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Development of a database of mine planning and peripheral software used in the South African mining industry

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Abstract

The mining industry uses computers for major administrative tasks, common to most industries, along with a range of applications highly specific to mining where the computer speed, accuracy and ability to cope with large volumes of data present the opportunity for optimal solutions to problems. However, the nature and extent of the software utilisation in the South African mining industry has never been evaluated. The aim of this research therefore was to collate and analyse the current utilisation of software in the South African mining industry. This was done through the development of a database of mine planning and peripheral software utilised in the South African mining industry.

The database is expected to help at least 13 educational institutions with decisions on facilities and training vital to the education of geologists, surveyors, mining engineers, metallurgists and other professionals who are directly involved in planning across the mine value chain. Exploration, mining, mineral processing and consulting companies will benefit from information relating to availability of software solutions. There are about 1 200 mining companies exploring for, extracting or processing more than sixty different mineral commodities at more than 1 600 sites in South Africa. At least 50 consulting companies and at least 20 software providers were identified. The database will also enable software providers to have a better understanding of their market share.

Snowball sampling was used to collect the data because the industry is diverse and software utilisation is fragmented across and within sectors of the mining industry. The data was then organised into distinct categories so that the information from a variety of sources could be evaluated on the same basis. The database was designed to reflect this categorisation and relationships between the data entities.

The major result of this research is a web-based database of mine planning software in use in the South African industry. The information can be accessed through a user-friendly frontend platform which is available online at http://db.mining.wits.ac.za. One may browse through the data to see which companies are included in the database and at same time view the associated sites and mineral commodities. Software provided by a company is also listed when one browses to the page that shows information on the company. A utility for searching through the database for software based on certain criteria has been included. Depending on the privileges granted to the user, he may also view where the software solutions are

installed. Functionality has also been included to analyse the data relating to adoption of software solutions and their relative market share.

An analysis of the data collated in this research shows that about 73% of the users are mining companies, 21% are consulting companies, 4% are mineral exploration companies and the rest being other providers, educational institutions, mineral processing companies. The software in use in South Africa is largely provided by Gemcom Software, MineRP Solutions and MRM Mining Services. CAE Mining is widely accepted as a major software supplier in South Africa, however, due to certain limitations and constraints, data from them had not been obtained at the time of submission of the dissertation.