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REPORT ON THE BUSINESS MODELS OF NEW CLUSTER SERVICES

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Description	This deliverable designs the business models suitable for the self-sustainability of the services developed in the project to support SMEs active in Biophotonics and improve the accessibility of Life Science infrastructures. It also identify potential obstacles to their implementation related to the specificity of the clusters' business models.

SEVENTH FRAMEWORK PROGRAMME

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1 Introduction

The aim of the work package WP4 is to design a sustainable model of services enabling OASIS clusters to support the development of SMEs active in the field of Biophotonics and help them to reach medical and agri-food markets. To reduce the gap between research and business and facilitate the access to facilities, the model also includes services to increase Life Science infrastructures' visibility and improve their management.

The service model proposed by the OASIS consortium (deliverables D 4.4 and D 4.5) relies on the knowledge of technological resources and companies' needs (WP2 and WP3) in partners' environment as well as on the analysis of the activity, service offer and strategy of each cluster (D 4.1 and D 4.2). Deliverable D 4.5 refined the support scheme delineated in the interim report D 4.4 by grouping services in five main categories (each one defining a "kind of service") and by proposing some new services. This approach fits with the strategy of many partners willing to extend the range of services and reinforce business-oriented services to meet SMEs' needs discovered in the second period of the project (D 3.5). The present deliverable complements this analysis by joining a business model with the aim to make sustainable the services and tools developed in the project. The definition of the business model completes the effort made to structure the services by organizing their commercial offer. This fits with the business strategy of some clusters that plan to raise private income weight via the increase of company members and of the volume of services provided on the basis of a fee.

When defining a self-sustainable scheme, cluster business models as well as business models of the facilities in the environment of each cluster (described in deliverables D 4.2 and D 4.3, respectively) have been taken into account as well. Significant differences in terms of financing sources, private/public turnover repartition and legal status were highlighted in the deliverable D 4.2. These heterogeneous conditions make not relevant to design a unique business model suitable for all clusters. Thus we propose more than one possible business model and describe which services might be financed by each one. Finally, we analyze potential constraints to their implementation related to the specificity of each cluster in terms of mission, kind of financing and available infrastructures.

2 Methodology

The basic idea is to define a possible business model for the self-sustainability of the services developed in the project, by crossing the type of service provided (services covering the entire value chain from search for partners and clients to facilities' management and highly customized support for projects and business) with a source of revenue (membership fee, sponsoring, participation fee, remuneration on a fee for service basis). The different source of revenue reflects the policy of access to the services that the cluster agrees on with users. A membership fee provide access to a more or less wide range of different services, sponsors may have exclusive access to a concrete and specific result of the action concerned, for example a market study or just increase their visibility and potential client portfolio, participation fee is applied to allow access to a punctual event. Finally, the cluster may engage with users on the basis of a fee for services that vary according to the service offered and possibly according to the type of user (members or external users, companies or researchers).

We suggest four possible business models and consider whether they are already or could be implemented by each partner, supposing that the smoothest way of making sustainable the OASIS services is to integrate them in the commercial offer of single clusters. It's worth mentioning that each service category identified in the deliverable D 4.5 includes several specific services (see Figure 1 of that deliverable). Therefore, a realistic financing scheme entirely covering a service category will be often represented from the combination of at least two possible business models.

The exploitation plan of the project results (D 6.3) proposes the setting-up of a European Biophotonics Platform as an infrastructure to provide services at a consortium level. Within the platform framework, inter-cluster services (such as a request to be redirected to other clusters when the service is not available locally or expertise exchange via a translator network) will be managed on the basis of the business model of the local cluster, which acts as regional/national contact point and operational node for the platform. An agreement between clusters should be signed to avoid unfair trading. For example it might include the definition of standard offer packages or price lists for registration fees of events organized locally and jointly offered by partners outside the local area).

It should be noted that the definition of a business model as proposed in this report implies a distinction between revenues (i.e. private financing from services, events, members) and resources (European and national grants, regional and local funds, University funds, donations from private foundations…). Recurrent public funding and European and national projects may represent a large part of the total clusters' budget and impact the choice of the business model. Such a funding also has an impact on local companies and infrastructures, indeed clusters' actions aim to improve the business and collaborative environment in their regions and countries. As stated in the deliverable D 4.2, public funds and involvement in European projects dominate the turnover of most clusters (e.g. PhotonicSweden which doesn't receive national base funding and obtains most financial support by European and national project grants). Only SECPhO is mostly supported by its members, although membership fees represent an important part of PhotonicSweden and Photonics Netherlands budgets. Photonics Bretagne is the only cluster where private financing (from services and members' support) represents about 50% of the turnover. The business strategy of some cluster aims to raise private financing: Photonics

Netherlands plans to recruit more company members to establish a stronger financial base and Optitec have been increasing both member number and membership fee in last years as well as the volume of service provision, thus reinforcing private revenue.

3 Business model

In this section we describe four possible business models obtained via the methodology previously discussed and we identify services that might be sustained by means of these financial schemes. We also analyze in which OASIS clusters and how these models are already implemented.

3.1 Membership model

The source of revenue of this business model issues from the payment by clusters' members of an annual fee to access a part or almost the totality of the activities and services proposed by clusters. Fee amount depends on the type of member (different sized company, research institute, University, consultant) and reduced fees are applied for members to access pay services and events not included in the membership fee.

Joining the cluster, a new member accepts to belong to an ecosystem, take advantage of easy exchanges with other members of this network and with cluster's partners, obtain visibility and participate to some periodic events involving all members as the cluster plenary meeting. Membership fee gives access to basic services that may become transversal to the different service categories defined in the deliverable D 4.5 (for example to make available a contact resulting in the submission of a new project). Basic services are linked to networking and communication actions, such as information about Photonics, its applications and related markets as well as about cluster activities, initiatives and technological offer. These actions address the member ensemble to reinforce the network and meet the needs of different actors: academics willing to know market trend, monitor emerging technology and establish contacts with companies for partnership, start-ups and medium sized enterprises aiming to meet together to develop new business. Clusters act as a representative of the needs and interest of the local Photonics environment and may carry out lobbying towards the bodies concerned (Europe, government, local authorities) if needed.

Regarding networking, membership fee gives access to the contact database and offers the possibility to be included in the database as well as participation to some local meetings, workshops and events for free or getting benefit of reduced prices. As detailed in section 3.3 membership fee cannot always cover event organisation costs and should be used as a complement to other financing sources if necessary.

Members also have access to dissemination material (booklets, reports about R&D and business environment within the cluster region/country) intended to increase the visibility of facilities and companies and may have access priority in terms of waiting list for testing or reduced fees for training in case facilities are directly managed by the cluster.

Services dedicated to support for RDI projects are outside the normal service envelope for members, except for provision of information about national and European calls and of partner contacts, not including connection between potential partners which implies additional amount of work for cluster staff. Finally, membership model is not suitable for the sustainability of facility management and business support services, except for communication about infrastructures's equipment and about training offer.

Membership model is currently implemented by most OASIS clusters except for academic partners (Swansea and Polimi) and Optoscana. It is the only source of private revenue (without considering some specific events and exhibitions) for PhotonicSweden, although this cluster plans to offer on the basis of a fee some services such as workshop organisation and support for national and European project set-up. Annual membership from company and private members is also the basic income for Photonics Netherlands. It includes most of the consultancy services this cluster offer to its members (information about national informative meetings about H2020 calls, administrative procedures to prepare and submit proposals and discussion about new projects and collaboration opportunities, connections between companies and research institutes for collaborative projects set-up). Besides this income Photonics Netherlands organizes several activities like meetings, workshops and courses. Depending on the kind of activity participants pay an entrance fee with a discount for cluster's members. This cluster is going to develop an interactive database on its website as a new service free of charge for members, while non-members will have to pay a separate fee.

Services included in the membership package vary according to the cluster due to constraints dependent on different financing sources, missions and statutes. For example, the award of the Optitec label for collaborative R&D projects (making them eligible for specific funding) is funded by state subventions and therefore represents a public service mission of the cluster to be provided for free. This is also the case for collective actions of business watch and business intelligence carried out by Photonics Bretagne. Finally, especially for regional clusters, being strongly anchored to the territory, geographical location may represent a member selection criterion.

3.2 Facility management model

Based on the experience of the technological platforms PEMOA (Optitec) and PERFOS (Photonics Bretagne), in the deliverable D 4.5 we proposed the facility management as a new service to be developed for the infrastructures. This service aims to increase the visibility and facilitate a sustainable development of the facilities. It may help to speed up the technology transfer from research to industry by fostering the emergence of new projects and products as well as to reinforce the collaboration with the end users. The two French clusters are in charge of the administrative and financial management. They coordinate the activities, design the technical service offer as well as the access policy and the marketing and pricing strategy.

This activity model can arise from a collaboration between a cluster and a research institute which entrusts to the cluster all management and communication tasks as well as the connection with companies and their involvement (PEMOA). Regarding PERFOS, it represents the

infrastructure evolution. Born as a R&D facility, then it becomes a technological and innovation center and finally brings to fruition the project of creation of a cluster, Photonics Bretagne whose PERFOS is the R&D platform.

The business model to make self-sustainable the service of facility management by clusters is complex. It has to take into account several needs in terms of infrastructures and equipment, human resources with different expertise, communication tools, and therefore to consider the interplay of distinct financing sources.

To set-up platforms the purchase or renting of equipment and premises requires an initial investment. For PEMOA the research center collaborating with Optitec obtained European, national and local funds to buy the equipment from five companies who participated for 20% in order to become platform partners. PERFOS was partially funded (80%) by local authorities, State and EC (ERDF funds). Platform technical operations may be sustained via regular public funding, involvement in R&D national and European collaborative projects (partially financed between 35-80%) and service provisions to clients. Optitec's statute doesn't allow the cluster to participate in collaborative R&D projects and in this framework PEMOA can only acts as a subcontractor of its partners. Nevertheless, all benefits arising from services (training, equipment rental, proof of concept and consulting for innovative small and medium sized businesses) fee the cluster's private income and facility management becomes part of the cluster's business model.

Another element to be taken into account is the need of both technical and management/business skills. Optitec makes available its staff to coordinate platform activity, perform administrative and financial tasks and design and market the service offer supplying researchers' lack of time and guaranteeing a quality management. Academics partners take care of all technical and training operations. Photonics Bretagne proposes a more suitable model for self-sustainability where both technical and managerial staff are internal to the cluster. Optitec (where facility management service is relatively recent) should consider to evolve towards this model by increasing the service volume in order to finance its own technical staff.

Finally clusters can rely on their budget allocated for communication activities (issued from membership fee) to promote and market platform's services.

Facility management model is complex due to the interplay of different financing sources. To make the service sustainable it is necessary to establish un equilibrium between initial and recurrent public investments, R&D project involving platforms and revenue issued from the provision of technical services. Public funds and project grants partially finance the platform set-up and operations and have to be balanced by an adequate service volume by constantly looking for new business opportunities but avoiding unfair competition.

This model is currently suitable for the minority of the OASIS clusters. Potential obstacles to its implementation are described in section 3.

3.3 Event management model

This business model addresses the sustainability of some networking activities such as the organization of specific events (workshops, conferences and exhibitions) whose costs cannot be covered by membership fees or financed by national or regional dedicated funds. Local events organized by one cluster but jointly offered by partners in their regions and countries are a further example of a new service for which event management model may be suitable.

When organizing local events and OASIS workshops, partners remarked the heavy staff costs and noticed that free events are sometimes not considered as seriously as paying ones. The first end-user workshop was organized by PhotonicSweden in the framework of the project. Outside CSA projects or without specific available funds (for example Photonics Netherlands submitted a proposal to organize end-user workshops via Dutch government "MIT-funding") partners believe that end-user workshops could be organized outside the normal service envelope for members, also because they involve non-member parts. The largest cost being the manpower, other sources of revenue should cover manpower cost. Membership fees should only be used as a complement if necessary. Other good examples of events this business model might deal with are the conferences organized in Florence and Aix en Provence by IFAC and Optitec (the "International conference on Biophotonics 2015" and Optitec event) during which two OASIS workshops took place. However, this model doesn't apply to the organization of all events, such as local meetings and workshop on specific topics of interest for companies or clustering events in collaboration with other organizations as regions, EEN, regional and national agencies for research promotion.

Sponsorship, participation fees and exhibition fees can be suitable sources of revenue for events' organization. Sponsors are mainly big groups and consultants. Big groups have available budget to invest in, may attract relevant speakers thanks to their well-known brand as well as companies and start-up eager to start new business with large companies which are usually not easy to meet. In return for their investment big group increase their visibility. Consultants are motivated by the opportunity to find new clients. Regarding participation fees, general policy is to propose a discount for cluster members depending on their nature (research institutes, universities, companies) and consider whether or not to apply fees for speakers. Event may be also financed by exhibitors, namely small and medium sized enterprises, start-ups and distributors who take advantage of showrooms area to promote their products and exchange with potential clients. In the project second period the consortium proposed a new service for companies (D 4.5) consisting in making available research infrastructures for product demonstrations. Company have to pay a fee for such technical workshops.

All OASIS partners are involved in the organization of workshops, conferences and exhibitions. PhotonicSweden and Photonics Netherlands have got used to organizing an annual conference on Photonics and Optics. The Swedish event is funded by participation fees and mostly by exhibition fees. In PhotonicSweden events related to calls and match-making events to set-up collaborative projects have been up to now sponsored by a specific national project. In the absence of such project, they envisage to apply a participation fee. The Photonics Netherlands conference during their annual Photonics Event is for free for all visitors and indirectly financed by exhibitors. Events like (end users) workshops that are funded by the Dutch government are for free as well.

OptecBB organizes several workshops and conferences in different fields as well as an annual international microphotonics congress. These events provide a considerable networking platform for its members. The cluster is open for partners from the OASIS network to join and actively participate in these workshops. Up until now these workshops are free of charge. In the future it is conceivable that an event management business model will also be implemented. For the annual congress a participation fee is applied.

The general Photonics Bretagne's and SECPhO's policy is to apply a registration fee for participating in the events to cover logistic costs and a reduced fare for its members.

3.4 Consulting model

In this business model clusters provide a high level expertise or perform tailor-made researches to fulfill SME's and facilities' requests and meet their needs with remuneration on a fee for service basis.

Consulting model is suitable for the sustainability of the services not included in the standard envelope for members (see section 3.1), namely support for national and European projects set-up and follow-up and business support (market survey/study, customised go to market/growth strategy). These services are detailed in the deliverable 4.5.

This is also a remuneration scheme for translators between technology providers, researchers and end users, either external or internal to the cluster. Indeed, the consortium proposed as a new service to train its own "cluster translators" as a professional role with technology, business and communication skills as well to set-up an expert network at consortium level.

Concerning collaborative projects, a packaged support offer may be provided on the basis of a predetermined fee. It includes identification of the right funds and partners for an application, project idea assessment, consortium set-up and proposal preparation. Usually SMEs don't have a qualified staff to write proposals, while this kind of resource can be offered by the cluster staff or performed via subcontractors. Depending on the cluster, such a service envelope may be extended to assist companies in the management and realisation of the project (administrative management, work plan follow-up, reporting). It might be implemented as well in the European Biophotonics platform which is proposed in the exploitation plan of the project results (D 6.3). In the platform framework an agreement on the services to be included in the packaged offer and fee amounts at consortium level should be established.

OASIS partners believe that consulting is a suitable business model for support for RDI projects, although the scope of the related service package vary depending on the cluster. For istance help with project follow-up is frequently not included due to the lack of available or qualified staff or when the cluster is not a partner of the project). Furthermore, in some cluster boundary between services free, included in membership and paying ones are unclear.

Consulting would be the model applied by PhotonicSweden for any service beyond a simple help for finding the best suitable calls and financing instrument although it has not been implemented yet.

In some clusters, services to support RDI projects may be included in the membership fee, depending on their individual or collective nature, the amount of work of the cluster staff and its participation as a partner. For example, support is charged by Photonics Bretagne in case it is provided individually to a single member (or to a members' consortium which doesn't include the cluster itself) and the workload exceeds a predetermined threshold (days per year). General consultation in building a consortium and search for partners is included in the SECPhO member fee. Nevertheless, when SECPhO is in charge of setting-up a consortium, administrating proposal preparation and submitting as a coordinator a fee is applied for participating members. This happens in the framework of Spanish funding programs where projects have to be managed by a cluster and other members develop innovation. For EU projects all consultation were free of charge up until now.

Optoscana doesn't implement a membership model and all mentioned services for project support are provided in case Optoscana is itself a partner of the project, while Optitec relies on consultants for proposal writing and administrative support depends on the availability of dedicated staff. Finally, OptecBB and Photonics Netherlands assist their members only in search for partners and funding.

The provision of a packaged offer for project support supplied on a fee for service basis may be therefore useful to better structure the offer in cluster where terms and conditions of remuneration are not well defined. It is also relevant in the framework of the European Biophotonics platform when clusters (acting as local nodes) are not able to provide the required service and has to redirect the request to other partners as well when they need to exchange expertise by translators' network.

4 Potential obstacles to a sustainable business model

In this section we analyze potential constraints to the implementation of the proposed business models. They depend on the specificity of each cluster in terms of legal status and related mission and of kind of financing (public versus private funding, regional and national funds dedicated to specific activities, cluster connection with potential sponsors). Cluster strategy, cluster involvement in facilities' activities, lack of staff and of well-structured service remuneration schemes are as well elements which play a role.

Stronger constraints concern academics partners. For instance, Polimi' code of practice doesn't allow its staff to provide services to companies, especially those consisting of promotion and marketing. Being a State University, Polimi's mission is teaching, research and technology transfer. Nevertheless, they have stable and strong relationships with companies both in Lombardy and other Italian regions and support industries in their research and innovation programs through sponsored research, sponsored PhDs, and patent licensing. Services to companies are provided by a different legal entity, i.e. Fondazione Politecnico di Milano, which is a private body participated by Politecnico di Milano.

In Wales, University is likely to support SMEs trough regional funding. The regional SMEs can access University infrastructure for free. Non regional SMEs need to pay the services that may be expensive. High service costs discourage companies and push them to be exigent in

terms of performance and delivery time, thus leading academics to be less interested in these activities. Therefore, while services are allowed an agreement may not be easy to reach. To push academics to more support SMEs the University created a new career path in Invitation and Business where, for example, a joint IP is valued more than a research paper. In the framework of inter-cluster services, OASIS partner will try to identify the best way to fulfill requests and eventually will redirect them towards other OASIS partner facilities.

Optoscana's statute is quite different, although it is somehow a public organization. It provides companies with services as third party or via collaborative projects. Nevertheless, according to regional policy, a membership business model has never been considered applicable. Technological clusters in Tuscany never rely on this model due to the public participation and cluster membership is free of charge. Moreover, Optoscana is part of a network of facilities scattered on the whole national territory. This facilitates expertise exchange: an infrastructure not able to provide a specific service can easily connect companies with the suitable facilities belonging to the network. However, each institute is independent concerning the management of both administration and service offer of its own facilities. This is an obstacle to the implementation of a facility business model at cluster level as done by Optitec. Finally, concerning event management model Optoscana considers that a participation fee may be occasionally applied.

Slight limitations on the business model are observed in clusters where private and public financing are almost equally distributed (Optitec, Photonics Bretagne) or private income is dominant (SECPhO). Some constrains related to cluster financing sources, mission and statute have been already mentioned (as an example the award of the Optitec label for collaborative R&D projects and some collective actions carried out by Photonics Bretagne cannot be included in the membership fee, see section 3.1). Regarding SECPhO all proposed business model are implemented with the exception of the facility management model. This is due to statutes, strategy and decisions made by the cluster director board.

Thanks to their association statute no relevant restrictions exist for OptecBB, Photonics Netherlands and PhotonicSweden, however a reduced number of business model is implemented because of the quite limited number of services proposed. The service offer scope is mainly related to the current lack of dedicated staff with respect to the number of cluster members or on existing unclear boundary between free or pay services which come out when additional services are given in bundle (see section 3.4). This makes difficult the provision of a varied support for project, tailored business support for SME members and sometimes prevents from acting as a translator, thus making not feasible a consulting model. Most of the consultancy services provided is included in the member fee, although a fee is already applied for the organization of specific events, thus making an event management model conceivable in the future. An additional constraint on the implementation of the facility management model in PhotonicSweden arises from the lack of cluster involvement in the activities of local technological platforms.

5 Conclusions

We completed the design of a sustainable service model for SMEs and facilities by joining a business model to the service offer proposed in the deliverable D 4.4. As significant differences

in terms of financing sources, private versus public turnover and legal status were observed (D 4.2), we proposed and described in detail four possible business models, namely "Membership model", "Facility management model", "Event management model" and "Consulting model. The sources of revenue for each model are shown in Figure 1 together with the types of services that may be financed. A realistic financing scheme suitable for most clusters is represented by a hybrid model deriving from the combination of at least two of the mentioned business models.

Finally, we analyzed potential restrictions on the implementation of the proposed business models related to the specificity of each cluster in terms of financing, statute, missions, strategy and infrastructure availability.

Figure 1