

Melbourne's water supply modelling information system: Progress update and next steps

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Abstract: The Melbourne urban water supply model plays a critical role in supporting Melbourne's water managers by providing insights into current performance, future outlooks, operational strategies, and investment needs. As the model becomes increasingly integrated and collaborative, there is a growing demand from non-modellers for improved access to inputs, processes, and outputs.

To address this need, a Modelling Information System (MIS) is being developed. MIS is a web-based platform intended to enhance the accessibility, visualisation, and communication of the urban water model. Its purpose is to bridge the gap between technical modelling outputs and stakeholder planning processes, both within and beyond the organisation. Given the diverse user base, the system is being developed using an agile and adaptive approach, with iterative testing and refinement to ensure usability and relevance.

The MIS development is structured into five progressive stages (Kularathna, et al., 2023):

- Stage 1 – Customisable Model Interface: Providing a user-friendly interface to display modelled information and support ongoing model calibration and verification.
- Stage 2 – Modelling Process Automation Interface: Functionality to run various automated modelling processes using add-on scripts
- Stage 3 –Modelling Input and Output Exploration Interface: Facilitating efficient querying and exploration of the growing repository of modelling inputs and results.
- Stage 4 – Standard Model Run Interface: Enabling internal/external stakeholders to undertake standard model runs
- Stage 5 – Water System Models Linkage: Enabling connections between models across the Victorian Water Grid.

A Proof-of-Concept version of Stage 1 has been completed and is currently undergoing testing through various use cases. This version includes core functionalities such as schematic generation from Source model runs, linking schematics to model outputs, and result analysis based on the schematic. Ongoing tests are helping modellers to identify practical workflows, potential applications, and limitations of the current design. Insights and feedback from this phase will inform the development of Stage 2 and beyond.

Development of the Modelling Information System (MIS) to date has highlighted several key challenges. Integrating MIS with enterprise IT systems and existing modelling tools require careful coordination to ensure compatibility and data integrity. Backend development also involves data storage, managing version control and implementing secure access protocols. Engaging stakeholders throughout the design process has proven essential, with iterative feedback helping to align technical functionality with user needs. These lessons have underscored the value of early collaboration, flexible design, and scalable architecture.

The Modelling Information System has the potential to act as a platform, bridging specialised information from the modelling process to non-technical stakeholders, urban water managers, and policy makers. By adopting an agile approach with multiple development stages, this allows faster development, better feedback loops and engagement. Learnings from the development process will inform future product designs, stakeholder engagement and integration with IT architecture. These will be discussed in more detail in the presentation.

REFERENCES

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