

Research Data Management Framework: Capability Maturity Model

About the Capability Maturity Model

This table is a summary of the [ANDS Data Management Framework Guide](#).

This practical Guide is for research institutions which are intending to assess the capability maturity of their current infrastructure supporting the management of institutional research data assets. A Capability Maturity Model is used as the instrument to support institutions to investigate their research data capability maturity using:

- **5 elements of data management capability:** Policies and procedures; IT infrastructure; support services; managing metadata, managing research data
 - **Checklists**
- **and assessed across 5 levels of maturity:** Initial; Development; Defined; Managed; Optimised

This Guide and table are a basic starting point for institutions who wish to assess their **capability maturity** in terms of research data management.

	Level 1 Initial	Level 2 Development	Level 3 Defined	Level 4 Managed	Level 5 Optimised
	Process is disorganised & ad hoc	Process is under development	Process is standardised, communicated	Process is managed, measured	Focus is on continuous improvement
Institutional policies & procedures	Policies & procedures may be undeveloped, not up to date, and/or inconsistent.	Policies & procedures are developed & harmonised.	Policies & procedures are promulgated & absorbed into behaviours.	Policies & procedures accepted as part of the culture & subject to audit.	Policies & procedures are subject to review & improvement.
IT infrastructure	IT infrastructure provision is patchy, disorganised & poorly publicised.	Funds are invested in technology & skills. Responsibilities are defined. Processes are established, defined & documented.	Management shows active support. Facilities are well-defined & communicated, standardised & integrated.	Funding adapted to need. Management is actively engaged. Documentation kept up to date.	Concerted efforts to maintain, update & publicise infrastructure. Metrics & feedback used to optimise services.
Support services	Training is ad hoc, curation & preservation services are disorganised, data management planning is unsupported & other services inconsistent & poorly publicised	Investment in skills. Services identified & staffed. Responsibilities are defined. Documentation & training developed.	Active participation in training with widespread availability of support services.	Widespread take-up of services. Curation & preservation acknowledged as critical to the institutional mission.	Customer feedback used extensively to update & improve services.
Managing metadata	Metadata management is ad-hoc, chaotic & understood by only a few and without established standards.	Responsibilities are defined & skills developed. Processes are established & documented. Metadata applied to key datasets & shared externally.	Processes are standardised & integrated. Metadata created for new datasets & shared externally, to ensure data is findable and accessible.	Metadata quality metrics are collected. All datasets described in machine-readable format & metadata shared. Metadata aligns with the FAIR data principles.	Continuous improvement applied to processes & capabilities.
Managing Research Data	Data is stored in ad-hoc facilities. Only data custodians know where the data is stored and accessible only to the researcher or small group of researchers, Standard formats are not applied and the potential for reusability is limited	Institutional data storage facilities are being developed. Data standards established	Well defined data storage facilities are established. Data managed using standard open formats widely used. Some connectivity between systems permitting limited reuse and sharing.	Data routinely stored in established repositories in machine-readable formats using open standards in established facilities according to FAIR principles.	Continual improvements to maintain update & publicise infrastructure. Metrics & feedback used to optimise services.