

Data Management Framework Development and Data Catalogue Project

DC007 - Research data management



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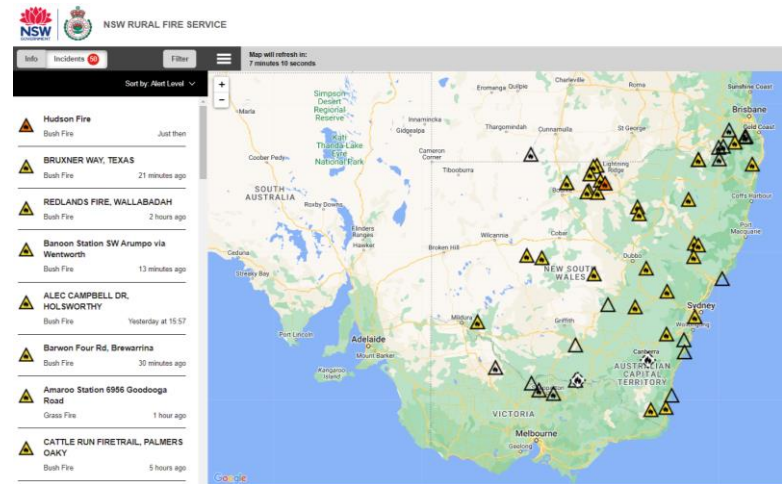


BACKGROUND

- Lack of a national centralised bushfire information database in Australia.
- **Critical Insights Missing:**
 - Understanding trends in bushfire intensity and extent.
 - Assessing the effectiveness of mitigation activities.
- **Importance of Timely Access:** Timely access to relevant data from research is crucial.
- **Supporting Effective Responses:** Enhances ongoing responses to natural disasters.



Photo by Matt Palmer



BACKGROUND & CONTEXT

- **Development of a Data Management Framework and Catalogue:** Focused on FAIR and CARE principles in sharing bushfire research data, expanding to multi-hazard research data long-term.
- **Collaboration Across Streams:** Engagement with ARDC Bushfire Data Commons streams and other NHRA projects such as *T1-E1 Bushfire information database – scoping study*.
- **National Data Asset Creation:** A metadata exchange from bushfire data outputs of the Centre and funded projects.
- **Governance Framework:** Establishing policies, procedures, and systems for data management in research projects.
- **Community Accessibility:** Making the data management framework and catalogue available to the broader research community.

PROJECT OBJECTIVES

Stage 1 - Creating a Research Data Management Framework

- **Objective:** Develop a data management framework based on a data exchange approach, initially focusing on bushfire data, extending to all hazards.
- **Key Elements:**
 - Governance framework for bushfire research projects.
 - Framework based on user requirements, addressing data standards, access methods, licensing, privacy, provenance, and governance arrangements.
 - Framework adoption awareness and seeking buy-in from stakeholders.

Stage 2 - Developing and Implementing a Pilot Data Exchange Catalogue

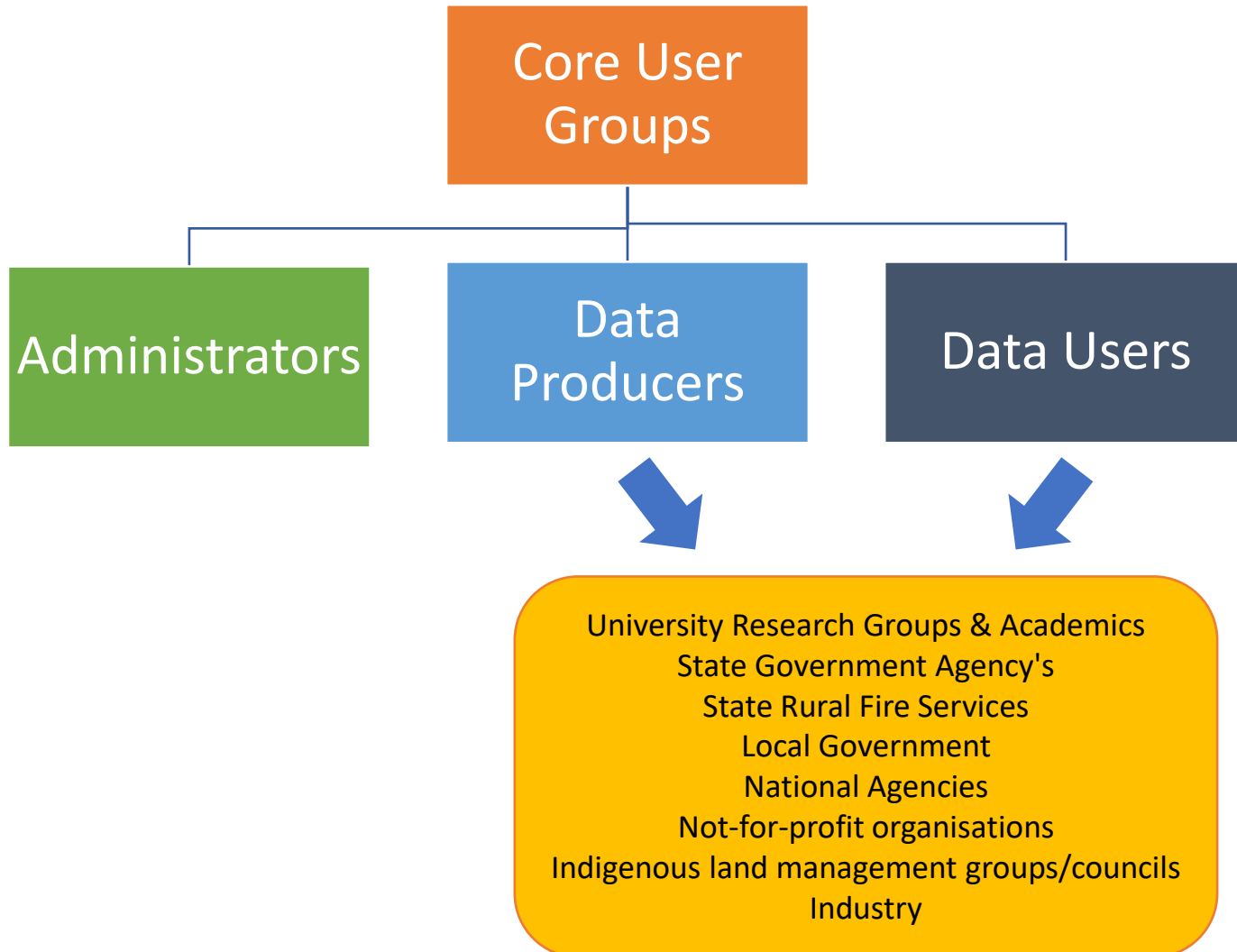
- **Objective:** Apply the data management framework to create a national data asset (metadata exchange) from bushfire project data.
- **Key Activities:**
 - Full technical implementation of the bushfire research metadata exchange on a selected platform.
 - Creation of a registry of NHRA/BNHCRC funded bushfire research data.
 - Development of a plan for scaling, hosting, and maintaining the data exchange.
 - Collaboration with other ARDC work streams.

APPROACH

- **Adhering to FAIR and CARE Principles.**
- **Data Management Framework Development:** Creating a framework that focuses on making datasets findable, interoperable, openly accessible, secure and with clear licenses
- **Iterative Framework and Platform Development:** Employing an iterative design approach, continuously refining the framework and platform to meet evolving needs and best practices in data management.
- **Pilot Outputs and Implementation:** Implementing the bushfire research data catalogue with a focus on scalability, hosting, and extending the data exchange to other hazard types.
- **Stakeholder Collaboration and Feedback Loop:** Engaging in ongoing collaboration and feedback sessions with Centre's data experts, project team, and stakeholders to align with research and operational needs.



Requirements Analysis and Stakeholders



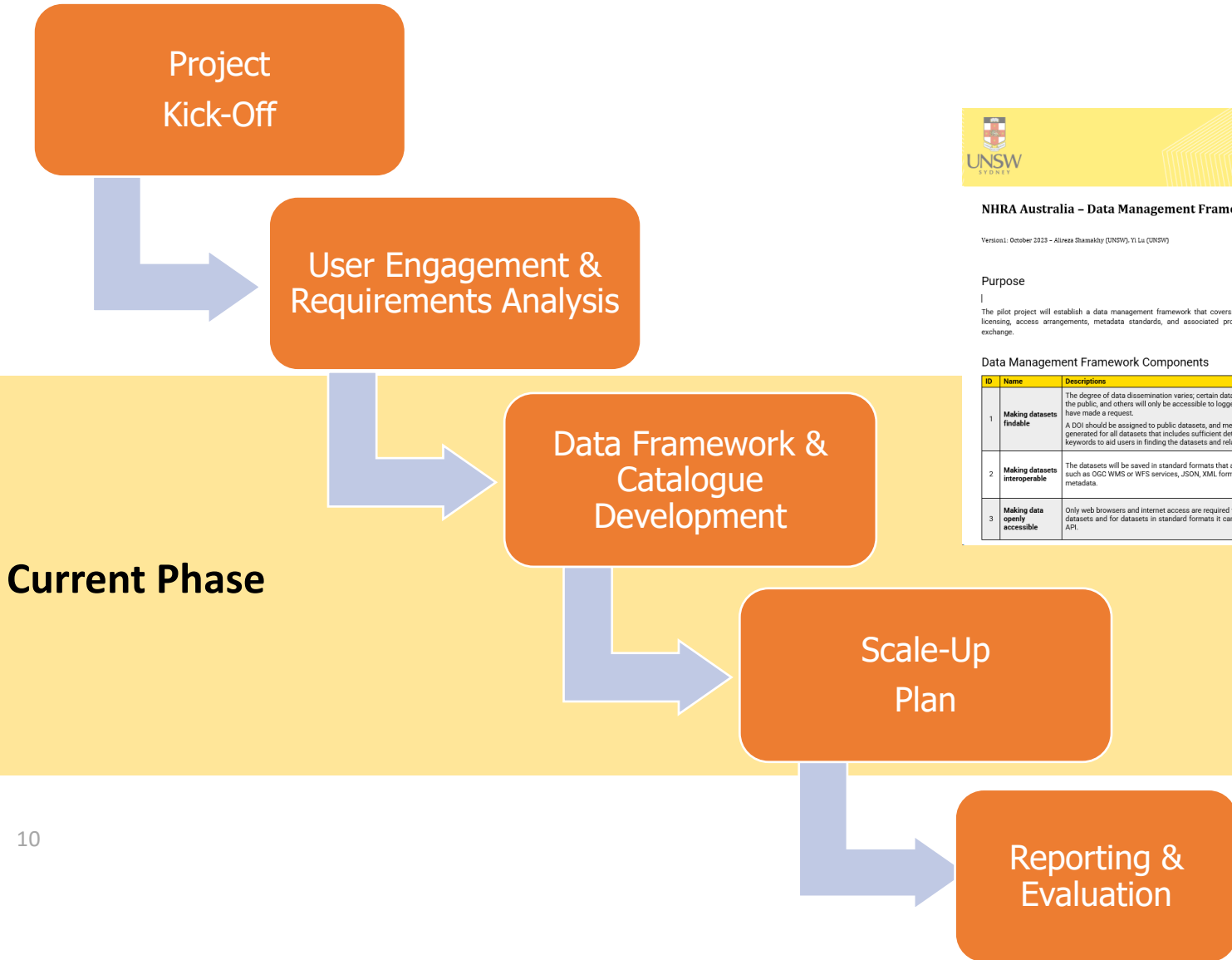
POTENTIAL OUTCOMES

- **Enhanced Data Discovery and Accessibility:**
 - Intuitive interface for researchers, policymakers, and emergency responders.
 - Improves research efficiency and evidence-based decision-making.
- **Improved Data Interoperability and Integration:**
 - Enables interdisciplinary collaborations by discovering and integrating datasets from various sources.
- **Strengthened Collaboration and Knowledge Sharing:**
 - Acts as a platform for collaboration among researchers, institutions, and stakeholders.
 - Facilitates transparency and reproducibility in scientific research.
- **Adherence to Best Practices and Ethical Guidelines**
- **Empowered Decision-Making and Policy Development:**
 - Provides policymakers and emergency responders with valuable insights.
 - Empowers the research community with better access to NHRA and CRC research.
 - Facilitates evidence-based decision-making and policy development.

FUTURE OPPORTUNITES

- **Full implementation of the pilot framework and catalog within NHRA**
- **Expand the framework and data exchange:**
 - Extend to all natural hazard dataset produced by NHRA and the previous Bushfire & Natural Hazards CRC
 - All Australian Natural Hazards data
- **Support existing data catalogues**
 - Work with existing databases to improve the line-of-sight / visibility of natural hazards datasets.

CURRENT STATUS



NHRA Australia – Data Management Framework

Version 1: October 2023 – Aineza Shamakky (UNSW), Yi Lu (UNSW)

Purpose

The pilot project will establish a data management framework that covers data storage, security, licensing, access arrangements, metadata standards, and associated procedures for metadata exchange.

Data Management Framework Components

ID	Name	Descriptions
1	Making datasets findable	The degree of data dissemination varies; certain datasets will be open to the public, and others will only be accessible to logged-in individuals who have made a request. A DOI should be assigned to public datasets, and metadata will be generated for all datasets that includes sufficient details, and the correct keywords to aid users in finding the datasets and related material.
2	Making datasets interoperable	The datasets will be saved in standard formats that are commonly used such as OGC WMS or WFS services, JSON, XML format with associated metadata.
3	Making data openly accessible	Only web browsers and Internet access are required for users to access the datasets and for datasets in standard formats it can be accessed through API.

Thank you

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