

INFORMATION SYSTEMS OF THE GEOLOGY AND MINING NATIONAL SERVICE OF CHILE (SERNAGEOMIN)

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ABSTRACT

SERNAGEOMIN is a state-run agency in Chile, which provides geological knowledge of the country, controls the safety and environment issues in the mining industry, registers and advises the mining property.

From 1992 this institution has implemented information systems, for geological data management. Initially to communicate the results of projects and cartography production throughout printed maps. Later on the emphasis evolved to: (a) the organization of the data, (b) application of standards and publication of maps in web, (c) implementing SIGEO (geology) and Cadaster on line (mining property). Nowadays, Sernageomin is developing several geoinformation projects: Update of the production and publication system of geological digital cartography, the Geological and Miner National Archive Geoportal and the Mineral Resources System. These technologies will become a fundamental tool to answer the information requirements of the community, in consistency with the recent Transparency and access to the Public Information law.

The system architecture general model is shown in figure 1. The data generated by the different departments, are organized into databases that will share a common relational integrated structure. The SIG applications will exploit a portion of the information for specific purposes and its results will be published in the future Geoportal using WMS services and others interoperability protocols.

Nowadays, the geological information is published by SIGEO <http://sigeo.sernageomin.cl> system which architecture is build by database (Oracle9i, ArcSDE), services (ArcIMS v.4.0) and clients (MS-IIS v. 5.0, Jakarta Tomcat Servlet Engine, Application Server ArcIMS). The Subsystem Database Server contains the repository of the relational and geospatial model, administration tables and transmission-tuned of geographical data. The data model is an extension of the North American Data Model version 5.3. The database contained standardized information, in shape (geometry and symbolization) as well as thematic attributes level, in agreement to international parameters, and locally controlled by the GIS Department and the internal Editor Committee. The public access information includes maps, documents and databases of basic geology, mineral metallic and non metallic resources, underground waters, geological hazards, environmental geology, geochemical and geochronology, between others. Two ways of query are available at SIGEO, by means of spatial filters

and combining thematic layers (user defined map), that are deployed on a map viewer (Advanced), or by a catalogue search (Documentary). The data can be downloaded by webspay, both for SIGEO and for a Virtual Store, in shapefile, mdb, jpg and pdf formats.

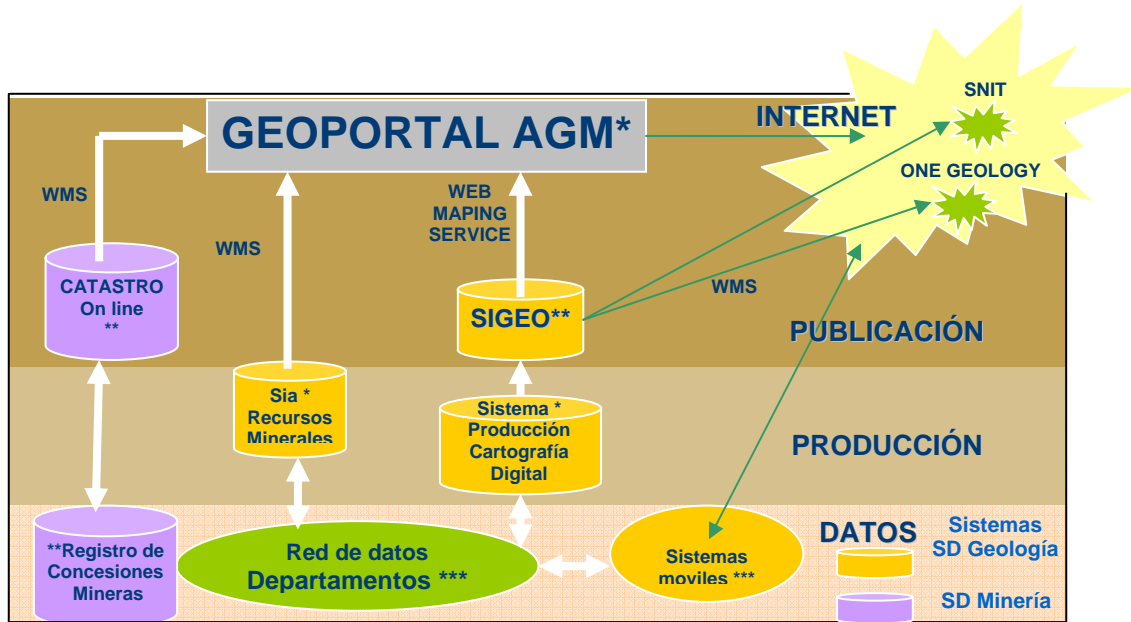


Figure 1 Sernageomin System architecture general model * in developing and/or undating systems, **in exploitation systems, ***planned

SIGEO is fed by the Digital Cartographic Production System, based on ArcGis desktop platform. Both systems are interoperable to software and format level and partially to data level. The deficient flow of processes, due to lack automation, and the degradation of the graphical symbolization of the web maps are the main problems of the system. The integration of both systems, allowing printed formats and web publications in a single production line, is planned for the present year. This effort includes the centralization of business rules for the production, the migration to the geodatabase model, and the simplification of the processes flow.

The Geological and Miner National Archive Geoportal, will integrate in one site, the territorial geological and miner information of SERNAGEOMIN, allowing to visualize on a map viewer many sources of information at once. Initially it will include Sigeo, Cadaster on line and Mineral Resources System. The Geoportal platform will be based on map services, catalogue of metadata and the application of interoperability standards.

In the near future, Sernageomin will move towards the development of a corporate databank, making easier the multiuser input data, supporting the information

consistency, validation, and safety, and allowing its exploitation across several orientated client applications.

Sernageomin represents the country at national and international instances, integrating networks of information and it is presenting publishing map services in others geoportals like OneGeology www.onegeology.org/ and SNIT www.snit.cl (IDE of Chile). In addition, it is part of Geosemantica collaborative in geosciences network, <http://geosemantica.sernageomin.cl/>, and takes part with other southamerican countries, in digital cartography and databases projects, dealing with geology and natural resources in bordering areas.