

# **ARCHITECTURAL STUDY AND EVALUATION OF AN INTEROPERABLE DATABASE SYSTEM FOR RESOURCE EXPLORATION AND ASSESSMENT**

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There are huge databases in the world that can be used for resource exploration. It is necessary to qualify data sources to get the precise estimation of assessment. Commonly we now use Geographical Information Systems (GIS) to clarify locations of resource databases. GIS can be used to accelerate the process of qualification and quantification of source data, through which Information Science must contribute to give analytical and evaluative methods. A difficulty occurs when we want to combine databases in various ways because of the impossible interoperability - especially from inconsistent formats. In order to handle all databases properly and precisely, we need information on the structures of each database. We have developed a common architecture of a meta-database format for geological information in order to utilize any database for appropriate interpretation. We tested various databases related to mineral resources that were to be combined under a plainly tabulated architecture of relational database. Three types of datasets were treated: 1, geological datasets mostly composed of stratigraphically-combined architecture with Boolean tables; 2, geophysical and geochemical datasets mostly expressed as geographically distributed numerical values; and 3, drilling datasets containing localized depth-controlled type1 and numerical values. We firstly add the universal headers to reveal the distribution of attributes, then dismember them to normalize into elementary tables down to an attribute with locations for further reconstruction and data mining with Information Science. Some case studies will be discussed in which the role of interoperability of classified databases and meta-databases will be evaluated.