TURNKEY RETROFIT

D3.4. Lessons learnt from the local implementation

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R2M RESEARCH TO MARKET SOLUTION

EIP

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FOREWORD / EXECUTIVE SUMMARY / SUMMARY OF FINDINGS

The work presented is part of an ongoing European Horizon 2020 project TURNKEY RETROFIT. The project seeks to create a burden-free renovation experience for the homeowner by providing a web platform where the user is offered tailor-made solutions based on his/her specific needs and preferences.

This report is deliverable D3.4 which presents the work developed in Tasks 3.2 and Task 3.4 collecting both the roadmap and the procedure followed to achieve the implementation of the TURNKEY RETROFIT service in France, Ireland, and Spain, It collects **the lessons learned from the whole process for the implementation of the service**, taking into account all the experience of developing and adapting the service to the local needs and the existing actors for each country.

These lessons will help and can be used for **future implementations of the service in other EU countries**. The results of this document together with the Guidelines for the implementation in different European countries as presented in D3.2 will facilitate the replication and implementation of the service in other countries.

This document presents the S4R TURNKEY RETROFIT platform in France, showing its current operation, and also presents how the TR service has been adapted in Ireland and Spain, including details on how the platform works in each country and its business model. All this work, together with the first results and conclusions obtained from the platform operation tests carried out in the three countries in several pilot cases, has allowed obtaining the **lessons learned from the local implementation of the TURNKEY RETROFIT service**.

Due to the characteristics of each country, the platform and the TR service don´t work in the same way in all of them. Before starting the implementation of the Turnkey Retrofit service, it is necessary **to have a clear definition of the scope of the service** to be developed. In addition, the motivations and expectations when undertaking the implementation of the service in each country may be different. Another key aspect to ensure the success of the implementation of the TR service is to analyse the environment and the factors that may affect or facilitate the implementation and of course **to have the necessary human, technical and economic resources for the management and development of the service.**

For the design of the business model, the lessons we have learned are that for the correct development of the service **a strong collaboration network must be created** including all the agents and stakeholders in the renovation processes, and involving them from the initial phases of the implementation of the service. This will provide the necessary knowledge and capabilities to respond to the needs and services offered by the TR service. It´s also important to **identify possible competitors** to avoid duplication of efforts and non-productive overlaps (positive competition exists). In each country where the TR service is to be implemented, the **most probable customer segment for service** must be identified. The definition will state both the developments to be made and the outreach strategies adapted to the different customer groups identified. It is also important to clearly define the roles of all the actors involved, including **the benefits and responsibilities of each of them when participating in the TURNKEY RETROFIT process.**

As the TR service is focused on the client and on transforming the complex and fragmented renovation process into a simple, straightforward, and attractive process, it is necessary that all the developments and the adaptation of **the TURNKEY RETROFIT service** and the design of the Solutions4Renovation platform and tools are carried out **with the user experience in mind** and that a clear, simple service with total control and quality assurance is offered. With this

objective, the definition of the **customer Journey** is one of the most important aspects to adapt the platform, as it depends on the chosen business model, but also the customers' needs and the feasibility of the technical developments.

Regarding the Turnkey Retrofit services and the **Digital platforms**, it´s clear that digital platforms such as S4R are a great opportunity to connect the renovation ecosystem and provide the customer with the necessary information and support in certain phases of the process. However, it is complicated to cover all the phases and processes that the customer must go through from the moment when decides to carry out an energy renovation, until the end of the project execution. To guarantee the success of the service, **personal contact with specialized professionals** is a key point. It is essential to create a team of technicians and companies with sufficient knowledge to support and solve the doubts and needs of the client throughout the development of the energy renovation process. **The transparency of all data and information processing and the certified professionals** build the **TRUST** needed to guarantee the success of the implementation

It is also key to **increase citizen awareness** of the opportunities for their home and building, showing that they are affordable and the results of the improvements in energy savings, comfort, and healthy environment that they would obtain, with this purpose the platform must offer a **clear diagnosis of the works** to be carried out, as well as an estimated cost of the works and deadlines. It should provide the customer with a **list of recommended works and the range of costs**, making it possible to adopt a staggered approach based on the tailor-made roadmap.

As a final remark if we want to ensure the implementation of the Turnkey Retrofit service in a new country and the survival and success of the Turnkey Retrofit service and the S4R Platform after its implementation and launch is key to design a **tailored Market Plan** and to have a **good Communication Plan**.

INTRODUCTION

The TURNKEY RETROFIT project aims to define, develop and implement a new renovation service, whose main value proposition is to assist the user throughout a renovation project. However, the TURNKEY RETROFIT service has had to be adapted to the local context in Ireland and Spain. The adaptation of the service has required the collaboration of local stakeholders to ensure that the service caters to local needs. In addition, the adapted service has had to resolve and overcome existing barriers in defining and developing a One-Stop-Shop model that fits the needs of local stakeholders in each country.

With the experience of the work carried out in this WP3-LOCAL IMPLEMENTATION, for the implementation and adaptation of the TURNKEY RETROFIT Service in the countries of Ireland and Spain and that is collected in the Deliverables D3.1, D3.2 D3.3, this document presents the lessons learned during the whole process of adapting the Service to the local needs of each country.

The objective of this document is to serve as a basis for the implementation of the TURNKEY RETROFIT service in the countries concerned. This report presents S4R platform in France, Ireland, and Spain, and their adaptation to the national contexts of the last two. Lessons learned from all this work will provide very useful information and will facilitate the implementation of the TURNKEY RETROFIT integrated renewal service in different European countries.

1. GENERAL OVERVIEW

Under the TURNKEY RETROFIT project, an integrated home renovation service has been developed, which will operate for the first time in France, Ireland, and Spain, and can be accessed through a user-friendly digital platform www.solutions4renovation.eu. This platform offers a homeowner or co-owner-oriented renovation service to transform the complex and fragmented renovation process into a user-friendly, attractive, and simple process. Renovation processes currently do not present the necessary facilities to encourage owners to renovate their buildings. Due to the ambiguity of the interventions that can be carried out, the lack of knowledge of the renovation solutions and the lack of services that allow the coordination of all the market agents involved in the process, the building renovations needed to achieve the goals set by the EU for the renovation of an old and inefficient building stock are not being carried out.

This service aims to offer a burden-free experience for the customer, with a turnkey solution that will cover all stages of the renovation process, thus becoming a one-stop-shop, responding to the renovation issues, and assisting the customer (owner or co-owner board) at various stages of the renovation process of their home, serving as a facilitator to achieve an increase in the renovation of the EU building stock.

In this section, the current operation and the description of the services implemented on the S4R platform in France are presented. It describes the process offered by the platform to respond to users´ needs and guide them through the process of renovating their homes.

1.1. THE S4R TURNKEY RETROFIT PLATFORM IN FRANCE

General architecture

TURNKEY RETROFIT platform, **whose name is "Solutions4Renovation"** (referred to as S4R further in the document), in France is based on the existing services provided by:

- EP for the single houses: Heero service run by EP
- OPERENE for the multi-family buildings.

Heero's bricks, as described in D1.2, are the core of the French TURNKEY services for the single houses, and S4R plays the role of an entry gate for this existing national platform. On this core, additional bricks are plugged to address both single-family and multi-family buildings. These bricks are independent web services running on independent web pages and connected to S4R through internet links.

S4R is an entry gate to these two national partners' services.

Visually, S4R consists of a homepage, that easily redirects the user towards:

- One of the Heero entry gates if the customer is a single-family house owner and already has quite good knowledge about energy retrofit and what they want to do;
- Additional bricks if the customer is a multi-family building co-owner or a person that just doesn't know where to start from.

Of course, the marketing design is uniform so that the customer has a fluid experience.

Customer journeys and additional bricks

As Heero only address single-family houses, OPERENE worked on the customer journey for multi-family buildings, see D1.2. Some steps of this customer journey are out of the platform as they require a specific action from another stakeholder (design team, energy assessor). Conversely, some bricks of the Heero customer journey cannot be used as such for multi-family buildings, for example, the Smartdiag.

Apart from the existing web service Heero that EP is running, several additional bricks were identified within Task 1.2 to have global and optimized one-stop-shops. The two bricks that have been selected as top priority ones by all the partners during the General Meeting mid-January, and that have been developed are:

- "Punch Diag"
- "Roadmap"

The idea of Punch Diag is to help customers describe the state of their home/building and trigger the homeowners' will to renovate. The main objectives of this brick are:

- **Attract people's attention** to the fact that they MUST do something about their home.
- Help them **realize what must be done**.
- **Make them want to retrofit** their home. Give them an optimistic point of view and help them realize that retrofit can provide benefits in terms of day-to-day life, comfort, aesthetic, acoustic, …
- **Make them go further** into the retrofit process, pointing out works they had not thought about.

"Roadmap" or "Get things done in order to prevent the disorders".

This brick gives a timeline to follow for the retrofit if all the works cannot be done at the same time, which is often the case due to financial issues. The objectives are:

- **Prevent disorders** if the works are not done in the proper order.
- **Propose additional works** to the customer that are easily grouped with the ones that are already planned, or that give additional subsidies (e.g. insulation of the attic with the roof replacement).
- **Keep customers into a proactive spirit** and do not let them discourage themselves with the scale of the retrofit. Allow them to spread the retrofit in time with their financial options.

See full description of S4R French services in D1.2.

Heero

The Heero platform was created in the Turnkey Retrofit project (the former service was called Izigloo).

For the platform to be fully operational, several improvements had to be made to provide differentiating elements:

- Design (color, logo, name)
- Content: baseline and tone of voice
- User database

Moreover, in the competitive world of works platforms, it is important to position the platform so that homeowners have easy access to the platform based on their internet searches. That's why, more than 300 pages of contents about energy retrofit had been added to the platform.

Timeline

Heero's service was online since May 2020 but fully operational and running since July 2021 (with the traffic acquisition campaign). The additional bricks and general contents have been added gradually to the platform since mid- 2021.

A team of project managers was recruited and organized by end of 2021. Two people work full time answering the phone to the customer to help them in their retrofit work.

Generally speaking, the development time and work effort necessary to develop the additional services and adapt the platform to the 3 countries were noticeably underestimated. In addition to the web development, the platform cannot work without a project team, a contractor's network, and traffic acquisition. It took almost a year to implement these different elements.

1.2. THE ADAPTATION OF THE S4R NATIONAL CONTEXTS IN IRELAND AND SPAIN

After presenting how the S4R platform works in France and showing and describing the services that will be offered in that country through it, in this section, the necessary activities and adaptation work to achieve the implementation of the TR service and the S4R platform to the local contexts of Ireland and Spain are presented. It also explains and describes the services that will be offered through the platform in both countries, as well as details of the business models and operation of the service in both countries.

1.2.1. SPAIN. S4R REFORMANERR

Due to the existing differences between Spain, France and Ireland, both in the needs of local agents and the kind and number of agents involved in the rehabilitation process, as well as the representative building typology of the country, it has been necessary to adapt the TURNKEY RETROFIT model and the S4R platform to the market requirements in Spain.

It is essential to analyse, in each country, who is the right decision-making partner for the representative typology of housing. In Spain multi-family dwellings are constituted in communities and therefore the figure of the Property Administrator is very relevant. That is why they have been included in the LIG. There are other essential figures such as neighbourhood associations or commonwealth.

Innovative methodologies help to achieve the objectives simply and easily, therefore, it is highly recommended for the customer journey definition process. These methodologies require a professional facilitator and previous work to outline the objectives to be defined in each session. Non-presence is not an insurmountable barrier since there is a wide range of collaborative tools available on the web that allow this type of interaction. Co-creation has been essential to achieving the commitment of all partners and participants in the development of the service in Spain.

A key issue for the adaptation of the TR service in Spain was the "service design" in which the technology is supported by professionals and experts, especially in the advisory and technical control phase. Thus, it has been possible to combine face-to-face and online processes. In Spain, the key is to accompany the online process with specialists who

advise and supervise the execution and control. The platform in Spain will act as an essential guide to centralize all the documentation and monitoring of the renovation process.

The S4R-Refomanerr platform has been adapted while maintaining a user-centered design approach. It has been designed so that all parts of the process offer value to the user. B2B **(Business-to-Business)** process should be also worked, if it doesn't exist, as a crucial part to get professionals involved and get improved goals.

The Customer Journey of the service must be clear, simple, and with total control and quality assurance. With this objective in mind, the development of each step has been carried out, thus ensuring that all the actors involved have a clear idea about their role and the process in which they participate. In this way, the scaling required by the project has been guaranteed.

In the case of Spain, the management of subsidies requires a special mention. In Spain, the need for special management support has been detected due to the lack of resources and training for rehabilitation companies and the complex management for property administrators. The financial part is an essential condition and must be well harmonized with public and private financing options to make the challenge of comprehensive renovation projects as effective and feasible as possible. However, this aspect has not been able to be developed due to its great complexity.

Details of the platform

Spanish Platform is called REFORMANERR as the pre-existing platform from ANERRs´ Associated companies as a B2B service. But the new and adapted version it´s open to B2C (Business-to-Consumer) and B2B services. In deliverable D3.2 some issues were set but conditioned to be revised and implemented to get the best user experience:

- The book of the building with all previous stories (on-site if possible)
- A retrofit road map: on-site and covering the potential impact on everyday life during the works (step by step)
- Signed contracts with construction companies & financial providers: on-site.
- The control of the energy surveys (in case the white certificate is ongoing in the country, it can be the financial support, in the case of Spain it does not apply now, but it´s not discarded as an option in the future.)
- The technical control of the execution of works done.
- The definition of the validation process on every step.
- The technical documentation of the execution and the technology involved.
- Training about maintenance or maintenance services can be provided by the end of the project. Especially for multifamily buildings.

According to the timetable and the flow for the project tools, the scope has been redefined. The current platform REFORMANERR is a new version and at presentworks as a Beta version, even though it is online.

On the **home page** there are three ways for interaction:

1- B2C Homeowner or Manager of the building

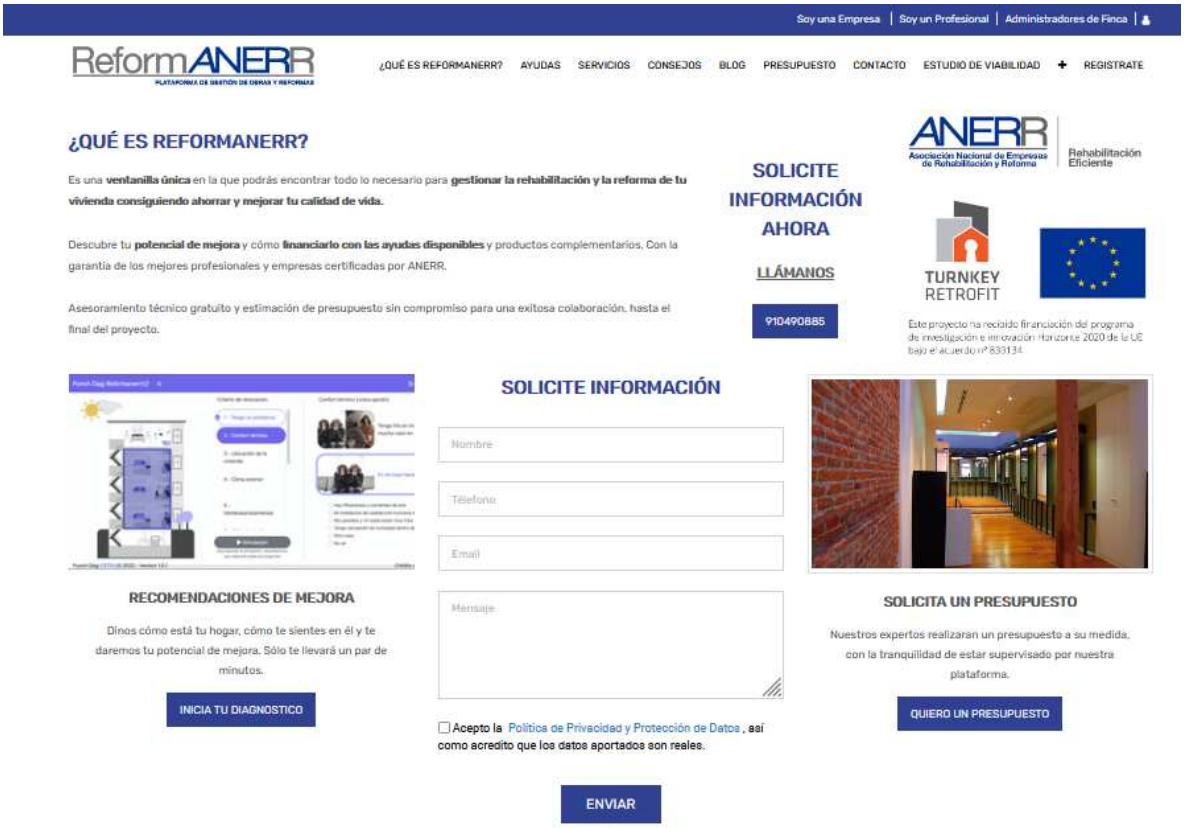


Figure 1 - Sample landing page of Spanish platform

- **"Make your pre-diagnosis" (HAZ TU DIAGNÓSTICO)** (Punch Diag tool) and discover the potential energy improvement you can get on your home, just based on how you feel at home (relates to the punch tool). The project can be saved on your profile, and ask for a personalized energy-saving auditory with specialized professionals. Login it´s required to save information on your profile.
- **Customers can ask for a quote for the required works. (PIDE UN PRESUPUESTO)** The home site includes a questionary with contact data and the first steps for the briefing. LOGIN is not required on this step. The client is contacted by the professional's team and invited to log in to the personal profile.
- **Request general information(SOLICITE INFORMACIÓN)**, it´s a regular form, no login it´s required. The team makes the contacts and filters out real opportunities.
- The Menu includes a link to **"ayudas"**. It is a landing with the Spanish map linking all **grants**.

Figure 2 - Sample grant application page

- The **Road Map Module**. It´s in the process to be adapted to the Spanish context, and it will allow having an estimated cost of the works including grants. Research is underway on how to include the actual estimates of private funding in the Spanish adaptation when the project is closed.

2- B2B for associates and other professionals.

- Home page link a direct form to create your professional profile on the platform: *Soy una empresa* (as a company), *Soy un profesional* (as a professional), *Administrador de fincas* (as building Manager). The form has created a lead and is confirmed by the REFOMANERR team for quality assurance and quality reasons.

Figure 3 - access for associates and other professionals

- Diagnosis Tool and Road Map will be very useful for the Building Manager also. But this profile includes other technical information for this target.

Some remarks on the adaptation of the TR service in Spain:

The Tool Pre-diagnosis or "Punch Diag" on the Spanish version, has been adapted to multifamily dwellings. Customers shall access the platform directly from REFORMANERR´s home page or through the Solutions4Renovation website.

The "Road Map" tool, it's not finished by this moment, so the testing process runs with a simulation screenshot to get any feedback from customers about the value that shall be added to the experience.

About Personal profiles:

- Then the specialized team from Reformanerr contacts the client to advise about the specifically required works. Then the request it´s sent to selected companies that can budget the works, and t**he customer receives 3 different quotes for the works.**
- There is a personal area for projects where the client receives the quotes and controls the works process.
- The platform provides a common document base shared by all profiles involved in the project. This makes it quick and easy to access information at any time, such as licenses, certificates, budgets, and also photographs (from any mobile device) on the site to document pre and post-work status, the evolution of the works, etc.

The evolution and development of the Turnkey Retrofit service in Spain and the Reformanerr platform in the short term will focus on improving the user experience (UX), and optimizing the tools developed in the project to achieve the experience on mobile devices.

Business model

The business model in REFORMANERR fits the "coordination model" but includes a deeper following to ensure quality for all stakeholders:

- One-stop-shop (full process guidance)
- Full traceability TRANSPARENCY
- Document repository with shared database
- Personalized profiles
- Management of grants and financing
- Personalized advice to end clients and Property Administrators.
- For clients, it guarantees access to the best professionals and companies certified by ANERR.
- For companies and professionals, gives access to new opportunities and constant management support
- A team of professionals with more than 10 years of experience.

Who pays:

It´s a freemium model. Home Owner & Building managers can get a simple service for FREE. Other complex services, such as professional diagnosis and works coordination, grants management, etc should be paid to professionals. The payment to companies in charge of works goes out of the platform. Companies and professionals pay a monthly/annual fee and % quote per work. Manufacturers, Financing services, Technologies, etc regarding the ecosystem, will pay to be placed on the platform.

1.2.2. IRELAND. S4R IRELAND

As in Spain, the TR service and the S4R platform have been adapted to cover the needs of the Irish renovation market.

The Irish platform is called Renovation Hub. Customers shall access the platform directly or through the Solutions4Renovation website. In deliverable D3.2 the following modules and information is delivered on Renovation Hub as planned within the timeline of the project

- Information, generic road map, and FAQ (Frequently Asked Questions)
- Discovering your home's renovation potential based on how you feel which relates to the PUNCH diagnostic module
- Getting a cost estimate including grants and energy credits which relates to the Road map module
- finding information on renovation loans and personal loans which relates to links and information provided on the Irish website

The additional following systems will also be alpha tested[1] within the project timeline

- Log in system

Where the customer can store the results of PUNCH and Roadmap including the FAQ information that they find

- Two-way Booking system

The platform will test the customer experience of booking a renovation advisor and also of a renovation advisor managing a booking from a customer.

The following modules are currently being developed and will complete the services offered.

- virtual assessment
- connecting to the renovation advisor
- connecting to the contractor, single measure supplier/installer or an existing accredited one-stop-shop

Details of the platform

The Irish platform is called Renovation Hub and is targeted at the customer who is brand new to home energy upgrades and retrofit. Within the 'Get started' section the customer will access adapted versions of both the PUNCH tool and Roadmap tool that answers the question "does my home need a renovation?" and "what should I do and how much would it cost?" respectively.

[1] alpha testing: https://www.geeksforgeeks.org/difference-between-alpha-and-beta-testing/

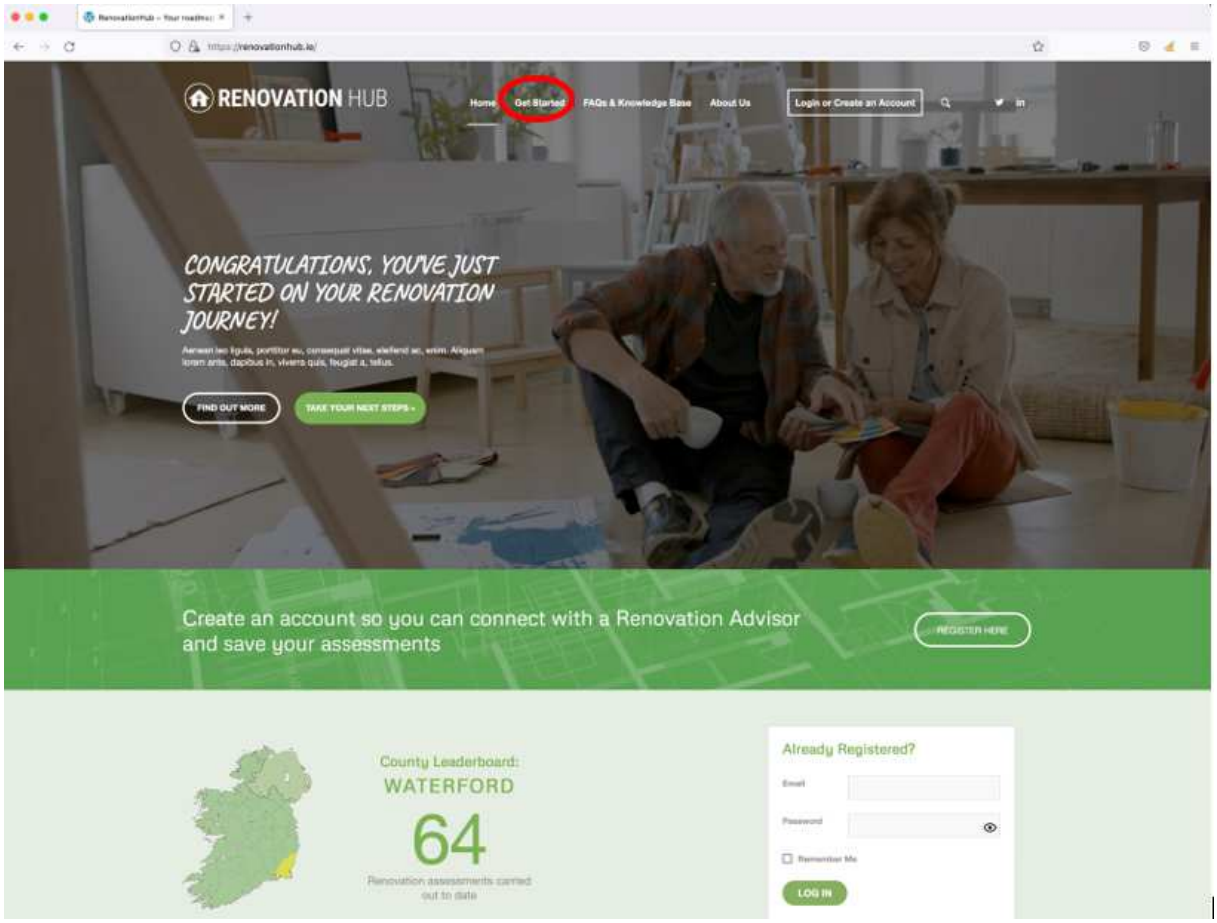


Figure 4 - Renovation Hub home page, S4R tools can be accesses on 'Get Started' on the menu bar

The Irish platform will expand on the information offered on the Solutions4Renovation website with over 50 questions and answers in the FAQ section.

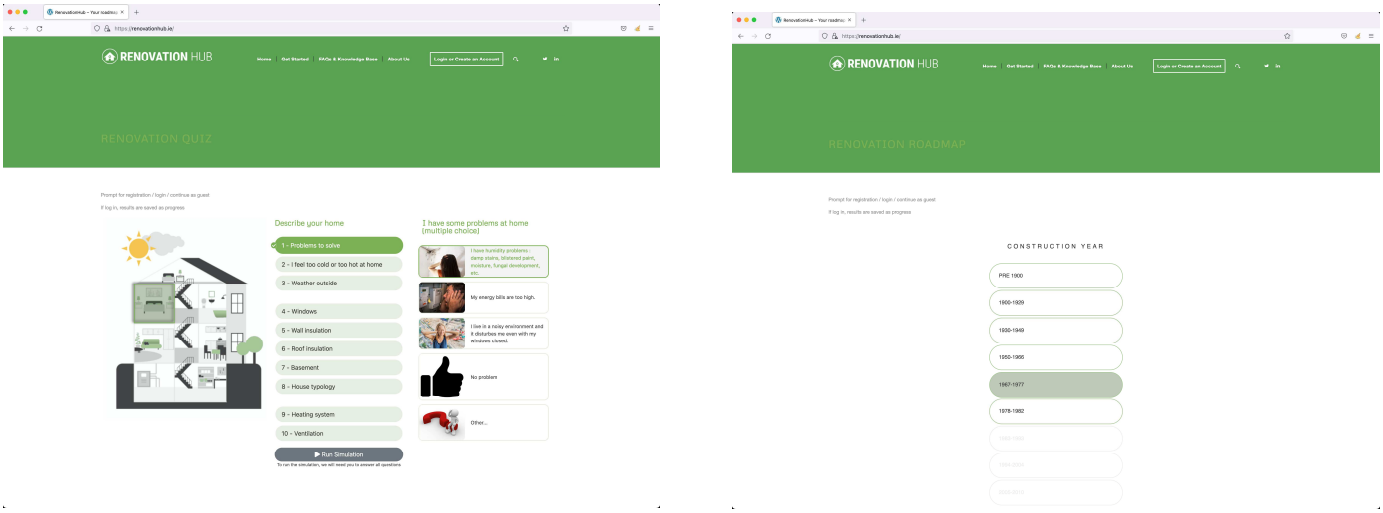


Figure 5 - [l-r] Punch tool and Roadmap tool on the Irish platform

Business model

The business model chosen is the One-Stop-Shop for one-stop-shops. The 'pain' in the Irish context is customers finding and trusting credible renovation advisors and contractors. Part of the success of delivering the business model shall be in finding the right partner to develop and fund an agnostic platform that provides independent information and connects the customer to qualified renovation advisors.

2. TESTING SOLUTIONS4RENOVATION

This chapter presents the results of the implementation of the S4R service in France and the harmonized framework tests performed for the evaluation of the platform in France, Ireland, and Spain. This chapter will not go into detail to analyse the evaluation methodology of the TURNKEY RETROFIT service, which will be described in detail in deliverable D4.2. This chapter also describes the selection criteria and the evaluation process followed in the pilot cases. Finally, the work carried out for the adaptation of the developed business models is presented, to define and adapt the concept of TURNKEY RETROFIT to the local context of Ireland and Spain based on the results of the pilot cases.

2.1. FRANCE

2.1.1. General approach for testing of the French platform.

Baseline

This objective is to measure the impacts of the changes and adaptations resulting from the integrated service specification (customer journey definition) delivered in WP1, when applied to the existing service being operated under the Operene and Heero brands. And, to enable establishing a baseline and monitoring the French service progress and growth in parallel of the local implementations in Spain and Ireland realized in WP3.

This evaluation has followed the strategy exposed in D4.1.

To evaluate the existing service (before the Turnkey project), a list of interviewees had to be defined to conduct the interviews. The two existing French services concerned are:

- MonCarnet by EP (former Izigloo) – EP for homeowners and professionals
- OPERENE for multi-family buildings (mostly professionals: condominiums, construction companies)

Evaluation method for the baseline

To reach as many people as possible, multiple ways to conduct the survey were offered:

- By phone: the interviewer calls the person and fills a Microsoft form with their answers.
- The Microsoft form is sent by mail to the interviewee and is directly filled by them.

Regarding the professionals for the OPERENE existing service evaluation, the initial strategy to contact people was followed.

For EP's clients (homeowners), the first tentative to reach them and carry out interviews was conducted by CSTB in June 2021 but was unsuccessful. Indeed, EP's clients did not see the link between CSTB and the service Izigloo they

have used. Moreover, this method was not compliant with the RGPD requirements as it meant that clients' contact details were given from EP to CSTB.

After a week or two, it was decided to change the evaluation method: EP would contact their former clients to evaluate the existing service. This proved to be difficult as well, people are not keen to answer evaluation questionnaires and EP did not want to lose retrofit project prospects by interrogating them.

Nevertheless, some clients did answer the questionnaire that was developed on D4.1, and EP used their own evaluation process and tools (shorter questionnaires sent just after the use of the service Izigloo) to have a relevant baseline and qualitative evaluation of the existing service.

Regarding the EP's contractors, the process must have been adapted to match EP's commercial issues and no contractors were interviewed.

See D4.2 for the details.

Pilot cases VS feedbacks interviews of the new service

At the very beginning of the project, the aim was to generate real retrofit projects through S4R platform and evaluate these projects (users' satisfaction, energy gains, …). But as the development works have fallen behind, the platform was not ready early enough to generate real projects within the timeline of TURNKEY project. Indeed, the service had been officially launched during summer 2021, EP was forced to wait until early 2022 to start the call campaign to have more convincing results. Besides, we had to consider the covid crisis and the general commercial context, ie retrofit tense market, that caused a lengthening of the retrofit project that could be carried out. The very first retrofit works generated by the new service have just received quotes from contractors and clients are starting to sign them.

As EP could not conduct interviews on projects that were not yet fully realized, it was decided to change the evaluation strategy and apply a similar methodology (based on user's interviews) to evaluate the new service (functionalities and tools) offered by S4R. That's why we don't have before/after results for energy savings.

In addition, the list of questions has been adapted according to the journey that the client has followed.

2.1.2. Baseline: Evaluation of the existing services and lessons learnt

Unfortunately, we haven't collected enough interviews within the TURNKEY Impact Evaluation process to draw complete feedback of the existing services. But the results we could collect are quite good. And they confirmed the general strategy that was decided to improve these existing services through TURNKEY RETROFIT project.

Izigloo – Mon Carnet

Here is the general feedback on Izigloo service (former version of Heero) that EP has collected from the beginning of 2021. This feedback does not follow the strategy that has been set for the impact evaluation (not enough interviews collected), and is based only on 2 questions: "Are you satisfied?" and "Would you recommend Heero"?

But it's interesting to check the results that are quite positive:

- Among 95 clients, 61% would recommend the service.

– And the global rating given is 4,7 / 5.

The details of the answers with some comments are in D4.2.

As the evaluation results were quite satisfactory once people had used the service, it confirms the strategy of TURNKEY RETROFIT project to develop new tools and functionalities to attract more customers onto the platform and increase the number of retrofit projects.

OPERENE service

Even if OPERENE doesn't provide a "service", professionals have been contacted to evaluate the work conducted by OPERENE as well as other stakeholders (landlord, property manager).

The general opinion is that the work done by OPERENE and the consortium of SME was appreciated:

- SME companies were satisfied by the possibility to work on such projects (energy performance contract, deep retrofit),
- Thermal engineers, surveyors were also satisfied to work on ambitious energy retrofit projects which is not always the case.

The challenge was therefore to attract homeowners as well onto the platform so that they can use now OPERENE´s service.

2.1.3. Selection and testing of the pilot cases

The first idea was to select 2 multi-family projects and at least 5 single houses projects to have a range of real pilot cases addressing different retrofit work typologies (global retrofitting VS reduced works package, geographic diversity, different type of user's profile).

But as explained in part 2.1.1, real pilot cases retrofit projects could not have been generated within the timeline of the projects.

At that time, 363 people took an appointment with an advisor, 164 were published to find contractors, 2 quote were signed for windows replacement. The works are planned for March 2022.

2.1.4. S4R evaluation

From the customer journey experience

Many interviews were conducted.

- Interviews for multi-family building
- Interviews for single family building

For single family building:

- Selection of customers who only start the journey from S4R but didn't do any work
- Selection of customers who when on Heero who wants to do works but don't realize them yet.

The questionnaire prepared and explained in D4.1 was adapted to the scenarios.

See D4.2 for details.

From the energy savings point of view

As none of the works has been finished yet, it's impossible to establish how much energy was saved during TURNKEY RETROFIT project.

But it was possible to project the renovation potential based on the simulations carried out, the number of people wishing to work with Heero and the conversion rate.

See D4.2 for details.

2.1.5. Evaluation of the business model

End-users Business model

The business model implemented in France for the software bricks developed as part of the Turnkey Retrofit project (S4R, Punch Diag, Roadmap and Cost of work) is based on a Freemium model.

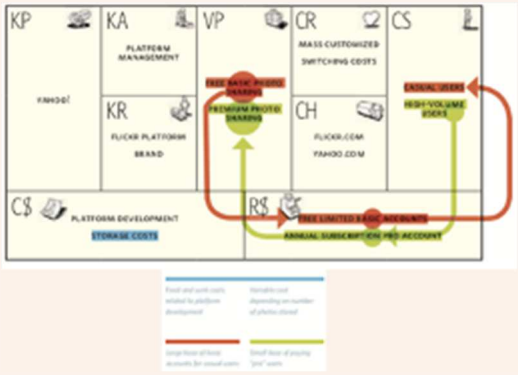
Indeed, all the bricks developed within the project are free to use for the inhabitants and it is the additional services, linked to the TR software bricks and provided by EP and OPERENE, which are chargeable.

The services provided by EP and OPERENE were already in existence before the project and their business models were already defined (for more information on the EP and OPERENE business models see deliverable D2.2-Business models).

The additional bricks developed as part of the Turnkey retrofit project give them a competitive advantage and attract more customers to them.

Freemium

Provide a good amount of functionality for free, then have a range of upgrades. This works well if the add-on services have real value for the target audience, but there's always a danger that most people won't need - or want - to upgrade[2].



Example of a Freemium model[3] with Flickr, the popular photo-sharing Web site acquired by Yahoo! in 2005, provides a good example of a freemium business model. Flickr users can subscribe for free to a basic account that enables them to upload and share images. The free service has certain constraints, such as limited storage space and a maximum number of uploads per month. For a small annual fee users can purchase a "pro" account and enjoy unlimited uploads and storage space, plus additional features.

Examples of Freemium: Candy Crush, Survey Monkey, LinkedIn, Evernote, Box, DropBox, Google Apps, Hulu, Skype, Spotify, Slack, Tencent, Trello

Cost structure between partners

As the bricks developed within the framework of the Turnkey retrofit project do not entirely belong to either EP or OPERENE, a retribution process had to be set up between EP / OPERENE and the owners of the TR bricks.

The running cost of the TR bricks are very low, but it is not zero. In fact, the list of annual running costs is as follows:

- Accommodation
- Maintenance
- Communication

And from time to time, it is also necessary to include the updates of these software bricks.

To support these charges, EP and OPERENE will have to pay part of the turnover generated by the leads generated by the TR bricks to them.

Leads generation

The Lead is a commercial contact: a potential customer (prospect) whose interest in the offer is more or less proven. This can be a direct contact obtained by a sales representative (at a trade fair, in a point of sale) or a contact that has been declared on other media (request for quotation, phone call, website visits related to inbound marketing, ...).

[2] Source: https://reasonstreet.co/business-model-freemium/

[3] Source : https://www.strategyzer.com/books/business-model-generation

An example of the remuneration process between partners was carried out for the S4R bricks.

It follows the funnel from the process of lead generation, web traffic, conversion rate, average basket and to the turnover (for more details see Deliverable 2.2 – Business model)

Solutions4Renovation Business model in France

HEERO TR Leads generation

	Y1	Y2	Y3
S4R	3%	5%	10%
Classic Heero chanel	97%	95%	90%
Trafic / conversion funel			
S4R - Homepage	1000	2000	5000
S4R - Punch Diag	100	200	500
S4R - conversion clients redirected to HEERO	20	40	100
Conversion rate	2%	2%	2%
HEERO - Homepage	70000	80000	90000
HEERO - conversion clients	700	800	900
Conversion rate	1%	1%	1%
Total clients	720	840	1000

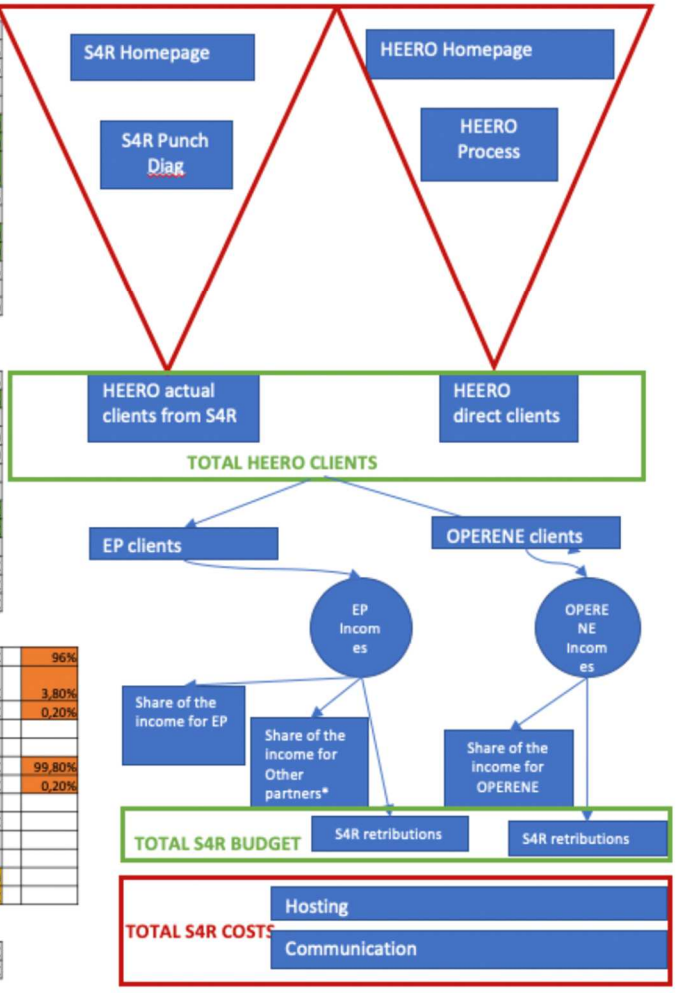
Business / Business split

EP	99%	98%	97%
OPERENE	1%	2%	3%
EP clients	713	823	970
OPERENE clients	7	17	30
Average basket			
EP	2 000 €	2 000 €	2 000 €
OPERENE	5 000 €	5 000 €	5 000 €
EP Incomes	1 425 600 €	1 646 400 €	1 940 000 €
OPERENE incomes	36 000 €	84 000 €	150 000 €
TOTAL	1 461 600 €	1 730 400 €	2 090 000 €

EP Split of Turnover / distribution

EP	1 368 576 €	1 580 544 €	1 862 400 €	96%
OPERENE + Others parners (Bricks involvement)	54 173 €	62 563 €	73 720 €	3,80%
S4R maintenance / com	2 851 €	3 293 €	3 880 €	0,20%
OPERENE Split of turnover				
OPERENE	35 928 €	83 832 €	149 700 €	99,80%
S4R retribution	72,00 €	168,00 €	300,00 €	0,20%
TOTAL S4R budget	2 923,20 €	3 460,80 €	4 180,00 €	
S4R costs				
Hosting	200	200	200	
Communication	4 000,00 €	2 000,00 €	2 000,00 €	

Balance 24R	-1 276,80 €	1 260,80 €	1 980,00 €
Cumulative balance	-1 276,80 €	-16,00 €	1 964,00 €



To be able to apply this remuneration scheme, the essential condition is to have **LEADs tracking** in order to be able to count the leads coming from the TR bricks.

2.2. SPAIN

Baseline

In the case of Spain, the evaluation and testing of the TR service through the S4R platform has been carried out following the strategy described in D4.1.

As indicated in section 2.1.1, at the beginning of the project, the objective was to generate real renovation projects through the S4R platform and to evaluate these projects (user satisfaction, energy gains, ...). But because an energy renovation process has a duration almost as long as the project itself, and because the development work of the

service and its tools has been delayed, the platform has not been ready early enough to be able to execute real renovation projects under the TURNKEY project schedule.

In fact, in the case of Spain, the "Road Map" tool is still in the process of error correction, and although it will be operational before the end of the project, ANERR was forced to adapt the evaluation of the service to these constraints. The evaluation of the TR service has been carried out on the developments that have taken place up to the date of the interviews.

Evaluation method for the baseline

To complete the evaluation of the service, in the case of Spain, following the indications given in D4.1, the methodology for the evaluation of the service has been carried out using the following:

- Selection of experts and conducting interviews
- Selection of pilot cases and conducting interviews

2.2.1. Selection of experts

The experts selected for the interviews have been chosen among some of the experts who have been part of the LIG in Spain. However, for the evaluation, it has also been selected and included the participation of other actors in the sector who have not been part of the LIG.

Thanks to the close collaboration with the LIG throughout the development of the project, and to the dissemination of the project during these years, both in magazines, fairs and congresses, it has been possible to select and recruit the participating experts for these interviews.

The experts selected to participate in the evaluation of the TR service cover the following profiles:

Table 1: Interview participants roles and responsibilities

Interviewee (job title)	Employer (type of organization)	Role in TURNKEY RETROFIT
Head of Energy Policy	ASSOCIATION OF ENERGY SERVICE COMPANIES	Local actor involved in the LIG. Energy solutions expert
Chief Executive Officer and Project Director	PROPERTY ADMINISTRATORS ASSOCIATION	Local agent involved in the renovation of multifamily buildings Knowledgeable about the needs of the owner as an association that manages property managers.
Vice President. Head of Institutional Relations	PROPERTY ADMINISTRATORS ASSOCIATION	Local actor involved in the LIG. Knowledgeable about the needs of the owner as an association that manages property managers.
Manager	ARCHITECTS ASSOCIATION	Local actor involved in the LIG. Expert in the energy renovation process as part of the Association of Architects.

Responsible for the development of plans and projects with municipalities.	SOCIETY FOR ECONOMIC DEVELOPMENT - REGIONAL AGENCY	Local actor involved in the LIG. Expert in the needs to achieve large-scale energy renovation in neighborhoods or entire areas.
Business and Institutions Director/ Account Manager	BANKING AND FINANCIAL SERVICES COMPANY	Local actor involved in the LIG. Expert in financing products that can be associated with the retrofit process.
International Coordinator, Master of Environmental Planning,	ASSOCIATION FOR THE ENERGETIC TRANSFORMATION OF THE BUILDING SECTOR	Local actor in the energy renovation sector
Head of the Energy School	ELECTRIC SECTOR COMPANY	Local actor involved in the LIG. Energy solutions expert

2.2.2. Expert interviews

Due to the sanitary situation caused by Covid-19, it has not been possible to carry out the evaluation and the interviews with the experts in face-to-face meetings. To solve this problem, forms have been created and shared with the participating experts. In addition, on January 13, a workshop was held with the selected experts, in which, in addition to presenting and explaining the results of the TURNKEY RETROFIT project, different dynamics of work were carried out to complete the information collected with the questionnaires.

To ensure compliance with data protection, all experts have been informed about the treatment of the information collected in the evaluation and validation process of the Solutions4Renovation service. They have been asked to sign a consent form to ensure that the processing of personal data by partner organizations is lawful and appropriate. Once they have signed the information and consent form, they have proceeded to fill in the form intended to carry out the expert interview.

The evaluation has been carried out by analysing the following aspects:

- Comparing TURNKEY RETROFIT with state-of-the-art
- Quality of service
  - Technical quality
  - Customer relationship
  - Online platform
  - Overall service
- Future development of the service

Although the details and results of the interviews and the evaluation carried out with the experts are included in the annex of deliverable D4.2, as a summary, it can be said that the responses of the experts have been very positive, and have shown that it is a "very advanced service compared to what there is" in the market, and that "it is an important step in the connection with the citizenship" with which to achieve an increase in energy rehabilitations.

LIG group also gave very positive feedback when the new tool was presented to them on the first days of January 2022.

They have also been able to collect comments and information on how the TR service and the S4R tool should be completed and improved in the future to cover all phases of the renovation process and provide better customer service.

2.2.3. Selection of the pilot cases

2.2.3.1. Criteria to select them

In Spain, around 72% of dwellings are in multi-family buildings, compared to single-family dwellings, which account for 28%. In addition, multi-family buildings represent the largest volume of business in energy efficiency improvement works for refurbishment companies. For these reasons, the buildings selected as a pilot case to evaluate the TR service correspond to this type of building. The following are the characteristics that the selected pilot cases must present:

- Multifamily buildings whose ownership status is the Community of Owners.
- Buildings constructed in two time slots, corresponding to two periods of time in which more houses were built in cities, as a result of the massive arrival from rural areas: from 1960 to 1980 and from 1980 to 2007. Between these two periods, the first regulation that demands a minimum of thermal insulation appears, the NBE-CT/79 (1979). Therefore, this type of building has a great potential for energy improvement and its energetic rehabilitation will mean a relevant improvement in the decarbonization of the country.
- Among the existing climates in Spain, we have chosen buildings located in the centre of the country, where we find a climate with very hot summers and cold winters, which is a special challenge when it comes to energy rehabilitation strategies. And within this climate, Madrid, which concentrates a significant number of homes both in the capital and in surrounding cities with large numbers of inhabitants.

2.2.3.2. The followed process:

The evaluation consisted in the selection of several pilot cases that are in different phases of their renovation process (initial phase of the decision to renovate, contracting phase, in the execution phase or that have already completed the work).

In order to get a broad representation of the entire rehabilitation process, two buildings were selected for each of the following phases:

- Before rehabilitation - contracting phase
- Execution phase
- Completed work

Interviews were conducted with:

- Homeowners.
- Property administrators, who manage the building.

2.2.4. Involvement of the LIG.

2.2.4.1. Identify the roles of the members of the LIG in the process.

In the case of Spain, the figure of the Property Administrator is key in the process of renovation of multifamily buildings, for that reason the Association of Property Administrators has collaborated in the identification of pilot cases.

As other agents of the LIG and members of ANERR are builders, and they are the companies that carry out the energy renovation projects, their collaboration has also been used for the identification of the pilot cases.

2.2.4.2. Steps followed

Throughout the project there has been the participation and collaboration as a member of the LIG of the Association of Property Administrators. Thanks to this collaboration, it has been possible to select the pilot cases. The property administrators have been selected on the basis of 2 criteria: Those proposed by the association of property administrators and property administrators selected from the network of contacts of the companies associated with ANERR as rehabilitation companies (they are the main clients of the associated companies.)

The LIG members, the Association of Property Managers and Construction Companies of the ANERR Board of Directors, facilitated contact with the projects selected as pilot cases for the evaluation of the TR service. They facilitated contact and access to the property managers of these buildings and access to the owners for the evaluation of the TR service.

2.2.5. Testing of the pilot cases

As indicated above, as it was not possible to evaluate the entire process of a renovation project within the TR project, several pilot cases have been selected that are at different phases of the renovation process.

In all cases, access to the S4R platform and the use of the different tools has been provided. Then, depending on the stage of the renovation process in which they are, they have been asked certain questions. In the pilot cases that have already finished their renovation project, the questionnaire has been carried out conditionally, so that they can explain the differences and improvements they would have experienced if they had used the S4R+REFORMANERR application.

In the evaluation of the service provided to owners, the process followed was the same, but in these cases the survey was carried out by a REFORMANERR professional, who explained the questions to the owner and the technician wrote down the answers.

2.2.6. Adaptation of the business models

2.2.6.1. Review of the theoretical business model developed.

End-users Business model

As discussed with the Spanish partners the bricks developed within the Turnkey retrofit project will be free for the end-user (the inhabitant) also in Spain. As in France the business model is based on a Freemium model.

This means that other services, provided by Reform ANERR, will generate money and that the TR bricks are used for lead generation.

Thus, as for France, the business model of Reform ANERR could have remained the same as before the TR project.

However, for the Lead generation tools developed by the TURNKEY RETROFIT project to be meaningful, the business associated with them must be powerful.

The experience of EP and OPERENE, as well as an analysis of the literature on the subject, shows that energy renovation businesses are more powerful when they are associated with the White certificate.

The Spanish partners of the TR project are currently working with the government to set up these White certificates in Spain, that currently do not exist.

Cost structure between partners

The cost structure has been deeply discussed between CSTB/EP (owners of TR bricks) and ANERR.

CSTB's bricks (S4R, punch diag, roadmap) have been adapted to the local context within the framework of the project. So, there are no additional costs to be included in the cost structure other than the one in France. The same retribution system will be put in place.

The EP brick (cost of works) was not adapted to the local context within the framework of the project. There is therefore an additional cost to be included in the cost structure compared to that of France: the cost of adaptation. The compensation system will be based on an initial royalty plus a share of the turnover generated annually. The exact figures for the initial royalty and share of turnover have yet to be determined, as Spain is currently focusing more on developing the core of its business model through the implementation of the white certificate.

2.3. IRELAND

Baseline

As indicated in previous sections, it has not been possible to carry out the evaluation of real renovation projects that have been developed within the project. For this reason IGBC has been adapted the evaluation of the service to these limitations. The evaluation has been carried out on homeowners who have recently completed a renovation of their home through a one-stop shop other than S4R.

Evaluation method for the baseline

To complete the evaluation of the service, in the case of Spain, following the indications given in D4.1, the methodology for the evaluation of the service has been carried out using the following:

- Selection of experts and conducting interviews
- Selection of pilot cases and conducting interviews

2.3.1. Selection of experts

In the case of Ireland, 13 experts, members of the LIG, were selected to participate in the evaluation process of the TR service. The expert interviews focused on analyzing the optimal business model and the Turnkey Retrofit tools for Ireland.

The experts were selected based on their knowledge so that they could all provide valuable input to the service evaluation. The profiles of the experts interviewed cover the following sectors:

- Sustainable Energy in governmental and academic agencies
- Software as a Service
- Local authority
- Renovation and retrofit
- Contracting and finance

2.3.2. Expert interviews

Since the Covid 19 restrictions were particularly strict in December 2021 and January 2022 due to the Omicron strain, it was not possible to conduct the evaluation and interviews with the experts in face-to-face meetings. The Punch and Road map tools were shown to the LIG members individually in online meetings, followed by the interview through a series of set questions, and their feedback on the tools, including the best positioning of the platform, was recorded.

Although the results of these interviews are reported in detail in D4.2, most of those interviewed stated that the platform should be developed as a public good resource, a trustworthy and independent platform to create awareness and connect customers with a renovation advisor. Part of the business plan would be to partner with a state or semi-state agency with a similar vision and mission.

2.3.3. Selection of the pilot cases

In contrast to Spain, the predominant building typology in Ireland is the single-family dwelling. For this reason, the selected pilot cases respond to this profile of homeowners.

Considering the impossibility of carrying out a complete renovation of a home using the TR service during the development of the project, two homeowners who have recently completed the renovation of their home and have used a one-stop service were selected for the evaluation of the service.

2.3.4. Testing of the pilot cases

As indicated above, as it is not possible to evaluate the entire process of a renovation project within the TR project, two pilot cases of homeowners who have recently completed the renovation of their home and have used other one-stop-shop services have been selected.

To evaluate the TR service, the selected homeowners were shown the S4R platform and Ireland's tools. The interviews were then reviewed to assess in retrospect whether the use of the S4R platform would have been useful to them beforehand compared to the one-stop-shop service they used. Comments and suggestions for improving the digital TR service in Ireland were also collected. The outcome of the interviews is provided in Deliverable 4.2.

2.3.5. Adaptation of the business models

2.3.5.1. Review of the theoretical business model.

In June 2021 theoretical business models were reviewed and a hybrid model combining one-stop-shop to host existing one-stop-shops and selling bricks or modules such as the Punch or Roadmap was the pathway considered. IGBC is a

not-for-profit and membership organisation, its mission is to work with the building and construction industry to transition to a low-carbon built environment. Therefore, the platform as a public good resource was considered the best approach.

Figure 6 - 3 options on type of business model presented in June 2021

Further ideas for the business model were explored through the Business Model Canvas. The exercise revealed high upfront costs to develop, maintain and market the platform.

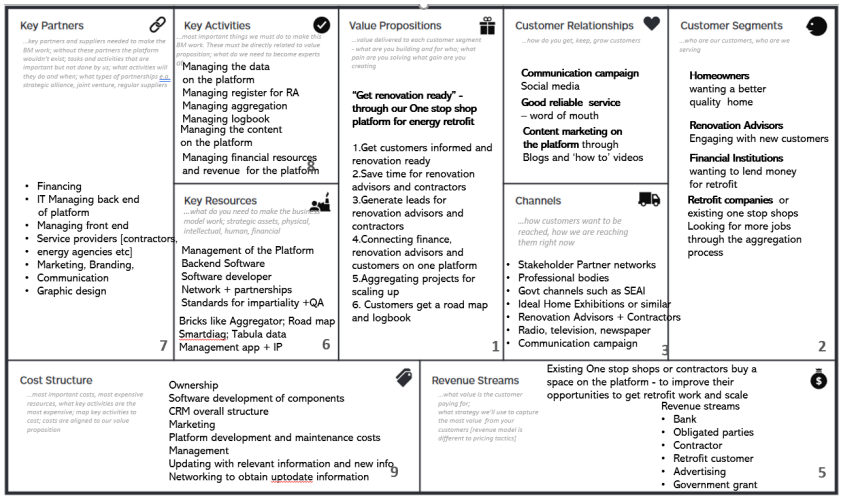


Figure 7 - Business Model Canvas for Irish platform

In Ireland, the implementation of the TR bricks will not be done by a direct partner of the project but by a third party – AnPOST.

End-users Business model

We have no vision of AnPOST business model and it is not the goal of the TR project to get involved in its development. However, 3 possible options exist to develop the end-user business model.

Status	Model	Actors
New partnership Secure a new partnership with a semi-state or state agency whereby, the partner assumes control of the platform and IGBC and NUIG provide services such as maintaining the renovation advisor list, updating prices for materials and rates, updating information on retrofit, case studies, finance and grants	**Freemium** Turnkey Retrofit tools would be free for customers	**Multisided** Targeting both retrofit customers and renovation advisors
New partnership from the project - IGBC and NUIG Maintain and update the platform only as an information hub to create awareness and signpost the customer to other one-stop-shops. IGBC and NUIG shall update prices for materials and rates, information on retrofit, case studies, finance and grants	**Freemium** Turnkey Retrofit tools would be free for customers	**One-sided** Targeting both retrofit customers
Licensing digital tools IGBC [with advice from CSTB] shall provide licensing for the use of Turnkey Retrofit tools on other one-stop-shop websites and maintain and update the tools with the prices for materials and rates	**Freemium** If the tools are free for the public to use	**Multi-sided** The tools would be used for targeting both retrofit customers and one-stop-shop services

Figure 8 - Business model options for end user

Cost structure between partners and third party

CSTB worked on setting up a contract for the use of its bricks by an actor external to the project. The code for the bricks is open source but it will be subject to certain conditions of use (mention the name of the project, the bricks must be free for the end-user ...). Contrary to what has been requested by the third-party organization, there will be no exclusivity regarding the use of these bricks.

The aim for the platform in Ireland is to be a public good resource, therefore the business model shall be adapted to suit either a partnership model or a sub-licensing of tools depending on the final agreement with an interested party.

3. LESSONS LEARNT

Following all the work developed over the last 33 months during which the implementation and adaptation of the TR service and the S4R platform in France, Ireland and Spain have been carried out, this section contains the lessons learned throughout this process, which will provide useful and valuable information that will facilitate the implementation of the TURNKEY RETROFIT integrated renovation service in other European countries.

The lessons learned throughout the entire process are presented in the following section. For ease of reading and understanding, these recommendations and lessons learned will be grouped and ordered concerning the different steps and processes that have been carried out from the beginning of the project to the final implementation and validation.

3.1. BEFORE STARTING

Before starting with the implementation process of the Turnkey Retrofit service in a new country, it is necessary to be clear of some issues, otherwise, it will mean that the set objectives and the success of the implementation will not be achieved. The following are a series of questions that must be answered before starting the process of creation and implementation of the TR service:

- What are your motivations and expectations in undertaking the implementation of a turnkey renovation service?
- Do you have the necessary human and financial resources for the management and development of the service?
- Do you already have good partnerships and stakeholders with complementary skills to meet the needs that the service will offer?
- Is your organization focused and mentalized in the idea and work necessary for the development and creation of a turnkey service?

3.2. ENVIRONMENT ANALYSIS

If the answer to the above questions is affirmative, it is feasible to start with the implementation of the Turnkey Retrofit service. One of the first steps to be taken to ensure the success of the implementation is to analyse the environment and the factors that may affect or facilitate the implementation. The following are some of the lessons learned from conducting this analysis in France, Ireland, and Spain:

- It is necessary to analyze the local context and market analysis in the country where the TR service is to be implemented.
- It is necessary to analyse the environment in which the service will be offered, to identify, analyse and understand the external factors that may affect its operation.
- It is necessary to use a methodology or tool to help identify external factors and understand the difficulties, barriers and challenges that may arise when implementing the TURNKEY RETROFIT comprehensive renovation service in a new country.
- Given the good results obtained, the use of a PESTLE analysis is recommended. However, another methodology or tool that allows market analysis and analysis of the local context can be used.

The following are the environmental factors that can facilitate the implementation of the TR service in a new country:

- The existence of a political framework in the country that favors the promotion of energy renovation in the construction sector.
- The political stability of the country to be able to carry out initiatives, regulatory changes that facilitate the promotion of energy renovation, and that the government has clear political priorities with respect to energy efficiency.
- The existence in the country of fiscal measures, instruments, and regulations, etc. that facilitate the achievement of energy objectives to increase and promote the rate of energy renovation of the building stock.
- To have strict building regulations on the energy performance of buildings, which will increase the need for energy renovations.
- A culture and awareness of energy efficiency in the country is necessary to ensure the acceptance of the service.

Most of these factors cannot be controlled or modified, but it is important to know the consequences with positive or negative effects they may have on the implementation of the RETROFIT TURNKEY service.

The following questions can help facilitate the analysis of the environment and each of the factors and assess their impact:

- Political factors:
  - Is the political situation in the country stable?
  - What is the main strategic framework in the country for energy renovation of buildings?
  - What does the country's long-term renovation strategy stipulate?
  - Is the country's strategy favourable to the provision of the TURNKEY RETROFIT integrated renovation service?
  - What financial support measures currently exist for integrated renovation? Are they stable or likely to change?
  - Is public financial support designed to favour more comprehensive energy renovation projects compared to single measure renovations?
- Economic factors:
  - What is the economic situation in the country? With respect to GDP, is it growing, stable or declining?
  - What is the economic situation of the energy renovation sector?
  - Are there tax incentives in favour of actions leading to energy efficiency improvements in buildings?
- Social factors:
  - Is there a culture in favour of energy renovation?
  - Is there confidence in the renovation and retrofitting sector?
  - Is there awareness of climate change?
  - What elements of society can facilitate or hinder the provision of the TURNKEY RETROFIT comprehensive refurbishment service?
- Technological factors:
  - Do companies in the country have sufficient knowledge of the products, materials, technological solutions and services that exist in the market to offer their clients?

  - Do companies seek access to the necessary knowledge and skills to be able to apply them?
  - Does the government support R&D and innovation in the field of energy efficiency (sector/challenge specific)?
  - What emerging technologies could influence the service?
- Legal factors:
  - What national regulatory elements might influence to boost or hinder the TURNKEY RETROFIT comprehensive retrofit service?
- Environmental factors:
  - What are the environmental considerations?

Another key point in the analysis of the environment for the implementation of the TR service in a new country is to identify the current services that serve the demand for energy renovation of housing (benchmarking). To carry out this work, it is recommended to realize a qualitative analysis of the existing integrated renovation services in the country's market, to identify their strengths and weaknesses. The following are the main aspects and information to be analysed:

- General information:
  - Geographical area of operation
  - Years in Service
  - Main objective
  - Host Organisation
- Business model
  - Key partners (Collaborate with other organizations and actors in the value chain)
  - Key activities (Turnkey service, or only responds to some phases of the renovation process)
  - Key resources (It has technicians and staff hired)
  - Value proposition (Innovative or traditional approach)
  - Customer relationship (It has a physical office or only online,
  - Channels (It has a physical office or only online)
  - Customer segments (multifamily building, single-family houses, etc)
  - Cost structure
  - What is the economic situation in the energy renovation sector?
  - Are there any fiscal incentives in favour of actions that lead to improvement in energy efficiency in buildings?
- One-Stop-Shop information
  - Data gathering
  - Renovation journey (Turnkey service, or only responds to some phases of the renovation process)
  - Certification (offers some certification for the related work, Provides an integrated service of energy renewal or not)
  - Post-installation QA (offers guarantees or advice at the end of the work)
  - Professional skills (has technicians or co-contractors of quality and guarantee)
- Key figures
  - Financial subsidies/loans (Does it inform clients about financial subsidies and bank loans?)
  - Number of supported renovation projects
  - Investments
  - Average project size

3.3. DESIGN OF THE BUSINESS MODEL

Another key phase in the process of implementing the TR service in a new country is the design of the business model. This does not necessarily have to be the same in each country, therefore the following are the lessons learned during the development of this process in France, Ireland, and Spain:

- For the design of the business model of the TURNKEY RETROFIT service, all the necessary requirements must be taken into consideration to guarantee the success and survival of the service, both in its implementation and in its start-up and service phase.
- It is necessary to use the appropriate tools or methodologies to facilitate the work of designing and adapting a business model.
- It is recommended that the Business Model Canvas (BMC) methodology be used to define a business model, which describes a business model as "the justification of how an organization creates, delivers and captures value. Although other tools or design methodologies can be used.
- The cost to support the commercial development of the platform (LEAD generation) are the more different from one-country to another.
- To ensure the success of the service, the business model design should identify the following key aspects:
    - Potential customers: the community of potential customers targeted by the model (building typology, income level, geographic area, etc.).
    - Value proposition of the service: what brings value to the customer, what is the specific service to be offered.
    - Create a partnership relation with the local entity
    - Channels/outreach: which communication channels are used to reach potential customers
    - Customer relations: define the method and scope of communications with the customer during the service.
    - Revenue streams: sources of revenue for the business model.
    - Key resources: the assets required to offer and deliver the elements described above.
    - Key activities: what key activities are required by the value proposition.
    - Key partnerships: finding and partnering with private and public actors that will enable better renovation services
    - Cost structure: costs related to the business model.

Other general recommendations and lessons learned to be considered in the design of the Turnkey Retrofit business model are collected below.

- The Turnkey Retrofit service needs to create strong networks with local stakeholders in the regions where it will be implemented and involve them from the early stages of the service implementation process.
- Turnkey Retrofit should be the single point of contact for the homeowner and the project manager throughout the entire renovation process.
- The Turnkey Retrofit Service should be through a smart digital platform that can make the customer journey easier and more enjoyable and inspire potential customers to renovate.
- Turnkey Retrofit's value proposition should focus on the overall customer experience and the outcome of the renovation

- The service offered should be transparent and keep the customer informed throughout the process, with the goal of minimizing any unpleasant surprises for the customer.
- Turnkey Retrofit should be promoted through local networks and online through the website.
- In each country where the TR service is to be implemented, the most probable customer segment for service should be identified. The definition will define both the developments to be made and the outreach strategies adapted to the different customer groups identified.
- To carry out the identification of the target customer, it is recommended to use the information of the TABULA Project, in which the typologies of representative buildings of 13 European countries have been characterized.
- it is necessary to identify and select the suppliers, and profiles needed to provide the services to be offered by TR
- It is important to clearly define the roles of all the actors involved, including the benefits and responsibilities of participating in the TURNKEY RETROFIT process.
- Turnkey Retrofit should combine different revenue streams, including project (management) fees and charges for connecting a potential client with the right professionals, and the potential for a membership fee will be explored.
- The use of the Ad Libs tool is recommended to quickly and easily initiate the reflection around the business model.
- Depending on the results obtained during the service implementation process, it may be necessary to adapt the initial business model, so that it can respond to the functionalities required for the specific case and to the identified barriers. Therefore, it is necessary to have the time and resources to carry out this adaptation.
- Practical experiences of implementation in other EU countries show that a one-stop shop that decides to offer such a renovation package needs at least 5 to 8 years to close the existing gaps in the market and make its business model financially viable and self-sufficient.
- Lots of initiatives to boost energy renovation already exist. It is important to avoid duplication of efforts and non-productive overlaps (positive competition exists).

3.4. LOCAL NEEDS AND ACTORS IN PLACE:

To ensure that the implementation of the TR service responds to the needs of each country, it is necessary to analyse and identify the main actors that are part of the retrofit value chain prior to the creation of the TR service. And to create a Local Implementation Group (LIG), which will contribute its knowledge of the local market in each of the phases and processes necessary for the implementation of the Turnkey Retrofit service.

The following are the main lessons learned and recommendations made with the creation and relationship with the LIG:

- LIGs should be formed by all parties involved in the renovation process.
- The LIG should be made up of: Representatives of the public administration and financial sector, building professionals, installers, building sector product manufacturers, energy service providers, technicians, architectural/engineering firms and building managers' associations.
- For the selection of the LIG, it is recommended to make a selection of the profiles of companies, agencies and organizations that can provide the necessary expertise on the renovation process for the region in which the service will operate.

- It is recommended to create the LIGs at the beginning in order to integrate their expertise in the development of the TURNKEY RETROFIT service.
- The LIG should be active during the implementation process of the TR service in a new country to integrate its expertise. It is recommended that the LIG participate in various forums, such as workshops, seminars, etc.
- It is recommended to maintain the interest and involvement of the participating organizations by conducting meetings and presentations to increase their motivation and interest and to get their commitment and participation in the implementation and development of the service.
- For the implementation of the TR service, work should be carried out jointly with the LIG to detect their needs and the main barriers they may face in participating as service providers.
- Together with the LIG should jointly design how the renovation process should be, from the customer's point of view, for an optimal experience and how to offer a one-stop-shop service.
- The LIG should be kept informed of the development of the TR service at all times to ensure their collaboration and interest in the service.
- The contribution of each company to the TR service should be identified and show them the benefits they could derive from their participation in the TR service.
- The business model of the service must be clearly defined so that the agents involved are clear about the advantages of their participation in the service.
- The contributions of the LIG to adapt the TR service to the local context are key to succeed in the implementation of TURNKEY RETROFIT services.

3.5. CUSTOMER JOURNEY:

The customer journey design could be included in the business model design process. However, due to the importance of this phase of the process to ensure that the TR service meets local needs and thus guarantees the success of the implementation, it has been located into a separate section. The following are the main lessons learned during the design of the customer journey:

- It is necessary to identify how it operates, what steps and procedures are performed, and which agents and stakeholders are involved during the entire renovation process in the country where the TR service is to be implemented and to define the ad hoc customer journey.
- It is necessary to identify the inefficiencies and gaps in the current renovation process and to think about what problems the user encounters in renovating his house.
- It is necessary to define with which tools or mechanisms these inefficiencies can be solved, defining the flow to achieve the ideal customer journey.
- It is recommended to carry out this customer journey design work and contrast it with the LIG members because they can have information closer to the renewal process.
- The use of online collaborative tools such as Jamboard or Mural is recommended to jointly brainstorm how the service should work and to solve its problems or challenges.
- The TURNKEY RETROFIT service must focus on the overall customer experience and must respond to and cover the entire renovation process.
- The service must facilitate effective collaboration between professionals.

- The TURNKEY RETROFIT service should enable a seamless and transparent renovation process for the homeowner, improving the customer's perception of satisfaction.
- The OSS model that best adapts to the services to be offered in TR should be analysed and defined according to the Customer Journey defined.
- To attract customers to use the service, it should inform them of the potential energy/cost savings, possible subsidies available, and improvement of their home comfort.
- The service should show the current energy problems of the home by showing the current energy problems and presenting the work needed to solve them.
- The service should show energy reduction and cost savings by comparing current energy consumption and after renovation.
- The TR service should operate through a single point of contact.
- The TR service should provide results of the evaluation of different intervention and renovation possibilities.
- The TR service should offer and present different specialist companies that can carry out the renovation work selected by the customer.
- The service should show different proposals so that the owners can choose the most interesting one based on different aspects such as price and quality.
- The professionalism of the companies and collaborators offering their services within TR should be guaranteed.
- The TR service should be able to offer tools to be able to carry out a follow-up control and evaluation of the renovation works.
- The use of User story mapping tool is recommended to assist in defining the user experience with the service being designed.
- The use of Design Thinking technique is also recommended to understand the problems that the service implementation may have and to define truly innovative and impactful solutions.
- Online collaborative tools can be used to perform the Design Thinking, such as: Userforge, Smaply or Invision. But for best results it is recommended to perform the Design Thinking activities in person with different group dynamics.

3.6. DESIGN, DEVELOPMENT AND / OR ADAPTATION OF THE TURNKEY RETROFIT PLATFORM

This section contains the main lessons learned during the design, development, and adaptation of the Solutions4Renovation platform through which Turnkey Retrofit services will be offered. To ensure that the TR service can cover all the phases and tasks necessary to carry out the renovation process, it is necessary to develop a digital platform that should bring together several independently developed services, adapted to respond to a specific stage of the renovation process and a specific user need.

- It should use and learn from the experiences of the implementation of the TR service in other countries.
- Customer Journeys are one of the most important aspects to adapt the platform, as they depend on the chosen business model, but also on the customers' needs and the feasibility of the technical development.
- It is necessary to identify all the data that will be needed to supply and respond to the needs of the platform.
- It is recommended to make a first version of the platform and tools quickly: minimum viable product and then update and complete it.

- It is necessary to analyse and define how to make use of all the necessary information and data and to involve them in the Service.
- It is necessary to consider both the human and economic effort to adapt these data to the needs of the platform.
- The main services to be offered within the TR service in a new country are:
    - Information and guides on energy efficiency renovation.
    - On-line diagnostic tools (energy performance, thermal comfort, etc.)
    - Recommendation of renovation works
    - Estimation of the cost of renovation works
    - Estimation of possible subsidies/grants
    - Tool to order renovation works in time without construction mess
    - Contacts with professional consultants and contractors

- Focus on the first point of contact to gain the client's trust and achieve a friendly User Experience process for the initial diagnosis.
- The platform must facilitate a simple and clear dialog with the customer based on images.
- A guarantee of technical support throughout the process and study of the specific needs and technical solutions of each customer should be offered.
- Public administration support should be simpler and more agile so that it can be the main lever for activation.
- The TR service and the S4R platform must offer a clear diagnosis of the works to be carried out, as well as an estimate of the works and deadlines.
- It is necessary to increase citizen awareness of the opportunities for their home and building, showing that they are affordable and the results of the improvements in energy savings, comfort, and healthy environment that they would obtain.
- The platform should provide the customer with a list of recommended works and the range of costs. This way, if he does not have sufficient funds for a global renovation, he can adopt a staggered approach based on the tailor-made roadmap.
- The adaptation of the platform requires the collaboration of local stakeholders to ensure that it responds to local needs.
- The platform must resolve and overcome existing barriers in defining and developing a One-Stop-Shop model that fits the needs of local actors.
- A common EU platform and a local one in the country can attract new customers by providing generic information and increasing their awareness of energy renovation.
- It is necessary to keep updating the contents of the platform over time.
- Be aware of regulatory constraints: update every time the law changes, otherwise, the final product will not meet the requirements to make its use viable.

3.7. ESTABLISHMENT OF CONTRACTUAL RELATIONSHIPS

The TURNKEY RETROFIT service cannot exist as an independent service, so it must be connected and promoted by the actors of the market community. This section gathers the main lessons learned during the establishment of contractual relationships:

- It is necessary to identify the partners that participate and offer their services through the TR service.
- It is not necessary to wait until the end of the platform development to define and sign a relationship contract with the companies and agencies that commit to providing their services.
- It is necessary to collaborate with several partners to ensure that the service covers all phases of the renewal journey.

3.8. MARKET PLAN

Another of the tasks and activities required to ensure the implementation of the Turnkey Retrofit service in a new country is the design of a Market Plan. The following are the main recommendations and lessons learned from the implementation and launch of the TR service in France, Ireland, and Spain:

- It is recommended to work on the development of a market plan that integrates the daily activities necessary to attract potential customers.
- It is recommended to perform market segmentation and targeted communication using key marketing tools to reach the right groups at the right time.
- A crucial activity of operational marketing is the tracking of online traffic generated by the service
- During the adaptation of the TURNKEY RETROFIT service in a new country, communication actions must be carried out to attract potential users.
- These communication actions can be carried out through conferences, social networks and press releases. In addition, it is strongly recommended to dedicate a budget to support the promotion of Solutions4Renovation with advertising (specialized press).
- Cost of google words acquisition are a main question to ask yourself.
- it is recommended to create a coherent and powerful communication campaign to reach citizens (google ad campaign, radio, rural and urban advertising...).
- It is recommended to use customer attraction methodologies, such as Direct marketing, Social marketing/Awareness raising, or website.
- The use of SEO methodology is recommended to increase both the quality and quantity of people who will reach the TR service website.
- It is necessary to carry out an effective marketing plan, to get people and companies interested in the TR service.
- It is important to leverage existing partner networks and the TURNKEY RETROFIT Community (LIG, companies, agencies and organizations involved in the implementation of the service) to promote the TURNKEY RETROFIT service and the Solutions4Renovation platform.
- It is necessary to give importance to the brand. Keep in mind that the brand is new and needs time to be trusted.

3.9. COMMUNICATION PLAN

Another necessary activity when implementing the TR service in a new country is the Communication Plan. A good Communication Plan will guarantee the survival and success of the Turnkey Retrofit service and the S4R Platform after its implementation and launch. The following are some of the lessons learned during this process:

- The activities related to the communication plan are necessary to create interest in the TR service and the S4R platform, both during its implementation and after its launch and operation.
- To achieve a successful communication plan, it is necessary to place great emphasis on online and offline communication.
- It is necessary to have a common image/brand for the service. This allows easier identification by the public and ensures better visibility and immediate recognition of the service.
- It is recommended to create communication materials such as brochures, banners, posters that provide an overview of the service.
- Adequate digital communication and dissemination is necessary to ensure the success of a service
- It is recommended to create several key communication messages that will be used to address different target groups
- It is necessary to use the following communication and dissemination tools or media for the implementation of the TURNKEY RETROFIT service:
    - Video
    - Website and digital platform
    - Newsletters
    - Blog content and infographics
    - Social media accounts and strategy

3.10. EVALUATION OF THE SERVICE

Following the implementation of the service, this section includes the lessons learned from the service evaluation and validation process, as well as from the process of selecting the pilot cases and conducting the evaluation questionnaires.

As an energy renovation process has a duration almost as long as the project itself, and the TR service developments achieved do not cover all phases and steps of the customer journey during an energy renovation process, the TR service evaluation could not be carried out as designed at the beginning of the project. The following are the main lessons learned during the service evaluation process:

- The evaluation should be conducted on what has been developed.
- The LIG, as experts knowledgeable about the characteristics of the renovation market in each country, should be involved in the selection of the pilot cases.
- It is recommended that the evaluation be conducted face-to-face or by telephone interview, because some of the questions on the forms may generate rejection or lack of knowledge and not be answered.
- If the evaluation is carried out by an expert in the project, he/she can resolve any doubts that may arise from the interviewee, thus obtaining more complete and valuable answers.

- Before the evaluation, it is advisable to have a meeting, in which the project is explained, its objectives, and access is given to the tools developed. In this way, it will be possible to conduct an evaluation interview and obtain more accurate data.
- Designing and creating the forms, selecting the pilot cases, conducting the interviews and analyzing the data requires a great deal of time and effort. In the case of implementing the TR service in a new country, the amount of work involved in evaluating the service needs to be taken into account at the outset so that problems do not arise.
- The privacy of the data collected in the forms may be sensitive. For this reason, it is necessary to explain to the interviewees the use that will be made of them. Otherwise, it may not be possible to obtain the desired answers.
- It is necessary to be very clear about the objectives to be achieved and that they are realistic. In this way, the evaluation forms can be designed accordingly. Otherwise, a lot of work and effort will be wasted in designing and creating forms that may not be used.

3.11. BARRIERS

Many barriers may be encountered during the process of implementing the TR service and developing the S4R platform in a new country. The following points are the main barriers that have been identified during the implementation of the service in France, Ireland, and Spain, and that can provide useful information to take into account for the implementation of the TR service in a new country.

- For the owner end-user:
  - Lack of commitment from the Property Administrators/ Managers, due to the complexity of the processes.
  - Access to financing options, both public and private due to lack of knowledge
  - Delays in the management of public aids.
  - Regulatory changes
- For Renovation companies:
  - Access to quality work opportunities
  - Lack of digital training
  - Need for advice on available technologies
  - Lack of specialized personnel
  - Present a "certification" that guarantees the quality of their work
  - Financing of works due to delay of financial aids.
- For the development of the service:
  - The complexity of the necessary developments
  - Design the adequate User Experience (UX) to the target market and audience
  - Design marketing campaigns targeting specific audiences
  - Budget and time resources
  - The management of subsidies is complex because they change and in each territory, they are different, for that reason its implementation within the TR service is complicated.
  - Identification of the leader that allows a correct implementation of a service in the local market and that facilitates and assists the client throughout the renovation process.

3.12. GENERAL RECOMMENDATIONS

This section contains a list of general recommendations and lessons learned that should be taken into consideration when implementing the Turnkey Retrofit service in a new country:

- The RETROFIT TURNKEY service must be clear, simple and with total control and quality assurance. Incremental development should be tested and prioritized at every step by LIG members, to be sure it is well understood by all stakeholders.
- Whenever there is an opportunity, spread the vision of the TR service, as it becomes part of the brand and awareness, plus your organization becomes associated with it.
- Create local partnerships, both for the design and adaptation of the service, as well as to work and offer their service within the Turnkey Retrofit, thus facilitating the dissemination and communication of the service.
- It is extremely important to create strong collaborative networks that include all partners: end customers, professionals, contractors, associations, etc... This collaboration must take place from the early stages of service implementation.
- LIG has been a key point in Spain and Ireland along with the Project evolution.
- Every country has to define its own Business Model. (Regulation and grants criteria)
- Be aware of the market context: strong inertia between the first simulation and the final project.
- The offer of integrated home energy renovation remains very rare. If such an offer exists, it depends (at least partly) on public subsidies. They are crucial, especially in the start-up phase.
- Digital platforms such as S4R are a great opportunity to connect the renovation ecosystem and provide the customer with the necessary information and support in certain phases of the process. However, it is complicated to cover all the phases and processes that the customer must go through from the moment he decides to carry out an energy renovation, until the end of the project execution.
- Personal contacts with specialized professionals are a key point to guarantee the success of the service. It is essential to create a team of technicians and companies with sufficient knowledge to support and solve the doubts and needs of the client throughout the development of the energy renovation process.
- It is necessary to have different companies or agencies that have all the necessary skills for all the developments and tasks to be performed.
- Each partner must be always clear, about what they want and what they will achieve with their participation in the service.
- Specific skills are needed: marketing, UX design, backend developer, front end developer, start-up facilitator, financial consultant, to develop new bricks and relationships between them in the platform.
- It is necessary that all stakeholders know from the beginning or as soon as possible the cost of the development of the necessary functionalities of the platform and the cost of implementation
- If the service is to be extended with other functionalities, time and resources will be needed to create partnerships to support the design, development, operation, and maintenance of the platform.
- It will be necessary to have special support for the management of subsidies, due to the lack of resources and training of renovation companies and the complex management for property managers, and the variability of this type of aid and subsidies.
- The transparency of all data and information processing and the certified professionals build the TRUST needed to guarantee the success of the implementation. Without these aspects, the end customer will not be convinced to use the service.

- The dissemination and communication aspect is essential for all project partners to inform potential clients about the advantages of the service, the building renovation technologies, and the benefits in quality of life and comfort that can be achieved with renovation.
- From the user's point of view, barriers and fears are very similar in each country.
- The right social-political, legal and economic context can be the key triggers to accelerate the process.
- Multi-family buildings it´s always a longer and more complex process.

ACRONYMS AND ABREVIATIONS

ANERR	Asociación Nacional de Empresas de Rehabilitación y Reformas
B2B	Business-to-Business
B2C	Business-to-Consumer
BMC	Business model canvas
CSTB	Centre Scientifique et Technique du Batiment
e.g	exempli gratia, meaning “for example”
EU	European Union
FAQ	Frequently Asked Questions
GDP	Groos Domestic Product
i.e	id est, meaning “that is
IGBC	Irish Green Building Council
LIG	Local Implementation Group
NUIG	National University of Ireland, Galway
OSS	One-stop-shop
Q&A	Question and Answer
S4R	Solution4Renovation
SEO	search engine optimization
TR	Turkey Retrofit
TURNKEY RETROFIT	TURNKEY solution for home RETROFITting
UX	User Experience
VS	Versus
WP	Work Package