



Bridging the gap – Delivering customisable teaching materials to enhance utilisation of geographic data

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Outline

- Background
- Introducing e-MapScholar
- Why e-learning
- A framework for learning resources
- Adding quality to the online experience
- Allowing customisation
- Where we are...
- Some conclusions

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EDINA Digimap

- Digimap is a web-based mapping service, offering access to Ordnance Survey digital map data
- National service, serving HE institutions Digimap offers an easy-to-use, map-based interface, allowing:
 - creation of maps on-screen
 - printing of high quality maps
 - downloading of digital map data for use in user's own GIS or graphics package
 - advanced cartographic services e.g. combining of datasets, changing scale

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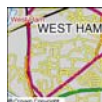
Web mapping and data available through Digimap



Strategi®
• 1:250,000



Land-Form PANORAMA™
• 1:50,000
• contours and DTM



Meridian™
• 1:50,000



Land-Line.Plus®
• 1:10,000 - 1:1,250

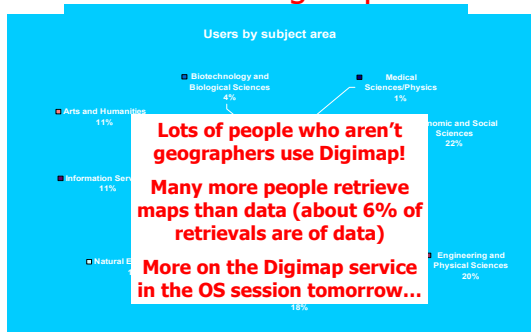


1:50,000 Colour Raster

1: 50,000 Place-names Gazetteer
– 250,000 place-names

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Use of Digimap



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The need for e-MapScholar

- **Interdisciplinary** use of service indicates wide demand for use of spatial data
- More advanced tasks (i.e beyond use of simple cartographic representations generated online) are possible
- These tasks require a greater understanding of the nature of the data (**concepts**) and some specific **skills**
- e-MapScholar aims to try to bridge this gap through...

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Some key project aims

- **Promoting** the use of geo-spatial data in learning and teaching
- Supporting learners by providing a **range** of learning materials that develop **skills** in the use of digital map data and **knowledge** of geo-spatial **concepts** specific to their disciplinary background
- Providing **case studies** and **customisable modularised** resources for lecturing staff to use in teaching on geo-spatial data

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Why e-learning?

- If we are going to provide something online, the materials must in some way be enhanced by this approach
- In the case of e-MapScholar, this enhancement is provided through:
 - The provision of **interactive tools** to students to illustrate key concepts and perform some basic analytical tasks
 - The facility for lecturers to **customise** materials through provision of **discipline** and **place specific** examples
- Going to examine the **framework** for delivering concepts, some of the key **concepts** identified, methods of **enhancing** learning and **customisation**

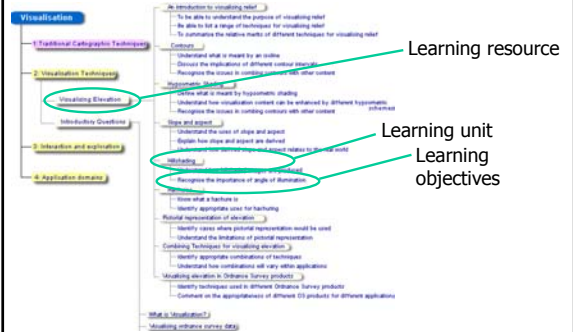
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Framework for resource delivery

- Three main areas identified as key conceptual interdisciplinary domains
 - Working with digital map data
 - Data integration
 - Visualisation
- Look at how **learning resources**, **units** and **objects** are being produced in the Visualisation domain
- Using **mind-map** concept to identify resources, units and learning objectives

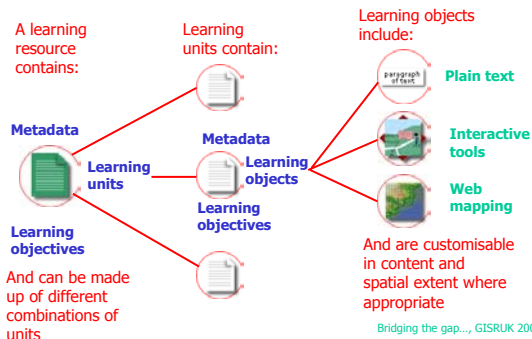
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Visualisation mind map (extract)



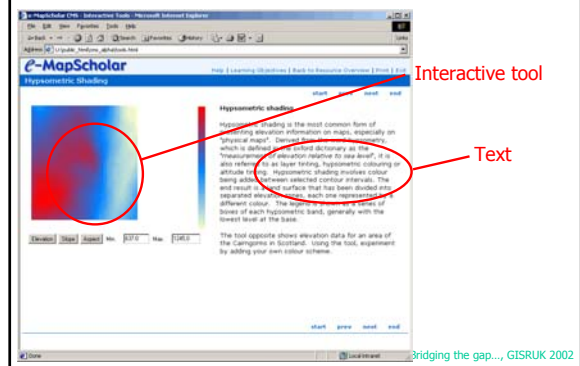
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Components of a learning resource



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Example page from unit



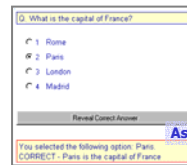
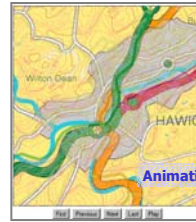
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More about tools

- A variety of tools are under development, these include:
 - Map tools – deliver web mapping – basically cut-down versions of Digimap clients
 - Raster tools – display 2 and 3D elevation data (Java and VRML) and allow on-the-fly calculation of derivatives such as slope and aspect, as well as contouring of data
 - Digitising tools, which allow on-screen digitising using OS data or aerial photography as a backdrop
- Tools are all customisable in terms of **spatial extent** and other appropriate parameters (e.g functions available on raster tool)

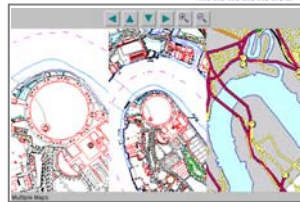
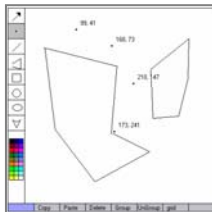
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Example tools



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Example tools



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How tool customisation works (or will do so...)

- Tools are written in client (or occasionally server) side Java
- Tool parameters are stored in XML files
- Digimap data delivered via OGIS compliant Web Map Server and Web Feature Server (these are currently being implemented for the e-MapScholar project)

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What makes this different?

- Other projects have produced learning materials for spatial data and tools
- We believe that several elements make e-MapScholar different (and hopefully you will agree!) and exciting
- The most important one of these is the development of a **content-management system** allowing **flexible customisation** of resources from **existing units** and editing of **objects** within units...

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Facilitating customisation

- Behind the scenes resources and units are stored as XML
- The user will see a web-based interface (the content management system) which allows customisation in a number of ways
- We envisage the primary customisations being:
 - Creation of **new resources** from existing units
 - Modifying **tools** for specific example
 - Editing **text objects** within units

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Content Management System



Interface of CMS showing how users can select units to create a new resource, and edit metadata associated with that resource

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More on XML, metadata, etc...

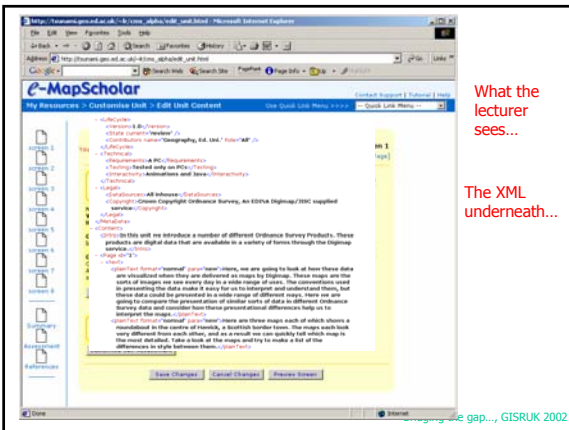
- DTDs have been generated for both resources and units
- Resource and unit are stored as XML – resources point to units
- Extensive metadata stored at both levels following Dublin core standards – fields are defined in DTD
- CMS provides simple mechanisms for customising such materials with no knowledge of structure

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Some things I haven't mentioned

- **Case studies** – being developed by members of the community who are using OS data in teaching
- **Virtual placement** – a pilot project to develop a project putting skills learnt into practice in a project-based context
- **Evaluation** is being carried out as an integral part of the project (led by OU) – and we seek your opinions

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What the lecturer sees...

The XML underneath...

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What happens next?

- Units and tools are being developed so that the CMS is populated
- In parallel CMS and map/feature servers are being implemented
- What are your thoughts – we are particularly interested in how you think you might customise materials (if you would use them!)

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Conclusions

- Digimap use is multi-disciplinary
- e-MapScholar aims to develop tools which facilitate development of knowledge and skills related to geo-spatial data
- Learners are provided with learning resources including interactive tools
- Lecturers have the opportunity to build new resources from existing units and customise individual units

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