

The Digital Object Identifier System and DOI Names

Who should read this?

This guide is intended for researchers and eResearch infrastructure support providers. It explains the Digital Object Identifier system and the advantages of using a DOI Name to cite and link to research data. This guide should be read in conjunction with the ANDS Guides on persistent identifiers and data citation.

What is the DOI System?

The Digital Object Identifier system is used for identifying intellectual property in the digital environment. It is used principally by publishers, and is an 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.

Major applications of the DOI system currently include:

- persistent citations in scholarly materials (journal articles, books, etc.) through CrossRef, a consortium of around 3,000 publishers;
- scientific data sets, through DataCite, a consortium of leading research libraries, technical information providers, and scientific data centres; and
- European Union official publications, through the EU publications office.

The Copyright Agency Limited (CAL) is currently the only DOI Registration Agency based in Australia, although some Australian publishers (e.g. CSIRO Publishing) use CrossRef to obtain DOIs for their publications.

DOI Names (Digital Object Identifiers)

A DOI Name (DOI) is a specific type of Handle and 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 two parts, a prefix and a suffix, separated by a forward slash. The prefix is assigned by a DOI Registration Agency and always starts with '10.' This distinguishes it as a DOI as opposed to other types of Handle. The suffix is assigned by the publication agent, the agency supplying the information about the object, and must be unique within a prefix.

Example:

10.1594/PANGAEA.484677

This is a complete DOI Name. The prefix 10.1594 consists of the directory code '10' (always 10 for a DOI Name) and the registrant's code '1594' which is allocated by the German National Library of Science and Technology for scientific datasets in its role as a registration agency.

The publication agency that supplied the metadata about this object is the Publishing Network for Geoscientific & Environmental Data, and they provided the suffix 'PANGAEA.484677' as their unique identifier for this dataset.

Citations for this DOI should be in the form

doi:10.1594/PANGAEA.484677

but the hypertext link should be

<http://dx.doi.org/10.1594/PANGAEA.484677>



What is the difference between a DOI Name and other Persistent Identifiers ?

A DOI Name is a Persistent Identifier (PID), but also provides extra benefits. A DOI Name can be used to uniquely identify either digital or non-digital objects, whether or not they have any internet presence.

A DOI Name persistently identifies an object itself through listing it in a DOI Registry, while a PID persistently identifies only an object's location. DOI Names are supported by the International DOI Federation (IDF) and Registration Agencies infrastructure, which provides ongoing DOI services and allows for a high level of confidence in the quality and accuracy of DOI Names.

An object may have multiple DOIs and multiple PIDs assigned to it as it moves through the publishing process. If an object has an internet location, it will have either a URL or other persistent identifier (such as Handle, PURL or ARK) in addition to a DOI. Each DOI and PID will confer a different benefit on the dataset.

What are the advantages of DOI Names for datasets?

The assignment of DOI Names through the international DOI infrastructure has associated costs. Accordingly, DOI Names are unlikely to be issued on an ad hoc or unmanaged basis, but will be assigned by authorised agencies or institutions to datasets that are well described and managed archivally for long-term access.

The assignment of a DOI Name therefore indicates that a dataset will be well managed and accessible for long-term use. It also brands published data as a first-class research output in the publishing world, since datasets will be assigned DOIs regularly as is done for existing scholarly publications.

Using DOIs in this way will establish easier access to research data on the Internet, increase the acceptance of research data as legitimately citable contribution to the scientific record, and support data archiving that will permit results to be verified and re-purposed for future study.

What is ANDS doing?

To promote the citation and re-use of Australian research data, ANDS will provide a DOI Name service for research datasets as a free service to Australian institutions.

ANDS is joining the DataCite consortium, a 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 will run a DOI Local Handle Server, minting and managing DOIs on behalf of DataCite. ANDS will have its own DOI prefix and research institutions, consortia and agencies will be able to obtain DOIs for research datasets from an ANDS machine-based web service. This will be a free service, although the total number that will be minted for any one institution will be capped.

ANDS is also working with both ThomsonReuters and Elsevier to investigate the feasibility of tracking and recording of dataset use through DOIs, and making that information available through *Web of Science* and *Scopus*.

Further Information

ANDS Awareness Level Guide on Data Citation (<http://ands.org.au/guides/data-citation-awareness.html>)

ANDS Awareness Level Guide on Persistent Identifiers (<http://ands.org.au/guides/persistent-identifiers-awareness.html>)

CrossRef—DOI Registration Agency for scholarly and professional publications (<http://www.crossref.org/>)

DataCite—International Initiative to Facilitate Access to Research Data (<http://www.datacite.org/>)

DOI Handbook (<http://www.doi.org/hb.html>)

Frequently Asked Questions about the DOI® System (<http://www.doi.org/faq.html>)

The Handle System—Frequently Asked Questions (<http://www.handle.net/faq.html>)



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