eosc | Blue-Cloud2026

Global Fisheries Atlas

VLAB #5

Main Objectives

This virtual Lab collates and standardizes regional or international authoritative sources for fisheries data, information and knowledge. By doing so, it generates a set of global and harmonized products describing fisheries activities worldwide by complying with FAIR principles.

A workflow story, from data to knowledge

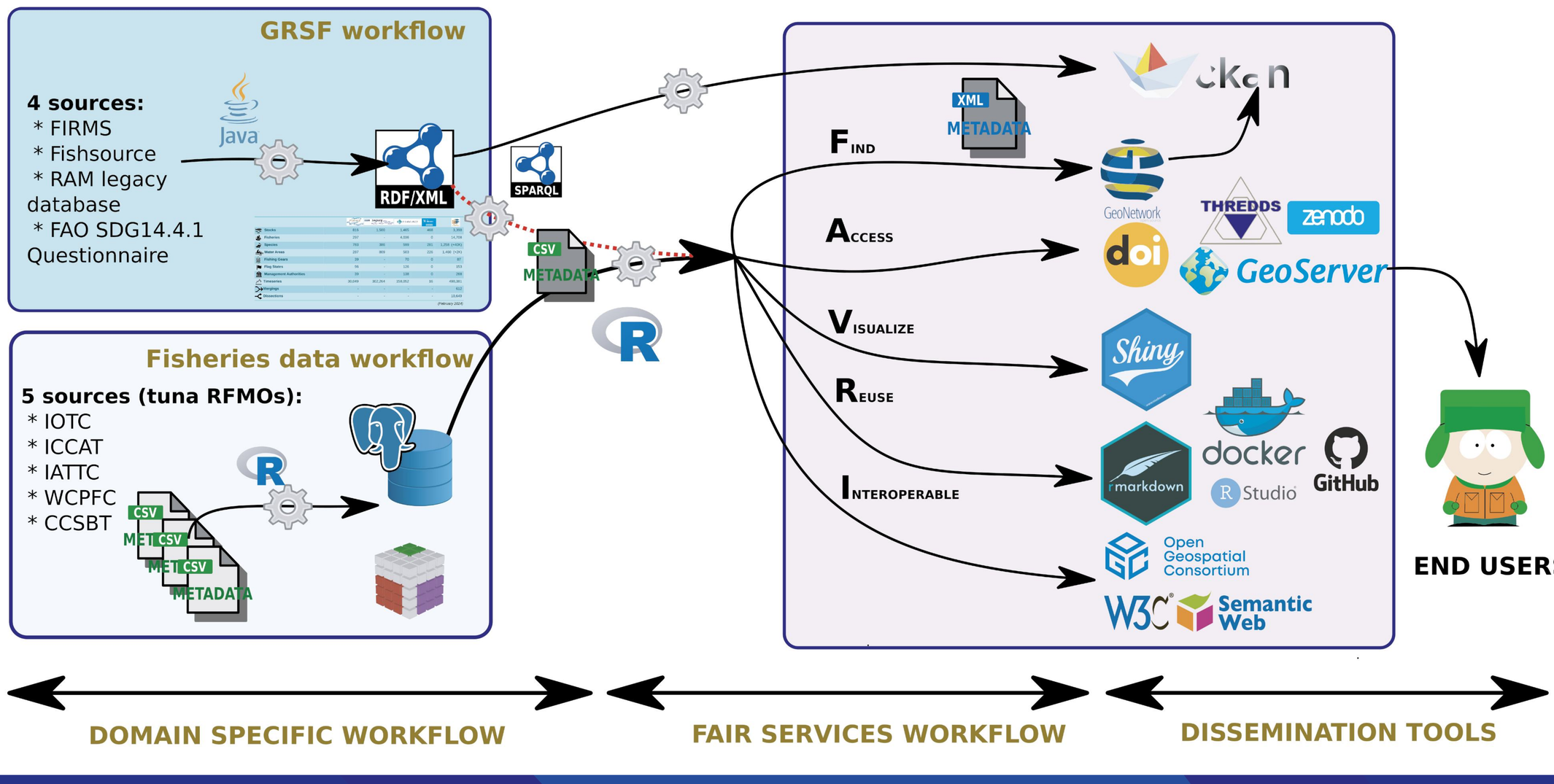
The Global Records of Stocks and Fisheries (GRSF) is a knowledge base harmonizing different sources and providing access to all of them though a single endpoint. GRSF relies on a Java Workflow which is made of different steps:

- harmonization of different sources (FIRMS, RAM Legacy Stock Assessment DB, FishSource, FAO SDG 14.4.1 Questionnaire) by applying a top level ontology model,
- compliance with Semantic Web standards : triplification process (RDF/OWL) and storage in a triple store made accessible with a SPARQL endpoint,
- knowledge base exploration through UI with CKAN, programmatically with a SPARQL enpoint or a dedicated API.

The Global Tuna Atlas is used as a demonstrator to showcase how a Global Fisheries Atlas can be entirely set up within a Virtual Laboratory. In this case, we used R programming language to build a data generation workflow which relies on following steps :

- harmonization of regional datasets collated from the five tuna Regional Fisheries Regional Organizations (RFMOs) : IOTC, ICCAT, IATTC, WCPFC, CCSBT),
- VLab collaborative environment is used to refine and execute the workflow in RStudio IDE server and publish the results in a spatial data infrastructure (SDI) made of following software : GeoNetwork, GeoServer, Postgres / Postgis

Global Fisheries Atlas workflows: data harmonization and standardization



Make Virtual Lab products compliant with Open science and FAIR principles

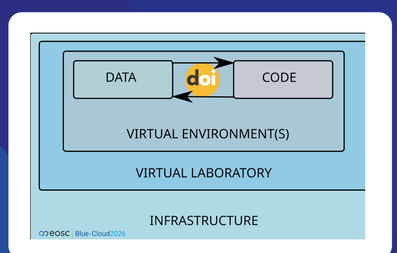
Data is open and FAIR

- Global annual catches from tuna fisheries (1918 - 2021) (FIRMS level 0) : DOI 10.5281/zenodo.5745958 all official catches at low resolution (per ocean yearly).
- Global monthly catches from tuna fisheries by 1° and 5° grids (1950-2021) (FIRMS level 0) : DOI 10.5281/zenodo.1164127 sample of total catches at a higher resolution 1° or 5° per month),

Code is open and available in the repositories of the firms-gta GitHub organization with DOIs assigned to main releases,

- Data generation workflow: DOI 10.5281/zenodo.5745958 all scripts to generate the datasets of the Global tuna Atlas.
- Shiny apps to explore and validate the datasets: DOI 10.5281/zenodo.13685479 continuous integration with GitHub actions to containerize the apps to be deployed on Blue-Cloud,

(Virtual) execution environments snapshots to foster reproducibility : e.g. by combining both containers (Docker) and renv R package



Global Fisheries Atlas Results

The products of this virtual laboratory are accessible in different ways, e.g.:

- Discovery in standardized catalogs : e.g. CKAN for GRSF, Zenodo or GeoNetwork for Tuna Atlas datasets (GeoNetwork being harvested by CKAN),
- Shiny apps are made available to explore and validate the content of datasets.

WATCH THE INTERVIEW!

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