

# Collaborative approach to developing an information management system for water resource models

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**Abstract:** Water resource modelling is an essential tool for sustainable management of natural resources, particularly in the face of increasing population growth and climate variation and change. As the complexity and demands of modelling grow, it is important to have a reliable information management system to support the storage, records, and sharing of model development and application across a variety of users. We undertook a project to develop a new system to meet information management needs.

The previous system involved storing the data on a server, accessing it by email request, and tracking model development and application manually. These practices presented a number of issues, including reduced accessibility, missed opportunities for continuous improvement of models, increased difficulties in delivering efficient and timely modelling services with an agile workforce, and manual qualitative processes for monitoring and evaluation of modelling activities.

We adopted a collaborative approach with DEECA, DEW and eWater working together under the national collaboration framework to develop the new system. We each developed the solution independently to ensure it meets our varied individual needs in consultation with model users. However, we focused on a collaborative approach which leveraged previous investment and that worked towards immediate needs and contributed towards the bigger picture goals.

The system we developed consists of four components, Model Datastore, Model Catalogue, Scenario Datastore, and Scenario Inspector.

- **Model Datastore** is the core tool and uses git with a git service to achieve the core requirements for storage, accessibility, version control, and permissions.
- **Model Catalogue** allows users to interact with data on the Model Datastore. It includes searching and filtering of available models, allowing users to request access to models, and track how models have been used. This functionality provides greater accessibility to the models and helps users to collaborate more effectively.
- **Scenario Datastore** provides storage for model results. A single model can produce many results depending on the configuration and Scenario Datastore provides an appropriate storage mechanism for results, allowing users to access and reuse previous scenarios.
- **Scenario Inspector** is a tool designed to report model results helps users to make informed decisions and improve the impact of modelling activities.

During the project, we encountered a number of challenges, including navigating internal ICT approvals, scaling, and resourcing. Navigating internal ICT approvals is complicated and evolving over time. Simple use cases can quickly and easily be implemented, however scaling needs care. Resourcing is a key issue, and it is difficult to secure the necessary skills for successful implementation. Staff also require time to adapt to the new system, which can slow down the implementation process.

Our collaborative approach allowed us to minimize duplication of effort, and the tools developed meet the immediate needs of all parties whilst remaining flexible as we iterate towards the future end state. The new system provides greater accessibility, more efficient monitoring and evaluation, and opportunities for continuous improvement of the base models. While we encountered challenges, the benefits of the system are significant, and it represents a significant step forward in water resource modelling and information management.

**Keywords:** *Information management, water resource management, collaboration*