

# FOSTER Final Report

## 4.1 Final publishable summary report

### Executive Summary

FOSTER was a coordination initiative that supported different stakeholders, especially young researchers, in adopting open access in the context of the European Research Area (ERA) and in complying with the open access policies and rules of participation set out for Horizon 2020 (H2020).

FOSTER promoted the integration of open access principles and practice in the current research workflow by targeting the young researcher training environment. In addition, FOSTER strengthened the institutional training capacity to maintain compliance with the open access policies in the ERA and H2020, and facilitated the adoption, reinforcement and implementation of open access policies from other European funders, in line with the European Commission's recommendation.

FOSTER established, conducted and supported a European-wide training programme, with more than 100 training events, in 28 countries, with more than 6000 participants, on open access, open data and open science, consolidating training activities at downstream level and reaching different stakeholders, diverse disciplinary communities and countries in the ERA. Each type of stakeholder was provided with a range of relevant training programmes, practical advice, support and help. The training programme included different approaches and delivery options: eLearning, blended learning, self-learning, dissemination of training materials, helpdesk, face-to-face training, especial training-the-trainers, seminars, etc.

Through the FOSTER Portal, established during the first year of the project, more than 1800 training items were collected, categorized and made available for reuse, as standalone objects or organized into courses, and 11 different elearning courses were created and offered, as self-learning or moderated courses, resulting in 25 elearning initiatives.

Through the training content collected, categorized and made available, the intense and wide-reaching training programme, and the availability of the FOSTER Portal to store and provide access to Open Science training content and to organize and run elearning courses, FOSTER has really greatly contributed to augmenting European researchers' understanding of open access, open data and open science requirements, and to the adoption of open access by the participants of the European Research Area (ERA), and on the compliance with the open access policies and rules of participation set out for Horizon 2020 (H2020).

## Summary description of project context and objectives.

Despite the significant activity and progresses registered at National, European and research community levels regarding Open Access and Open Science in previous years, namely with the FP7 Open Access pilot, and the H2020 Open Access mandate and Open Research Data pilot, and the growing and generalized awareness and support (90% or higher, as revealed on several surveys<sup>1</sup>.) of the principle of open access to public funded research from various stakeholders, the implementation of open access remained a challenge, as shown by the same surveys<sup>2</sup>.

There were still important knowledge gaps, technical and legal questions and doubts, and a stated deficit of concrete support, for the practice of open access and the implementation of open access policies, by the different stakeholders, especially researchers and research institutions.

All those issues, if not addressed, could affect the effectiveness of the open access policy on H2020, as they have shown to be barriers to the compliance with the FP7 Open Access pilot<sup>3</sup>.

Trying to address those issues, and based on the rich experience of its members (through the participation on EC funded projects like OpenAIRE, MedOANet, NECOBELAC and existing Open Access advocacy organizations and networks like LIBER, SPARC Europe, Couperin), the FOSTER consortium proposed a strategy with the following general objectives:

- **Support different stakeholders**, especially young researchers, in adopting open access in the context of the European Research Area (ERA) and **in complying with the open access policies and rules of participation set out for Horizon 2020**;
- **Integrate open access principles and practice in the current research workflow** by targeting the young researcher training environment;
- **Strengthen the institutional training capacity** to foster compliance with the open access policies of the ERA and Horizon 2020 (beyond the FOSTER project);
- **Facilitate the adoption, reinforcement and implementation of open access policies** from other European funders, in line with the EC's recommendation, in partnership with PASTEUR4OA project.

These objectives have been pursued through the combination of three main activities which have been identified in the project proposal:

- Identification of already existing **contents** that could be reused in the context of the training activities and repackaging, reformatting them to be used within FOSTER, and develop/create/ enhance contents where they were needed;

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<sup>1</sup> Online survey on scientific information in the digital age - [http://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/survey-on-scientific-information-digital-age\\_en.pdf](http://ec.europa.eu/research/science-society/document_library/pdf_06/survey-on-scientific-information-digital-age_en.pdf)

Survey on open access in FP7 - [http://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/survey-on-open-access-in-fp7\\_en.pdf](http://ec.europa.eu/research/science-society/document_library/pdf_06/survey-on-open-access-in-fp7_en.pdf)  
Políticas e mandatos de Acesso Aberto : perceções dos investigadores - <http://repositorium.sdum.uminho.pt/handle/1822/20521> (Survey to portuguese researchers)

<sup>2</sup> Survey on open access in FP7 - [http://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/survey-on-open-access-in-fp7\\_en.pdf](http://ec.europa.eu/research/science-society/document_library/pdf_06/survey-on-open-access-in-fp7_en.pdf)

<sup>3</sup> Information on the number of journal articles from FP7 funded projects available on Open Access can be found in the OpenAIRE portal - <http://www.openaire.eu/> specially on the FP7 Open Access statistics area - <http://www.openaire.eu/pt/component/openaire/stats/default/393>

– Creation of the **FOSTER Portal** to support **e-Learning, blended learning, self-learning, dissemination of training materials/contents and Helpdesk**;

– Delivery of **face-to-face training**, especially **training trainers/multipliers** that can carry on further training and dissemination activities, within their institutions, countries or disciplinary communities.

The project targeted primarily the creators and users of research data and research publications, i.e. the researchers, particularly young researchers and graduate students, that not only will be active researchers during the timeframe of H2020 (2014-2020), but can also act as multipliers disseminating knowledge and inducing behavioural changes on senior researchers and other stakeholders.

But FOSTER has also directly engaged with other relevant stakeholders in the ERA: research institutions (administrators, librarians), project managers, policy-makers and staff working in funding bodies by pointing these stakeholders to a set of resources and data and arguments about open access targeted to their needs.

As initially foreseen, the training strategy used a combination of training methods and activities, from face-to-face training, to the use of e-learning and self-learning, trying to reach the maximum number of ERA stakeholders and accommodate the different training needs and practices across the countries, the disciplines and types of stakeholders.

Considering the interest to continue to support the results from the project (especially the training contents, and the FOSTER Portal), the consortium has defined a strategy to provide its sustainability combining of contributions from FOSTER partners (which will support basic functioning of the FOSTER Portal) with collaborations and synergies with related projects and organizations, and the wider community.

The sustainability plan will be implemented from September 2016 with a message to all contacts (associated partners, course creators, trainees, trainers, speakers and identified projects) to announce the sustainability of FOSTER Portal and the possibility of further collaboration with the project. Furthermore, synergies with other initiatives will take place, mainly the connection with the OpenAIRE 2020 project and the network of national Open Access Desks.

## Description of main S & T results/foregrounds

The FOSTER project has generally achieved, or even exceeded, the original objectives and has produced very relevant results in each of the 3 main areas of work (Contents, FOSTER Portal and Training) that have been identified in the initial proposal.

Regarding the first area, FOSTER has achieved to collect and categorize a significant volume of training materials, has produced an Open Science Taxonomy for content classification, has engaged with Graduate Schools on including Open Science into curricula, and produced content and learning objectives for target groups/stakeholders.

The content collection and categorization was realized throughout the project duration, using several approaches. Initially, through the collection of existing training materials previously produced or known by the project partners, and also with the participation from the wider Open Science community that has contributed existing training content, following an open community call for content, released by the project in its early stage. Several hundred training items have resulted from this initial work, and all the submitted content was analysed and categorized by FOSTER partners, for deposit in the FOSTER Portal.

On a second phase, since the end of the first year, a significant number of training content resulting from the training events organized or supported by FOSTER was deposited on the FOSTER Portal.

Resulting from this different sources, around 1800 training materials (presentations, videos, briefing papers, infographics, etc.) were collected, categorized and made available on the FOSTER Portal. The content was categorized according with a “Technical Protocol for Content Classification” (D2.1), based on which an “Open Science Taxonomy” was created.

The “Open Science Taxonomy” which structured the Portal content, was also favourably accepted by the community, and has been mentioned and used in different contexts.

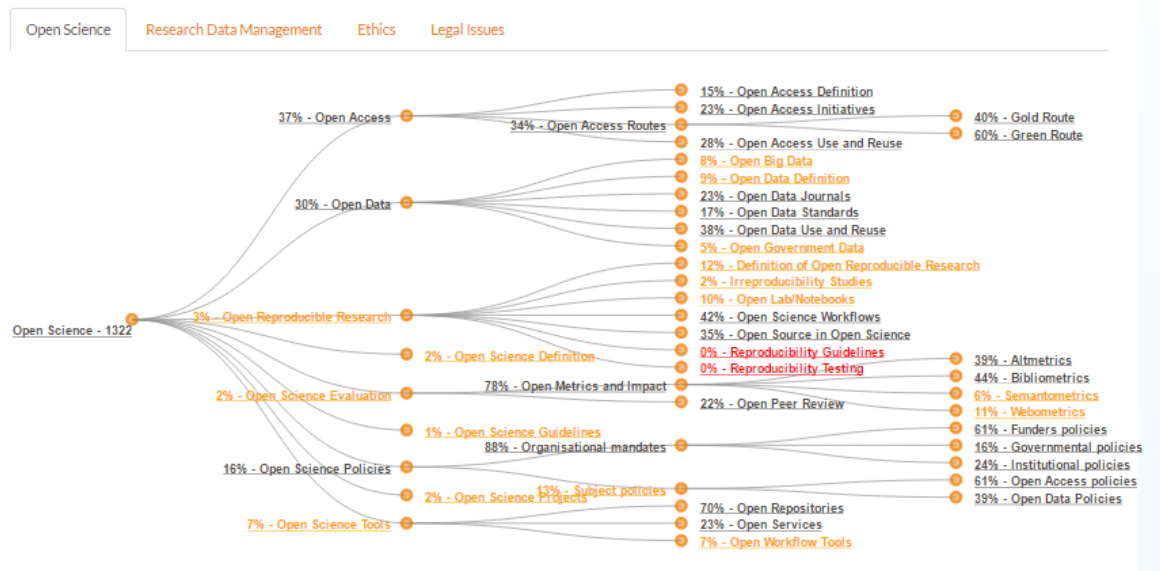


Figure 1 - Distribution of resources on the FOSTER Portal with Open Science Taxonomy

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Regarding engagement with ERA Graduate Schools, seeking certification to officially recognize Open Science training, there were several initiatives with individual or groups/clusters of Schools (like the University of Helsinki Graduate Schools, or the Université Européene de Bretagne) and a couple of events were organized, with strong Graduate Schools administrators, Ministry of Education staff and EC participation:

- [FOSTER-UNESCO Open Science for Doctoral Schools](#), 23 April 2015
- [Future of the Doctorate](#) (Organised by EC MSCA Office), 28 May 2015

The overall reaction by doctoral curriculum administrators is that the approach adopted by FOSTER to support each step of the **Research Lifecycle is with an Open Science tool, practice or philosophy**, (Figure below) matches existing curricula structures, and would allow addition of training as needed locally.

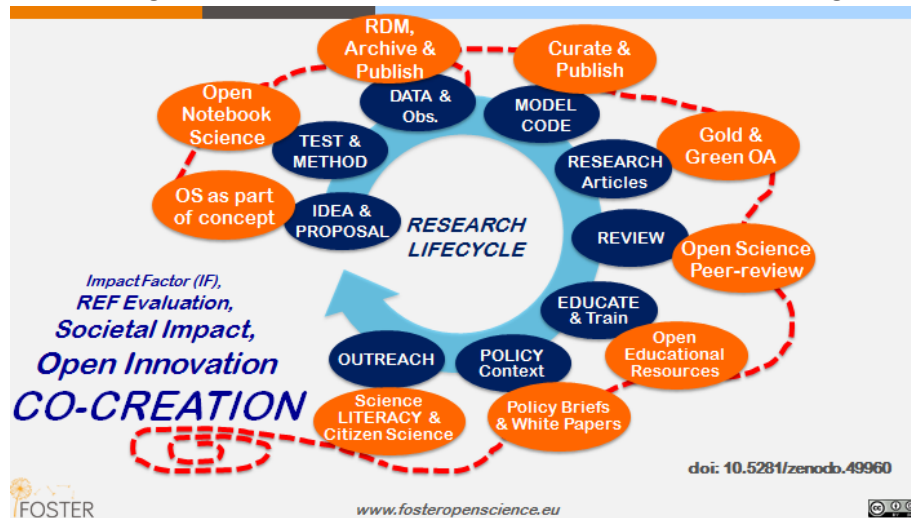


Figure 2 - Research Lifecycle is with an Open Science tool, practice or philosophy

Finally, FOSTER produced “Content and Learning Objectives for Target Groups” (D2.3) (Detailed table with Learning Objectives is openly available at [https://docs.google.com/spreadsheets/d/1UwsYf8fEFZzK8IPFK-7rFE3BO\\_VbjvOjQm3CigqBqyk/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1UwsYf8fEFZzK8IPFK-7rFE3BO_VbjvOjQm3CigqBqyk/edit?usp=sharing)). Simplified Learning Objectives for the main stakeholders, structured by Open Science Topics, were identified.

To maintain the coherence between an Open Science taxonomy that accompanies the target audience workflow, and to be able to match it with relevant training content (via the FOSTER Portal), the following logic is applied in structuring the Learning Objectives:



Figure 3 - Learning Objectives Workflow

For each main topic and subtopic of the Portal taxonomy, one general objective was defined, that can be structured in specific learning objectives. These specific learning objectives will be the basis for course creation in through a variety of possible approaches (face-to-face, blended or e-Learning) and allow the course creator to choose which specific objective are relevant to which target audience.

This method allows to map the learning objectives with the training content (via the FOSTER Portal) and the learning activities. It also allows the course creator to adapt the course to specific local context, depending of the level of competence, and the ultimate objectives for performing the training.



Figure 4 - Structure and Approach to Open Science Learning Objectives

On the second main area of work, the creation of FOSTER Portal, it has been a challenge to develop and run and integrated system around open science training. The initial step was focused on existing initiatives regarding training in general and in science education topics in particular. We found many initiatives, but all of them with a lack of integration between the different modules.

Aware of the need to deploy on early stages of the project some support to the community, we plan three different releases of the FOSTER Portal to introduce gradually new functionalities based on AGILE methodologies of development. This option allowed us to include also improvements based on the user feedback during all the process.

The effective challenge for the team was to combine the concepts of “Learning Object Repository”, “Learning Management System”, “Shared Calendar of Events” with the engagement of the community. All of these concepts are based on a participatory model to promote future sustainability.

The primary input which provided the specification for the portal development including a calendar of the portal releases. Three release candidates (RCs) have been scheduled; RC1 was released in September (in M8) when the FOSTER Portal was launched. This happened 4 months earlier than originally anticipated in

the DoW. The decision to provide this earlier release evolved from the need to support training events and increase the project visibility as early as possible.

The RC2 has been released on M12 and contained a prototype of all envisaged front-end portal functionalities.

The RC3, released on M23, include the functionalities associated primarily with back-office tools in order to guarantee the sustainability of the project.

From the beginning of the development of the project, Partners considered this task not only as a technical challenge, but the combination of the technical structure to integrate the community needs to develop the training activities to support the project objectives.

The Portal has three main areas, the contents, the courses and the events.

The **contents** can be submitted by anyone that is registered on the portal and allow the categorization of each content based on the topic (from the topics maps), language, difficulty, stakeholder, licences, etc... After been submitted, the role of the reviewer will check for the correctness of the information. This allows us to assure a minimum of the quality of the contents. At this step, the contents are available on the portal, which means they can be retrieved by a simple or advanced search, referred by a specific link and integrated onto the eLearning courses. By using controlled vocabularies, users can also browse contents by stakeholder/audience.

Users can submit any type of content that can be host on the FOSTER portal or referenced by a link to an external source, like an external website. If the user submits specific file formats, they will be converted in PDF and ePub formats and made available to the user by download or on the integrated viewer "Multivio".

All the contents are also available by search engines like Google or Bing. To promote the use of the Open Science taxonomy, the users can browse the contents of each node of the taxonomy to identify learning contents for their needs. Also, each node has a "topic page" with a short description of the concept and the parent topics associated.

The **events** module has two different objectives, first, it allows the community to attend events in their geographic zone or check for events they can reproduce locally. Another objective is the promotion of the deposit of new learning contents from these events in to FOSTER Portal.

In some cases, the FOSTER Portal was used as the main dissemination page to promote the event. Each event page includes the location, contact, description, programme and the same taxonomy of description as the contents for the topics and stakeholders. Another important development is the events maps that shows upcoming and past events. All the events with FOSTER support includes a FOSTER badge to strengthen the FOSTER community.

Finally, the **Learning Module** of FOSTER is based on andragogy concepts, focus on adult learning styles with a basic learning structure. Each course has a course presentation, a schedule, a specific number of hours, specific modules with learning contents, one or different moments for evaluation and a forum

associated with each training initiative. With these modules, simple or complex training initiatives can be developed with different types of activities included based on the contents of the FOSTER Portal. This means that the course creator needs to submit on the Portal all the course contents, which promotes the deposit of new learning content. One specific module of the Learning Module is the creation of quizzes that can be used for assessment but the questions introduced on the quizzes are also available on the portal when browsing.

A great added value of the FOSTER Portal is the combination of these different types of information in one shared taxonomy of topics, stakeholders, levels, languages that allows the user to search by a specific stakeholder and then choose if it wants to check for resources, events, courses or questions from the quizzes.

Considering the technical components, all the developments were based on open source technologies, in this case based on the DRUPAL content management system.

Another aspect to the Portal, focus on the initial requisites is the management of the user profiles and their specific roles. This functionality allows an easy management of the workflow (reviewers, events creators, course creators, etc...).

The partners made available many materials to support the use of the Portal by any user, even without technical skills. But even if a user needs some support, it can contact the FOSTER Helpdesk that has been considered on the sustainability of the project. The development of the back-office tools also allows the possibility of workflows based on any user registered on the Portal to allow for example the validation of learning contents or events submitted by the community.

Besides these main modules, the FOSTER portal also includes News regarding the project and the Open Science topic in general and also a Speaker Directory to promote and disseminate speakers by topic and audience. This way, an event creator can contact directly a speaker based on the specific skills.

The third, and most important area of FOSTER work was obviously the training activity. The results of FOSTER regarding training have clearly exceeded the initial expectations, and the contractual commitments.

FOSTER has established and conducted a comprehensive training programme with more than 100 face-to-face training events (the initial commitment was 20 events), realized in 28 European countries, totalling more than 6300 participants from different target groups (but with a majority of researchers, especially young researchers, and postgraduate students) and from a wide variety of disciplinary backgrounds. FOSTER developed 25 e-learning initiatives, in six languages (English, Estonian, Latvian, Polish, Portuguese and Spanish). From those, 15 initiatives were in self-learning mode and 10 in moderated versions from a total of 11 different courses, reaching more than 750 participants.

As initially foreseen, the establishment of the training schedule, was not be mainly based on events directly planned by the FOSTER consortium, but by supporting community training events via two annual open calls for events which adhere to the objectives of FOSTER. The first call was issued at the project kick-off (for events occurring from Month 4 to Month 12), and the second call later on the first year, for events taking place in the second year.

During this first call, 45 training proposals, from 19 countries, have been submitted. Resulting from the evaluation process, 19 proposal from 14 countries (Belgium, Bulgaria, Croatia, Denmark, France, Germany, Greece, Hungary, the Netherlands, Poland, Portugal, Slovenia, Spain and the UK) were selected. These 19 training proposals involved a total of 66 initiatives, as some of them were series of courses. A complete and detailed account of the training events selected on the first call, as well as other training courses organized by FOSTER can be found on the FOSTER Detailed Training Schedule (Deliverable 4.1).

In October 2014, FOSTER announced a call for Open Science Training inviting proposals to host FOSTER training events on open access, open research data and open science in 2015. Out of 79 submissions, [24 training proposals were accepted for funding](#), in 20 different countries (Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Ireland, Latvia, Lithuania, Malta, the Netherlands, Slovenia, Spain, Switzerland and the United Kingdom). This resulted in 46 events organized from March 2015 until December 2015, with one event in Lithuania taking place in the first quarter of 2016.

Simultaneously with the support and participation in community promoted events, the FOSTER consortium has directly organized or participated in more than 20 other training activities in line with the project objectives.

The eLearning strategy defined by FOSTER forecasted the implementation of the distance learning initiatives on the second half of the project, in 2015. With the extension of the project, more actions could be developed. As already referred, 9 different courses with different translations and types of courses (moderated or self-learning) in a total of 22 online initiatives were created. The project implemented 8 moderated courses and 14 self-learning initiatives on the Learning Module.

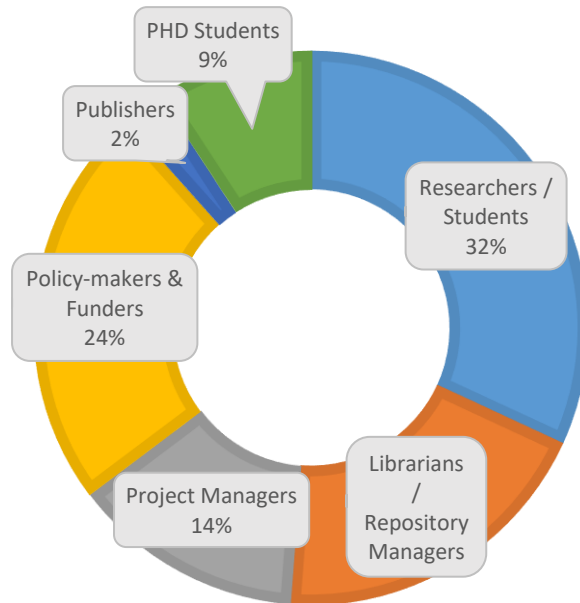
Considering it is a very efficient and cost effective method for reaching out to geographically distributed audiences, 8 Webinars were organized in 2015 and 2016, in some cases also being part of moderated e-learning courses.

Based on the information of the D4.4 – Final Training Report, we present bellow the compilation of the training activities developed on the FOSTER project.

The next graphics present the information from all the training events during the project (except webinars and eLearning courses). Overall, from May 2014 to June 2016, FOSTER organized or supported more than 100 training events, in 28 European countries, with more than 6000 participants in total.

Considering its reach by stakeholder, the FOSTER training activities have achieved the objective of prioritizing researchers, and especially young researchers (including PhDs), which represented 41% of participants.

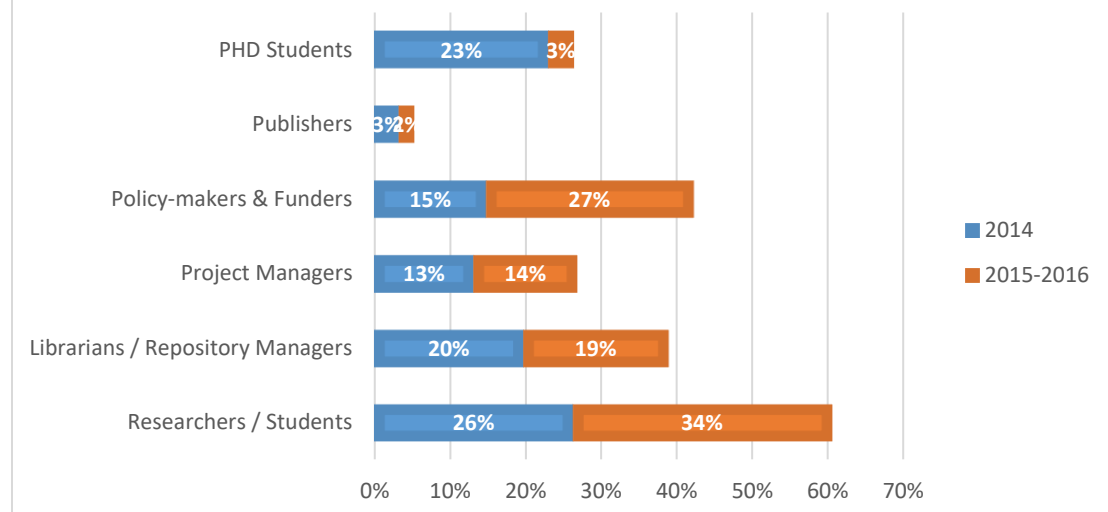
## TOTAL INITIATIVES BY STAKEHOLDER



Graphic 1 - Total Initiatives by Stakeholder

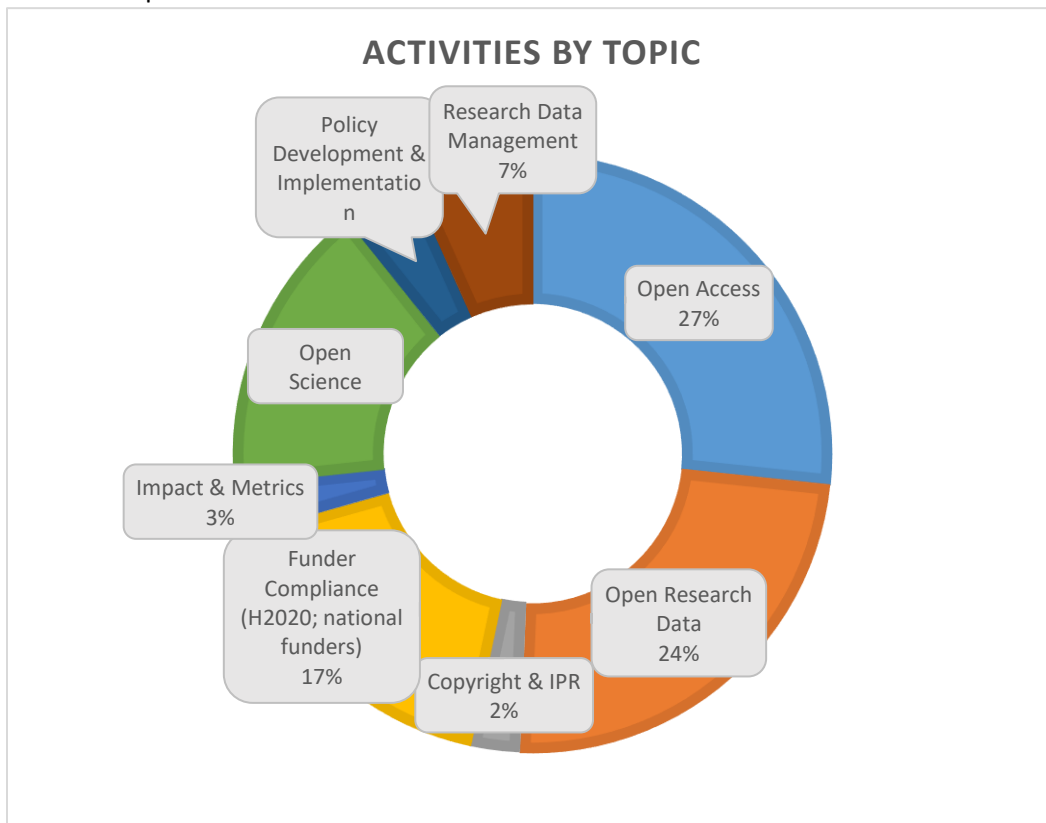
The next graphic represents the percentage of each stakeholder by period and we noted an increase of focus on Researchers /Students and Policy-makers & Funders during the second period. Some activities have specifically targeted PHD Students.

## PERCENTAGE OF STAKEHOLDERS BY PERIOD



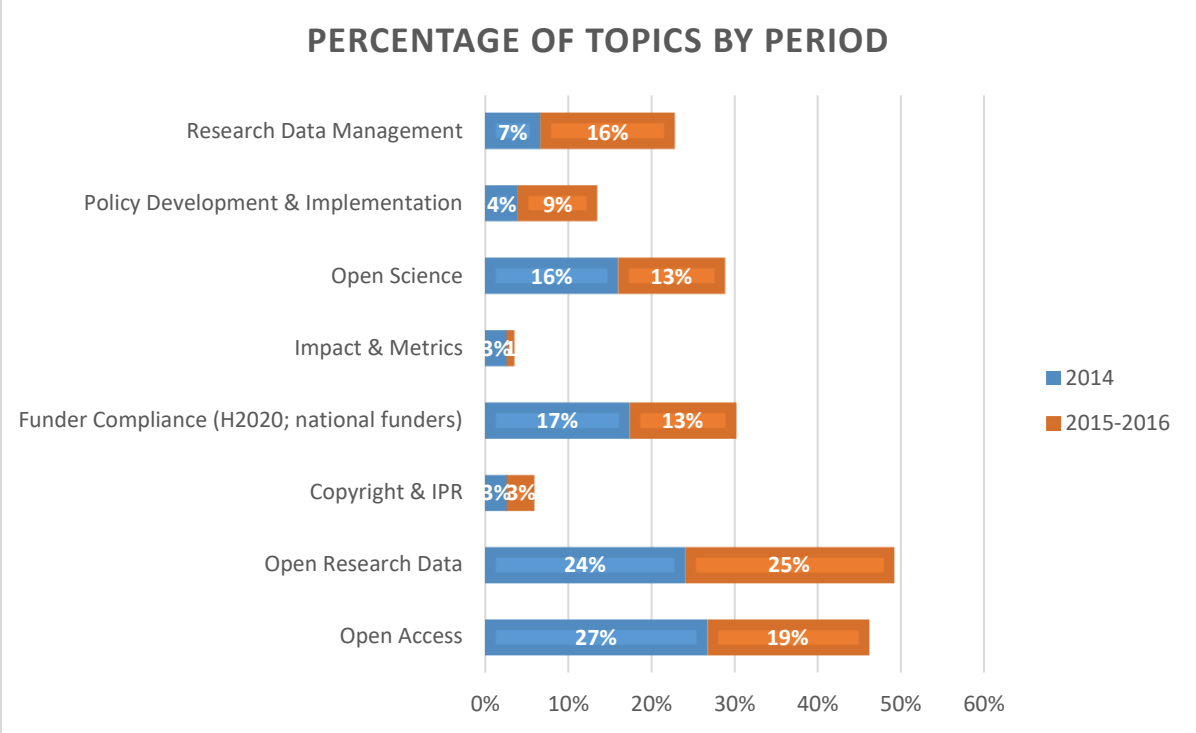
Graphic 2 - Percentage of Stakeholders by Period

Considering the topics approached on the different initiatives of the calls and other funded events, Open Data and Open Research Data were the most addressed in the initiatives, followed by the topic of the funder compliance.



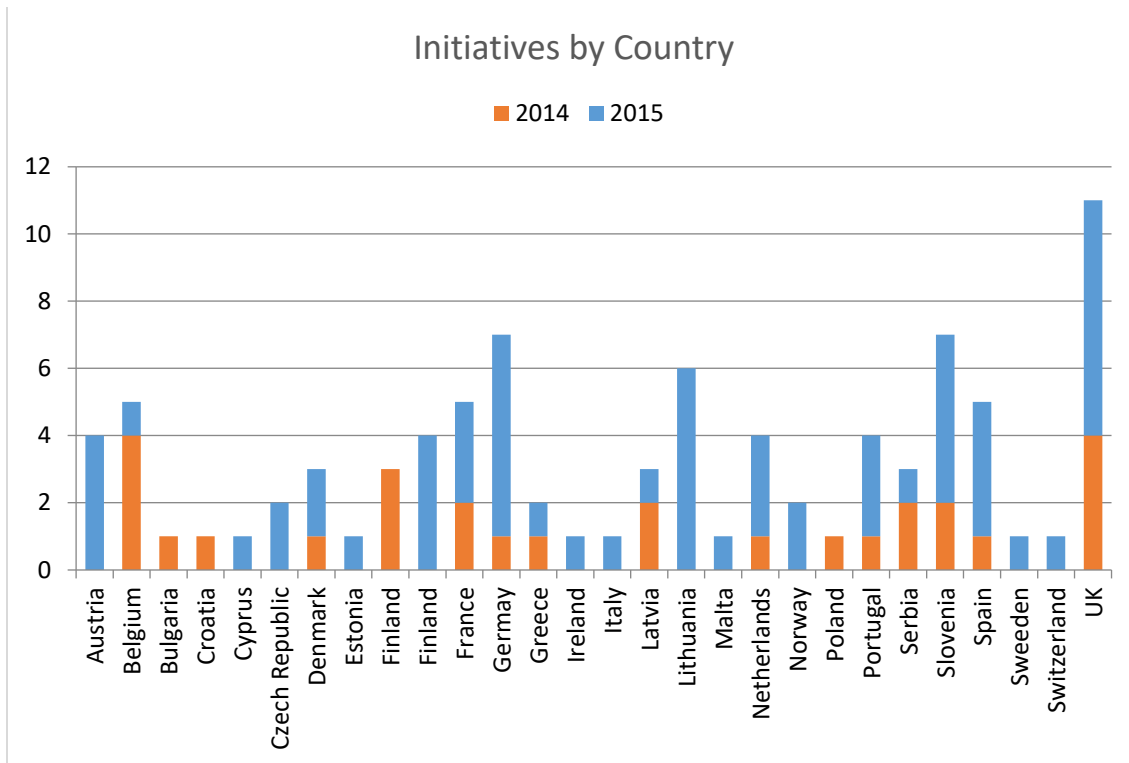
Graphic 3 - Total Activities by Topic

There was a clear increase of interest in research data management and policy development and implementation on the second period of the project, as shown on the following graphic.



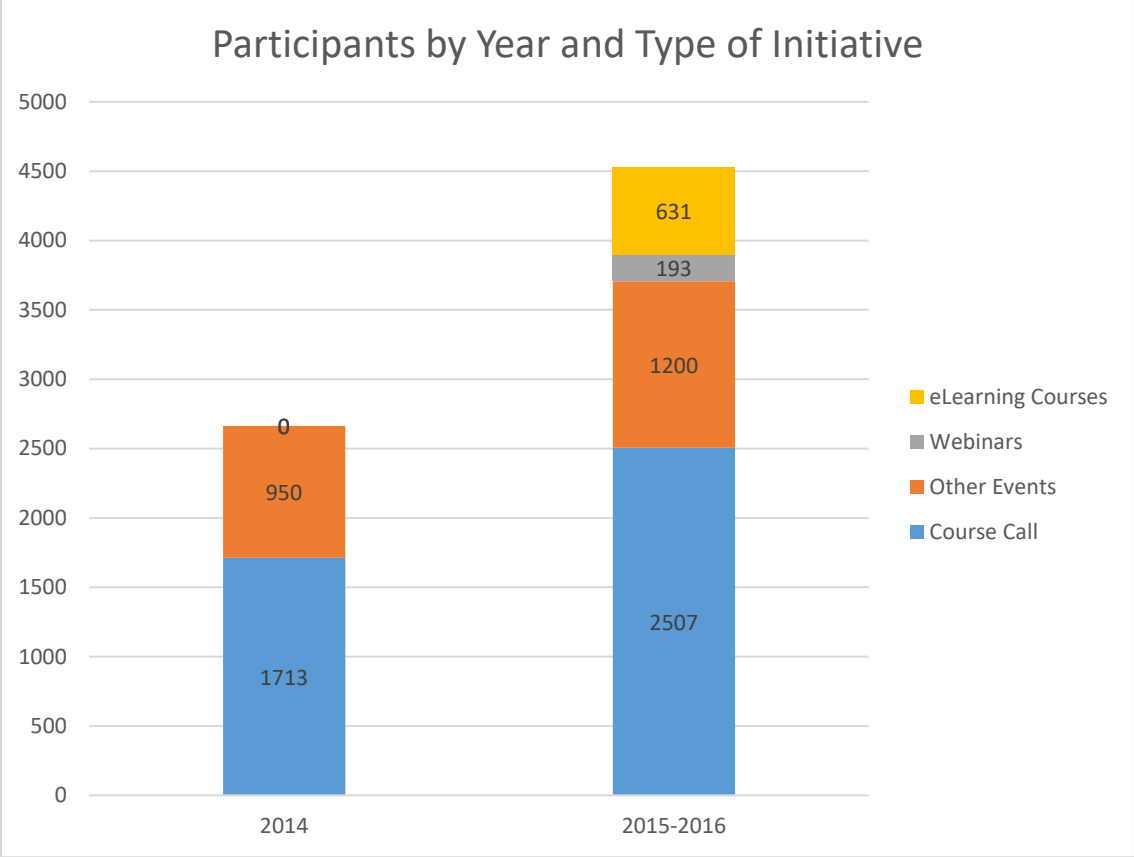
Graphic 4 - Percentage of Topics by Period

Regarding the geographical distribution of initiatives, it is very clear that FOSTER achieved a broad coverage of Europe, with initiatives in 28 countries.



Graphic 5 - Total Initiatives by Country

Finally, regarding the total number of participants on FOSTER organized or supported training events, the following graphic presents the number of participants per period and by type of initiative. We've registered a growth in the number of participants from the first (around 2600) to the second (around 3700) period. On the other hand, the eLearning courses and webinars took place during the second half of the project (totalling more than 800 registered participants) and were types of activity that tend to grow over time. The self-learning registered users are not included in the numbers below.



Graphic 6 - Total Participants by Year and Type of Initiative

Considering all this, **more than 7000 participants (6300 in face-to-face training and 800 online) have been involved in FOSTER training** regarding Open Access and Open Data topics with different types of initiatives.

**Potential impact and main dissemination activities and exploitation results** (including the socio-economic impact and the wider societal implications of the project so far) and the main dissemination activities and exploitation of results (not exceeding 10 pages)

FOSTER served a particular role in the current landscape of EU-funded projects in the sense that it sets out to bolster the training capacities for promoting open access, open data and open science, in particular in the context of the European Commission's open access mandate and open data pilot for Horizon 2020.

And through the training content collected, categorized and made available (around 1800 items), the intense and wide-reaching training programme (more than 100 face-to face events, in 28 countries, and 25 elearning initiatives, totalling more than 7000 participants) and the availability of the FOSTER Portal to store content and organize and run elearning courses, FOSTER has really greatly contributed to augmenting European researchers' understanding of open access, open data and open science requirements, and the potential benefits associated with their adoption.

A key strength of the FOSTER consortium was the fact that the project was built upon an already effective European-wide network of Open Access advocates who possess expertise in community engagement and in building capacity among numerous stakeholder groups. This unique network of people and European-funded initiatives provided a solid basis for all the work developed during the project, from content collection and creation, to intensive training.

The main impacts and potential exploitations of FOSTER results, are naturally related with the 3 main areas of work: Content, Portal and Training. But during the project period an intense dissemination activity was carried out, to maximize the reach and impact of those project outcomes and results.

Initial dissemination (through mailing lists, and the FOSTER website) was focused on the Calls to the Open Science community to contribute with training content and organize FOSTER supported training events. The FOSTER website, was one of the main dissemination channels of the project. A preliminary teaser web page for the project was released online in December 2013, which was replaced by a basic website in February 2014. The second stage of the website was concluded in July and launched in August 2014 smoothly integrated with the pre-launched training platform. Over the course of the project the website was developed further in parallel to the development of the training portal, ending up being fully integrated in the Portal, and continuously adapted to the communication needs of the project consortium.

All training events were closely supported by the dissemination team, making sure that the event was widely announced, visible on social media and reported through news items on community platforms as well as the FOSTER website. With the opportunity to upload training content to the FOSTER portal, not only the events but also the training material could be included in the communication. Particular useful, high quality material was especially featured and highlighted to stimulate re-use.

Partners extensively used their highly followed [Twitter channel](#) (1844 followers as of July 2016) with good re-tweeting rate, continuing to engage and support a community around Open Science topics through which events and upcoming project outputs are disseminated.

Several dissemination materials, like Posters, Roll-ups, Flyers, Moo cards, videos, and infographics, were produced to raise the visibility and awareness of FOSTER, and were used in many events and other occasions.





Figure 6 - Interviews "How to make #openseience the default?"

The impact of the FOSTER training programme has to be assessed not only by the impressive number of events and participants, or the wide geographical and disciplinary coverage of those events. FOSTER impact will be shown after the project end, in the coming months and years, with the multiplication of events organized by “local” trainers, that were FOSTER trainees, and the future usage of the existing elearning courses available on the FOSTER Portal.

On the other hand, in many countries, FOSTER training events have been the most complex and comprehensive open science events ever organized. New partnerships and co-operations between researchers, research administrators and academic librarians were established in institutions, countries, regions and Europe-wide. And several follow-up workshops have already been organized. We hope that this is a start of a new tradition of similar events and initiatives leading towards systematic policy development and sharing best practices in promoting and practicing Open Science.

In what concerns to content, the 1800 training items collected, categorized and currently available for reuse on the FOSTER Portal. FOSTER training materials have already been used and re-used, as well as FOSTER branding and competencies. But we are sure they will be certainly useful, and used in the coming years, for all those seeking to learn, or provide training, about Open Science.

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The sustainability plan will be implemented from September 2016 with a message to all contacts (associated partners, course creators, trainees, trainers, speakers and identified projects) to announce the sustainability of FOSTER Portal and the possibility of further collaboration with the project. Furthermore, synergies with other initiatives will take place, mainly the connection with the OpenAIRE 2020 project and the network of national Open Access Desks.

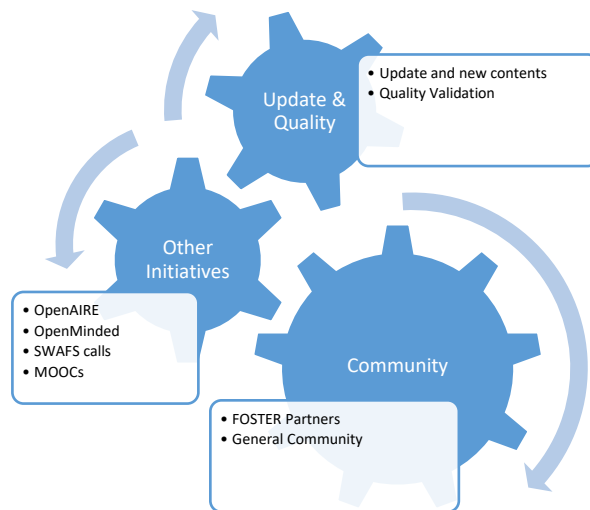


Figure 7 - FOSTER Project Sustainability

After the results of the calls SWAFS 04 and 07 2016, the sustainability coordinator will engage with the new project coordinators, to explore possible collaborations and use of the FOSTER results and infrastructure by those projects.