Rock and Core Repository Coming Digital

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GEOMAR

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A use case of PID for a multi-faceted sample collection

GEOMAR is currently building a new storage facility for its large and heterogeneous collection of hard rocks, sediment cores and refined sample specimens (e.g. rock powder cakes, mineral separates, microfossils, sieve fractions, chemical preparates). In the course of events it was recognised, that it is high time we had a sophisticated sample curation.

PAST

GEOMAR accumulated thousands of geological specimens. The samples, collected mainly during marine expeditions, date back as far as 1964. Our collection encompasses about 17.000 m of sediment core and almost 5.000 boxes of hard rock samples. Unfortunately, data capture and storage location documentation has been little systematic. Furthermore, this repository missed the onset of the interconnected digital age.

To un-earth our wealth of material, GEOMAR opted for the International Geosample Number (IGSN) as a persistent identifier for unambiguous identification of the physical samples. We plan to adopt IGSN as a future asset, while for the initial stock-taking of our collection, and for the upcoming relocation, simple but unique QR-codes act as "bridging identifiers".
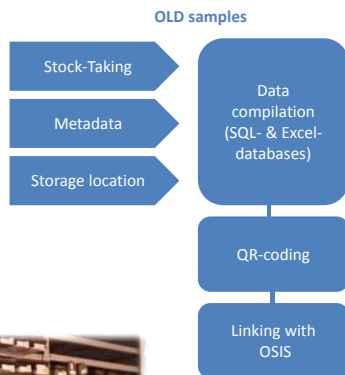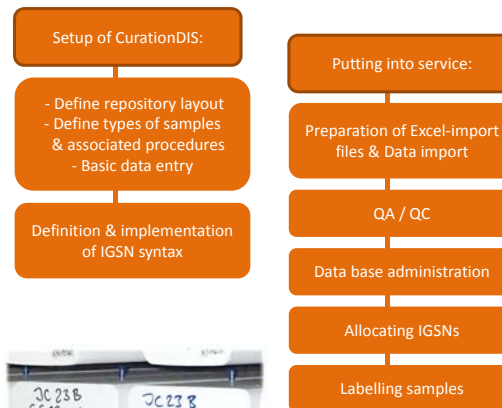

Fig.1: Sediment core storage at present

OLD samples

Stock-Taking → Data compilation (SQL- & Excel-databases)
Metadata →
Storage location →
→ QR-coding
→ Linking with OSIS

PRESENT

Currently we compile an overview of the broad variety of sample types and their associated metadata available. QR-coding of the boxes of rock samples and sediment cores is near completion. Each QR-code delineates the sample's location in the repository and links the sample to any information available about the object.

In parallel, we are testing the software CurationDIS by smartcube GmbH, to be used as the central component of this project. The software is designed to handle acquisition and administration of sample material and sample archiving in storage places. In addition, the software allows the direct allocation of an IGSN number to each sample, as well as to their split- and subsamples.

PRESENT Planning & Processing

Setup of CurationDIS:
- Define repository layout
- Define types of samples & associated procedures
- Basic data entry

Definition & implementation of IGSN syntax

Putting into service:
Preparation of Excel-import files & Data import
QA / QC
Data base administration
Allocating IGSNs
Labelling samples

QR-code

Fig.2: QR-coded cores and xls-spreadsheet depicting shelf-storage location

FUTURE

Planning is in progress to streamline the flow from receiving new samples to their curation to sharing samples and information publically. Additionally, interface planning for linkage to GEOMAR databases OceanRep (publications) and OSIS (expeditions) for external data retrieval are in the pipeline.

OUTLOOK

Data capture during or early-post cruise

Expedition metadata import via DShip

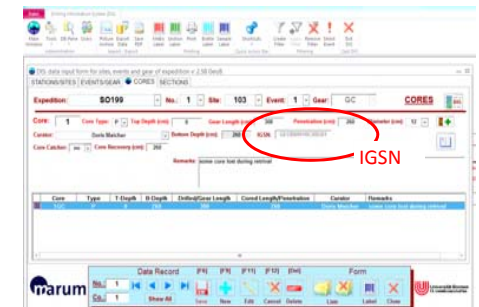Registration of IGSNs

IGSN

Fig.4: Screenshots of CurationDIS, field entry with automatically generated IGSN highlighted

With respect to CurationDIS, an extension of the sample capture options is contemplated. Gear-types such as dredge and ROV require different steps in the sample and sub-sample handling as compared to sediment cores.

Looking ahead to implement IGSN, taking on board lessons learned from earlier generations, it will enable to comply with our institute's open science policy. Also it will allow to register newly collected samples already early post-research cruise expeditions. They thus receive their "birth certificate" contemporarily in this ever faster revolving scientific world.

Fig.3: Future GEOMAR Repository (Staab Architekten)

LESSONS LEARNED

- It is time consuming to restore metadata of samples having fallen into oblivion – but it is worth the effort.
- Introducing a change into a running system requires lots of advertising & lobbying against scepticism. Involve as many scientists ("sample-owners") as possible and raise awareness for advantages of the new curation system.

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