

# Improving Data and Knowledge Management for Effective Integrated Flood and Coastal Erosion Risk Management

Technical Summary: FD2323

## Joint Defra / EA Flood and Coastal Erosion Risk Management R&D programme

### Background to R&D project

The success of integrated flood and coastal erosion risk management (FCERM) is underpinned by the use of good data, information and knowledge management. A review of approaches within the FCERM industry to planning data collection and the management of the data once obtained shows that there is a tendency to focus on data, as opposed to the business objectives for which the data is required to support. This data-led culture has resulted in an ineffective approach to data management, where the cart is effectively driving the horse. This current approach has given rise to:

- Inability to determine the optimum amount and quality of data required and hence justify the procurement of additional data when needed
- Data in the wrong form, requiring a lot of additional work to convert to useful information
- The duplication of data and its management, due to lack of awareness of data that already exists
- Data redundancies due to lack of objective-led planning
- The inability to re-use or maximise the use of data due to lack of knowledge about other parts of the business requiring the same data
- The inability to share data due to lack of knowledge about others requiring the data and inconsistent standards

Following earlier reviews of data issues within the joint Defra/Environment Agency R&D programme, Defra commissioned the FD2323 project to develop a strategic approach to FCERM data management, to ensure it effectively feeds into knowledge about the business and the delivery of FCERM objectives.

### Results of R&D project

The FD2323 project involved the development of a framework for improving data and knowledge management through a move into a more objective-led approach to data management. A number of techniques and tools were developed within the project to support the culture change required to deliver the objective-led approach. The FD2323 project was carried out within five work packages:

Work Package 1 (FD2323\TR1) – The development of an ‘ontology’ to provide a systematic representation of the links from FCERM objectives through to data required to underpin their delivery and the associated information exchange network;



Work Package 2 (FD2323\TR2) – The development of an ISO 19115 compatible metadata standard for FCERM data and its management through an ISO 19135 compatible format;  
Work Package 3 (FD2323\TR3) – The development of a knowledge management tool to support the ontology by providing an interactive link between management objectives, tasks within these and available information;  
Work Package 4 (FD2323\TR4) – Development of a methodology for appraising the value of data to support business decisions; and  
Work Package 5 (FD2323\TR5) – The development of a best practice guidance for improving data and knowledge management from the outputs of the above research and development work.

## R&D Outputs and their Use

**Guidance:** FD2323\TR5 is the principal output of the project, capturing and presenting its key outcomes in form of guidance to support a more effective management of data and knowledge within FCERM. The guidance aims to support data and knowledge management, through:

- Developing a framework for objective-led data management
- Establishing links between data and business objectives
- Enabling data provenance;
- Characterising data consistency, quality and appropriateness;
- Providing a framework for data appraisal;
- Focusing on data users and suppliers of data and their interactions; and
- Improving data access and exchange

For data to translate effectively to knowledge, there is a need for obtaining data of sufficient form and quality, as well as maximising the use of the data through ensuring awareness of the data's existence, its sharing and re-use by the whole FCERM community.

**Technical Reports and Tools:** Four technical reports (FD2323/TR1, TR2, TR3 and TR4, respectively Work Packages 1, 2, 3 and 4) describe the tools and techniques developed within this project. The good practice approaches and tools are expected to engineer a significant step-change in FCERM data and knowledge management. However, the benefits of this study are likely to be limited, without a culture change towards more willingness to share data and to enable data to be shared, through better and more consistent recording of information about data.

This R&D Technical Summary relates to R&D Project FD2323 and the following R&D outputs:

**R&D Technical Reports FD2323/TR1, TR2, TR3, TR4 & TR5 and Project Record FD2323PR.** Published Jan 2007.

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The above outputs may be downloaded from the Defra/EA Joint R&D FCERM Programme website ([www.defra.gov.uk/envIRON/fcd/research](http://www.defra.gov.uk/envIRON/fcd/research)). Copies are also available via the Environment Agency's science publications catalogue (<http://publications.environment-agency.gov.uk/epages/eapublications.storefront>) on a print-on-demand basis.

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