

지리사상을 위한 공간 데이터 모델

Feature Data Model in GIS

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With the emergency of geographic information systems (GIS), the traditional layer based data model can only contain the spatial geometry and thematic attributes of phenomena. In real world, geographic phenomena have not only spatial geometry and thematic attribute but the temporal situation and the relationship between each phenomenon.

Since late 1980, a feature concept that is a defined geographical entity and its object representation in computational environment has been developed to represent a various aspect of geographic phenomena in GIS. A feature can be the unit of aggregation and analysis instead of the traditional theme or layer. A feature approach in building GIS has the potential to better support geographical models and analytical procedures with the accurate representation of geographic reality because the features correspond to the basic level of human cognitive observation.

With the object-oriented paradigm in computer science, studies have shown that the object-oriented paradigm is better for GIS than conventional data models and programming methods. By definition, a feature is an object in compute environment. The object-oriented paradigm is closer to real world situations, features and their relations, which are very complex. GIS deal with very complex spatial data that are captured from the real world.

In this study, a feature data model has been derived basically from the feature conceptual framework with the abstraction methods defined in SDTS and key concepts of object-orientation. With the feature conceptual framework, features are represented by three dimensional aspects: space, theme, and time. Classes in the feature data model has been derived from the abstraction methods of spatial data in SDTS. A feature class has been derived by classification. A feature type, a time, and an attribute type classes have been derived by aggregation and generalization. Three attribute classes and various relationship classes have been derived by association.

Finally, how the feature data model is different from the existing layer based data model and the geographic data model for geodatabase has been discussed. Also, the possible applications of the developed feature data model have been discussed.