Use of the ENVRI Reference Model to Support the Design of Environmental Research Infrastructures

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Advances in automation, communication, sensing and computation enable experimental scientific processes to generate data and digital objects at unprecedented speed and volume. Research infrastructures (RIs) provide advanced capabilities for data acquisition, curation, sharing, processing, and analysis. In Environmental Science, as in many other fields, RIs are a significant part of the research agenda. However, the complexity of the RIs systems produced to support data oriented research grows considerably in line with the size of the research data along with the size of the scientific community being served by those systems. In this context, designing, building, and deploying an RI is a long, complex, resource-intensive endeavour. Addressing the requirements of the research community to provide an effective research infrastructure for diverse groups of research scientists while observing strict standards and technology constraints is really challenging. These infrastructures need to integrate and share the data resources of a wide and varied community.

Over the past six years, the FP7-funded ENVRI project (2011-2014) and its successor Horizon2020-funded ENVRIplus project (2015-2018) have investigated the structure of environmental RI systems. The RI systems were analysed at different levels of development and were observed as they evolved. The RI systems considered aimed at supporting research communities from the solid earth, atmospheric, aquatic, and biosphere domains. The analysis of environmental RI systems supported the development of the ENVRI Reference Model, a standards based model designed to support the delivery of complex research data management capabilities, providing a clear map through technology complexities.

This demonstration will show how an archetypical RI can be modelled using the ENVRI RM and explain the potential advantages of modelling an RI in this fashion.