

e-MapScholar:

enhancing the use of spatial data in learning and teaching

Overview of project

e-MapScholar is aiming to produce a range of materials that support the use of spatial data, including the digital map data available from EDINA Digimap, in learning and teaching. The duration of the project is from January 2001 to April 2003.

Project Team:

Lead Site:

EDINA, Data Library, University of Edinburgh

Associate Partners:

The Institute of Educational Technology, Open University
The Department of Geomatics, University of Newcastle
The Department of Geography, University of Edinburgh

Associates:

LTSN Centre for Education in the Built Environment, University of Wales Cardiff
LTSN Geography, Earth and Environmental Sciences, University of Plymouth
Learning Technology Unit, University of Aberdeen

Advisors:

Dr Jo Wood, School of Informatics, City University
Mr David Hartland, Manager, Netskills, University of Newcastle
Dr Clare Davies, Psychologist
Ms Elaine Owen, Education Sector Manager, Ordnance Survey

Contacts

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Project website

<http://edina.ac.uk/projects/mapscholar/>

Project Aim:

To promote and enhance the use of digital map data in learning and teaching, by developing resources applicable to all geo-spatial data available to the academic community, including the Ordnance Survey data available through EDINA Digimap.

Project Objectives:

- To promote the use of geo-spatial data in learning and teaching;
- To support learners by providing a range of learning materials and tools that develop skills in the use of digital map data and knowledge of geo-spatial concepts. Three specific topic areas have been selected
 - ◆ Working with digital maps
 - ◆ data integration
 - ◆ data visualisation
- To support the use of geo-spatial data in teaching by providing exemplar case studies and customisable modularised resources for lecturing staff;
- To provide opportunities for learners to develop workplace-related skills in the use of geo-spatial data, using problem-based learning techniques.

Project Deliverables:

- A range of Teaching Case Studies by March 2002;
- Learning materials and tools in Working with Digital Map Data by September 2002;
- Learning materials and tools in Data Integration by September 2002;
- Learning materials and tools in Data Visualisation by February 2003;
- A proof-of-concept virtual placement by April 2003;
- Formative evaluation reports to developers;
- The evaluation team led by IET at the OU will provide a final report on evaluation activities;
- Interim reports to the JISC and final Project Report.

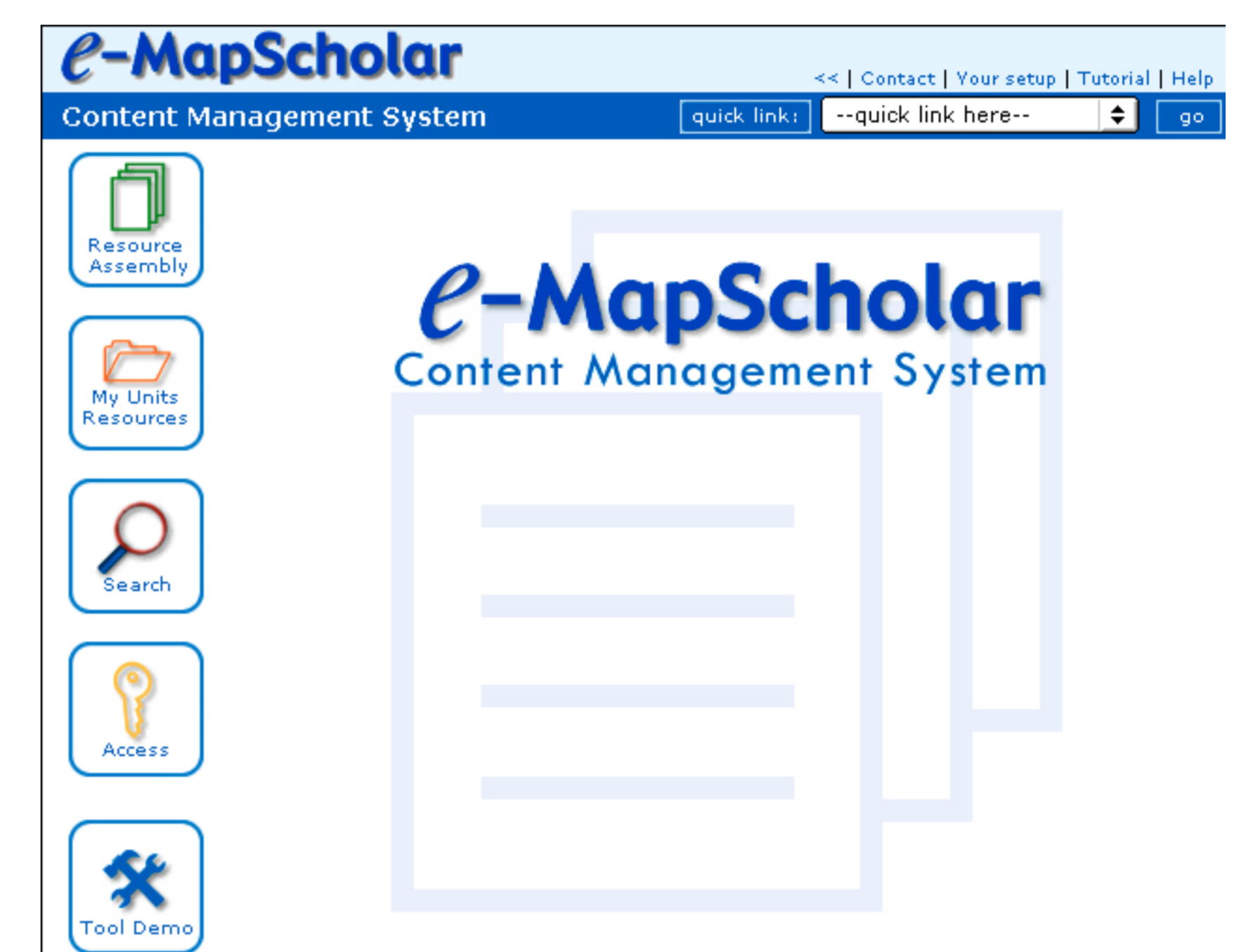
Teaching Case Studies

Following an open call to the community to share their experiences of teaching with Ordnance Survey digital map data, ten Teaching Case Studies have been selected and will be funded by the e-MapScholar project.

The case studies will consist of the data and materials used by the learners, along with descriptions of the uses made of the data and learning materials, and evaluations by staff and students, where available.

For further information about the Teaching Case Studies, please see:

<http://edina.ac.uk/projects/mapscholar/authors.shtml>



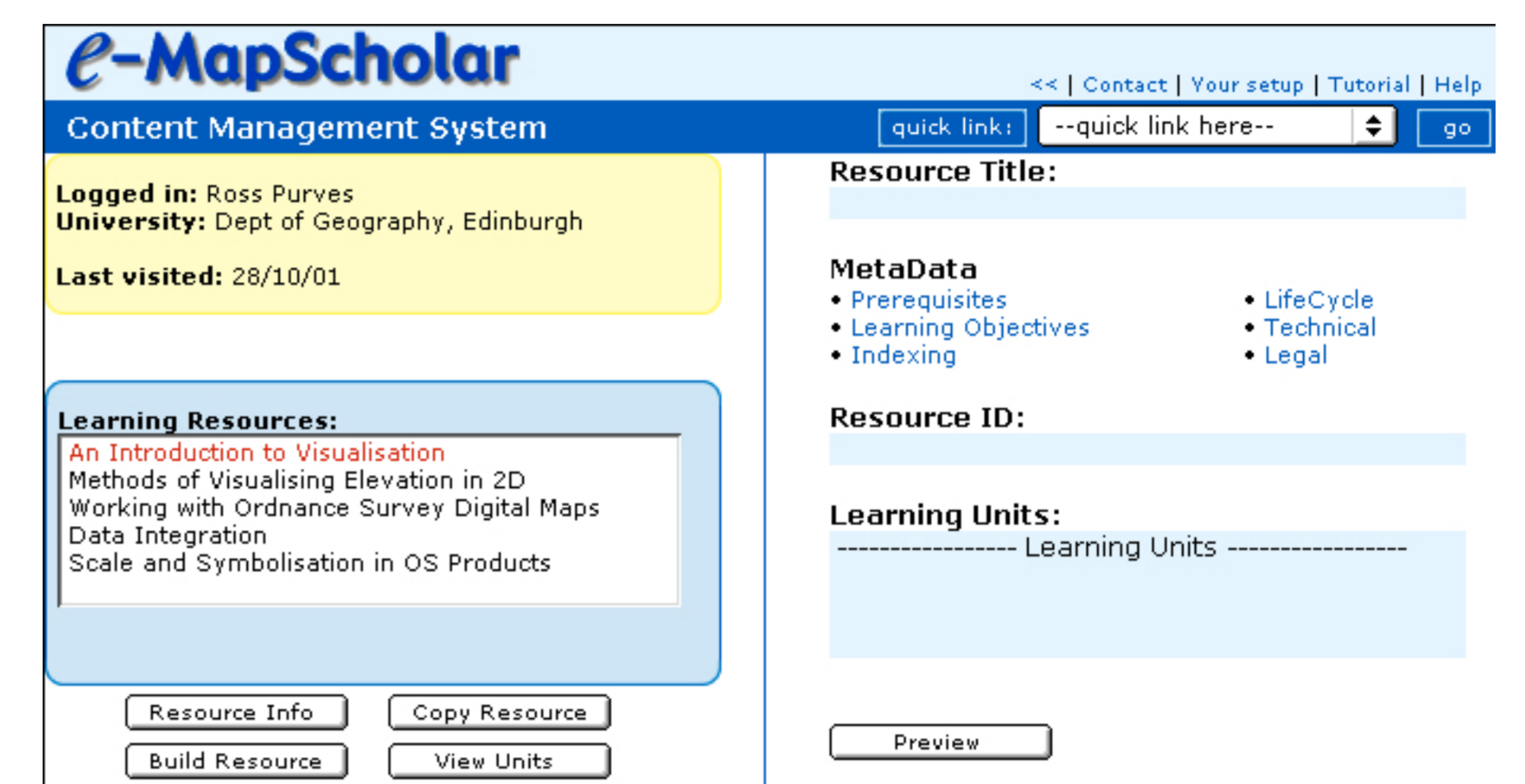
Customisable On-line Learning Materials and Software Tools

Customisable on-line learning materials which incorporate software tools are being developed under three areas:

- Working with digital map data
- Data integration
- Data visualisation

Key features of these resources are:

- The learning materials are being developed as "learning objects", at unit and resource level
- A core set of units are being authored which teaching staff can customise
- Teaching staff build learning resources for their students from the learning units
- The learning units contain interactive tools which are generic and can be used in different learning materials
- Tools, and the content they display, are also customisable by teaching staff
- The tools and learning materials are online resources that access maps and data from the EDINA Digimap service in real-time
- Learning resources include self-assessment exercises for the students to test their own learning
- The self-assessment exercises are customisable
- A glossary of commonly used words and phrases will be accessible at any point
- An e-MapScholar content management system is under development, which enables the construction of customised learning units and resources
- The content management system allows the lecturer to publish his/her customised units and resources to the community if s/he wishes
- The content management system provides search facilities for the units and resources at unit and resource level, and also within the units and resources themselves
- The learning units and resources are IMS-compliant



Virtual Placement

In the latter part of the project, the team will develop a proof-of-concept 'virtual placement', a real-life problem from an outside partner organisation, through which the learner has to work in order to arrive at a reasoned solution. The external organisation will provide a description of a typical workplace problem, along with solution(s) that it would find acceptable, and data for use in the virtual placement. The partner organisation will be invited to review and comment on work developed by learners using the virtual placement, and this evaluation will be fed back to the community.

Incorporation of user needs and requirements

The e-MapScholar project wants to ensure that user needs and requirements are fully addressed within the project.

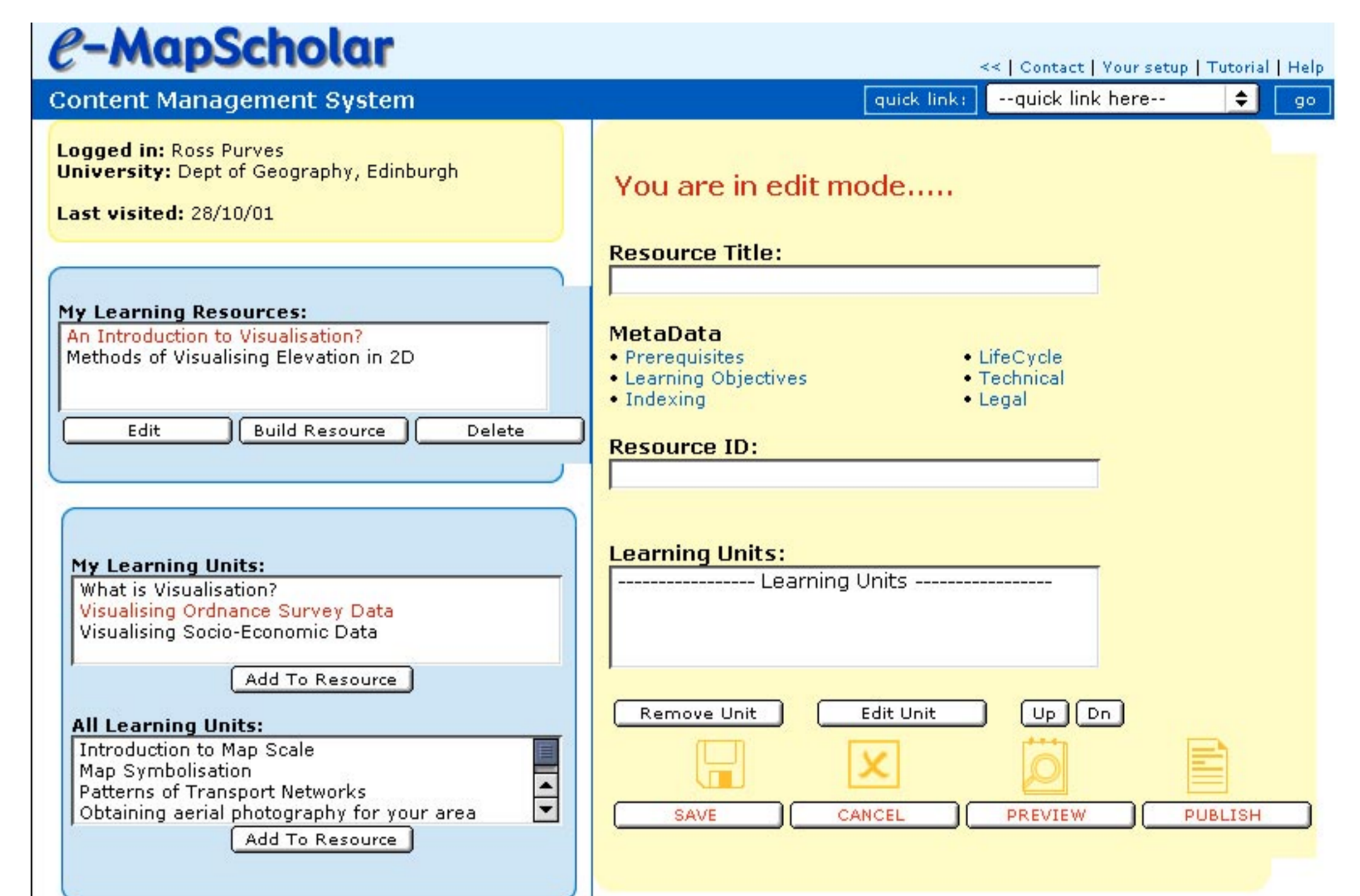
So far, we have:

- conducted a web-based User Needs Survey
- held a User Requirements Workshop
- established a JISCmail mailing list available at: <http://www.jiscmail.ac.uk/lists/digimap-mapscholar.html>

A full report from the Workshop is available at:

<http://edina.ac.uk/projects/mapscholar/consultation.shtml>

Further consultation will be carried out during the course of the project. The Evaluation Team based at the Institute for Educational Technology at the Open University will be evaluating software and tools developed directly with users.



Impact of e-MapScholar on the community

Given the growing use of spatial data in the real world, where over 80% of all data used in business have spatial elements, an understanding of these data is increasingly part of the skill set of the well-educated graduate.

A skills gap has been identified amongst spatial data users. They currently have access both to easily accessed online digital maps, which do not require specialist knowledge to acquire, and also to many forms of spatial data that can be downloaded to locally-based Geographical Information Systems (GIS) and graphics software packages. However, the latter process requires more advanced skills.

The e-MapScholar project is aiming to address these student needs, by developing innovative, interactive learning materials that bridge the gap between obtaining digital maps online and using geo-spatial data from many DNER sources, including the EDINA Digimap service, in specialist software packages. The project also aims to support the needs of teaching staff, by providing teaching case studies and lecturers' notes to assist them in using spatial data with their students.

'Hidden' outputs from the project

Among the many 'hidden' outputs from the e-MapScholar project are likely to be resources for other projects under the following categories:

- A generic content management system within which tools can be added that allow the embedding of data from JISC collections into learning materials in real time.
- Templates for content writers of learning units and resources.
- Process documentation, covering commissioning of content, checking, XML conversion, editing/proofing, peer review, auditing, publishing, copyright clearance.
- Peer review process.
- Logs/records of third party permissions obtained.
- Logs/records of illustrations/tools provided.
- Legal agreements.
- Advice on intellectual property issues addressed during the course of the project, both between project members and with outside content providers.
- Provided that the content management system and materials therein can be made available in a time-scale that gives an opportunity for the materials to become embedded in teaching practice, then we should gain an understanding of the process of customisation and reuse of learning materials.

e-MapScholar

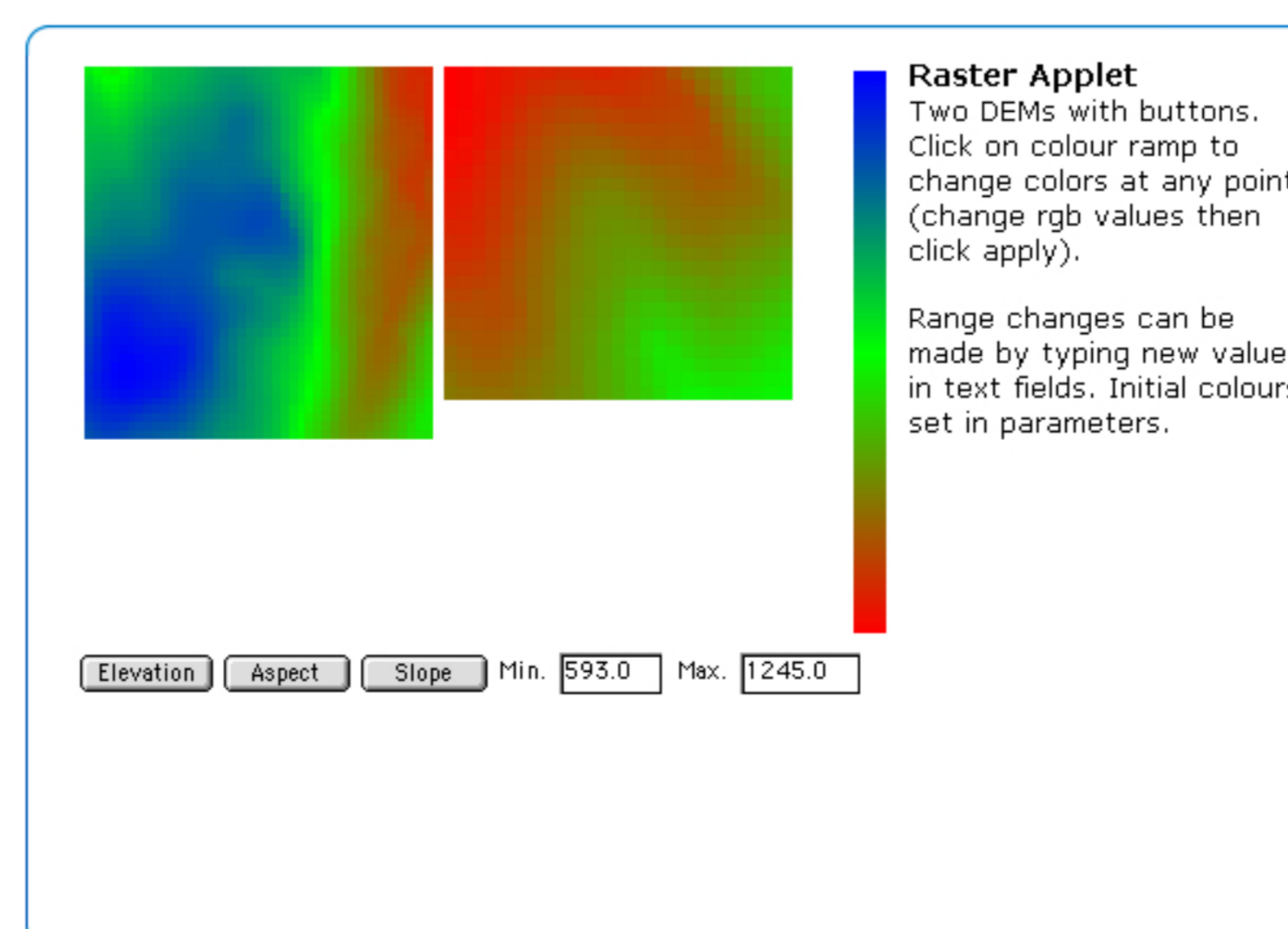
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Contour application areas

Contours can be used in variety of application areas from irrigation to planning. For example, successful irrigation relies on using very slight slopes of land, requiring very precise contours with a small vertical interval. Field irrigation is essential for crop cultivation in farming, and is even used in Golf Course design. The planning of reservoirs could not be accomplished without contour maps. Generally a very accurate survey of the proposed reservoir area is carried out, to produce contours at smaller intervals. The capacity of the reservoir can be calculated by drawing parallel profiles of even intervals, the area of this is transformed into triangles or parallelograms and the volume of water is calculated from these 2 areas. When choosing the location for a military observation station for example, you need to know which areas will be visible from the station. This can be achieved by drawing profiles radially from the proposed location, areas with 'blind space' or no visibility can be identified, and other posts can be planned to cover these areas.



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