Metadata for e-Learning Objects

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數位典藏國家型科技計畫後設資料工作組
Metadata Architecture and Application Team

Outline

- **Definition**
- **Scope of e-Learning**
- **Overview of Current Metadata Standards**
- **Position of Metadata**
- **Snapshot on Metadata Standards**
- **Issues and Future Works**

Definition[1]

- **Learning Object**
  Leverage database, Internet, and other digital technologies to prepare learning content as discrete small "chunk," or "Learning Objects," that can be used alone or dynamically assembled to provide "just enough" and "just in time" learning.

Definition[2]

- **Learning Object**
  A re-usable, media-independent chunk of information used as a modular building block for e-Learning content. Learning objects are most effective when organized by a metadata classification system and stored in a data repository such as a Learning Content Management System (LCMS). (The MASIE Center, 2002)
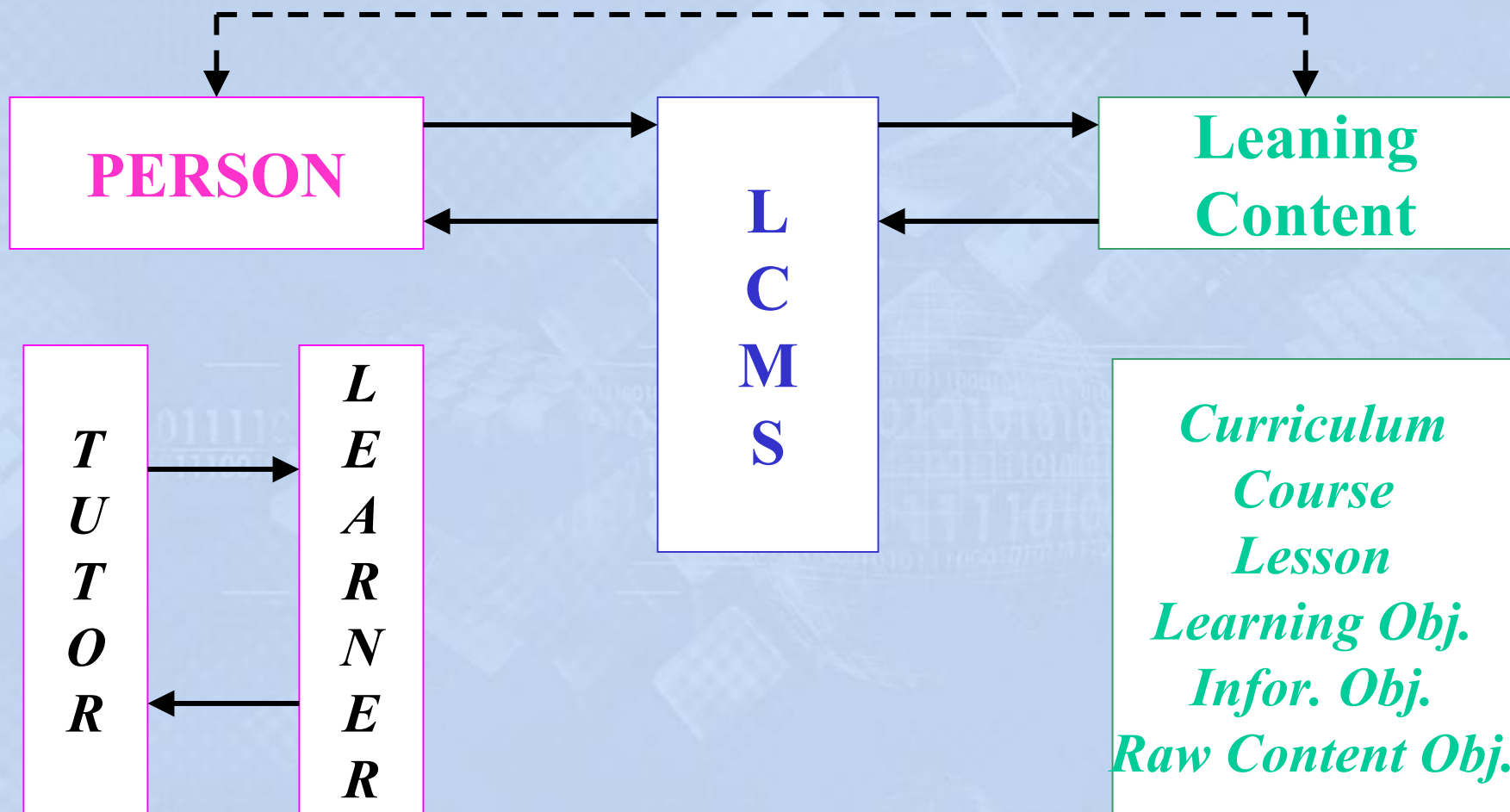
Scope of e-Learning[1]

- **Person – tutor, and learner**
- **Platform – a content management system for e-Learning (LCMS)**
- **Content**
  - **Curriculum**
  - **Course**
  - **Lesson**
  - **Learning objects**
  - **Information objects**
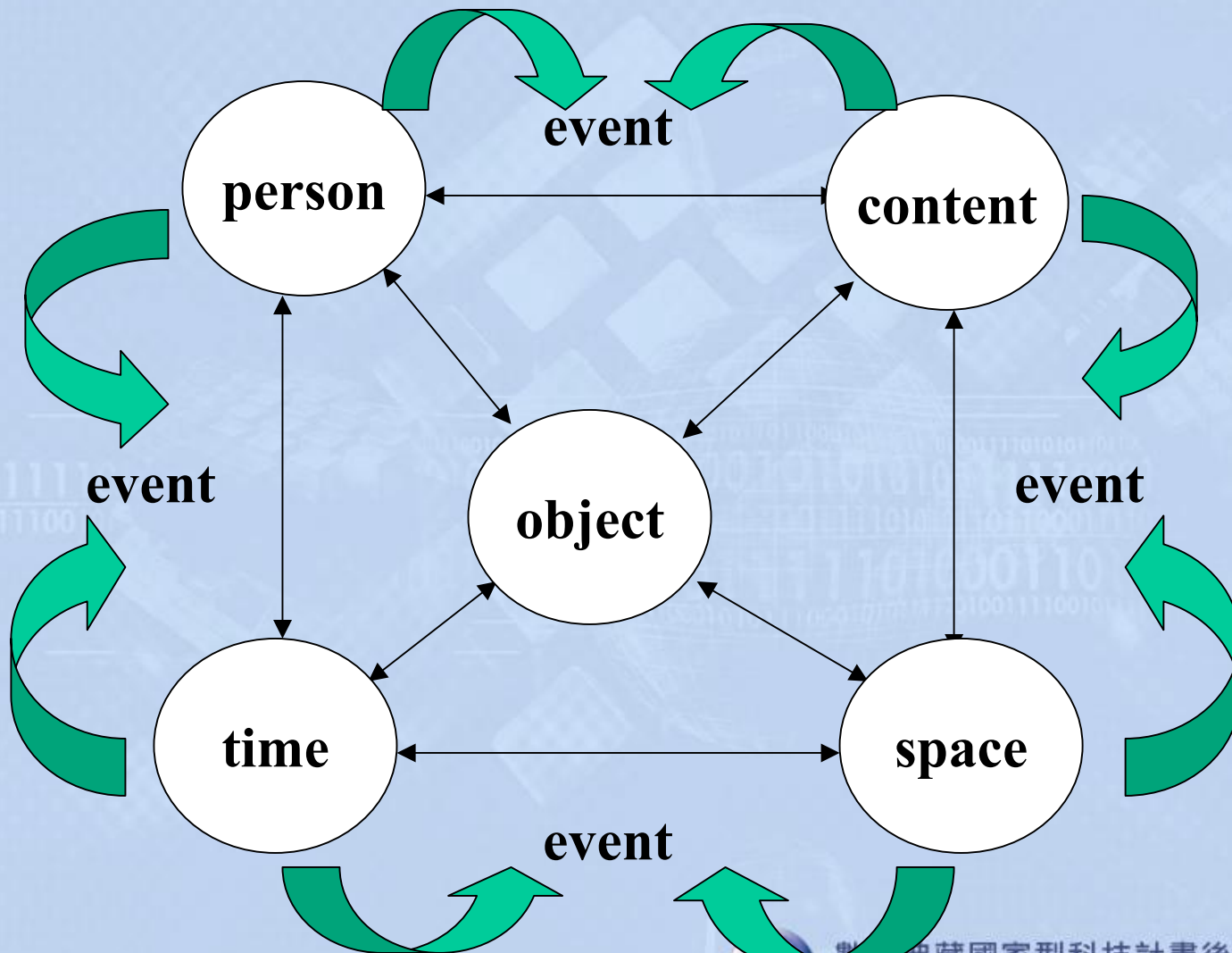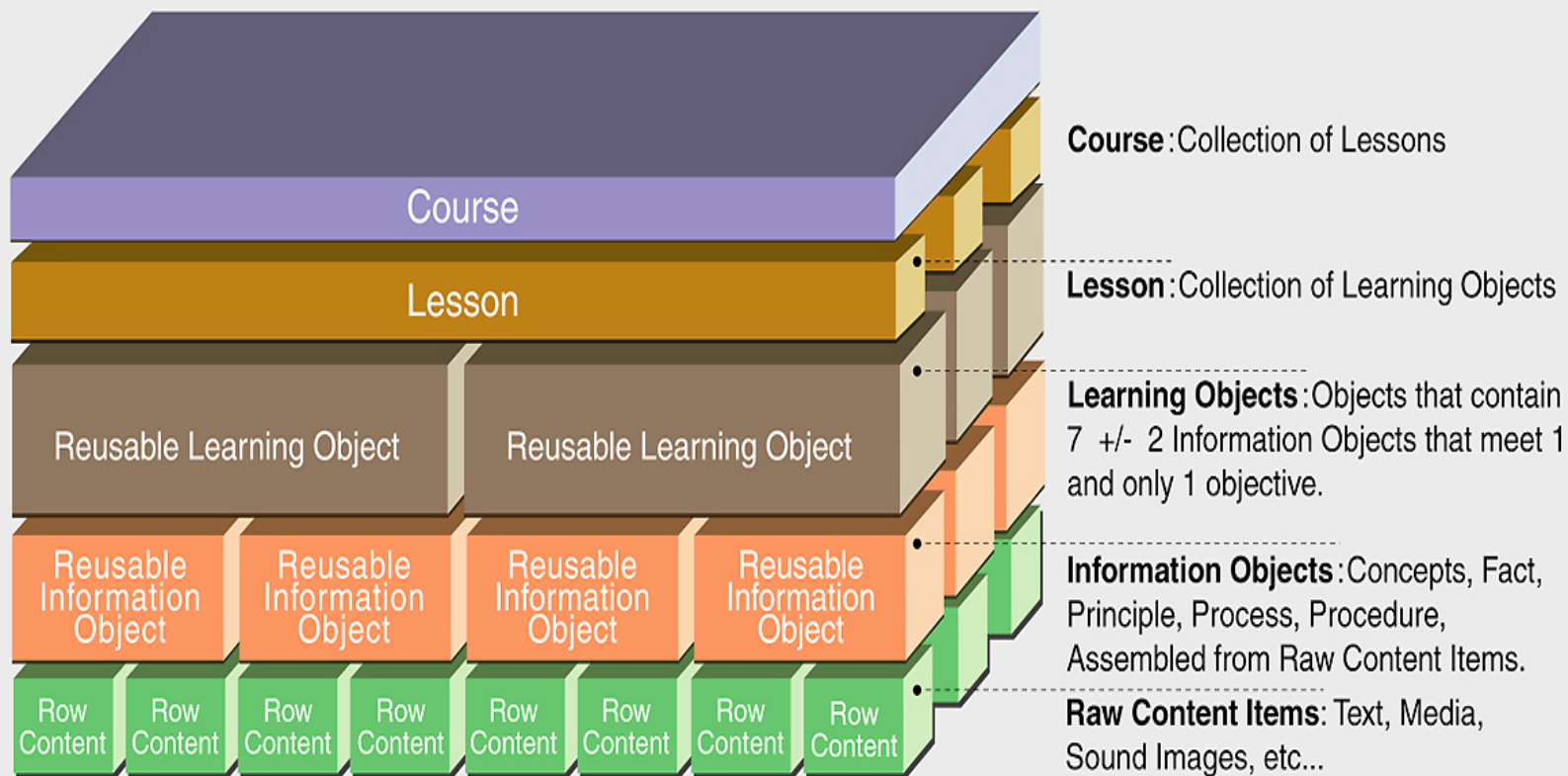 - **Raw content items**

Scope of e-Learning²

```
PERSON  →  L C M S  →  Leaning Content
        ←             ←
```

PERSON

L C M S

Leaning Content

```
T U T O R  →  L E A R N E R
           ←
```

Curriculum
Course
Lesson
Learning Obj.
Infor. Obj.
Raw Content Obj.

Scope of e-Learning[4] Content Model

Course : Collection of Lessons

Lesson : Collection of Learning Objects

Learning Objects : Objects that contain 7 +/- 2 Information Objects that meet 1 and only 1 objective.

Information Objects : Concepts, Fact, Principle, Process, Procedure, Assembled from Raw Content Items.

Raw Content Items : Text, Media, Sound Images, etc...

autodesk Content Model

Overview of Current MD Stds.[1] Functions of Standard

- **Standard helps e-Learning in achieving to**
  - **Interoperability**
  - **Re-usability**
  - **Manageability**
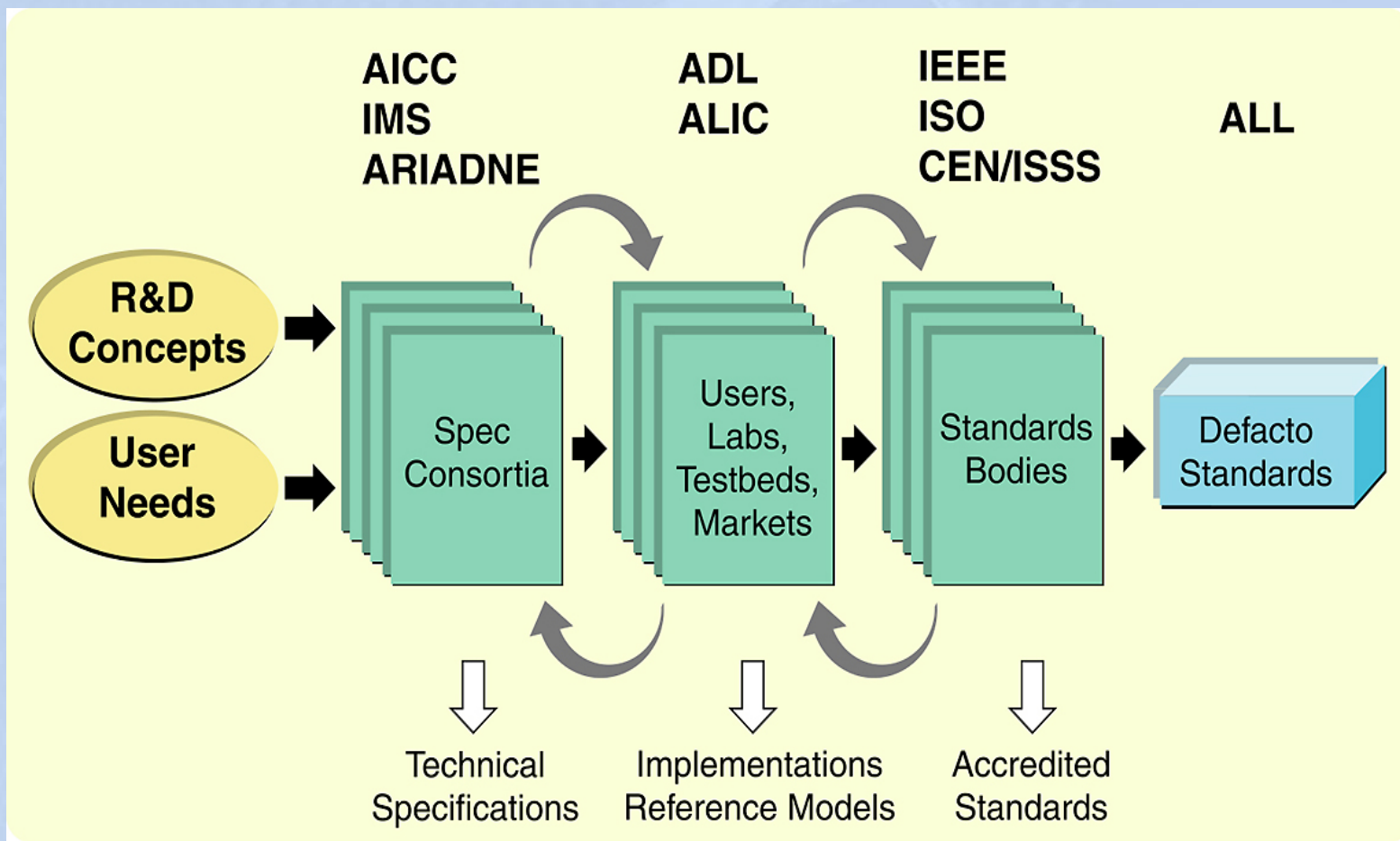 - **Accessibility**
  - **Durability**

Overview of Current MD Stds.[2]

- **Technical Specifications such as AICC, IMS, ARIADNE**
- **Implementation Reference Models such as ADL SCORM (sharable content object reference model)**
- **Accredited Standards such as IEEE, ISO, and CEN/ISSS**
- **De facto Standards**

Overview of Current MD Stds.[3]

Position of Metadata[1] Definition

- **Metadata**
  - **Data about data.**
  - **Structural data about data.**
  - **To structure and annotate data which can then be easily reused, transformed, accessed, etc., in order to gain more information and knowledge on demand (ASCC, 2002).**

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Position of Metadata[2]
Sample of Metadata

- the **author** of a book

- the **file size** of an animation

- the **location** of a file in a database

- **learning preferences** or **styles** of an individual

- the **collective opinion** of a group who has seen the same movie

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Position of Metadata^3 Vision – 6R

- **Just the right *CONTENT*, to**
- **Just the right *PERSON*, at**
- **Just the right *TIME*, on**
- **Just the right *DEVICE*, in**
- **Just the right *CONTEXT*, and**
- **Just the right *WAY***

Position of Metadata[4] Function

- **Metadata can help e-Learning attain to**
  - **Find**
  - **Select**
  - **Retrieve**
  - **Combine**
  - **Use/re-use**
  - **Target
    it for appropriate use.**

  - **Furthermore, categorization and taxonomies can be also attained.**

Snapshot on MD Standard[1] ADL Initiative: SCORM[1]

- **In 1999, ADL (Advanced Distributed Learning) was initiated by DoD and established ADL Co-Laboratory (Co-Lab).**

- **ADL Vision**
  - **Sharable content objects from across the world wide web**
  - **Assembled in real-time, on-demand**
  - **To provide learning and assistance anytime, anywhere**

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Snapshot on MD Standard²
ADL Initiative: SCORM²

- **High-level requirements**
  - **Accessibility, interoperability, durability, and reusability**
- **Web-based design assumption**
- **Describing "Learning management Systems" (LMS)**
- **Tracking the Learner**
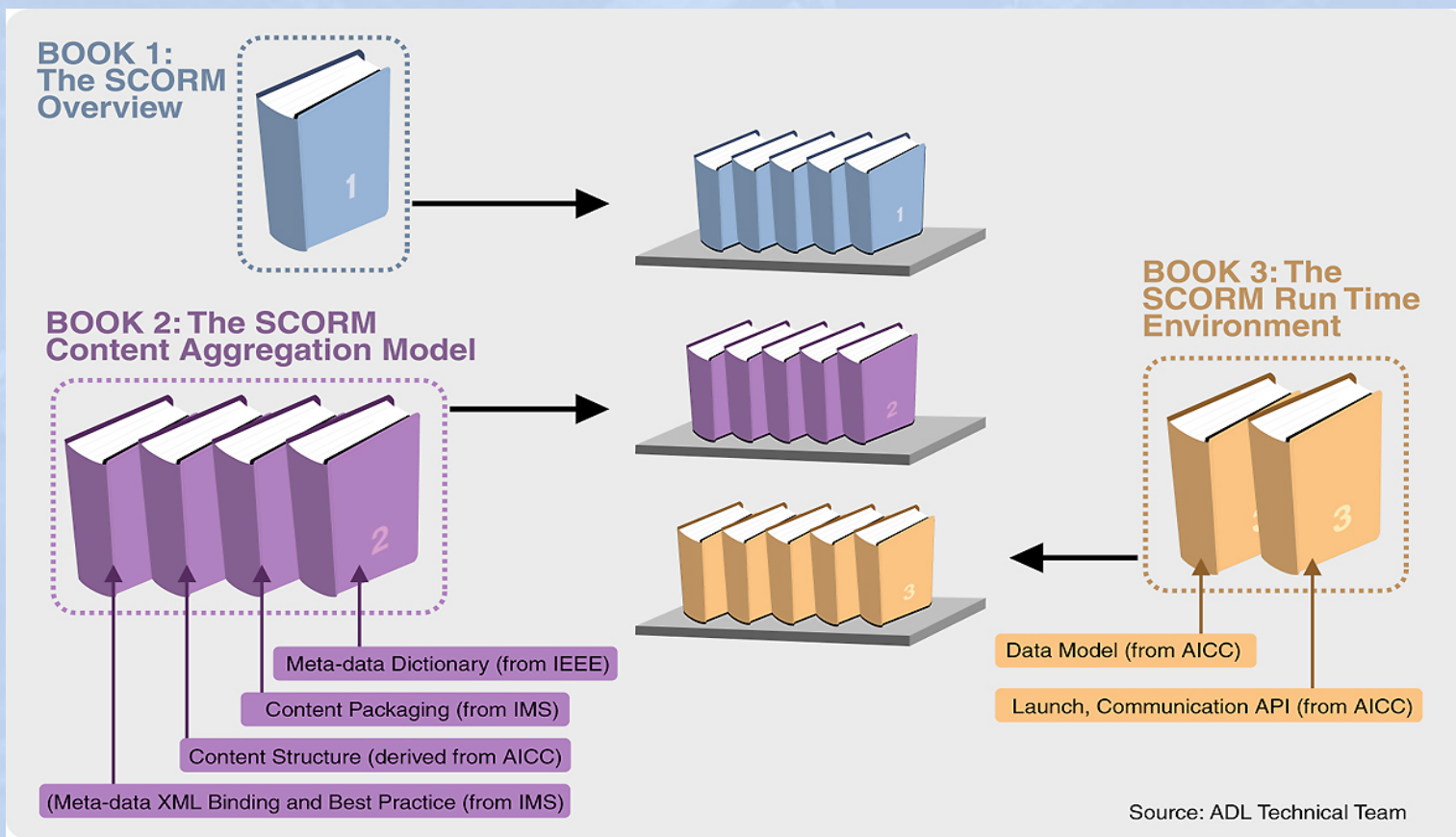- **Toward adaptive and intelligent tutoring**

Snapshot on MD Standard[4] IEEE LTSC: LOM[1]

- **Initiated date: 1996**

- **Achievement:**
  1484.12.1-2002 has been approved as an IEEE – SA Standard on Jun. 12, 2002.

- **Collaboration**
  - **A formal connection between IEEE's LOM and DC has been formulated.**

Snapshot on MD Standard[5]
IEEE LTSC: LOM[2] —Category

- **General**
- **Life Cycle**
- **Meta-Metadata**
- **Technical**
- **Educational**
- **Rights**
- **Relation**
- **Annotation**
- **Classification**

Snapshot on MD Standard[6]
DCMI: Education Working Group[1]

- **Launched Date: 9 August, 1999**
- **Current Progress**
  - **Dec. 2001: Audience Level Proposal**
  - **Feb. 2002: Complete discussion of audience characteristics data**
  - **Jun. 2002: Complete work gathering teaching processes and characteristics data**
  - **Aug. 2002: Proposal for 'type' vocabulary**
  - **Jun.-Aug. 2002: Discussion: Intrinsic learning objectives (DCMI 2002 Annual Meeting)**

Snapshot on MD Standard[7] DCMI: Education Working Group[2]

- **Completed documents**
  - **Audience Characteristics – draft**
  - **Teaching Methods/Strategies – draft**
- **Collaboration**
  - **A formal connection between IEEE's LOM and DC has been formulated.**

Issues and Future Works

- **More case studies will be examined for e-Learning Objects and verify the feasibility of and issues related to current metadata standards in Taiwan, such as the Hsichih Community College in Taipei County.**

- **To use the practices and results of the National Digital Archive Program as a base to extend into e-Learning metadata and related services.**

- **An application profile will be employed for developing current metadata standards of e-Learning Objects in Taiwan. Furthermore, best practice will be prepared for users.**

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