"NATURAL HAZARDS IN CARINTHIA"

USING OGC COMPATIBLE WEB SERVICES FOR INTEGRAL RISK MANAGEMENT TO SUPPORT THE IMPLEMENTATION OF THE EU FLOOD DIRECTIVE.

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A LOCAL PROJECT

The project "**Natural Hazards in Carinthia**" outlines an interdisciplinary approach for the identification and assessment of natural alpine hazards and risks in the province Carinthia, Austria. It subsumes the following objectives:

- Detecting the sectoral hazards for floods, torrents, avalanches, rockfall and land-slide.
- Providing an interactive, interdisciplinary hazard map.
- Harzard analysis - sectoral and cumulative assessment of probability of occurrence and intensity of alpine hazards
- Risk analysis - providing methods for risk assessment deriving the potential risk for different classes of protected properties.
- Risk communication – development of a toolset for integral risk management including a web-based application to publish interactive hazard and risk maps.
- Establishing OGC compatible WEB Services (WMS & WFS) to implement a GDI (GeoData Infrastructure) of risk management

THE EUROPEAN APPROACH

The objective of the proposed **EU Flood Directive**[2] is to manage and reduce flood-related risks to human health, the environment, infrastructure and property. As a result of climate change the frequency and dimension of floods have advanced. Moreover the number of people living or working in flood risk zones has increased dramatically. The proposed directive includes a three step approach to achieve the upper objectives:

- Preliminary flood risk assessment, which includes a detailed description of river basins, description of past floods and of the flooding processes as far as an assessment of the likelihood of future floods and the estimated consequences.
- Providing detailed flood risk maps for different flood risk scenarios, which can used for different purposes like targeting investments and developing sustainable policies and strategies.
- Flood risk management plans will have to be developed and implemented at river basin/sub-basin level to reduce and manage the flood risk. The management plans will have to contain the assessment of flood risk, the definition of protection levels and sustainable measures for river basins.

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As the flood risk management plans have to implemented at river basin level, a cross border approach, as known from the EU Water Frame Directive, will be necessary for many basins. A further objective of the EU Flood Directive is the active involvement of all interested parties in the production, review and updating of the flood risk management plans.

As a matter of fact, the objectives of the project "**Natural Hazards in Carinthia**" include a lot working packages, which meet the requirements of the EU Flood Directive. Within the local Carinthian project not only flood risk is mentioned, there are some tools and methods, which can used for implementation of flood risk management plans too.

OGC WEB SERVICES

The Open Geospatial Consortium, or OGC, is an international voluntary consensus standards organization. In the OGC, more than 330+ commercial, governmental, non-profit and research organizations worldwide, collaborate in an open consensus process encouraging development and implementation of standards for geospatial content and services, GIS data processing and exchange. It was previously known as Open GIS Consortium. (www.wikipedia.org)

Popular OGC specifications are the Web Map Service (WMS[3]), the Web Feature Service (WFS) or the Geography Markup Language (GML).

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Within the project risk assessment (for floods and other hazards) will be elaborated and published in interactive risk maps. To ensure actuality, all results will be provided within sophisticated web-based mapping applications. A restricted expert application and a public application will be available.
Moreover a number of different OGC Web Services will be provided. They can be used for:

- Providing actual data to all interested parties in the production, review and updating of the flood risk management plans.
- Supporting cross border planning processes without physical data transfer
- Establishing a European GeoData Infracructure (EGDI) focussing on natural hazards and risks.
- Improving local and regional planning processes by providing standardized web services.
- Supporting the publishing process of risk maps and risk management plans at member state level.
- Providing standardized methods and tools to support the active involvement of interested parties

As there is a lot of coincidence between the local project and the goals of the EU Flood Directive, we are convinced, that providing the hazard and risk maps as OGC Services can be an important contribution to effective risk assessment.

2 Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the assessment and management of floods {SEC(2006) 66}
3 Web Map Service Implementation Specification, Open GIS Consortium Inc., Version: 1.1.1, Reference number of this OpenGIS® project document: OGC 01-068r3