

Ubiquitous Learning Objects

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Outline

- E-learning
- Learning objects
- Towards ubiquitous learning
- Our research work
- Final considerations

Background

E-learning

“E-learning is the acquisition and use of knowledge distributed and facilitated primarily by electronic means”

Fernando Mikic and Luis Anido

Background

E-learning

Course: Ambientes e Objetos de Aprendizagem - Tópicos 2 (2007.2) - Mozilla Firefox

Arquivo Editar Exibir Histórico Favoritos Ferramentas Ajuda

http://www.sergiocarvalho.net/moodle/course/view.php?id=28&switchrole=0&sesskey=kWUWwE610D

Ambientes e Objetos de Aprendizagem - Tópicos 2 (2007.2) You are logged in as Sérgio T. Carvalho (Logout)

Início ▶ Tópicos 2 Switch role to... Turn editing on

Upcoming Events

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Sérgio T. Carvalho

Activities

- Assignments
- Forums
- Resources
- SCORMs/AICCs
- Wikis

People

Participants

Calendar

May 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Topic outline

Ambientes e Objetos de Aprendizagem 2007.2
Prof. Sérgio T. Carvalho

Resultado Final disponível

- WIKI: Análise dos LMS's
- Spring
- FÓRUM DE DEBATES
- Fórum de notícias

- 13-NOV**
O modelo de agregação de conteúdo (CAM) e o ambiente de execução (RTE) do **SCORM**.
- 08-NOV**
Aula **inicial de SCORM**: definimos o SCORM e os seus componentes, CAM, SN e RTE.
06-NOV
Seminários ...
 - SLIDES: SCORM Overview
 - SEMINÁRIO: Estudo de LMS
 - CONSTRUÇÃO DE Objeto de Aprendizagem
- 01-NOV**

Latest News

[Add a new topic...](#)

30 Aug, 17:21
Sérgio T. Carvalho
Cobertura online do congresso da ABED [more...](#)

30 Aug, 10:18
Sérgio T. Carvalho
Alunos da Unicsul reclamam de implantação de aulas online [more...](#)

15 Aug, 10:50
Sérgio T. Carvalho
O MEC não faz restrição a nenhuma modalidade; em medicina, porém, distância só é aplicada em aulas teóricas [more...](#)
[Older topics ...](#)

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Concluído

What are Learning Objects?

Learning Technology Standards Committee of the IEEE define them as

“...any entity, digital or non-digital, which can be used, re-used or referenced during technology supported learning.”

- A more general definition (from David Wiley)

“The main idea of 'learning objects' is to break educational content down into small chunks that can be reused in various learning environments, in the spirit of object-oriented programming.”

Learning Objects: characteristics

Examples

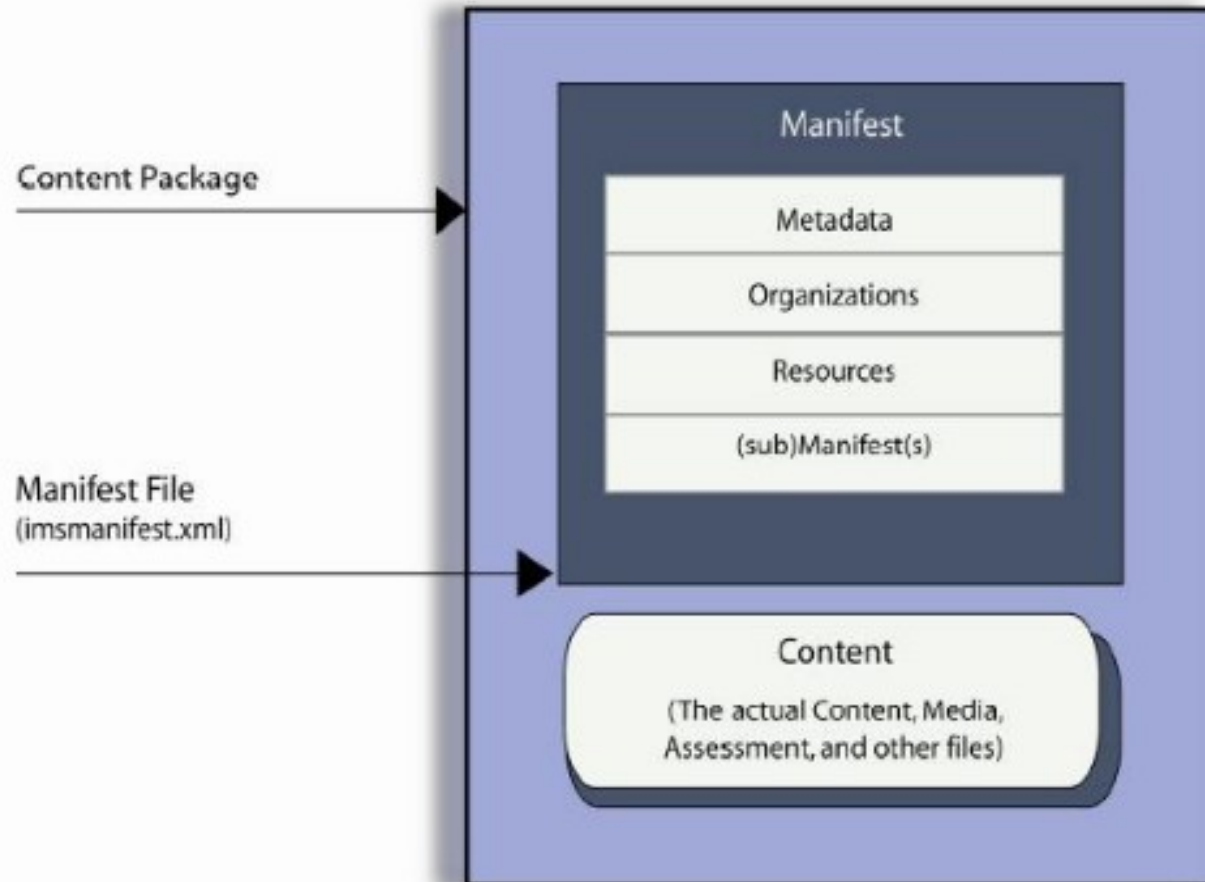


Learning Objects: characteristics

- Encapsulates learning contents (**content package**)
- Should be tagged with **metadata**, defined in terms of IEEE Learning Object Metadata standard (LOM)
- Can be **reused** in different instructional contexts
- Described by standards: IMS CP, IEEE LOM, SCORM

Background

Learning objects: content packaging



Background

Learning objects: content packaging

The screenshot displays the Reload Editor interface for editing a SCORM package. The main window is titled "SCORM Package - helloworld_asset" and shows a "Content Package" tree structure. The tree includes a "MANIFEST" folder, "Metadata" (with "ADL SCORM" and "1.2" sub-items), "Organizations" (with "Exemplo de asset" and "Hello world asset" sub-items), and "Resources" (with "helloworld_asset.htm" sub-item). The "Resources" folder is expanded, showing "helloworld_asset.htm" and its sub-item "helloworld_asset.htm".

The bottom right panel displays the details for the selected resource:

Resource
A reference to a resource.

Attribute	Value
Identifier	RES-1E64D908-62EB-4AD1-310C-34E...
Type	webcontent
Base	
HREF	helloworld_asset.htm
SCORM Type	asset

Background

Learning objects: main standards

- IEEE Learning Object Metadata (**IEEE LOM**) is a standard to describe artifacts
- IMS Content Packaging (**IMS CP**) is a standard for assembly resources, metadata and sequencing information into learning objects
- **SCORM**
 - extends IMS CP and use IEEE LOM
 - suitable for **web-based** learning contents

Background

Learning objects: one simple example

- Learning contents from MIT's [website](#)
- MIT delivers them like a [SCORM learning object](#)
- SCORM learning object on [Moodle](#), a web-based Learning Management System (LMS)

Objetos de Aprendizagem e Repositórios

Seguir para...

Início > LO > Recursos > Java Preparation for 6.170, January 2006 - MIT (IMS)

Atualizar Recurso

- Java Preparation for 6.170
 - Sample Java?? Code
 - Syllabus
 - Calendar
 - Lecture Notes
 - Java Preparation for 6.170, January (IAP) 2006 - Lecture1A Day 1 Java Objects
 - Classes and Interfaces
 - Polymorphism
 - Hashing, Collections, and Comparators
 - Java Preparation for 6.170, January (IAP) 2006 - Lecture4
 - Labs
 - Java Preparation for 6.170, January (IAP) 2006 - Problems1_4
 - Java Preparation for 6.170, January (IAP) 2006 - Solution_notes
 - Java Preparation for 6.170, January (IAP) 2006 - MathCalc.java
 - public class Primes - Primes.java
 - Java Preparation for 6.170, January (IAP) 2006 - StringCharacters.java
 - Getting a Real Taste of Java - Balls and Boxes
 - Java Preparation for 6.170, January (IAP) 2006 - Box.java
 - Java Preparation for 6.170, January (IAP) 2006 - Ball.java
 - Java Preparation for 6.170, January (IAP) 2006 - BallContainer.java
 - Java Preparation for 6.170, January (IAP) 2006 - BallTest.java

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6.092 Java Preparation for 6.170, January (IAP) 2006

Sample Java code.

Sample Java™ code. (Image by Lucy Mendel.)

Highlights of this Course

This course features a complete set of [lecture notes](#) for all sessions and a complete set of assignments in the [projects](#) section. This course is offered during the Independent Activities Period (IAP), which is a special 4-week term at MIT that runs from the first week of January until the end of the month.

Course Description

This course focuses on introducing the language, libraries, tools and concepts of Java™. The course is specifically targeted at students who intend to take 6.170 in the following term and feel they would struggle because they lack the necessary background. Topics include: Object-oriented programming, primitives, arrays, objects, inheritance, interfaces, polymorphism, hashing, data structures, collections, nested classes, floating point precision, defensive programming, and depth-first search algorithm.

Technical Requirements

Special software is required to use some of the files in this course: [.jar](#), [.zip](#), [.gz](#), [.mf](#), [.class](#), and [.java](#).

Staff

Instructors:
Ray He
Corey McCaffrey
Lucy Mendel
Scott Ostler
Justin Mazzola Paluska
Robert Toscano

Course Meeting Times

Lectures:
Five sessions for one week
3 hours / session

Level

Undergraduate

Feedback

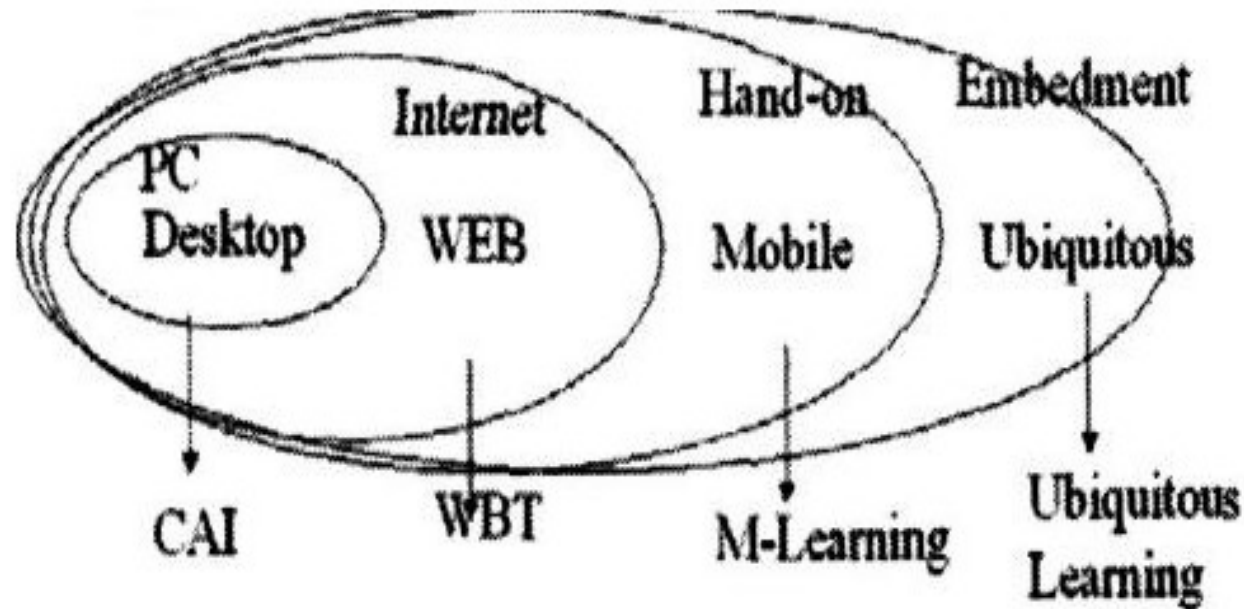
Send [feedback](#) about OCW or this course.



Towards ubiquitous learning

- E-learning with **web-based learning** is usual today
- But, there are other technologies to support learning
 - mobile devices
 - wireless communication
 - sensor networks
- Researches have been advanced from web-based learning to mobile-learning (**m-learning**), and from mobile-learning to ubiquitous learning (**u-learning**)

Towards ubiquitous learning



- **Ubiquitous learning** uses ubiquitous computing technology and infrastructure to learn anything at anytime and anywhere

Ubiquitous learning environment: characteristics

- **Embedded** and mobile computers
- **Context-aware**: learner's situation can be sensed
- Provides **personalized support** for learner based on his situation
- Able to **adapt subject** contents based on learner's situation and based on the functions of the mobile device
 - “The ubiquitous learning environment should provide learners the right educational materials at the **right time** at the **right place** and in the **right way**”

Our Research Work

- Investigate **learning objects** and **ubiquitous learning**
 - implementation, storing, distribution of learning objects considering an ubiquitous learning environment (**ubiquitous learning objects**)
- Propose an ubiquitous learning environment (possibly a framework) based on **adaptable software** and **ubiquitous computing** techniques
 - We intend apply and evaluate the results on learning of the medicine students in the context of project “*Application of Ubiquitous Computing Techniques on **Telehealth** (remote assisted living)*”

Some related works

- Hiroaki Ogata describes JAPELAS (Japanese Polite Expressions Learning Assisting System) a **specific** language ubiquitous learning system
- Ting-Ting Wu describes an Context-Aware U-Learning Environment, a **specific** RFID-based environment
- There are other specific approaches
- **We are still investigating ...**

Final Considerations

- This presentation showed our work research about **e-learning** focusing **learning objects** and **ubiquitous learning**
- We have just started our work; some future steps
 - context-aware learning
 - situated learning and problem-based learning

Questions...