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Simone van Schijndel
Manager of Operational Water Management at Deltares

Unique Deltares and Tessella collaboration helps tackle threat of flooding around the world

Delft-FEWS (Flood Early Warning System) is now used by a growing number of agencies and organisations worldwide to forecast flood risk and underpin strategic decision making.

Background

More than half of the global population lives in coastal, delta and river areas. These areas are economically favoured because of their rich, fertile soil and close connection with the sea and waterways.

However, rising sea and river levels, freak weather patterns and growing pressure on infrastructure have led to an increased risk of flooding, subsidence and soil and water pollution, especially in these low-lying areas.

Water management authorities and agencies around the world have therefore begun using automated systems and modelling to help them manage and plan for flood risk. Masses of data, both meteorological and hydraulic, are being combined and processed to produce real-time information and forecasts that provide the basis for flood warning and strategic decision making.

Solution

A growing number of these authorities use a forecasting solution called Delft-FEWS (Flood Early Warning System), which was originally developed in the framework of a European project and was further developed for the UK Environment Agency by Deltares, the independent Dutch water technology institute, and Tessella. The collaboration brought together Tessella's unique blend of scientific and software expertise with Deltares' extensive knowledge of hydrology and software development. The system went live in 2005 and is now fully operational as the National Flood Forecasting System (NFFS).

Since the development of the system for the Environment Agency, Deltares and Tessella have maintained a close long-term partnership, continuing to support and extend Delft-FEWS through a joint team based in the Netherlands.



This has enabled Delft-FEWS to be made available free of charge for other water authorities around the world to customise and integrate into their own forecasting systems. Countries now using the system include the UK, Netherlands, Switzerland, Germany, Italy, Spain, the US, Singapore and Taiwan.

Forecasting models are complicated and computationally intensive; many different environmental factors need to be taken into account. This is why Delft-FEWS is offered as a modular package allowing authorities to plug-in their own models as well as configure and customise to their specific needs. It also means the global community of water management authorities can benefit from each other's developments.

Another benefit is the system handles all routine functions such as fail-over, real-time data import, data handling, dispatching of forecasts, data analysis, data visualisation and data archiving, which allows forecasters and hydrologists to spend more time analysing results, highlighting flood risks and refining the models.

An Ongoing Collaboration

Simone van Schijndel of Deltares, who manages the team for the Delft-FEWS projects and developments, explains, "As well as adding new functions requested by authorities around the globe, we also provide installation, training and customisation advice. Tessella play a vital role in this by augmenting our team. Their knowledge of modelling software, professional development techniques and ICT very much complement our expertise in water technology, hydrology and software development. It is a very good fit."

Tessella's role includes implementing new features, maintaining the core of the application, ensuring the software is database and platform independent, performing installations at client sites worldwide, developing and presenting training courses for

system administrators, and advising on and implementing software engineering good practice.

Simone also finds the calibre of the Tessella consultants very high. "Because of their scientific background, the Tessella consultants understand where we are coming from. They also relish helping us solve the really big and complex challenges that come in from our user base. And we can always rely on their extensive ICT knowledge, including database design and management, and installation, configuration and integration support."

The Future

Deltares will continue to make Delft-FEWS freely available for water management authorities around the world with the valued help of Tessella consultants. Simone continues, "The important issue for us is helping water managers accurately forecast flood risk and protect their local communities. We are also looking to expand the system to model and predict other environmental challenges such as large outbreaks of algae bloom. Tessella's expertise plays a very important role in new development, as well as in helping us maintain our reputation as one of the world's leading applied research institutes in water technology and hydrology."

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