

# MORSE, Marine Organisms and Resources Storage system, towards a global system to ensure the traceability of all Ifremer biological samples

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Ifremer has started to implement the information system MORSE (Marine Organisms and Resources Storage system). It aims to ensure the traceability of all Ifremer biological samples as required by the international regulations APA (*Access and Benefit Sharing*) and CITES (*Convention on International Trade in Endangered Species of Wild Fauna and Flora*).

MORSE provides an identity card of each Ifremer biological sample which is also required to serve the scientific objectives of valorisation and publication (Figure 1). The information stored for each sample cover the entire sample life: acquisition metadata, sample type and processing, storage information, responsible(s), identification, administrative data.

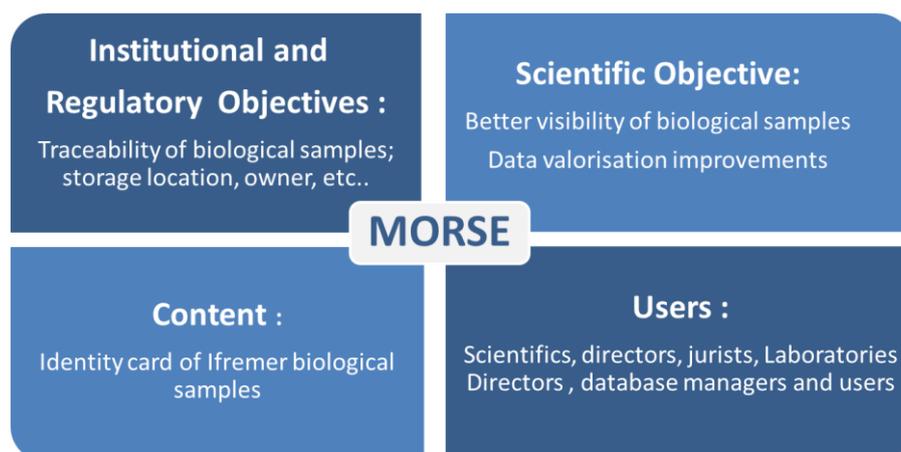


Figure 1: MORSE principles

## Data localisation:

IFREMER owns within all its laboratories thousands of biological samples. They are referenced in many ways:

- Locally with dedicated software as LabCollector or Excel
- Locally and manually, without dedicated software
- Centrally, integrated in various and specific databases and information systems.

The information systems managed by SISMER (the French NODC hosted in Ifremer) and concerned by MORSE deal with deep-sea environment data and geoscience data (BIGOOD), fisheries data (Harmonie) and coastal environment data (Quadriges 2).

## MORSE functionalities and structure:

**MORSE** is a unique tool that will answer the following needs:

- Aggregation of biological sample information
- Interoperability with standardised referential
- Visualization of the required information on biological samples (including physical storage, sampling)
- Description of the sample filiation, duplication, modification, etc.
- Unique internal code generating an unique label
- Labels generation before, during and after samples collection
- Valorisation of biological samples using DOI.

In addition to scientific data management systems, Morse interoperates with administrative systems (Corail, SAP, SGC) and data portals (Seanoe, Sextant).

Technically, **MORSE** is composed by

- A dynamic and contextual dashboard built on the Angular 8 framework to access directly to the desired information.
- A micro-service to display/print on demand the QR Code and metadata labels adapted to the sample container dimension.
- A micro-service to direct, for each sample or group of samples, to the associated DOI landing page.
- An administration dashboard built on the Angular 8 framework to control the interfaces with thematic information systems, with administrative systems and with common referentials.

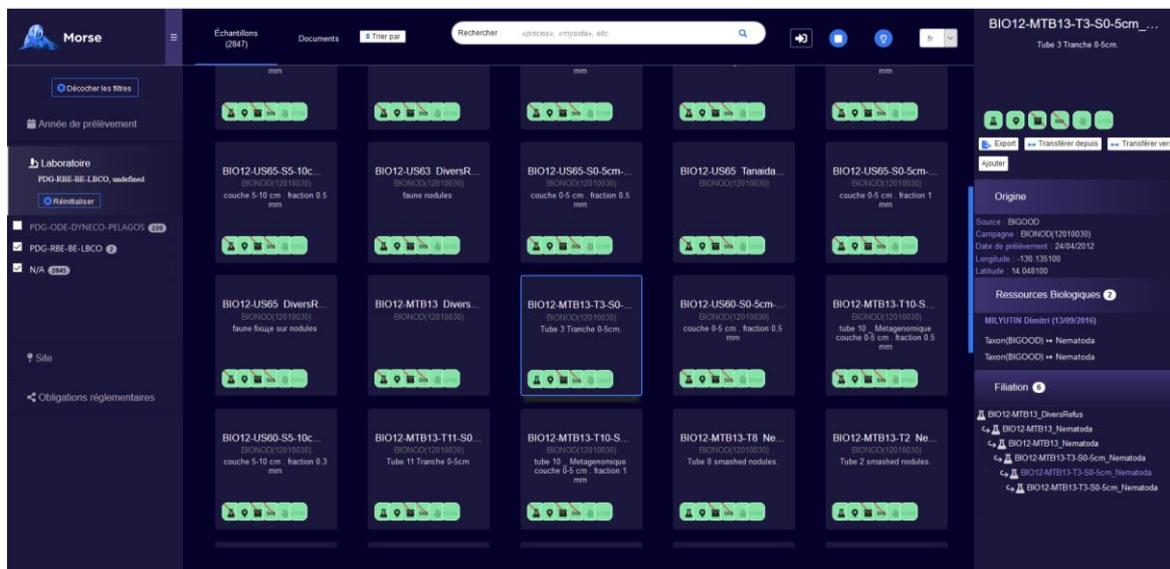


Figure 2: Screenshot of the user dashboard

## Remaining questions and challenges

To get the MORSE system fully operational, many challenges remain. Crucial points will be to link this Ifremer System to European referential and standards, DISSCO for example, to attribute DOI to biological samples and last but not least to involve users with a wide variety of profiles.