SAFER – PROJECT DESCRIPTION:

The project **SAFER** (**S**ervices and **A**pplications **F**or **E**mergency **R**esponse) started in January 2009 and ended in March 2012. The project was partly funded by the European Commission under the 7th Framework Programme (FP 7). SAFER is part of the European initiative **G**lobal **M**onitoring for **E**nvironment and **S**ecurity (**GMES**).

The main objective of SAFER was to provide support in disaster management addressing all types of natural disasters: Floods, storms, fires, landslides, earthquakes and volcanic eruptions.

The project did not only focus on rapid mapping during the response phase – using geo-information derived from up-to-date satellite images of the affected area in combination with recent reference maps – but also on the use of its products for preparedness / early warning and reconstruction. By doing so the whole risk cycle of natural disasters was addressed by SAFER's service portfolio. For more information on the SAFER project please visit the following web site:
http://www.emergencyresponse.eu

Besides rapid mapping and reference mapping products, SAFER provided specific thematic products, in particular in the areas of meteorological and geophysical risks.

SAFER – Role of Astrium GEO-Information Services (Infoterra GmbH & Spot Image), geomer GmbH, Eurosense, INDRA, ReSAC and ROSA

The work performed in SAFER was grouped into work packages. Infoterra GmbH was leading the work packages and service developments related to "Plain flood risk management" and "Assets mapping". All partners acted as service providers meeting as best as possible the users' requirements in these domains.

The thematic service portfolio – which has been developed taking into account the requirements for the transposition of the EU flood directive – comprised the following products:

Flood risk management

- Past Flood Event Map
- Flood Hazard Map
- Flood Risk Map
- Flood Information System (FloodServer)

Assets mapping

- Basic European Asset Map (BEAM)
- Higher Resolution Assets Map (HiRAM)
- Assets map PLUS (AM+)

Important note: Strategic Management Board and Public User Board decided in May 2011 – based on a "service maturity analysis" including the collection of "user feedback" and the partners' performance in an "operational exercise" – that the services ***Flood Hazard Mapping, Flood Risk Mapping and Basic European Asset Mapping (BEAM)*** will be implemented into SAFER's final Service Portfolio (V2). As a consequence, besides rapid mapping and damage assessment these "thematic services" were then ***qualified to be activated by the users*** as well.

Furthermore, the continuation of the services is guaranteed as well, since particularly risk and vulnerability mapping as well as assets mapping are currently being further developed in the framework of the Copernicus project IncREO (www.increo-fp7.eu).

PRODUCT DESCRIPTIONS:

Past Flood Event Map: Past flood extent maps are derived from space-borne observations of a flood event – possibly at different time instants of the flood event simultaneously enabling a monitoring of the flood extent. The products are not generated in real-time but based on Earth Observation archive data and provide information about (historic / maximum) flood extent, flood duration and flood frequency which is essential information related to vulnerability.

Flood Hazard Map: Flood hazard maps are the results of modelling and simulation. The products show flood extent and flooding depth for one or more events. The events are defined by the customer; usually a recurrence interval of 100 years (HQ100) and an extreme event with an even higher recurrence interval is chosen. The required minimum input data are a Digital Terrain Model (DTM), water level information, homogeneous land use data (usually derived from EO data) and the flood modelling software. The final products comprise information on areas at (flood) risk and the impact of specific flooding scenarios (e.g. dam failure) concerning flow direction / velocity, inundation depth and flood extent line.

Flood Risk Map: Flood risk maps show the potential adverse consequences (damages) associated with flood scenarios in terms of monetary values (e.g. €/m²) plus the amount of population either affected or at risk for life. The assessment of damages and losses is based on the combination of land use data and socio-economic statistics with flood extent information, using actual (current, historic) or potential (simulated) flood events. The subsequent damage calculation is performed using well-established damage functions which are based on information about water depth and / or flow velocity. The initial land use information needs to be enriched by ancillary socio-economic data, i.e. for each land use class different damage functions are applied. The former mentioned fast flood event and hazard maps can serve a basis for the flood risk maps. The benefit of this product type similar to the one mentioned before.

Flood Information System: The FloodServer is an online platform where all relevant information about floods can be integrated into (www.floodrisk.eu). With its reliable and easy accessible geo-information this web-based system does not only raise the general public's awareness of flood risk but also contributes to disaster risk management and decision-making.

Basic European Assets Map (BEAM): The BEAM product displays monetary values per area unit (e.g €/m²) on country level. Up-to-date national available land use data sets - supplemented by street network data – and socio-economic statistics available via eurostat serve as input data to relatively quickly produce this map.

Higher Resolution Assets Map (HiRAM): HiRAM is sort of an intermediate product, trying to bridge the gap between covered area and level of detail. In addition to the input data of higher detail than for the BEAM product, information about critical infrastructure such as hospitals, power plants, oil tanks etc. is considered for this product. Thus, this product serves as decision support in case of evacuation measures.

Assets Map PLUS (AM+): AM+ is a highly sophisticated product with a very high degree of detail and information content with respect to the location and amount of assets per administrative on a large scale. However, in order to provide the user with this product a particularly good data basis is required in terms of land use information (cadastral level) and statistics (monetary reference values on single object level).