Meta-data Implementations in Singapore

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Contents

- Background of Meta-data implementations in Singapore
- Details of Meta-data specification for Singapore
- Examples of implementations
- Difficulties & challenges
- Future of meta-data in Singapore

Objectives – i.e. I hope to …

- explain how the Singapore's SingCORE Schema presents a practical meta-data solution for labeling digital learning resources
- explain some meta-data implementations in Singapore using the SingCORE Schema
- discuss the difficulties and challenges encountered in the meta-data implementations

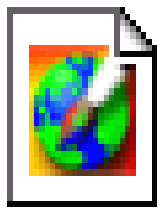
Digital Learning Resource

- Digital Resource with an explicit educational application
- It can be a:

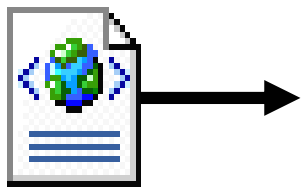
  - Video clip
  - Flash animation
  - Java Applet
  - Executable program
  - Web page
  - Web site
  - PowerPoint
  - PDF file
  - Other resource types

Separate file for Resource and its Meta-data

Single asset = raw media + meta-data file



aground

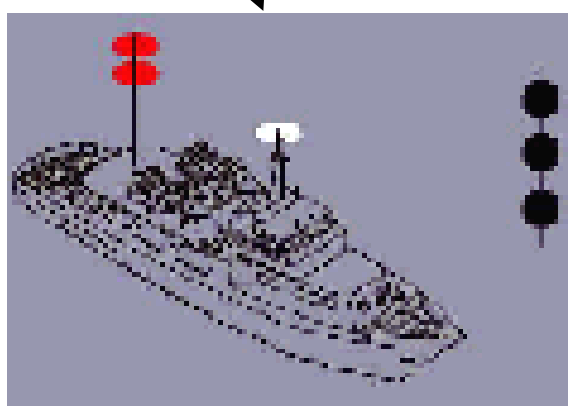


XML file = Text file

aground

A JPEG picture file

Its associated meta-data file



What is the problem?

- Extensive use of digital learning resources lead to difficulties in storing, discovering, searching and locating useful and meaningful digital learning resources
- Lack of consistent cataloguing system for digital learning resources does not allow content authors to share and reuse existing digital learning resources

Is there a solution?

- Yes
- Introduce a labeling system for digital learning resources nationwide for Singapore
- Make the labeling system a Singapore Standard with SPRING Singapore – statutory board in charge of all standards in Singapore
- Promote, support and propagate the use of such a labeling system

Background - 1

- **1994** – Websites started in Singapore
- **1996** – Several Universities & Polytechnics implemented Web-based learning
- **1998** – Formed the then IMS Asia Centre in Kent Ridge Digital Labs
- **1999** – Started work to consolidate vocabulary and taxonomy for education
- **2000** – Formed the Learning Standards Technical Committee
- **2001** – Released the Learning Resource Identification Specification (SingCORE)

Background - 2

- **2002** – Carried out the ITSC Plugfest (eLearning domain) – did tests on meta-data compliance
- **2002** – Promote the widespread use of this SingCORE Schema
- **2002** – Implemented two applications using meta-data:
  - Digital Media Community (repository of digital graphic images for Geography)
  - Student-Teacher Accounting Repository (repository of lesson plans, Webquests, Hot Potatoes, case studies, etc)

Example 1

::: Advanced Search :::

- Menu Information
- Home
- MyProfile
- MyAlbum
- Browse Category
- Advanced Search
- Help
- FAQ
- Feedback
- Logout

Search allows user to discover learning resources in the Digital Media Community.

Enter values for specific fields below:

Subject Category: Human & Cultural Geography | Cultural

Title:

Description:

Keyword:

Coverage: — Select —

Location:

Submit Reset

Example 2

::: List Records :::

- Menu Information
- Home
- MyProfile
- MyAlbum
- Browse Category
- Advanced Search
- Help
- FAQ
- Feedback
- Logout

Human & Cultural Geography/Cultural

found 45 document(s)

check all | clear all

Resource	Title	Description	
	SEAGA Conference Fieldtrip 1995	Taken at the Mynmar-Thailand border on the 1995 Chiang Mai Southeast Asian Geographers' Association conference fieldtrip.	☐
	Petronas Twin Tower	Petronas Twin Tower of Kuala Lumpur	☐
	KL Petronas Tower	View of the Petronas Twin Tower taken from MidValley, Kuala Lumpur	☐
	Tambun Inn, Ipoh	Tambun Inn, Ipoh	☐

Example 3

Home Login View Upload Search Discussion Forum Tools Help

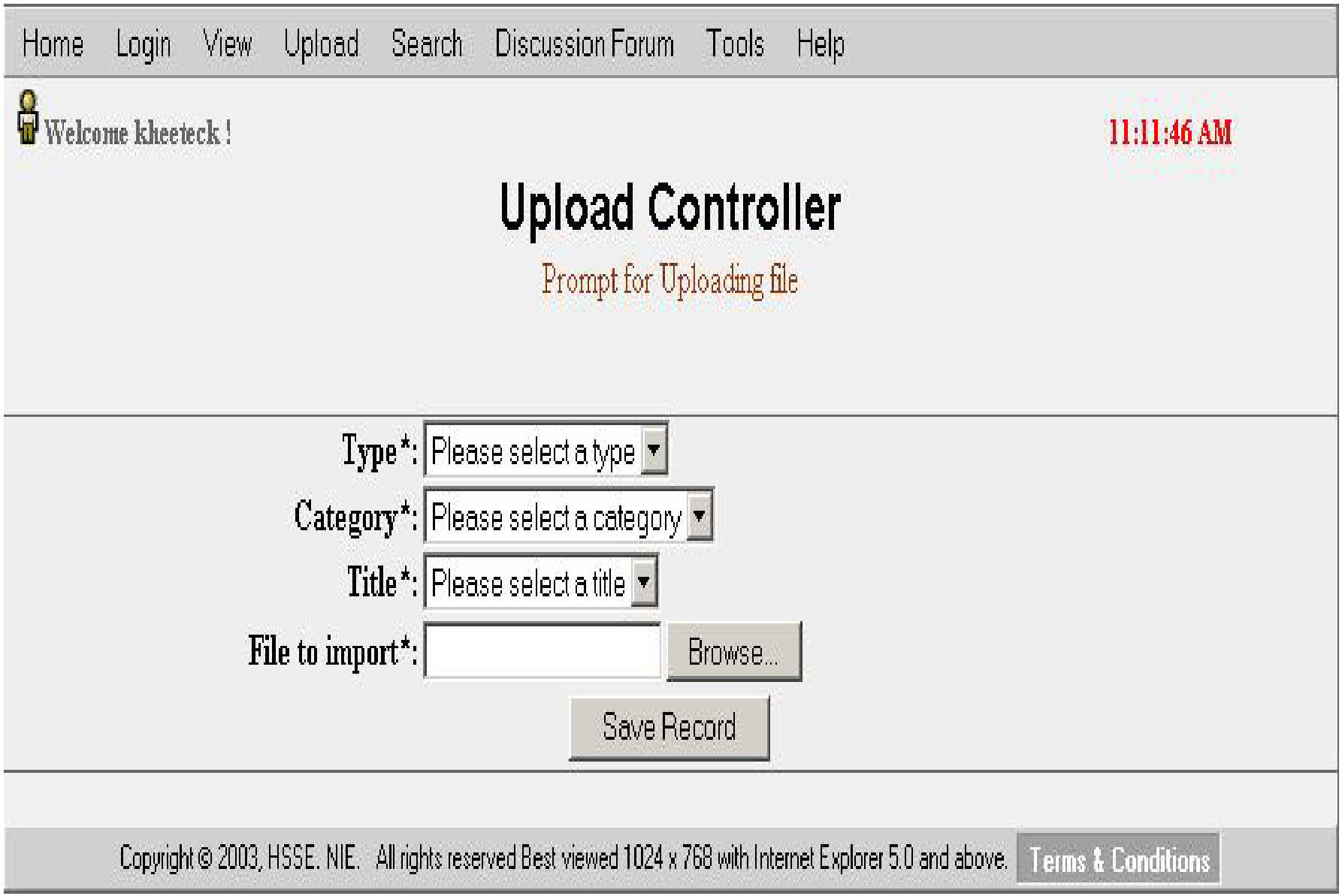
Welcome kheeteck ! 11:13:19 AM

Star Metadata

Records 1 to 50 of 88 records found

id	type	category	title	keyword	Description	Added On
7	POA	ATMs	Accounting Eqn	Lesson Plan	First Lesson LSY	9/30/2003 10:17 AM
8	POA	ATMs	Accounting Eqn	Lesson Plan	Second Lesson LSY	9/30/2003 10:19 AM
9	POA	ATMs	Accounting Eqn	Other resources	Newspaper cutting LSY	9/30/2003 10:20 AM
10	POA	ATMs	Accounting Eqn	Worksheet, MCQ, excel	MCQ LSY	9/30/2003 10:21 AM
11	POA	ATMs	Accounting Eqn	Powerpoint presentation	Lesson,Presentation,LSY	9/30/2003 10:23 AM
12	POA	ATMs	Accounting Eqn	Powerpoint presentation	Lesson presentation LSY	9/30/2003 10:24 AM
13	POA	ATMs	Accounting Eqn	Worksheet	Word Document LSY	9/30/2003 10:27 AM
14	POA	ATMs	Accounting Eqn	Worksheet	Word Document LSY	9/30/2003 10:27 AM
15	POA	ATMs	Double Entry	Lesson Plan	First lesson LSY	9/30/2003 10:29 AM
16	POA	ATMs	Double Entry	Lesson Plan	Second Lesson LSY	9/30/2003 10:29 AM
18	POA	ATMs	Double Entry	Powerpoint presentation	Lesson Presentation LSY	9/30/2003 10:31 AM
19	POA	ATMs	Double Entry	Powerpoint presentation	Lesson presentation LSY	9/30/2003 10:47 AM

Example 4


Home Login View Upload Search Discussion Forum Tools Help
Welcome kheeteck !
11:11:46 AM
Upload Controller
Prompt for Uploading file
Type*: Please select a type
Category*: Please select a category
Title*: Please select a title
File to import*:
Browse...
Save Record
Copyright © 2003, HSSE. NIE. All rights reserved Best viewed 1024 x 768 with Internet Explorer 5.0 and above.
Terms & Conditions

Why SingCORE? - 1

- Several international labeling specifications – e.g. Dublin Core, IMS Meta-data Specification, CanCORE
- We need to customize international specification for our Singapore needs – e.g. language requirements, taxonomic paths (Asian language/Chinese/Syllabus A)
- Need to build up our own local expertise on cataloguing digital learning resources
- Need to use SingCORE for the specification for ITSC Plugfest 2002

Why SingCORE? - 2

- Vocabulary for meta-data for the education sector was started in 1999.
- Final vocabulary compilation done in late 2001.
- Need to update this vocabulary and also to include other industries' vocabularies
- SingCORE was mentioned in the Canadian website at http://www.cancore.ca/lomsurvey.html

Two approaches to Learning Object Metadata (LOM)

- Dublin Core:
  - Minimalist approach
  - 15 elements, all core (i.e. mandatory)
  - Not specific to education
  - Not linked to other eLearning aspects
- IMS LOM:
  - Designed for education
  - Structural approach (i.e. represent in a tree)
  - More than 80 elements
  - Widely accepted by other groups like ADL
  - Harmonizing with IEEE LOM standard which became is standard since 13 Jun 2002

Dublin Core

- Dublin Core Metadata Initiative
  - No confirmed elements for education
  - IMS elements suggested for education
  - Guidelines, interpretations, and implementations exist
  - http://dublincore.org
  - Widely used in libraries, including the National Library in Singapore
  - Have just released RDF XML for binding

IMS - 1

- IMS Learning Resource Meta-data Information Model ("IMS")
  - More than 80 Elements
  - All elements are optional – may lead to trivial situations: <lom></lom> record!
  - Clear leader in meta-data for educational objects
  - http://www.imsglobal.com/metadata/
- Ambiguities & some minor errors in definitions
- No guidelines or interpretations available for implementation
- Used as base for SingCORE (IMS MD v1.2)

IMS - 2

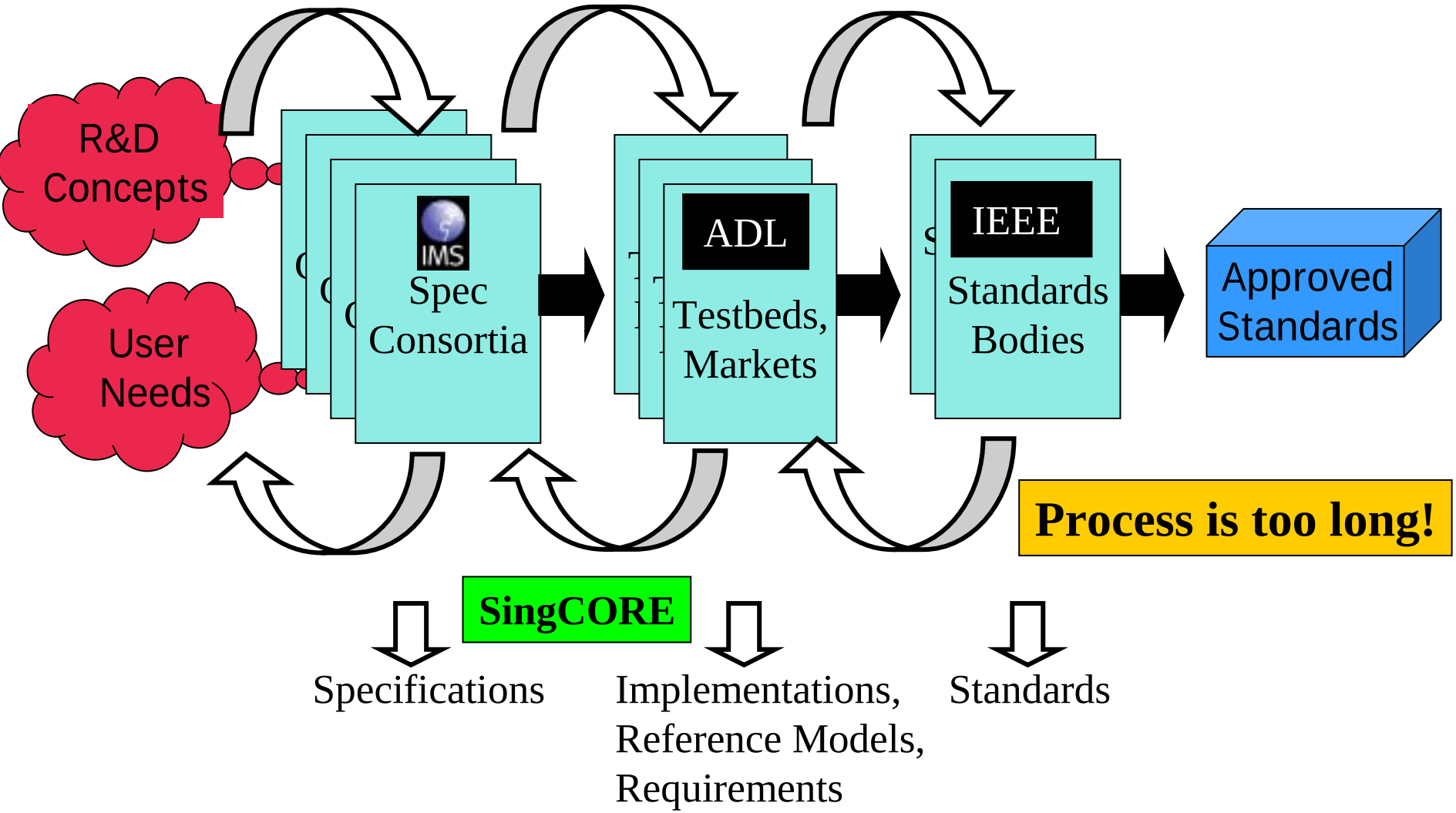
- IMS Meta-data Model not intended for direct implementation:

  “Many vendors [have] expressed little or no interest in developing products that [are] required to support a set of meta-data with over 80 elements”

  Best Practices and Implementation Guide, IMS, 2000

- SingCORE is the next logical step

SingCORE and Standards Evolution



SingCORE and Standards Evolution

- Effective implementation requires a consistent interpretation of each element's purpose and use
- Best accomplished through
  - Regular consultations and feedback from the user communities in Singapore
  - Work with relevant bodies to make it international
  - Compile guidelines, best practice documents
  - Promote its use widely in Singapore via IDA, MOE, EDB, SPRING, IHLs, NLB

SingCORE: Overview

- Establishes a core of 42 IMS elements
- Provides guidelines and interpretations that address ambiguities and facilitate implementation and extensions
- Establishes a 3rd way between the extremes of minimalist and structuralist approaches to metadata represented by Dublin Core and IMS, respectively

SingCORE: Element Groups & Numbers

1. General (6)
2. LifeCycle (4)
3. Metametadata (8)
4. Technical (3)
5. Educational (4)
6. Rights (4)
6. Relation (5)
7. Annotation (omitted)
8. Classification (8)

Total number of elements in SingCORE: 42

Misconception

- We already have international e-learning standards like the IMS and the SCORM. So why are we creating one to compete against them?

Answer:

SingCORE is not a new specification per se. It is adapted from the IMS Meta-data specification and the IEEE LOM specification. SingCORE should be regarded as an application profile.

Difficulties & Challenges - 1

- Skeptics – “Singapore’s version is no good; international ones are better!”
- Management support – “Yes, we support it. Period.” Nothing happens after that.
- Meta-data strategy – not central to any e-learning strategy. Should label all documents to be reused. Can learn from Canadian e-Government’s strategy – SCORM + CanCORE. For Singapore – how about SCORM + SingCORE?
- Lack evangelists – We need the “James Goslings” of Java or Steve Jobs of Apple to evangelize!

Difficulties & Challenges - 2

- Learning Object paradigm – Meta-data become important when you need to label individual learning chunks for packaging and re-packaging.
- Business value – Compare this with bar code. Can MD be used pervasively like bar codes in supermarkets?
- Too many MD cooks – “Too many cooks spoil the broth!”
- Not sure about vocabulary and taxonomic paths
- Cataloguing digital learning resources not a national priority, yet!

Examples of SingCORE implementations

- NIE's HSSE's DMC (Digital Media Community)
- NIE's HSSE's STAR (Student-Teacher Accounting Repository)
- ECC's In-house Repository of Documents
- Nanyang Polytechnic (Using CLiKS 2.0 LMS)
- Institute of Technical Education (Customized solution)
- National University of Singapore (Digital Media Gallery)
- Ministry of Education's Digital Learning Resources Group (CD-ROM based)

SingCORE's Future

- SingCORE Version 2.0 to include examples on other language implementations (i.e. Chinese, Tamil and Malay). Version 2.0 – adopt SCORM's Content Aggregation Model.
- Intend to propose to this as a project for the Asian E-learning Network
- Can set up Conformance Centre in Singapore
- Intend to harmonize with SCORM's meta-data specification:
  - Assets – only 7 mandatory elements
  - SCOs – only 15 mandatory elements
  - Content Aggregations – only 15 mandatory elements

Conclusion

SingCORE is the current state of educational meta-data development and implementation in Singapore.

We have some experiences in meta-data implementations and we want to share our experiences with the PNC Community.

With collaborations, we can develop and possibly evolve an Asian-based meta-data standard which can be used in the Asia.

End of Presentation

Thank you for your attention!

More information can be obtained from:

www.ecc.org.sg

www.elearninghouse.com