

A Study on Federation of Ontology in GIS-based Systems

Shigenobu Tachizuka, Ryosuke Shibasaki

Center for Spatial Information Science, the University of Tokyo

Cw-503 4-6-1 Komaba, Meguro-ku Tokyo 153-8505 Japan

sigtat@iis.u-tokyo.ac.jp

Abstract: Recently, with the help of IT infrastructure improvement, many GIS (Geographic Information Systems) projects have been planned, carried out and realized in various sectors. For instance, public sectors have introduced GIS not only to make administration more sophisticated and efficient but also to provide quality service to inhabitants. Additionally, business firms have used GIS for marketing and individuals have transmitted regional information with it. Direct interaction of such available systems may provide more intelligent service.

Transferring information between systems are, for instance, following procedures: service recipients request information to one system, receive formatted information, interpret its semantics, convert it to another format suitable for next system, and send it. One system must understand semantics of information received from another one for automatic interaction without such complex processes. Standardization of information can be one of solutions to realize automatic interaction. However, international organizations have targeted to standardization of not semantics but expressive format. Standardization of expressive format is not enough to chain different systems seamlessly because it is still necessary to convert meaning of information by manual procedures.

The objective of this paper is to investigate the federation of semantics of information (in terms of philosophy, "ontology") built in different systems to approach automated service chains. We consider what kind of knowledge and means to federate ontology in different systems should be required.

Keywords: GIS, Ontology, Service Chain, Data Modeling