ANDS Guide

Digital Object Identifier (DOI) System for Research Data

Level: Awareness

Last updated: 9 December 2016

Web link: www.ands.org.au/guides/doi

Who should read this?

This guide is intended for researchers and eResearch infrastructure support providers. It explains: 1) Digital Object Identifier system 2) advantages of using a DOI Name to cite and link research data and 3) the ANDS DOI minting service.

This guide should be read in conjunction with the ANDS Guides on:

- Persistent identifiers
- Data citation

What is the DOI System?

The Digital Object Identifier system is used for identifying intellectual property in the digital environment. It is a more rigorous implementation of the Handle System for persistent identifiers. The International DOI Federation (IDF) appoints Registration Agencies who allocate DOI prefixes, register DOI Names, and provide the necessary infrastructure to allow registrants to declare and maintain metadata associated with a DOI.

Major applications of the DOI system currently include provision, linking and tracking of persistent citations in:

- scholarly materials (journal articles, books, etc.) through CrossRef, a consortium of around 3,000 publishers
- scientific data sets and associated outputs (e.g. grey literature, workflows, algorithms, software etc.), through DataCite, a consortium of leading research libraries, technical information providers, and scientific data centres

ANDS is the Australian DOI Service Registration Agency for research datasets and associated outputs. It is a free service to publicly funded Australian institutions and government agencies.

Anatomy of a DOI

A DOI Name (DOI) can be assigned to any object that is a form of intellectual property. DOI should be interpreted as 'digital identifier of an object' rather than 'identifier of a digital object'.

A DOI consists of a unique, case-insensitive, alphanumeric character sequence that is divided into four parts separated by a forward slash:

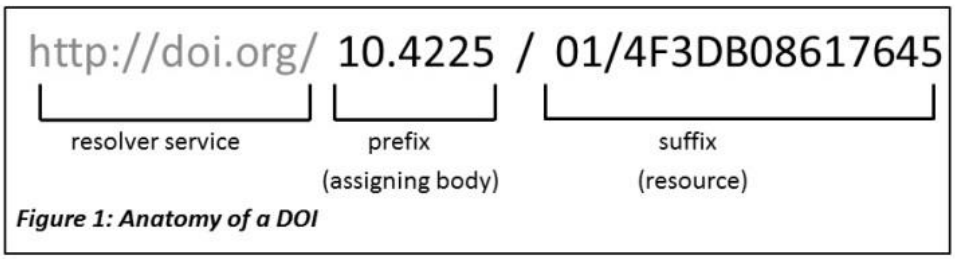


Figure 1: Anatomy of a DOI

Resolver service http://doi.org	This ensures the DOI resolves to an online metadata record about the dataset or collection
Prefix e.g. /10.4225/	Assigned by a DOI Registration Agency (i.e. DataCite for research datasets and collections) and always starts with '10.' This distinguishes it as a DOI as opposed to other types of Handle
Institution Suffix e.g. /01/	ANDS assigns each Australian institution with a unique number which allows that institution to track their downloads and maintain their DOI records e.g. James Cook University is /28/
Unique Suffix e.g. /4F3DB08617645	Assigned by ANDS for Australia and is always unique within a prefix

What are the advantages of DOIs for datasets?

A DOI is a Persistent Identifier (PID) with extra benefits:

- **High level of confidence in the quality and accuracy of DOIs**: supported by the International DOI Federation (IDF) and Registration Agencies infrastructure

  Data citation:
  - DOIs require metadata elements which create an unambiguous data citation. For example:
    Hanigan, Ivan (2012): Monthly drought data for Australia 1890-2008 using the Hutchinson Drought Index. The Australian National University Australian Data Archive. DOI *http://doi.org/10.4225/13/50BBFD7E6727A*

- Metrics: DOIs are used to accurately track data citations by international publishing groups such as Thomson Reuters
- Altmetrics: DOIs are frequently used to track references to datasets in social media

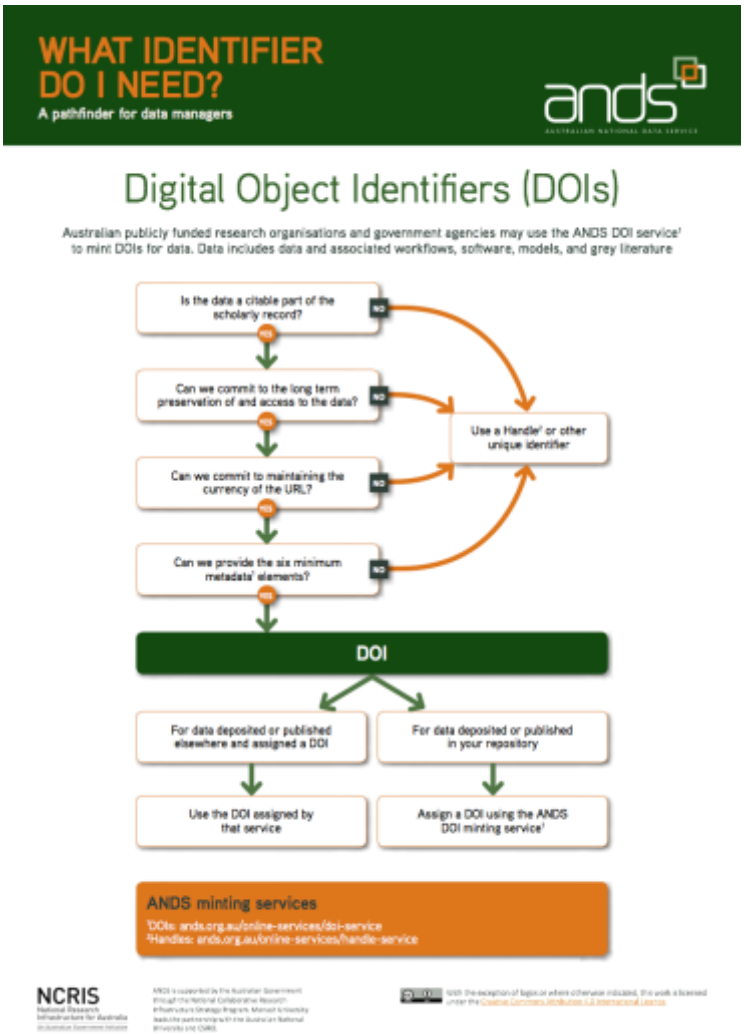
- **Persistence**: a DOI indicates that a dataset will be well managed and accessible for long-term use

- **Accessibility:** resolvable DOIs provide easy online access to research data

- **Published data as a first-class research output**: DOIs for datasets are equivalent with DOIs for other scholarly publications

When should DOIs be applied to datasets?

Printable version here



DOIs and other persistent identifiers

Using a range of persistent identifiers (PIDs) can contextualise the data to related outputs and also maximise their discoverability, reach and connectivity.

- DOIs for data and publications e.g. of DOIs applied to a:
  - Dataset
  - computational model
  - dataset and related publication in the same record
- ORCID for people - combine with Scopus ID and ResearchID to provide a full record of publications (data, articles and other outputs) e.g. Toby Burrows ORCID record pulls together over 130 publications, including datasets.
- PIDs for research projects, activities or grants e.g. ANDS purl IDs for ARC and NHMRC grants e.g. ARC research grant

ANDS DOI Minting service

ANDS is a member of the DataCite consortium, an international group of leading research libraries and technical information providers that aims to make it easier for research datasets to be handled as independent, citable, unique scientific objects. ANDS mints and manages DOIs for datasets and other associated research outputs on behalf of DataCite through the ANDS DOI minting service:

1. A free minting service for research data from Australian publicly funded Research institutions and government agencies
2. Available as a machine to machine or manual minting service
3. Interoperable with international initiatives to link datasets to related publications and track dataset use:
   a. Thomson Reuters-ANDS collaboration
   b. Research Data Alliance-ANDS collaboration
4. Offers extensive support materials and consultation:
   a. General information
   b. Technical documentation
   c. ANDS DOI Frequently Asked Questions
5. Mint DOIs for a wide range of scholarly outputs such as:
   a. datasets and collections
   b. associated workflows
   c. software
   d. models
   e. grey literature

Contact services@ands.org.au for more information

Further Information

ANDS DOI Minting Service:

- General information
- Technical documentation
- ANDS DOI Frequently Asked Questions

International DOI agencies:

- CrossRef-DOI Registration Agency - for scholarly and professional publications
- DataCite - International agency for DOIs for datasets
- DOI Handbook - the primary source of information about the DOI system

Feedback?

We welcome your feedback on this guide. Please email contact@ands.org.au with any comments or questions.

About ANDS

The Australian National Data Service (ANDS) makes Australia's research data assets more valuable for researchers, research institutions and the nation.

ANDS is a partnership led by Monash University in collaboration with the Australian National University (ANU) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). It is funded by the Australian Government through the National Collaborative Research Infrastructure Strategy (NCRIS).