

## Research Infrastructures and their collaborative potential to address scientific questions at global scale

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Research Infrastructures (RIs) are facilities, resources and services used by scientists to carry out research and develop innovation. A number of EU research infrastructures (e.g. LifeWatch ERIC, ELIXIR, EMBRC ERIC, EuroBioImaging ERIC) have been developing various virtual research environments (VREs), which include many virtual laboratories (vLabs) offering, one stop-over point access, high computational capacity and collaborative research platforms that supporting the needs of digital biodiversity science. This presentation provides examples on the use of the vLabs initially developed by LifeWatch ERIC but then taken up as examples by other RIs.

The RvLab operating on a high-performance computer cluster, has been used in order to address the global question on the taxa equality. The taxonomic research community has developed a system for describing, classifying and naming taxa across multiple categories. This taxonomic information on marine biota is organized and made publicly available through the World Register of Marine Species (WoRMS) that delivers more than 250,000 described valid species names. Although scientists consider an equal status (in terms of contribution to overall diversity) to each taxon used in taxonomy, biogeography, ecology and biodiversity, the question “*are all taxa equal?*” has never been tested at a global scale. We present evidence that this question can be addressed by applying relatedness indices (Taxonomic Distinctness) over the entire WoRMS metazoan tree.

The virtual micro-CT laboratory (Micro-CT vLab), which can be used by the members of the scientific community interested in the digitisation methods and biological collections, makes the micro-CT data exploration of natural history specimens freely available over the internet. Therefore, Micro-CT vLab makes it possible the online exploration and dissemination of micro-CT datasets, which are only rarely made available to the public due to their large size and a lack of dedicated online platforms for the interactive manipulation of 3D data.