

## 2 PUBLISHABLE SUMMARY



<http://www.IQmulus.eu>

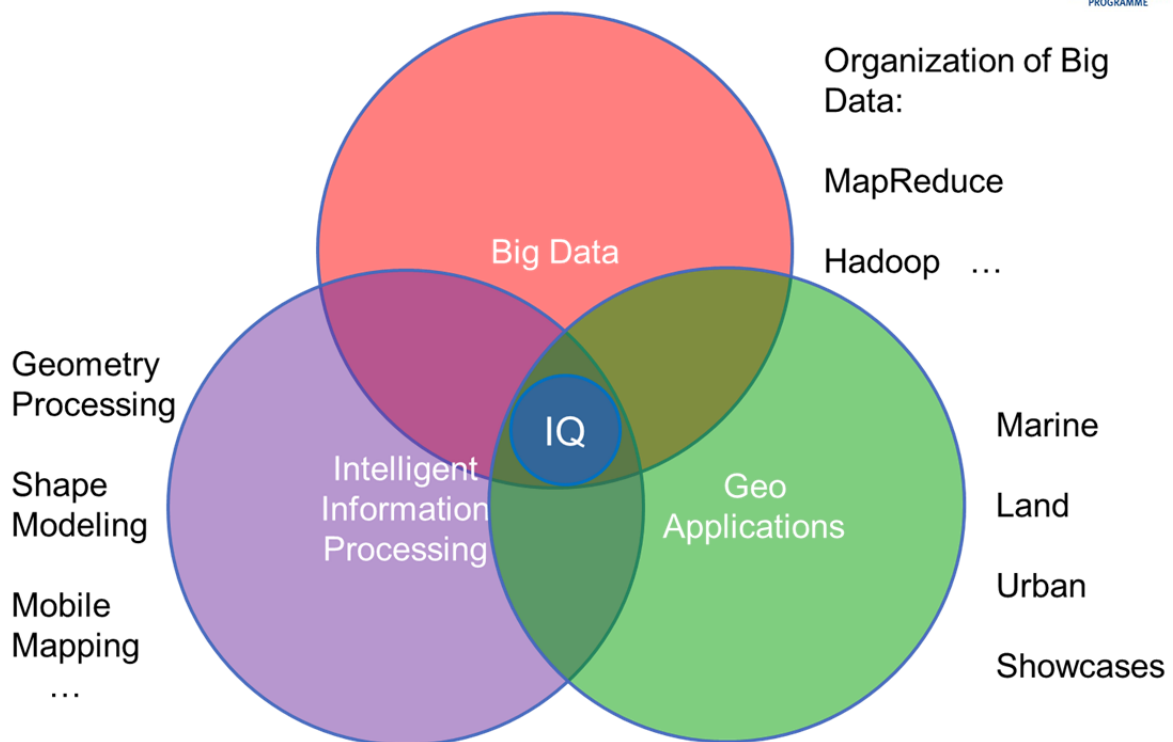


*A High-volume Fusion and Analysis Platform for Geospatial Point Clouds, Coverages and Volumetric Data Sets*

### *The IQmulus Mission*

**IQmulus** will leverage the information hidden in large heterogeneous geospatial data sets and make them a practical choice to support reliable decision making

### IQmulus in the intersection



**IQmulus** (November 2012 – October 2016) is a four-year *Large-scale Integrating Project* co-funded by the EU Seventh Framework Programme under *Grant Agreement FP7-ICT-2011-318787* in the area of *Intelligent Information Management* within *ICT 2011.4.4 Challenge 4: Technologies for Digital Content and Languages*.

## ***IQmulus – Goals and Concept***

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The goal of IQmulus, which stands for *A High-volume Fusion and Analysis Platform for Geospatial Point Clouds, Coverages and Volumetric Data Sets*, is to develop a platform that provides the needed functionalities to integrate latest research results in data processing and visualization to tackle important real-life challenges in geospatial applications.

New emerging data acquisition techniques provide fast and efficient means for multidimensional spatial data collection. All these systems provide point clouds, often enriched with other sensor data, yielding large volumes of raw data.

Given the wide choice of different available sensors and the massive amounts of data thus obtained, combined with the intent to provide useful knowledge in an appropriate period of time, the platform thus has to be scalable in processing and storage, and capable of handling the four aspects of variety, volume, velocity and analytics that are commonly associated with the term Big Data.

## ***IQmulus – Geospatial Data Processing: Fast and Scalable***

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IQmulus makes use of modern Cloud Computing infrastructure to process large-volume geospatial data in a fast and scalable manner. For this purpose a private Cloud has been built up at Fraunhofer IGD, one of the partners, providing resilient and flexible on-demand pooling of computing resources.

The IQmulus system consists of the following components:

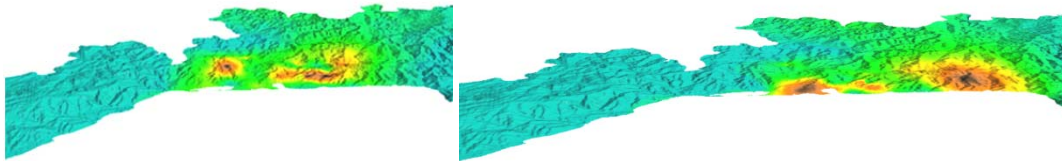
- a distributed Cloud-based data storage with centralized access
- a highly scalable processing Cloud
- a user interface based on Domain-Specific Languages that allow users from the geospatial domain to harness the possibilities of Cloud-based data processing
- a high-performance 3D visualization running on Desktop computers as well as in the Web browser.

## ***IQmulus – From Showcases to Real-Life Applications***

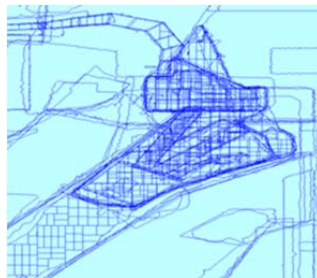
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After interactions with geo-experts, workflows in the following three showcases have been selected for treatment as sample applications:

The *Land Showcase*, where an hydrologist or geo-morphologist supporting decision makers in civil protection wants to analyze data measured during critical events to prepare better prediction and monitoring of floods and landslides.



The *Marine Showcase*, where an expert needs to create a seamless land/underwater elevation model by the integration of land and underwater data sources to obtain a data product that can also be used in further marine analysis and processing tasks.



The *Urban Showcase*, where – given a new data set – a cartography expert is tasked with the update of an existing 3D catalogue of urban topographic objects, such as the detection of buildings for monitoring and cadastral updating or individual tree extraction from urban LMMS (Laser Mobile Mapping Systems) data.



## *Project partners*

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The IQmulus consortium is made up of 12 partners from 7 European countries, representing university teams for basic research in geo-spatial information processing, applied research institutes, an SME from the GIS industry as well as national and regional organizations such as mapping agencies.

- SINTEF ICT, Department of Applied Mathematics (coordinating), Oslo, Norway
- Fraunhofer Institute for Computer Graphics Research (Fraunhofer), Competence centers for Spatial Information Management, Visual Computing System & Interactive Engineering Technologies, Darmstadt, Germany
- Institute for Applied Mathematics and Information Technologies of the National Research Council (CNR-IMATI), Genova, Italy
- M.O.S.S. Computer Grafik Systeme GmbH (MOSS), Munich, Germany
- HR Wallingford Ltd (HRW), Wallingford, UK
- Hungarian National Mapping and Cadastral Agency (FOMI), Institute of Geodesy, Cartography and Remote Sensing, Budapest, Hungary
- University College London (UCL), Research centre for Photogrammetry, 3D Imaging and Metrology, London, UK
- Delft University of Technology (TUDelft), Department of Geoscience & Remote Sensing, & Man-Machine Interaction Group, Delft, The Netherlands
- Institut National de l'Information Géographique et Forestière (IGN), Paris, France
- Université de Bretagne Occidentale (UBO), European Institute for Marine Studies, Brest, France
- L'Institut Français de Recherche pour l'Exploitation de la Mer (Ifremer), Brest, France
- Regione Liguria, Genova, Italy

## *Contact for project information*

### **IQmulus project coordinator**

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