

**“Collaborative Strategies for Successful Library Design and Innovative Use”**

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**Cooking and multiculturalism, Living Lab and Fab Lab  
as a result of collaborative strategies in the Municipal Library Network of  
the province of Barcelona**

**SANTI ROMERO – IMMA SABATER architects**  
Library Architecture Unit  
**Library Services Management Office - Diputació de Barcelona**  
Comte d’Urgell, 187- 08036 Barcelona (Spain)  
romerogs@diba.cat - sabaterei@diba.cat  
<http://www.diba.cat/biblioteques>

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**INTRODUCTION**

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The Municipal Library Network of the province of Barcelona

First of all, we are going to provide some information about our country, the city we live in, the institution we belong to and our work there.

Spain has a population of 47 million people and it is divided into 17 Autonomous Communities. One of them is Catalonia, which has a population of 7.5 million people and is divided into 4 provinces. One of these provinces is Barcelona, which has a population of 5.5 million people and 311 municipalities.

The “Diputació de Barcelona”, the organization where we work, is a supramunicipal institution, whose purpose is to assist the 311 municipalities in providing citizens with the municipal services established by law.

In the area of public library service, the assistance is technical and economic and is provided through the Library Services Management Office (<http://www.diba.cat/biblioteques>). This Office leads and manages the Municipal Library Network of the province of Barcelona.

Currently the Network is made up of 225 libraries and 9 mobile libraries. From the 311 municipalities of the province, service is being given to 242 of them (142 have a library and the other 100 receive the service through mobile libraries). In these 242 municipalities live the 98% of the population of the province, therefore only 2% of the population still does not have a library service near them.

Part of this assistance is given during the process of planning and creating new libraries, either because the municipality lacks a library service or it needs to improve the existing one. In order to do so we have the “Standards of public library in Catalonia (2008)” ([http://www.diba.cat/documents/16060163/22275360/Estandards\\_castella.pdf/cc6c1985-c4df-4eca-a7ed-4a03724010fb](http://www.diba.cat/documents/16060163/22275360/Estandards_castella.pdf/cc6c1985-c4df-4eca-a7ed-4a03724010fb)), which specify quantitatively the resources needed in order to offer a library service of good quality.

In order to advise during the whole process of the project and construction of the building, the Library Architecture Unit, for which the two authors work, was created. We advise both the architect authors of the projects and the technical services of the municipality. We also take part in the process of the project and construction of the building, as well as in the project of furniture and interior equipment. As architects specialized in library buildings, our main aim is to develop architecturally interesting buildings that at the same time offer a good library service.

### New challenges for public libraries

The role of public libraries has evolved rapidly in past years as a consequence of the coming of what some people have named as “network society”. The change from analogue information, fixed on physical documents, to digital information, immaterial and ubiquitous, has caused the dematerialization of the collections. But it has also brought with it new ways to access to and handle information, as well as the birth of new uses inside the library.

From being an information container, the library is now a center that creates contents through all kinds of workshops and spaces: recordings and music edition studios, digital manufacturing workshops (Fab Lab), research and innovation centers (Living Labs), centers for performing arts, and even kitchens.

From the spatial point of view, these innovative uses bring a change in the architecture of our libraries. It is necessary to find new spaces, whose essence is the collaboration and dialogue between users, spaces where usually conversation is the central element, where sounds and noises are produced (machines, music, etc.) and that can have very specific and determinate requirements (audiovisual equipment, manufacturing machinery, computer equipment, stage lighting, acoustic insulation, etc.). Thus it is advisable that all agents take part in the process of programming before the architectural project begins. This way the technical requirements are defined *a priori*.

## **THREE COLLABORATION PROJECTS WITH EXTERNAL PARTNERS**

We are going to present three projects in which collaborative strategies with external partners have generated innovative uses in libraries. We, the authors of this proposal, have taken part in the process of creation of these libraries as adviser architects.

The three cases are different for the following reasons:

- The type of collaboration.
- The use given to these new spaces.

- How the collaboration project has evolved during the development of the architectural project.
- The physical relationship between these spaces and the library.

### 1 – Cooking and multiculturalism in the Library of Fondo (Santa Coloma de Gramenet).

The Library of Fondo has a kitchen at its center: a space of innovative use where activities about cooking are carried out as a tool to enhance the values of interculturality and citizen engagement.

### 2 - Living Lab in the Library of Volpelleres (Sant Cugat del Vallès).

In the Library of Volpelleres a Living Lab has been created. It is an experimentation space where computer programs aimed at facilitating the access to reading and knowledge are tested. The spatial organization of the building allows this space, completely connected to the library, to work independently.

### 3 - Fab Lab in the Library of Les Corts (Barcelona).

The library, which is in the construction process, is located in a restored building where it will share the space with a laboratory of digital manufacturing, with the aim of promoting local talent. The physical link between library and laboratory is not as direct as in the previous cases, since they only share the entrance hall and common services.

## **COOKING AND MULTICULTURALISM IN THE LIBRARY OF FONDO (SANTA COLOMA DE GRAMENET)**

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### History

Santa Coloma de Gramenet is a municipality of the metropolitan area of Barcelona with a population of 120,000 people. The population density is very high, with an average age of 30 years old, and more than 110 different nationalities that live together in the city.

The neighborhood of Fondo, where the library had to be built, is the densest in the municipality and has the highest percentage of immigrants.

In order to bring together the different cultures existing in the neighborhood, the city council of Santa Coloma de Gramenet decided to build a very central building with a municipal market, a supermarket, a nursery and a public library. According to the Standards, the library had to have a program floor space of 1,700 m<sup>2</sup> (around 2,200 m<sup>2</sup> of built surface area). (*Figure 1*)



They wanted to promote the values of interculturality and citizen engagement through cooking culture. Thus, the decision was made to integrate a space in the library where activities around cooking would be carried out. This project was called “world cooking” and its characteristics were defined at the same time as the architectural project was being developed.

**Figure 1.** Location.

## The architectural project

The idea was to create a building with a modern and innovative image. The site chosen was very central and had a very difficult topography. It was very important that every activity that was going to be carried out had an easy access from the surrounding urban space.

The creation process was very long. The project began in 2006, the construction work began in 2010 and each part of the building was opened separately when it was finished. The library was opened in September 2014. The total surface area of the building is 9,000 m<sup>2</sup> and the library takes 2,030 m<sup>2</sup>.

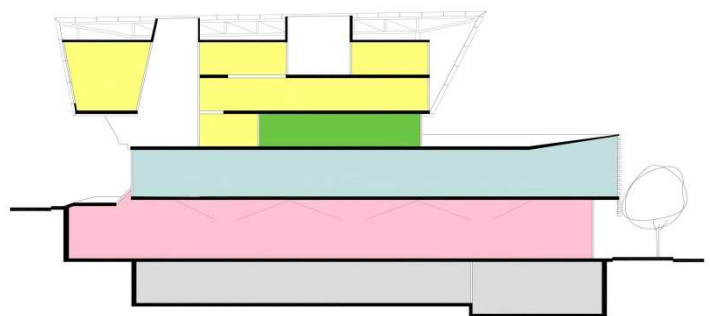
We will explain the project of the library from a series of key moments that, for different reasons, had an influence on the development of the process.

At the start of 2006 the city council ordered a draft of the building to the team of architects *Pich-Aguilera arquitectes*. They presented a proposal with great urban impact, with a composition of volumes and a combination of construction materials that made it possible to visually differentiate each one of the activities in the building, so that each one of them has its own personality. The library took the upper volume, which was covered with a metal mesh. Below there was the nursery, which had a hanging garden, and beneath that there was the supermarket, which was covered with ceramic blocks. The access to each one of them could be found in the northern part of the site. Below these volumes there was the market, which could be accessed from the square located on the southern side. (*Figure 2*)

The library was organized in three floors and during the phase of ordering the draft the program related to the project “world cooking” had not been defined yet, therefore this was not in the demand to the team of architects. (*Figure 3*)



**Figure 2.** Exterior view from the square.



**Figure 3.** Section of the building.

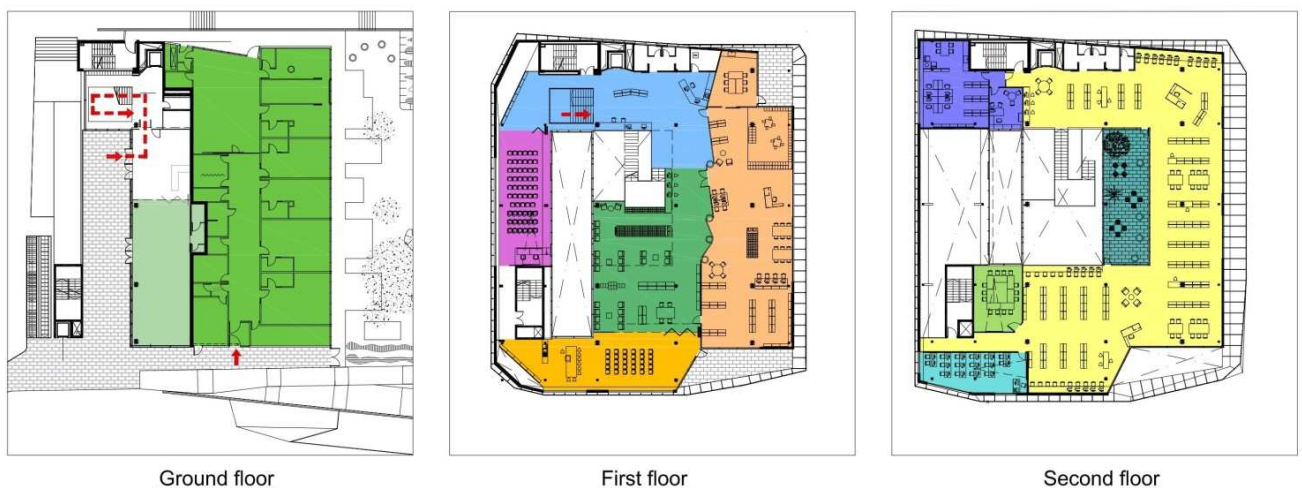
In 2008 the city council organized a competition to award the project and the construction of the building, which was won by the same team who made the draft. During this time the project “world cooking” was developed and conceived as a space with a kitchen that could also be used as a bar-restaurant. Therefore, the architects were asked to place in the ground floor, in addition to the entrance area, the multipurpose space and this space for “world cooking”. They were also asked that it could work independently when the library was closed. (*Figure 4*)



**Figure 4.** Library's floors. The space "world cooking" is located on the ground floor.

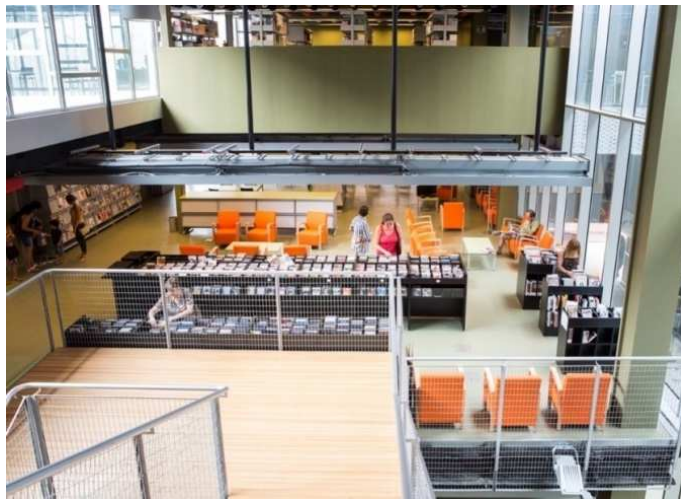
Afterwards it was decided that the nursery, also located on the ground floor, had to be bigger, so the area for the library was reduced. It was clear that the space "world cooking" could not be located on the ground floor. Then the city council decided to integrate it completely to the library, without the bar-restaurant function. It was defined as a space where it was possible to cook, teach and organize activities related to gastronomy. It was located at the end of the first floor, in a space of around 140 m<sup>2</sup> that could also be closed off with sliding doors depending on the type of activity taking place. It was accepted that it would not be possible to use it when the library was closed.

In 2013, when the library was practically finished the city council decided to take over almost all the ground floor of the library to install another municipal activity: the citizen service. That made it necessary to relocate the activities planned on the ground floor. They lost the opportunity of having in the entrance area, directly related to the street, the possibility to do all the transaction of borrowing and returning documents, as well as having a welcome, exchange and information area. (Figure 5)



**Figure 5.** Library's floors. Definitive organization of the different spaces. The space "world cooking" is located on the first floor.





**Figure 6.** Access stairway to the second floor.  
Author: Oscar Ferrer (ago2)

Therefore, on the ground floor there is only one stairway and one elevator that access the upper floor. On the first floor there is the entrance area, with the service of borrowing and returning documents. Behind the access stairs there is the multipurpose space, which takes up a double height space with a very peculiar layout. From the entrance area it is possible to access the children's area, which is separated with glass walls in order to soundproof it from the rest of the library. From the entrance area it is also possible to get to the magazines, music and image area. Right after that, at the end of the floor, there is the area used for the "world cooking" program. On one side there is a compact piece of furniture with a kitchen, fridge, oven, drawers, etc., which has the format of a domestic kitchen

but with quality services, and around which users can sit on high stools. Access to the second floor is provided by a big stairway, located on a double height and that attracts a lot of attention, since it is possible to view all the areas of the library from the stairs (*Figure 6*). On this floor there is the general area (*Figure 7*), the training room, the teamwork room and the staff area. There is also a very nice courtyard, where users can go out to and read.



**Figure 7.** General area.  
Author: Oscar Ferrer (ago2)



**Figure 8.** View of the building from the square.  
Author: Simón García

The highlight of the library, from an architectural point of view, is how the section of the building has been solved, how the volume has been "perforated" inside. The effect created by the double heights is one of a single large area, even though the library consists of different levels. Furthermore, it facilitates natural ventilation and the entrance of sunlight, resulting in energy saving. (*Figure 8*)

### The "world cooking"

The project "world cooking" allows the library to become a cultural reference of the territory, like a social integration center in an area with a lot of diversity of origins and nationalities. The main objectives are: to promote the mixture of cultures, genders and ages; to facilitate a meeting and

engagement space; to generate a feeling of belonging to a group and a city; and finally to promote positive values such as tolerance and respect among users.

A relationship space similar to a family kitchen has been created and it has never been intended to turn it into a cooking school.

Activities are carried out at three levels:

- Scientific: about nutrition and food, with cooks and/or university professors.
- Training: courses to teach how to cook and sessions during which people of different origins meet in order to share cooking experiences.
- Social: fusion cuisine, reading clubs, presentations, etc. (*Figure 9*)



The project has been developed with the collaboration of many different agents: Universitat de Barcelona (through the culinary innovation center Bullipedia, fostered by the renowned chef Ferran Adrià), the local cooking school, professional chefs, the primary school of the neighborhood, the local commerce association, the city council and the Municipal Library Network of the province of Barcelona

**Figure 9.** Activity about cooking in the space “world cooking”.

Author: Mariona Chavarria

## Evaluation

The architectural project was developed without the project “world cooking” being defined. This caused difficulties and changes to a process that, also, took longer than expected.

It would have been desirable to have a previous reflection process, with all the agents involved, which specified a complete and detailed functional program.

Almost two years after its opening, the evaluation of the project “world cooking” is very positive. Among other things, it has attracted people who for different reasons don’t visit public spaces, especially not libraries. The project has been incorporated to all the activities of the library and its success has shown the need to allocate more resources (economic and human) to improve the service and to organize more activities.

The city council considers this collaboration project a model that has to be repeated, since now it is impossible to conceive the library without the kitchen, nor the kitchen without the library: both make the most of each other.

In regards to the physical space, apart from the advantage of having “world cooking” located in the center of the library, we must note the following problems:

- Noise problems when certain activities are being carried out. Even though there are sliding doors, in some cases the noise disturbs the library users.
- Unsatisfactory system of extraction of smoke and smells.
- Impossibility of using this space when the library is closed.

At the moment of writing this paper, we have been informed that the library has recovered the space on the ground floor that had been used for the citizen service. This will make it possible to recover the original idea and to have in the ground floor the entrance area with the service of borrowing and returning documents and the magazines area.

## LIVING LAB IN THE LIBRARY OF VOLPELLERES (SANT CUGAT DEL VALLÈS)

### History

Sant Cugat del Vallès is a municipality located 12 km from Barcelona city that has a population of 88,000 people. Construction is much less dense and detached houses prevail.

The neighborhood of Volpelleres, where the library had to be built, is an area that has been recently urbanized and that is inhabited mainly by young families, with a mid to high education level and usual access to new technologies. The neighborhood association of the district, made up of a high number of people linked to the university, convinced the city council of Sant Cugat del Vallès that the new library had to have the Living Lab of the Computer Vision Center of the Universitat Autònoma de Barcelona: an innovation laboratory that makes use of the links between culture, technology and society in the surroundings of experimentation.

In the functional program, created jointly between the municipality and the Library Services Management Office, it was stated that the library would need to have 960 m<sup>2</sup> of program floor space and the Living Lab 100 m<sup>2</sup>. The Living Lab had to be connected directly with the general area of the library, in order for the users to take part in the activities carried out. At the same time, it was also necessary that it could work independently when the library was closed.

### The architectural project

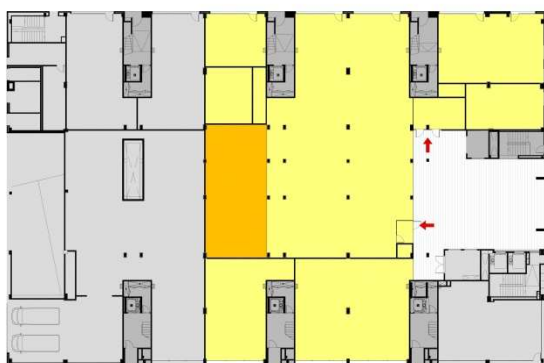
The creation process was relatively short. The project began in 2013, the construction work began in 2014 and the library was opened in March 2015. The built surface area of the library is 1,330 m<sup>2</sup>.

The library had to be located on the ground floor of a new residential building. The site was rectangular but the available area was irregular since there were 6 vertical communication cores to access the apartments and one ramp to access the lower car park. Furthermore, it was necessary to have space for several retail spaces.

The city council put the team *Orteu, Piferrer, Farré, OP TEAM arquitectes* in charge of the project. The plans of the library kept changing during the development of the project due to a clash between those wishing to improve the accessibility and the visual link between interior and exterior and those with interests connected to the retail spaces.

In the first drawings of the architectural project the Living Lab was located inside the library but didn't have an independent access. (*Figure 10*)

Afterwards, through a series of location changes of some retail spaces, it was possible to give the Living Lab an independent access. (*Figure 11*)



**Figure 10.** Library's floor. Initial proposal.



**Figure 11.** Library's floor. Second proposal.



After more changes on the plans of the spaces, in the definite proposal the objectives of the functional program were achieved. These objectives were: an accessible library open to the exterior with a Living Lab fully integrated but that is possible to access when the library is closed. The library is organized in a single level and the access is through a courtyard that works as an exterior hall (Figure 12). Inside, the library is distributed around a central axis from where it is possible to access the different areas (Figure 13). On one side we can find the general area, split in two parts. On the other side we can find the children's area (Figure 14), the staff area and the Living Lab, which is separated by a wall made of glass so it is possible to have a complete view of the interior. At the end of the library we can find the training room, the teamwork room and the multipurpose space, which like the Living Lab can also work independently when the library is closed.



**Figure 12.** Library's floor. Final distribution of the spaces.

The highlight, from an architectural point of view, is the ability of the architects to transform a very irregular space into a library that is very organized and easy to understand as soon as you access it. Furthermore, the treatment of materials, colors and lighting offers an elegant but also close image. In regards to the exterior, even though it is located on the ground floor of a residential building, they have managed to give it visibility and the character of communal equipment. (Figure 15)



**Figure 13.** Entrance área.  
Author: Adrià Goula (photo courtesy of OP TEAM arquitectes)



**Figure 14.** Children's area.  
Author: Adrià Goula (Photo courtesy of OP TEAM arquitectes)



**Figure 15.** View from the exterior.  
 Author: Adrià Goula (Photo courtesy of OP TEAM arquitectes)

### The Living Lab



**Figure 16.** Living Lab.  
 Author: Santi Romero

The Living Lab (*Figure 16*) is a public space of technological transfer where research groups of the Computer Vision Center of the university do research on technology used to facilitate the access to reading and knowledge. This is how it works: users have free access to a series of interactive computer programs and, in exchange, they act as a testing ground that provides information to the researchers in order to develop and improve their products.

The objectives of the Living Lab, linked to the ones of the library, are the following: identifying challenges, exploring solutions and trying proposals “from” “with” and “for” the people.

Very different activities are carried out, such as for example, the project “The Library visits the Museum”, during which a group of users, from the library, guide and give instructions to two people who, from the museum, broadcast the visit online. Another project is “I am my drawing”. In this project a group of children, after listening to a story, create their own story and draw the characters, which are digitalized. Afterwards, the children dramatize the story and with gesture detection technology they give movement to the characters they have created, and the result is an animated film.

It is a collaboration project between the neighborhood association of the district, the Universitat Autònoma de Barcelona, the city council and the Municipal Library Network of the province of Barcelona.

### Evaluation

The inclusion of the Living Lab has added value to the library and has caused this space of participation and creation to be used not only by the inhabitants of the neighborhood and the

municipality. The library has broadened its range of action and some of the projects are having international impact.

Users are very proactive and find the new experiences very interesting. The library has turned into a place where things can happen every day, things that users don't expect in a library.

The current challenge is to keep planning new activities and attracting a sector of the audience that still feels intimidated by the excess of technology.

In regards to the physical space, some noise issues have been detected because the glass separation is not soundproofed enough for some of the activities carried out in the Living Lab.

On the other side, there are doubts about whether it would have been better to integrate some of the Living Lab elements, such as the video wall or the augmented reality table, inside the library.

## **FAB LAB IN THE LIBRARY OF LES CORTS (BARCELONA)**

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### History

The district of Les Corts is located in the southwestern area of the city of Barcelona. The density of population is lower than the average of the city and there are mostly middle class young families.

The plan was to build a library for a population of 88,000 people. According to the Standards, it was necessary to have a program floor space of 3,500 m<sup>2</sup> (around 4,700 m<sup>2</sup> of built surface area).



**Figure 17.** Location.

At the moment of writing the functional program of the library, the creation of a Fab Lab wasn't planned.

It was decided that the library would occupy an existing volume formed by one industrial unit that had once been a textile factory, and besides two annexed buildings internally conjoined.

The industrial unit, built in the beginning of the 20<sup>th</sup> century, is a rectangular single-story building. Due to the fact that it is a protected building, it was not possible to modify neither the volume nor the structural type. Furthermore, the façades

and the original covers had to be restored. The two annexed buildings, higher than the industrial unit and also rectangular, were not subject to any protection regulations. (*Figure 17*)

### The architectural project

The creation process has been very long. The project began in 2010, the construction work began in 2015 and the opening is planned for the end of 2017.

At the beginning of 2010 the city council organized a competition of ideas that the team *Ricard Mercadé-Aurora Fernández Arquitectes* won.

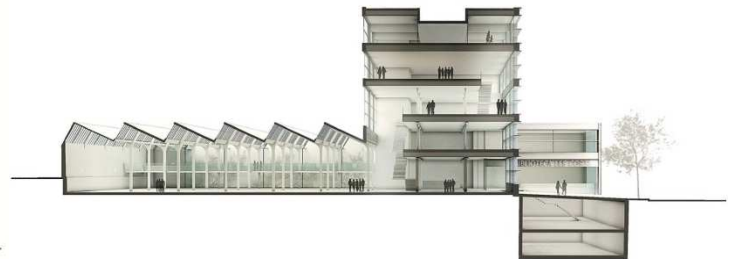
In the winning proposal one of the annexed buildings was partially demolished in order to create an access square (*Figure 18*). The library's lobby was located in the other annexed building, which had its interior emptied on one side, which resulted in an immense space that linked with the



industrial unit. This way, there was a good visual connection between all the floors in the annexed building and the industrial unit, with only one floor. (*Figure 19*)



**Figure 18.** Initial proposal. Exterior view.



**Figura 19.** Initial proposal. Section of the building.

Because of the economic crisis the project was put on hold for over 2 years. When it was reactivated and also due to some budget cutbacks the architects were asked to study a new proposal with the following changes: the library had to be reduced more than 800 m<sup>2</sup>, the layout of the two annexed buildings could not be modified, and they had to add one Fab Lab that would be part of the network “Association of production of Barcelona”, which already had other similar spaces in the city.

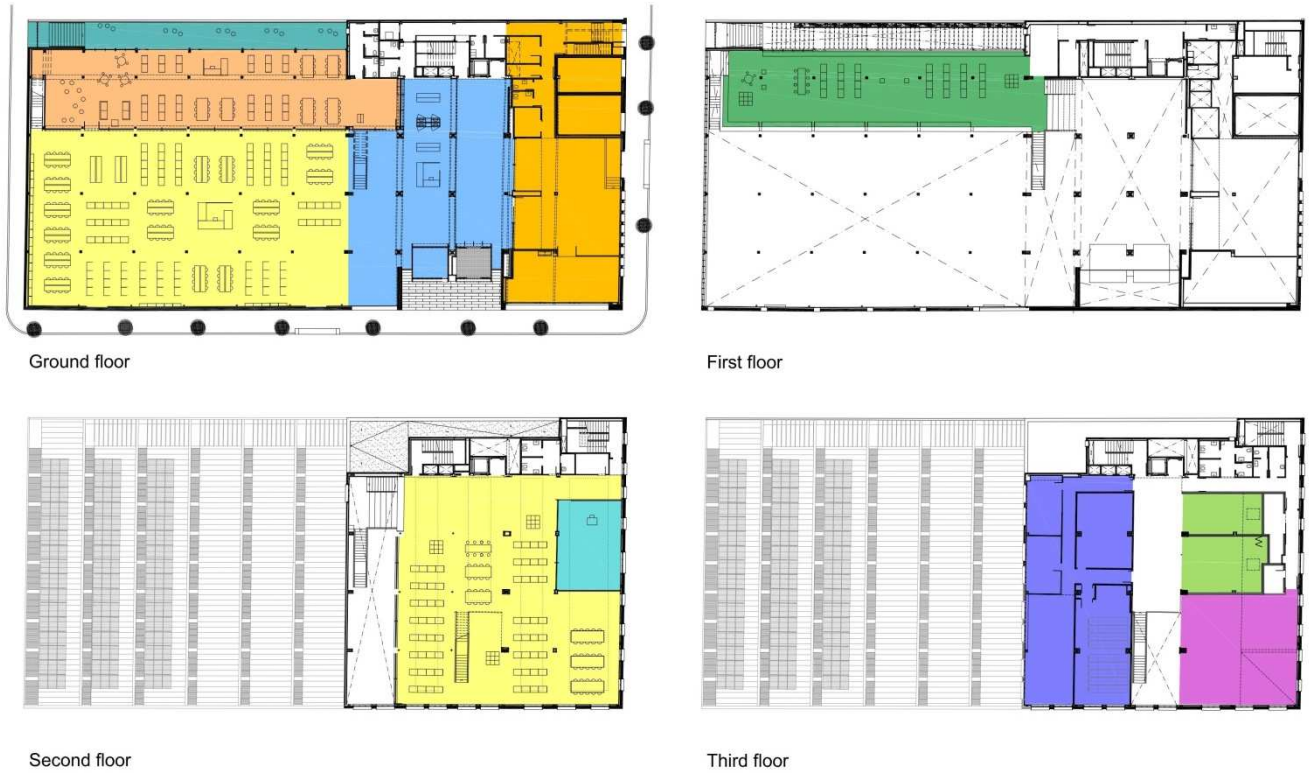
On the other hand, since the Fab Lab had a defined program of activities, the city council decided that the Fab Lab could be provisionally installed in the industrial unit until the construction was finished. Thus some containers were placed, which will be working until the Fab Lab can be moved to its definitive location.



**Figure 20.** Definitive proposal. Exterior view.

In the new proposal the basic ideas are maintained, the Fab Lab is located on the right side of the lobby and it takes the space where originally one of the buildings was supposed to be demolished in order to create an exterior square (*Figure 20*). The Fab Lab is then linked to the library through the lobby and, with a system of rolling blinds that divide the lobby in two parts, it is possible for the Fab Lab to work independently when the library is closed. (*Figure 21*)





**Figure 21.** Definitive proposal's floors.

The library has 3,800 m<sup>2</sup> of built surface area and is organized in four levels. On the ground floor there is the entrance area, the information area at double height and the children's area, which has its own courtyard. The magazines, music and image area is located on top of the children's area (Figure 22). On a level above there is the general area and the training room. On the top floor there is the multipurpose space, the teamwork rooms and the staff area.

The Fab Lab occupies a surface of 250 m<sup>2</sup> of built surface area and it has a very good visual relation with both the entrance lobby and the exterior, so it will work as a display window for the activities that will be carried out.



**Figure 22.** Children's area with courtyard. Above it, the magazines, music and image area.

The configuration of the building makes it possible for the teamwork rooms and the multipurpose space, on the top floor, to work independently from the rest of the building, so they will end up being spaces very easy to use for the library, the Fab Lab and for other different uses.



**Figure 23.** Temporary space for the Fab Lab.  
Photo courtesy of Ajuntament de Barcelona

### The Fab Lab

The Fab Lab, currently working in a temporary space of the building (*Figure 23*), promotes own creations and collaborations of all kinds between all types of people who are interested in science and technology. The Fab Lab provides these people with materials that are economically unavailable to individuals. Its aim is to create a space of debate and technological production, a place where anyone can express his or her talent and creativity, since it is the first public Fab Lab in the world. It is equipped with software and production machines that let users

turn their ideas into digital information, and this information into useful objects for society. This way the projects have a social return for society. (*Figure 24*)



**Figure 24.** Activity at the Fab Lab.  
Photo courtesy of Ajuntament de Barcelona

It is a collaboration project between the network of “Association of production of Barcelona” and the city council of Barcelona.

### Evaluation

The architectural project was subject to modifications due to the changes in the program of use and it also took more time than planned. With these difficulties, architects have made a positive evaluation of the final result because they have incorporated the new demands without losing the architectural essence of the project that won the competition.

In regards to the Fab Lab, even knowing the evaluation of the activities developed in the temporary installations is positive, we can't evaluate how this project is going to fit in with the library because the whole facility hasn't been opened yet.

## **CONCLUSIONS**

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The success of these experiences encourages the Library Service Management Office of Diputació de Barcelona to keep looking for collaboration strategies that give this additional value to public libraries.

Originally our main mission was to spread knowledge. Later it was decided to increase the social value of the library, creating services and meeting spaces in order to promote personal relationships, social cohesion and citizen involvement. Now we are also focusing on the promotion of creativity, which is the first phase of the knowledge cycle.

We understand that in order to create it is necessary to learn, experiment and produce. That is why we have to offer learning and experimentation spaces and, of course, ways to cooperate and collaborate with different external agents, according to the creation type that we want to promote.

Currently we have three specialization lines: social scientific, technological and creative or artistic practices.

We are working in that direction and we hope the number of experiences increases day by day.