An ontological consideration of land classification systems for effective use of geographical information

Hidetsugu Yoshida[1]; Tatsuya Oda[2]; Seiji Takano[3]; Takashi Oguchi[2]; Ryosuke Shibasaki[4]

[1] CSIS, Univ. of Tokyo; [2] CSIS, Univ. Tokyo; [3] CSIS, Univ of Tokyo; [4] CSIS,UT

It is necessary to integrate geographical information provided by various countries and organizations all over the world, to contribute to the solution of global problems like catastrophic natural disasters and large-scale food crises. Recently, 'ontology' has been methodologically attracting attention in information science and engineering for standardizing qualitative data. It is relatively easy to apply an ontological concept to geographical information sciences. For instance, land use maps express human knowledge about how we use lands using hierarchical structure, and ontology is appropriate for systematizing the semantic contents of such knowledge and their relationships. However, because the majority of such geographical information has not been created with flexibility in terms of spatial scale, their usefulness should be reevaluated from an ontological viewpoint. For example, the Land Develop Department (LDD) of the Thai government established a land-use classification system with hierarchical structure divided into Level 1 with 5 items, Level 2 with 27 items, and Level 3 with 151 items, corresponding to different map scales. Most items are related to agriculture and each class has a concrete name (e.g. crop name) which enables users to understand the classes easily. The classification system by the LDD should be referred to in making official land use maps for Thailand. Therefore, at the country level, ontological approaches can be employed to the integration of land use maps for Thailand with a relatively small effort.