



## Building a multidisciplinary e-infrastructure for the NextData Community

Stefano Nativi (1), Marco Rorro (2), Paolo Mazzetti (1), Giuseppe Fiameni (2), Fabrizio Papeschi (1), and Michele Carpenè (2)

(1) IIA, CNR, Florence, Italy, (2) CINECA, Bologna, Italy

In 2012, Italy decided to launch a national initiative called NextData (<http://www.nextdataproject.it/>): a national system for the retrieval, storage, access and diffusion of environmental and climate data from mountain and marine areas. NextData is funded by the Research and University Ministry, as a “Project of Interest”.

In 2013, NextData funded a “special project”, the NextData System of Systems Infrastructure project (ND-SoS-Ina). The main objective is to design, build and operate in production the NextData multidisciplinary and multi-organizational e-infrastructure for the publication and sharing of its resources (e.g. data, services, vocabularies, models). SoS-Ina realizes the NextData general portal implementing the interoperability among the data archives carried out by NextData.

The Florentine Division of the Institute of Atmospheric Pollution Research of CNR (CNR-IIA) and CINECA run the project.

SoS-Ina (<http://essi-lab.eu/nextdata/sosina/>) decided to adopt a “System of Systems” (SoS) approach based on a brokering architecture. This has been pursued by applying the brokering technology first developed by the EC-FP7 EuroGEOSS project (<http://www.eurogeoss.eu/broker/Pages/AbouttheEuroGEOSSBroker.aspx>) and more recently consolidated by the international programme GEOSS (Global Earth Observation System of Systems) of GEO (Group of Earth Observation) – see [http://www.earthobservations.org/documents/geo\\_ix/20111122\\_geoss\\_implementation\\_highlights.pdf](http://www.earthobservations.org/documents/geo_ix/20111122_geoss_implementation_highlights.pdf).

The NextData general Portal architecture definition will proceed accordingly with the requirements elicited by user communities. The portal will rely on services and interfaces being offered by the brokering middleware and will be based on Liferay (<http://www.liferay.com/>). Liferay is free and open source, it provides many built-in applications for social collaboration, content and document management. Liferay is also configurable for high availability.

The project considers three distinct phases and related milestones: (a) the first prototype of the NextData SoS infrastructure, implementing the core functionalities; (b) the consolidated version of the NextData SoS infrastructure, implementing advanced functionalities; (c) the final and operative NextData SoS infrastructure for data and information sharing and publication.

An important outcome of the project will be the performances and scalability advancement of the current brokering and portal technologies, exploiting resources and middleware services provided by CINECA.