



## Building the Environmental Research Infrastructure (ENVRI) community



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**The present article will not be a scientific and technical piece, but rather retrospection of what I have learned about the environmental research infrastructures (RI) and why do I think it is crucial to bring them together and collaborate.**

Have you ever wondered, as I did back in 2011 when I started to work with the RIs, what the term “research infrastructure” means? The European Strategy Forum for Research Infrastructures (ESFRI) define them as: “facilities, tools, resources and related services used by the scientific community to conduct top-level research in their respective fields, ranging from social sciences to astronomy, genomics to nanotechnologies”.

But what does it mean? How do they differ from the standard research project? I think it is hard to provide a single broadly accepted definition of “research infrastructure”, as the term can mean different things in the different fields of science, and in different regions even inside the same field. It is indeed a challenge to provide a comprehensive definition including all the elements of the RIs and at the same time distinguish them enough from the other existing research facilities and organizations.

The way I see them is that they are providing unique tools and instruments enabling researchers to perform an excellent science – In other words, RIs are facilities where basic research, as well as applied research, are interacting to generate innovations for our daily life.

They can be, for example, telescopes when talking about astronomy, colliders in physics, observatories, and databases in the context of environmental sciences or biobanks in the field of life sciences. CERN (the European Organization for Nuclear Research) is an example of research infrastructure known to all.

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They simply change the way we conduct the research by providing access to steadily growing amounts of data, by innovative and novel approaches with respect to how data are gathered and used. They propel cooperation across the scientific fields but most importantly across the na-

tional borders. And how do they differ from other research facilities? What makes them unique is their focus on providing the services, ability to gather the critical mass of people, knowledge and funds, which eventually leads to their long-term sustainability. But why do we think it is necessary for research infrastructures to collaborate? As an example, imagine a small company - it has just been established, and the company is trying to find its way through on market without even thinking about the strategy for the harmonisation of the ICT (Information and communications technology) employees are using. Soon the company grows, their operations and production are ten times bigger, they tripled the number of employees, and they realise the way they were working before is not any more sustainable. Soon they start a process to increase commonalities and to decrease differences of ICT technologies with the aim to improve interoperability and compatibility to make their operations smooth. However, to take a step back and build new integrated solutions is time as well money wise challenging.

The same applies to research infrastructures. Most of them are currently being constructed and it has been realised that instead of



them being developed in isolation, they need to cooperate together, to make their products harmonized and interoperable, to develop the synergies, to learn from each other, share the best practices and to work towards their joint vision and strategy to streamline their activities. Even though each RI is very special and has its specific focus area, they all are facing common challenges in their construction. Moreover, they are all contributing to the wider, trans- and interdisciplinary science questions and their interoperability enables integrating the data and knowledge into holistic understanding. All of this is very crucial especially for environmental research infrastructures, which provide irreplaceable knowledge to better understand the complex Earth system, which is necessary to address today's grand challenges, such as climate change, loss of biodiversity, extreme events, etc.

## ENVRI community building

We are not starting from scratch - ENVRI (2011-2014) was the first cluster project for the European environmental RIs. Even though the main focus of ENVRI was on data and software solutions, it has also built a strong foundation for the ENVRI community mindset. It was within this project where RI communities from different fields of environmental science started to talk together

and soon realized they indeed have many things in common - not just challenges, but also visions towards the future. The cluster now continues its work in ENVRIplus (2015-2019), a four-year project bringing together 20 environmental RIs in Europe. Its work is organised in six "Themes" ranging from the development of common technical and data solutions, through work on joint policies and guidelines, to transfer of knowledge, etc. (ENVRIplus Newsletter #1).

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Not all integration is European: COOPEUS project (2012-2015) enabled better data interoperability with RIs' counterparts in the US, and recently funded COOP+ (2016-2018) is aiming at bringing the cooperation among environmental RIs on a global level.

And where does all this come together? RIs that are actively participating in the projects are adopting its solutions (on a voluntary basis) as the project goes. We, however, do not aim to work only for the participating RIs, but for the whole ENVRI community. And where the community can

access the products and solutions and also engage in dialogues about future needs? How to bring on board also new emerging RI networks, e-infrastructures, and other relevant stakeholders? All of this will be possible within the **ENVRI Virtual Community Platform**, which is currently being built. The platform will be launched in May 2016 at <http://www.envri.eu>. It will serve as a meeting point, bringing all the ENVRI community players together, to share the information, guidelines, products and services developed by current and future projects like ENVRIplus. One of most important attributes of the platform is its sustainability for a longer period than what is the typical lifetime of one single project.

Besides the virtual platform, there is another tool ENVRIplus is using to bring the entire ENVRI community together in the form of **Open Community meetings** that will be organized in May each year to discuss its needs, prospects and visions towards future.

So whether you are an environmental RI coordinator, member of the RI network or just a scientist interested in RI matters, you all are part of the ENVRI community working together to tackle the environmental challenges of tomorrow.



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