

OSCARS

Open Science Clusters' Action
for Research & Society

SemantyFish



Advancing Visibility, Interoperability and Exploitability of FishBase

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Implemented by



FORTH



quatics



Funded by
the European Union



- **Limited Integration & Interoperability**
 - Without semantic representation, cross-domain data integration is a laborious and manual process
 - **Fragmented & Human-Centric Access**
 - Information is primarily locked within a human-centric website, hindering automated discovery and machine-led workflows
 - **Querying Limitations**
 - Existing search methods do not allow for the complex, semantically rich queries and deeper biodiversity research
 - **Beyond Open Data**
 - Open data alone \neq open science; standardized, structured formats are required
 - **Long-term Sustainability**
 - Adopting a sustainable and open science approach, without disrupting existing data evolution policies
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Nov'24



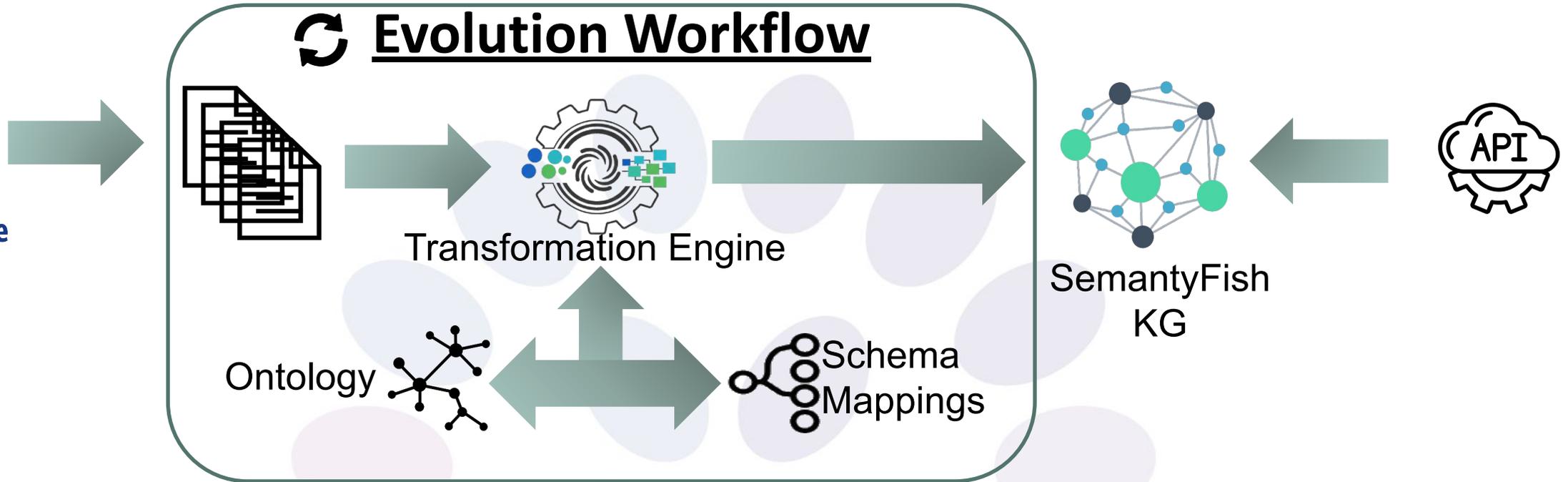
Mar'26



Oct'26

A FAIR-by-design framework

- **Semantic Knowledge Graph** (*towards Interoperability*)
 - Transforming FishBase into a semantic knowledge graph using ontologies
 - **Open API ecosystem** (*towards Accessibility and Reuse*)
 - Implement REST-based open APIs to ensure seamless data interoperability and reuse
 - **Support Complex Query Answering** (*towards Findability*)
 - Answer queries invoking different entities in the knowledge graph using SPARQL
 - **Reasoning and Inference** (*towards Open Science*)
 - Enable deeper biodiversity research through semantic reasoning and inference
 - **Adaptive Evolution Workflow** (*towards Sustainability*)
 - Apply a dedicated evolution workflow to stay updated with FishBase releases, without disrupting existing policies
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Knowledge Graph ↔ Resources Interoperability and Reuse

API ↔ Facilitates access, retrieval, and software integration/exploitation

Evolution Workflow ↔ Ensures that the contents of the Knowledge Graph are in kept sync in FishBase resources

SemantyFish API 1.0.0 OAS3

https://api.swaggerhub.com/apis/YANNISMARKETAKIS_1/semantifish-api/1.0.0/swagger.json

This is the documentation of the SemantyFish API. SemantyFish aims to enhance the visibility, interoperability and exploitability of FishBase by transforming it into a exploit the wealth of resources from the knowledge base.

resources Retrieves specific entities from the Knowledge Base (e.g. Species, Genus, etc.) by providing the unique identifier of the entity

GET `/species/{id}` Find species by ID

GET `/genus/{id}` Find genus by ID

GET `/family/{id}` Find family by ID

GET `/order/{id}` Find order by ID

GET `/class/{id}` Find class by ID

GET `/common_name/{id}` Find common name of species by ID

GET `/synonym/{id}` Find synonyms by ID

<https://demos.isl.ics.forth.gr/semantifish-api>

SemantyFish API methods grouped into:

- **/resources**: retrieve detailed information about entities (e.g. species, common names, etc.)
- **/find**: find entities using different criteria
- **/terminologies**: controlled vocabularies or list of terms that can be used while searching
- **/external**: methods that retrieve data from external publicly available sources using FishBase entities (e.g. stocks and fisheries details from the Global Record of Stocks and Fisheries)

What's coming next?

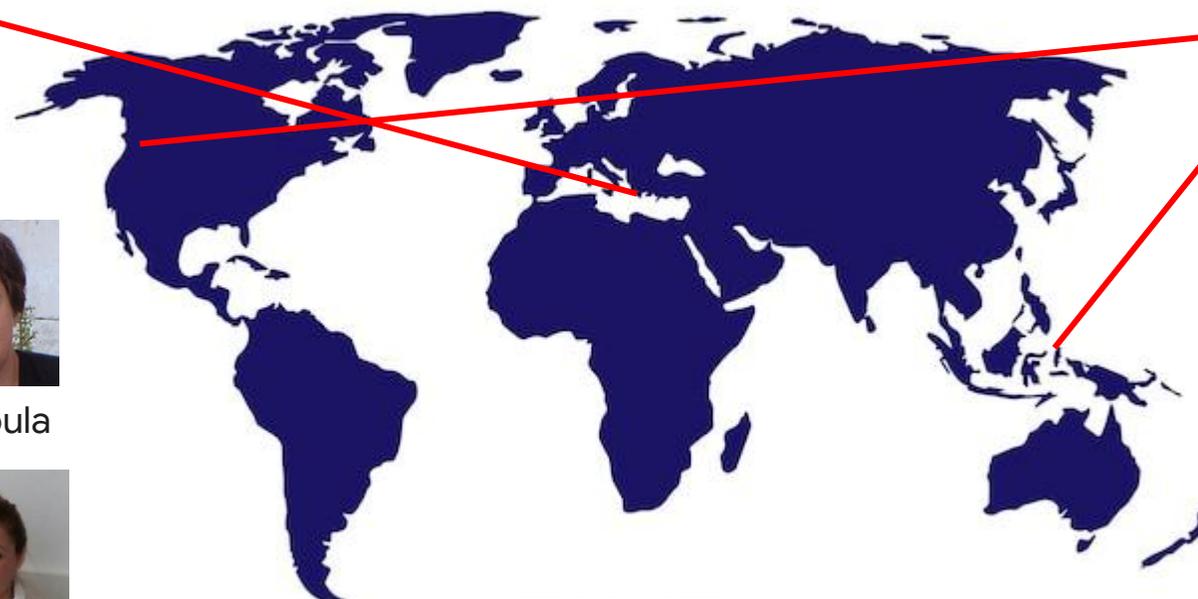
- Continue modelling / schema mapping/ transformation / integration / activities
 - Focus on interlinking with external resources (e.g. OBIS, GBIF, EMODnet Biology, etc.)
 - Strengthen the integration with EOSC and RIs
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FORTH
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