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HMC Earth and Environment - Semantics, connecting Helmholtz data with with international initiatives

In pursuit of deep and expressive semantic interoperability, the Earth and Environment Hub is adopting a three-pillared approach to develop strategically and technically aligned capacity within the Helmholtz Association and globally.

The first pillar is implementation of high-quality, future-oriented semantic solutions for Earth and environmental applications. HMC E&E personnel lead the development of the Environment Ontology (ENVO), an internationally recognised, highly expressive, and adopted community ontology for environmental research, management, and operations. Leveraging the practices, technologies, and interoperability architecture of the Open Biomedical and Biological Ontologies (OBO) Foundry, ENVO hosts machine-friendly representations of classification systems including the World Wildlife Fund's biomes and ecoregions, the Global Platform for Marine Litter's litter and debris classification for reporting towards Sustainable Development Goal (SDG) 14, and the UNEP World Conservation Monitoring Centre's mountain classification. Current activities are deepening links to the SDGs through collaboration with UN Environment, the UN Statistical Division, and UN Data, particularly on environmental hazards and disasters.

Our second pillar is harmonisation of existing semantic resources to enhance interoperability amongst them. Through the work of an Earth Science Information Partners' (ESIP) cluster for semantic harmonisation, we are supporting efforts to harmonise semantics for vocabularies, glossaries, thesauri, and ontologies describing the cryosphere, the marine realm, natural hazards and disasters, and heliosphere. This activity engages major global stakeholders - including the WMO and NASA - and fosters collaborative interoperation between formerly competing standards.

Our third pillar is the co-development and deployment of lightweight semantic solutions for knowledge graph creation and maintainence by multiple parties. Leveraging ESIP's Science on Schema (SoSo) approaches, our personnel are leading co-development of the UNESCO Intergovernmental Oceanographic Commission's Ocean Data and Information System (ODIS) and Ocean InfoHub (OIH), requested by the Member States. As it matures, we seek to merge this graph with its counterparts emerging in the Polar community and others, as well as ontological graphs noted in the other pillars.

In conclusion, our efforts are addressing local and global needs in environmental semantics through broad, multilateral collaboration while creating fluid capacity exchange between all actors. This approach will support the creation of Helmholtz data spaces bearing intrinsic semantic compatibility with external systems and ready to transfer Helmholtz data to address global challenges.

Please assign your poster to one of the following keywords.

Semantics

In addition please add keywords.

Strategy, Semantics, International Connections

Please assign yourself (presenting author) to one of the stakeholders.

other (please specify)

Please specify "other" (stakeholder)

Data Infrastructure Provider, Data Curators

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