IGSN

… more than a label on a box.

Jens Klump | President IGSN e.V.

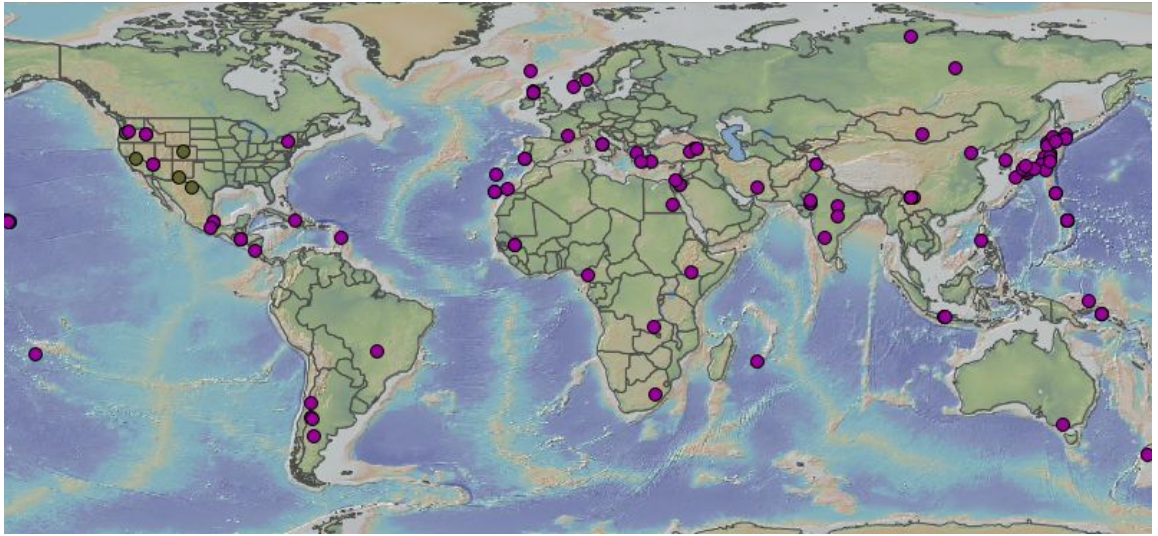
DataCite Community Meeting 2023 | 12 October 2023

What is an IGSN?

- IGSN is a persistent identifier for tracking samples across institutional and system boundaries, and unambiguously link them with data and literature.
- IGSN provides a PID system for physical samples through a globally unique resolvable identifier that is compatible with other PID systems.
- IGSN PIDs are already used by major research centres, universities, and government geological surveys, and is endorsed by scientific publishers.
- IGSN PIDs are now available through DataCite to all DataCite members. One service - One subscription.

Original use case: Unique identification

PetDB Identifier:	ARGAMPH-003
IGSN:	N/A
Other Names:	AMPH D-3(SUN, 1980) D3(ENGEL, 1964) PD3(TATSUMOTO, 1965) PD3(TATSUMOTO, 1966) AMPH-D3(MACDOUGALL, 1986) AMPH D-3(SCHILLING, 1975) S-10(SUBBARAO, 1972) PV D-3(ENGEL, 1965) AMPH-3D(PINEAU, 1983) AMPH 3-PD3(HART, 1971) PD-3(HEDGE, 1970) PD-3(MUEHLENBACH, 1972) AMPH3D(PINEAU, 1976) D-3(SCHILLING, 1971) D-3(SCHEIDEGGER, 1981)



Are these all the same?

All these samples are called ‘M1’.

An early example of an IGSN

Sample information

Identification:

PetDB Identifier:	ARGAMPH-003
IGSN:	N/A
Other Names:	AMPH D-3(SUN, 1980) D3(ENGEL, 1964) PD3(TATSUMOTO, 1965) PD3(TATSUMOTO, 1966) AMPH-D3(MACDOUGALL, 1986) AMPH D-3(SCHILLING, 1975) S-10(SUBBARAO, 1972) PV D-3(ENGEL, 1965) AMPH-3D(PINEAU, 1983) AMPH 3-PD3(HART, 1971) PD-3(HEDGE, 1970) PD-3(MUEHLENBACH, 1972) AMPH3D(PINEAU, 1976) D-3(SCHILLING, 1971) D-3(SCHEIDEGGER, 1981)

Sample Description:

Rock type:	igneous:volcanic:mafic
Classification:	BASALT
Description:	Not Available
Alteration:	FRESH
Age:	PLEISTOCENE
Archived at:	Not Available

Sampling Information

Cruise:	AMPHITRITE
Date:	Not Available
Chief Scientist:	Not Available
Technique:	Dredge
Station:	ARGAMPH-003

Location:

Latitude:	12.867°S
Longitude:	110.95°W
Elevation:	-2952
Tectonic setting:	SPREADING_CENTER
Location:	SPREADING_CENTER:EAST PACIFIC RISE
Location Comment:	Not Available

IGSN: SIO000003

IGSN:	SIO000003
Sample Name:	AMPH01AR-003D
Other Name(s):	
Sample Type:	Dredge
Parent IGSN:	Not Provided

Description	
Field Name:	Not Provided
Description:	volcanic igneous rock
Age (min):	Not Provided
Age (max):	Not Provided
Collection Method:	Dredging
Collection Method Description:	Not Provided
Size:	Not Provided
Geological Age:	Not Provided
Geological Unit:	Not Provided
Comment:	Not Provided
Purpose:	Not Provided

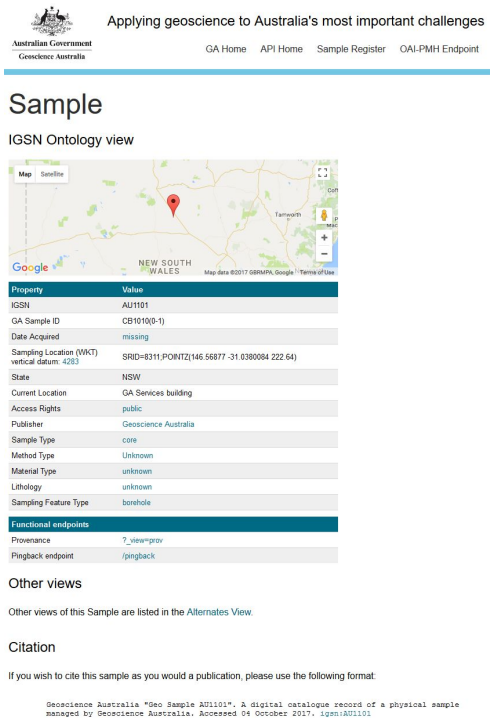
Geolocation	
Latitude Start (WGS84):	-12.867
Latitude End:	Not Provided
Longitude Start (WGS84):	-110.95
Longitude End:	-110.95
Northing (m) (UTM NAD83):	Not Provided
Easting (m) (UTM NAD83):	Not Provided
Zone:	Not Provided
Vertical Datum:	Not Provided
Elevation Start:	-2952 meters
Elevation End:	-2952 meters
Nav Type:	Not Provided
Physiographic Feature:	Not Provided

From local to global uniqueness

Museums and other collections have existing identification systems for their samples; there is no need to reinvent the wheel.

However, more often than not, the local IDs are not globally unique, not actionable, and cannot be linked to the scholarly knowledge graph.

Integrating IGSN into existing systems



Australian Government
Geoscience Australia

Applying geoscience to Australia's most important challenges

GA Home | API Home | Sample Register | OAI-PMH Endpoint

Sample

IGSN Ontology view

Property	Value
IGSN	AU1101
GA Sample ID	CB1010(0-1)
Date Acquired	missing
Sampling Location (WKT) vertical datum: 4283	SRID=8311;POINTZ(146.56877 -31.0380084 222.64)
State	NSW
Current Location	GA Services building
Access Rights	public
Publisher	Geoscience Australia
Sample Type	core
Method Type	Unknown
Material Type	unknown
Lithology	unknown
Sampling Feature Type	borehole
Functional endpoints	
Provenance	?_view=prov
Pingback endpoint	/pingback

Other views

Other views of this Sample are listed in the Alternates View.

Citation

If you wish to cite this sample as you would a publication, please use the following format:

Geoscience Australia "Geo Sample AU1101". A digital catalogue record of a physical sample managed by Geoscience Australia. Accessed 04 October 2017. igsn:AU1101

Geoscience Australia assigned IGSN IDs to 5.5 million samples in their collection by appending their existing accession numbers to a prefix.

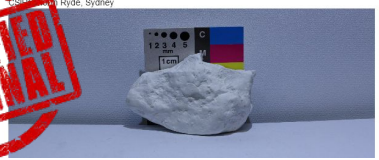
An IGSN is not just a label; it is an anchor of the scholarly knowledge graph in reality.

Linking Samples - Data - Literature

CSIRO Mineral Spectral Libraries | Content | Contact

Sample Details

Identifier	NR-KAO-01
Igsn	http://hdl.handle.net/10273/CSMS66
Source_Identifier	NR-KAO-01
Source_Second_Ide...	
Dimensions	6 x 4 x 2 cm
Visual_Description	white soft aggre
Sample_Type	rock sampl
Specimen_Type	
Material_Type	http://vo mineral
Purity	Pure (vi
CurrentCurator	CSIRO
Current_Location_Of...	ARRC, Pe
Locality	unknown
CreatedBy	peterwarren
Created	23/12/2015
ModifiedBy	PeterWarren
Modified	13/09/2017
Mineral Name	Kaolinite
Organisation_Name	CSIRO Ryde, Sydney
Photo	



Linked

CSIRO Data Access Portal

Search | Browse

Collection

MIR spectral library

Description | Files 8 | Image Gallery 0 | Services 0

About this collection

LeGras, Monica , Laukamp, Carsten , Pejcic, Bobby , Shelton, Tina , Lau, Ian , Stromberg, Jessica

Collection description

flectance spectra collected of rocks and soils in the mid infrared wavelength range (2500 to 6000 nm; MIR) of the electromagnetic spectrum ntain fingerprints of a wide range of rock forming and alteration minerals. The MIR is complementary to the visible-near infrared (VNIR; 380 to 00 nm), shortwave infrared (SWIR; 1300 to 2500 nm), and thermal infrared (TIR; 6000 to 15000 nm) wavelength ranges. However, due to chnological challenges with regards to proximal and remote hyperspectral sensing instruments, the MIR has been underutilised with regards applications in mineral exploration and mining.

ith the advent of readily commercially available, hyperspectral handheld and drill core sensing instruments, such as portable Fourier transform frared (pFTIR) spectrometers and the newly developed HyLogger4TM (Corescan Pty Ltd.), reflectance spectra of this relatively unexplored avelength range become accessible to the mineral resources sector.

umerous methods exist for inferring mineralogy from hyperspectral reflectance spectra collected from, for example, drill core or field samples, nging from automated semi-automated unmixing algorithms that compare the collected reflectance spectra with a spectral referen rary (e.g. https://mines allibraries.csiro.au/) to scripts targeting s roups and Gaussian deconvolution.

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...ectra aims to help improve the und...ctral signatures of rock forming and ...

...testing of methods for infer...ineral abundance, mineral co...

...om the MIR wavelength ...flectance spectra feature a...

...easured from various ...llected from a wide ran...

I20-06-30

...ccess

...e metadata and files (if any) are available to the public.

Data

Published
19 Feb 202

Contact
Monica.Le

Licence
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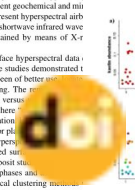
Cite as

Linked



Earth Syst. Sci. Data, 13, 1371–1383, 2021
https://doi.org/10.5194/essd-13-1371-2021
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Earth System Science Data

The Rocklea Dome 3D Mineral Mapping Test Data Set

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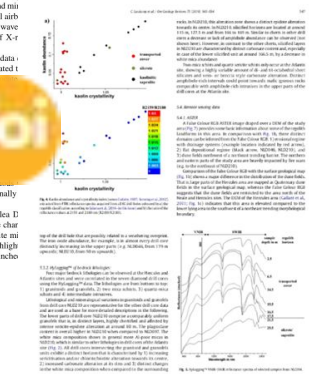
[2]MineSense Technologies, Vancouver, Canada
[3]CSDMM Pty Ltd, Perth, Australia
Correspondence: Carsten Laukamp (carsten.laukamp@csiro.au)

Received: 9 November 2020 – Discussion started: 25 November 2020
Revised: 25 January 2021 – Accepted: 2 February 2021 – Published: 30 March 2021

Abstract. The integration of surface and subsurface geoscience data is critical for efficient and effective mineral exploration and mining. Publicly accessible data sets to evaluate the various geoscience analytical tools and their effectiveness for characterisation of mineral assemblages and lithologies or discrimination of ore from waste are however scarce. The open-access Rocklea Dome 3D Mineral Mapping Test Data Set (Laukamp, 2020; https://doi.org/10.25919/5ed83bf55be6a) provides an opportunit data, validated and calibrated by independent geochemical and mi iron deposits (CIDs) through cover. We present hyperspectral airb collected in the visible–near-infrared and shortwave infrared wave as well as whole-rock geochemistry obtained by means of X-r measurements of drill core samples.

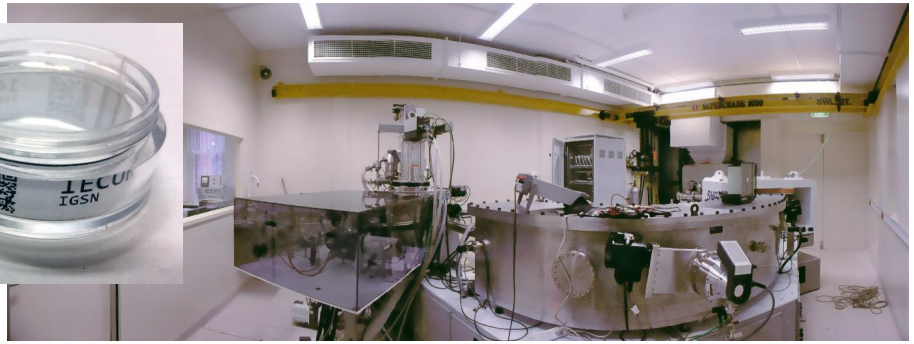
The integration of surface with subsurface hyperspectral data Rocklea Dome 3D Mineral Mapping case studies demonstrated t sunk int ground and could have been of better had bee for drill hole planning. The ...(iron ore resources) versus ...for other areas where ...mineral exploration ...to airborne hypers... ...from the weathered sur... ...ration and mineral deposit stu... allowed ...ification of iron oxide phases and Rocklea ...e data set, novel geostatistical clustering m... body d...ining that introduced scientific rigour to a traditionally objective domains that are critical for the mining process.

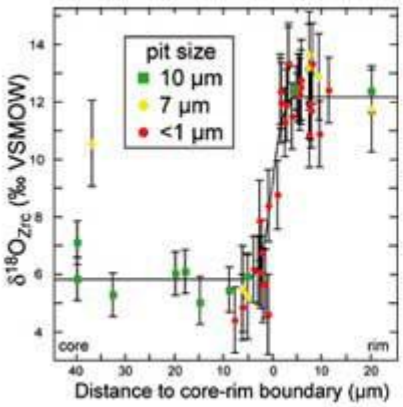
Beyond the previously published case studies, the Rocklea D the potential to develop new methods for advanced resource char aid exploration for mineral deposits through cover. The white mi airborne hyperspectral, presented here for the first time, highligh for geological mapping and could help to evaluate newly launches for geoscience and mineral exploration.

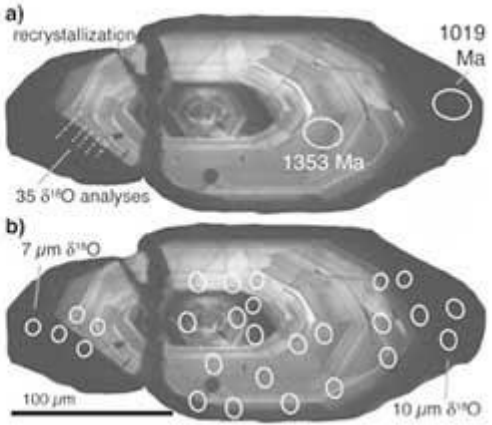


Published by Copernicus Publications.

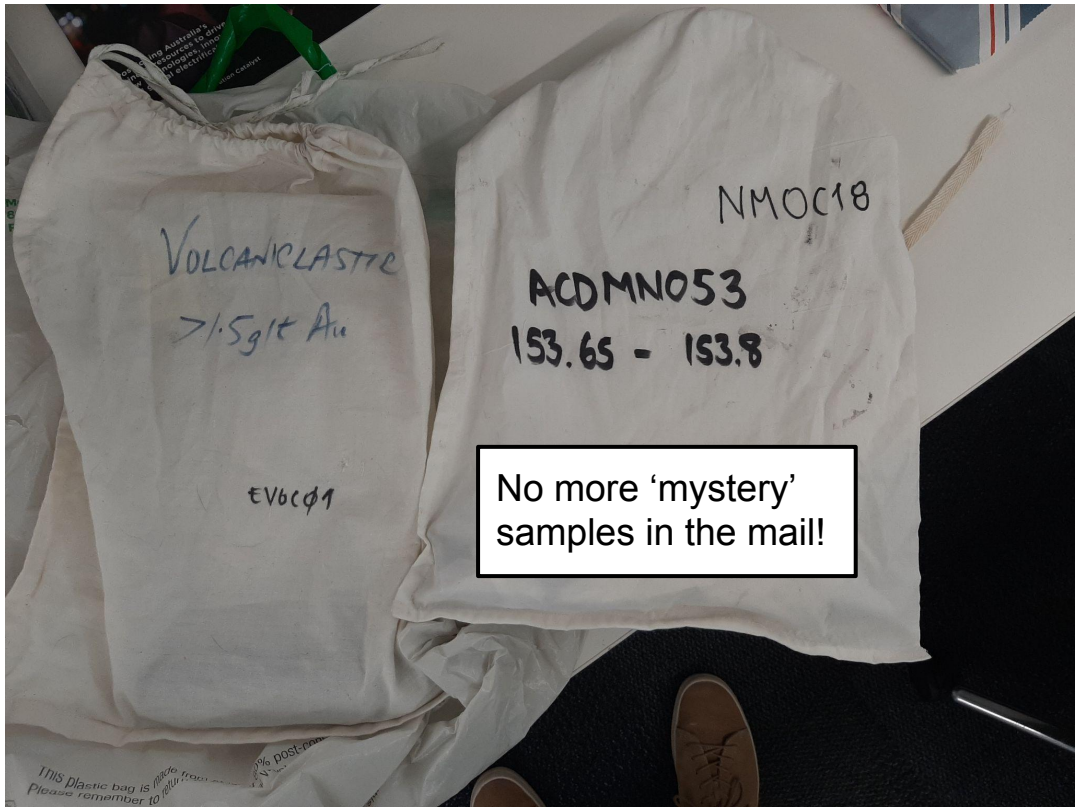
Samples move across organisational boundaries







Sample Tracking



IGSN in the Field

Using IGSN IDs in the field together with the FAIMS app increased the efficiency of sample collection campaigns by 100%.

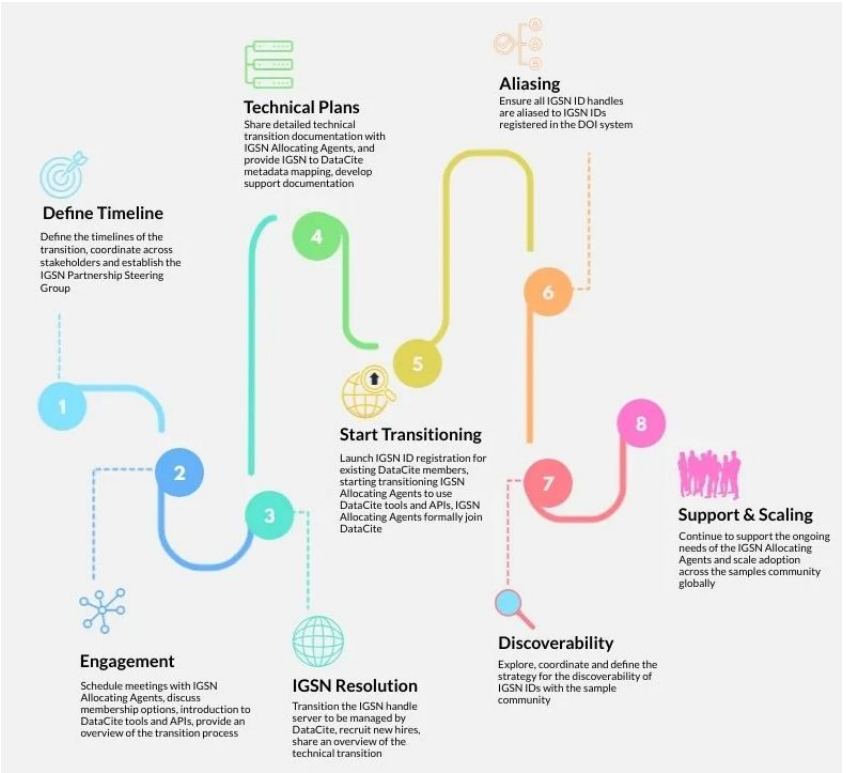
CSIRO used pre-printed labels with IGSN IDs encoded in a QR code that could be scanned by the FAIMS app.

IGSN Organisation going forward

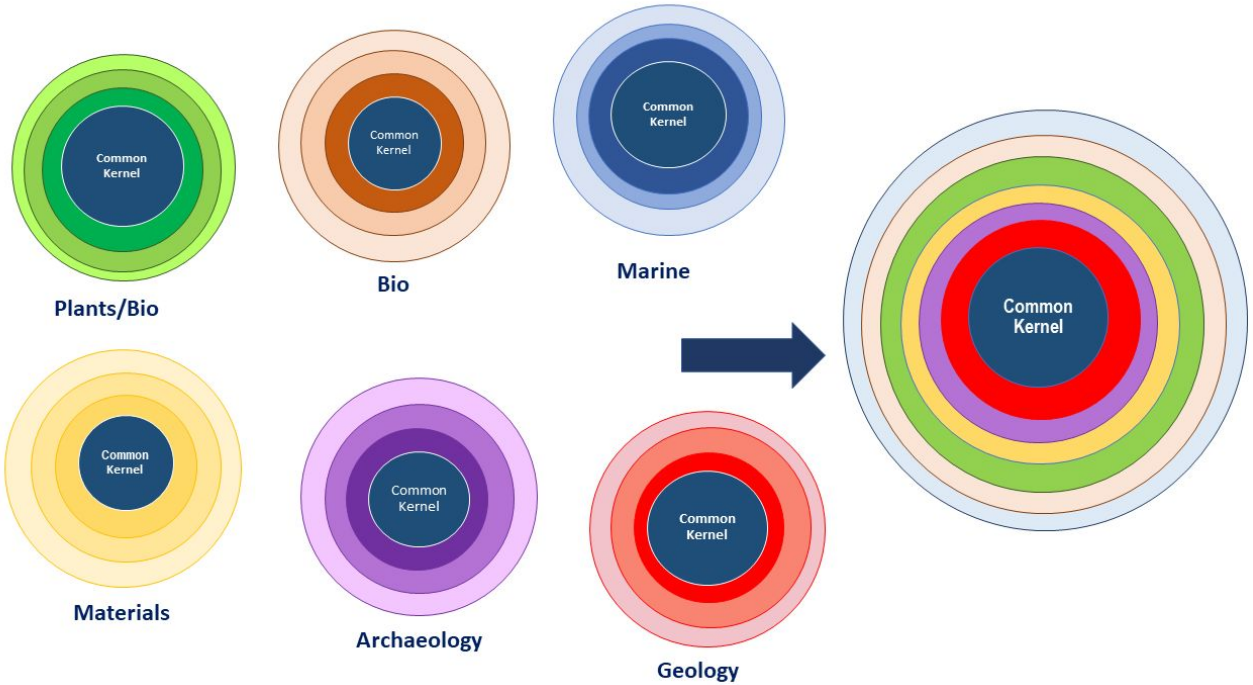
In October 2021, the IGSN Organisation entered a strategic partnership with DataCite to support the global adoption, implementation, and use of physical sample identifiers.

IGSN IDs are now available as DataCite DOIs. All previously existing Handle IGSN IDs have been aliased to DOIs.

The role of the IGSN Organisation is changing from operating a PID service to becoming a platform for disciplinary user communities to formulate standards and best practices for the identification of samples using IGSN IDs.



IGSN Community of Communities



Needs for describing samples vary across community.

With the DataCite catalogue they all share a common metadata kernel.

IGSN provides a platform for communities for developing common profiles.

Outreach and Engagement

DataCite and the IGSN Organisation work together in a partnership to provide PID registration for physical samples, guidance on best practices, and technical solutions.

The IGSN Organisation (IGSN e.V.) develops and publishes guidelines on information to be displayed on landing pages, and on how to populate the DataCite metadata fields.

The DataCite Samples Community Manager (Rorie Edmunds) works with DataCite members wanting to assign DOI to physical samples.

More information: https://www.igsn.org

IGSN

… more than a label on a box.