

# Creating a Data Management Framework

## Who should read this?

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This guide is for research institutions which are intending to improve their infrastructure to support data management.

## Background

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Good research data management practices ensure that researchers and institutions are able to meet their obligations to funders, improve the efficiency of research, and make data available for sharing, validation and re-use. To support these goals, it is imperative that research data management is done properly from the outset; through the stages of planning, collection, analysis, publication, archiving and later re-use.

Good data management depends on a number of players. Institutions have a role in establishing and promulgating policies and procedures and providing the requisite support infrastructure and services. Researchers have a responsibility to manage their data within that framework and according to the requirements of funders and disciplinary expectations.

Good data management is integral to the development of the Australian Research Data Commons. Research institutions and facilities receiving funding through the ANDS programs have shown a strong interest in improving data management policy and practice. This document is designed to provide a framework to assist.

## Principles

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The Data Management Framework is underpinned by a number of principles:

- Data management is essential to support the evolving global data-intensive research environment
- Data management is an essential part of doing good research and supporting the research community of which each researcher is a part
- Data management will help each researcher in making effective use of their data
- The individual institutional data management framework is in accordance with the Australian Code for the Responsible Conduct of Research and other external legal and regulatory frameworks
- The institution will support all aspects of the data lifecycle, through creation and collection, storage, manipulation, sharing and collaboration, publishing, archiving and re-use
- Effective data management is best achieved through teamwork and collaboration between researchers, research offices, information specialists and technical support staff.

## The Data Management Framework

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The Framework as set out below outlines the basic elements required within an institutional context to support effective data management. The elements are set out in four separate categories:

- Institutional policy and procedures
- IT Infrastructure: the hardware, software and other facilities which underpin data-related activities
- Support services: people and other means of providing advice and support, such as web-pages
- Metadata management: so that data records can be used for both internal and external purposes.

Applying to each of these categories is the expectation that there will be:

- Appropriately defined roles and responsibilities
- Defined and promulgated standards
- Adequate resources – financial, staffing and equipment
- Appropriate skills across all staffing groups

Institutional policy & procedures	IT infrastructure (hardware & software)	Support services (people & advice)	Managing metadata
Appropriate policies* & procedures* in place to cover:	Adequate IT infrastructure* in place to support:	Staff and capabilities to support:	Activities to support:
<ul style="list-style-type: none"> <li>• Research data management</li> <li>• Research data ownership &amp; storage</li> <li>• Access to databases &amp; archives</li> <li>• Retention of materials &amp; research data following a research project</li> <li>• Collaborative research projects with other research organisations</li> <li>• Ethics, Codes, Funding Requirements and relevant Legislative Frameworks</li> <li>• Data sharing &amp; re-use</li> <li>• Secure &amp; safe disposal of research data</li> <li>• Intellectual property, copyright &amp; patents</li> <li>• Records management</li> </ul>	<ul style="list-style-type: none"> <li>• Storage of data &amp; metadata, for both collaboration &amp; archiving</li> <li>• Identity management, authentication, &amp; access</li> <li>• Internal &amp; external network connectivity</li> <li>• Access to discipline specific tools to support analysis</li> <li>• Software development</li> <li>• Visualisation</li> <li>• Collaborative Environments</li> <li>• High Performance Computing</li> </ul>	<ul style="list-style-type: none"> <li>• Training of researchers &amp; support staff</li> <li>• Data management planning, including relevant standards</li> <li>• Discovery and access</li> <li>• Data security mechanisms</li> <li>• Data sharing &amp; re-use</li> <li>• Data curation</li> <li>• Appraisal of collections, &amp; assistance with preservation &amp; sustainability</li> <li>• Awareness, outreach and marketing</li> </ul>	<ul style="list-style-type: none"> <li>• Identification of datasets</li> <li>• Implementation of relevant metadata standards</li> <li>• Creation of metadata records for discipline requirements</li> <li>• Creation of metadata records for preservation requirements</li> <li>• Creation of metadata records for Research Data Australia — Collections, Parties, Activities, Services</li> <li>• Sharing of metadata with Research Data Australia and other portals</li> <li>• Administrative metadata to support recording of ownership, retention period, access rules, etc</li> <li>• Statistical information on publication and use</li> </ul>
Policies and procedures to be: <ul style="list-style-type: none"> <li>• Up to date</li> <li>• Addressing data-related issues</li> <li>• Widely publicised</li> <li>• Include compliance measures</li> </ul>			
* separate policies for all of these may not be required	* not all institutions will require all of these		
These elements apply across all the above categories: <ul style="list-style-type: none"> <li>• Appropriately defined roles and responsibilities, with appropriate legal support and authority</li> <li>• Defined and promulgated standards for institutional use</li> <li>• Adequate ongoing resources – financial, staffing and equipment</li> <li>• Appropriately skilled researchers, research office staff, information specialists and technical support staff</li> </ul>			

