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## Multi dimensional modeling of geoinformation and the standardization

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Geoinformation is composed of various data related to the planet earth. In the information science, the former style to treat geoinformation was to use the projected plan view model from multi dimensional data, while today and future style uses multi dimensional data effectively with the advanced information tools of hardware and software. In the two dimensionally projected models, three dimensional data can be modeled with the international standard of OGC and GeoSciML based on GIS. Multi dimensional model over three can be treated the technological trend of the recent information processing. In two dimensionally projected system, the international standard like OGC and GeoSciML models together with free and open source software(FOSS) like GRASS-GIS and so on can handle three dimensional geoinformation with the accessible maps of digital geology and substantial database systems. Three dimensional modeling can popularly be treated by simulation models like finite element modeling. The three dimensional subsurface modeling is well known in the expensive software system of petroleum and mining or independent tools but they are not much popularized. The reason of the difficulty can be considered by the underdevelopment of the international standards as well as of the three dimensional subsurface data and metadata, though they are recently improved. In order to popularize and to standardize the three dimensional subsurface modeling, it is suggested to establish the international standards of multi dimensional geoinformation, to disclose more subsurface database systems adopted to the standard, and to open testbeds of representative source data of subsurface to encourage to develop FOSS based modeling systems.

Keywords: geoinformation, three dimensional subsurface modeling, database, three dimensional metadata, international standard