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ORCHESTRA: Developing a Unified Open Architecture for Risk Management Applications

ORCHESTRA
Description and future activities

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Basics (1 of 4). Basic Data



- European Commission (EC) has highlighted the strategic objective of “Improving Risk Management” within the FP6 of RTD IST Programme
- ORCHESTRA stands for “Open Architecture and Spatial Data Infrastructure for Risk Management”
 - Started in September 2004, ending in August 2007
 - A consortium of 14 partners in Europe
 - A budget of 13,7 M€, with 8,2 M€ funded by the EC



Basics (2 of 4). Why ORCHESTRA?

- EU citizens and environment have to face large series of risks: forest fires, floods, landslides, tornadoes, storms, earthquakes, volcanic eruptions, etc.
- Disasters do not respect national borders
- The number of victims and economic losses of disasters are increasing
- Governments, civil protection bodies and emergency services are becoming more dependent on integrated information systems to address different phases of Disaster Risk Management in complex trans-boundary, multi-risk scenarios
- Such integration is difficult due to lack of
 - common terminology,
 - accessibility and availability of data,
 - interoperability (e.g. lack of standards and their use),
 - co-ordination, procedures and business models, ...
- Existing legacy systems were not designed to work together



Basics (3 of 4). ORCHESTRA Goals



- Improve efficiency risk management activities through:
 - The design and implementation of an open service-oriented architecture based on standards (de-facto and de-jure) and in INSPIRE and GMES specifications
 - To validate the architecture in multi-risk scenarios, developing the sets of services that are most useful and adequate for the risk management end users



Basics (4 of 4). ORCHESTRA Partners





What ORCHESTRA is NOT

ORCHESTRA is NOT:

- A system (centralised or distributed) to be used in risk management
 - Each institution in each European region must work with the systems they consider more appropriate according to their needs, characteristics, policies, etc.
- A list of methodologies or procedures for risk management
 - Each institution in each European region must have the flexibility and autonomy to establish the most adequate to their case
- An effort of systems integration
 - Because then it would solve – with a prohibitive cost – the actual situation, but not the future one



What ORCHESTRA is

- ORCHESTRA is the definition of a service architecture that enables interoperability at an European level
- ORCHESTRA defines the interface that a software service must have in order to be interoperable
- ORCHESTRA does not only design the architecture but also develops a list of services for risk management in order to:
 - Validate the architecture in the pilots
 - Provide part of the software together with the specifications, so interested institutions can see how to make their own services and applications interoperable
- ORCHESTRA cannot develop all the required services for risk management. In fact, the continuous emergence of new needs, together with the flexibility and interoperability that provides ORCHESTRA, constitutes the project business case



What ORCHESTRA is



Final ORCHESTRA results:

- A Reference Model for interoperable service architectures (platform-independent, policy-independent, etc.)
- An open services architecture and based on standards for risk management
- Open specifications, distributed for free
- It is currently under discussion how to distribute for free part of the software developed within the project

Summarising, with ORCHESTRA an institution can decide which of their services or applications will be made accessible (with or without restrictions) and interoperable, and achieve it with minimum technical and economic efforts. These services will be interoperable with other European institutions' and can be offered for free or under different payment schemes, according to the business model of the institution.





During year 3

- Main activities:
 - Validation
 - RM-OA (Reference Model – ORCHESTRA Architecture):
 - Further public versions
 - Further contribution to standards (such as OGC).
 - Conclude the 4 pilots (phases 2 and 3)
 - Contributions to standards: OGC, W3C, ISO
 - Contributions to initiatives: INSPIRE, GMES, GEOSS
 - Training
 - Collaborations with other projects, with focus on:
 - User Requirements Methodology
 - ORCHESTRA Architecture (public since Oct 2005)
 - ORCHESTRA Service specifications and implementations
 - Further commercial and research actions



Pilots (1 of 4)

Pan-European Assessment of natural Hazards (PEUNHA)



- Objectives:
 - To assess the risk of forest fires in the Member States of European Union and to support forest fire prevention
 - To assess the vulnerability towards floods and droughts within the Member States of European Union according to different considerations and scenarios
 - To assess the vulnerability to various hazards (floods, droughts, forest fires) within the Member States of European Union
- Leader: JRC-IES
- Participants:
 - Within the consortium: JRC-IES, INTECS, BRGM
 - External: European experts, personnel from different EU DGs and from the INFOREST and WDNH (Weather Driven Natural Hazards) actions of the JRC



Pilots (2 of 4)

Floods and Forest Fire Risk prevention assessment in the Tordera Basin (Catalonia, Spain)

- Objectives
 - Improve the context of decision-making process in the prevention planning of various risks (floods and forest fires) in a basin by focusing on the efficiency of information management and assessment services, thus improving the interoperability among the involved actors and systems
 - Prove the adequacy of ORCHESTRA Architecture as a solution for the mentioned challenges and, in turn, identify which parts need to be corrected or modified towards a fully operational implementation in other similar/larger cases
- Leader: TYPESA
- Participants:
 - Within the consortium: TYPESA, ATOS, INTECS
 - External: ACA, ICC, Comissió de Protecció Civil



Pilots (3 of 4)

Risk assessment for the road network in the French-Italian border region



- The main objective of the pilot is to demonstrate how ORCHESTRA can be used to effectively support cross border, regional and provincial risk management with a focus on the activities related to the vulnerability and consequence analysis of road infrastructure
- Leader: BRGM
- Participants:
 - Within the consortium: BRGM, Ordnance Survey, JRC-IPSC, JRC-IES, ARCS
 - External: Local authorities from Provence, Piedmont Region and Liguria Regions, Italian Transport companies, Italian Ministry of Transport, French Ministry of transport and ESCOTA (operates the toll motorways)



Pilots (4 of 4)

Assessment of Risks generated by Ship Traffic Activity in the German Bight-Wadden Sea Area



- Objectives:
 - Assess and quantify the multi-environmental risks which are generated by ship traffic activity around the German Bight coastal zone region
 - Provide access to risk management spatial information to the German Bight stakeholders and other users using Orchestra Architecture
- Leader: BMT
- Participants:
 - Within the consortium: BMT, AMRIE, DATAMAT, IITB
 - External: Trilateral Wadden Sea Cooperation, Schleswig-Holstein (Ministerium für Landwirtschaft, Umwelt und ländliche Räume), GAUSS GmbH y Brockmann-Consult





Thank you for your attention

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Results after year 2

- SP2
 - User Requirements and Policy Watch
 - Knowledge modelling
- SP3
 - RM-OA v2 (Reference Model – ORCHESTRA Architecture)
 - ORCHESTRA Architecture service specifications and implementations
- SP4
 - Pilots selection and detailed specifications
 - Phase 1 of pilots (ending November 2006)
 - ORCHESTRA Thematic service specifications; OA & OT services deployment
- SP5
 - E-learning environment and training units (not open yet)
 - Collaborations: OGC, INSPIRE, GMES, OASIS (CM), PREVIEW, WIN, GITEWS, SANY, INTAMAP, SAFE/DPRR, etc.

