

ALIVE



Introduction to ALIVE

METI (Ministry of Economy, Trade and Industry)
e-Learning Consortium Japan (eLC)

Presentation
By
Yoshiko Terada of eLC

Purpose and Outline

■ Purpose

- 1.To verify the effectiveness of Test Suite Ver1.2.7
- 2.To check the SCORM conformance level of the products
- 3.To verify LMS and Content Interoperability

■ Outline

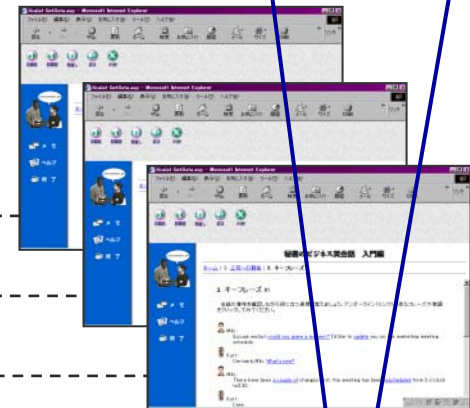
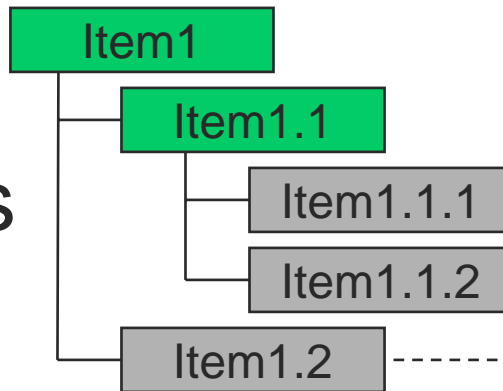
- Demonstration test using Test Suite Ver1.2.7
 - Test products
 - 9 LMSs from 5 countries (Japan, Korea, Singapore, Malaysia, Vietnam)
 - 7 Contents from 4 countries (Japan, Singapore, Malaysia, Vietnam)
 - Effectiveness of Test Suite Ver1.2.7
- Cross Test between LMSs and Contents
 - Pre-cross test of 4 LMSs and 2 contents was held
 - LMS and contents that were remain will be cross tested on 16th Dec.
- Questionnaire investigation on the effectiveness of the Test Suite.

SCORM Standard

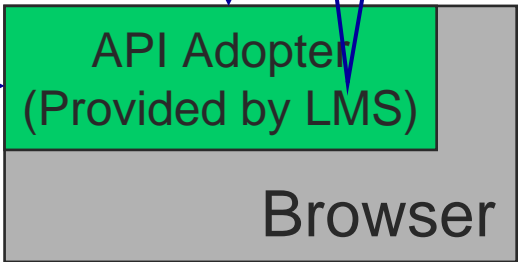
SCORM Standard 1
Manifest file

SCORM Standard 2
Run time environment

Contents



Platform LMS

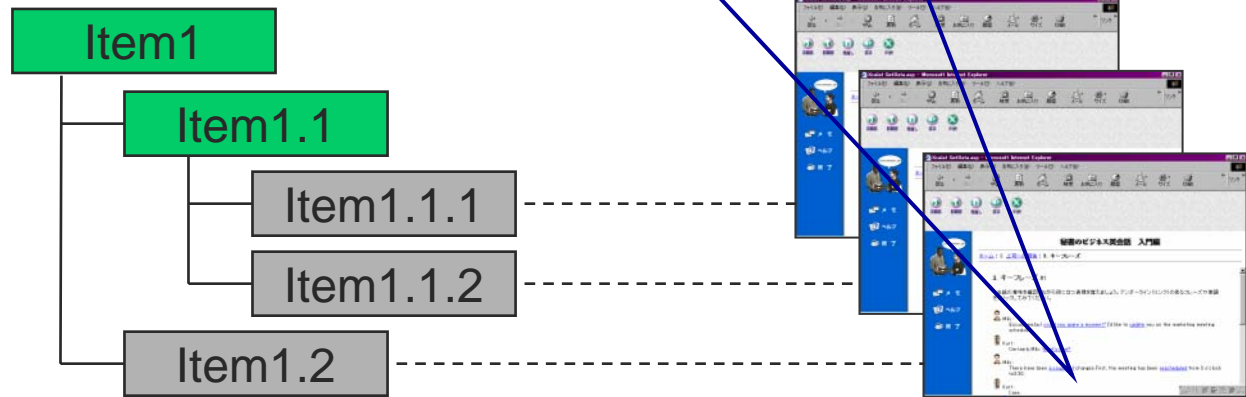


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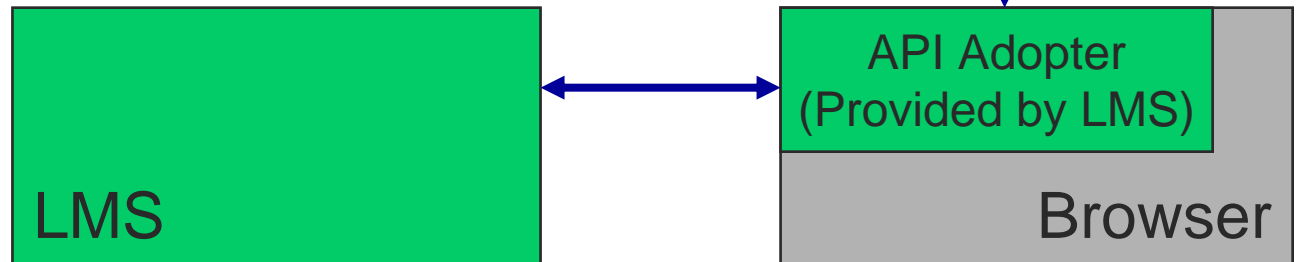
Test Suite (LMS Test)

Test Suite

LMS Adopting test Contents



LMS Object

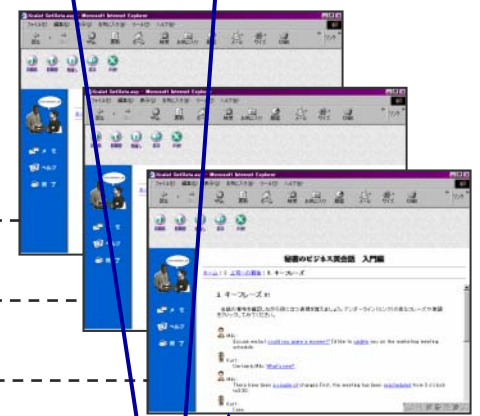
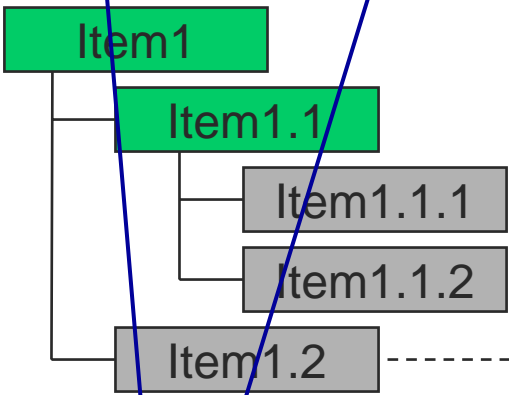


Test Suite (Contents Testing)

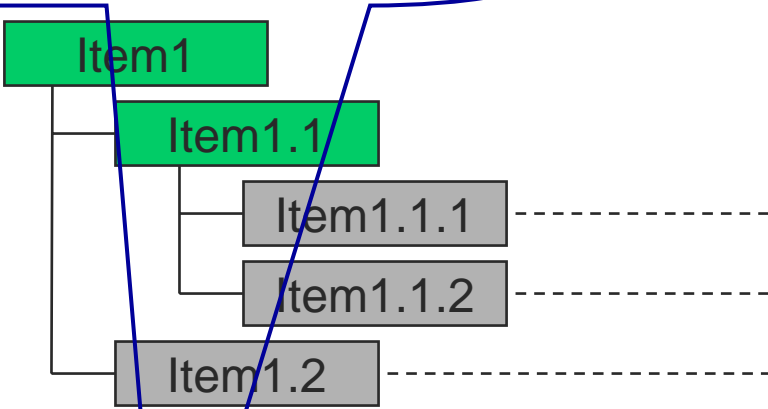
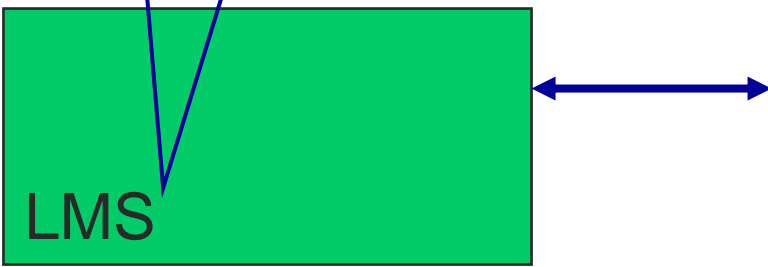
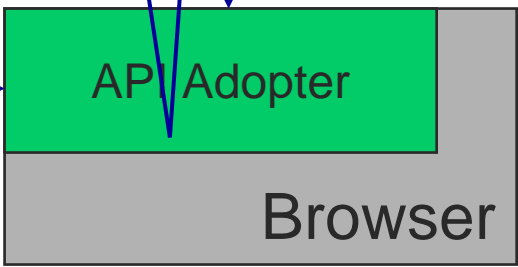
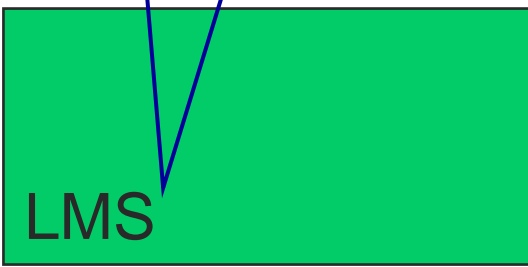
Contents Package Testing Function
Meta Data Testing Function

SCO Adoptability Testing Function

Contents Object



Test Suite



Participants & Schedule

Participants in ALIVE from each country except Japan

Country	Organization	Name	Product		Observer
			LMS	Content	
1	Cambodia Department of Information and ASEAN Affairs, Ministry of Education, Youth and Sport	Mr Sok THA			○
2		Ministry of Education, Youth and Sport	Mr OM Sethy		○
3	Korea Dunet Inc.	Mr Ju Hyung LEE			
4		Alex IT, Co. Ltd.	Mr Choon Won Park	1	
5	Malaysia Centre for Multimedia Education Development, Multimedia University	Mr David ASIRVATHAM			
6		Multimedia University	Mr Muhammad Hasan	1	1
7	Myanmar UNIVERSITY OF COMPUTER STUDIES, YANGON, MYANMAR	Mr AYE THANDA			○
8	Singapore OrimsonLogic	Mr Chet Shiu Chua	1	1	
9		E-learning Competency Centre Learning Standards Technical Committee	Mr LIM Kin Chew	1	1
10		ASKnLearn.com Pte Ltd.	Mr Lee Kok Pun		
11	Thailand Thai Computational Linguistics Laboratory. CRL Asia	Dr. Virach Somlertlamvanich			
12	Vietnam Library and Information Network Center (LINC)	Dr. Nguyen Ngoc BINH			
13		NCS Ltd., Vietnam	Mr LUU TRUONG HUY	1	1
14	USA ADL	Mr Jeff Krinock	-	-	
			5	4	3

Participants & Schedule

ALIVE Participants from Japan

	Organization	Name	Product	
			LMS	Contents
1	NEC Corporation	Hisashi Shimizu	1	
2	FUJITSU INFO SOFTWARE TECHNOLOGIES LIMITED	Hitomi Hotta	1	
3	NTT Resonant Inc.	Kiyoshi Nakabayashi	1	
4	Toshiba Solutions Corporation	Hidekatu Sato	1	
5	Wilson Learning Worldwide	Teruyuki Morimura	1	
6	FUJITSU LEARNING MEDIA LIMITED	Ryoko Masujima	—	2
7	THE SANNO INSTITUTE OF MANAGEMENT	Hiroshi Miyauchi	—	1
			5	3

SCORM conformance level and interoperability

contents LMS	SCO-RTE1 (Level 1)	+ mandatory (Level 2)	+ option (Level 2.5)	+ mandatory + option (Level 4)
LMS-RTE1 (Level 1)			×	×
LMS-RTE2 (Level 2)				
LMS-RTE3 (Level 3)				

: LMS covers all functions. All functions of contents work.

: When LMS does not support option functions that contents have, that functions don't work. What options LMS and contents support are depend on the products' specification.

× : Option functions contents have don't work.

SCORM LMS conformance level	
Conformance level:	LMS - RTE3 (level 3 : highest)
	LMS - RTE2 (level 2 : middle)
	LMS - RTE1 (level 1 : standard)

SCORM contents conformance level	
Conformance level:	SCO - RTE1+Mandatory and Optional (level 3 : highest)
	SCO - RTE1+Optional (level 2.5 : middle)
	SOC - RTE1+Mandatory (level 2 : middle)
	SCO - RTE1 (level 1 : standard)
Meta-data conformance level:	MD-XML1+extension+option (level 3 : highest)
	MD-XML1+option (level 2 : middle)
	MD-XML1 (level 1 : standard)
Contents package conformance level :	ADLCP-PIF1 (only this level)

Test result

LMS products

Product information	Country	Korea	Vietnam	Singapore		Malaysia	Total	
	Organization/Company	Korean Company	Vietnamese company	Singaporean Company A	Singaporean Company B	Malaysian Company		5
	Language	Korean	Vietnamese, Japanese, English	English	English	English		
A result of operation	Conformation/Nonconformity	Conformation	Conformation	Conformation	Conformation	Nonconformity		
	LMS conformance level	LMS-RTE3	LMS-RTE2	LMS-RTE2	LMS-RTE1	-		
	Number of errors	0	0	0	0	1	1	
	· LMS SCORM violation	0	0	0	0	0	0	
	· Unknown reason error	0	0	0	0	1	1	
Product information	Country	Japan				Total		
	Organization/Company	Company A	Company B	Company C	Company D		4	
	Language	UNICODE	Japanese	Japanese	Japanese			
A result of operation	Conformation/Nonconformity	Conformation	Conformation	Nonconformity	Conformation			
	LMS conformance level	LMS-RTE3	LMS-RTE3	-	LMS-RTE2			
	Number of errors	1	1	12	0	14		
	· LMS SCORM violation	0	1	12	0	13		
· Unknown reason error	1	0	0	0	1			

Test result

Contents (Each Country)

Product information	Country	Vietnum	Singapore		Malaysia
	Organization / Company	Company of Vetnum A	Company of Singapore A	Company of Singapore B	Company of Malaysia A
	Name of products	Product of Vetnum A	Product of Singapore A	Product of Singapore B	Product of Malaysia A
	Use Meta-data	Yes	Yes	Yes	No
SCO conformance test	Conformation/Noncoformity	Conformation	Conformation	Conformation	Conformation
	Conformance level	SCO-RTE1	SCO-RTE1+Mandatory and Optional	SCO-RTE1+Mandatory and Optional	SCO-RTE1+Mandatory
	Number of error	0	0	0	0
Meta-data conformance test	Conformation/Noncoformity	Conformation	Conformation	Conformation	/
	Conformance level	MD-XML1+option	MD-XML1+option	MD-XML1+option	
	Number of error	0	0	0	
Contents package conformance test	Conformation/Noncoformity	Conformation	Conformation	Conformation	Conformation
	Contents package conformance	ADLCP-PIF1	ADLCP-PIF1	ADLCP-PIF1	ADLCP-PIF1
	SCO conformance level	SCO-RTE1	SCO-RTE1+Mandatory and Optional	SCO-RTE1+Mandatory and Optional	SCO-RTE1+Mandatory
	Meta-data conformance level	MD-XML1+option	MD-XML1+option	MD-XML1+option	-
	Number of error	0	0	0	0

Test result

Contents (Japan)

Product information	Country	Japan		
	Organization / Company	Company E	Company F	
	Name of products	Contents 1	Contents 2	Contents 3
	Use Meta-data	No	No	Yes
SCO conformance test	Conformation/Noncoformity	Conformation	Conformation	Conformation
	Conformance level	SCO-RTE1+Mandatory	SCO-RTE1+Mandatory and Optional	SCO-RTE1+Mandatory and Optional
	Number of error	0	0	0
Meta-data conformance test	Conformation/Noncoformity	/	/	Conformation
	Conformance level			MD-XML1+Optional
	Number of error			0
Contents package conformance test	Conformation/Noncoformity	Conformation	Conformation	Conformation
	Contents package conformance level	ADLCP-PIF1	ADLCP-PIF1	ADLCP-PIF1
	SCO conformance level	SCO-RTE1+Mandatory	SCO-RTE1+Mandatory and Optional	SCO-RTE1+Mandatory and Optional
	Meta-data conformance level	-	-	MD-XML1+Optional
	Number of error	0	0	0
Contents package test availability	Before Multibyte	OK	NG	NG
	After Multibyte	OK	OK	OK

Test result

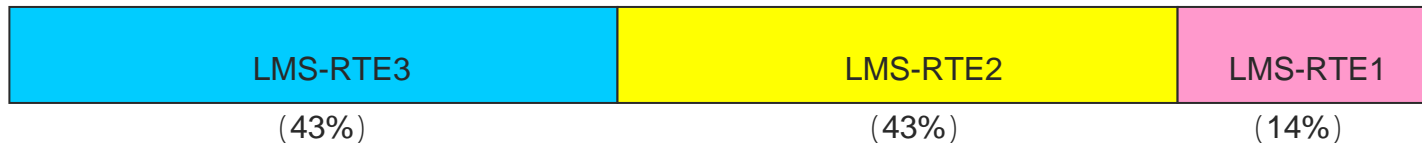
Error

Type	Country	Products	Symptom	Cause
LMS	Japan	Company A 's	Showing "The LMS is Non-conformant" by operator's operation. No error showing.	Operation by operator
		Company B 's	"O09" could be set to cmi..objectives.id of SCO and as error code was taken, 0 would be returned.	LMS SCORM violation
		Company C 's	O09 could be set to cmi.objectives.in SCO and as error code was taken, 0 would be returned.	LMS SCORM violation
			As error code was taken after LMSGetValue("cmi.launch_data._count") was issued in SCO, 401(Un-implementing error) would be returned.	LMS SCORM violation
			As error code is taken without issuing any API function before LMSInitialize() is issued in SCO, 301(Un-initialized error) would be returned.	LMS SCORM violation
			cmi.suspend_data which is taken in SCO is different from the data which was set at previous time.	LMS SCORM violation
			Previous learning history is not retained after SCO is re-started.	LMS SCORM violation
			LMSCommit() and LMSFinish() are issued after cmi.core.session_time was set in SCO. Then As cmi.core.total_time was taken as soon as LMSInitialize() was re-issued, it is going to be double.	LMS SCORM violation
			As error code was taken after normal value that is in the proper range was set, 405(improper data error) would be returned.	LMS SCORM violation
	cmi.launch_data that was taken is different from adlcp:datafromlms that was set in the manifest file.	LMS SCORM violation		
Malaysia	Multimedia Learning System	Neither detailed log nor LMS-RTE were not shown after the test has done.	Unknown reason error	

Test result

SCORM conformance level

LMS SCORM conformance level (7 SCORM conformed products)



Contents SCO conformance level (7 SCORM conformed products)



Contents Meta-data conformance level (7 SCORM conformed products)



Contents package conformance level (7 SCORM conformed products)



Test result

Cross test

Contents			Contents conformance level			
			SCO-RTE1+Mandatory		SCO-RTE1+Mandatory+Option	
LMS			Company E		Company F	
			Contents 1		Contents 2	
LMS-RTE Conformance level	Company	Name of Product	Expectation	Result	Expectation	Result
3	B	LMS product B				
	C	LMS product C				
2	D	LMS product D		× (1)		(1)
Reference (Nonconformity products)	A	LMS product A	×	(2)	×	(2)

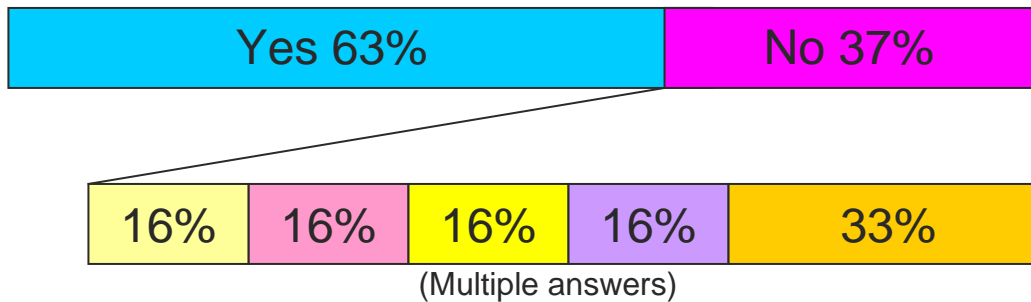
The products which support LMS-RTE3 worked 100%(4 cases) in accordance with theory. The products which support LMS-RTE2 worked 50%(1/2 cases) of the theory.

- 1 Since LMS conformance level is below the contents conformance level, it theoretically don't work. As a result, contents A didn't work.
- 2 The example of nonconformity LMS. This shows that contents sometimes work on the LMS that is judged as nonconformity.

Test result

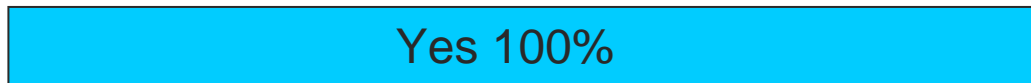
Survey (Number of responses 8)

Q . Was the Test Suite easy to use?



- Manual is not understandable
- Test suite operation is complex
- Takes too much time due to excessive number of items to check
- Difficult to understand due to the English test suite messages
- Other

Q . Is the Test Suite effective as a SCORM conformance tool?



Outcomes

- Verification of the effectiveness of test suite Ver1.2.7 which supports multi-byte
 - Verification of the effectiveness as test tool
 - 14 cases of SCORM violation were detected and 2 LMS products were judged as SCORM nonconformant as a result of the test of 9 LMS and 7 contents.
 - Verification of the effectiveness of multi-byte support
 - The test of 2 contents could only be completed after the Suite had been modified.
 - Evaluation of effectiveness based on survey
 - All participants who answered the survey responded that the test suite is effective as a SCORM conformance testing tool.

On the basis of these results, we conclude that this test suite which supports multi-byte characters can be effective as a SCORM conformance testing tool

Outcomes

- Checking the SCORM conformance level of the products
 - Conformance level
- <LMS>
43% of the products passed the highest level 3, 43% passed level 2 and 14 % passed level 1.
- <Contents>
57% of the products passed the highest level 3, 29% passed level 2 and 14% passed level 1.

This result shows that half of the LMS products might have interoperability problems with contents.

- Improving the level of LMS conformance is important for interoperability.
Because the conformance level that the contents products require is generally higher than that which the LMS products support.

Outcomes

- Verification LMS and contents interoperability
 - As a result of the preliminary cross test, 2 LMS products which conform to RTE3 worked with all levels of contents conformance level.
1 LMS product which conforms to RTE2 doesn't accept one of 2 contents which are of the same level or higher.
The points are as follows
 - When the LMS conformance level is higher than contents conformance level, interoperability problems don't occur.
 - When the LMS conformance level is lower than the level, interoperability problems occur.

Improving the level of LMS conformance is important for interoperability based on the test result of SCORM conformance level and verifying contents interoperability.

Challenges and proposal for the future

- Future concerns and proposals
 - Continuous ALIVE session
 - Conducting validation experiment
 - Community of interoperability know-how
 - Co-operation with ADL
 - Correspondence to SCORM2004