Geospatial Ontology – ISAO 2016

Assignment – An essay on "Land cover and land use ontologies"

To illustrate the practical problems in building and using ontologies, we will examine of the most comprehensive efforts to date: the development and use of LCCS (Land Cover Classification System), a major attempt by UN FAO to harmonize the classification of land areas in the Earth.

LCCS became the ISO standard 19144–1 'Classification Systems – Part 1: Classification system structure'. This standard establishes the structure of a geographic information categorisation system, together with the mechanism for defining and registering the parameters. Furthermore, LCCS was used as the basis for the ISO 19144–2 'Classification Systems – Land Cover Meta Language' standard established in 2012. LCML comes with a Unified Modelling Language (UML) diagram (see www.glcn.org) that provides insights into the categorisation rules.

We will read papers on land cover and land use ontologies. The papers by Chazdon et al. (2016) and Comber et al. (2008) describe the inherent problems on land cover and land use classification. Herold et al. (2006) and Ahlqvist (2008) describe the aims and expected impact of LCCS, while Jansen et al. (2008) describes the application of LCCS in a practical case and draws some lessons. Based on these papers, write an essay on geographical ontologies (400-1000 words). Please present your vision of the topic and also consider the following issues:

1. What are the essential problems of land use and land cover ontologies that follow from the papers of Chazdon et al. (2016) and Comber et al. (2008)?

2. What is the basic hypothesis of the LCCS ontology? What is the importance and impact of LCCS, according to Herold et al. (2006) and Ahlqvist (2008)? Did the authors expect that LCCS would solve the semantic interoperability problem in land cover classification?

3. What did Jansen et al. report about the practical use of LCCS in trying to harmonize land classifications from different agencies? What were the problems they faced? What are the lessons learned?

4. Comparing the optimistic views of the papers by Smith and Mark and by Herold et al with the practical findings of Jansen et al., where do you stand? Are you optimistic or pessimistic about the possibilities of ontologies to solve the problems of semantic interoperability? Why?