3D Geospatial Data Quality

Introduction

Standards or other recommendations generally try to improve quality of all things which are related to geospatial topic. In geospatial world there have been many types of standards published by different organizations. These documents usually specify some recommendations, requirements or conventions which should ensure that target of product, system, data etc. fit its purpose. One of these specific terms is data quality.

Geospatial data quality is term which become more important nowadays because there exist many technologies how obtain large amount of data. However, it is important ensure appropriate quality hand in hand with amount. Several standards deal with the data quality for example ISO 19113, ISO 19138 etc. The term related with data quality is data quality measures. In ISO 19113 for example we generally distinguish several measures – completeness, logical consistency, positional accuracy, temporal accuracy or thematic accuracy for geospatial data. However, the main issue which define my topic is how it is possible to apply data quality measures for three-dimensional geospatial data.

The difficulty of defining quality measures in 3D is that there haven't been satisfying works on this topic. This is because the spatial data display has been a domain of classical two-dimensional visualization for centuries. However, there are some projects that might focus to 3D data quality for example 3D cadastral. Also, the ISPRS (International Society for Photogrammetry and Remote Sensing) organize International Symposium on Spatial Data Quality (ISSDQ) within ISPRS Geospatial Week where are number of workshops and symposiums every two years.

The reason why we should aim to three-dimensional geospatial data is that third dimension brings a new point of view. Because current recommendations or standards mostly come from classical visualization of geospatial data which more focus on 'description quality'. Description quality means it is important describe detailed all features out of the visualization because in classical visualization too many texts cause messy and misunderstanding in users. This quality is efficient and effective in data storage but can be unfriendly to users. The advantage of 3D visualization is that it more focus on aspects of 'visual quality' and 'user quality'. Visual quality means the measure of information which visualization carries. For example, in 3D you can see that the house has four floors, red roof, white windows etc. This is the information that classical visualization can never shows. User quality aspect means that the measure of usability for user. For example, in city navigating where are many visual clues is 3D visualization more understandable that simple symbols.

When we aim on current quality measures, we can see that many of them is applicable on 3D, for example positional accuracy, completeness etc. However, there can different level of importance between 2D and 3D and there can be some aspects which are associated only with 3D. For example, Degree of perception, Level of detail etc. When we define all those measures, we can evaluate 3D geospatial data quality more effectiveness and it can improve 3D geospatial data quality generally.

Research questions??
Proposed methodology??

Expeceted results?