

An environmental data system for the Příbram District, Czech Republic

A GIS solution on CD-ROM

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GS collaboration with the Czech Geological Survey has been active over the past two decades, originally focusing on topics related to metalliferous mining and industrial minerals and, more recently, on environmental issues. Much of the early collaboration was led from the BGS office in Exeter and culminated with the signing of a Memorandum of Understanding (MOU) between the Ministry of the Environment and the

Geological Survey, for the Czech Republic, and the DETR (then DoE) and the BGS in the United Kingdom. Within the framework of the MOU, funding was secured in 1998 from the British Council, to run a pilot project on the environmental geology of land affected by mining.

This project was completed to schedule, and copies of the product compact disc (CD-ROM) were presented to the British Council and to representatives of

Přibrum-Březové Hory
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zoař bům

The 162-year life of a lead mine commemorated at the mining museum, Příbram. Hammers up signifies opening year, hammers down signifies closing year.

the participants in March of this year. The participating institutions in the project were: Příbram District Council, the Ministry of the Environment of the Czech Republic, the Czech Geological Survey, Geofond of the Czech Republic and the BGS.

The choice of the Příbram district, some 50 miles south of Prague, was as a result of its 500-year history of mining activity in one of Europe's most intensely mineralised areas. Formerly producing large amounts of silver, lead and other base metals, the district has more recently produced uranium from a number of deep mines. Problems in the district resulting from the mining activity include ground instability, toxic element contamination and groundwater pollution.

The objective throughout the project was to produce an easily accessible geographical information system (GIS) that incorporated the wide range of data held by a variety of sources, including local and national government organisations, companies and technical institutions.

Examples of the data incorporated into the GIS include geological maps, mine plans, borehole sites, radiometric anomalies, and hydrogeological sites. Input data also included the location and extent of mining claims, both in production and out of production, and also protected areas with reserves of mineral resources. These are areas that have known and predicted reserves of a particular mineral and which have, therefore, been designated as a protected reserve. Such information must be taken into account in land-use planning. In addition to the geological data, the location and extent of towns and villages, forested areas, roads, railways, and drainage was also included. By integrating these diverse data-sets into a single GIS, planners and developers now have access to a tool which will assist in the processes of rehabilitation and future land development.

A number of reciprocal visits by staff from the BGS and from Příbram District Council, Geofond of the Czech Republic, and the Czech Geological Survey, provided opportunities to examine and develop various data modelling, data management, and data analysis strategies. Existing systems built around the Oracle relational database and Microsoft Access were





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examined and this led to further development of integrated databases derived from the disparate data-sets managed by the various partners.

As a result of technical discussions it was decided that the final GIS product would be distributed on CD-ROM, using the freely available ArcExplorer® software (developed by Environmental Systems Research Institute, Inc., ESRI) as the data viewing application.

In addition, an ArcView® project file was also included on the CD-ROM. Any users having local access to ESRI's commercil desktop GIS application, ArcView®, would then be able to open this project file, enabling them to make use of the complete functionality of the GIS. A customised interface (in Czech) provides access to additional tools such as report writing, layout options, and two gazetteers.

The use of the two GIS applications (ArcView® and ArcExplorer®) does not compromise the ideal of a single GIS

solution, as both products use the web browser. The metadata includes same data formats, can access the information on the nature and extent of same data files, and work in each data-set, the accuracy of location, similar ways. The main difthe history of the data, the source organference between the two isation, and the number of objects applications is in their included within each data-set. The final functionality: CD-ROM was divided into two parts: ArcView® is a the first containing the project backcomplete GIS ground, descriptions of the data-sets, solution, whilst and references to the data sources, and

ArcExplorer® is a the second containing the data files and simple spatial data the data viewer. browser, providing At the Příbram meeting in March, the read-only access project CD-ROM was demonstrated and and simple received an enthusiastic welcome from querying of the representatives of the District Council. data. ArcExplorer® Dr Zdenek Venera, Director of the was provided on Geology Department of the Ministry of the CD-ROM along the Environment expressed the hope that with the data, allowing users to similar systems would be sought by access the data other districts in the Czech Republic to without needing any expand the valuable work already being previously installed undertaken by Geofond and the Czech GIS application (i.e. Geological Survey. Since then, four ArcView®) on their other districts have expressed interest, and it is hoped that further collaboration will take place between the BGS and the In addition to the GIS, docu-Czech geological institutes.

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Members of the project team outside a lead mine in Příbram, Czech Republic, July 1998. l to r: RN. Dr Dana Čapova, (Geofond of the Czech Republic), Dr Richard Scrivener, (BGS) Mgr. Robert Tomas, (Czech Geological Survey), Mr Jan Kopecky, (Příbram District Council).

ground was provided as Hypertext

Mark-up Language (HTML) code, in

both Czech and English, readable by a