A G.I.S. BASED APPLICATION FOR SEISMIC RISK 
OPERATIONAL RESPONSE ENVIRONMENT

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ABSTRACT:

Information flow and management represents one of the major tasks of seismic risk mitigation. This recent experience, following a number of destructive earthquakes in Greece during the last decade, underlined the necessity of a flexible system in order to support earthquake disaster response organizations. Due to the large volume of updated data required, GIS platforms represented the ideal solution choice for the development of a flexible system for integration and processing of seismological data, available and can be processed by the user through a specially designed menu driven environment.

Following the declaration of a damaging earthquake, location data are immediately transmitted by the seismological agencies to the primary earthquake response organization (EPPIO) and administrative data are selected and sorted according to preliminary estimated damage zones. Thus, the user is able to access all the pertinent contact and communication data in order to publish and record pre-defined damage report information. These data can be edited, updated and reviewed within the system or forwarded as reports to the corresponding agencies for further action. At present the system is in operation at the Earthquake Planning and Protection Organization (EPPIO) in Greece, while further enhancements are also planned according to user requirements.

Stage 1: Analysis - Design

- Seismicity data
- Hydrographic Network
- Road and Railway Infrastructure
- Major faults in the area of Greece
- Major boundaries and contact info
- Region boundaries and contact info
- Municipality boundaries and contact info
- Open-end additional data capabilities

Stage 2: Database creation

- Historical Seismicity
- Instrumental Seismicity
- General Information Layers
- Major administrative units

Stage 3: Application development

- Data integration in ArcView environment
- Design and Development of User Interface
- User friendly environment based on MapObjects 2.1

Stage 4: Using the application after a major earthquake

- Forms to support EPPIO user communication with local authorities and reporting of the type and extent of the event. 

- New data fields (non-structural damage, types of buildings and industries, etc.) are incorporated in the system.

- Information about specific events can be also processed.

- The main screen of the application following a major seismic event. 

- Reports for various administrative levels such as regions, prefectures and municipalities around the epicenter of the report minor earthquakes.

Administrative units are categorized in three groups according to essential seismic risk or protection needs. The database is updated and an official report is generated.

Official report generated after the communication with the local authorities. Damage information is also transferred to Microsoft Access Database files in order to facilitate non - GIS based processes by individual administrations and enable later stage of damage assessment and relief operations.