

Written by:



Samples 101

Getting started with managing your samples using IGSN IDs and RSpace

This guide aims to provide **comprehensive, step-by-step advice** to enable institutions to set up and manage IGSN IDs for their material samples. We have compiled summaries and checklists for core concepts, commonly asked questions, and points of confusion, based on our experiences with various user groups.

We hope this guidance is helpful, and let us know if we've missed anything that we should include here!

Core concepts

International Generic Sample Numbers (IGSN IDs)



IGSN IDs are a persistent identifier (PID) for material samples. Functionally, an IGSN ID is a **Digital Object Identifier** (DOI) created within DataCite services—via the [Fabrica web interface](#), the [DataCite REST Application Programming Interface \(API\)](#) or a [DataCite Registered Service Provider](#)—such that its metadata is indexed into DataCite’s openly available and searchable directory of DOIs.

IGSN IDs can be registered for **all sample types from all disciplines**, including individual samples, sample aggregations, sample collection sites, and ephemeral samples. They cannot be registered for sample images, analytical sample data, or instruments used for sample measurements.

IGSN IDs provide material samples with a digital presence, and in doing so, enable them to be **connected with related entities in the PID graph** (e.g., datasets and publications) for the purposes of discovery and credit, as well as parent and child samples to **capture hierarchical relationships** among them. They **support established workflows**, as well as **enhance sample collection and process management**.

IGSN ID Format

https://doi.org / 10.21384 / AU1234

Proxy Prefix Suffix

An IGSN ID name is made up of a prefix beginning with 10. and a suffix, separated by a forward slash. The **prefix** ensures that the IGSN ID is globally unique. The **suffix** can be customized, and therefore may incorporate any local identifiers already employed by your institution.

Metadata

IGSN IDs are encoded in the [DataCite Metadata Schema](#). Therefore, in addition to institutional / community / disciplinary metadata that richly describes samples, the DataCite Schema forms a shared set of **common, core IGSN ID metadata properties** for all samples in a standardized format (e.g., author, collection date, geolocation). This enhances sample discoverability when querying and surfacing samples across institutions through [DataCite Commons](#) or the DataCite [REST API](#), contributing to research that follows the [FAIR](#) (Findable, Accessible, Interoperable, Reusable) Principles.

IGSN IDs are differentiated from DOIs for physical objects in DataCite services through the creation of [IGSN ID Catalog Repositories](#)—IGSN IDs must be registered in an IGSN ID Catalog Repository and an IGSN ID Catalog Repositories must be used exclusively to register IGSN IDs.

Landing Pages

IGSN ID names follow the same 'proxy/prefix/suffix' URL format as DOIs. Likewise, an IGSN ID resolves to a **landing page** when accessed that typically contains both IGSN ID metadata for the material sample and domain-specific metadata that enables its reuse. In particular, an IGSN ID landing page is fully customisable and should include as much descriptive information as possible to find and distinguish the sample, non-IGSN ID metadata relevant to the sample, as well as visualizations, branding, and other elements to increase its discovery. Landing pages may be generated and managed either by the institution directly, or via a [DataCite Registered Service Provider](#).

IGSN–DataCite Partnership

A strategic partnership between DataCite and IGSN e.V. was formalized in October 2021. Under the partnership, DataCite is providing the IGSN ID registration services and is supporting the ongoing sustainability of the IGSN ID infrastructure provider for IGSN IDs, while IGSN e.V. is implementing and promoting standard methods within samples communities for identifying, citing, and locating material samples with confidence.

IGSN e.V. and DataCite work together with disciplinary Communities of Practice worldwide to develop best practice guidance for incorporating domain-specific metadata within the DataCite Metadata Schema and in web descriptions.

RSpace & Sample Management

RSpace is an open-source platform that is made up of a sample management system, an electronic lab notebook (ELN), and an ecosystem of integrations with existing research tooling, all focused on FAIR data management. RSpace Inventory provides the following features that aid in sample management:

- Creation of samples based on customisable sample templates, with support for subsampling
- List, grid, and image-based containers that can be nested hierarchically, to fully mirror an institutional inventory setup
- Close integration between the ELN and Inventory systems, such as the ability to decrement sample quantities from within an experimental write-up
- Tree, card, list view of items, as well as advanced search and filtering options
- User benches, lab groups, item visibility options
- Support for barcoding, as well as internal RSpace Global IDs
- Powerful API, with flexible import and export

A full list of features can be found on the RSpace website and in the Inventory documentation.

RSpace & IGSN IDs

To facilitate sample management and the use of IGSN IDs in an institutional setting, **RSpace integrates with DataCite as a Registered Service Provider**, and is a member of IGSN e.V. RSpace is able to interact with your DataCite account on your behalf, enabling the creation, publishing, and management of IGSN ID metadata records right within your sample management system. **Currently, RSpace is the only DataCite Registered Service Provider to support IGSN ID registration capabilities.**

The following features are supported directly within RSpace:

- Create, publish, update, or retract an IGSN ID, including deletion of a draft IGSN ID.
- Auto-population of mandatory fields
- Add recommended fields (subject, description, date, alternate identifier, geolocation)
- Generate, preview, and publish a persistent landing page that showcases both IGSN ID metadata fields and fully customisable domain-specific fields, based on the sample template used in RSpace. **The institution does not need to implement its own landing page generation mechanism**
- Include the ROR ID associated with the RSpace server in the IGSN ID metadata

See this [comprehensive overview](#) of the integration for more details.

Note that DataCite DOIs have three states: Draft, Registered, and Findable. RSpace create, retract, and publish actions correspond to these states, respectively. See [DataCite Support](#) for more information on DOI states.

Sample management & IGSN ID checklist

Step 1: DataCite

- ☐ **Join DataCite.** If you are not already, become a Direct Member of DataCite or join one of its Consortia. Your institution does **not** need to become a DataCite Registered Service Provider, as RSpace fulfills this role.
- ☐ **Set up an IGSN ID Catalog Repository.** Note that IGSN IDs require a separate DataCite Repository, so you cannot use an existing DataCite Repository meant for DOIs.
- ☐ **(optional) Request credentials for the DataCite test environment.** DataCite maintains test instances of its services. By obtaining a DataCite test account, you will be able to link with RSpace and experiment with workflows in a safe sandbox environment, without creating real IGSN IDs.

Step 2: RSpace

- ☐ **Set up an RSpace server with RSpace Solutions.** Designed to support implementation, adoption, and maintenance of the open-source RSpace system, RSpace servers are available for teams and institutions.
- ☐ **Set up the IGSN ID integration within RSpace.** Follow the configuration guide to enable the functionality as an RSpace System Administrator. You will need your DataCite Repository Account ID, Password, and Prefix.
- ☐ **Configure your institutional ROR ID in RSpace.** A ROR ID connects research organizations with their researchers and outputs. Adding your ROR ID to RSpace will automatically populate the IGSN ID Creator Affiliation property with your institutional information when publishing the metadata.

Step 3: Preparation

- ☐ **Review the RSpace IGSN ID functionality.** Ensure you can perform all actions as listed in the documentation. You should understand the crucial differences and relationships between:
 - The DataCite Metadata Schema, and the custom sample template schemas you can create in RSpace.
 - Draft, Registered, and Findable states for IGSN IDs, as well as how public the metadata is for each of these states.
 - The IGSN ID, which resolves to the RSpace landing page URL. Citations should always reference the IGSN ID, rather than the landing page URL directly.
- ☐ **Review the recommendations for IGSN ID metadata.** Ensure agreement between RDM staff and researchers on how to maximize its richness/quality, while also respecting the need to protect embargoed and sensitive information.
- ☐ **Join IGSN e.V.** IGSN e.V. is a member organization with expertise on material sample metadata and workflow best practices. Connecting with IGSN e.V. enables your institution to benefit directly from its collective knowledge and experience. IGSN e.V. can also put you in contact with, or work with you to create, a formal Community of Practice to discuss and reach consensus on standardized best practices for your domain.
- ☐ **Set up sample templates suited for your work.** Templates enable custom, domain-specific metadata capture, and are separate from the DataCite Metadata Schema. We recommend using community-approved schemas (Bioschemas, Darwin Core). You might also find the default templates a good starting point for building your own. Questions to ask when creating your templates include:
 - What metadata do you want to capture for each sample type you work with?
 - What template fields should be mandatory to complete as acceptable minimum metadata?
 - What is the field type best suited for each metadata field? For example, do you want researchers to pick a unique value from a defined list (radio field), or multiple values (choice field)? Is it a freeform number or plain text field?
 - What are the boundaries and options for each field?
 - Can a default value be specified to facilitate data entry?
- ☐ **Import existing samples into RSpace.** RSpace supports import of samples, subsamples, and containers as CSV files directly into the system, with automatic detection of field types and sample template generation.

Step 4: Adoption

- ☐ **Provide guidance on how to use IGSN IDs at your institution.** This could consist of references to existing documentation (such as this guide!), complemented with recommendations specific to your workflows.
- ☐ **Assign a point of contact for IGSN ID technical and workflow-related questions.** Ensure that everyone in your institution knows who can support them with IGSN ID adoption. This person should also act as a direct liaison with DataCite and RSpace.
- ☐ **Use your IGSN IDs!** In particular, reference your material samples in associated research outputs such as datasets and scholarly literature by adding their (hyperlinked) IGSN IDs. Request others do the same to ensure you receive credit.

Step 5: Maintenance

- ☐ **Review published IGSN IDs and landing pages in DataCite Fabrica.**
 - ☐ Ensure your IGSN ID metadata is up-to-date and as complete as possible, especially for complex information that may be difficult to add through the RSpace integration. Adjust procedures based on noticed gaps. You may need to consider when it is appropriate to create a new IGSN ID, as opposed to updating an existing ID.
 - ☐ Identify if the RSpace sample template fields require updating based on their existing use and feedback.
- ☐ **Update existing samples to the latest template version.** If wanted, updates to an RSpace sample template can also be reflected in previously created samples.

Finally, do not be discouraged if your processes for adopting IGSN IDs need some adjustment! Owing to the domain- and institution-specific nature of sample workflows, finding the correct workflow for your institution necessitates collaboration among all of your internal stakeholders and will likely require fine tuning.

Resources

DataCite

[Membership](#)

[Support Site](#)

[Fabrica Guide](#)

[Testing Guide](#)

[Metadata Schema](#)

[IGSN ID Support Pages](#)

RSpace

[Solutions](#)

[Support](#)

[IGSN ID Configuration](#)

[IGSN ID Guide](#)

[Sample Templates Guide](#)

IGSN e.V.

[Website](#)

[Communities of Practice](#)

Contact us

Many questions around implementing IGSN IDs and sample management solutions are unfortunately best answered with “it depends”, based on your particular use case, domain, and institutional workflows. While there are no one-size-fits-all answers, we can provide you with pointers such that you can make informed decisions on your IGSN ID adoption process. We are eager to help however we can, so please get in touch with us if you have any feedback or technical questions.

DataCite: support@datacite.org

RSpace: support@researchspace.com

IGSN e.V.: info@igsn.org