



PROJECT PERIODIC REPORT

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1 Publishable Summary

1.1 Project Context and Objectives

The large scale research facilities and technology platforms are usually defined as a set of experimental instruments and components mainly available to academics and partly to industry. The management of open access for scientists and outstanding research programmes via facility networks is being consolidated through existing initiatives such as Instruct and EuroBioimaging. Large companies have created strong collaborations with these research infrastructures. However, there is still room to improve the economic output of this research and the involvement of small and medium sized enterprises (SMEs) in creating value and employment from these early scientific results.

Photonics clusters and national platforms act as coordinating entities between science and business, as well as between regional and international environments. They may play a key role in improving the communication and the collaboration framework between life science research facilities, SMEs and end-users.

In recent years, the European Union (EU) has strongly invested in life science infrastructures and biophotonics technologies. Seven European countries (France, the UK, Germany, Sweden, the Netherlands, Italy, and Spain) gathered 70% of the new infrastructures in life sciences in the 7th Framework Programme (FP7). Nine photonics clusters from these countries, involved in initiatives supporting biophotonics at the regional or national level, defined the 30-month OASIS Coordination and Support Action (CSA).

The consortium has realized an inventory and geographically mapped former European investments in life science infrastructures and identified SMEs' and end-users' needs in the regions or countries of the consortium partners. OASIS partners have designed a service model intended to match the existing offer with the identified needs. Cluster services aim at supporting the development of SMEs, increasing the visibility of the infrastructures and improving their collaboration. These actions help to reduce the gap between research and business, facilitate the access to facilities and provide European SMEs with a competitive advantage in new product development and faster access to their markets by increasing available funding for biophotonics technologies and by reducing cost and time of technical development.

The final objective was to create sustainable tools and services and spread them towards different target groups in Europe: other regional clusters and national platforms, companies and facilities, as well as other existing networks and programmes. Outcomes are available in the form of public deliverables and a contact database on the project website, as well as in the form of dissemination material such as brochures intended to improve the visibility of the R&D and business environment in each partner region or country. The consortium also produced a smart book aimed at inspiring and providing SMEs with tips via success stories and the main project results.

1.2 Description of the Work since the Beginning of the Project

The work carried out during the first project period (December 2013 - February 2015) was mainly dedicated to:

- Organizing and making operational consortium actions and activities;
- Gathering and sharing knowledge on biophotonics potential of the R&D and business environment in each cluster area as well as on unmet companies' and end-users' needs;
- Providing efficient communication and web-based tools to increase the visibility and foster the collaboration between facilities and companies;
- Starting cooperation with other projects and previous initiatives.

During the first 9 months of the project the consortium agreed on a mode of operation through a project management guide. Early communication tools (a website <http://www.fp7-oasis.eu/>, a basic presentation, a flyer, a roll-up, a newsletter) were set-up to be used by each partner throughout the whole project lifespan. A methodology to perform gathering and inventory activities was defined and applied to prepare a questionnaire. Its aim was to analyze supply and demand by collecting information about companies, research laboratories, existing initiatives and end-users. The planning of workshops to be held over entire duration of the project was also carried out and adapted according to scheduled regional and national events in order to facilitate the stakeholders' participation. Two workshops were organized during the first period in the working environment of hospitals in Spain and Brittany.

The consortium believes that the cooperation with existing networks and initiatives is critical to the success of this project and may help the dissemination of the tools and services developed by OASIS. Therefore, several appointments with existing networks were planned for the second project semester in order to present OASIS. The mode of this interaction was periodically discussed in consortium meetings and the last workshop was organized in collaboration with Public Private Partnership (PPP) Photonics 21.

Information gathering by partners covered the project's first year. Efforts were uneven according to the partners. Some of them have less interaction with their ecosystem and therefore needed more time to contact companies and laboratories, present the project and showcase the interest of a European collaboration for the development of their activities in biophotonics. This outcome allowed the consortium to highlight local specificities of the collaboration framework between SMEs, laboratories and end-users. At the end of 2014, the consortium decided to stop with the interviews since more than 70% of the expected data had been received. Nevertheless, partners were able to collect further information at a later stage through the networking activities. Based on the results of the inventory, an online database was created at the beginning of 2015 with both public and private access from the website. It highlights the expertise of the interviewed organisations and their corresponding cluster in order to make their contact details accessible to stakeholders.

Data analysis started during the last months of the first period and continued during the second year due to the considerable amount of information received. At the end of February 2015 a report profiling the interviewed SMEs and their major needs concerning the access to biophotonics markets, as well as unmet clinical and agrifood needs was produced. Reported drawbacks in collaborative projects with facilities were also analyzed. In parallel the partners collected information about financing sources, strategy and services provided by each consortium partner with the aim of identifying already existing local support schemes for companies and facilities.

The main actions carried out in the second period of the project (March 2015-May 2016) aimed at:

- Finalizing the analysis of facility mapping and SMEs' needs;
- Designing a sustainable model of cluster services to support SMEs' development and improve facilities' accessibility;
- Increasing the effectiveness and the volume of networking activities to foster the emergence of new projects and products;
- Gathering and sharing success stories arising from the project to aid SMEs with their development in biophotonics;
- Defining an exploitation plan of the project results and their sustainability.

The analysis of the results of the facility inventory activities was accomplished during the second period of the project (September 2015) and provided recommendations for an improved collaboration of research infrastructures with industry and end-users. Through direct contact with their company members (calls, visits, participation in the workshops and subsequent requests for feedback on these events) the consortium tried to delineate a roadmap of SMEs' needs in terms of technology and business for the next 3-5 years.

The consortium proposed a service model to support the development of SMEs active in biophotonics and to help them to reach medical and agrifood markets. To reduce the gap between research and business and facilitate access to facilities, the model also includes services to increase Life Science infrastructures' visibility and improve their management. The model design was based on the acquired knowledge of technical resources and companies' needs in partners' environment as well as on the analysis of existing services, funding and the strategy of each cluster carried out in the first period. The service offer was built-up and gradually structured during the last eight months of the project. This was done by examining the improvements in the provided services in each cluster and a consortium level and by testing new ideas. The service offer design was complemented by a business model aiming to create a sustainable basis for the commercialization of services and tools developed in the project. The service model should be adjustable to each cluster to fit with its strategy and business model. It should also fit with its ecosystem in terms of infrastructures, funding programmes and support schemes that are already provided for SMEs and facilities in the cluster region or country. In case one cluster cannot implement a specific service the consortium designed inter-cluster services to fulfill the demand, and exchange information and expertise.

Huge effort was made by partners to foster and gather success stories based on the collaboration between SMEs, facilities and end-users. These can be short-term

collaborations to answer unmet needs via photonics based technology or long-lasting ones resulting in R&D or innovation projects to co-develop new tools, services, or products for application in Life Science. Success stories related to the project were collected in a biophotonics Smart book. Most of them are the results of the networking activities (workshops, search for partners via OASIS contacts and database, webinars). Seven workshop took place in the second period (Berlin, Florence, Aix-en-Provence, Milan, Amsterdam, Cardiff, Uppsala). Starting with the workshop in Amsterdam a questionnaire was sent to participants to evaluate the added value of the activities carried out and was later used to improve the organization of ongoing events. The questionnaire allowed partners to enlarge and update the results of the inventory activities and helped to refine the analysis of the SMEs' needs. Finally, workshops were an ideal opportunity to test and validate the quality of certain of the services proposed by the consortium.

Communication is a key issue of the project and one of the final objectives is to sustain and spreads the tools and services developed. Therefore, workshop announcements to attract participants and relevant deliverables were regularly uploaded to the project website. In addition, a large quantity of dissemination material was produced. Six brochures were produced to provide information about the business and R&D environment within the cluster regions or countries (Italy, France, Spain, the Netherlands, Germany, the UK). They are a powerful tool for increasing the opportunity of being contacted for new collaborations and business by enhancing the visibility of both facilities and companies. A video presenting the project was produced as well. During the last months of the project the consortium focused on the definition of a plan for the exploitation and sustainability of the project results.

1.3 Exploitation of the results and potential impact

The final goal of the exploitation plan of the project results is to strengthen European biophotonics by addressing the Life Science markets with new photonics-based products in a more efficient way. Since Europe has strong potential in this field and can deal with most of the life sciences challenges, the focus is on European products and European companies commercialising them. However, European biophotonics is highly fragmented. The collaboration of photonics clusters intended to connect and support different actors and resources in the innovation value chain can help to overcome the limitations originating from this fragmentation. The exploitation plan defines the consortium roadmap as the continuation of partner collaboration with the aim of strengthening European biophotonics. It includes a plan for the sustainability of the services, tools, analysis and connections built up during the lifespan of the project.

The first step is to organise the collaboration to maintain the basics activities of the project such as networking, sharing best practices and local services offered by clusters to companies, facilities and end-users. The next level of collaboration consists of services jointly offered by clusters and financed through fees. Such services may be event organisation, support for European collaborative projects and connection between SMEs and facilities by combining human resources. Furthermore, a large fraction of the consortium has applied for a new coordination and support action. Its aim is to further develop the OASIS project by

fostering regions' engagement and providing companies with new "Go-To-Market" services. These three scenarios will improve the database and the services developed by OASIS. Finally, the consortium discussed the creation of a European Biophotonics Platform as a powerful instrument to efficiently implement joint services, strengthen the collaboration between photonic clusters, engage other European regions and countries and reach a situation of stable sustainability.

Project results show that the collaboration of photonics clusters may have a socio-economic impact at local and European level.

- Impact on regional photonics strategy: some success stories suggest that clusters may play a role in the coordination of regional, national and European strategies and financial resources to the benefit of the local ecosystem and the regional smart specialization strategies.
- Impact on SMEs' development: cluster networking services such as setting-up a contact database and event organization impact on the economic and R&D environment by connecting SMEs with potential collaborators, business partners and customers. This fosters the SMES' internationalization and their competitiveness via the co-development of new products and technical solutions in collaboration with facilities and end-users.
- Impact on applicable sectors and markets: collaborative projects born from the participation in the workshops show the impact of photonics-based technology on healthcare, agri-food and agriculture via the development of new diagnostics and therapy, quality control and precision farming. Co-development allows SMEs to adapt products to end-users' needs and reduce investment risk.
- Impact on facilities' accessibility and sustainability: the analysis of the facility inventory enables clusters to provide recommendations in order to improve the access policy and the management of research infrastructures. This may foster a customer oriented approach to meet the market needs which affects the sustainable development of the facilities.
- Impact on business opportunities and collaboration: cluster dissemination activities aiming to improve companies' and facilities' visibility contribute to increased commercial opportunities for the SMEs and for the technological offer of the facilities.
- Impact on clusters: actions carried out during the project had an impact on clusters as well. They reinforced the local biophotonics networks of companies, facilities and end-users in partner regions and countries resulting in an increase of cluster members. They fostered the implementation of new services both at local level and potentially at European level via the provision of joint services. Finally, clusters benefitted from their direct involvement in collaborative projects.

1.4 Address of the project website

<http://www.fp7-oasis.eu/>