Geomatik - Kolloqium

Do. 04.07. ab 16:15 Uhr Griebnitzsee Raum 3.04.2.14

Information Modelling in the Geological Sciences

Jens Klump

Geoscience data and derived information comes in many different shapes and formats. They cover the entire physical planet, its interactions with other spheres, and other extra-terrestrial bodies. Given this broad scope it is particularly challenging to develop an information model for the geosciences. Even though single investigations only study small subsets of the system, the interconnected nature of earth processes sometimes requires the integration of data from several different fields.

ISO TC 211 and its working groups, together with the Open Geospatial Consortium (OGC), have developed a whole family of standards that contribute to an information model for spatial information, notably the Geography Mark-up Language (GML). To enable the exchange of interpreted geological data the government geological surveys and the International Union of Geological Sciences (IUGS) initiated the development of a geosciences application schema of GML, called **Geoscience Mark-up Language (GeoSciML)**. This mark-up language was designed to facilitate the exchange of geoscience information between government geological surveys through OGC web services.

With the rise of web services and XML came the idea that it should be possible to assemble components of a service oriented architecture in a modular fashion, similar to “plug and play” hardware. Web services were thought to integrate into web based, service oriented architectures by automatic inclusion in a registry of available services with standardised, machine interpretable descriptions of their interfaces. Information exchange was thought to be between machines only with no need for human intervention. Mark-up languages were seen as well suited media for machine-machine communication since they can be validated by machines and leave no room for interpretation or ambiguity. But does this assumption hold true? **Is it possible to pre-define an unambiguous structure for this communication – a perfect language?** Or is the solution “yet another mark-up language”? Are there principal limitations to formal information models underlying mark-up languages and ontologies?

This lecture will introduce the **fundamental concepts of information models in the geosciences** and look into their **implementation as mark-up languages and web services**. The implementation will be illustrated by use cases. The lecture will also discuss the **limitations of formal information models** and resulting implications for the development of information models.

Dr. Jens Klump is a senior research scientist at the German Research Centre for GeoSciences (GFZ) in Potsdam, Germany. His field of research is data driven science. Research topics in this field are numerical simulation of natural gas reservoirs, virtual research environments, remotely operated instruments, high performance and cloud computing, long-term preservation of research data, and the development of system solutions for geoscience projects. Jens earned degrees in geology and in oceanography from the University of Cape Town (UCT) and received his PhD in marine geology from the University of Bremen, Germany.

Next talk

11.07.2013 V. Stender, M. Schroeder: Projektportale für raumbezogene Daten – Architektur und Entwicklung
16:15 Uhr **Griebnitzsee Raum: 3.04.2.14**

Veranstalter

Prof. Dr. Bettina Schnor, Institute of Computer Science, Universität Potsdam
Prof. Dr. Joachim Waechter, German Research Centre for Geosciences