

Specialized mining GIS system MineGIS SMZ Jelšava

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Špecializovaný banícky GIS systém MineGIS SMZ Jelšava

Following, the real needs for new mining information system requested by SMZ Jelšava, the Department of Mineral Deposits and Applied Geology (KLaAG) at the Technical University of Košice (TUKE) has prepared a specification for the specialized mining geographic information system called **MineGIS SMZ Jelšava**. The main roles of the new system have been defined as follows of reserves: the administration, analyse and the visualization of all mining geo-data related to the estimation.

Key words: geology, mining operations, GIS, Open Source and geo- data.

Mining GIS system

Nowadays, following the tendency of mining production, optimalization and the new mining unit opening, the specialized mining geographic information system MineGIS is being prepared in cooperation between KLaAG, TUKE, Košice and SMZ Jelšava. The main roles of the new system have been defined as follows: the administration, printing, analyses and the visualization of all mining, primary and secondary, geo-data related to the estimation of resources.

The MineGIS application consists of two stand-alone web sub-applications (MineGIS Corina and MineGIS Avatar), one stand-alone desktop application (MineGIS Nemesis) and one server application (MineGIS Aaron) splitted into three sub-applications (MineGIS Aaron GeoDatabase, MineGIS Aaron AS and MineGIS Aaron SystemTools).

The MineGIS Aaron GeoDatabase is providing the geo-data warehouse, MineGIS Aaron SystemTools is set odd tools for service, backup and system resources administration. The MineGIS Corina is a web-interface to system the MineGIS. It provides a functionality used for the data administration – data input, editing, deleting and viewing based on defined criteria. The MineGIS Avatar is 2D map server application it provides the thematic layers definition functionality, the logical selection definition functionality and the actual attributes of geo-objects displaying. The MineGIS Nemesis presents an interface for the geo-data visualization in the 3D pseudo-space.

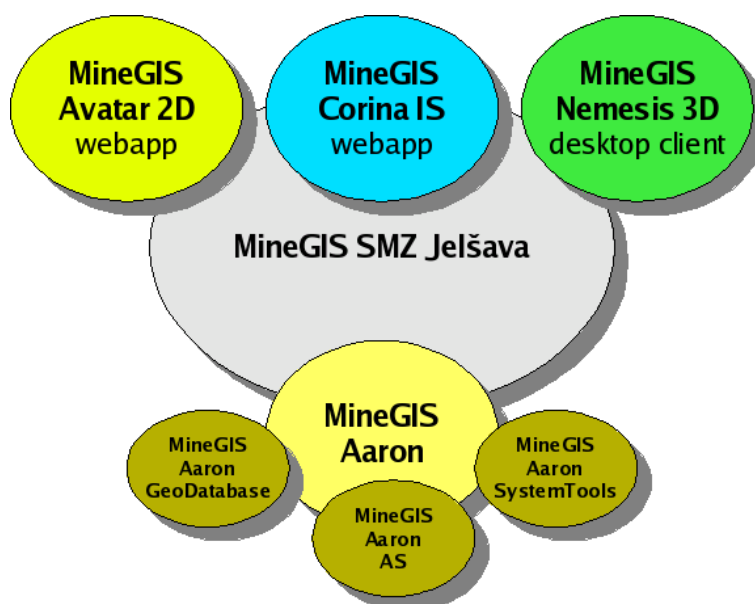


Fig. 1. Applications of the MineGIS SMZ Jelšava

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The Modularity of the system MineGIS allows to effectively and rapidly extend the present application with new thematic modules. In the version 1.0, (final version), the following modules are available:

- **module_seizmo** (administration of seismic and acoustic data received from the real-time application Magmoni),
- **module_admin** (access rights user management), module quality (reserve estimation),
- **module_samples** (drill hole samples),
- **module_help** (concent help).

The GNU/Linux was selected like a general platform for the system development, testing and the operation. Regarding the stability, price, availability and the community base, the application server of MineGIS system is developed on the Mandriva Linux LE2005 [1] operating system. To support the OpenSource GIS software, the MineGIS reused some OpenSource GIS tools such as the Ogr/Gdal [2] – the vector and raster data import/export support, PROJ.4 [3] – the Cartographic Projections Library, GEOS [4] – the geometry engine etc. For the full list of components, see [11]. The MineGIS application is an client-server based application and it supports the multilanguage environment and the modularity.

The MineGIS Avatar fully extends the Mapserver [5] - an OpenSource development environment for constructing spatially enabled Internet-web applications and the PHP/Mapscript for a dynamic access to the geodata warehouse.

The MineGIS Nemesis fully customizes GRASS GIS [7], [8] and NVIZ [7]. The MineGIS Corina is typical web-application developed by PHP [13] scripting language. The Geo-data warehouse MineGIS Aaron is based on the highly scalable, SQL compliant, open source object-relational database management system Postgresql [9] and the PostGIS [10] extension which adds a support for geographic objects to the PostgreSQL.

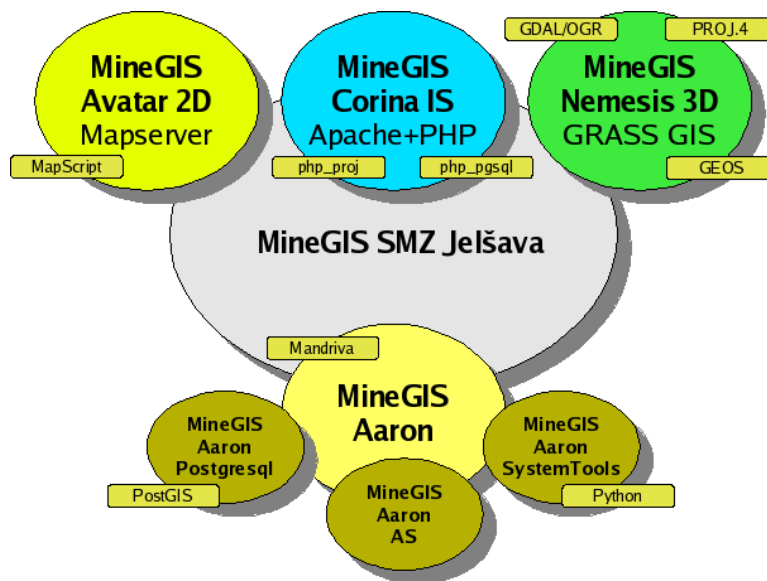


Fig. 2. Components of the MineGIS SMZ OpenSource.

References

- [1] Mandriva Linux : <http://www.mandriva.com/>
- [2] Gdal/Ogr : <http://www.remotesensing.org/gdal/>
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- [4] Geos - <http://geos.refrations.net/>
- [5] Mapserver - <http://mapserver.gis.umn.edu/>
- [6] PhpMapscript – http://maptools.org/php_mapscript/
- [7] Grass GIS - http://maptools.org/php_mapscript/
- [8] MineGIS home page :

- http://www.minegis.com/screenshots/minegis_grass_menu.php?version=0.1stable
- [9] Postgresql : <http://www.postgresql.org/>
- [10] PostGIS : <http://www.postgis.org/>
- [11] Referenes of using OpenSource aplication:
http://www.minegis.com/snz_jelsava/documents/minegis_software_specification.txt
- [12] OpenSource : <http://www.opensource.org/>
- [13] PHP : <http://www.php.net/>