

Atlantis: a new joined-up world for flood and water engineers

Civil engineers designing flood-defence and water-quality schemes in Britain could soon benefit significantly from a nationwide data-interoperability initiative called Atlantis. **James Brayshaw** and **Keith Murray** of Ordnance Survey report on progress to date.

In 2004 the British Geological Survey, the Centre for Ecology and Hydrology, the Environment Agency, Ordnance Survey, the Met Office and the UK Hydrographic Office launched an initiative 'to provide integrated base geographic and environmental datasets to better support water management in flooding and water quality for the twenty-first century'.

Called Atlantis, the project is not a product or even a single access point—it is a framework that sets a new standard for improved hydrologically relevant datasets. The aim is that organisations responsible for datasets will develop their data using this framework so that all the datasets are interoperable and meet agreed hydrological needs.

The data in scope consist of two primary datasets, namely a land and marine digital ter-

rain model (DTM) and a detailed river network with a number of complementary datasets. The initiative is based on market research which revealed more than a third of respondents spent 25–50% of their project costs on getting such data ready for use in analysis packages. There is thus clearly significant benefit in data providers building in consistency at the outset.

Digital national framework

Interoperability of data is provided by adoption of the UK's digital national framework (DNF) model. This provides a series of principles and methods for identifying and linking data. It moves the industry towards 'plug-and-play data', which is essential for reliable information services over networks supported by efficient and reliable data management.

The scope of the Atlantis initiative includes all the datasets used in planning and mitigation during emergency-event management, post-event analysis and restitution, and then investing this knowledge back into the planning and mitigation part of the cycle.

The two initial key datasets being improved are the river network and DTM, with the Environment Agency developing a new detailed river network (DRN) and Ordnance Survey

a next-generation DTM (Profile+), to fit the DNF model.

New river and terrain models

The DRN will be the highest-resolution river network available, allowing analysis of localised events. It will be cross-referenced to Ordnance Survey MasterMap topographic objects so that a wider range of applications are enabled, for example analysis using the breadth and (in time) depth of the river. The DNF model allows different users—flood engineers, chemists and biologists, who all take a different view of the river—to share information about a common location.

The new DTM incorporates the latest high-resolution photogrammetric surveys and high-resolution aerial laser scanning (LiDAR) data for floodplains and urban areas as it becomes available. The highest resolution of the DTM will be in the order of 100 mm. Integration of marine height information is also planned to support coastal needs, which is backed up by new legislation such as the forthcoming Marine Bill.

Complementary information

As well as the core datasets, it is essential that other complementary data can easily be integrated. These include other aspects of coastal-zone information and the built environment, such as the location of buildings and homes, and associated information about assets.

Atlantis is seeking to establish a new baseline of datasets to help civil engineers meet the challenges of a changing climate and man's increasing impact on the environment. The datasets need to be fit for twenty-first century applications and the information infrastructures of a knowledge economy—Atlantis is leading the promotion of that goal.



The Atlantis initiative will ensure all relevant geographic and environmental databases, such as digital terrain models and river networks, can be readily combined—a significant benefit to civil engineers designing flood-defence and water-quality schemes

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