complete, four separate simulations can be created by using the Auto Playback, Standard, Self Test, and Assessment modes.

Simulations can be published as HTML files, and published simulations can be used in web-based training courses, classroom training, or an online help system.

Courses in the Adoption Readiness Tool

The Adoption Readiness Tool includes a rapid eLearning course authoring component. Courses can include conceptual information, graphics, audio, pop-ups, Adoption Readiness Tool simulations, and self-check and assessment tests. Courses are published to HTML format.

SCORM and AICC

"The Sharable Content Object Reference Model (SCORM) defines a Web-based learning [model and environment] for learning objects. …SCORM is a collection of specifications adapted from multiple sources to provide a comprehensive suite of e-learning capabilities that enable interoperability, accessibility and reuse of Web-based learning content." Source - http://www.adlnet.gov

"The AICC wants the aviation training community to get the best possible value for its technology-based training dollar. The only way that this is possible is to promote interoperability standards that software vendors can use across multiple industries. … AICC recommendations are fairly general to most types of computer based training and, for this reason, are widely used outside of the aviation training industry." Source -http://www.aicc.org/pages/aicc_faq.htm

SCORM and AICC help buyers procure software and custom eLearning content whose outputs can be:

- Launched from a learning management system (LMS)
- Shared in reusable “chunks” with multiple LMSs
- Used in tests and assessments, and the results reported to the LMS

When evaluating software or custom content against the SCORM or AICC guidelines, it is helpful to remember that there is no such thing as conformance to a collection of standards such as SCORM or AICC. Rather, one can conform to a specific version of a standard. As a customer, you should assess product conformance based on your requirements around metadata, packaging, and test results management.

Standards are facilitators or enablers to help you meet your training goals. In and of themselves, they do not ensure better learning or proven learner effectiveness.

How ART Addresses SCORM and AICC Standards

The Adoption Readiness Tool produces SCORM 1.2- and SCORM 2004- conformant content by conforming to the technical standards that enable web-based learning systems to find, import, share, reuse, and export learning content in a standardized fashion. In addition, the Adoption Readiness Tool also conforms to AICC 2.2.

Content Output and the SCORM and AICC Package Folder Structure

The following files are included in simulation and course SCORM packages:

- Manifest File (imsmanifest.xml) - required document describing the content organization and resources of the content. This file contains the table of contents, metadata file references, and resources (a list of all files and URLs required to deploy the content). This file is necessary for sharing and reusing content within any LMS that supports the SCORM 1.2/SCORM 2004 Content Aggregation Model.
- Metadata File and Supporting Documents (sco01.xml & *.xsd) - metadata XML binding file containing the content metadata. Metadata is typically used to allow the simulation or course to be searched, located, retrieved, and reused in other customer courses (for example, courses within a content repository). The supporting XSD files are XML schema documents, used for validating the markup within the manifest and its corresponding metadata files.

The following files are included in simulation and course AICC packages:

- Assignable Unit data (*.au) – Contains information relating to the assignable units (AU) in the course. In ART, there is currently only one AU per course allowed.
- Course Description data (*.crs) – Contains information about the course as a whole, and information that relates to more than just a single element in the course.
- Course Structure data (*.cst) - Contains the basic data describing the order and grouping of AUs in a course, and includes the definition of course elements contained in blocks. The order in which these appear in the file implies (but does not force) an order for presentation to the student.

- Descriptor data (*.des) - Contains a complete list of every course element in the course. It is used as the basic cross-reference file showing the correspondence of system-generated IDs with user-defined IDs for every element.

General information about SCORM and AICC packages in ART:

- Sharable Content Objects (SCOs)/Assignable Units (AUs) - Lowest level of granularity that can be tracked by an LMS; these are self- contained files that can be launched via a browser (such as .htm and .xml files, and associated assets). You can create a "course package" to generate multi-SCO SCORM packages in both SCORM 1.2 and 2004. A course package can contain one or more courses or simulations, and individual simulation "modes" (for example, Auto Playback) can be selected as a SCO contained within the package.
- Package Interchange Format (PIF) file - an archive (*.zip) file that contains the imsmanifest.xml file at the root level. When a PIF is used, the LMS unpacks the .zip file into an appropriate location and imports the manifest file. When you create a .zip file of the contents of the Flash Simulation or Flash/HTML Course folder, the manifest file will be at the root level of the resulting file. Content published from ART contains a PIF at the root level of the content folder.

Supported SCORM and AICC Elements

The SCORM and AICC specifications dictate the type of information that should be requested and sent to the LMS. Adoption Readiness Tool content currently supports the following elements from the SCORM and AICC specifications. For details on each element, refer to the bullets below the following table:

SCORM 1.2	SCORM 2004	AICC
Lesson Status (cmi.core.lesson_status) Lesson Location (cmi.core.lesson_location) Suspend Data (cmi.suspend_data) Raw Score (cmi.core.score.raw) Min Score (cmi.core.score.min) Max Score (cmi.core.score.max) Session Time (cmi.core.session_time) Interactions (cmi.interactions) Interaction ID (cmi.interactions.n.id) Interaction Time (cmi.interactions.n.time) Interaction Type (cmi.interactions.n.type) Interaction Correct Response (cmi.interactions.n.correct_responses.n.pattern) Interaction Student Response (cmi.interactions.n.student_response) Interaction Result (cmi.interactions.n.result	Completion Status (cmi.completion_status) Success Status (cmi.success_status) Lesson Location (cmi.location) Suspend Data (cmi.suspend_data) Raw Score (cmi.score.raw) Min Score (cmi.score.min) Max Score (cmi.score.max) Scaled Score (cmi.score.scaled) Session Time (cmi.session_time) Interactions (cmi.interactions) Interaction ID (cmi.interactions.n.id) Interaction TimeStamp (cmi.interactions.n.timestamp) Interaction Latency	Lesson Location (Core.Lesson_Status) Lesson Status (Core.Lesson_Location) Suspend Data (Core_Lesson) Raw Score (Core.Score) Session Time (Core.Time)

	(cmi.interactions.n.latency) Interaction Type (cmi.interactions.n.type) Interaction Correct Response (cmi.interactions.n.correct_responses.n.pattern)	

- Lesson Location – The element used to specify the step/page at which the learner terminated the SCO. Also referred to as the SCO "bookmark".
- Lesson Status, in the case of SCORM 1.2 and AICC, and Completion Status in SCORM 2004 - The element utilized to specify the completion status of the SCO (complete/incomplete). In SCORM 1.2, this element can also be utilized to specify the mastery of the SCO (passed/failed).
- Suspend Data – The element utilized to persist content-specific information, such as the pages/steps the learner has viewed within the SCO. This element is primarily utilized by ART courses.
- Raw Score (0-100) – The element utilized for specifying the score achieved by the learner within the SCO. The value is based on the performance within the assessment mode of an ART simulation, or an assessment inserted into an ART course.
- Session Time - The time the learner has spent in the lesson during a given session.
- Min Score - The minimum score a learner can achieve within a lesson. This value is currently always set to a value of "0" (zero) within published ART content.
- Max Score - The maximum score a learner can achieve within a lesson. This value is currently always set to a value of "100" within published ART content.
- Success Status, used only in SCORM 2004 - The element utilized to specify the mastery of the SCO (passed/failed).
- Scaled Score (0-1.0), used only in SCORM 2004 – The element used in a SCORM 2004 SCO to specify the performance of a learner within the SCO that is scaled to fit with the range of -1.0 – 1.0.
- Interactions - The data related to the questions/steps within an assessment. The value is based on the performance within the "Assessment" mode of a simulation, or an assessment inserted into a
- Interaction ID - The unique identifier of the interaction.
- Interaction Time - A timestamp at which the interaction was completed (SCORM 1.2).
- Interaction TimeStamp – A timestamp at which the interaction was first made available to the learner (SCORM 2004).
- Interaction Latency – An ISO time value of the amount of time elapsed between when the interaction was first made available to the learner and when the learner engaged in the interaction (SCORM 2004).
- Interaction Type - The type of the interaction.
- Interaction Correct Response - The correct answer for the interaction.
- Interaction Student Response - The learner's response to the interaction.
- Interaction Result - The success outcome (correct or incorrect).
- Interaction Description - The description of the interaction, used to persist the question stem in ART. This element was not introduced until SCORM 2004.

Prerequisites for Importing Content into an LMS

Perform the following steps to generate simulations and courses that are ready for import into your SCORM- and AICC-conformant LMS:

1. Select the Create package option within the Adoption Readiness Tool template. Ensure the correct version of SCORM or AICC is selected. These options are found via Publications > Course or Simulation > LMS Settings.
2. Publish the simulation(s) and/or course(s). Note: If the content does not contain an assessment, only completion status will be captured.
3. Locate the SCORM- or AICC-conformant zip file. For the Adoption Readiness Tool simulations and courses, this zip file is in the published folder.
4. Log into your LMS and upload the zip file.
5. For LMSs that do not support the Content Aggregation Model, the file that needs to be used to launch ART simulations is the index.htm file at the root of the appropriate Flash folder. The course.htm file should be used.

Process for Capturing Assessment Results without an LMS

If your organization does not use an LMS, the results of simulations and courses can be sent to an email address or web page. When capturing results outside of an LMS, you must include an assessment test in your simulation and/or course.

To send assessment results to an email address, you must specify mailto:[email address] in the Assessment URI field in the template. This option is found via Publications > Course or Simulation > LMS Settings. To send assessment results to a web page, any server-side scripting technology (ASP, JSP, PHP) can be used to capture the posted results and send output to a text document, spreadsheet, or database. In this scenario, one would simply specify the full URL to the script in place of the “mailto:” entry.

When viewing ART content outside of an LMS, student data will persist in browser cookies ONLY if the courses have been published without the “Create package” option checked in the template editor under the course LMS settings. This allows the learner to experience the same features found in content running within a SCORM-conformant LMS. In this mode, all of the supported SCORM data elements are available within the cookie implementation, so the difference is transparent to the learner.

AICC Configuration with content stored on an ART ELE server

Objective

To track courses and simulations hosted on your ART ELE Server in your LMS (SuccessFactors, for example) The solution described below was created for ART ELE customers who wish to host training content on their ART ELE Server which can be launched from their corporate LMS. In this scenario, a cross-domain policy file (crossdomain.xml) must reside at the root of the LMS domain with an entry for the ART ELE Server's domain.

In some cases, customers cannot either create or update the requisite cross-domain policy file on their LMS. This is often the case for cloud-hosted LMS scenarios. Without this policy file in place and configured to allow communication from the ART ELE Server, ART courses and simulations cannot communicate via AICC with the LMS. The proxy solution was created to circumvent this limitation.

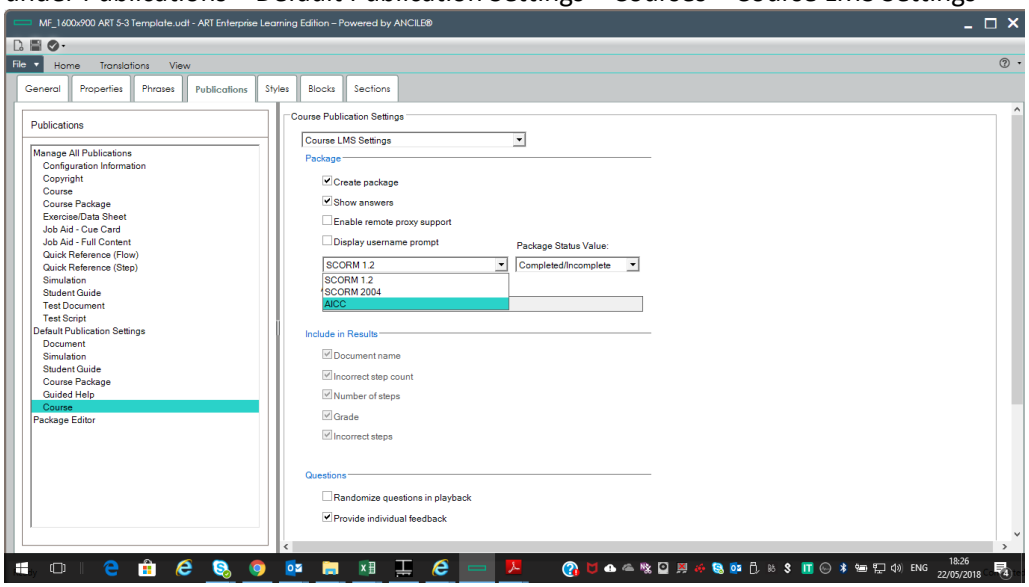
Environment

- Product: ART ELE Server
- LMS that supports AICC
- Adobe Flash (R) support in End User browsers for any ART content that has Flash content

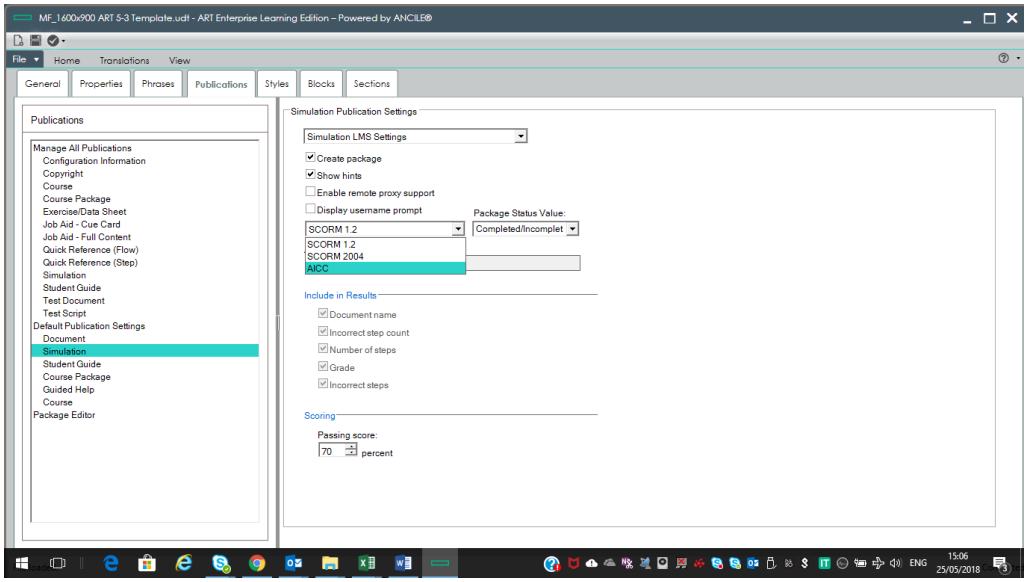
Prerequisites

For ART courses:

Open your ART template and enable **Create Package** and then select **AICC** from the drop down list under Publications > Default Publication Settings > Courses > Course LMS Settings



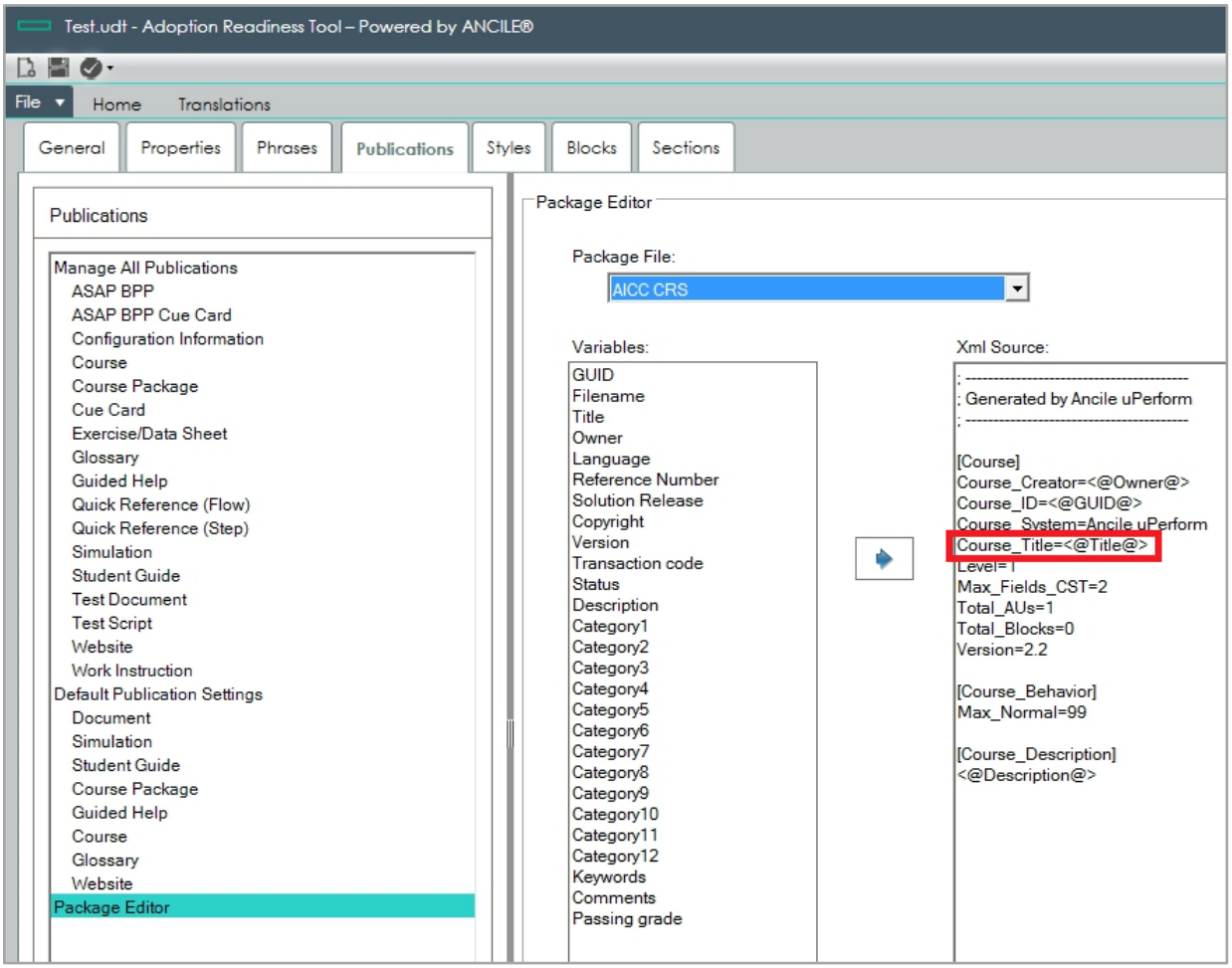
For ART simulations:
Open your ART template and enable **Create Package** and then select **AICC** from the drop down list under Publications > Default Publication Settings > Simulations > Simulation LMS Settings



AICC Meta Data files

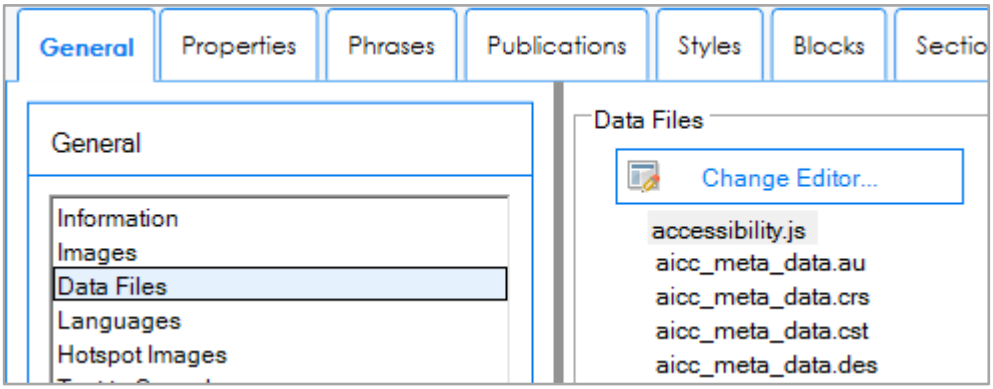
In case the generated AICC Meta Data files contain a wrong setting or column name then this can be changed through the template editor. Follow the steps below to make a variable change in one of the AICC meta data files:

1. Open the ART **template** and select the tab **Publications**
2. Select **Package Editor** from the left menu
3. Select in the **Package File** dropdown list on the right, the file you need to change
4. Select a **variable** on the left, a row on the right and click the button in the middle to bring the variable across



Alternatively you can also edit the AICC meta data files through the template:

1. Open the **ART template** select the tab **General**
2. Select the **Data Files** on the left menu.
3. Just click on one of the AICC meta data files and modify the content variables or header columns where needed.



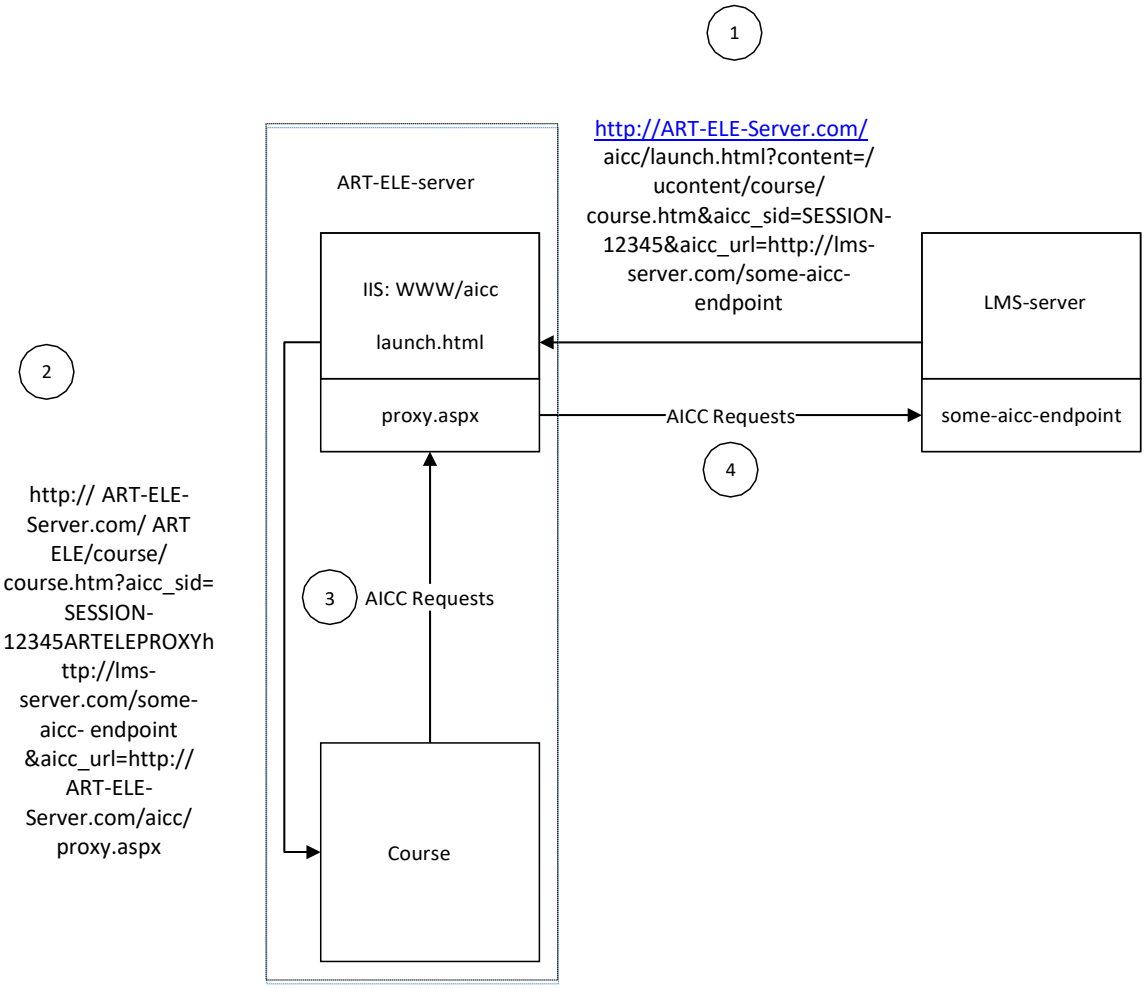
When you are done save the template and check-in the template into server. Using the ART ELE Admin portal you can assign the template to any ART ELE project. This will ensure that any document or course that gets created using the ART ELE Client will use this publishing template. Note: In all ART documents you can look up the document properties to check the template GUID (unique identifier) that was used to create the file.

Procedure

Download the two IIS communication files and follow the instructions below.

AICC – ART ELE Communication Process

The following diagram summarizes the communications that need established between the ART ELE Server and the target LMS



The step numbers below correspond to the diagram on the previous page.

1. The user selects the launch link in the LMS. The LMS sends the content url to the launch proxy along with appended AICC ID and return communication url.
2. Launch.html on the ART ELE Server IIS receives the data from the LMS and reformats the link to include the return proxy (proxy.aspx).
3. The course sends AICC communications to the return proxy, proxy.aspx.
4. proxy.aspx forwards the AICC communication from the course to the LMS.

On the ART ELE Server, IIS must be set up to manage the AICC communications.

1. Create a WWW/aicc folder on the IIS website. This folder should be set up as a new application in IIS and granted execute permissions via the Handlers section.
2. Store the two communication files below in the WWW/aicc folder

Note:
launch.html – This is the target url for the LMS
proxy.aspx – This file channels the AICC communications from the content back to the LMS

Configure the LMS to initiate the content launch.

1. The consumable course or simulation content is stored in an ART ELE Project folder. This can be achieved by checking the source content into the ART ELE Server and publishing it, or by saving content directly in the ART ELE folder.
2. The url to the content is identified. The URL can be found by browsing directly in the ART ELE folder, or by navigating to the content via the ART ELE End User website on the ART ELE Server and copying the url from the browser address window.
3. Using the url for the content, create a link within the LMS that sends the url to the launch.html link. For example:
   http://ART-ELE-server.com/aicc/launch.html?content=
   /ucontent/8a27afaaa9944267b3f10ed1434699b1_en-US/course/html/index.htm