**How can e-Infrastructures facilitate Open Scholarship?**

**Discussion and contributions received on Digital4Science**

The European Commission intends to foster the collaboration of EC funded projects in areas of **Open Scholarship Infrastructures**with the objective of creating an infrastructure that is fit for open science compliant research methods. This infrastructure can include access to information, tools and other resources, but also novel digital services and platforms. It should also acknowledge the rapidly changing scholarly communication landscape and the support that practitioners need in this evolving situation.

Examples of the components of "Open Scholarship Infrastructures" include Infrastructures that will integrate digital scholarly record with the methods of e-Science and Open Science. Users, sponsors and service providers require access to information, from articles to datasets, from software to protocols, from projects to impacts, that needs to be identified across geographical, temporal, disciplinary, cultural, organisational and technological boundaries. The main projects participating in this project group are those working directly with the scholarly record. In addition projects dealing with access technologies, preservation, trust, data production, end-user tools, etc. are also relevant participants in the group activities.

A few questions should be adressed to create an infrastructure that matches the open science priorities:

1. **What is Open Scholarship (OS) and how to deconstruct into basic ideas/elements and e-infra-matching elements?** The goal is to agree on terminology, goals and objectives.
2. **How e-Infrastructures can facilitate Open Scholarship?** The focus should be on services, costs, incentives for use, barriers and how to go about solving them.
3. **Open Scholarship requires transparency at all levels of the research life-cycle, which effectively leads to trust and uptake. What/who do we need to mobilize the right stakeholders to build this trust?**

#### [**Report from break out meeting on 9 November 2015**](https://ec.europa.eu/futurium/en/comment/5777#comment-5777) **– Wouter Los**

1. Introduction
The European Commission intends to foster the collaboration of EC funded projects in areas of Open Scholarship Infrastructures. The Commission describes such Open Scholarship infrastructures in summary as follows.
• Access to information, tools and other resources
• Novel digital services and platforms
• Acknowledge rapidly changing scholarly communication landscape
• Support practitioners in this evolving situation
• Integrate digital scholarly record with methods of e-Science/Open Science
• Provide users, sponsors, and service providers access to information (from articles to datasets, from software to protocols, from projects to impacts) across boundaries (geographical, temporal, disciplinary, cultural, organizational and technological)
• Consider access technologies, preservation, trust, data production, end-user tools etc.

The participants in the project group Open Scholarship (9 November 2015) addressed the following questions in their break-out meeting:
• What is Open Scholarship and how to deconstruct into basic ideas/elements and e-infra-matching elements?
• How e-Infrastructures can facilitate Open Scholarship?
• Open Scholarship requires transparency at all levels of the research life-cycle, which effectively leads to trust and uptake. What/who do we need to mobilize the right stakeholders to build this trust?

2. What is Open Scholarship?
For simplicity, it was suggested to consider an analogy with for example a large laboratory. Such a laboratory allows for jointly shared resources (lab spaces, chemicals, instruments), opportunities for interaction (seminars, discussions at the coffee machine), engaging foreign researchers, and training to find your way (to the instruments park, the library). Another view is to consider opening up the research process digitally to others. This would concern the whole pipeline from data production (measurements, sensors, observations), through processing, analysis and modeling, up to presentation including publication or running operational results.

These views are emphasizing that Open Scholarship is not served with only a static catalogue for sharing data, software and other services. In addition, Open Scholarship requires dynamic facilities for interactive collaboration, for example in performing experiments and in publishing. Some scientific communities have their closed environments with such capabilities, but Open Scholarship means scaling up with other communities and with open access.

Such an approach is very different from most current research practices, implying an enormous scale of culture change towards open scholarship. It will impact the traditional social system of science with respect for example ownership, recognition and behavior. This takes time and will be different for various scientific fields, but varying speeds in the process of change should be appreciated. Success stories may serve to sell the value of new practices. This includes opening up science to society and citizen scientists. Communicators can assist in this respect, also to identify and understand any obstacles. Amongst these are often the not open accessible public data generated by governmental agencies.

3. How e-infrastructures can facilitate Open Scholarship?
As said above, Open Scholarship requires facilities for the interactive deployment of new collaborative facilities on top of a catalogue of data, web services and workflows. To lower the threshold to Open Scholarship it would be helpful to introduce facilities for user-driven filters to navigate in the Open Scholarship environment and to see how others used and commented on the facilities. Novel automated supporting processes from e-infrastructures are conditional, and these should not be restricted to Europe and/or the public research sector. This may contribute to open protocols.

A concern is how to secure trust and how to deal with misconduct. Open science will make misconduct better discoverable, but the above mentioned culture change has to take anyway into account how to deal with these issues.

4. How to mobilize the right stakeholders to promote transparency of the research life-cycle?
Generally, scientists do not consider opening up their research process to wider audiences and do not feel responsible for issues outside their own interests. Also considering the required culture change towards open scholarship, it is crucial to train a new generation of open scholars with an understanding of the emerging advantages of open scholarship. An action plan to engage all universities is probably a good mechanism. Cooperation with the plans of the Concertation group New Skills and Professions is an effective way to proceed. As with respect to the professional career of the foreseen open scholars, it is also important to have attention for shaping new profession and career policies. Changing the behaviour of scientists is not enough. Other stakeholder communities to be mobilized are the (scientific) organisations expected to foster open scholarship, and the funding bodies and governmental agencies with a position to initiate (financial) incentives for culture change. Additional mechanisms need exploration.

5. Next steps
a. Drafting of a discussion document by engaging the interested e-infrastructure projects. The discussion document should serve to inform stakeholders and to encourage them for action.
b. Cooperate with the New Skills and Professions group to design an action plan for training a new generation of scholars and shaping model policies for career development in Open Scholarship.
c. Promote the involvement of interested individuals and stakeholder communities to promote Open Scholarship.
d. Suggest the European Commission to include in the next Work Programme activities for the introduction of Open Scholarship and attention for the above actions b and c.