

# **Overview of AICC and SCORM Standards**

**Prepared for NASA E-Learning**

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February 28, 2002**





## **Overview of AICC**

### **Purpose**

This document describes the history, goals and objectives of the Aviation Industry Computer-Based Training Committee (AICC) . It also discusses their relationship with Advanced Distributed Learning Initiative (ADL) and SCORM. Both AICC and ADL are influential standards bodies within the e-learning industry and are in the process of certifying (separately) e-learning vendors to meet specifications. While many vendors are rushing to meet these requirements, e-learning consumers are trying to understand what it all means.

### **The Aviation Industry Computer-Based Training**

The Aviation Industry Computer-Based Training Committee (AICC) is an international association of technology-based training professionals that develops guidelines for aviation industry in the development, delivery, and evaluation of CBT and related training technologies.

In the 1980's, airplane manufactures were providing computer based-training to their customers. However, airlines were forced to spend exorbitant fees on hardware and software to meet the unique system requirements of each manufacturer's proprietary CBT system. In 1988, AICC was founded to solve this problem. The first objectives of the AICC were to standardized PC hardware and promote system interoperability.

The AICC membership is made up of aircraft equipment manufacturers, airlines, military, government regulatory agencies, educational institutions, content producers, and software vendors. Members are companies not individuals and the AICC has no staff. All work is done by volunteers from the member companies. The AICC is a fairly open group; no organization has been refused membership.

The AICC wants the aviation training community to get the best possible value for its technology-based training dollar. To meet this goal AICC promotes interoperability standards that software vendors can use across multiple industries. With such standards a vendor can sell their products to a broader market for a lower unit cost. 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.<sup>1</sup>

Objectives of the A.I.C.C.:

- Assist airplane operators in development of guidelines which promote the economic and effective implementation of computer-based training (CBT).
- Develop guidelines to enable interoperability.
- Provide an open forum for the discussion of CBT (and other) training technologies.<sup>2</sup>

### **AICC Compliance vs Certification**

The term AICC Compliant means that a training product complies with one or more of the 9 AICC Guidelines & Recommendations (AGR's). Some vendors claim that their product is "AICC Compliant" if they comply with any one of the 9 AGR's. This can create confusion for customers.

Since there are 9 different AGR's, there are 9 potential ways a vendor could claim **compliance**. The AICC **certifies** training products that comply with AICC guidelines and recommendations (AGR's) via its independent test labs. The AICC currently offers certification testing for only two AGR's (AGR -006 and AGR 010). AICC lists their certified products at [www.aicc.org/pages/cert.htm#products](http://www.aicc.org/pages/cert.htm#products).

The seven AICC guidelines that are not formally tested by AICC are listed below. If a company wished to **comply** with one or all of these 7 guideline they simply need to download the compliance regulations from AICC, build there systems to the guidelines, and do a "self-test." The testing is done internally, but customers can ask for the vendors independent verification documents.

The other 7 AICC Guidelines and Recommendations that have no formal tests are:

- AGR-002 - COURSEWARE DELIVERY STATIONS
- AGR-003 - DIGITAL AUDIO
- AGR-004 - OPERATING/WINDOWING SYSTEM
- AGR-005 - CBT PERIPHERAL DEVICES
- AGR-007 - COURSEWARE INTERCHANGE
- AGR-008 - DIGITAL VIDEO
- AGR-009 - ICON STANDARDS: USER INTERFACE

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<sup>1</sup> [www.aicc.org](http://www.aicc.org)

<sup>2</sup> McDonald, W; [AICC what does it mean to me?](#) July 2001

If a vendor claims to comply with AICC/CMI guidelines, ask for proof with the following questions:

1. Ask them if they have been "AICC Certified". You can verify by checking the AICC's list of certified products [www.aicc.org/pages/cert.htm](http://www.aicc.org/pages/cert.htm)
2. If they claim to have "self-tested" their systems, ask if they have a copy of test logs from the AICC/CMI test suite
3. Ask which version of the AICC/CMI guidelines that they comply with.

If you wish to check any system for compliance with AGR-010 or AGR-006 you can get a copy of the AICC/CMI test suite and its associated documents and perform the tests yourself at [www.aicc.org](http://www.aicc.org).

The AICC tries to discourage vendors from using the term "AICC compliant" because it can give the mistaken impression that it was somehow checked/tested for compliance. Instead they ask vendors that if they have not been tested in the AICC labs or if they only partially implement AICC guidelines that they say "*designed to AICC guidelines*". If they have been tested by an AICC Independent Test Lab (ITL) they are to be called "*AICC-Certified*".

### **Advanced Distributive Learning Initiative**

The Department of Defense (DoD) established the Advanced Distributed Learning (ADL) initiative in 1997 to develop a DoD-wide strategy for using learning and information technologies to modernize education and training and to promote cooperation between government, academia and business to develop e-learning standardization.<sup>3</sup> The ADL initiative has defined high-level requirements for learning content, such as content reusability, accessibility, durability and interoperability to leverage existing practices, promote the use of technology-based learning and provide a sound economic basis for investment.

In January of 2000 ADL released the first version of the Shareable Content Object Reference Model (SCORM). And their most recent document that defines sharable learning content objects that meet these high-level requirements is SCORM Version 1.2, released October 2001.<sup>4</sup>

SCORM features three main sections:

- An XML-based specification for representing course structures, making courses portable between LMS's

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<sup>3</sup> ADL; [SCORM](http://www.adlnet.org) Version 1.1 January 2001

<sup>4</sup> [www.adlnet.org](http://www.adlnet.org)

- A set of specifications relating to the run-time environment, including an API, content-to-LMS data model, and a content launch specification
- A specification for creating metadata records for content, courses, and raw media elements.

This initiative is designed to accelerate large-scale development of dynamic and cost-effective learning software and to stimulate an efficient market for these products in order to meet the education and training needs of the military and the nation's workforce of the future. It will do this through the development of a common technical framework for computer and net-based learning that will foster the creation of reusable learning content as "instructional objects."

### **AICC and SCORM Working Together**

Many AICC standards were developed before the Internet became what it is today. As the Internet became the chief delivery vehicle for delivering training, many felt a new set of standard was needed. Several standards bodies emerged including: IMS Global Learning Consortium (<http://www.imsglobal.org>) and Electronic Engineers' (IEEE) Learning Technology Standards Committee (<http://www.ltsc.ieee.org>).

ADL and AICC are two standards bodies that are working together. AICC is retrofitting much of SCORM's enhancements into its own guidelines and recommendation and SCORM is building on the experience that AICC has gained in three years of certifying LMS product standards.<sup>5</sup>

ADL does not want to not to compete with the other standards bodies, and instead it is attempting to incorporate the work of AICC, IMS, and IEEE under one umbrella.<sup>6</sup> Their work is far from done. Certification, compliance and testing remain separate processes. A product that is AICC certified or compliant is not necessarily SCORM compliant and SCORM compliance does not mean AICC certified or compliant.

SCORM has been preoccupied with tracking, tagging, and storing content objects. The standard dwells at length with "metadata" specifying the identifying tags that all learning objects in a course should carry. AICC is far more interested in continuing to develop the standards they have already put in place for hardware, operating systems, and audio files. Furthermore, AICC is taking the lead in developing communication protocols or API's to provides a method for one or more programs to communicate with other processes and programs. AGR-010, the most famous of the AICC recommendations, provides this standard, allowing learning content to be launched and communicate results back to an LMS system. AGR-010 is one of the two AGR's that AICC offers formal testing to vendors for AICC certification.

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<sup>5</sup> Connelly, P.J; InfoWorld A standard for success. October 2001

<sup>6</sup> Cohen, Edward; Emerging Standards Effort in E-learning (Feb. 2002)

## **Conclusion**

The AICC and ADL (SCORM) are actively coordinating their efforts with broader learning technology standards organizations like IMS, and IEEE/LTSC. Both want the 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. More e-learning vendors probably will attempt to support both AICC and SCORM in the near term, and customers have reason to be encouraged by the work of both groups.

[www.hq.nasa.gov/office/codef/codeft](http://www.hq.nasa.gov/office/codef/codeft)

## Appendix A

### **The AICC Compliance Details and Logo "Brand"**

The AICC tries to discourage vendors from using the term "AICC compliant" because it can give the mistaken impression that it was somehow checked/tested for compliance. They instead ask vendors that if they have not been tested in their labs or if they only partially implement AICC guidelines, that they say "designed to AICC guidelines". If they have been tested by an AICC Independent Test Lab (ITL) they are to be called "AICC-Certified".

The AICC has a compliance logo program ([www.aicc.org/pages/logo.htm](http://www.aicc.org/pages/logo.htm)). This "brand" that will help you recognize products that either claim to (or are tested to) comply AICC guidelines. Not surprisingly, the two logos are called "Designed to AICC Guidelines" and "AICC Certified":

AICC Certified Logo - This logo is available only to products that have been tested compliant in an AICC Independent Test Lab.

Designed to AICC Guidelines Logo - This logo is available to any vendor who pays a nominal fee. *(Please note that this is self-policing by the vendor)*

The both logos are required to have the AGR's supported listed on the product packaging or in the product documentation.

### **AICC Certification Overview**

The AICC [certifies training products](#) that comply with AICC Guidelines and Recommendations (AGR's) via its independent test labs. The AICC currently offers certification testing for the following AGR's:

- AGR-006 - Computer Managed Instruction (File-based)
- AGR-010 - Web-based Computer Managed Instruction

The types of products that can be certified compliant to AGR-006/AGR-010 are as follows:

1. **Assignable Units** - Computer-based pieces of learning content Launchable/trackable from an AICC/CMI system
2. **CBT Courses** - A groups of assignable units bundled with an AICC/CMI course structure
3. **CMI Systems** - Systems that manage and launch AU's (Assignable Units) and track student progress. (also called LMS - Learning Management Systems)
4. **CMI Application Service Provider (ASP)** - A CMI System installed at a central data center provided by an organization. This organization, the application service

provider (ASP), offers CMI system "services" to multiple customer organizations rather than licensing/selling CMI system software.

5. **Courseware Generation / Assessment Systems** - Content creation/delivery systems that can either communicate with a CMI system directly as an AU *or* generate AU's such that some (or all) of AICC communication data is automatically set or inspected by the system (and not directly by the content designer). Examples of such systems are test bank systems, simulation systems, courseware engines, and courseware generators. (Formerly known as "Interfacing Systems".)
6. **Authoring Systems** - Learning content creation/delivery systems that allow content designers to directly control the inspection and setting of all AICC communication data in the design of Assignable Units.