MONITOR II

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MONITOR II –WP4: Continuous Situation Awareness System

Consortium "Bauer Consult"

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tel: +359 2 48 990 71

fax: +359 2 48 990 72

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1. Main purpose of the Continuous Situation Awareness system

The CSA (Continuous Situation Awareness) system will consist of several parts, which have aim to support the users in the issues of planning, risk assessment and decision taking. These parts should be elaborated in such way in order to allow flexibility in use for different cases.

One of the main parts of each Continuous Situation Awareness system is monitoring. The most widespread methods for monitoring of the environmental components were described in the report.

The main purpose of MONITOR II is improving of methodology for risk assessment and communication through applying a new innovative methos as Continuous Situation Awareness system.

There are a lot of monitoring methods, but every method is applicable for one or more project partners. There is no method which could be used by everybody. That's why the architecture of the Continuous Situation Awareness system should give the possibility every user to choose methods, applicable for the specific territory depending on the risk maps and risk analysis which are used as input data.

2. Continuous Situation Awareness system - architecture

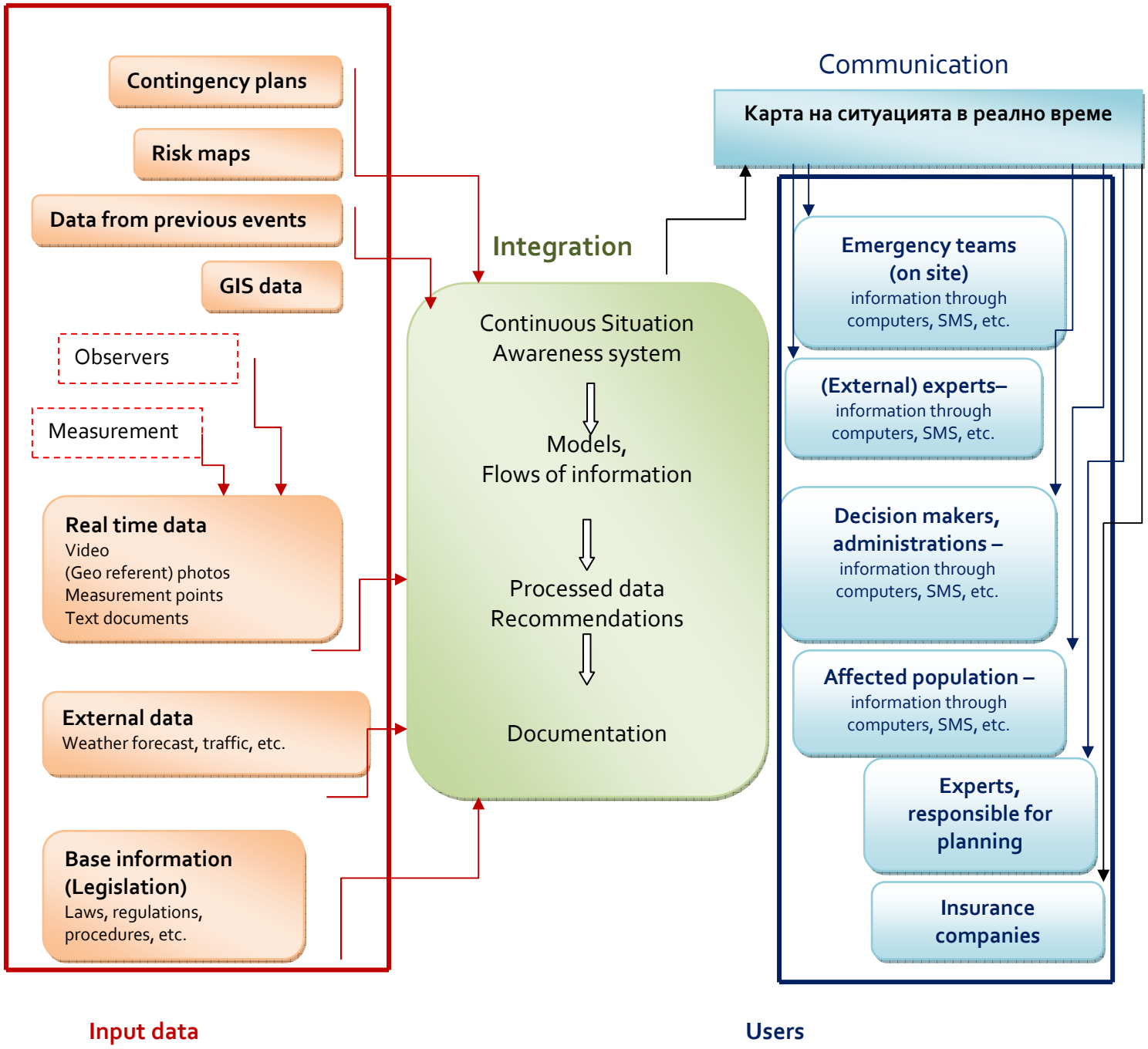
The CSA system elaborated under the MONITOR II project is supposed to be a series of software components, which could allow easy integration, representation and use of information for disaster management.

The atchitecture of the Continuous Situation Awareness system is based on the existing and already established systems. That's mean that the components of the Continuous Situation Awareness system should cover the following rules as for example:

- They should have base according to the standards
- They should use standards like INSPIRE, where it is possible
- They should have open interface in order to allow their integration in another components
- They should also have the possibility to function independent
- Their design should be based on common functional connections (Figure 1)

The atchitecture of the Continuous Situation Awareness system proposed by the MONITOR II project partners is shown on Figure 1.

Figure 1: Atchitecture of the Continuous Situation Awareness system



The Continuous Situation Awareness system is designed to store spatial data in a special data base in the system. The objects – like roads and construction - are stored in local, regional or national GIS. The CSA system could use these data directly if they are suitable for use according to the rules of INSPIRE. Otherwise there should be data transformation.

3. European Continuous Awareness systems

In many developed European countries which have traditions in monitoring of the environmental components in connection with natural disasters there are working Continuous Situation Awareness systems.

In the present report several systems are presented including their architecture/ structure, components and way of activitites. One of them is so called FLIWAS system, elaborated for monitoring and warning in the flood risk events in the Baden – Wuerttemberg, Germany.

System INGE - Interaktive Gefahrenkarte für den kommunalen Hochwasserschutz is elaborated together with 23 administrations from Germany, Czeck republic, Poland, Austria and Hungary with the main purpose for Elbe River flood protection.

For comparison Flood early warning system elaborated for Maritza River in Bulgaria is also presented.

3.1 Conclusions and recommendations

The following conclusions could be made on the base on the above written systems:

- If there are flooded areas it is very important to have one elaborated good acting early waning system
- For forecasting of the exact water level along the river it is necessary to receive detailed hydrological and meteorological information
- It is necessary to receive data not only from the main course but also for sub-basins
- The Fliwas system has 250 measurement points for water level, flow and rain quantity. INGE system has more than 100 measurement points. For Varbitza watershed the measurement points are less than 10 for more than 1200 км^2, which is not sufficient for real assessment in the periods of heavy rains.

Recommendations:

- For improving the work of one Continuous situation awareness system and warning system it is necessary additional monitoring measurement point to be installed – for example automatic telemetri stations for measurement of water level, water flow, rain quantity. This will lead to improving the quantity and quality of measurements.
- For the future – it is important to be clear which organization/ administration will manage the equipment as well as what will be the conditions for data use.

3.2 Technical specification of Continuous situation awareness system

At the end of 2008 during the execution of a project, consultants from BCEOM International together with experts from Nationsl Institute of Meteorology and Hydrology and Basin directorate – Plovdiv, elaborated and installed Early warning system. Because the system has some equipment, we propose every new system to supplement the existing one in order to be compatible.

The common technical requirements to such system are:

- The equipmet must sustain during electrical interruption. The normal work should be as follows: 230 V and 50 Hz. All necessary equipmet should have supply and connection cables.
- The conditions for using computers: environmental temperature (10 – 40 ºC); humidity (30 – 85%). All equipment that will be used outside should be waterproof and should have working temperature range between –30 ºC up to +60 ºC.
- Operational life – min 10 years
- The equipment that will be installed outside should be damaged and theft protected

Taking into account the above written requirements the Continuous situation awareness system should consists of the following main parts:

- Measurement devices, including in the monitoring system – it is proposed the system to be automated and to measure river flow, rains, air temperature and water temperature, etc. it is also advisable part of the measurements to be done by hand, so manual equipement for the same parameters should be available.
- Computers and software for data processing, analysis, storage and dissemination

- GIS software and different layers, as well as software for visualization of GIS data
- Surver for data collection, processing and records

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