

Building a Data Management System for the Reef 2050 Integrated Monitoring and Reporting Program (RIMReP)

A single system for connecting to Great Barrier Reef data

The challenge

The Reef 2050 Integrated Monitoring and Reporting Program (RIMReP) was established as a vital component of the Reef 2050 Long-term Sustainability Plan (the Reef 2050 Plan). RIMReP coordinates monitoring, modelling and reporting for the Great Barrier Reef (the Reef) and its adjacent catchment to help track the progress towards the Reef 2050 Plan's objectives and drive adaptive management of this World Heritage Area.

The successful delivery of RIMReP requires a fit-for-purpose Data Management System (DMS): a critical infrastructure that underpins the Program to create a better understanding of what's happening on the Great Barrier Reef.



The approach

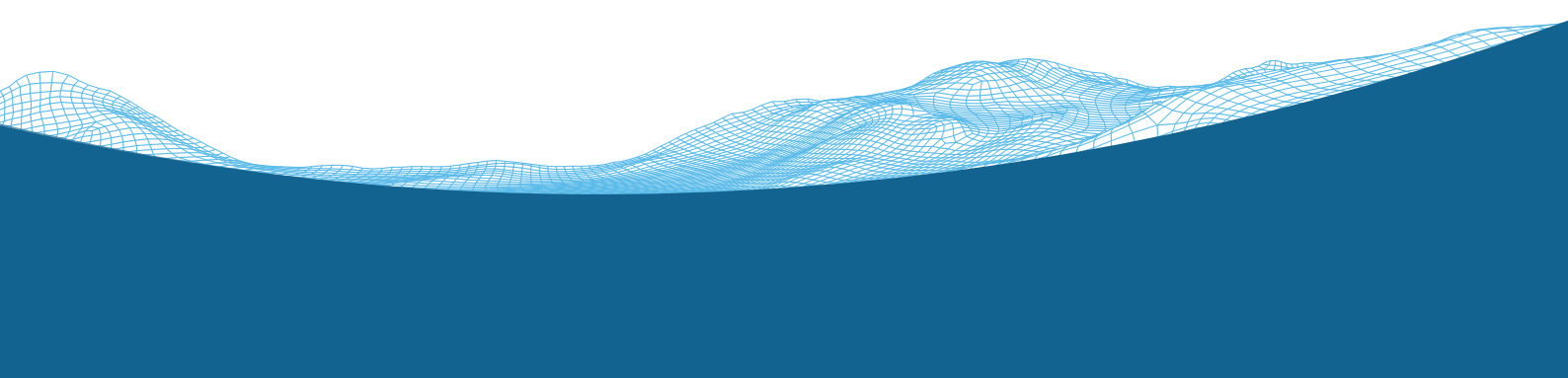
Discovery: The scoping phase for the DMS identified the size, scale and maturity of the data sets critical for inclusion in RIMReP. More than 150 unique datasets from over 70 organisations or programs were identified. Based on existing and anticipated use cases, 55 datasets were identified as a high priority: approximately 50 per cent of these come from providers with good data infrastructure.

Harvesting: Guided by prioritised use cases, the DMS will create automatic data ingestion pipelines for connecting and collecting data from the data provider. Metadata, a detailed dataset description, will also be collected and catalogued using globally accepted standards.

Harmonising: The variables and values from each dataset will be transformed into a “Analysis-Ready, Cloud-Optimised” (ARCO) format. The data will live in the DMS cloud infrastructure, ready to be discovered and extracted in a very efficient way.

Delivering: The user can connect directly to the DMS data repository and request subsets of the variables of interest. The ARCO format allows the processing of the data on the cloud without downloading the full collection into a local computer. Another option is to use a very efficient Application Program Interface (API) to get the data in one of the provided formats. Metadata details can also be requested using a dedicated service. These API services will provide a robust framework for machine-to-machine communications.

By June 2024, the DMS will be a fully operational system capable of harvesting, storing, and delivering most of the datasets related to the Reef, providing the required data for current and future management needs.



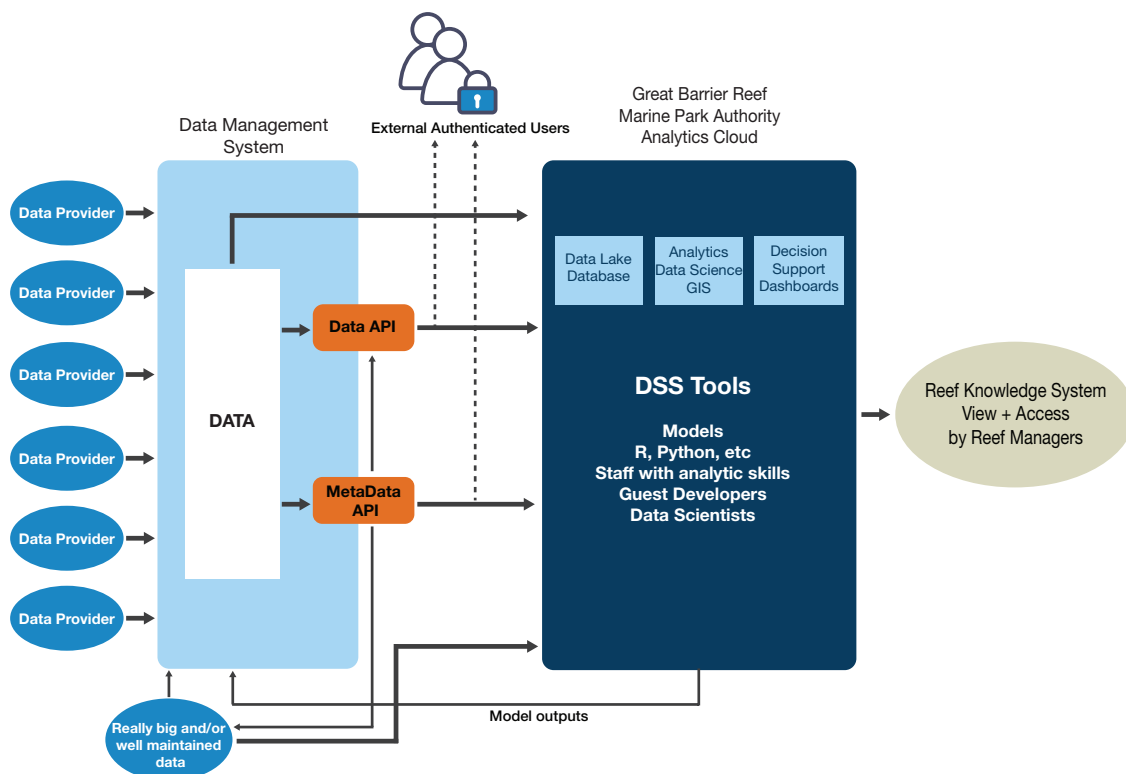
The product

The DMS architecture is conceived as a scalable data-agnostic system based on data and metadata standards and built using open-source software. The system will collect data and metadata from data providers in an automated way, store/cache data collections, and provide the end user with a delivery mechanism through rich Application Programming Interface (API) services.

The DMS will enable the Great Barrier Reef Marine Park Authority (Reef Authority) and its stakeholders to discover most of the data related to the Reef, and will provide different options to extract the required data using simple filters like temporal range or geographical extent. The DMS team will provide extensive documentation, use case examples and training workshops to allow the users to make the most of the system.

And everything will be in one single place.

The DMS is a critical service in support of RIMReP's Reef Knowledge System (www.reefknowledgesystem.gbrmpa.gov.au)



The partners

The RIMReP Data Management System is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation, and the Great Barrier Reef Marine Park Authority with support from the Integrated Marine Observing System.



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