



Facilitate Open Science Training for European
Research



Open Science

- Open Science (OS) aims to transform science by making research more open, global, collaborative, creative and closer to society
- OS is about the way research is carried out, disseminated, deployed and transformed by digital tools, networks and media
- OS makes scientific processes more efficient, transparent and effective through the application of new tools for scientific collaboration, experiments and analysis
- OS enables and fosters the emergence of new scientific practices, disciplines and paradigms to respond to the new challenges through global distributed collaborations



Rationales for Open Science

- *Improving efficiency in science* by reducing duplication and the costs of creating, transferring and re-using data; enabling more research on the same data.
- *Increasing transparency and quality* in the research validation process, by allowing greater replication and validation of scientific results.
- *Speeding the transfer of knowledge* promote swifter development from research to innovation.
- *Increasing knowledge spill-overs to the economy* - Increased access to the results of publicly funded research can foster spill-overs and boost innovation.
- *Addressing global challenges more effectively* - Global challenges require co-ordinated international actions
- *Promoting citizens' engagement* in science and research - may lead to active participation in scientific experiments and data collection.



Features of Open Science

- *Open Notebooks* - an emerging practice, documenting and sharing the experimental process of trial and error;
- *Open Data* - managing research data in a way that optimises access, discoverability and sharing for use and re-use;
- *Open Research Software* - documenting research code and routines, and making them freely accessible and available for collaboration;
- *Open Access* - making all published outputs freely accessible for maximum use and impact.

The Open Research Process

Each element of the research process should:

- *Be publicly available*: it is difficult to use and benefit from knowledge hidden behind barriers such as passwords;
- *Be re-usable*: research outputs need to be licensed appropriately so that prospective users know clearly any limitations on re-use;
- *Induce collaboration* between researchers through better access and better online tools;
- *Be transparent and have appropriate metadata* to provide clear statements of how research output was produced, and can be re-used.

