Design Principles of Geo3DML: Practical and open, Modeling tool independent, Reuse existing standards
Definition of the exchange information of individual geological object (geometry, semantic and visualization information; spatial relationship) and their hierarchical data organization (data and visualization parameters are separated also).
**Geo3DML: 3D Geological Model Markup Language**

- **Supported geometry types:** 3D points, lines, surfaces, solids, voxels, and notes, etc. (Based on GML and its extension).

- **Supported data types:** 3D models, borehole, geological map, cross-section, etc.

- **Applied in the geological fields:** basic geology, hydrogeology, engineering geology, environmental geology, mining and energy, etc.
Geo3DML with Other Standards

Geo3DML

- Filter Encoding (v1.1.0)
  - Aids in defining visualization parameter

SE* (v1.1.0)

GMD

SWE* (v2.0.0)

- Contributes customized attributes definition

GML* (v3.2.1)

- Contributes geometry object model

GMLCov (v1.0)

- Contributes coverage data encoding specification

GeoSciML

CityGML
The progress (2011-2016)

• Geo3DML have been issued as the China Geological Survey standard in Dec. 2015

• Useful tools of Geo3DML Viewer and SDK were also released.

• 3D geological model metadata standard: Started in 2015, completed by the end of 2016, released in 2017

• 3D geological model data management and web publishing system based on Geo3DML: Started in 2015, test run at the end of 2016
Some suggestions

• Why:
  – 3D geological model construction is one of bottlenecks for the development and applications of 3D technology in the geosciences.
  – A wide range of techniques and software tools have been developed to meet various needs of modeling and information dissemination.
  – Different types of modeling software packages, without the same data models, may be simultaneously used in one organization, even in one work team

• What:
  – an open 3D geological model data exchange format (not a common standard 3D data model, just for exchange)
  – 3D geological model metadata standard

• How:
  – institutions engaged in geological survey, scientific research, and industry
  – practical and open