



Tips for Assigning DOIs to Journal Articles: A Guide

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Introduction

In scholarly communication, Digital Object Identifiers (DOIs) are commonly used to identify research outputs such as journal articles, books, book chapters, datasets and reports. A DOI is a unique identifier for a research output that helps ensure it can still be found and cited even if its web address changes.

This guide provides information about DOIs and tips for structuring, registering and assigning DOIs to journal articles with DOI registration agencies [Crossref](#) and [DataCite](#). It is intended for journals already assigning DOIs, as well as those planning to begin doing so, and aims to help them implement DOI registration correctly and avoid common problems, like failing to activate DOIs properly or providing incomplete or poor-quality metadata.

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Definition

A DOI (Digital Object Identifier) is a unique and persistent identifier used to identify objects of any kind – physical, digital or abstract. In scholarly communication, a DOI is most commonly used to identify research outputs such as journal articles, books, book chapters, datasets and reports.

Structure

A DOI consists of:

- A prefix (e.g. 10.37293), assigned by a DOI registration agency (e.g. Crossref or DataCite); it is unique to the organization managing DOI registration (e.g. the publisher); and
- A suffix, unique to the article (e.g. sapientiae112.05); the pattern for constructing suffixes is defined by the organization managing DOI assignment, e.g. the publisher can decide to structure DOIs following one of these models:
10.12345/journal.2026.001 or 10.12345/vol5iss2art3

The prefix and suffix are separated by a forward slash. A complete DOI, including the prefix and the suffix, would look like this: 10.37293/sapientiae112.05. Please note that according to current recommendations, DOIs should always be displayed as full URLs: <https://doi.org/prefix/suffix> (see below [Display DOIs](#)).

Forming DOI suffixes - best practice guides:

- Crossref: [Constructing your DOIs - Crossref](#)
- DataCite: [DOI Basics](#)

How DOIs work

Simply displaying a DOI on a webpage or in a journal article, does not make it valid. DOIs must be activated to be valid. To activate a DOI, the organization assigning DOIs (e.g. a journal publisher) must register the DOI, along with the URL and required metadata, with a DOI registration agency such as Crossref or DataCite.

The registered DOI is displayed as an interactive link on the journal website, in the journal article to which it refers, and in indexing services and search engines. When a DOI is clicked, a service called the resolver checks the DOI registration agency's database, then sends users to the correct landing page where the journal article can be found (a dedicated webpage for a scholarly article that presents its bibliographic metadata, abstract, licensing and access information, and links to available full-text versions and related resources). If the location of the article changes, only the URL in the DOI registration's database record needs to be updated, while the DOI remains the same.

Options for assigning DOIs and associated costs

DOI registration is often managed at the institutional level. In many universities, libraries or research support units handle DOI assignment and metadata registration on behalf of journals. Journals should therefore first check whether such support is available within their institution.

If institutional support is not available, publishing entities can become members of a DOI registration agency, such as Crossref or DataCite, in order to register DOIs directly. In this case, assigning DOIs typically involves fees paid to registration agencies. Assigning DOIs usually requires the publisher to assign staff and time to prepare metadata and ensure accurate registration and maintenance of records.

Crossref charges an annual membership fee and a small charge per registered DOI. Pricing depends on organization type, size and the volume of content being registered. More information can be found here: [Fees - Crossref](#).

DataCite charges an annual fee for participation in the DataCite association and an [additional shared infrastructure fee](#). Per-DOI fees are charged only if an organization or consortium exceeds 100,000 DOIs annually. If your organization is affiliated with a DataCite Consortium member, you will not pay fees directly to DataCite. DOI assignment terms will be set by your consortium. More information can be found here: [Fees - DataCite](#).

Crossref and DataCite members are expected to adhere to a set of obligations:

- Crossref: [Current membership terms](#)
- DataCite: [DataCite DOI Services Terms and Conditions](#)

Crossref Sponsors

DOIs can also be obtained through [Crossref Sponsors](#) - organizations that manage technical integration and DOI registration on behalf of publishers. In this model, publishers do not pay a Crossref membership fee, but instead pay a service fee to the Sponsor (if the Sponsor charges such a fee).

Organizations and programmes offering free DOIs

The following organizations and initiatives offer scholarly publishers access to DOI registration at no cost:

- The Global Equitable Membership (GEM) programme, for publishers in qualifying countries. More information can be found here: [Global Equitable Membership \(GEM\) program - Crossref](#);
- AJOL (African Journals Online), for journals hosted on [AJOL](#). More information can be found here: [Resources for Journals | African Journals Online](#);
- WACREN for journals hosted on [PublishNow](#). More information can be found here: <https://pidslink.wacren.net>. You can also email pidslink@wacren.net.
- National (e.g. [Ethiopian Journals Online](#)) or institutional platforms and initiatives (e.g. a university press or a library).

Content types that should have a DOI

Ideally, DOIs should be assigned to all content types ([original research](#), [review articles](#), [letters to the editor](#), [editorials](#), [retraction notices](#), [supplementary information](#), [review reports if open peer review is used](#), etc.). In practice, many journals assign DOIs only to research articles to reduce costs. If resources are limited, journals can start with a clearly defined set of content types and gradually extend DOI assignment to other types as funding and capacity increase.

How to assign DOIs

Prepare article metadata

- Ensure that article metadata is accurate and complete.
 - Follow best practice defined by DOI registration agencies
Crossref: [Metadata best practices - Crossref](#)
Datacite: [DataCite Metadata Schema Documentation for the Publication and Citation of Research Data and Other Research Outputs](#)
- These resources provide detailed practical advice like:
- Use sentence case for titles;
 - Use **bold**, *italics*, superscript, subscript, SMALL CAPS, and ALL CAPS only when required by established conventions (e.g. species names, chemical elements, acronyms);
 - Use UTF-8 encoding, etc.

DOI registration agencies use metadata schemas that specify which metadata elements are required (mandatory), recommended, or optional.

Required (mandatory) metadata in Crossref:

- Author names
- Article title
- Publication date
- DOI

- Journal title
- ISSN
- Issue (if applicable)
- landing page URL.

Required (mandatory) metadata in DataCite:

- Creator (Author)
- Title
- Publisher
- Publication Year
- and ResourceType.

Required metadata alone is not enough to ensure strong visibility for published content. **Strive to provide metadata that is as complete as possible.** If providing a full set of metadata is not feasible right now, focus in particular on the following recommended metadata elements:

- Authors' ORCID IDs
- Author affiliations
- ROR ID for each affiliation
- Abstract(s)
- Journal volume
- Article number/ID
- Pages
- [Linked references](#)
- Access information
- Data and software citations (to link publications with their supporting research data or software)
- [Relationships](#) (links to preprints, different versions, translations, etc.).

The format in which publishers should prepare metadata depends on the method used to deposit metadata and register DOIs (see more details in the [Deposit metadata](#) section below).

Make sure that the metadata prepared for depositing matches exactly with what is displayed on the article landing page and that DOIs resolve to dedicated article landing pages (not directly to PDFs).

The accuracy of metadata is very important as any inaccuracy can lead to a failed DOI registration.

If DOI registration is performed by a library, AJOL, WACREN or another Crossref Sponsor or a service provider, follow the instructions provided by that organization or the service provider when preparing metadata.

Display and activate DOI links on the website and in articles as soon as the metadata has been deposited and the DOI has been registered.

Deposit metadata and register a DOI

Both Crossref and Datacite offer multiple ways to deposit metadata and register DOIs:

- Automated, via the publishing platform, with the help of plugins (e.g. [OJS DOI plugin](#)), which transmit the metadata entered in the platform to the DOI registration agency.
- Semi-automated: By providing structured metadata in XML, JSON or a similar format:
 - Crossref: [Uploading XML files using our admin tool](#)
 - Crossref: Depositing [XML using HTTPS POST](#)
 - DataCite: [Uploading a metadata file via the DataCite Fabrica DOI Form](#)
 - DataCite: [Using REST API](#).

Before uploading metadata files, check whether they are properly formatted:

- Crossref: [Testing your XML - Crossref](#)
- DataCite: [How can I check my XML metadata validates correctly?](#)
- Manually, by filling out web forms that do not require XML knowledge:
 - Crossref Web Deposit Form: [Web deposit form - Crossref](#)
 - Crossref Metadata Manager: [Metadata Manager - Crossref](#)
 - DataCite Fabrica DOI Form: [Create and Update DOIs with the DOI Form](#)

If DOI registration is performed by a library, AJOL, WACREN or another Crossref Sponsor, or a service provider, this step will be performed by that organization or service provider.

Ensure that DOI links are displayed and activated on the website and in articles as soon as the metadata has been deposited and the DOI has been registered.

Validate DOIs

The easiest way to test whether a DOI and its associated metadata have been registered successfully is to enter the DOI link (e.g. <https://doi.org/10.13003/5jchdy>) into a browser window, and check whether it resolves correctly.

You can also use the search form at <https://www.doi.org/> for all DOIs, [Crossref Metadata](#) or [Simple Text Query](#) for Crossref DOIs, and the search form at [DataCite Commons](#) for DataCite DOIs.

Display DOIs

Only display DOIs on the journal website and in articles after they have been registered and their metadata has been deposited with a DOI registration agency.

Always display DOIs formatted as full URLs <https://doi.org/10.xxxx/xxxx>. Make sure that the string does not contain spaces or invalid characters!

DOIs should be displayed as hyperlinks:

- on article landing pages,
- in all full-text formats,
- in recommended citations (*How to cite* on landing pages, if available),

- in metadata exports and via OAI-PMH,
- on all platforms and repositories where the article is available.

When DOIs appear as **clickable links**, indexing systems and reference crawlers can detect and connect them to relevant publications or other outputs. This enables proper **DOI resolution**, improves **citation linking and discoverability**, and ensures compliance with publishing standards. Without hyperlinks, DOIs remain inactive text that cannot be automatically recognized or accessed.

Guidelines:

- Crossref: [Display guidelines - Crossref](#)
- Datacite: [DataCite DOI Display Guidelines](#)

How to maintain DOIs and update metadata in the DOI registry

Typically, the publisher is responsible for:

- Updating URLs in the DOI registry if the article's URL changes;
- Correcting metadata errors (e.g. if there are errors in author names or titles);
- Updating metadata (e.g. if an article has been assigned the issue or pages, or there is need to establish a link to related research outputs, such as the underlying research data, that have been made available after the article was published);
- Enriching metadata (e.g. when only the required elements were deposited at DOI registration and the publisher later adds additional metadata such as authors' ORCID, funding information, or linked references).

If DOI registration is performed by a library, AJOL, Crossref Sponsor or a service provider, the publisher should request these organizations or services providers to correct, update and enrich metadata.

Review your metadata

Inspect metadata before making corrections, updates or retrospective metadata enrichment. DOI registration agencies provide tools that allow publishers to review the metadata deposited for their articles:

- **Crossref:**
 - Check individual DOIs using the search form at <https://search.crossref.org/>
 - Query large sets of DOIs using the the [REST API](#) (e.g. by prefix, member ID, or journal)
 - Use [Participation Reports](#) to monitor the completeness and quality of metadata.
- **DataCite**
 - The [DataCite REST API](#) allows bulk retrieval by prefix or client

- Metadata can be exported from the DataCite Fabrica interface.
- Use the [Metadata Dashboard](#) to monitor the completeness and quality of metadata.

Update your metadata

There are several ways to update metadata, and the choice depends on the scale of the changes and the number of records affected.

- Crossref: [Updating your metadata - Crossref](#)
- DataCite:
 - Via DOI Form in DataCite Fabrica: [Create and Update DOIs with the DOI Form](#)
 - Via file upload in DataCite Fabrica: [Create and Update DOIs with File Upload](#)
 - Via the DataCite REST API: [Updating DOIs with the REST API](#)

How to manage different versions

A new DOI is typically assigned when a version represents a distinct, citable publication relative to the first version. For example, a preprint published on a preprint server or in a repository usually gets its own DOI, and the later published version is assigned a separate DOI by a publisher.

A new DOI is also assigned for major post-publication changes, such as corrections or retractions that are issued as separate documents.

Different versions should be linked through metadata relationships.

Guidelines:

- Crossref: [Version control, corrections, and retractions](#)
- Datacite: [Versioning](#)

What happens when content is no longer available

DOIs must never be deleted or reused. Even if the content disappears (e.g. when content is legally removed, a journal ceases publication and content is no longer hosted, or a publisher cannot maintain the original landing page), the DOI continues to resolve. Instead of linking to the original content, it resolves to a tombstone page, i.e. a landing page that typically states that the content is no longer accessible and may include basic metadata such as the title, authors, and publisher.

Guidelines:

- Crossref: [Defunct DOI](#)
- Datacite: [Best Practices for Tombstone Pages](#)

Workflows

DOI assignment without an intermediary

This workflow applies when a publisher is a member of a DOI registration agency, like Crossref or DataCite, and assigns DOIs independently, without an intermediary. In this case, the publisher is responsible for ensuring proper technical implementation of DOI registration, including metadata preparation, the deposit of complete and accurate metadata in accordance with the registration agency's schema and the ongoing maintenance of records (e.g. updates and corrections to metadata and landing pages).

- 01** Become a member of a DOI registration agency (e.g. Crossref, Datacite) to obtain a DOI prefix.
- 02** Define DOI suffix patterns.
- 03** Choose a deposit method and prepare article metadata accordingly.
- 04** Register DOIs and deposit metadata with the DOI registration agency.
- 05** Check whether DOIs resolve correctly and that metadata has been properly deposited.
- 06** Make sure that DOIs are properly displayed throughout your publishing platform and that they resolve properly.
- 07** Maintain DOI records by updating metadata, correcting errors, and enriching entries in the registration agency's registry as needed.

DOI Assignment with institutional support

This workflow applies when the institution that publishes the journal, or its parent organization (e.g. a university), is already a member of a DOI registration agency (e.g. Crossref or DataCite) and provides DOI assignment and metadata registration support to journals affiliated with the institution. In this case, the journal will need to work closely with the team responsible for DOI registration. The specific procedures and division of responsibilities may differ from one institution to another.

01

Contact the team responsible for DOI registration (e.g. the publishing unit or the library) at your institution.

02

Define a DOI suffix pattern in collaboration with the team responsible DOI registration at your institution.

03

Prepare metadata according to the guidelines provided by the team responsible for DOI registration at your institution.

04

Provide the metadata to the the team responsible DOI registration at your institution.

05

After receiving information that DOI registration has been completed, make sure that DOIs are properly displayed and they are resolving throughout your publishing platform.

06

Contact the team responsible for DOI registration at your institution when metadata needs to be corrected or updated.

AJOL DOI assignment workflow

This workflow applies only to journals hosted on the AJOL (African Journals Online) platform.

01

Journal sends AJOL the issue table of contents before publication.

02

AJOL assigns hyperlinked DOIs (e.g. <https://doi.org/10.xxxx/xxxx>) to each article on the issue table of contents and sends it back to the journal.

03

The journal copies the DOIs from the table of contents and adds them to article landing pages, in all full-text formats (e.g. PDF, XML) and the table of contents on the journal website.

04

The issue is then published.

- a. If the journal uploads and publishes their own content, a published status email is sent to AJOL. AJOL then registers the issue's DOIs with CrossRef.
- b. If AJOL uploads and publishes for the journal, AJOL registers the issue's DOIs with CrossRef after publication.

05

AJOL checks whether DOIs are resolving correctly and lets the journal know that DOIs have been resolved.

The journal is responsible for final checks to see whether DOIs are resolving properly and to let AJOL know if they experience any problems.

Assigning DOIs via other Crossref Sponsors or a DataCite consortium member generally follows a similar workflow, but specific steps, tools and deposit procedures may differ. Publishers should follow the instructions provided by the Sponsor or consortium.

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