

# Coastal Approach to Open Architecture

The Coastal and Marine Resources Centre (CMRC) at University College Cork, Ireland, carries out multidisciplinary research primarily aimed at contributing to the scientific understanding of coastal and marine environments and their management. CMRC conducts basic and applied research in local, national and international projects relating to four niche areas: Marine Geomatics, Coastal Processes and Seabed Mapping, Marine Mammal and Seabird Studies and Coastal Governance. CMRC researchers come from a range of backgrounds including geography, geology, information technology and biology.

## Broadening Innovative Research

Knowledge and information management relating to the coastal environment has been a core activity at CMRC since it was established in 1994. Over the past six years the capacity to undertake and develop innovative research in data management has broadened significantly and been enhanced through the Marine Geomatics team. Key drivers include the need for society to manage increasingly large datasets, such as those generated by the Irish National Seabed Survey (INSS), and policy drivers like the European INSPIRE Directive. Marine Geomatics team areas of research include Geographic Information Systems (GIS) & Web GIS for data management and geo-spatial analysis, remote sensing, internet technologies & services, data integration, semantic interoperability, OGC and ISO standards, data mining, data visualisation, data quality, metadata, and data modelling, e.g. the Arc Marine data model.

## Standards and Web Data

One issue crosscutting CMRC projects is the efficient delivery of data and metadata. The EU FP6-funded InterRisk project “Interoperable GMES (Global Monitoring for Environment and Security) Services for Environmental Risk Management in Marine and Coastal Areas of Europe” is one notable example highlighting the need for standardised ways of web-enabled data exchange. InterRisk is a three-year project that began in September 2006 with the aim of developing a pilot system for interoperable GMES monitoring and forecasting services for environmental management in marine and coastal areas. The project addresses two important risk situations, oil spills and harmful alga blooms.

## InterRisk

InterRisk service providers across Europe specialise in various data products, including remotely sensed data, in situ observations and forecasting models. The pilot should facilitate web-based delivery and integration of these products to help support risk assessment and handling of environmental crises. Such integration will be achieved using an open system architecture based on established OGC interoperability standards and INSPIRE guidelines. InterRisk data providers will thus deliver their products using OGC Web Map Service (WMS), Web Feature Service (WFS), and Web Coverage Service (WCS). OGC Catalogue Services for the Web (CSW) will also ensure delivery of ISO 19139 metadata. These services will be accessed and subsequently visualised through the European Space Agency (ESA) Service Support Environment (SSE) portal and other regional portal OGC clients. The InterRisk project is one of many applications demonstrating the essential role of OGC standards in ensuring efficient web-enabled data delivery. Other examples in the coastal and marine domain include coastal governance, marine aggregates and marine-mammal studies.