

Reusable learning objects: designing and archiving

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Reusable Learning Objects

Designing and Archiving

By

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What are reusable learning objects (RLO)s?

- ❑ A reusable learning object is a web-based (electronic) interactive chunk of e-learning designed to explain a stand-alone learning objective.
- ❑ The fact that the learning object has been broken down to a low level of granularity facilitates its reuse in different learning and teaching situations.
(Ref: <http://www.ics.heacademy.ac.uk/resources/rlos/index.php>)
- ❑ The reusability of any learning object depends mainly on the method of archiving and retrieval of that object.

What forms do learning objects come in?

- ❑ A learning object can be any of the following
 - Animation
 - Interactive Simulation
 - Puzzle
 - Quiz
 - Game
 - Walkthrough
 - Etc...

Things to consider when designing a RLO (from a technical perspective)

- ❑ Subject matter
- ❑ Subject category
 - Science (e.g How a Sin wave works)
 - Technology (e.g Traversing a binary tree data structure)
 - Humanities/Education (e.g How to conduct a tutorial)
 - Business (e.g How to do a sales forecast using excel)
 - Etc...
- ❑ Type of RLO to design
 - How a Sin wave works – Simulation
 - Traversing a binary tree data structure - Animation
 - How to conduct an effective tutorial – Quiz
 - How to do a sales forecast using excel - Walkthrough
- ❑ Method of delivery
- ❑ Method of archiving and retrieval
- ❑ Technological platform for design

Method of delivery

- The method of delivery is important to determine which technology to use for the design
 - **Web based delivery**
 - The learning object should be web friendly
 - Cross browser/ cross platform compatible
 - Should be able to embed into an HTML page
 - Should download fast
 - Should be secure
 - **CD/DVD based delivery**
 - Cross platform compatibility (Windows, Linux, MacOS)
 - Accessed using existing software technology
 - Use minimum hardware resources
 - High quality

Which technologies are available?

- ❑ Flash animations
- ❑ Flash with XML and action scripts
- ❑ Java Script
- ❑ Java Applets with Abstract Windows Toolkit (AWT) and Swing
- ❑ .NET Windows Presentation Foundation (WPF)
- ❑ Silverlight
- ❑ Ajax
- ❑ Third party e-learning development software

Why the Windows Presentation Foundation WPF?

- ❑ Robust
- ❑ Web/browser/windows based
- ❑ Can achieve complex animations including 3D
- ❑ Can incorporate complex programming for adding parameters
- ❑ Free for academic use
- ❑ Has a GUI
- ❑ Examples: Examples need to be installed on the .NET framework before use.

What is required for WPF

- ❑ The WPF is a new feature of the Microsoft .NET 3.5 framework. This is available with the new Visual Studio 2008 (Free for academic purposes)
- ❑ The WPF builds the code automatically when GUI changes are made and vice-versa.
- ❑ Archiving can be problematic as the complete solution folder needs to be archived. This folder could be in the range of 1-5GB.
- ❑ Easier to incorporate animations and calculations than Java Applets
- ❑ For RLO development using WPF the following team members should be involved
 - Designer – To envision how the RLO should look like
 - Academics – To work out the mathematical model
 - Program Developer – To build the Applet
 - QA – To test the RLO for accuracy
 - IT Support – To archive the RLO

Why third party e-learning software?

- ❑ Very customized for a particular type of RLO
- ❑ Many platforms are available for presentation
- ❑ Some of these software are Free for use
- ❑ RLOs can be easily built
- ❑ The RLO can be exported to a suitable platform for use
- ❑ The RLO can be stored as project files for re-use
- ❑ Examples: [Animal](#) / [AlgAE](#) / [ProForm](#)

What is required for third party e-learning software?

- ❑ These platforms are very specialised and caters to a specific type of RLO
- ❑ Some of the platforms are free whilst others charge a licensing fee
- ❑ Specific training is required
- ❑ Archiving is a bit problematic as there is no self contained package
- ❑ For RLO development using third party software the following team members should be involved
 - Designer – To envision how the RLO should look like and to design the images/record voiceovers / design animations etc...
 - Academics – To provide theoretical input / test accuracy
 - IT Support – To archive the RLO

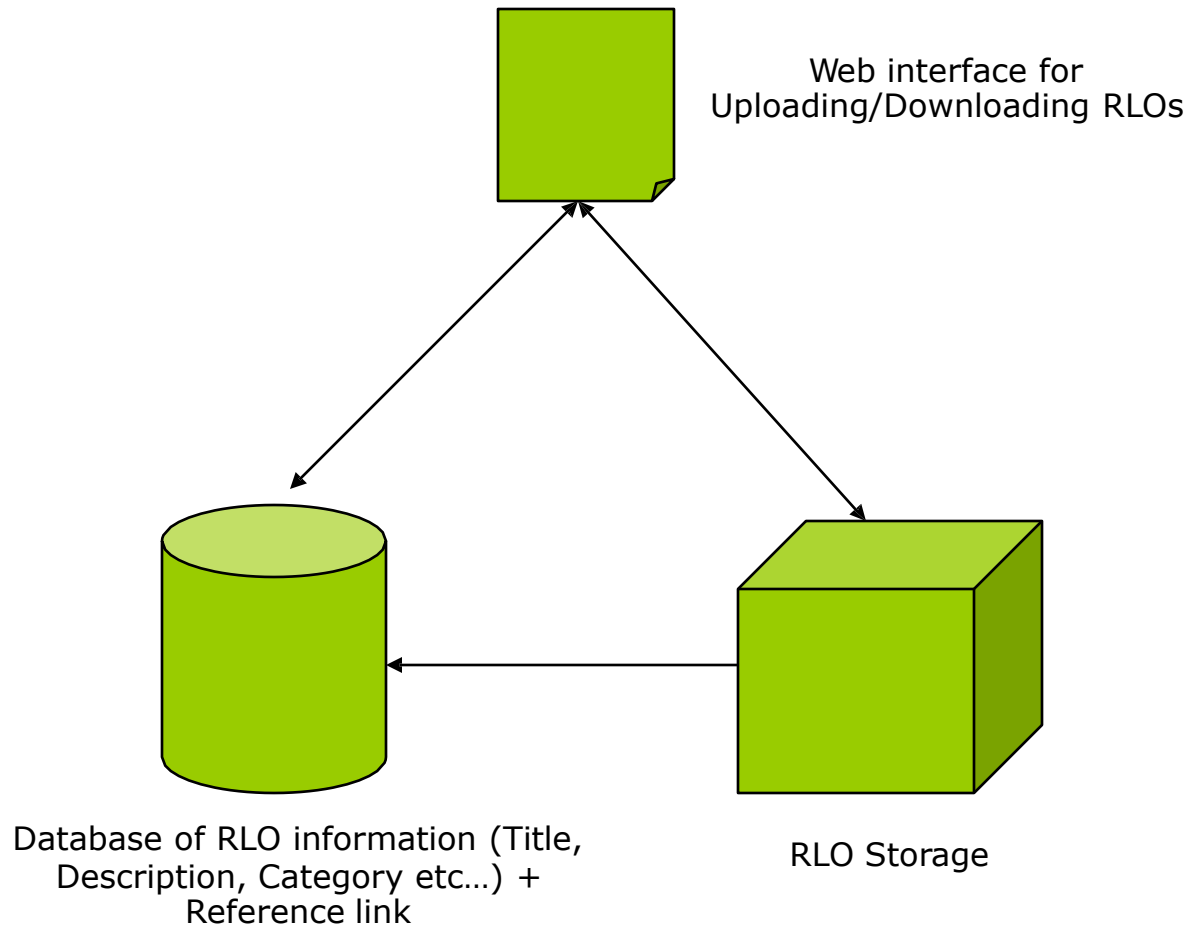
Why Java Applets

- ❑ Light weight
- ❑ Web/browser based
- ❑ Can achieve complex animations including 3D
- ❑ Can incorporate programming for adding parameters
- ❑ Can be stored as web pages on a website
- ❑ Free and OpenSource
- ❑ Examples: [1](#) / [2](#) / [3](#) / [4](#) / [5](#) / [6](#) / [7](#) / [8](#) / [9](#) / [10](#) / [11](#) / [12](#)

What is required for Java Applet Development

- ❑ Java is a Free and Open Source programming platform by Sun Micro Systems
- ❑ A Java Applet is build purely using Java Programming. There is no GUI for this.
- ❑ Can be archived as a web page with supporting files
- ❑ For RLO development using Java Applets the following team members should be involved
 - Designer – To envision how the RLO should look like
 - Academics – To work out the mathematical model
 - Program Developer – To build the Applet
 - QA – To test the RLO for accuracy
 - IT Support – To archive the RLO

Archiving and retrieval



Thank you

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