The Learning Marketplace

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0.0 The Learning Marketplace: Overview

1. Intro: What are Learning Marketplaces?
2. Basics: Resource Descriptions
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4. Learning Objects (1): The Theory
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0.1 Introductions…

- Who are you?
- Where are you from?
- State one ***property*** of yourself….
  - E.g. I'm Stephen Downes, I'm from the University of Alberta in Edmonton, Canada, and one property of myself is ***height***, of which I am 5 feet 11 inches and three quarters.
  - **Note**: each person please provide a ***unique*** property

1.0 Intro: What are Learning Marketplaces?

1. Three Models of Online Learning Portals
2. Why We Want Learning Marketplaces
3. Prospects, And A Polemic
4. Some Examples of Learning Marketplaces

1.1 Three Models of Online Learning Portals

- Reference: Hungry Minds, A Commentary on Educational Portals **http://www.westga.edu/~distance/downes31.html**

1. The **Restaurant Model**: Specialized learning prepared by hand
2. The **Big Box Model**: Generic learning from a single provider (e.g. AOL)
3. The **Grocery Store Model**: Wide selection, mix and match

1.2 Why We Want Learning Marketplaces

For the student:

- A much wider selection of learning is available
- Because of the wide range of offerings, a much more personalized listing of offerings is possible
- There is no extra effort involved in purchasing learning from a new institution
- And purchases are made from a single point of contact

1.2.1 Why We Want Learning Marketplaces (2)

For the educational institution, the advantages of a marketplace are also clear:

- A much wider audience is available for its course offerings
- The institution can focus and specialize on particular types of offerings
- It is much easier to acquire new students

Reference: The Learning Marketplace - A Concept Paper

1.3 Prospects, And A Polemic

- A Snarky Note from Saba…
- The problem: nobody really likes grocery stores – if Heinz (or Microsoft) could pull it off, you would buy products only from them
- The universities, on the other hand, want everyone to eat from five star restaurants
- The likely result? McDonalds

1.4 Some Examples of Learning Marketplaces

- MERLOT http://www.merlot.com (?)
  - Essentially a listing of courses offered by member institutions (there was a big fee for membership, but this is now in question)
  - Full courses listed only
  - Members input metadata via a form
  - No payment mechanism, no delivery mechanism (I.e., helps you find courses only)

1.4.1 Some Examples of Learning Marketplaces (2)

- WebCT Course Packs
  - Pre-built courses offered publishers to supplement textbooks
  - Courses selected by institutions who own WebCT and must be offered using WebCT
  - Course providers must enter into an agreement with WebCT
  - Prospects: external input of (WebCT compliant, or at least, IMS compliant) courses into WebCT

1.4.2 Some Examples of Learning Marketplaces (3)

- XANEDU http://www.xanedu.com (?)
  - System for selecting articles, essays, etc., from journals and publications for the creation of course packs
  - Course packs priced automatically; students purchase directly from XanEdu
  - Providers must enter into agreement with XanEdu

1.4.3 Some Examples of Learning Marketplaces (4)

- Saba http://www.saba.com (?)
  - Corporate learning portals
  - Companies must purchase Saba system (combines marketplace and LMS)
  - Billing and certification built into the system
  - ASP model

1.4.4 Some Examples of Learning Marketplaces (5)

- REDVECTOR http://www.redvector.com
  - Industry specific learning portal
  - Single point billing
  - Clear connection to certification
  - Courses delivered via Red Vector LMS
  - Providers must enter agreement with Red Vector

2.0 Basics: Resource Descriptions

1. Overview: The Semantic Web
2. Talking About Resources
3. RDF Syntax
4. Applying Resource Descriptions

2.1 The Semantic Web

- The Semantic Web is **designed to allow reasoning and inference capabilities** to be added to the pure descriptions.
- The Semantic Web is a **web-technology that lives on top of the existing web**, by adding machine-readable information without modifying the existing Web.

2.1.2 The Semantic Web (2)

- Huh? What does this mean?
- The semantic web allows us to identify ***types*** of entities
- It allows us to identify ***relations*** between entities
- This allows computer programs to make ***inferences*** about entities

2.1.3 The Semantic Web (3)

- Reference: Tim Berners-Lee, James Hendler, Ora Lassila: *The Semantic Web* http://www.scientificamerican.com/2001/0501issue/0501berners-lee.html
- See Also: Mikael Nilsson: The semantic web: How RDF will change learning technology standards http://www.cetis.ac.uk

2.2 Talking About Resources

- ***Resources*:** anything can be a resource
- Think of each of these things as having individual web pages.
- These web pages *refer* to the resource in question and contain a *description* of that resource.
- To a large degree, we already do this in our paper-based records.

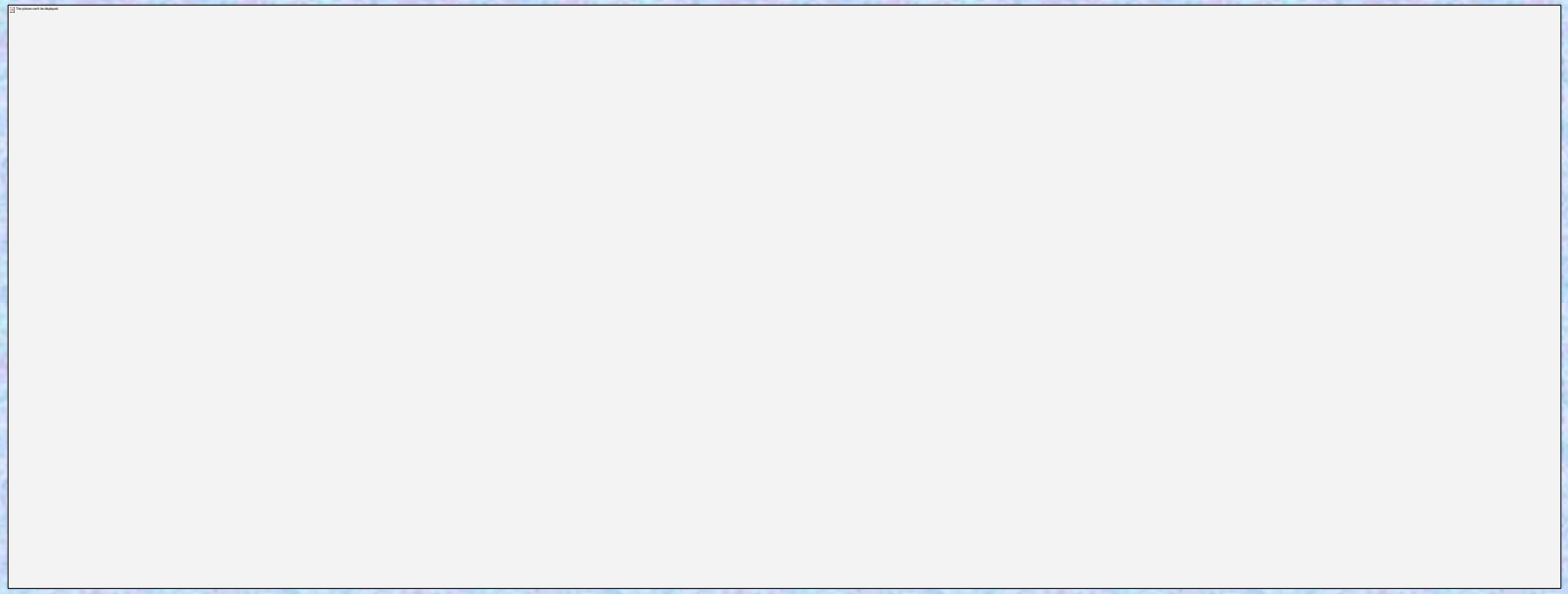
2.2.1 Talking About Resources (2)

- The purpose of these records is to provide a ***description*** of the resource in question.
- Descriptions of objects consist of a list of their ***properties.*** A property is some aspect, characteristic, attribute, or relation of a resource.
- A town, for example. The properties of a town include its name, its population, its mayor…

2.2.2 Talking About Resources (3)

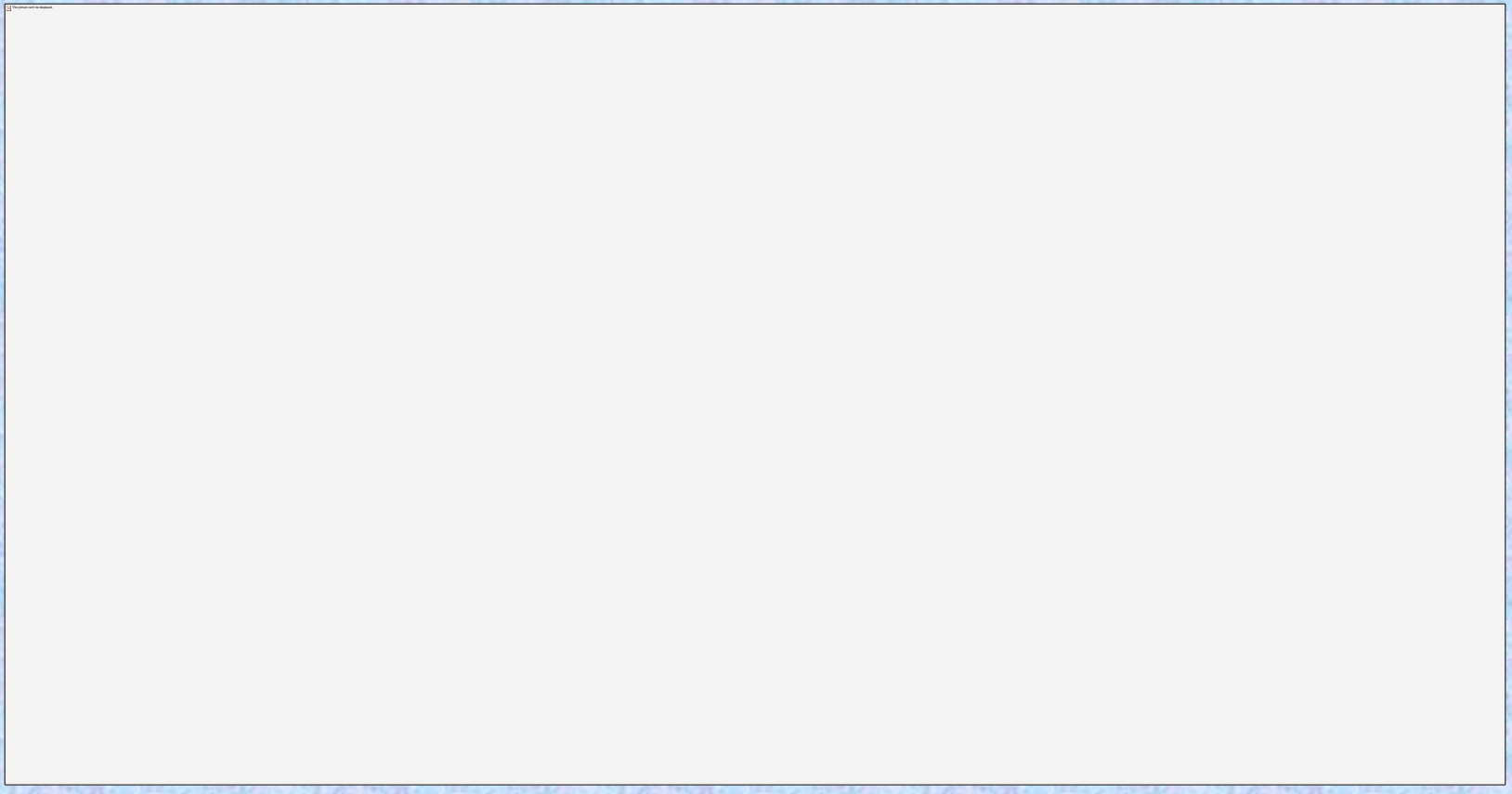
- **Resource Diagrams** – a useful way to think of resource descriptions:

2.2.3 Talking About Resources (4)



- A document is associated with an author; the author, in turn, has his/her own properties

2.2.4 Talking About Resources (5)



- The Generic Model

2.3 RDF Syntax

```
<?xml:namespace ns = "http://www.w3.org/RDF/RDF/" prefix ="RDF" ?>
<?xml:namespace ns = "http://purl.oclc.org/DC/" prefix = "DC" ?>
<RDF:RDF>
<RDF:Description RDF:HREF = "http://uri-of-Document-1">
   <DC:Creator>John Smith</DC:Creator>   </RDF:Description>
</RDF:RDF>
```

2.3.1 RDF Syntax (2)

```
<?xml:namespace ns = "http://www.w3.org/RDF/RDF/" prefix = "RDF" ?>
<?xml:namespace ns = "http://purl.oclc.org/DC/" prefix = "DC" ?>
<?xml:namespace ns = "http://person.org/BusinessCard/" prefix =
   "CARD" ?>
<RDF:RDF>
    <RDF:Description RDF:HREF = "http://uri-of-Document-1">
        <DC:Creator RDF:HREF = "#Creator_001"/>
    </RDF:Description>
    <RDF:Description ID="Creator_001">
        <CARD:Name>John Smith</CARD:Name>
        <CARD:Email>smith@home.net</CARD:Email>
        <CARD:Affiliation>Home, Inc.</CARD:Affiliation>
    </RDF:Description>
</RDF:RDF>
```

2.3.2 RDF Syntax (3)

- More Resources:
- Eric Miller: An Introduction to the Resource Description Framework, D-Lib Magazine, May, 1998
- Resource Descriptions

2.4 Applying Resource Descriptions

- **Describe:** a description can be expanded, or new descriptions can be added.
- **Certify:** multiple entities can certify content
- **Annotate:** entities can be annotated
- **Extend:** successive editing can be done allowing private, group consensus or author-specific versions of a common base document
- **Reuse:** RDF is application independent

3.0 Exercise: A Needle in a Haystack?

1. Overview – the Task
2. Topics

3.1 Overview – The Task

- Break into groups of (about) five people
- You will be given an entity to describe
- Create a resource description for the object:
  - The syntax isn't the main thing
  - What are the essential properties of your entity?
  - What schemas do you need? How might they be extended?

3.2 Topics

1. A needle in a haystack
2. Another brick in the wall
3. A pea in a pod
4. A night at the opera
5. A bird in the hand
6. A ship of the line

4.0 Learning Objects (1): The Theory

1. The Need for and Nature of Learning Objects
2. Two Design Concepts
3. Protocols (= Schemas)

4.1 The Need for and Nature of Learning Objects

- Assumption: thousands of universities are offering the same (or similar) course
- Assumption: these courses are being placed online
- Premise: the world does not need thousands of versions of the same course online
- Indeed – we cannot ***afford*** it

4.1.1 The Need for and Nature of Learning Objects (2)

- Courses? Not courses
- Sharing the old way: books, videos, wall charts, etc.
- Sharing the new way: web pages, exercises, simulations, etc.
- We need a mechanism, the LCMS:
  - To **select** learning materials
  - To **integrate** learning materials

4.2 Two Design Concepts

1. Rapid Application Design (RAD)
2. Object Oriented Design

4.2.1 Rapid Application Design

- The main lesson for educators: think of online learning resources as ***programs*** (as opposed to, say, books or essays)
- The idea of RAD is that a software programmer can select from a menu of pre-defined subroutines in a CASE (computer-aided software engineering) environment
- Exists in other domains: e.g. the chef

4.2.2 Object Oriented Design

- Begins with ***prototypes*** of common objects (as though we had a blank object created from a ***schema***) that are ***cloned*** and ***blessed***
- The cloned object inherits both properties and ***functionality*** from the prototype
- Attributes are assigned to the cloned object in order to create a new entity

4.2.3 Example

- ***Windows programs*** are classic examples of this

1. A particular entity, say, a menu bar, is cloned
2. The entity is given content (e.g. a page title) by the program
3. The entity also obtains properties (e.g. colour, font) from the user environment

4.3 Protocols (= Schemas)

- Open Standards: if the properties and functions are known generally, multiple developers can create interoperable objects
- Two major sets of standards:
  1. Metadata (I.e., schemas)
  2. Function protocols (I.e., application program interfaces, or APIs)

4.3.1 IEEE Learning Technology Standards Committee (LTSC)

- Basic set of standards
- Groups are creating specifications:
  - **learning object metadata**
  - **student profiles**
  - **course sequencing**
  - **computer managed instruction**
  - **competency definitions**
  - **localization**
  - **content packaging**
- More info: http://ltsc.ieee.org/

4.3.2 More Standards

- ADL Shareable Courseware Object Reference Model (SCORM)
- IMS Global Learning Consortium
- Aviation Industry CBT Committee (AICC)
- Resource: Wayne Hodgins with Marcia Conner: All About Learning Technology Standards http://www.learnativity.com/themes.html

5.0 Learning Objects (2): The Application

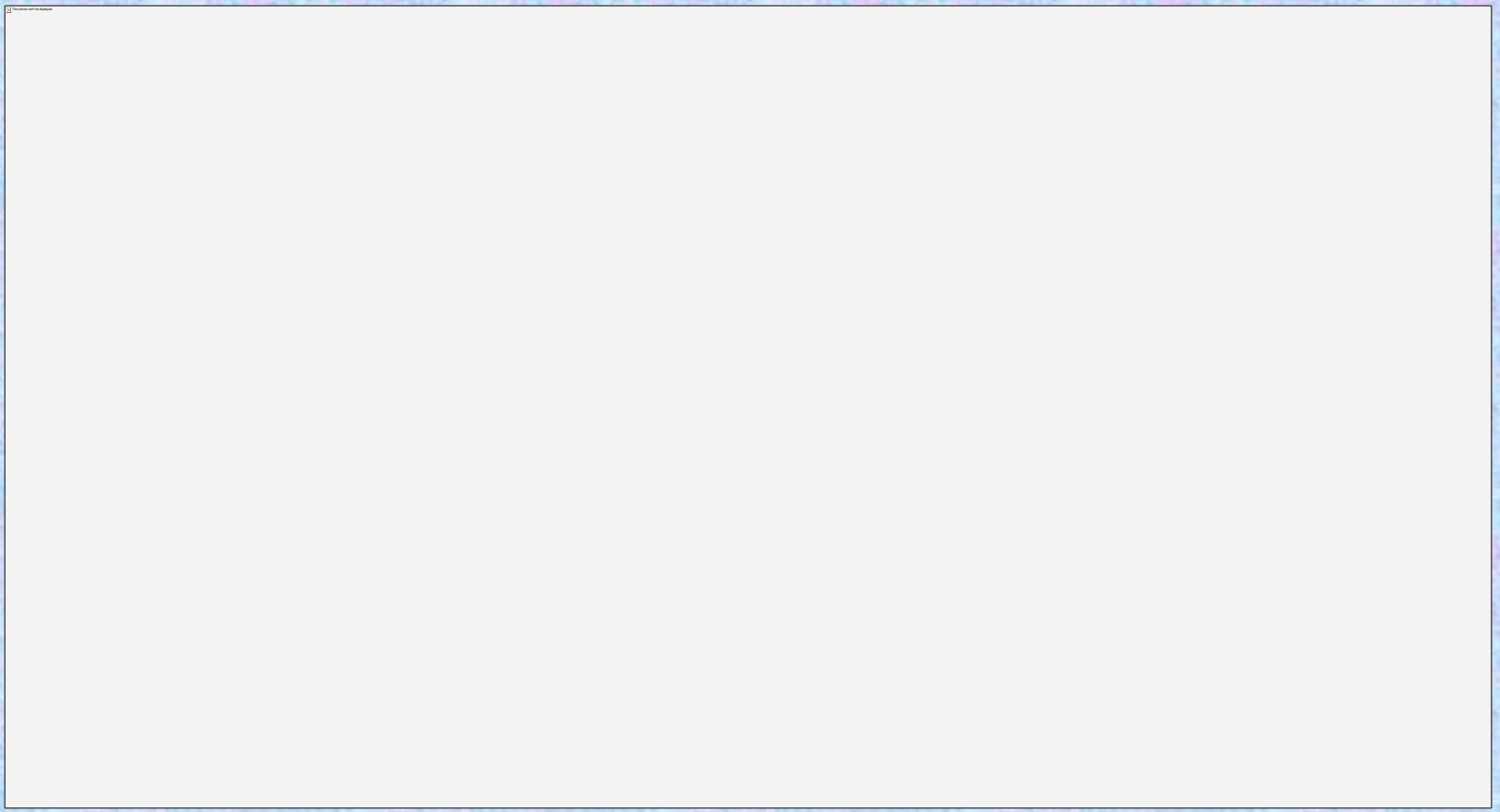
1. Learning Management Systems
2. Content Management Systems
3. Learning Content Management Systems
4. LCMS and Learning Marketplaces

Resource: Maish Nichani: LCMS = LMS + CMS [RLOs]
http://www.elearningpost.com

5.1 Learning Management Systems

- An LMS is used to deliver and administer learning over the internet
- For learners: access to learning materials, communication with instructor and other students, tracking progress
- For administrators: testing, administration, etc.
- LMS used to deliver, not to create

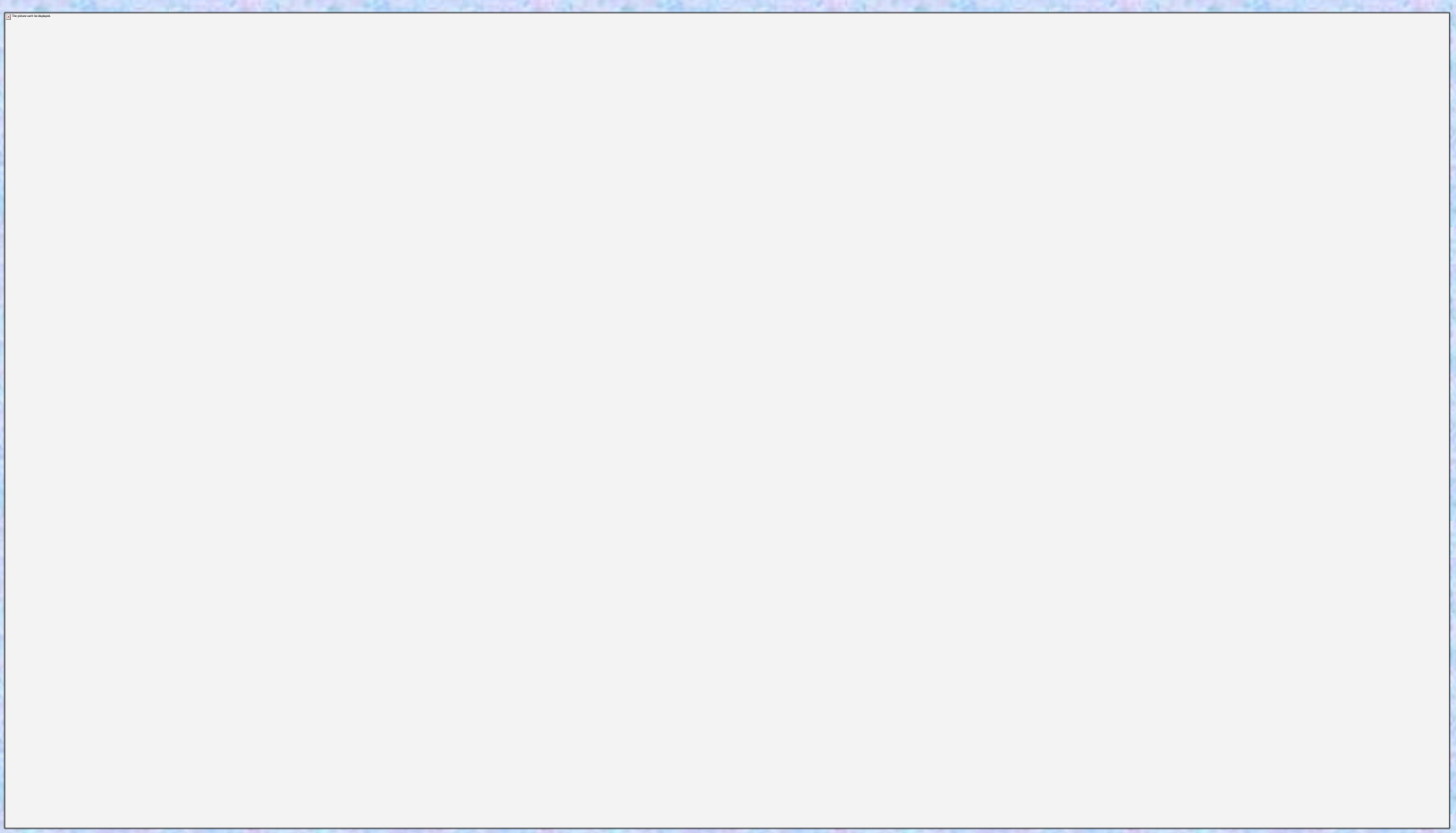
5.1.1 Learning Management Systems (2)



5.2 Content Management Systems

- Used in the online publishing industry
- Separates content from presentation (e.g. by using templates)
- Allows the insertion of data from multiple sources into a single page (eg. Stock graphs with a story on stocks)
- Allow personalized delivery of online content

5.2.1 Content Management Systems (2)



5.3 Learning Content Management Systems

- An LCMS combines the administrative and management dimensions of a traditional LMS with the content creation and personalized assembly dimensions of a CMS.

5.3.1 Learning Content Management Systems (2)

- Four Stage Process:

1. Instructional designers create learning objects (or they are purchased)
2. Editors review the created course
3. Personalization rules are applied, targeting the completed courses to learners
4. Review, revision, deletion

5.4 LCMS and Learning Marketplaces

- The snarky note from Saba revisited: LCMSs and Learning Marketplaces: what's the difference?
- It's a matter of orientation:
  - The LCMS is managed by an institution
  - The Learning Marketplace is managed by a learner

6.0 Exercise: Have you Ever Fished Before?

It's a beautiful spring day. You gather your brand new rod and reel and head to the beach.

You cast your line – badly, and without attaching bait.

As you unravel the tangle, your fishing rod asks you: "Have you ever fished before?"

6.0.1 Exercise

1. The Intelligent Fishing Rod
2. Your Own Learning Application

6.1 The Intelligent Fishing Rod

- The fishing rod contains a learning marketplace
- When you select a tutorial from the rod, lessons are delivered by voice or on your PDA
- The rod receives feedback and adjusts its lessons accordingly
- Premium lessons are available (for a fee)

6.2 Your Own Learning Application

- Same Groups as Before
- Rules:
  - No classroom allowed!
  - Otherwise, anything is fair game
  - Be sure to include all components of learning: learning materials, certification, instruction and tutorial support, interaction, etc...

7.0 Outro: What are Learning Marketplaces?

1. Creating Course Offerings
2. Creating the Offer
3. Customization and Personalization
4. Presenting the Offer
5. The Transaction

7.1 Creating Course Offerings

- Grocery store analogy: creating the course is like putting the peas into the can
- Attached to the can is a ***label*** – the label is the (IEEE compliant) metadata describing the course
- The ***label*** is placed on the website for public viewing
- The learning marketplace ***polls*** the provider

7.2 Creating the Offer

- The offer is a mechanism for viewing and purchasing courses
- Grocery stores use the ***browse*** model – but this is obviously not good for online learning
- But grocery stores know nothing about the customer – the learning marketplace can create ***profiles*** and product ***clusters***

7.3 Customization and Personalization

Profiles are created by means of customization and personalization

- *Customization* is individualization performed by the portal or online service.
- *Personalization* is individualization performed by the individual user.

7.3.1 Filters

Filters are applied based on the profile

- Mode selection – a user may elect to view only online courses, for example, or only courses for a Mac
- Accreditation – a user may elect to view only certified courses
- Funding Limitations – the user may elect to view only courses funded by the employer
- Pre-requisites – A user may not be qualified to take certain courses, or may require formal admission to an institution before taking certain courses

7.3.2 Preferences

Preferences are used to order the presentation. For example, higher preference may be given to courses that:

- Are newer
- Are from a provider that provides discounts to the employer
- Are associated with recently completed courses
- Are Canadian (are Australian)
- Are three hour courses (as opposed to three week courses)
- Have higher student evaluation ratings

7.4 Presenting the Offer

- List display – view a number of ofderings
- Object display – view information about a single object
- Multiple output formats:
  - Web pages
  - Email newsletters
  - Fishing rods!

7.5 The Transaction

- Entrance into the Course
  - Course registration
    - Admission
    - Registration
    - Payment
  - Course delivery
- Work during the course via LMS
- Course completion

A Finale

- We have to start thinking of learning as something that can happen anywhere, any time
- We have to start thinking of learning as something that is directed by the learner
- We have to find for ourselves a ***place*** in the system