

GROUND ASSESSMENT AND EXPLORATION LICENSING THROUGH THE INTERNET – THE FUTURE FOR IRELAND

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Introduction

In the highly competitive international arena of attracting investment in mineral exploration, ready access to data for assessing ground and speed of the permitting system are major national assets. Ireland is fortunate in having a simple exploration licensing system and a significant repository of exploration company and other minerals-related data. The latter is largely due to its current status as a relatively mature exploration territory for zinc. However, to date, licensing and access to data have essentially relied on paper based systems, with consequent time inconvenience to industry and relative inefficiency. As such we have lagged behind, since online availability of digital data is being increasingly provided by our competitor countries as a major element in raising their exploration profile, and hence gaining a comparative edge. With the greater use of technology in exploration, digital data collection for ground assessment is recognised by major companies as minimising risk in 'greenfield' exploration (Williams, 2002).

Ireland has now responded to this global marketing challenge to encourage external interest, and at the same time stimulate current exploration activity. This is being done by implementing a web-enabled, client-focused business solution, referred to as the MAPS (Mineral Administration Programme Support) Initiative.

The MAPS Initiative

At the end of 2001, the responsible body, the Exploration and Mining Division (EMD) in conjunction with the Information Systems Division (ISD) in what was then the Department of Marine and Natural Resources initiated the MAPS project. The contract to build the system was awarded to ICL (now Fujitsu Consulting). This project is designed to provide the exploration industry with internet access for the first time to:

- Conduct their licensing business online, including payments.
- Visualise a wide range of map-based, mineral related GIS information.
- Access all available company exploration reports held by EMD.
- Determine ground availability.

These industry focused aspects are part of a fully e-Enabled and g-Enabled system for both external clients and the internal 'back office' users. When fully implemented, the MAPS Initiative will automate all permitting aspects, from application to surrender, as well as appropriately e-Enabling State Mining Facility activities and other relevant business areas. As far as the exploration industry is concerned, the result will be far quicker licence processing, a more efficient business service and free access to the publicly available datasets held by EMD for ground assessment. Such datasets are being progressively made available in digital format through separate projects.

The Online Facility

The aim of this facility is to provide a world class website whereby the exploration and mining community can both assess the mineral potential of ground and take out exploration licences, as well as providing EMD clients in general with all available information on the current situation and industry activities. Six main elements are involved.

- An explanation of the legal and regulatory framework governing exploration and mining, together with information concerning the relevant Acts and Regulations.
- e-Business. For exploration permits, this includes the procedure in applying for Prospecting Licences, and an online application form that can be

completed and emailed to EMD. Payment facilities are integrated with the application. Submission of required reports in digital format, facilities for payments and other business dealings during the 'life' of a licence are also accommodated. Some business aspects of the handling of State Mining Facilities will also be included.

- GIS functionality that allows EMD clients to access, visualise and interrogate a diverse range of spatial data (Doyle *et al.*, 2002; see also below).
- The provision to industry of all publicly available minerals-related data held by EMD. This includes exploration company data released since 1st January 2000 (maps, reports, drill logs), information on mineral deposits, and all publications from EMD. Earlier exploration company data is available from the Geological Survey of Ireland, as is geological information, geology maps, drill logs, mine records, mineral localities etc. (see www.gsi.ie).
- The status of any Prospecting Licence area, its geographical information and previous exploration history. Where ground is available and the licence area has not been previously defined, clients will be able to electronically outline their selected areas.
- Dissemination of news relating to exploration in Ireland. This includes reviews prepared by EMD and press releases from both the Minister and exploration companies.

This sector of the website is currently focused on exploration aspects. It is designed as a user-friendly informational route through the legal background to the simple exploration licensing system, and then to actual licence application and payment. From a 'Regulatory Information' page the prospective licensee can gain quick access to all the Acts, as well as the Regulations, Fees, Terms, Reporting Requirements and Guidelines concerning Prospecting Licences. These are available for downloading and printing.

A 'Permitting System Explained' page outlines the way in which exploration is administered, giving links to details about the requirements under Prospecting Licences, the licence areas in the country and availability, and relevant map-based information through the GIS ('Browse Maps').

Should the prospective licensee wish to apply for a licence, the method is outlined and there is a series of screens that guides applicants through the online process. This process allows the applicant to register a user name and password that gives unique access to their shopping basket of Prospecting Licences. After the application form has been completed successfully, the applicant is given a reference number for that particular form. One form can be used to apply for up to six Prospecting Licences or areas of open ground. This form appears in the customer's checkout basket, where the applicant can view the completed online application forms, delete as required and then proceed to checkout and payment. Payment can be made using an online credit card process or by attaching a cheque to a cover letter (template provided) that is forwarded to the Exploration and Mining Division. Hard copies can be printed down for the applicant's records.

The Regulatory Aspects

Spatial Data Availability For Ground Assessment

The MAPS solution deploys 'state of the art' internet-based GIS technologies (ArcIMS 4.0) to deliver a world of minerals related information to your desktop. No specialised software is required to access GIS information and services. Using a simple, browser-based interface, EMD clients are able to access,

display and interact with a wide range of GIS data. All spatial and attribute data collated as part of the project, have been integrated into the following map services:

- Location: this service provides Ordnance Survey of Ireland 1:600,000 to 1:50,000 base maps and townland data on a 1:25,000 base.

- Permit Status: a service that publishes the current status of Prospecting Licences and presents information on licensees, licence issue dates, etc. (Fig. 2).
 - Environmental: a service that publishes all areas for which mineral exploration is constrained. This includes data from Dúchas (Special Areas of Conservation, SAC; Special Protection Areas, SPA; Natural Heritage Areas; National Monuments Register; National Parks) as well as forestry coverage and urban areas.
 - Geological (Fig. 3): a service providing a geological framework, borehole and mineral deposit information, airborne geophysics survey areas and other documentary data (e.g. company exploration reports). More detailed geological information is available from www.gsi.ie.
 - Mining: a service giving maps of current state mining facilities and historic mine locations, associated with relevant information.
- Undertake simple spatial analysis (e.g. buffering around selected features).
 - Toggle map legends on or off that show the symbology of each layer.
 - Print maps to the scale of their choice.
 - Measure distances on maps.

The Current Status

The MAPS project is ongoing, and scheduled for completion in mid-2003. Elements of the business process requirements remain to be done, but the first phase of the website is now completed and is currently being evaluated by selected clients before going "live" by the year end. In its present release form the e-Business aspect is restricted to application and payment for Prospecting Licences, although the majority of GIS map services and datasets are in place. The website design will also be improved. These improvements will be progressively undertaken, but the site would already appear to be globally unique in providing ground information and exploration licensing in the one site (www.emd.ie) as a "one-stop" shop.

The GIS tools deployed with MAPS permit exploration companies to:

- Create their own customised maps from a list of GIS themes pertinent to mineral exploration.
- Obtain data on all constraint areas that intersect one or more Prospecting Licences.
- Navigate map-based services by either townland, Prospecting Licence Number, county or Ordnance Survey 1:10,560 sheet via a gazetteer function.
- View documentary information hyperlinked to selected features (e.g. drillhole logs, mineral deposit, SAC and SPA site synopses).
- Perform simple query operations (e.g. find feature, interrogate spatial features and associated attribute data).

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References

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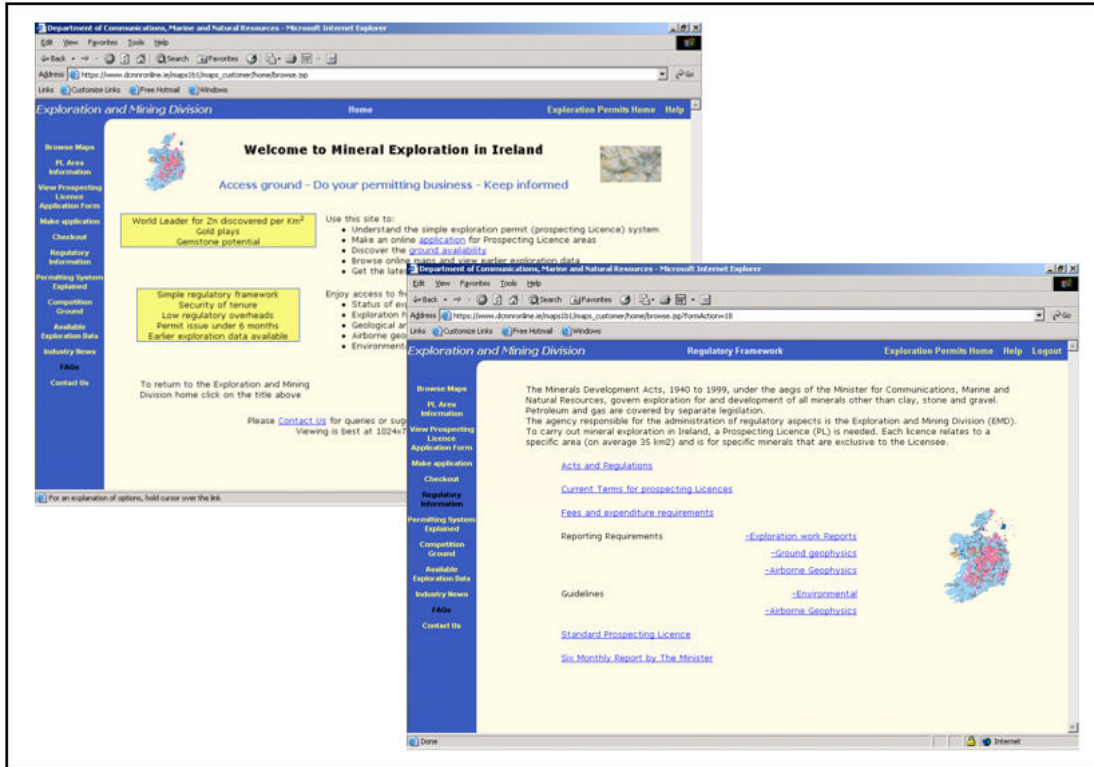


Figure 1: Entry screens with links to regulatory and exploration information

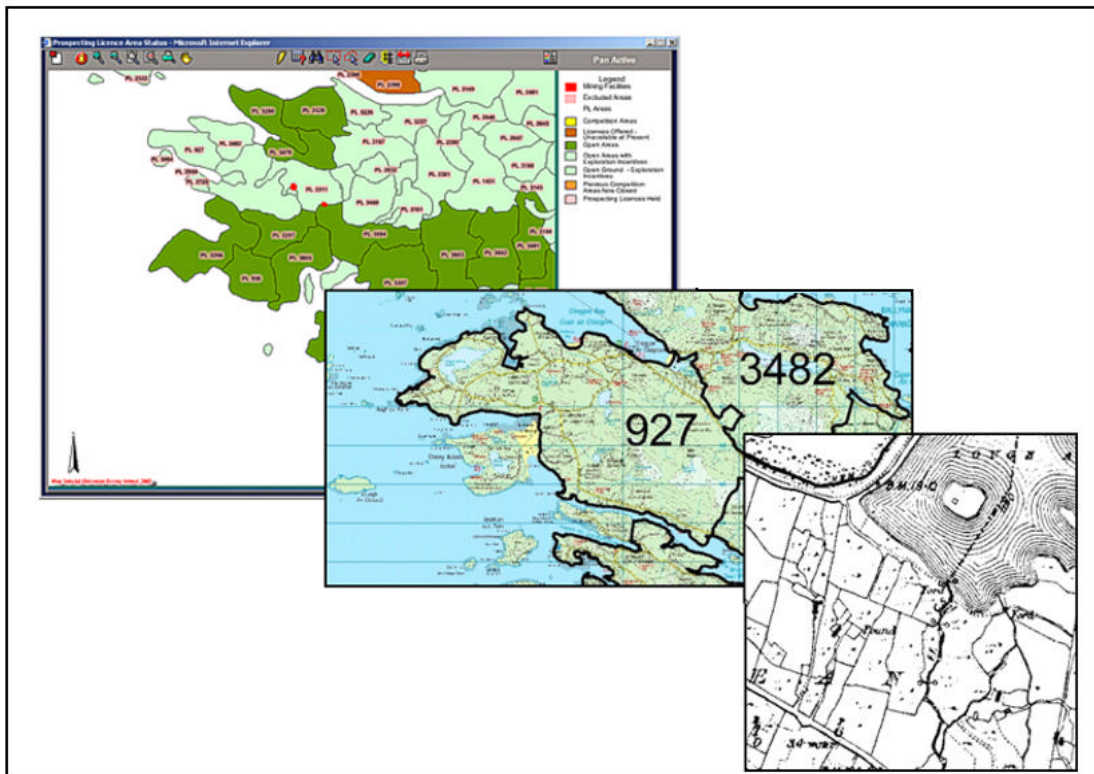


Figure 2: Example screen shots from the permit status map service showing Prospecting Licence areas on progressively detailed base maps

