

D4Science: An e-Infrastructure for Facilitating Fisheries and Aquaculture Resource Management

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The Fisheries and Aquaculture Resource Management (FARM) is a very complex activity which requires to access, analyze, and elaborate large amounts of heterogeneous distributed data in order to produce information for globally spread scientists in the field, regional statistics departments, national governing bodies, etc. This activity is extremely time consuming. It also demands large investments by the involved organizations for setting up the necessary machineries and skills. In many cases, this high cost makes unfeasible to respond to concrete and pressing needs.

D4Science (<http://www.d4science.eu>) is a production e-Infrastructure designed to facilitate complex scientific co-operation activities, like FARM. It is the result of an intense activity performed during three subsequent EU co-funded projects (2004-2011) by a large consortium which includes technologists and FARM related domain experts, like the FAO Fishery Department, the WorldFish Center and the European Space Agency. In particular, the e-Infrastructure provides:

- a framework for enabling cost-effective on-demand resource sharing across organisation boundaries (resources are here intended as generic entities, including data collections, the software needed to process them, and the physical resources hosting them - e.g. storage and computing resources);
- a number of built-in services and frameworks providing transparent and interoperable access to heterogeneous distributed data collections and advanced management of information objects (i.e. storage, description, annotation, transformation)
- services for on-demand building of Virtual Research Environments, i.e. integrated environments providing seamless access to needed resources as

well as to facilities for communication, collaboration and any kind of interaction among scientists and researchers. This is built by aggregating the needed constituents after hiring them through the e-Infrastructure.

Currently, the D4Science e-Infrastructure integrates more than 400 software components, offers access to thousands CPU-cores, and gives access to hundreds heterogeneous collections.