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About EDINA

EDINA, based at Edinburgh University Data Library, is a JISC-funded national datacentre. It offers a library of data, information and research resources. All EDINA services are free of charge at point of use. For information on institutional subscription fees, visit the EDINA web site, or contact us (details below).

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Go-Geo! resources: supporting UK academic spatial data management and sharing

This is the first edition of Go-Geo! Metadata News, as we plan on publishing a biannual newsletter for UK academics, researchers and students interested in issues and news involving spatial data management and sharing. The newsletter will also draw attention to geospatial standards and metadata, plus announce service updates for the Go-Geo! portal, the new Go-Geo! Metadata Editor tool and supporting metadata creation resources.

Go-Geo! is provided by the EDINA National Data Centre at the University of Edinburgh. It represents a suite of JISC-supported online resource for supporting geospatial metadata creation and spatial data discovery for the UK academic community. The Go-Geo! Metadata Editor tool, Academic Geospatial Metadata Application Profile (AGMAP), geospatial metadata guidelines and teaching and learning

material modules aid in the creation of metadata records and the Go-Geo! portal serves a mechanism for publishing the records. The portal can also cross-search other sites and harvest records from them. In addition, the Go-Geo! portal opens a window to a full range of online GI resources including current news, conferences and other events, links to free GIS software and online services and more.

Go-Geo! Metadata News circulation is intended to reach the wider geographic information community in UK academia. Readers are invited to submit articles or comments for publication in future newsletters. If you would like to submit an article, or have news or comments to share, please email Tony Mathys (tony.mathys@ed.ac.uk) or call him at 0131 651 1443. The next issue will be released in September 2006.

Geospatial Metadata: A Recipe for Successful Data Management and Sharing

As many people know, geospatial metadata are data about spatial data and reveal the Where, How, What, When and Who information about a spatial dataset. A metadata record is analogous to a recipe. Think of brewing your grandfather's favourite ale without knowing what ingredients to use or how much to measure out for each ingredient. You may also wish to know how to mix and brew the ingredients and the duration of the fermentation process. Without the recipe, you might find yourself drinking swill rather than your grandfather's fine ale! A recipe is important and so is metadata - there are many more tangible reasons for encouraging metadata creation.

Metadata matters because it will

- Protect your investment of time and cost dedicated to data development.
- Reduce the time required to reassess existing datasets for new and future applications.
- Ensure the integrity of existing and new-datasets by using metadata as a tracking mechanism to monitor changes and edits to datasets.

- Eliminate or reduce the risk of redundancy in data collection or deletion of existing datasets.
- Reduce effects of researcher turnover and minimise its disruptive effects. It a critical aspect of organisational memory.

By publishing your metadata records on an online catalogue or geo-data browser, you can realise these following benefits:

- a repository for you to store and manage your metadata - it saves you in cost and time;



Metadata: for those inadvertently deleted datasets

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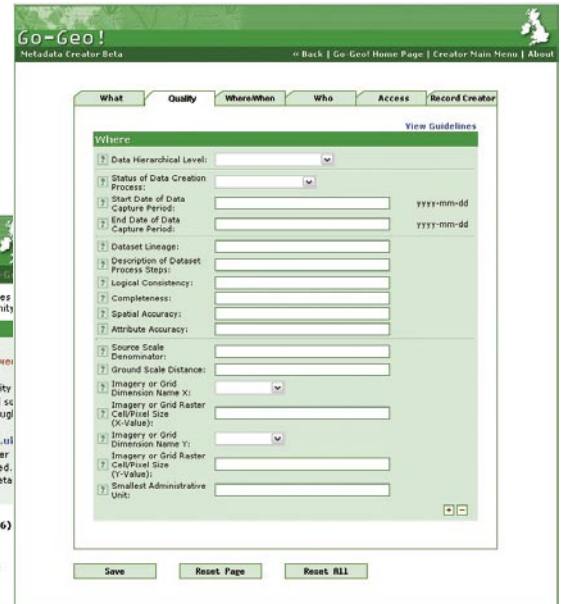
- a mechanism by which to register your data and applications;
- a cost effective mechanism for advertising (sharing and/or selling) your datasets to other

- interested parties in academia and in the private and public sectors;
- a resource for referencing and citing project proposals or papers;

- a source for discovering new datasets to generate new GIS applications.

Tools of the Trade

Despite the many benefits metadata has to offer, most data creators still find metadata creation to be tedious and dull. EDINA's response is to provide a wide range of resources to support and facilitate metadata creation, record edits and updates and online publication for the purposes of data discovery.



Academic Geospatial Metadata Application Profile (AGMAP) Guidelines

The Go-Geo! metadata guidelines have been produced to serve as a reference resource for individuals and organisations wishing to document and create quality metadata records for publication on the Go-Geo! portal. The guidelines provide an overview of geospatial metadata and introduce AGMAP, the Academic Geospatial Metadata Application Profile, which is a template designed to support the documentation and discovery of spatial datasets within UK Higher and Further Education. AGMAP also serves as a metadata element field template for the Go-Geo! portal and Go-Geo! Metadata Editor tool.

AGMAP includes 97 elements which provide information about the when, where, how and what of a dataset, its access and use conditions and the metadata record itself. Though the total number of elements in the AGMAP profile is considerable, only 36 of these elements are mandatory. Providing information for these 36 elements will satisfy the minimum requirements for creating an HE/FE (AGMAP) com-

pliant metadata record. This makes the task of metadata creation less onerous, and considering that 15 of these 36 mandatory elements require only contact information, a metadata creator can produce a template file containing these contact details. Subsequently, this information can be transferred to each new metadata record, hence demanding even less time of the metadata creator. In addition, nine of the other mandatory elements include lists, so the metadata creator needs only to select the relevant values rather than entering free text. The inclusion of these elements in the Go-Geo! Metadata Editor tool, and use of the contact details template scheme, eases the process of metadata creation and demands only 15 minutes time to create a new, compliant metadata record.

The 200 page guidelines document has been written to serve as a reference resource for individuals and organisations wishing to document and create metadata records. Referencing the guidelines also ensures that the metadata cre-

ator can produce a compliant, accurate metadata record for publication on the Go-Geo! portal site or for management of local data.

The AGMAP guidelines provide an overview of geospatial metadata and the AGMAP profile. The guidelines also provide definitions, conditions and requirements for each of the 97 elements comprising the AGMAP profile. In addition, the guidelines include examples for each of the elements to provide greater clarity for the eclectic range of academics and researchers using geographic information technology. Many of the examples are presented in a manner that can be understood across social science and science disciplines including archaeology and anthropology, biological sciences, civil engineering, earth sciences, environmental sciences, geography, health sciences, history and sociology.

Each AGMAP element, and its details, is also stored separately in an online database which can be accessed directly from the Go-Geo!

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portal and Metadata Editor tool. As mentioned the AGMAP profile serves as the metadata template for both resources. Many users of the portal and tool will be unfamiliar with certain elements (e.g.: Dataset Event Date or Data Hierarchical Level) and wish to reference the guidelines to familiarise themselves with these elements. The mechanism in place al-

lows the user to click the element in question in order to access the detailed information for that element, which is displayed through a new open window.

Metadata creators also have the option of downloading the complete Go-Geo! metadata guidelines document from the Go-Geo! portal

website. The document is available in *.pdf format and can be downloaded for printing.

Go-Geo! Online Metadata Teaching and Learning Materials

Online teaching and learning material modules are currently being developed to introduce geospatial metadata principles and concepts as well as a interactive training exercise to instruct the users on the use of the Go-Geo! Metadata Editor tool and portal for metadata creation and data discovery. The modules will include the following:

- an overview of geospatial metadata;
- a presentation scenario showing the creation of two datasets intended for several multi-disciplinary applications;
- a module introducing the Go-Geo! Metadata Editor tool to users. This training ex-

ercise takes users through the steps of creating metadata records for the two datasets generated in the presentation. This module will be designed to allow users to return to the dataset creation presentation module to reference it for information to complete the exercise;

- a training exercise introducing the Go-Geo! portal to users. This module takes users through the steps required to search and discover spatial datasets using the portal. This exercise also borrows the two metadata records created in the previous exercise to demonstrate the benefits of data sharing as the two datasets will be merged to form a

third dataset for a new research application.

The purpose of preparing these teaching and learning modules is two-fold. The modules provide a resource for users to reference during metadata creation or data discovery and academics can also incorporate the modules into curriculum or courses to introduce and stress the importance of geospatial metadata and documentation, internet GI technologies and data management and sharing. More employers are expecting their GI professionals to implement and practise good data management.

Go-Geo! Metadata Editor Tool

The Go-Geo! Metadata Editor tool provides a user-friendly web browser-based interface which supports an effective 'publish, discover, use' spatial data sharing system. Users wishing to use the Go-Geo! Metadata Editor tool should contact Tony Mathys (tony.mathys@ed.ac.uk) at EDINA for Athens authorisation instructions. Once authorisation has been granted, the tool can be accessed from the Go-Geo! portal's homepage via the 'Supply Metadata' link or at <http://www.gogeo.ac.uk/geoPortal10/Metadata/Metadata1.html>.

discovery by all users of the Go-Geo! portal and GIGateway and its network of catalogue services

Many data creators are not inclined to publish information about their data in public. For them, the Go-Geo! Metadata Editor tool can store metadata records in a private and secure online directory which only the data creator can access and control. Metadata records stored in a secured directory will not be displayed on the Go-Geo! portal. This can be useful for those data creators concerned about issues surrounding data sharing and dissemination, including IPR and datasets derived from licensed data (e.g.: Ordnance Survey). The Go-Geo! Metadata Editor tool gives each data creator the option of exporting records for personal use or

storage on a local server or medium. Storage of metadata records in a local directory makes it possible for data creators to set permissions to allow access to the records and corresponding datasets at the institutional or departmental level. This scheme might prove beneficial for departmental and intra-departmental data sharing within an institution. This alleviates the problem of time and effort dedicated to individual queries and requests for data as in most instances, metadata creation and data storage become one off events unless updates and edits are made to datasets. In these instances, the AGMAP profile contains elements that allow spatial data/metadata creators to assign editions and unique identifiers to their datasets and metadata records, enabling them and users to track changes made to both.

The Go-Geo! Metadata Editor tool also allows users to create metadata records in industry-compliant formats without the user having to know the technical details of the underlying formats. These formats include the Federal Geographic Data Committee's (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM), and the recently ratified ISO 19115, the geospatial metadata standard which will eventually supersede FGDC. The FGDC standard will continue to be supported for the foreseeable future. This functionality built into the Go-Geo! Metadata Editor tool allows users to concentrate on the important task of describing the data in as effective a way as possible using their knowledge of the data and GIS in general.

Once metadata creators have generated their metadata records, these can be submitted for quality control review and subsequently submitted for the purpose of publication and



There are easier ways to create metadata!

The Go-Geo! Portal: An Online Resource for Publishing your Geospatial Metadata Records

By: Eddie Boyle (EDINA Software Engineer)

The JISC-supported Go-Geo! projects is an example of the commitment of EDINA to the development of an academic spatial data infrastructure. The Go-Geo! portal (<http://www.gogeo.ac.uk>) is intended to provide the focus for promotion of this in the UK tertiary academic sector.

The Go-Geo! portal, is a website developed to serve as a spatial data discovery browser for users in the UK higher and further (HE/FE) education. Almost every aspect of the service provided by the Go-Geo! portal relies on metadata, and specifically metadata of a spatial nature. The portal harvests and then stores metadata records from many organisations, including the UK Data Archive (UKDA), British Geological Survey (BGS) and Ordnance Survey (OS), and offers in one combined service sophisticated techniques for searching this metadata, including coordinate-based searching, postcode searching and gazetteer-based place name searching. The purpose and importance of metadata is thus shown to be crucially linked to the ease with which data can be discovered and shared amongst disparate organisations.

This sort of effectiveness relies heavily on several things however, chief amongst them being:

1) An agreed national framework about how spatial data is created, stored, catalogued and shared (this is called a Spatial Data Infrastruc-

ture);
2) adherence to metadata format standards; and
3) an internet-accessible metadata publication and discovery location.

The Go-Geo! portal implements several metadata standards, reflecting the diverse types of geospatial (and non-geospatial) metadata standards currently in use. However, it harmonises and maps all the metadata it harvests from distributed sources into one custom standard, the UK Academic Geospatial Metadata Application Profile (AGMAP). A small loss of metadata is involved in this mapping process, but this is more than outweighed by the advantages gained in faster, more efficient searching and better organised and targeted search results. The AGMAP metadata profile, which is described in another article of this issue, was created to support spatial dataset documentation across an eclectic academic community, and meet the needs of data management and sharing requirements within academia. AGMAP is also designed to be harmonised with the existing Federal Geographic Data Committee's (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM), the ubiquitous standard for documenting spatial data, and the recently ratified ISO 19115, the geospatial metadata standard which will eventually supersede FGDC. The AGMAP profile also includes elements from the ISO 19115 compliant UK GEMINI, the new geospatial standard for the UK geographic information community.

UK GEMINI supersedes the GIGateway and NGDF standards. This harmonisation between the AGMAP profile and the standards improves interoperability and allows Go-Geo! portal users to cross-search and retrieve metadata from other spatial data web browsers.

The Go-Geo! portal can also search metadata records from many diverse sources including records created using other metadata standards, including Data Documentation Initiative (DDI), Dublin Core and UK MARC (from COPAC). The great strength of the Go-Geo! portal is that it offers one location from where users can discover geospatial resources from many disparate and heterogeneous collections.

The technical core of Go-Geo! is Z39.50. (Z39.50 is an international standard for communication between computer systems primarily, library and information related systems.) The most common Z39.50 software used by bodies holding geospatial metadata is Isite, a free, open source application developed by the FGDC in the US. This application allows metadata records to be indexed and made accessible via Z39.50 requests conforming to the GEO Z39.50 profile. Thus it crucially supports co-ordinate parameter-based searches allowing matching of searches to records via bounding rectangles. At the moment Isite only works with FGDC records, although there is work underway to develop it further to allow it to work with ISO 19115 records.

Other Metadata Services

Workshops

Geospatial metadata workshops, which had been successfully held at 12 universities over the past couple of years, will continue to be organised and run at universities over the 2006 academic year. Typically, the workshops run about two hours and provide an overview of metadata and their relevance to the Go-Geo!

portal and data management and sharing, plus hands-on training for the Go-Geo! portal and Metadata Editor tool.

Funding for 2006 includes support for 12 metadata workshops. There are six more workshops slots available for the year, so please

contact Tony Mathys (tony.mathys@ed.ac.uk) to arrange for one. All that is required is a computer lab with internet access and facilities for giving a presentation. EDINA can provide all the necessary support to publicise, organise and run the workshops.

Metadata Co-ordination

Most readers of this newsletter may argue that there isn't sufficient time available in their schedules to create metadata. As stated previously, the existing online resources and contact details template strategy enable a metadata creator to produce a AGMAP compliant metadata record in about 15 minutes; the same amount of time to claim world fame. The

creation of a comprehensive metadata record documenting data creation processes, quality statements, temporal frames of a dataset and other details will certainly demand time, but compare this with the time required to assess an undocumented dataset that hasn't seen the light of day for months, perhaps years.

For those of you without the time for fame, another resource is at your disposal and that is the Go-Geo! metadata co-ordinator. You can contact Tony Mathys (tony.mathys@ed.ac.uk) at EDINA to begin the process of metadata creation for your datasets. You're welcome to submit your dataset files in a zip file and send them to for review and consideration for meta-

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data creation. EDINA is equipped with a full suite of GIS software packages, which makes it possible to extract important bits of information from the datasets. There will be a couple of metadata elements in the record that will require input from the data creator, so the partial

record and dataset files can be returned to the data creator for completion. When the metadata record has been completed, it can be returned for quality assessment and subsequently published on the Go-Geo! portal, or returned to the data developer if there are IPR, licens-

ing or dissemination concerns. The metadata records can be stored locally or uploaded to the Go-Geo! Metadata Editor tool's access secured directory.

GRADE: Scoping a Geospatial Repository for Academic Deposit and Extraction

Many data creators have expressed concerns about data IPR, licensing and dissemination. Until these concerns have been resolved, many data creators may be reluctant to publish their metadata records. The need to address these concerns provided one impetus for a JISC-funded study (GRADE) to examine the feasibility of an online spatial data repository and to address the issues of spatial data reuse. Resolving these thorny issues will break down the barriers to widespread access to spatial data and set the stage for an online one-stop shop to serve the spatial data management and sharing requirements of UK academia.

GRADE, is investigating and reporting on the technical and cultural issues around the reuse of spatial data within the JISC IE in the context of media-centric, informal and institutional repositories. The aim of GRADE is to lay the foundations for a sustainable infrastructure (both cultural and technical) that underwrites the communities' substantial and ongoing

investment in the utilisation of geospatial resources within the learning, teaching and research environments of UK academia.

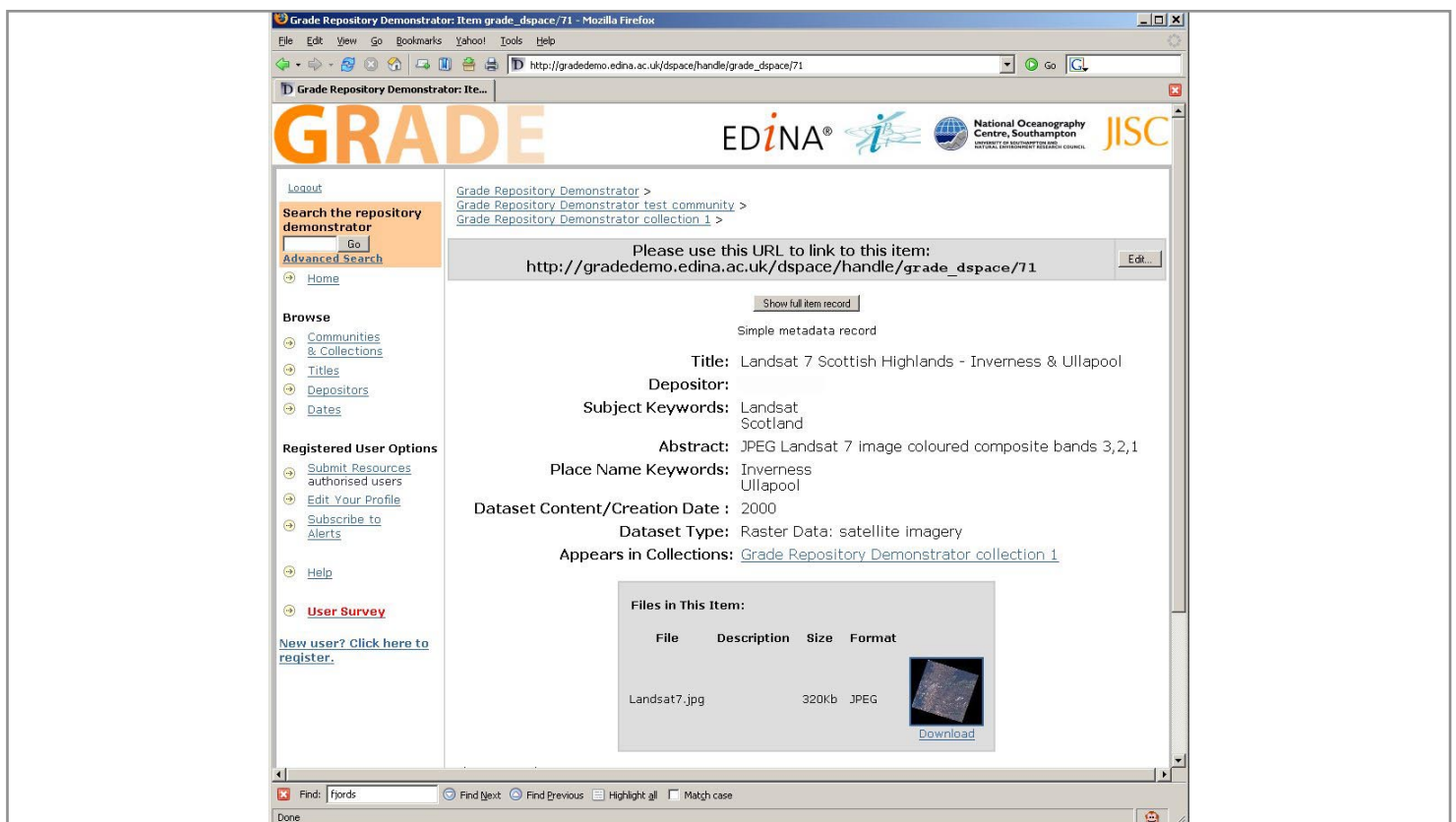
EDINA have announced the release of the GRADE geospatial repository demonstrator (phase one). The demonstrator is a web-based test geospatial repository. Its main purpose is as a mechanism for exploring the technical and cultural issues in the reuse of spatial data. It has been built in order to engage with the academic GI community to aid an understanding of the tools, functionality, and user interface a geospatial repository may need, and to assess the types of spatial datasets and potential degree of reuse of GIS data. The phase one demonstrator uses a DSpace interface and provides basic functionality (i.e. search, upload, retrieval) which will be built and developed as the project progresses and in response to feedback.

The GRADE demonstrator is now accessible from the GRADE website (<http://edina.ac.uk/projects/grade/>).

If you are a registered Digi-map user and are keen to get involved with consultation stage and in testing the demonstrator, please make a request via: Rebecca Seymour, Tel: 0131 6511227, or email at: bex.seymour@ed.ac.uk

There is also an online 'user survey' taking place, and those who complete the survey, will have their names entered into a draw for a £30 Amazon voucher. The questionnaire can be found in the left menu on the GRADE repository demonstrator website <http://gradedemo.edina.ac.uk/dspace/index.jsp>.

For more information and updates, please visit the GRADE project home page at <http://edina.ac.uk/projects/grade/>.



GRADE Repository Demonstrator

Metadata in the News

In late 2004, a new geospatial metadata standard was introduced to the UK at the AGI Conference in London. UK GEMINI is an ISO 19115 compliant standard that supersedes NGDF and GIGateway. The AGMAP profile for UK academia includes all the UK GEMINI elements to ensure Go-Geo! cross-searching capabilities of the GIGateway site.

European legislation, through the Infrastructure for SPatial InfoRmation in Europe (INSPIRE) and Public Sector Information (PSI) is going to require an effective national metadata service. Both sets of legislation make reference to the need for tools for discovering data resources. INSPIRE will require an effective metadata service for the discovery of geographical information. Article 9 in this EU directive can be read in this following pro-

posal: europa.eu.int/eur-lex/en/com/pdf/2004/com2004_0516en01.pdf

This directive establishes the need for students to have a better understanding about metadata and data management and sharing in preparation for their professional careers in the public sector.

Did you know?

- EDINA will be hosting Go-Geo! drop-in sessions at GISRUK 2006 in Nottingham. The sessions have been scheduled to coincide with all programme breaks and the last 45 minutes of the Thursday and Friday lunch breaks. The Go-Geo! drop-in sessions will be held in the Graduate Computer Lab (B26e).
- Go-Geo! portal includes GI resources for users. These are updated on a daily basis and provide information about the UK geographic community, upcoming conferences and events, GI industry news items, free software and online services, data sources, case studies, publications and more...
- Go-Geo! portal provides 'My Go-Geo!', a service which enables users to create and store personal details on a secure and private form. The Go-Geo! Metadata Editor tool uses this information each time a new metadata record is created.
- 'My Go-Geo!' allows a user to register for email alerts. When new resources, news items or new metadata records are added to Go-Geo! an announcement is sent out to registered 'My Go-Geo!' users.
- You can access 'My Go-Geo!' and all the other metadata and GI resources from the Go-Geo! portal homepage (<http://www.go-geo.ac.uk/>).
- It has been reported that the cost of spatial data non-interoperability in the US is about \$14 billion per annum.
- There are six more metadata workshops available for 2006, so please contact Tony Mathys (tony.mathys@ed.ac.uk) to arrange for one or enquire about attending workshops scheduled at other institutions.



Metadata as labelling - which tin has the cat food?