

GIS development

Strategies and systems for maximising data value

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The ongoing project, *Strategies and Systems for Maximising Data Value*, funded by the DfID's Knowledge and Research (KaR) programme aims to address the requirements of a range of Geological Survey Organisations (GSOs) with differing levels of IT use. The project has modules covering data management issues; the development and implementation of a template geoscientific data model; the development of a Geographical Information System (GIS); and the development of a web site to disseminate the project results and to provide integrated distance learning material.

The aim of the GIS module was to produce a demonstration to illustrate the

use of GIS in geoscientific data analysis. Due to the differing levels of IT use in the participating GSOs it was important that the demonstration should provide both an introduction to GIS, and complex data analysis functionality for users already familiar with GIS. To support these aims data from one of the participating nations (Malaysia) was used to populate the GIS.

In order to distribute the software as widely as possible it was decided to develop two versions of the GIS:

- a version on CD-ROM to be sent to GSOs
- a World Wide Web version which can be accessed globally via the Internet

The software chosen to implement the CD-ROM version was MapObjects® by Environmental Systems Research Institute, Inc. (ESRI). MapObjects® differs from conventional GIS products in that it is not designed for end users, i.e. it does not have a user interface. It is strictly for applications developers, as it consists of a collection of programmable objects, which allow developers to add mapping and GIS capabilities to their applications. Thus through a standard development environment, in this case Microsoft® Visual Basic, a developer can build a GIS from scratch that contains functionality tailored to a particular project.

Through discussions between the developers and the participating GSOs, a demonstration was produced that addressed the differing levels of IT experience of the various users. The user interface of this demonstration GIS is shown in the accompanying image.

The functionality of the GIS includes:

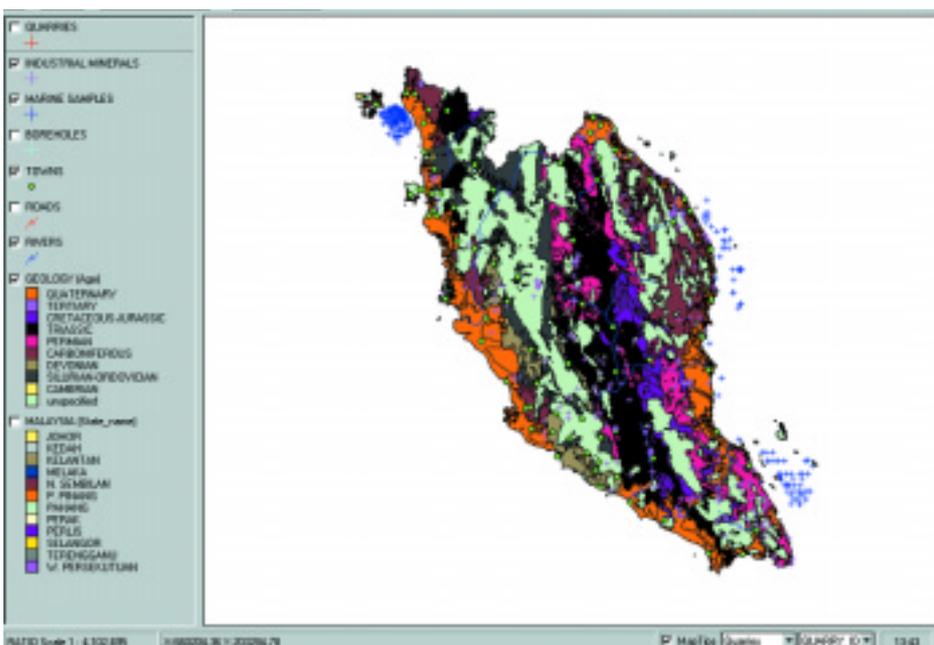
- basic map manipulation (zoom, pan etc.)
- identification of spatial features
- searching for particular features
- querying using SQL based queries
- spatial searches
- report generation in Microsoft® Word
- basic map production

Using the deployment facility in Microsoft® Visual Basic, the GIS was packaged on to a CD-ROM. This CD-ROM can be used to install the GIS on any suitable personal computer.

The next stage of the project is to convert the demonstration GIS into a web-based GIS by developing a Map Server using MapObjects® Internet Map Server (IMS) software. The Map Server will be responsible for receiving requests from a client application (a web-based interface to the MapObjects® GIS), performing the appropriate GIS operations, and responding with meaningful information.

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The user interface of the demonstration GIS showing geology and sample data for Malaysia.