CONFERENCE AT A GLANCE

Monday, January 16

8:00 AM – 4:00 PM	On-Site Registration
9:00 AM – 4:00 PM	Tutorial Program
12:00 PM – 1:00 PM	Lunch

Tuesday, January 17

8:00 AM – 6:00 PM	On-Site Registration
9:00 AM – 12:00 PM	General Session: Welcome Remarks and Keynote
12:00 PM – 1:00 PM	Lunch
1:00 PM – 6:00 PM	Plug N Play
1:10 PM – 1:50 PM	Plug N Play Demonstrations
2:00 PM – 6:00 PM	Track 1: Plenary Sessions
2:00 PM – 6:00 PM	Track 2: SCORM 2004 Product Demonstrations
2:00 PM – 6:00 PM	Track 3: International Conference on SCORM
6:00 PM – 8:00 PM	*Welcome Reception*

Wednesday, January 18

8:00 AM – 6:00 PM	On-Site Registration
9:00 AM – 10:00 AM	General Session: Keynote
10:00 AM – 6:00 PM	Plug N Play
10:00 AM – 6:00 PM	Track 1: Plenary Sessions
10:00 AM – 6:00 PM	Track 2: SCORM 2004 Product Demonstrations
10:00 AM – 6:00 PM	Track 3: International Conference on SCORM
12:00 PM – 1:00 PM	Lunch
1:10 PM – 1:50 PM	Plug N Play Demonstrations
7:00 PM – 9:30 PM	*Banquet*

Thursday, January 19

9:00 AM – 10:30 AM	Track 1: Plenary Sessions
9:00 AM – 10:30 AM	Track 2: SCORM 2004 Product Demonstrations
9:00 AM – 10:30 AM	Track 3: International Conference on SCORM
9:00 AM – 11:00 AM	Plug N Play
10:45 AM – 12:15 PM	General Session: Keynote and Closing Remarks
12:15 PM – 1:00 PM	Lunch
1:00 PM	*National Palace Museum Tour*

TUTORIAL PROGRAM

Monday, January 16, 2006	
9:00 AM – 12:00 PM	**Introduction to SCORM and the ADL Initiative** *Chueh-sheng Memorial Hall, 10th Floor* Jennifer Brooks, *Alexandria ADL Co-Laboratory* David Wirth, *Academic ADL Co-Laboratory*
	12:00 PM – 1:00 PM **Lunch**
1:00 PM – 4:00 PM	**SCORM in Practice** *Chueh-sheng Memorial Hall, 10th Floor* Cande Filip, *ADL Technology Center* Aaron Silvers, *ADL Technology Center* Angelo Panar, ADL Technology Center

TECHNICAL PROGRAM

Tuesday, January 17, 2006	
	General Sessions *Chueh-sheng Memorial Hall, 10th Floor*
9:00 AM – 9:30 AM	**Welcome Remarks** Paul Jesukiewicz, *Alexandria ADL Co-Laboratory*
9:30 AM – 10:30 AM	**Keynote Speech** Dr. Robert Wisher, *ADL Initiative*
	10:30 AM – 10:45 AM **Break**
10:45 AM – 12:00 PM	**ADL Initiative Status and ADL Co-Lab Network** Paul Jesukiewicz, *Alexandria ADL Co-Laboratory* Steve Slosser, *Joint ADL Co-Laboratory* Judy Brown, *Academic ADL Co-Laboratory* Dr. Xiangen Hu, *Workforce ADL Co-Laboratory*
	12:00 PM – 1:00 PM **Lunch**
	PLUG N PLAY DEMONSTRATIONS *Student Activity Center*
1:10 PM – 1:30 PM	**Reload Editor 2004** Jennifer Brooks, *Alexandria ADL Co-Laboratory*
1:30 PM – 1:50 PM	**Open Source Integration for SCORM Editor (FreeMind and Reload)** Won Ho, *Kongju National University*
	1:00 PM – 6:00 PM **PLUG N PLAY** *Student Activity Center*

International Plugfest II		2006 International Conference on SCORM 2004
Plenary Session *Chueh-sheng Memorial Hall, 10th Floor*	**SCORM 2004 Product Demonstrations** *Room I501, 5th Floor*	**Session 1: Searching and Reusing of Learning Objects; Metrics of Learning Objects and Content Aggregations** *Chair: David Yang* *Room I201, 2nd Floor*
2:00 PM – 3:30 PM **SCORM Status and Evolution** ***(Includes SCORM 2004 3rd Edition)*** Kirk Johnson, *ADL Technology Center* Steve Slosser, *Joint ADL Co-Laboratory*	2:00 PM – 2:45 PM **SCORM 2004 Enhanced DLMS** Tzu-Chieh Tien, *Institute of Information Industry* 2:45 PM – 3:30 PM **Providing Context for Reuse** Ian Douglas, *Florida State University*	2:00 PM – 3:30 PM **Curriculum Tree 2.0: A Curricular and Learning Activity Management System** Young-Ching Chou, Yu-Ting Wu and Yang-Ming Ku **An Instructional Design Pattern Approach to the Design and Use of Pedagogically Reusable Learning Objects in a Web-based LCMS** Feng-Hsu Wang **SCASDA: SCORM-based Centralized Access, Search & Discovery Architecture** Nasir Hussain and M. Khalid Khan **Enhancing SCORM with a Domain Ontology** Jawad Berri, Rachid Benlamri and Yacine Atif
3:30 PM – 3:45 PM **Break**		

<table>
<tr><th>Plenary Session
Chueh-sheng Memorial Hall, 10th Floor</th><th>SCORM 2004 Product Demonstrations
Room I501, 5th Floor</th><th rowspan="2">Session 2: Automatic Testing of Sequencing and Navigation
Chair: Kiyoshi Nakabayashi
Room I201, 2nd Floor</th></tr>
<tr><td>3:45 PM – 5:15 PM
SCORM Conformance, Certification and Software Tools
Doug Peterson, ADL Technology Center
Judy Brown, Academic ADL Co-Laboratory
Aaron Silvers, ADL Technology Center</td><td>3:45 PM – 4:30 PM
A European perspective: delivering SCORM contents onto Location Based Mobile, Wearable, ITV and VR environments using the Learn eXact LCMS
Gianluca Rolandelli, GIUNTI Interactive Labs

4:30 PM – 5:15 PM
Metadata Implementation in Universitas 21 Global
Budy Harnata, Universitas 21 Global Pte. Ltd.</td></tr>
<tr><td colspan="2">5:15 PM – 6:00 PM
SCORM Panel Open Discussion
C.S. Memorial Hall, 10th Floor
Dr. Michael Freeman, ADL Initiative
Paul Jesukiewicz, Alexandria ADL Co-Laboratory
Jennifer Brooks, Alexandria ADL Co-Laboratory
Kirk Johnson, ADL Technology Center
Angelo Panar, ADL Technology Center
Cande Filip, ADL Technology Center
Aaron Silvers, ADL Technology Center</td><td>3:45 PM – 6:00 PM
A Framework for the Support of the SCORM Run-Time Environment
Gennaro Costagliola, Filomena Ferrucci and Vittorio Fuccella

Integrating SCORM Player into Authoring Tools
Huan Chung Li, Jiun Gu, Sung-Chieh Chen, Uei-Bor Huang and Wen-Tai Hsieh

Design and Implementation of SCORM 2004 Execution Engine and its Performance Evaluation
Kiyoshi Nakabayashi, Akihito Nakamura, Youichi Kosaka and Keizo Nagaoka

SCORM Sequencing Testing
Timothy K. Shih, Hsuan-Pu Chang, Chun-Chia Wang, Te-Hua Wang and Kuen Han Jan

The Course Browser: A Focus Context Technique for Visualizing SCORM 2004 Sequencing
Jiun Gu, Uei-Bor Huang and Sung Chieh Chen

Errors Detection of SCORM Sequencing Control Mode with Truth Table Derivation
Hsuan-Pu Chang, Chun-Chia Wang, Te-Hua Wang, Kuen Han Jan and Timothy K. Shih</td></tr>
<tr><td colspan="3">6:00 PM – 8:00 PM
Welcome Reception
Chueh-hsuan Chinese Garden</td></tr>
</table>

TECHNICAL PROGRAM

Wednesday, January 18, 2006

GENERAL SESSION
Chueh-sheng Memorial Hall, 10th Floor

9:00 AM – 10:00 AM

The Future of Standards
Robby Robson, *IEEE Learning Technology Standards Committee*

10:00 AM – 6:00 PM

PLUG N PLAY
Student Activity Center

International Plugfest II		2006 International Conference on SCORM 2004
Plenary Session *Chueh-sheng Memorial Hall, 10th Floor*	**SCORM 2004 Product Demonstrations** *Room I501, 5th Floor*	**Session 3: Mobile Technology for Distance Learning** *Chair: Stephen J.H Yang* *Room I201, 2nd Floor*
10:00 AM – 10:45 AM **CORDRA and the ADL Registry** Paul Jesukiewicz, *Alexandria ADL Co-Laboratory* Angelo Panar, *ADL Technology Center*	10:00 AM – 10:45 AM **A Rapid Interactive/Game Authoring Framework in a Managed Learning Environment** Anthea Ong, *Centre for the Advancement of Research & Development in Educational Technology* Chua Chee Kwang, *Centre for the Advancement of Research & Development in Educational Technology*	10:00 AM – 10:45 AM **Context Aware SOA form Mobile Learning Activity** Stephen J.H. Yang, Angus F.M. Huang, Blue C.W. Lan and Irene Y.L. Chen **An Adaptive Content Delivery Mechanism for Multiple Mobile Devices** Chun-Hun Chen, Shian-Shyong Tseng and Jun-Ming Su

10:45 AM– 11:15 AM

Break

Plenary Session *Chueh-sheng Memorial Hall, 10th Floor*	**SCORM 2004 Product Demonstrations** *Room I501, 5th Floor*	**Session 4: Question, Test, and Performance Assessment** *Chair: Liu Shijin* *Room I201, 2nd Floor*
11:15 AM – 12:00 PM **SCORM and S1000D Integration** Jennifer Brooks, *Alexandria ADL Co-Laboratory* Ben Dellavedova, *ADL Job Performance Technology Center*	11:15 AM – 12:00 PM **SCORM SCO Presentation Engine (S2PE)** Kraig Mentor, *Concurrent Technologies Corporation*	11:15 AM – 12:00 PM **Research of Performance Assessment in Distance Learning** Liu Shijin and Li Jia **Formative Assessment in SCORM-based Learning Environments** Shueh-Cheng Hu
12:00 PM – 1:00 PM **Lunch**		
PLUG N PLAY DEMONSTRATION *Student Activity Center*		
1:10 PM – 1:30 PM	**SCORM S1000D Reuse Demonstration** Nigel Ward, *(Candidate) Australia ADL Co-Laboratory*	
1:30 PM – 1:50 PM	**Real time communication tool for e-Learning** Harvard Chung, *WebEx Taiwan*	

Plenary Session *Chueh-sheng Memorial Hall, 10th Floor*	**SCORM 2004 Product Demonstrations** *Room I501, 5th Floor*	**Session 5: Content Authoring and Converting** *Chair: Tsung-Yao Lee* *Room I201, 2nd Floor*
2:00 PM – 2:45 PM **TBD** 2:45 PM – 3:30 PM **International SCORM Adoption** *Institute for Information Industry*	2:00 PM – 2:45 PM **Course Go! – An Integrative Authoring Tool** Shih-Chun Chou, *Institute for Information Industry* Jing Cu, *Institute for Information Industry* 2:45 PM – 3:30 PM **Structure within the SCO: A Strategy for Effective Content Reuse** Tyde Richards, *Eduworks*	2:00 PM – 3:30 PM **A Communicative Courseware Authoring System Compliant to CELTS** Tsung-Yao Lee, Yen-Ping Chu and Chou-Chen Yang **The Video SCORM: Learning with Entertainment** Te-Hua Wang, Han-Bin Chang, Shin-Zu Chen, Timothy K. Shih, Li-Chieh Lin and Te-Lu Tsai **WebDAV Aware Content Management System for Content Aggregation** Mrs. Uma U. Gajendragadkar **A Web-based Collaborative Authoring System Focusing on Reusability of Web Educational Materials** Fei Yuan, Hiroyuki Mitsuhara, Kazuhide Kanenishi and Yoneo Yano
3:30 PM – 3:45 PM **Break**		

Plenary Session *Chueh-sheng Memorial Hall, 10th Floor*	**SCORM 2004 Product Demonstrations** *Room I501, 5th Floor*	**Session 6: Distance Learning** *Chair:Madhav G Gaikwad* *Room I201, 2nd Floor*
3:45 PM– 4:30 PM **International SCORM Adoption** *Higher Education Taiwan* 4:30 PM – 5:15 PM **International SCORM Adoption: SCORM Promotion Activities in the Asian Region** Kiyoshi Nakabayashi, *e-Learning Consortium Japan* 5:15 PM – 6:00 PM **International SCORM Adoption: SCORM Use Case in the Cyber Home Learning System** Yong-Sang Cho, *Korea Education and Information Service* (*KERIS*)	3:45 PM – 4:30 PM **LMS and Content Conversion Tools for Multiple Standards** Mike Rustici, *Rustici Software, LLC* 4:30 PM – 5:15 PM **Applying S-P Chart Analysis as Feedback Mechanism in SCORM Assessment Material** Sheng-Bo Chen, *National Taichung Institute of Technology, Department of Multimedia Design* Yung-Chou Hsu, *National Taichung Institute of Technology, Department of Multimedia Design* Chewei Hu, *National Taichung Institute of Technology, Department of Multimedia Design* Yu-chen Lin, *Southern Taiwan University of Technology, Department of Applied English* 5:15 PM – 6:00 PM **Video SCORM** Timothy K. Shih, *Tamkang University* Han-Bin Chang, *Tamkang University* Shin-Zu Chen, *Tamkang University*	3:45 PM – 6:00 PM **The Design of Decomposed LMS With Embedded 3D Virtual Instruments** Fu-Chien Kao, Tien-Hsin Feng and Tzu-Chao Chien **20 Cognitive and Psychomotor Multimedia Tools for "PC Hardware Maintenance": A Self-learner approach** Vasant G Wagh, Madan B Matsagar and Madhav G Gaikwad **The Developing of SCORM 2004 Adoptive Courseware** Jeng-heng Hu, Shuping Chang and Chen-Yu Lee **SCORM 2004 Compliant Learning Content Management System with Scaffolding Template Design** Chin-Chieh Hao, Jing-Wen Wang and Ren-Hung Hwang **Production System Model for Instruction Design** Ubirajara Rocha Ferreial and Celi Langhi **SCORM-LST: Describing Learning State Transitions Based on Learners' Interactions** Yasuhiko Morimoto, Maomi Ueno, Shingo Shitaba, Setsuo Yokoyama and Youzou Miyadera
7:00 PM – 9:30 PM **Banquet** *The Grand Hotel*		

TECHNICAL PROGRAM

Thursday, January 19, 2006

9:00 AM – 11:00 AM

PLUG N PLAY

Student Activity Center

International Plugfest II		2006 International Conference on SCORM 2004
Plenary Session *Chueh-sheng Memorial Hall, 10th Floor*	**SCORM 2004 Product Demonstrations** *Room I501, 5th Floor*	**Session 7: Infrastructure and Design of Repository: Discovery and Registration of Repository** *Chair: Imran Kasmani* *Room I201, 2nd Floor*
9:00 AM – 10:30 AM **SCORM Application: Examples, Practices and Lessons Learned** Cande Filip, *ADL Technology Center* Aaron Silvers, *ADL Technology Center*	9:00 AM – 9:45 AM **The Design and Development of Asynchronous Distance Leaning Supporting System** Wasin Pirom, *Chulalongkorn University* 9:45 AM – 10:30 AM **Design Quality eLearning Course 2.0--The First CP SCORM 2004 Conformant from Taiwan** Chang-Hua Lai, *Taiwan Knowledge Bank, Co., Ltd.* Chun-Kwei Chen, *Taiwan Knowledge Bank, Co., Ltd.* Yu-Kuan Chen, *Taiwan Knowledge Bank, Co., Ltd.*	9:00 AM – 10:30 AM **Infrastructure and Design of Repository** Imran Kasmani **Design of the Smart Gateway used for Instrument Control** Yuansheng Liu , Weimin Li , Wenson Pan **Metadata Wizard Design for Searchable and Reusable Repository** H. W. Lin, Mon-Tin Tzou, Timothy K. Shih, Chun-Chia Wang, and Li-Chieh Lin **Distributed and Learner Adaptive e-Learning Environment with Use of Web Services** Yasuhisa Tamura,Takeshi Yamamuro

10:30 AM– 10:45 AM

Break

	GENERAL SESSION *Chueh-sheng Memorial Hall, 10th Floor*
10:45 AM – 11:45 AM	**Standards for Free and Open Learning** Dr. Rory McGreal, *Athabasca University, Canada*
11:45 AM – 12:15 PM	**Closing Remarks** Paul Jesukiewicz, *Alexandria ADL Co-Laboratory* Lichieh Lin, *Institute for Information Industry, Taiwan*
12:15 PM – 1:00 PM	**Lunch**
1:00 PM	**National Palace Museum Tour**

INTERNATIONAL PLUGFEST II PRESENTATION ABSTRACTS

Introduction to SCORM and the ADL Initiative

Jennifer Brooks, *Alexandria ADL Co-Laboratory*
David Wirth, *Academic ADL Co-Laboratory*
Monday, January 16, 2006 9:00 AM – 12:00 PM Chueh-sheng Memorial Hall, 10th Floor

This tutorial is a high-level look at ADL and SCORM, the definition of SCORM conformance and certification, the direction of ADL and a look as some emerging efforts in e-learning. Although this tutorial is high-level, it focuses in depth on how SCORM works.

Reload Editor 2004

Jennifer Brooks, *Alexandria ADL Co-Laboratory*
Tuesday, January 17, 2006 1:10 PM – 1:30 PM Student Activity Center

Reload Editor 2004 is an open source content packaging tool for aggregating content objects to create a SCORM 2004 conformant content package. Reload contains a rather unique Sequencing Editor designed through collaboration between SCORM experts and Instructional Designers from ADL and the Learning Systems Architecture Lab (LSAL) at Carnegie Mellon University. Our goal is to help the instructional designers overcome the technical challenges of implementing SCORM, accelerate development of SCORM 2004 conformant content packages with sequencing, and assist Instructional Designers at various phases of development. The tool also includes sequencing templates for commonly implemented sequencing behaviors such as remediation, n-way branching, etc. By separating the content from the intended structure and rules for sequencing, any content may be switched in and out of these templates creating new scenarios that adhere to the same sequencing patterns for delivery. We anticipate more contributions from the community to this open source project to advance its capabilities and UI as more SCORM content is being published and shared.

Applying S-P Chart Analysis as Feedback Mechanism in SCORM Assessment Material

Sheng-Bo Chen, Yung-Chou Hsu and Chewei Hu, *National Taichung Institute of Technology, Department of Multimedia Design*

Yu-chen Lin, *Southern Taiwan University of Technology, Department of Applied English*
Wednesday, January 18, 2006 4:30 PM – 5:15PM Room I501, 5th Floor

This demo mainly presents how to implement an online assessment feedback mechanism into SCORM 2004 content package. This content package identifies if you are the teacher or students and provides the real-time assessment result collection, analysis, and online report for the teacher and students. The S-P Table (Takahiro Sato, 1974) was adopted as the analysis tool, and this content package provides S-P Curve automatic determination.

Different from always being added on LMS in the past, assessment feedback mechanism in this demo earns many advantages: not being assigned to any particular LMS, following the interoperation of SCORM, and enhancing the assessment analysis functions of SCORM.

SCORM Use Case in the Cyber Home Learning System

Yong-Sang Cho, *Korea Education and Information Service* (*KERIS*)
Wednesday, January 18, 2006 5:15 PM – 6:00 PM Chueh-sheng Memorial Hall, 10th Floor

The Cyber Home Learning System of Korea is an e-Learning system which have been planed and operated by Ministry of Education, KERIS), and 16 Metropolitan & Provincial Office of Education since 2004 and is first case in the world to adapt in K-12 area national scale which basis for SCORM 2004.

KERIS has developed and modified SCORM 2004 based Content Packaging Tool, Conformance Test Suite and LCMS (Learning Contents Management System) to adapt SCORM in Cyber Home Learning System. Then KERIS has supplied and done technical support to 16 Metropolitan & Provincial Office of Education by open source type.

Besides, KERIS trained officers and developers of Metropolitan & Provincial Office of Education for standardization including SCORM.

In addition, to make contents flexibly and to support collaboration learning, we are researching about refining sequencing & navigation rule of SCORM 2004.

Finally, Standardization specs that apply to Cyber Home Learning System are as following.

1. SCORM 2004 Content Packaging Spec
2. SCORM 2004 Data Model and API/API Adaptor
3. SCORM 2004 Sequencing & Navigation Rule
4. KEM (Korea Educational Metadata for K-12)

I will introduce how to develop and service Cyber Home Learning System which basis for SCORM and announce R&D status about standardization topic including SCORM Sequencing & Navigation in International Plugfest 2.

Key Objectives:

1. Why need SCORM to adapt distributed learning and service environment?
2. How and what to do develop advanced SCORM?

Intended Audience: officer, researcher, planner about e-Learning

Learning Outcomes:

1. SCORM use case in K-12 area(regular education)
2. various view point about metadata and sequencing & navigation

Course Go! -- an Integrative Authoring Tool

Shih-Chun Chou and Jing Cu, *Institute for Information Industry*
Wednesday, January 18, 2006 2:00 PM – 2:45 PM Room I501, 5th Floor

To create a complete digital learning content requires the cooperation of professional instructors, graphic designers, and programmers. We have developed Course Go!, an integrative content editing software that creates a cooperative environment between the three roles. Instructors can design course content with word, while allowing graphic designers to use Dreamweaver or FrontPage to enhance the visual presentation and programmers to design objects for the instructors to use.

Features:

1. Meets SCORM 1.2 and SCORM 2004 standards
2. Provides template creation tools
3. Combines the use of Word for content editing
4. Supports multiple languages
5. Supports template interchanging

Providing Context for Reuse

Ian Douglas, *Florida State University*
Tuesday, January 17, 2006 2:45 PM – 3:30 PM Chueh-sheng Memorial Hall, Room I501, 5th Floor

SCORM objects are liable to be the result of a front-end analysis. In front-end analysis someone looks at a performance problem and determines that some form of content is required to be delivered in either a training or performance support solution. This presentation will report on a project carried out in collaboration with front-end analysis units in the U.S. military. It was found that knowledge in these units is currently captured through non-standard documents, which are not easily shared. A tool will be demonstrated for capturing 'analysis objects', which are a SCORM compatible standard for the capture and storage of front-end performance analysis knowledge. Analysis objects can be linked to SCORM objects to provide the problem context that would facilitate reuse.

SCORM in Practice

Cande Filip, *ADL Technology Center*
Aaron Silvers, *ADL Technology Center*
Monday, January 16, 2006 1:00 PM – 4:00 PM Chueh-sheng Memorial Hall, 10th Floor

The purpose of this tutorial is to better provide the three communities of practice, Instructional Designers, Content Developers and Software Developers, an overview of decisions and analysis should be made for a SCORM project, whether the development of a tool, LMS or a SCORM courseware project.

SCORM Application: Examples, Practices and Lessons Learned

Cande Filip, *ADL Technology Center*
Aaron Silvers, *ADL Technology Center*
Thursday, January 19, 2006 9:00 AM – 10:30 AM Chueh-sheng Memorial Hall, 10th Floor

The ADL Application Team will demonstrate four SCORM 2004 content examples available for download from ADLNet.org. This will be an overview of each example, including purpose, audience, objectives and results. After the demonstration, a discussion of lessons learned about Sequencing from an Instructional Design and Content Development point of view. These lessons learned stress the need for good team communications, project management, instructional sequencing and relating that information between the design and development sides of a project.

ADL Initiative Status and ADL Co-Lab Network

Paul Jesukiewicz, *Alexandria ADL Co-Laboratory*
Steve Slosser, *Joint ADL Co-Laboratory*
Judy Brown, *Academic ADL Co-Laboratory*
Dr. Xiangen Hu, *Workforce ADL Co-Laboratory*
Tuesday, January 17, 2006, 10:45 AM – 12:00 PM Chueh-sheng Memorial Hall, 10th Floor

The ADL Initiative Status / Update session will provide a high-level overview of where the ADL Initiative currently is and where it is going over the next several years. This session will also discuss the plans for continued collaboration across international standards and specification organizations and how ADL plans to remain a strong proponent in advancing an adaptive learning environment that is open and interoperable across current and future learning technologies.

SCORM Status and Evolution (Includes SCORM 2004 3rd Edition)

Kirk Johnson, *ADL Technology Center*
Steve Slosser, *Joint ADL Co-Laboratory*
Tuesday, January 17, 2006 2:00 PM – 3:30 PM Chueh-sheng Memorial Hall, 10th Floor

The SCORM Status and Evolution session will present ADL's model for SCORM development and evolution and show how the SCORM set of specifications and standards has evolved to its present state. Highlighted will be specific improvements gained in the maturation from SCORM Version 1.2 to SCORM 2004, and specific details about the soon to be released SCORM 2004 3rd Edition. Metrics on the current level of adoption for SCORM 2004 and implementation successes will be shared. Past and present Prototype project, ways in which the ADL Community can influence SCORM evolution, details on future editions of the SCORM, and ADL's plans to deprecate SCORM Version 1.2 will be presented.

Metadata implementation in Universitas 21 Global

Budy Harnata, *Universitas 21 Global Pte. Ltd.*
Tuesday, January 17, 2006 4:30 PM – 5:15 PM Room I501, 5th Floor

Universitas 21 Global (U21G) has been implementing the SCORM 1.2 metadata to tag all of its content and digital assets. It also has been using the LCMS to manage its content and digital assets.

After implementing the SCORM metadata for more than two years, U21G has gained some experience as well discovered some issues in using the metadata. The presentation will highlight the issues and experience U21G has been facing, something that the audience will be able to learn from. Even though the metadata used is SCORM 1.2, the same lesson could be applied to any metadata specifications, including the SCORM 2004.

Open Source Integration for SCORM Editor (FreeMind and Reload)

Won Ho, *Kongiu National University*
Tuesday, January 17, 2006 1:30 PM – 1:50 PM Student Activity Center

There are many open source programs available for educational division. Reload is a SCORM 2004 Editor, which provides many functionalities. The graphical interface of Reload is somewhat difficult to grasp the whole contents structure. On the other hand FreeMind is open source mindmap tool, which provides convenient editing environment and good graphical representation. The presentation will be about new SCORM 2004 Editor, which combined FreeMind and reload. The tool provides convenient, easy, and quick editing functions to the users.

Design Quality eLearning Course 2.0 - The First CP SCORM 2004 Conformant from Taiwan

Chang-Hua Lai, Chun-Kwei Chen and Yu-Kuan Chen *Taiwan Knowledge Bank, Co., Ltd.*
Thursday, January 19, 2006 9:45 AM – 10:30 AM Room I501, 5th Floor

Design Quality eLearning Course 2.0 is the first course of Application of Quality Knowledge Series. It's also the first course from Taiwan which got the CP SCORM 2004 Conformant from ADL.

- **Course Objectives:** Help user to utilize the concept and solution of design quality during the product development process.
- **Target Audience:** R&D people, engineer and manager level of R&D, Manufactory and Quality Control departments.
- **Course Length:** 8 hours
- **Design concept:**
  1. Problem-based content design and 7-step of learning levels (Question-Answer-What-How-Example-Why-Advanced)
  2. Utilize sequencing rule of SCORM 2004 to control the learning paces to achieve the adaptive learning processes and behavior.

SCORM SCO Presentation Engine (S2PE)

Kraig Mentor, *Concurrent Technologies Corporation*
Wednesday, January 18, 2006 11:15 AM – 12:00 PM Room I501, 5th Floor

The presentation objective is to offer one solution for the simplification of SCO creation for developers and instructional designers. The presentation informs the audience about the use of XML to architect and implement immersive, varied content through the implementation of a pre-coded playback engine. The SCORM SCO Presentation Engine allows individuals lacking programming skills who previously could not implement SCORM content, to create entire SCOs, including branching and quizzes, by the use of simple XML. This approach takes content creation in a new direction by removing the code burden from the author and allowing them to focus on content creation.

SCORM Promotion Activities in the Asian Region

Kiyoshi Nakabayashi, *e-Learning Consortium Japan*
Wednesday, January 18, 2006 4:30 PM – 5:15 PM Chueh-sheng Memorial Hall, 10th Floor

AEN (Asia e-Learning Network) initiative is aiming to share experience and knowledge about e-Learning activities in Asian region. One of the important topics of AEN is SCORM Promotion. Interoperability experiment for SCORM based products called ALIVE (AEN LMS and content Interoperability Validation Experiment) has been conducted since 2004. This presentation reports the result of the most recent ALIVE event and other activities for SCORM promotion in the Asian Region.

SCORM Conformance, Certification and Software Tools

Doug Peterson, *ADL Technology Center*
Judy Brown, *Academic ADL Co-Laboratory*
Aaron Silvers, *ADL Technology Center*
Tuesday, January 17, 2006 3:45 PM – 5:15 PM Chueh-sheng Memorial Hall, 10th Floor

This session highlights the use of ADL software products. The ADL software products demonstrated will be the SCORM 2004 Conformance Test Suite Version 1.3.3 and the SCORM 2004 Sample Run-Time Environment Version 1.3.3. This discussion will also include the needs of content developers and software developers.

This presentation will also include the definition of SCORM conformance and certification, as well as the difference between the two, and an overview of the SCORM certification process and the progress of SCORM certification in the e-learning community.

The Design and Development of Asynchronous Distance Learning Supporting System

Wasin Pirom, *Chulalongkorn University*
Thursday, January 18, 2006 9:00 AM – 9:45 AM Room I501, 5th Floor

This paper proposes a design of asynchronous distance learning supporting system (ADLSS) according to the basic of SCORM requirements in order to increase ability of a learning management system (LMS). In the ADLSS, teachers produce and integrate knowledge and understanding to construct the learning objects (LOs), including contents structure and test module, according to the basic of SCORM specifications. The LOs are then uploaded into the server of LMS in which learners can download the LOs into clients of ADLSS and teachers can track learning activities of learning reports from LMS and then report the feedback of learning status. In addition, this project develops and designs the real time face detection for using in ADLSS in order to detect the face of learner.

Structure within the SCO: A Strategy for Effective Content Reuse

Tyde Richards, *Eduworks*
Wednesday, January 18, 2006 2:45 PM – 3:30 PM Room I501, 5th Floor

This presentation will describe and demonstrate technology that enables learning-related content from different sources to be deconstructed into a common set of structural and content units that are smaller than the SCO. From these units, SCORM-conformant SCOs can be constructured that are pedagogically and stylistically consistent. In defining these units, an important project goal is the attempt to leverage existing open specifications that are XML-based and widely adopted. The technology and an associated content conversion methodology are evolving under the aegis of the Joint ADL Co-Lab Prototype Program. The presentation will discuss the implications of the approach being taken for the SCORM community.

A European perspective: delivering SCORM contents onto Location Based Mobile, Wearable, ITV and VR environments using the Learn eXact LCMS

Gianluca Rolandelli, *GIUNTI Interactive Labs*
Tuesday, January 17, 2006 3:45 PM – 4:30 PM Room I501, 5th Floor

Given by Europe's leading LCMS technology provider and most active RD and standardization player, GIUNTI Interactive Labs (www.giuntilabs.com), the presentation will highlight the large uptake of SCORM into both EU and commercial developments based onto the Learn eXact LCMS (www.learnexact.com) now available also for SCORM 2004 authoring and delivering. The speech will present achievements from Europe's leading RD Projects MOBIlearn (www.mobilearn.org), WearitatWork (www.wearitatwork.com) and Sculpteur (www.sculpteurweb.org) where GIUNTI Labs has developed the new eXact Mobile, eXact TV and eXactVR plugins for delivering SCORM contents now onto Mobile and Wearable computers, Digital Terrestrial TV Settop Boxes and VRML based collaborative Virtual Worlds for Art Education, Industrial Maintenance and Corporate Training scenarios.

LMS and Content Conversion Tools for Multiple Standards

Mike Rustici, *Rustici Software LLC*
Wednesday, January 18, 2006 3:45 PM – 4:30 PM Room I501, 5th Floor

Participants will learn about two tools from Rustici Software that greatly simplify the process of converting existing content and LMS's to conform to the SCORM 2004, 1.2, 1.1 and AICC specifications. These tools enable developers to perform one simple conversion to add support for all four standards simultaneously. This presentation will be targeted at managers and developers tasked with converting existing products to be standards conformant. Of particular note, we will discuss several integrated solutions to the cross-domain scripting problem (including a remote RTE component and document.domain manipulation) as well as metadata extensions which provide increased control to content developers.

Video SCORM

Timothy K. Shih, Han-Bin Chang and Shin-Zu Chen, *Tamkang University*
Wednesday, January 18, 2006 5:15 PM – 6:00 PM Room I501, 5th Floor

In the past few years, the Multimedia Information Networking Lab at Tamkang University had developed several systems based on SCORM 2004. These systems deliver SCORM-compliant contents on different devices, such as PDAs, cellular phones, PCs, and even on hardcopy books with hyper pen as the input device. We present a new system based on video technology and digital television. With the system, SCORM 2004 is realized on set-top box and digital television. MHP (i.e., Multimedia Home Platform) is an open standard for interactive digital television. We develop a MHP and SCORM-based authoring tool for the users to organize their video presentations into several video scenes. Each scene can be incorporated with a few actors, which performs two types of pre-defined actions. A video jump action allows the user to navigate to another video scene. A web jump action allows the user to see a website while one is watching the video. Thus, our run-time environment allows general users to study SCORM-compliant course materials on digital television, using remote controller as the input device. The run-time environment is based on MHP 1.1. With proper setup of hardware configurations, SCORM-based distance learning programs can be available on digital TVs.

SCORM 2004 Enhanced DLMS

Dr. Tzu-Chieh Tien, *Institute of Information Industry*
Tuesday, January 17, 2006 2:00 PM – 2:45 PM Room I501, 5th Floor

DLMS is an LMS product which can be applied in a distributed environment. There users can take courses not only at the registered LMS but also at allied ones. DLMS is developed by using Java and JSP techniques. Now it has been powered by equipping SCORM 2004 sequencing engine. Audience will know the distributed architecture of the DLMS and how the SCORM 2004 sequencing engine is embedded. If audience would like to understand the functions of a DLMS, a product demo will also be given.

SCORM S1000D Reuse Demonstration

Nigel Ward, *(Candidate) Australia ADL Co-Laboratory*
Wednesday, January 18, 2006 1:10 PM – 1:30 PM Student Activity Center

The SCORM – S1000D Re-use Project was a collaborative project between Boeing Australia, HarvestRoad Limited and the Australian Commonwealth Department of Education, Science and Training (DEST). The technical demonstrator shows: - the use of repositories to share content components between SCORM training modules and S1000D technical documentation based on authoritative data sources, and - the timely update of SCORM and S1000D content based on updates to the common data sources. The demonstration will include discussion of open issues, best practices and lessons learned and recommendations are for the further development of S1000D/SCORM and associated infrastructure to support the use of repositories to share content components between SCORM training modules and S1000D technical documentation.

ABSTRACT FROM ICSCORM 2004

Curriculum Tree 2.0: A curricular and learning activity management system

Young-Ching Chou, Yu-Ting Wu, Yang-Ming Ku

Tuesday, January 17, 2006 2:00 PM – 3:30 PM Room I201, 2nd Floor

There are much more learning materials and learning activities in the recent elementary curriculum. This increases heavy load for teachers to prepare and arrange the teaching plan, and students feel more complex to capture learning progress of the curriculum. In this article, we introduce a curriculum management system design to support teachers' curriculum management and to help students catch key points of each class. A pilot study to test the system is also reported.

An Instructional Design Pattern Approach to the Design and Use of Pedagogically Reusable Learning Objects in an Web-base

Feng-Hsu Wang

Tuesday, January 17, 2006 2:00 PM – 3:30 PM Room I201, 2nd Floor

As Learning Content Management System (LCMS) has evolved into a critical part of the learning paradigm based on reusable learning objects, it is an important issue about how to reuse learning objects in a pedagogical manner. This paper proposes a novel mechanism, called Instruction Design Pattern (IDP), which supports instructors in developing theory-sound learning contents by reusing learning objects in a pedagogical manner. A web-based LCMS system, called IDEAL, was implemented to support the IDP approach based on the SCORM standard. Preliminary test results show that the IDP approach helps to promote the reuse of learning objects in the level of instructional strategies.

Enhancing SCORM with a Domain Ontology

Jawad Berri, Rachid Benlamri, Yacine Atif*

Tuesday, January 17, 2006 2:00 PM – 3:30 PM Room I201, 2nd Floor

The production of e-learning material is an expensive and tedious task. Many standards have come out to define a common convention for learning object metadata definition and representation. The aim is to allow object reuse and to standardize authoring activities. Metadata's mission however has been limited to inform learning management systems about technical features of learning objects while having less emphasis on its educational features. This is mainly due to the fact that there is no common agreement on the domain content structure and the used terminology. Consequently, the problem with metadata and usability stems from the lack of a common ontology. In this paper we present a framework for ontology guided instructional design and planning in specific domain knowledge. In particular, the proposed ontology-based system provides a great potential for enhancing SCORM's e-learning capabilities related to its educational use.

A Framework for the Support of the SCORM Run-Time Environment

Gennaro Costagliola, Filomena Ferrucci, Vittorio Fuccella

Tuesday, January 17, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

In order to allow interoperability among Learning Management Systems there is a need for a standard environment in which the Learning Objects could be launched and exchange data with the Learning Management System. The functionalities of this environment are often referred to as Computer Managed Instruction and are at present defined in several specification documents issued by the producers of the main standards and guidelines. The most famous of them is SCORM Run-Time Environment, produced by ADL. In this paper we propose an Object Oriented framework which allows the development of Learning Management Systems with the support of Computer Managed Instruction functionalities. The framework can be opportunely instanced to obtain an environment in which Learning Objects, compliant with different versions of the specifications, can be launched without incurring incompatibility problems.

Integrating SCORM Player into Authoring Tools

Huan Chung Li, Jiun Gu, Sung-Chieh Chen, Uei-Bor Huang, Wen-Tai Hsieh
Tuesday, January 17, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

This paper studies the integration of authoring tools and the SCORM 2004 Player in order to improve the course creation experience. We hope to achieve a realistic SCORM RTE operation environment simulation, provide Data Model browsing, and correctly simulate an adaptive course. These will allow content developers to preview changes during the RTE simulation and debug accordingly. During our research we discovered that this combination between the two presents content developers with a "What You See Is What You Get (WYSIWYG)" editing environment, allowing for quicker browsing, data simulation, and error detection. We will also compare the new combined authoring tool with the older structure (unaltered SCORM Player), along with some ideas on further exploration and research on the subject.

Design and Implementation of SCORM2004 Execution Engine and its Performance Evaluation

Kiyoshi Nakabayashi, Akihito Nakamura, Youichi Kosaka, Keizo Nagaoka
Tuesday, January 17, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

This paper describes development of a content execution engine that is compliant with SCORM 2004, a WBT content standard. SCORM 2004 newly defines a sequencing specification for designing content adaptive to a learner's progress status. It also contains a specification for communication between an LMS and client side content. The developed engine consists of functional modules corresponding to these specifications. In addition, the engine is equipped with several utility functions such as sequencing log recording and GUI customization. An evaluation result indicates that the engine achieves performance suitable for practical use.

SCORM Sequencing Testing

Timothy K. Shih, Hsuan-Pu Chang, Chun-Chia Wang*, Te-Hua Wang, Kuen Han Jan
Tuesday, January 17, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

Advanced Distributed Learning (ADL) propose SCORM (Sharable Content Object Reference Model) that aims to provide the specifications necessary to enable content developers with the ability to produce content that is sharable, accessible, reusable, and most importantly interoperable. SCORM[1] 2004 also defines the sequencing information that describes how SCORM-conformant content may be sequenced to the learner through a set of learner or system-initiated navigation events. The branching and flow of that content may be described by a predefined set of activities. SCORM Sequencing provides users the ability to prescribe the intend learning sequencing strategy by themselves, but quit many completed definitions and lacking the testing mechanism for these authored sequencing information results in usual developers probably design the unreasonable or careless settings of SCORM sequencing. The improper sequencing information would lead a learner to attend unanticipated learning activities, or causes unexpected situations such as learner's attempt is stuck in a certain activity or some demanded activities are not able to be identified for delivery always. Consequently, if a published course has wrong or improper sequencing information, it will waste a lot of time and energy for developers to suspend the course process and then refine the course sequencing architecture.

In this paper, the testing mechanism focuses on detecting improper setting of Sequencing Control Mode elements applied to activities. An assistant truth table derived from the definitions of Sequencing Control Mode elements and experiments with latest ADL runtime environment will be introduced. Finally, the implementation demonstrates the program that lists the effective warning message for users according to the proposed testing algorithm.

The Course Browser: A Focus Context Technique for Visualizing SCORM 2004 Sequencing

Jiun Gu, Uei-Bor Huang, Sung Chieh Chen
Tuesday, January 17, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

In the field of e-learning material, ADL's SCORM standards are the most commonly recognized. SCORM 2004 introduces Sequencing settings, allowing courses to become more adaptable, giving students a more dynamic learning experience. One lesson can include different material according to the proficiency level of each specific student. Currently available SCORM 2004 compliant editing tools, however, do not allow for easy usage of the

new sequencing settings. The current method of using an RTE to examine course materials is tedious and time consuming. Furthermore, it is still difficult to get a complete grasp of the course sequence after uploading into an RTE. This paper will present an adaptive course material simulated visualization system based on SCORM 2004 standards. We hope to simplify the SCORM 2004 material authoring process, speed up viewing of course flow and sequencing settings, and finally to aid content developers in error detection and debugging. By achieving these goals, course material creation under SCORM 2004 will be faster and more accurate.

Errors Detection of SCORM Sequencing Control Mode with Truth Table Derivation

Hsuan-Pu Chang, Chun-Chia Wang*, Te-Hua Wang, Kuen Han Jan, Timothy K. Shih
Tuesday, January 17, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

SCORM 2004 defines the sequencing information that describes how SCORM-conformant content may be sequenced to the learner through a set of learner or system-initiated navigation events. It provides users the ability to prescribe the intend learning sequencing strategy by themselves, but quit many completed definitions and lacking the testing mechanism for these authored sequencing information results in usual developers probably design the unreasonable or careless settings of SCORM sequencing. The improper sequencing information would lead a learner to attend unanticipated learning activities, or causes unexpected situations such as learner's attempt is stuck in a certain activity or some demanded activities are not able to be identified for delivery always.

In this paper, the testing mechanism focuses on detecting improper setting of Sequencing Control Mode elements applied to activities. An assistant truth table derived from the definitions of Sequencing Control Mode elements and experiments with latest ADL runtime environment will be introduced. Finally, the implementation demonstrates the program that lists the effective warning message for users according to the proposed detecting algorithm.

Context Aware SOA form Mobile Learning Activity

Stephen J.H. Yang, Angus F.M. Huang, Blue C.W. Lan, Irene Y.L. Chen
Wednesday, January 18, 2006 10:00 AM – 10:45 AM Room I201, 2nd Floor

Context aware Web service is an interactive model between the context of service requesters and the services on Web enabled environments. We envision that providing context aware services is the first step toward semantic Web services to enhance current Web based e-learning by finding right learning partners, right learning information and right learning services in the right place at the right time. The major contributions of this paper are the development of our context model and context oriented service architecture. We have developed a context model to formally describe and acquire contextual information pertaining to the service requesters and services. Based on the model, we have constructed a context aware service oriented architecture for intelligent Web service discovery and access based on requesters' surrounding context.

An Adaptive Content Delivery Mechanism for Multiple Mobile Devices

Chun-Hun Chen, Shian-Shyong Tseng, Jun-Ming Su
Wednesday, January 18, 2006 10:00 AM – 10:45 AM Room I201, 2nd Floor

With the mobile devices becoming more and more powerful, the requirements of delivering the learning contents on the mobile devices are increasing rapidly. Therefore, how to perform the Content Adaptation becomes an important issue. The historical user request records including hardware capabilities, user's preference, and the network situation, can offer us an opportunity to solve the above issue. Thus, in this paper, based on the concept, which provides a new request with the adaptive contents created from previous similar request, and SCORM complaint learning object repository (LOR), we propose an Adaptive Content Delivery Mechanism, called ACDM, which applies clustering approach and decision tree approach to efficiently manage a large number of historical user requests, and intelligently deliver a proper adaptive content with higher fidelity from LOR to the user directly by means of our proposed Adaptation Decision Process. Moreover, an ACDM prototypical system is developed and the experimental results show that the ACDM is workable and beneficial for users.

Research of Performance Assessment in Distance Learning

Liu Shijin, Li Jia

Wednesday, January 18, 2006 11:15 AM – 12:00 PM Room I201, 2nd Floor

In the distance learning, effectively processing the related information of test must be assisting administrators to evaluate teaching quality and students' studying status. And it will be helpful for teachers to adjust and improve the content of courses according to students' feedback. This paper introduces some methods of collecting and processing the information of test in distance learning, as well as how to realize correlative process measured.

Formative Assessment in SCORM-based Learning Environments

Shueh-Cheng Hu

Wednesday, January 18, 2006 11:15 AM – 12:00 PM Room I201, 2nd Floor

Formative assessment provides constructive feedbacks for both learners and instructors. From the perspectives of learners, formative assessment generates criticism and suggestions that guide them toward ultimate learning objectives, indirectly improve their sustaining rate. In contrast to summative assessment, it is difficult to fully automate formative assessment activities. Under certain circumstances, it is necessary for instructors to get involved in the formative assessment activities. This research work investigates how the SCORM supports assessment activities currently, and then proposes a model in which both fully-automatic and instructor-involved formative assessment activities are able to be blended into those self-paced, Web-based learning environments. For the sake of the interoperability between SCORM-compliant learning management systems and various formative assessment tools, a de facto standard for loosely coupling distributed software systems, Web service, is selected for bridging the learning management systems and the formative assessment tools. With the realization of the proposed model, the application scope of the SCORM-based learning systems could be extended.

Communicative Courseware Authoring System Compliant to CELTS

Tsung-Yao Lee, Yen-Ping Chu, Chou-Chen Yang

Wednesday, January 18, 2006 2:00 PM – 3:30 PM Room I201, 2nd Floor

With the rapid development of Internet and multimedia technology, e-Learning becomes the most popular application over the Internet. CELTS (China E-Learning Technology Standard) which was proposed in 2001 is an e-learning standard widely applied in China. CELTS adopts SCORM as the specification of learning resource description and teaching material exchange, but there are still differences between these two standards. There are a few authoring tools that can generate the courseware compatible with CELTS, and are even weak to transform the existing learning content to be compatible with CELTS. A well-designed authoring tool can efficiently decrease both the efforts of teaching material productions and the technical threshold of courseware developers. In addition to automatic standard courseware generation, authoring tools have to provide friendly content authoring interface and information dissemination method.

In this paper an authoring system compatible with CELTS is proposed. The functionalities of the system are listed as follows: (1) generating CELTS compatible courseware; (2) constructing an easy-search asset repository to achieve reusability of learning resources; (3) enabling courseware information exchange between homogeneous systems; (4) helping teachers easily create learning content on line with a template module; (5) constructing a courseware information centre to integrate global courseware information. With the proposed system, the courseware developers could work more efficiently.

The Video SCORM: Learning with entertainment

Te-Hua Wang, Han-Bin Chang, Shin-Zu Chen, Timothy K. Shih, Li-Chieh Lin, and Te-Lu Tsai
Wednesday, January 18, 2006 2:00 PM – 3:30 PM Room I201, 2nd Floor

The learning activities of the learners have become more and more various and plentiful within the distance learning scope. Accordingly, the learning content which can be brought to learners would be more miscellaneous, and any digital material within the cyberspace could be seen as the learning resource to be learned by people. In this paper, we proposed a new idea which aims to integrate the learning and the entertainment in our daily life as one thing. We called it “Video SCORM”. Obviously, Video SCORM is named by the notion of making the video learning materials which are able to be compliant with the SCORM specification. In this paper, we develop an integrated authoring system based on the SCORM specification, and provide the functionalities to build such video courses which can be learned not only through the online LMSs but also on the TV. We also discuss the similarities and the differences between SCORM and the proposed idea.

WebDAV Aware Content Management System for Content Aggregation

Mrs. Uma U. Gajendragadkar
Wednesday, January 18, 2006 2:00 PM – 3:30 PM Room I201, 2nd Floor

WebDAV (Web Distributed Authoring and Versioning) protocol is an extension to HTTP (HyperText Transfer Protocol) that allows users to collaboratively author their content directly on an HTTP server, allowing the Web to be viewed not just as a read only way to download information, but as a writeable, collaborative medium. In this paper, we propose a thin client approach that combines the enterprise application development abilities of J2EE and flexibility of collaboration provided by WebDAV to create an open standard based collaborative solution for SCORM content authoring and management.
We then introduce a prototype implementation of WebDAV Aware Content Management System (WACMS), developed by us. This prototype successfully exploited the unique features provided by WebDAV and its promising application aspects in LMS and groupware.

The paper discusses how one can take advantage of support provided for over-write protection, locking, properties and name space management. It also discusses our experiences with implementation of the WebDAV Aware Content Management System and its possible integration with existing LMS tools. The prototype introduces basic implementations of workspace management, document views, locking, check in, check out, version control, role based access control and web folder accessibility through WebDAV enabled tools.

A Web-based Collaborative Authoring System Focusing on Reusability of Web Educational Materials

Fei Yuan, Hiroyuki Mitsuhara, Kazuhide Kanenishi and Yoneo Yano
Wednesday, January 18, 2006 2:00 PM – 3:30 PM Room I201, 2nd Floor

Web educational material is the base of e-Learning. In this study, we propose the evolutionary information sharing approach to enhance reusability of web educational material from the viewpoint of “content”. This approach aims at refining the content by stimulating authors’ conflict and discussion in collaborative authoring. Conflict is triggered off by means of the current version sharing and discussion is supported by means of the authoring process sharing. In the current version sharing, authors can share, create, and modify content of the current version of web educational material without other authors’ approval. In the modification process sharing, authors can share the past versions of the modified content and the modification reasons. Based on this approach, we have developed the prototype of a web-based collaborative authoring system. Through the experimental use, we found out that the system stimulates authors’ conflict and discussion and contributes to enhancing the content reusability. In order in enhance the reusability from the viewpoint of “form”, the web educational material’s metadata is created according to SCORM.

The Design of Decomposed LMS With Embedded 3D Virtual Instruments

Fu-Chien Kao, Tien-Hsin Feng, Tzu-Chao Chien
Wednesday, January 18, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

This study brings up a learning management system with load-balancing function that allows for the integration of learning resources and balance of network traffic. The system consists of the Learning Management System (LMS) for processing basic data, learning data and learning records of learners, and the Learning Content Management System (LCMS) for managing and storing the proposed practice courses. To reduce training time in the operation of electronic instruments and improve the learning interest of practice courses, the proposed 3D embedded virtual instruments allow learners to operate 3D virtual instruments with their computers. The proposed interactive 3D virtual instruments include Function Generator, Oscilloscope, Multimeter and Power Supply. All 3D virtual instruments are packaged into embedded practice modules by ActiveX technology. The Web Service cross-platform distribution configuration of this study provides common communications between systems and enhances the capability of integrating learning resources. The architecture of the system ensures a load-balancing functionality for LCMS of different domains. The connection program embedded in the PC of the learner via LMS connects to the LCMS broker server for access to required teaching materials from each LCMS. The LCMS with the minimum load is then selected from suitable LCMS as the source of the teaching materials. This study proposes a SCORM learning environment by creating a cross-domain server with URL-rewrite technology to provide a solution for this issue.

Cognitive and Psychomotor Multimedia tool for “PC Hardware Maintenance”: A Self-learner approach

Wednesday, January 18, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor
Vasant G Wagh, Madan B Matsagar, Madhav G Gaikwad

Self-instructional learning material for laboratory based topics/subjects is still rare. Print and Video of lectures/demos are the only two options available to a self-learner. Most of the Computer Assisted Learning (CAL) packages are demo type, a passive approach. Psychology of Learning (Learning Theory) is hardly given any importance in the design of the CAL packages. A learner is assumed to be equipped with prerequisites. Self evaluation component is generally lacking.

An Interactive Computer Assisted Learning (ICAL) package based on a Learning Strategy is developed. Prime objective considered is to involve the learner in an active learning rather than a passive viewing and listening. Different learning mechanisms and approaches are taken into consideration. Present work is multimedia improvisation of Audio-Vision concept (Gaikwad et. al. 1994, 1995) developed and implemented in YCM Open University, Nashik. Class room and laboratory simulations are two major components of the ICAL package.

ICAL package so developed is tried, component by component, on postgraduate degree students of Electronic Science. Paper describes the attempt and discusses the results.

The Developing of SCORM 2004 Adoptive Courseware

Jeng-heng Hu, Shuping Chang, and Chen-Yu Lee
Wednesday, January 18, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

With the evolvement of E-learning techniques and Internet, the learning materials can be delivered to learner rapidly, students can learn in anytime and anyplace, and also the learning objects can be shared and reused to decrease the effort of designer. However, the different cultures and behaviors among the content providers make the sharing and reusing difficult to realize. Therefore, the ADL (Advanced Distributed Learning) has proposed a SCORM (Shareable Content Object Reference Model) architecture that provides appropriate standards to realize the sharing and reusing of learning materials and information. In which, the 2004 version (SCROM 2004) especially allows the designer to perform a flexible design of contents depend on learner’s reacts. In this paper, we will provide a method on creating adoptive (sequencing) courseware, which include a processing flow and related techniques, as well as go through a course named “Introduction to XML” as an example to share our experiences.

SCORM 2004 Compliant Learning Content Management System with Scaffolding Template Design

Chin-Chieh Hao, Jing-Wen Wang , Ren-Hung Hwang
Wednesday, January 18, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

In the Past, it is very difficult to practice special teaching strategy in an e-learning courseware. Usually, it relies on a special designed platform or program bundled with the courseware. With SCORM reference model, especially the simple sequencing control defined in SCORM 2004, adaptive learning becomes feasible. That is, based on the learner profile, a SCORM2004 Learning Management System (LMS) can adaptively present the most appropriate learning object to the learner, such that learner can learn adaptively. With the simple sequencing control, content design can be separate from control and several effective teaching strategies can be implemented. It is now feasible to practice several teaching strategies in an e-learning courseware running on a SCORM 2004 LMS. But developing an e-learning courseware compliant to SCORM 2004 standard is not very easy, especially its complicated sequencing control. A content designer, who has no idea about sequencing rules, will not be able to design the teaching strategy using the simple sequencing of SCORM2004. Therefore, in this paper, we design a LCMS that can automatically generate sequencing control to meet the content designer's requirement. To facilitate the design of sequencing control, our LCMS supports seven commonly used Sequencing Templates. In particular, a template based on the Scaffolding theory is designed. With our contribution, we believe the design of a SCORM 2004 compliant courseware with special teaching strategy can be easily achieved.

Production System Model for Instruction Design

Ubirajara Rocha Ferreial, Celi Langhi
Wednesday, January 18, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

Modelling a production system to improve the education learning process, at distance learning environment, we discuss Instructional Design Tools and their elements.
Computational resources allow exploring the communications capability and pedagogical opportunities to enhance student learning associated with interpersonal learners skills and their exploratory and interactive inquiry actions are a few examples of the system's input set elements.

Even though the model is designed as a decision maker to design the product and the production, it also offers support and heuristics to facilitate team-oriented collaborations, evaluations and flexibility.
We think about the use of e-technologies and how SCORM can help, once applied to improve student learning by working with a learners focused system and six major issues: needs, instructional objectives, performance, strategies, evaluation and author rights. It demands a continuous evaluation taking into account pedagogical aspects.

To reach those goals, all relevant operations have to be considered in the model: interactive classes must to be controlled, critical review points must to be well defined as well as the actions, the task schedule, settled for learners, e-technologies and media.

SCORM-LST: Describing Learning State Transitions Based on Learners' Interactions

Yasuhiko Morimoto, Maomi Ueno, Shingo Shitaba, Setsuo Yokoyama, Youzou Miyadera
Wednesday, January 18, 2006 3:45 PM – 6:00 PM Room I201, 2nd Floor

SCORM is an international set of standards that describes learning contents of web-based training (WBT). SCORM cannot describe learning state transitions by learners' interactions for lessons in the classroom. The purpose of this study is to create lessons that center on learners' interactions with learning management systems (LMSs). Therefore, we created SCORM-LST by adding to SCORM a framework to describe learning state transitions based on learners' interactions and teachers' controls in each state and developed an LMS based on the enhanced set of standards. As SCORM-LST can easily describe learners' interactions and teacher's controls, the LMS can give lessons similar those that many teachers conduct in the classroom

Infrastructure and Design of Repository

Imran Kasmani

Thursday, January 19, 2006 9:00 AM – 10:30 AM Room I201, 2nd Floor

This paper does not deal with creation and use of Learning Objects, but rather an architecture and infrastructure where all the diverse collection of both public and private content repositories have a seamless discovery and access. We approach this problem by creation of interoperable registries of content and content repositories all conforming to an agreed standard. The model aims at specifying a distributed model of learning object repositories.

Design of the Smart Gateway used for Instrument Control

Yuansheng Liu, Weimin Li, Wenson Pan

Thursday, January 19, 2006 9:00 AM – 10:30 AM Room I201, 2nd Floor

A Smart Gateway (SG), which is used for remote instrument control, is addressed in this paper. As an embedded system the Gateway uses S3C44B0X chip based on ARM7 core as its main processor. The main goal of the Gateway is to remote control the instrument having GPIB/LAN/Serial interface. The SG can at most connect 14 GPIB interface instrument(each has its own GPIB address) and two serial interface instrument at the same time, it connect the PC with LAN interface. The handler use PC to send command (consist of instrument address and control command) to the SG through LAN. The SG receives the command and sends to the instrument according to its address and wait for the feedback of the instrument. The Smart Gateway can also control the instrument according its setup parameter without the support of pc, that is its another special features.

The main chip of SG is the S3C44B0X which is a 16/32 bits RISC processor and based on ARM7 core. The processor has two Serial interfaces, the GPIB /LAN/USB interfaces are connected to the processor bus with the conversion chip. The use of 5 inch LCD and the touch screen provide a well user interface for handlers. A 16M Nand-Flash, based on FAT16 file system, is used as a hard disk to storage the setup parameter and the data.

Metadata Wizard Design for Searchable and Reusable Repository

H. W. Lin, Mon-Tin Tzou, Timothy K. Shih, Chun-Chia Wang, and Li-Chieh Lin

Thursday, January 19, 2006 9:00 AM – 10:30 AM Room I201, 2nd Floor

Sharable Content Object Reference Model (SCORM) has become a conventional model adopted in distance learning. Although the most significant characteristics of SCORM are its shareability and reusability, very few reusable content objects satisfy query condition content mainly due to various complicated metadata standards causing metadata elements to be filled implicitly. To make the content repository searchable, this study constructs a metadata wizard based on Deduction Engine to fill in metadata automatically.

SCASDA: SCORM-based Centralized Access, Search & Discovery Architecture

Nasir Hussain, M. Khalid Khan

Thursday, January 19, 2006 9:00 AM – 10:30 AM Room I201, 2nd Floor

In recent years, the SCORM adopters are growing tremendously but the standardization of learning content repositories and interoperability between different learning systems are still big concerns. Unfortunately very few are able to share and reuse these learning contents between diverse platforms across the Internet. The existing SCORM-based collection of contents repositories does not provide any centralized search and discovery service to the users. So it is inflexible for users to access learning contents. We are proposing an architecture that can facilitate the development of an infrastructure for centralized search & discovery of SCORM-based learning contents using web service and multi-agent technologies. This will provide single point of access and discovery to learning contents from distributed content repositories. The architecture also provides high degree of freedom to build learning content repositories using any platform.

How to use IMS Learning Design and SCORM 2004 together

Colin Tattersall, Daniel Burgos, Hubert Vogten, Harrie Martens, Rob Koper
Thursday, January 19, 2006 9:00 AM – 10:30 AM Room I201, 2nd Floor

Standardisation plays an increasingly important role in e-learning, requiring designers to make choices as to the route to be followed during the development of e-learning courses. IMS Learning Design is an e-learning specification which allows e-learning designers to describe Units of Learning – delimited pieces of education or training, such as courses, modules or lessons. SCORM 2004 is the latest version of Advanced Distributed Learning's reference model for e-learning, which describes a content model and run-time environment for Shareable Content Objects. IMS Learning Design and SCORM 2004 are often positioned as mutually exclusive alternatives. This article outlines the case for using the two together and examines approaches to achieving integration between Units of Learning and Shareable Content Objects.

Distributed and Learner Adaptive e-Learning Environment with Use of Web Services

Yasuhisa Tamura, Takeshi Yamamuro
Thursday, January 19, 2006 9:00 AM – 10:30 AM Room I201, 2nd Floor

Web Services based e-learning architecture is proposed, which constructs functionally distributed servers communicate and share learning-related information. Archiving and retrieval functions of information directory, learning materials, learner information, and learning strategy are assigned to devoted servers. On this architecture, the authors designed a function to change sequence of SCOs automatically due to learner's learning strategy. This function provides learner-adapted materials, which is incapable of conventional LMS servers.

SOCIAL EVENTS

Welcome Reception

The welcome reception will be held at Tamkang University in a traditional Chinese style garden. All participants are welcome to enjoy the buffet style of Chinese dishes. A live performance of traditional Chinese music will be included so that the reception will create a good memory of everyone.

Banquet

The conference banquet will be held at the Grand Hotel for all participants. The hotel is famous for its traditional Chinese restaurant. The dinner will be arranged in a Chinese style (round tables with dishes served one after another). Transportation between Tamkang University and the Grand Hotel will be arranged.

Tour

The National Palace Museum preserves the 7000-year cultural legacy of China. A tour will be open for everyone. However, reservations are required. Participants need to check with the registration desk to fill out a reservation form. A professional guide will introduce the tour in English. Transportation will be arranged.