OASIS

Open the Access to Life Science Infrastructures for SMEs

Project No. 619230

Deliverable 4.3

ANALYSIS OF BUSINESS MODELS OF FACILITIES

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Description	This deliverable is an in-depth analysis of the business models implemented by the bio-facilities located in the environment of the OASIS clusters. A detailed picture of the business model is drawn on the basis of WP2 questionaries, phone-calls and visits. Several elements help to characterize the business model including the financial structure, the model activity, the service offer. The study highlights the fact that the facilities' objectives and the policy of access to the equipment mainly determine the specificity of the business model. Specific business models for each cluster and comparing different clusters are discussed.

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SEVENTH FRAMEWORK PROGRAMME

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1 Introduction

The aim of the WP4 is to define a set of services to foster the development of biophotonics products for the medical and agrifood sector. The main objective of this workpackage is to design a sustainable model of services that can be used by each cluster to support the development of SMEs active in the field of Biophotonics and to facilitate their access to bio/agri-research infrastructures.

Services targeting owners of Life Science infrastructures help the facilities' development. They foster the collective management of the technological platforms in order to strengthen the coupling between research and innovation and to realize technology transfer to the industry. The service design relies on the facility business model, which unveils the financial structure, the organization and governance mechanisms, the activity model and the access policy as a function of the service offer. These elements allow us to identify the significant needs in both financial and human resources and to design development strategies in terms of marketing, promotion pricing, partnership, new schemes for funding and management.

A review of the business model offers suggestions for a strategic development of the facilities towards business oriented goals and a customer oriented approach reducing the gap between research and market. Moreover, the present analysis gives indications for the build-up of a business model for the self-sustainability of the tools developed in the OASIS project.

As the service model should be adjustable to each cluster to fit its environment, the financing structure and the supports already provided in the region or country, it is necessary to highlight the local characteristics of the business models.

In the following report we describe the methods and criteria applied to the analysis and the main results concerning the business models of the facilities in the OASIS clusters. These results will be used in the deliverables 4.4 and 4.5 to design new cluster services to be developed for SMEs and facilities and in the deliverable 4.6 to define the business models of these services.

2 Methodology

Based on the answers to the WP2 questionnaires only, we could not carry out an in-depth analysis of the business models of the facilities. We experienced difficulty gathering financial and economic data. A few answers were collected about the funding mechanisms and the origin of the resources (european/government grants, University funds, donations). The lack of feedback can be interpreted as a reluctance to discuss financial issues and reveal funding sources, or as a consequence of the facilities' nature and their objectives. Many interviewed facilities are public organizations, research community focused, that have a limited interest in the financial aspects and in establishing a structured business development strategy. This may cause a divergence of objectives in collaborations between facilities and companies. A contacted facility identified as a critical aspect in collaborating with SMEs *"To share a common goal considering that the main aim of a research is publishing for non-profit organization and having revenues for a company"*.

Each OASIS partner complemented the information inferred from the WP2 through directly contacting facilities by phone calls and visits and gathering further data available on the facility websites. Calls and visits were an efficient way to get a more detailed picture of the different business models that the facilities operate.

3 Analysis criteria

Several elements may help to characterize the business model, such as the geographical location; the model of activity; the ownership; the financial structure; the existence of partnerships and collaborative projects and the related issues of intellectual property management and staff organization; the governance; the rules of pooling of equipment and the related type of users and pricing, marketing and promotion strategy.

The deliverable 2.4 provided all the clusters with a mapping of Life Science facilities already offering, or potentially able to offer, services or resources to Biophotonics SMEs for the development of their products. The confidentiality and intellectual property issues were identified by that deliverable as critical aspects the facilities encountered in collaborating with SMEs. These issues are treated in the current deliverable in terms of source of revenue and will be taken in account in the deliverable 4.4 to suggest strategies for a collective management of the facilities and to propose cluster services helping the technology transfer to the industry.

In this deliverable we focus on the financial mechanisms, the model activity, the service offer according to the access policy agreed with users and the related sources of revenue. The results of some visits also enable us to discuss pricing strategy, staff organization and human resources issues in some cases.

4 Previous business model studies

We based the analysis of the facility business models in the clusters' environment on the previous study conducted by Ernest & Young in the framework of the european project ShareBiotech. According to these authors “a business model can be defined by crossing a source of revenue with an exact positioning on the value chain”. They identified seven different business models in Europe, listed below (“Analysis of the technology core facilities business models in Europe”, ShareBiotech 2012).

Business model 1: “Consulting”

This model results in providing high level of expertise in order to solve clients' needs with remuneration on a fee for service basis. It can be defined as a consulting service.

Business model 2: “Tailor-made research”

This model corresponds to a fee paid for a comprehensive solution provided by the staff of the facility upon request of a client. This can include the elaboration of a protocol, the execution of the experiments and the interpretation of the results.

Business model 3: “Routine analysis”

This model relies on a routine service offer with determined prices and including the use of the equipment by competent staff within the facility and standard analysis of raw data.

Business model 4: “Training”

This model includes both the basic training required for access the facility and more specialized training to attract new companies and present new technologies. The source of revenue from this training activity is based on fee for services.

Business model 5: “Facility access”

In this model, the facility gives the client direct access to the instruments under the control of internal technicians. The client's employees operate their own experiment in the facility. This model can be defined as “a rental service of the equipment”.

Business model 6: “Membership model”

This model differs from the others by the source of revenue, which is linked to the payment by the clients of an annual membership fee which gives access to a part or the totality of the activities proposed by the facility, depending on the amount of the membership.

Business model 7:”IP generation through research project”

In this model the objective is to create new intellectual property, through internal or collaborative projects, which will generate revenues in the future such as milestone payments and royalties.

The different business models are presented in the ShareBiotech study by means of a conceptual mapping showing the position on the value chain (from pure equipment service such as equipment rental service, to pure intellectual performance such as consulting) as a function of the source of revenue (fee for service, annual membership fee, license).

The type of source of revenue reflects the access policy to the facility agreed with the users. For example a gold member can access all the activities in the facility whereas a silver member has only limited access to specific activities. When a license agreement exists, the user is utilizing the facility for a specific research project that either will exploit already existing IP or generate new IP. When the facility services are offered on the basis of a fee for service, the fee varies according to the type of service provided and also according to the type of users (companies, researchers). It is worth mentioning that the definition of the business model in the ShareBiotech study implies a distinction between revenues and resources (grants, donations). This is important as recurrent funding and research project grants can represent a large part of the budget of the facilities and influence the choice of the business models and their development.

5 Local/global business model analysis

The first part of the analysis aims to highlight the local characteristics of the business model as well as to stress the differences and the shared specificities in the business models implemented between public, private and public/private Bio-facilities.

Each OASIS partner contributed to this study by gathering the financial and business data in the cluster environment. Information about 5 facilities was included for Photonics Netherlands, 12 for Photonics Bretagne, 7 for Photonics Sweden, 11 for SECPhO, 14 for OPTOSCANA, 9 for Swansea University, 10 for OPTITEC and 9 for OpTecBB. POLIMI was not considered in the business model analysis as this public University doesn't provide any service to companies. Nevertheless, they may support SMEs via consultancy.

With regard to the financial structure, facilities can be classified as :

- Public facilities which are part of or linked to a University. Their financing structure relies on grants and public subsides (european, national and regional). The equipment and its maintenance are financed thanks to the funds obtained. These facilities are research community focused, as their aim is to give wide-ranging access to cutting-edge technology to the international research world to improve science knowledge. These facilities may be opened to a large range of users (researchers, academics, students, SMEs).
- Private facilities (SMEs, startup, spin-off) whose resources originate from fees charged for the services provided, grants for collaborative projects, tax credit for research and especially venture capital financing. These facilities are profit-oriented as their main purpose is to increase their business and if possible become self-financing. They put special effort into adapting the services to the clients' needs placing themselves at the interface between companies and facilities.

- "Hybrid" facilities having public and private stakeholders as non-profit organizations, often created by a foundation or a consortium of private and public actors proposing a common service offer.

For each cluster the business model was fixed taking into account the resources, the objectives in terms of activity priority (research versus services), the service offer in order of priority, the sources of revenue (service remuneration) and the access policy. Thanks to phone-calls and visits we could also add further information about the pricing strategy and the human resources management for some facilities. Finally we grouped clusters according to the shared specificity in the business models that are implemented by their bio-facilities.

OPTITEC and OPTOSCANA

Almost the whole sample in these clusters is represented by public facilities. They are part of or linked to a University, national centers for scientific research (CNRS and CNR) and hospitals which provide them with funds (generally dedicated to staff salaries and infrastructures) in addition to the grants (mainly national but also european and regional) they receive for research programs. Collaborative research projects with companies may be a secondary source of revenue. One hybrid and one private facility are present in the OPTITEC and OPTOSCANA cluster, respectively.

The interviewed facilities are research and education focused and their major activity is the commitment in R&D projects to get new scientific results and to develop a center of expertise for research. They are generally involved in secondary activities such as services. The primary service offer (generally routine analysis and training) targets mainly academics users, but may be also oriented towards private clients to increase the service volume and balance the recent reduction of public grants.

The pooling of equipment reflects this model activity. For most facilities the access is restricted to internal staff (technicians and researchers) and only two facilities in the OPTITEC cluster (PEMOA and I2FH) and one in the OPTOSCANA cluster (CEME) provide a rental service of equipment. Moreover, the pricing strategy for the service offer is not well structured, lacking, or constrained by, owner hierarchy issues. For some technological platforms in France, for example, fees are decided by the CNRS. Some facilities also complain about the shortage of dedicated staff available for the service activity.

Based on these features it is not surprising that the facilities in the OPTITEC and OPTOSCANA environment show a limited number of business models. According to the Ernst and Young classification "Training", "Consulting" and "Tailor-made reserch", and "Routine analyses" and "Training" are the primary business models in the OPTOSCANA and the OPTITEC cluster, respectively. "IP generation through research project" is observed as a primary business model in one public facility of the OPTITEC cluster. The "Membership" business model is always absent. Figure 1 shows how many times each business model is implemented as a primary model. For these research focused facilities, the selection of the business models seem to be associated to the need of additional revenues instead of being the result of a strategic decision.

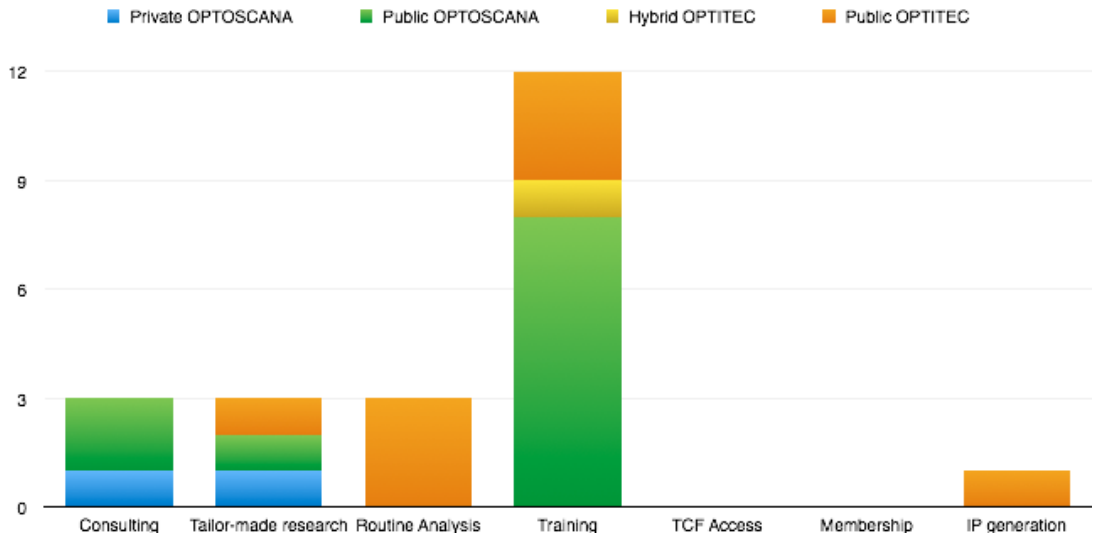

Figure 1: occurrence frequency of each business model implemented as primary in the OPTOSCANA and OPTITEC clusters

Photonics Sweden and OpTecBB

The facilities present characteristics similar to those of OPTITEC and OPTOSCANA in terms of financial structure and objectives. All are public facilities whose financing relies to large extent on regional and national funds secondarily. They are part of or close to the University and research-dedicated. Their main objective is to improve science knowledge, publish their findings and gain international awards. Thus, the interaction with external partners is considered as interfering with the internal research activity to varying degrees.

The examined Swedish and German facilities differ from the French and Italian ones in the policy of access to the equipment. The pooling of equipment is implemented in all the facilities. The provision of rental equipment to external users to operate their own experiments is observed for all the facilities.

A large range of services is offered by Photonics Sweden and OpTecBB facilities, although the financial aspects seem to be of little interest and the pricing strategy not well structured. Provided services may be not charged by some swedish facilities or for free. The drawback is that performances and procedures may not fulfill the standard of the industry and companies' needs don't have priority over the research activities.

As a consequence of these features, a broader variety of business models is observed with respect to public facilities in the OPTITEC and OPTOSCANA clusters. All the business models deriving from services offered on the basis of a fee for service are present, in both clusters. The “Membership” and “IP generation through research project” business models may be implemented in a few cases but have a lower weight as models of revenue (see Figure 2).

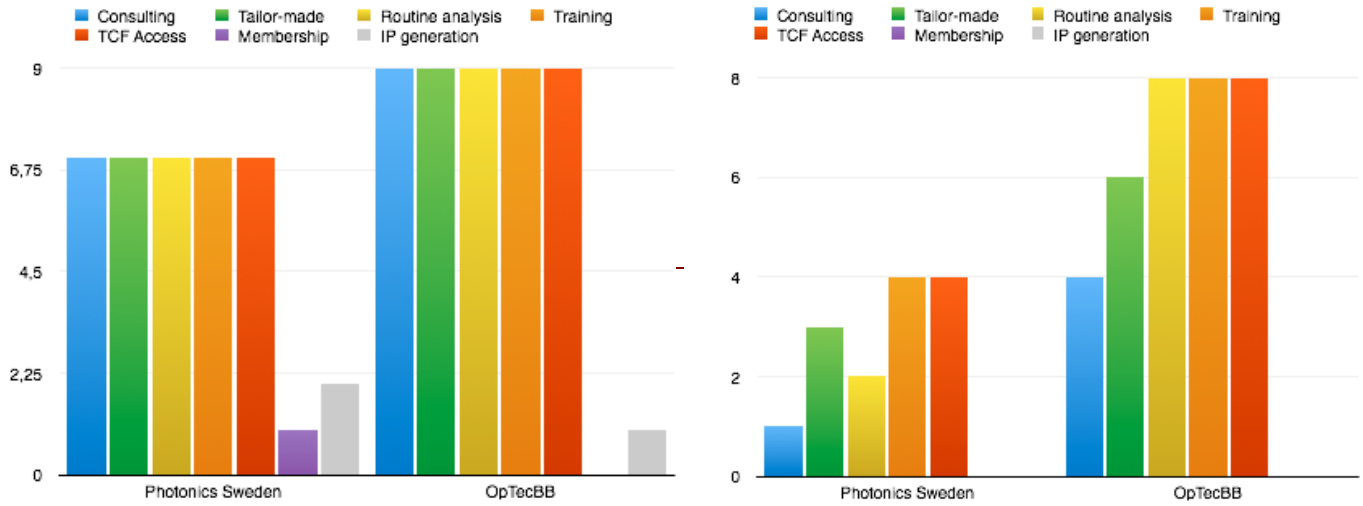

Figure 2: (left) occurrence frequency of each business model, (right) occurrence frequency of each business model implemented as primary in the Photonics Sweden and OpTecBB clusters

Photonics Netherlands and Swansea University

In these clusters we also observe public facilities region, government and Europe funded. They are part of or affiliated to the University. The main specificity is that, although research and education represent the primary activity of these facilities, most of them are used and organized to collaborate and provide support to private companies. Some are business incubators for biotech and medtech startups (the Cardiff Medicenter in UK for example). Others have dedicated helpdesks for knowledge-based startups, such as technology transfer offices (for example the Erasmus Medical Center in Netherlands) to create the opportunity for further development and commercialization of academic inventions, or rent laboratory and office space in which to develop innovative products.

This translates to facilities more structured in terms of staff organization, intellectual property management and service offer. Moreover, all the Photonics Netherlands and half of the Swansea University facilities provide clients with direct access as a rental service of equipment. The service offer proposed within these facilities is quite large but the activity generally focuses on one or two primary services according to the infrastructure expertise. Netherlands based facilities are mostly medical centers providing routine analysis services and those in the UK physical laboratories offering tailor-made R&D projects.

As a result of these specificities almost all the models of revenue based on a system of fee for services are observed as well as the IP generation business model, while a system of membership fees is never implemented (see Figure 3). Nevertheless, in both clusters one or two business models are dominant. The primary business models are “Routine analysis” and “Training” in Photonics Netherlands and “Tailor made research” in Swansea University (see Figure 4).

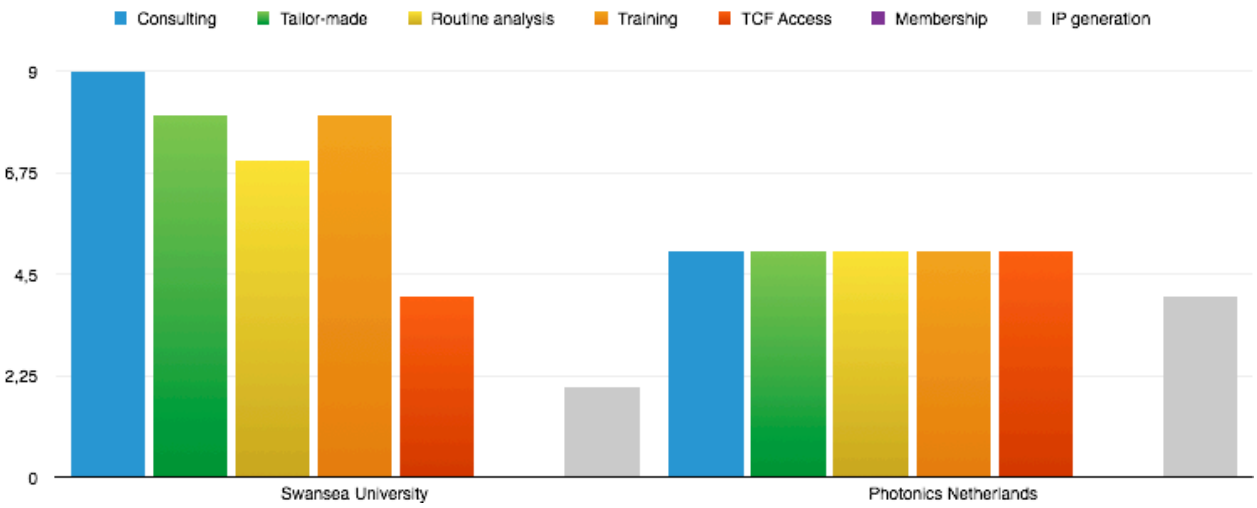

Figure 3: occurrence frequency of each business model in the Swansea University and Photonics Netherlands clusters

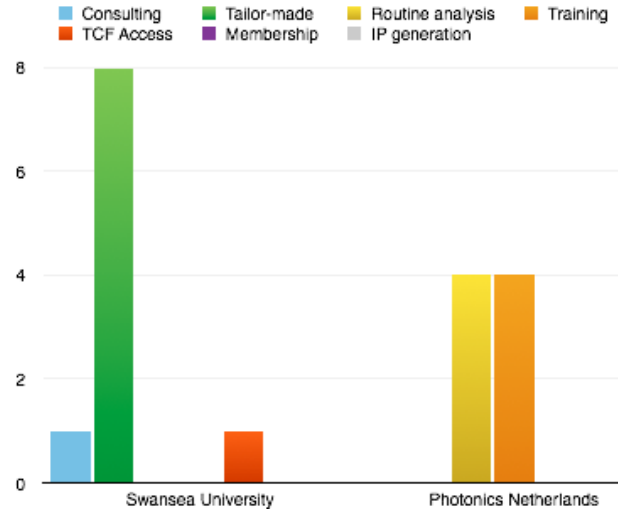

Figure 4: occurrence frequency of each business model implemented as primary in the Swansea University and Photonics Netherlands clusters

SECPhO and Photonics Bretagne

In these clusters we observe a higher density of private facilities, that represent about half of each sample. The main resources of private facilities come from fees charged for the services provided. The payment by clients of an annual membership fee which gives complete or partial access to the facility activities may be the primary source of revenue for some Spanish private facilities. As the major objective of profit-oriented facilities is to grow their business and build sustainable commercial relationships with clients, research is not the main activity for these structures. Their core business is generally represented by a focused activity, usually routine and tailor-made analyses or consulting to a smaller extent. They generally have a more

specific area of expertise or technology offer with respect to public facilities. However, training can be a secondary activity able to attract new clients and promote a specific equipment.

The private nature of these facilities also influences the access policy. The access to the equipment is restricted to internal dedicated staff for all the private facilities in both clusters. This trend also extends to public facilities, with the exception of the platform CytoCellBiogenouest in Photonics Bretagne which proposes the pooling of equipment as a secondary rental service.

Both private and public facilities in SECPhO and Photonics Bretagne clusters present a limited number of business models. The same feature is observed in the OPTOSCANA and OPTITEC clusters for public facilities with restricted access and is linked to the research community focused nature of the infrastructures. Some academics platforms in the Photonics Bretagne cluster are making an effort to open the access to private companies, but regret the lack of qualified staff dedicated to provide a flexible and efficient service offer to shorten the time needed to market the products. For private companies the limited number of business model is a consequence of the high specific technology and area of expertise they have and of the need to make the services profitable as soon as possible.

In the Photonics Bretagne cluster both private and public facilities mainly implement models of revenues based on a system of fee for services. “Training” and “Tailor-made research” business models are the primary business models implemented (see Figure 5). “Membership” and “IP generation trough research project” may be present as secondary business models in private platforms.

Half of the public facilities of the Spanish cluster implements “Tailor made research” and “Routine analysis” as primary business models. In the remaining half “IP generation trough research project” represents the primary business model. For private facilities “Membership” is the primary business model (see Figure 5).

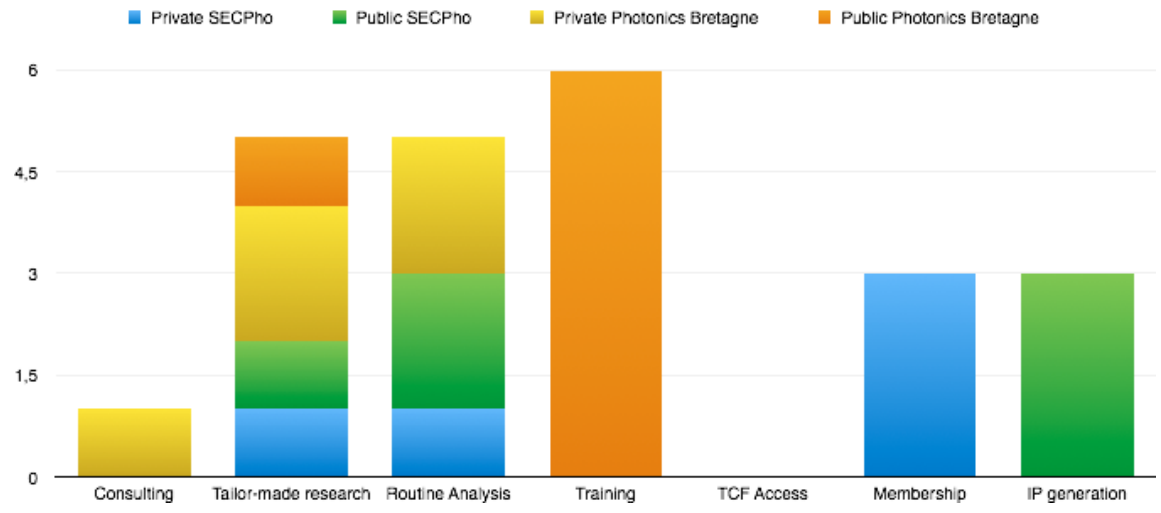

Figure 5: occurrence frequency of each business model implemented as primary in the Photonics Bretagne and SECPho clusters

6 Conclusions

On the basis of the answers to the WP2 questionnaires, the direct contact by phone-calls and/or visits with the bio-facilities, and the informations available on the facilities' websites we investigated and draw a detailed picture of the different business models the facilities operate.

To conduct an in-depth analysis of the business models we considered several elements such as funding, model activity, service offer according to the access policy and the related pricing strategy and human resources organization. We relied on previous studies to classify the different business models that may be observed in the environment of the european clusters. We highlighted the local characteristics and grouped the clusters according to the similarities in the business models that are implemented by their facilities.

Our study pointed out two main elements determining the specificity of the business model : the facilities' objectives and their access policy and related type of users (researchers, start-ups, SMEs, industry).

In public, research community focused facilities applying a policy of restricted access a few business models are observed, mainly Training" and "Tailor-made research" or "Routine analyses". The specific business model is not the results of a strategic business approach and decision. It seems to be a consequence of the need of secondary revenues in addition to grants and public subsides.

Public, research oriented facilities that pool the equipment don't show a great interest for financial aspects neither. Nevertheless, the will to open the infrastructures and to offer a large scope of services translate in a larger variety of business models. Some public facilities may be more oriented towards companies and, as consequence, implement a more structured service offer determining the selection of a limited number of primary business models, such as "Routine analysis" and "Training" or "Tailor made research".

Finally, private companies exhibit a few business models, mainly "Membership", "Tailor made research" and "Routine analysis", due to the high specific area of expertise and the absence of pooling of equipment. Figure 6 provides an overall view of these results by showing the occurrence frequency of each business model implemented as primary for public facilities applying a policy of restricted access, public facilities that provide pooling of the equipment and private facilities, in all clusters.

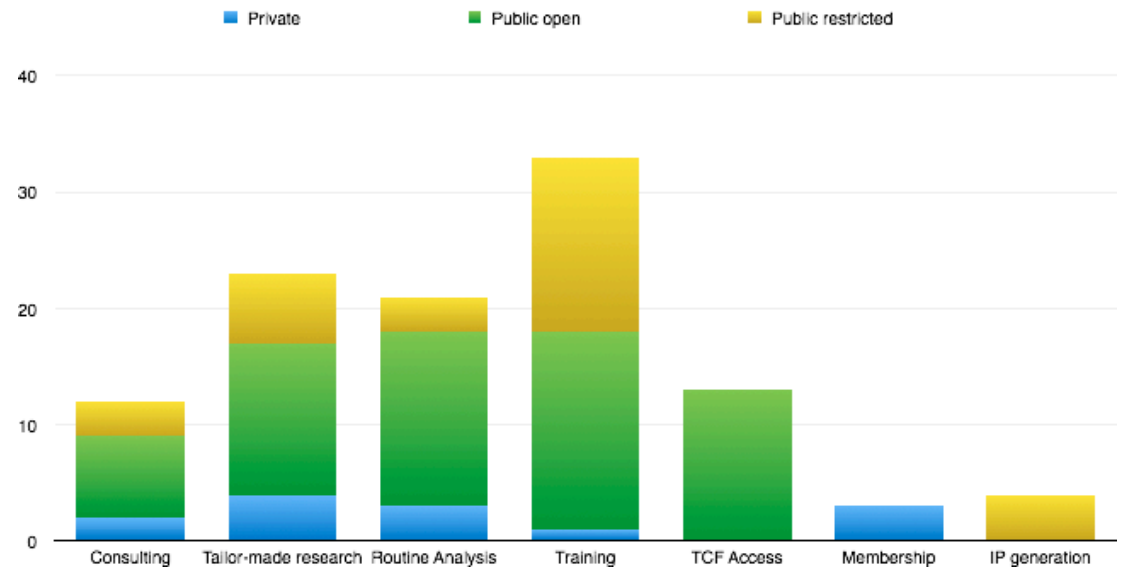

Figure 6: occurrence frequency of each business model implemented as primary in private facilities and public facilities with open/ restricted access in all clusters