MarineTLO-based warehouse Demo Guide

This guide will help you exploit the functionalities of the software that has been developed by FORTH-ICS in the context of the EU iMarine project. Since many of the artifacts are hosted in the iMarine infrastructure we will also provide some details about how to enter the portal and how to register to particular VREs. The structure of this guide is the following: at first we will describe how a user can login in the iMarine portal and how to register in particular VREs. In the sequel we will describe how users can access the contents of the MarineTLO-based warehouse and browse over its contents.

Accessing the iMarine portal

To expose the functionalities of the gCube system to the end users, a presentation layer has been implemented. This layer adopts the portal/portlets paradigm and it is based on the Liferay portal. The portal is accessible at https://i-marine.d4science.org/. The homepage of the portal is the following (Figure 1).

![Figure 1: The homepage of the iMarine portal](image)

If you haven't already registered in the portal then click on “Create Account” to sign up. Make sure that you enter a valid email address, because a verification email will be sent, and
this email is going to be used as your username. After creating (and verifying your email) you will see the following screen.

![Image of iMarine portal homepage]

The facilities of iMarine infrastructure are offered through VREs (Virtual Research Environments). Practically this means that you should join a VRE first. As you will notice from Figure 2 (in the upper right) you haven’t been subscribed to any VREs yet. By clicking on “Find out” you can see the available VREs (Figure 3).
You will notice that some VREs have free access (e.g., BioDiversityLab, BiOnym, etc.) while for others you have to submit a request for joining (e.g., AquaMaps, FCPPS, etc.). In the sequel whenever it is requested to join a VRE we will also report the VRE that should be used.

**MarineTLO-Based warehouse**

**Accessing the SPARQL endpoint**

The SPARQL endpoint of MarineTLO-based warehouse is accessible from iMarine portal using the following VREs:

- BiodiversityLab
- MarineSearch
- iSearch
In the sequel we are going to use the BiodiversityLab VRE to access the MarineTLO-based warehouse SPARQL endpoint. Note that in other VREs the process might be slightly different.

After joining the Biodiversity lab VRE click on the page “SPARQL Endpoint”. The following figure will show up.

Figure 4: The MarineTLO-based warehouse SPARQL endpoint

There you can submit your SPARQL queries, and define the format of the results. For building the warehouse we have used OpenLink virtuoso. Virtuoso supports an extended syntax for SPARQL queries, allowing users to define if they want to include also the inferred triples for the evaluation of their query. These instructions are the following:

- **define input:same-as “yes”**: This instruction enables the inference of all triples containing the predicate owl:sameAs (e.g. http://www.ecoscope.org/ontologies/ecosystems/thunnus_albacares owl:sameAs http://www.marinespecies.org/entity#WoRMS:127027/Thunnus_albacares)
- **define input:inference ‘http://graphspace’**: This instruction allows inferring triples that have not been physically stored. It recognizes rdfs:subClassOf, rdfs:subPropertyOf, owl:equivalentClass, and owl:equivalentProperty. For this reason we have created a rule-set based on the MarineTLO and its mappings.

The following figure searches for the predators of thunnus_albacares. The results of the SPARQL query are shown in Figure 5.

```
define input:same-as 'yes'
prefix tloCore: <http://www.ics.forth.gr/isl/MarineTLO/v4/marinetlo.owl#>
SELECT DISTINCT ?predators WHERE {
  <http://www.ecoscope.org/ontologies/ecosystems/thunnus_albacares>
```
tloCore:LT5_usually_is_predator_of ?predators .

```sparql
PREFIX tlo: <http://www.tlo.org/ontologies/tlo#>
PREFIX cat: <http://www.ecoscope.org/ontologies/ecosystems#>
SELECT ?predators WHERE {
}
```

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**Browsing the contents of MarineTLO-based warehouse**

Apart from the SPARQL endpoint, the contents of the MarineTLO-based warehouse are available through the faceted browser (for short FCT). It is available at [http://virtuoso.i-marine.d4science.org:8890/fct/](http://virtuoso.i-marine.d4science.org:8890/fct/). Figure 6 shows the initial screen of FCT.
FCT allows searching for triples by entering query terms (it does not require SPARQL syntax). In this example we used the query tuna. The results are shown in Figure 7. The user can start browsing over the returned triples by clicking on them.
FCT also contains a set of sample queries (the majority of them has been derived from the competence queries that have been used for evaluating MarineTLO). The sample queries can be found by selecting “Demo queries” in the upper right part of the homepage of FCT (Figure 6).
Each query can be executed by selecting Run with iSPARQL. Shows the results from the execution of the 1st demo query.

Figure 10: Results of the 1st demo query

References