



ADRIAN: **E-Learning Content Production** **(creating online exams)**

José Carlos Ramalho
Giovani R. Librelotto
Pedro R. Henriques
Department of Informatics
University of Minho
Braga, Portugal
{jcr, grl, prh}@di.uminho.pt

State of the Art / Motivation



- Many **LMS**:
 - Blackboard, Luvit, WebCT, Lotus Learning Space, TWT, ...
- Each LMS **provides**:
 - Schedule management;
 - Student records management;
 - Interaction between students and teacher control;
 - Access statistics;
 - Content publishing (to put online);
 - **No content production policies.**

State of the Art / Content Production



- The **Learning Object** concept (LO);
- Two parts:
 - Metadata
 - Some standards: **IMS EML** and **LOM**
 - Content:
 - **No known** initiatives

Outline

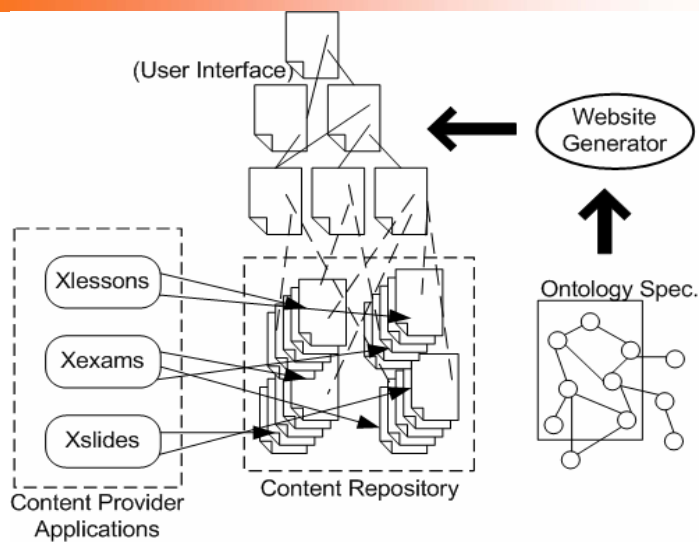


- ADRIAN
- ADRIAN architecture
- X-Applications
- Ontology and Topic Maps
- Conceptual Navigation
- Conclusions

ADRIAN

- Provides support for **content production**;
- Structure **is not free**, some rules will be enforced;
- Some **Markup Languages** for Content Production are proposed.

ADRIAN architecture



Content Provider Applications



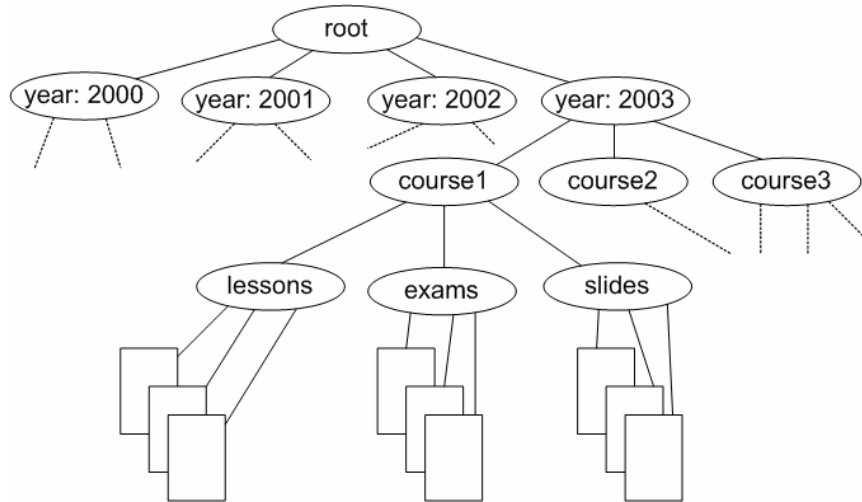
- **Xlessons**: to produce lectures: lectures notes, laboratorial guided sessions, exercise sheets, ...
- **Xexams**: to assist teachers in the production of test and exams: multiple choice, true and false, progressive, ...
- **Xslides**: to assist the production of slide based presentations.

Content Repository



- A **sub tree** in the server file system;
- A **Repository Management System** is under development.

Content Repository Structure



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Tests and Exams

- Can be divided in the following types:
 - Multiple choice;
 - True and false;
 - Development.
- In the near future:
 - One attempt;
 - Time limit;
 - Progressive;
 - Random

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Structure for tests and exams

```
...
<body>
<questions>
<question numberQ="Q1">
<description>
<para>No Tratado de Roma assinado em 1957 pelos seis
Estados-membros de então, ficava expressa a intenção em realizar:</para>
</description>
<choices>
<choice answer="false">
<para>uma união aduaneira;</para>
</choice>
<choice answer="false">
<para>uma união aduaneira, um mercado comum e uma
união económica;</para>
</choice>
<choice answer="true">
<para>uma união aduaneira e um mercado interno;</para>
</choice>
<choice answer="false">
<para>um mercado comum, uma união económica e uma união
económica e monetária.</para>
</choice>
</choices>
</question>
...
</questions>
</body>
```

description, choices?)>

ED>

choice+)>

(para+)>

big) #IMPLIED>

ra+)>

REQUIRED>

Slide based presentations

The screenshot shows a web browser window with the following content:

- File: C:\Documents and Settings\José Carlos Ramalho\My Documents\Documentos...
- Address bar: C:\Documents and Settings\José Carlos Ramalho\My Documents\Documentos\XML samples\xfic...
- Page title: Ficha Nº2 Exercício Nº2 2003.10.01
- Text: Querias sobre os sumários
- Text: Faça o download do documento XML correspondente aos sumários de PED2000.
- Text: Crie um documento baseado no DTD acima com expressões XPath que respondam às seguintes alíneas:
- List of tasks:
 - (a) Seleccione todas as aulas teóricas.
 - (b) Seleccione todas as aulas práticas.
 - (c) Seleccione as datas de todas as aulas.
 - (d) Seleccione o primeiro parágrafo do sumário de cada aula.
- Link: [Voltar ao Índice de exercicios](#)

Follows the same approach as the previous one;

An XML Schema defines this kind of documents;

There are two transformations:

To generate a website that drives the slide presentation

To create a PDF version of the slides.

Lessons and laboratory guided sessions



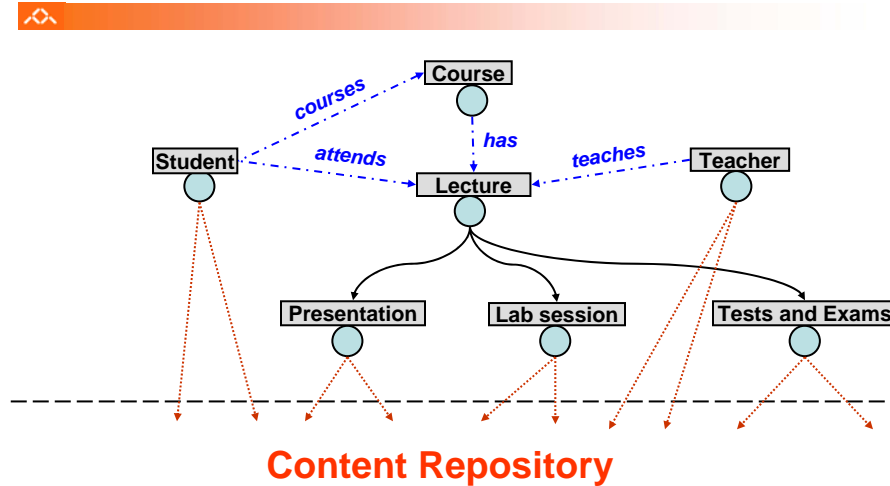
- It is used in **three different courses** to support practical lessons and laboratory guided sessions;
- An **XML Schema** defines this kind of documents;
- There are two transformations:
 - To generate a **website**;
 - To create a **PDF document**.

Ontology



- **Semantic Network**
 - Concepts;
 - Relations between concepts;
- In **ADRIAN** context:
 - Learning Objects are/have Concepts;
 - Relations between LO are/have Relations;
 - **LO and Relations** are defined by the user. They are **not constrained**.

An ontology example

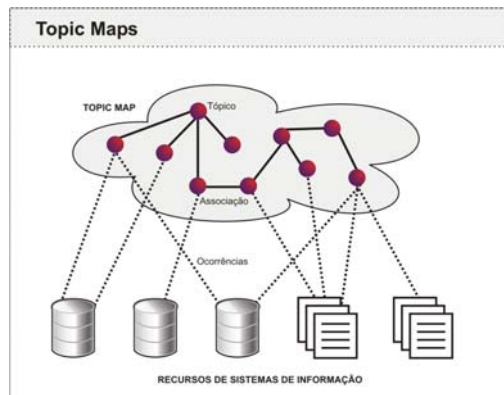


Topic Maps

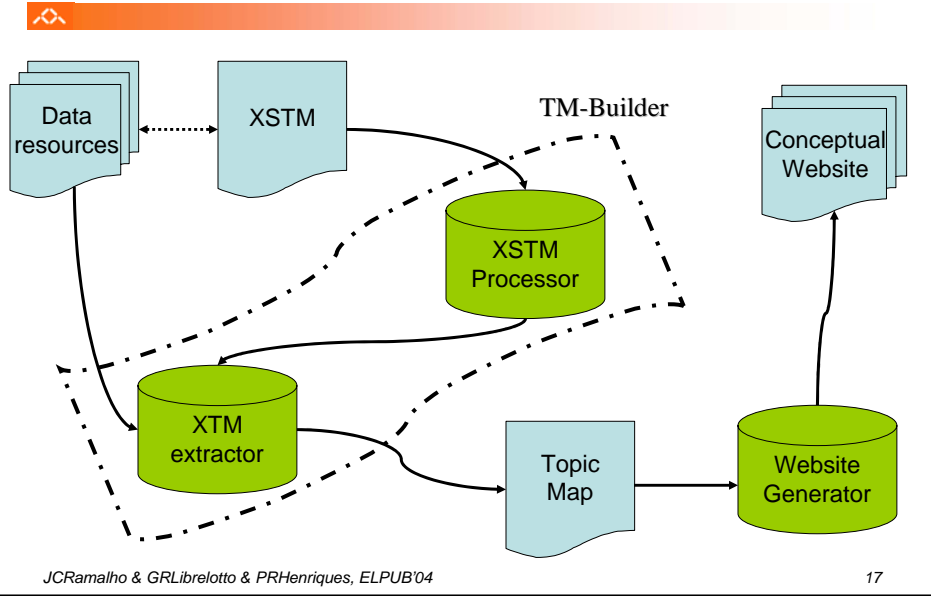
• “Topic maps are a new ISO standard for describing knowledge structures and associating them with information resources”

The TAO of Topic Maps,
Steve Pepper, 05-2000

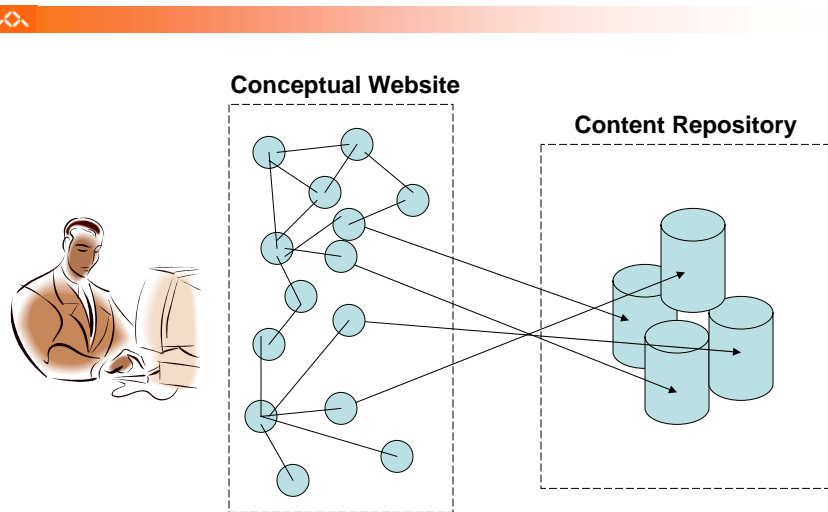
- **Topics**
- **Associations**
- **Occurrences**



TM-Builder



Conceptual Navigation



Conclusion



- ADRIAN provides **support** for content production;
- Three **XML languages** were defined to the content production;
- It is still a **prototype**, but some parts are already being used in E-Learning contexts;
- ...



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