Developing Interoperable Geographic Data Model for the Mitigation Phase of Disaster Management

Arif Cagdas Aydinoglu and Bekir Tastan (Turkey)

SUMMARY

Manmade and natural disasters have been increasing day by day and cause great human and properties losses. Hazard is a dangerous fact or activity that can leads to loss of life, health effects, social and economic losses. Vulnerability is a feature of a society that makes it susceptible to the destructive outcomes of the hazardous event. The interaction of hazard and vulnerability creates the risk of disaster. Disaster management is to perform preparedness, response, mitigation, and recovery activities in a sequence to save humans, diminish assets damages on manmade and natural disasters. Accomplishment in disaster management depends on effectively realization of activities that are carried out in the disaster cycle. Mitigation stage refers to activities such as determination of disaster hazard and risk and avoidance of damages, prevention of its effects or minimization, taking measures to compensate inevitable losses. It is an intricate issue in the whole sequence of emergency management requiring full and quick collaboration between diverse actors in diverse sectors. Geographic Information Systems (GIS) will facilitate to diminish of calamitous results of disaster and protect lives and properties with dynamic use in mitigation phase of disaster management. For effective management of disasters as a priority, data requirement analysis were accomplished for mitigation phase of disaster management after determining disaster types such as earthquake, flooding, landslide, forest and urban fire. Developing an interoperable geographic data model is a new approach for Turkey that enables using the data corporately and successfully. General features of this model are object-oriented model and based on ISO/TC 211 Geographic Information standards. The model is fully described with Unified Modeling Language (UML) class diagram and converted to Geographic Markup Language (GML) of OGC. The model compliant with Turkey National GIS specifications can be starting point for geographic data providers in Turkey to determine disaster risk that has significance because of the increasing of natural or man-made disasters. For effective sharing of geographic data between different actors, this geographic data model was tested with applications.

Developing Interoperable Geographic Data Model for the Mitigation Phase of Disaster Management (7745)   1
Arif Cagdas Aydinoglu and Bekir Tastan (Turkey)

FIG Working Week 2015
From the Wisdom of the Ages to the Challenges of the Modern World
Sofia, Bulgaria, 17-21 May 2015