



Deliverable due date: M24 – nov. 2018

D2.5 Platform for Single desk retrofitting of individual houses

WP2. Task 2.5

Transition of EU cities towards a new concept of Smart Life and Economy



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Table of Content

1. Executive Summary.....	8
2. Introduction	9
2.1 Purpose and Target.....	9
2.2 Contributions of partners	10
2.3 Relation to other activities in the project	10
3. Mon Projet Renov (MPR): Platform for Single desk retrofitting of individual houses.....	11
3.1 Context of the platform development	11
3.2 Benchmark of similar initiatives	13
3.3 Platform description.....	16
3.4 Spin off on local stake-holders	26
3.5 Actors feedback.....	29
4. Platform replicability	31
4.1 Strengths to be kept	31
4.2 Weaknesses to be challenged	32
4.3 Opportunities to be caught	32
4.4 Threats to be avoided.....	33
4.5 Synthesis	34
5. Conclusions	35



Table of Figures

Figure 1. MonProjet Renov Platform home page 17

Figure 2. Route for assessing the user’s house 23

Figure 3. Channels of communication 25

Figure 4. Mon Projet Renov Value Creation Ecosystem 26

Figure 5. City Model Canvas (CMC) from « Business Model Canvas » (Osterwalder, 2010)..... 27

Figure 6. SWOT Matrix 34

Table of Tables

Table 1. Abbreviations and Acronyms	7
Table 2. Contribution of partners	10
Table 3. Ma Rénov characteristics	13
Table 4. Faire.fr characteristics	13
Table 5. ARTEE characteristics.....	14
Table 6. OKTAVE characteristics	14
Table 7. ENGIE Travaux characteristics	14
Table 8. Izigloo characteristics	15
Table 9. WEBRENOV characteristics.....	15
Table 10. Mon projet Renov statistics.....	29



Abbreviations and Acronyms

Acronym	Description
mySMARTLife	Transition of EU cities towards a new concept of Smart Life and Economy
SWOT	Strengths, Weaknesses, Opportunities, Threats (analysis method)
MPR	Mon Projet Renov (name of the Nantes Metropole single-desk online platform for retrofitting)

Table 1. Abbreviations and Acronyms

1. Executive Summary

According to a national survey 94% of French residents agree that their energy consumption must be reduced (source: CREDOC, Enquête « Habitants, habitats et Modes de vie », july 2013). However, another French survey indicates that energy retrofitting “generates anxiety” for 74% of the people who have been asked, and would be “too expensive” for 89% of them (IFOP survey for Effy Groupe and Quelle Energie, august 2018).

A study presented by Cercle Promodul INEF4 (2018, <https://www.cercle-promodul.fr/publication/freins-identifies-a-la-renovation-energetique-leviers-mettre-en-place/>) showed that one of the main barriers to private residential energy retrofitting was the lack of information and trust between the stakeholders.

This is the reason why local authorities have been leading initiatives in several countries, to propose new digital services, especially to single-family residential private owners, in order to enhance trust and improve their level of information about retrofitting. These initiatives offer a great opportunity to increase the number of retrofitting projects, developed in a reasoned way with positive impacts from the energy, economic, citizen satisfaction, and environmental points of view, with the support of the public authorities.

Mon Projet Renov is a single desk retrofitting service developed and proposed by Nantes Metropole. It is part of the list of Smart Actions developed in Nantes within the mySMARTLife framework.

Through this online service platform, Nantes Metropoles enables the residents to access relevant information to help them in the development of the retrofitting project. Once their project is mature enough, the platform offer them potential contacts with listed local companies, and can even play as intermediary in the proposal of costs estimates by the company.

This deliverable details this initiative: the original context, the definition of requirements and functionalities, the adopted business models, the design of the interface, as well as a feedback about the strengths and limitations of the platform. Some other examples of retrofitting support platforms are also presented. An analysis of the strong replicability potential of Mon Projet Renov to other Metropolitan Areas concludes the document.



2. Introduction

2.1 Purpose and Target

The objective of this deliverable is to draw a feedback of the development and application of the Mon Projet Renov platform in Nantes Metropole.

A first part (section 3.1) consists in describing the context of development of the platform (what was the initial motivation? the objectives? the resources?).

Then a list of similar initiatives is presented as a benchmark (section 3.2). It will demonstrate that even if the initial motivation is the same, there are different ways to provide services to the residents for their retrofitting project.

The platform is then technically described in section 3.3, with a special focus on the “user’s path” to illustrate its content and functionalities.

Section 3.4 explains the impact on the local-stakeholders, the relation with the local economy, as well as the chosen business model.

Some direct feedback form the users is presented in section 3.5.

Then section 4 details the different aspects to be considered in the perspective of replicating Mon Projet Renov to other cities (within EU or beyond). The section is presented in the format of a SWOT analysis: strengths to be replicated, weaknesses to be overcome, opportunities to be identified, and threats to be considered. **Error! Marcador no definido.**

2.2 Contributions of partners

The following Table 2 depicts the main contributions from participant partners in the development of this deliverable.

Table 2. Contribution of partners

Participant short name	Contributions
NBK	Overall content production and deliverable leading
NAN	Documentation of all the Mon Projet Renov related information. Overall content reviewing.
CAR	Deliverable review.

2.3 Relation to other activities in the project

This deliverable focuses on describing one of the smart actions developed in Nantes Metropole in the scope of WP2 activities. It provides a feedback analysis on the development and the monitored impact of the MPR (Mon Projet Renov) platform for retrofitting individual house in Nantes. The interest of this deliverable goes well beyond the perimeter of WP2 as the lessons learnt from this smart action in Nantes will serve as an inspiration and guidelines for any city wanting to develop a similar approach. It will be the case for the follower cities in WP6 but also the cities members of mySMARTLife Cities Network.

3. Mon Projet Renov (MPR): Platform for Single desk retrofitting of individual houses in Nantes

3.1 Context of the platform development

In 2015, the national law on energy transition has been approved. It fixes objectives on the amplitude of housing renovation in France. It also requests territorial platform developments. Nantes needed therefore to find solutions to increase the number of renovated houses: 3,200 private housings per year including 1,800 individual houses. When talking about energy renovation, it implies that at least 2 works are done in the house to be considered as renovated.

The lack of information to individuals and the lack of energy renovation culture are two deficiencies that Nantes Metropole had to fill. The city then decided to develop a platform on a website in order to gather existing dispositives and enhance their impact on energy renovation. Nantes Metropole chose a service provider to design and operate Mon Projet Renov.

Nantes Metropole conducted a substantive work around urban transformation since 2012 focused on energy transition. Previous collaborative work with local stake-holders like architects, certification organisms, ADEME (national agency for environment and energy control) occurred. Then public concertation has been organized to collect citizens' impressions and opinions. Mon Projet Renov, built in cooperation with local actors, still required citizens' implication: it was submitted to citizen opinion as a driver for urban transformation and people appropriation. This "smart people" analysis contained reports of their platform experience. Some of their recommendations have been actually taken into account in the development of the platform, like creating a financial help to energy diagnosis and more communication to bring increased visibility of this service.

Mon Projet Renov also intends to use conclusions from a national study driven by ADEME, the national agency for environment and energy control about state of art of renovation. This survey focuses on works realised between 2014 and 2016 in individual houses (public and private sector). This study called TREMI finds out the following outcomes:

- Improvement of comfort is a key criterion of motivation for renovation. Drop of energy bills is the second factor.
- Households support is too low.
- Rate of ventilation system renovation is very low.
- Rate of satisfaction of works done is very high (83% of households think it improved their thermal comfort and 61% it lowered their energy bills).

- Owners awareness of the totality of possible energy works is low.
- Energy performance is usually not included in households renovation : only 25% of renovated houses improved their performance.
- French housing renovation goals are still remote and the most important part is yet to be done.

3.2 Benchmark of similar initiatives

In order to position Mon Projet Renov in the renovation market, a benchmark of similar initiatives is presented in the following paragraph.

3.2.1 Similar platforms

- Ma Renov, developed in Bordeaux (France), is a platform really similar to MonProjetRenov. It includes a “non-aware” user journey but also proposes a journey with more details to enter. It allows Ma Renov platform to be more precise in the works proposition and costs.

City / Region	Name	Assets compared to Mon Projet Renov	Disadvantages compared to Mon Projet Rénov
Bordeaux, FR	Ma Rénov	<p>Possibility to enter more details about the house</p> <p>Works proposals within a decided budget</p> <p>Works prioritisation</p> <p>Financial and energy economies computation</p>	<p>Necessity to have a precise project (knowledge of the type of works needed and of the prices of these works) to identify the financial helps</p>

Table 3. Ma Rénov characteristics

- Faire.fr is the national website / portal gathering contact informations about local professionals working in the energy field.

City / Region	Name	Assets compared to Mon Projet Renov	Disadvantages compared to Mon Projet Rénov
France	Faire.fr	<p>Exhaustiv list of certified professionals</p>	<p>No on line diagnosis</p> <p>No drive to choose one professional</p>

Table 4. Faire.fr characteristics

ARTEE is regional agency providing information about available funding solutions for individuals. It offers larger possibilities for individuals to get financed.

City / Region	Name	Assets compared to Mon Projet Renov	Disadvantages compared to Mon Projet Rénov
Nouvelle-Aquitaine, FR	ARTEE	Third-financing proposal Redirection to faire.fr	No diagnosis : expired page

Table 5. ARTEE characteristics

- Oktave is a regional platform to encourage individuals to get their house renovated. It carries the project from the idea to the user action of renovation, including diagnosis, works prioritisation, companies choice, site supervision and financial file creation.

City / Region	Name	Assets compared to Mon Projet Renov	Disadvantages compared to Mon Projet Rénov
Région Grand Est, FR ADEME, FR	OKTAVE	Examples of local housing renovations Webserie, videos Long terme accompagnement	No on line diagnosis Few informations Need for calling or meeting a consultant (free but time consuming)

Table 6. OKTAVE characteristics

- ENGIE travaux is a national company website. It provides similar informations as in Mon Projet Renov.

City / Region	Name	Assets compared to Mon Projet Renov	Disadvantages compared to Mon Projet Rénov
Private sector, national, FR	ENGIE travaux	Call form a consultant Free visite with a technician Bank loan provided by a bank partner	Contact information required early in the process Financial interest, partiality for the company providing informations

Table 7. ENGIE Travaux characteristics

- Izigloo is a platform that gathers big data about real estate.

City / Region	Name	Assets compared to Mon Projet Renov	Disadvantages compared to Mon Projet Renov
Private sector, national, FR	Izigloo	Individualised support House diagnosis out of Big data Funding plan White certificates Selected professionals Satisfaction survey Free service No selling of personal data	No incitement for global renovation No additional help for low income households

Table 8. Izigloo characteristics

- WEBRENOV is a digital platform software that can be easily implemented by local authorities. It also can be customized. Nantes Metropole and several cities around Nantes are using this website package: Brest, Vannes, Lorient.

City / Region	Name	Differences with Mon Projet Renov
Private sector, national, FR	WEBRENOV	Editorial choices Households support and follow-up Financial helps House self diagnosis

Table 9. WEBRENOV characteristics

3.2.2 Other types of platform

Several platforms about energy have been developed those last years.

In Nantes, a solar platform called « In Sun We Trust » is used by individuals. Regarding solar energy income and financial criteria, it calculates the optimized area of solar panel to install on the house roof.

3.2.3 Conclusion on benchmark

A bench of platforms does exist; some of them are really similar to MonProjetRenov. Some of their functionalities could be collected and set up in the platform future versions or in a replicated platform.

The private sector has definitely entered this market. Their solutions are usually integral yet the user does not feel confident because of detailed data asked early in the process, despite efforts made by some private platforms to secure personal data and to use them only for specific purpose with explicit agreement of the user, like izigloo.

The major assets of those contestants will be proposed for implementation into Mon Projet Renov potential of replicability.

3.3 Platform description

Mon Projet Renov is an on-line platform that has been developed for individuals and professionals. It provides a free service with accessible tools and information. It is also a support to professionals to access to renovation market.

3.3.1 Interface for individuals

The platform offers a bench of services:

- Information about financial helps, advice services, professional partners, institutional partners;
- Energy and environmental assessment of personal house;
- Financial helps evaluation;
- professionals and individuals linking;
- Site supervision advices;
- Project management team and individuals linking;
- Questions form;



- News;
- Connection page.

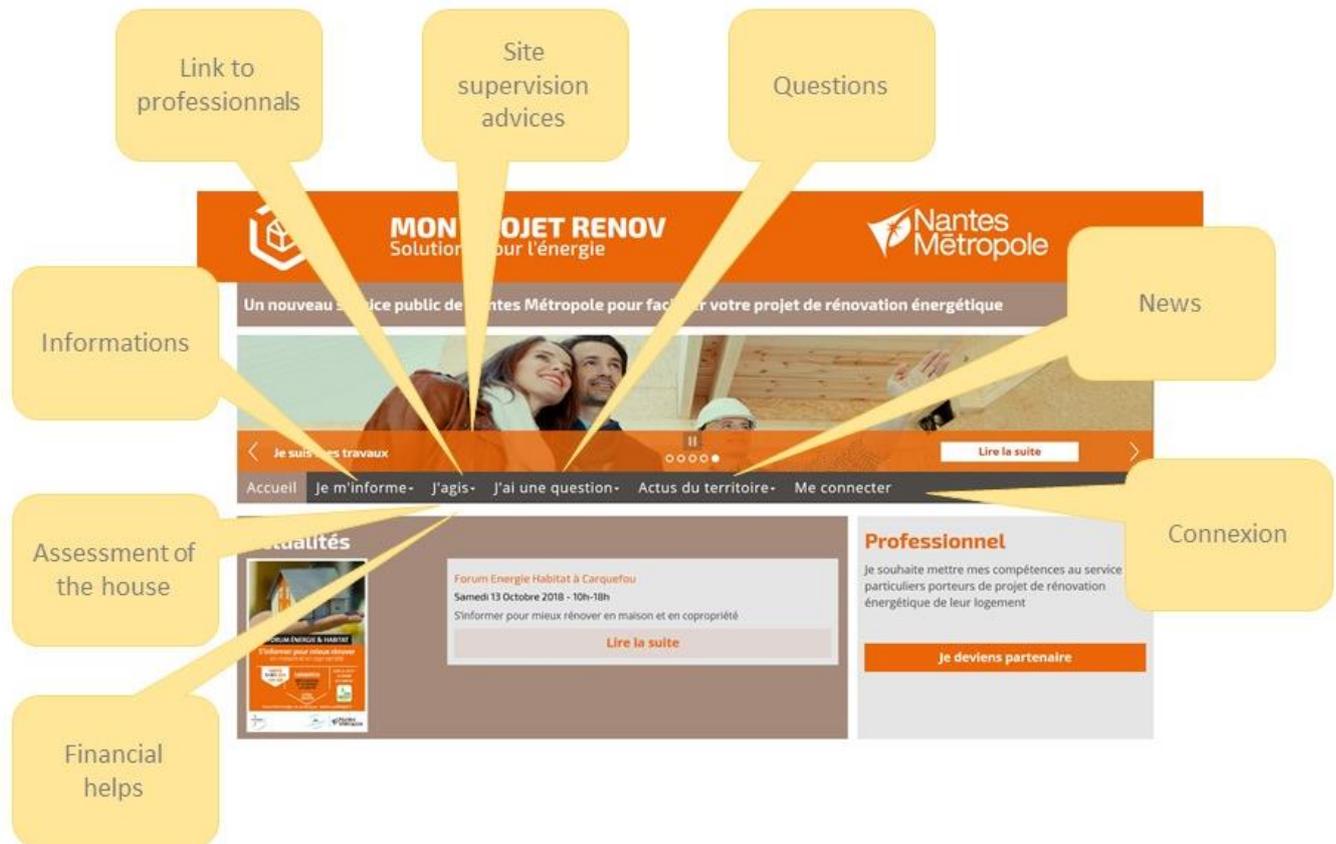


Figure 1. MonProjet Renov Platform home page

The user travels through the following route for assessing his house:

- Identification
- Administrative characteristics

Le logement sur lequel porte mon projet



merci de remplir tous les champs

Mon projet porte sur

Maison individuelle Appartement Copropriété

Ce logement est ma résidence principale

Oui Non

Le logement concerné par les travaux a été achevé

Avant 1990 Entre 1990 et 2002 Entre 2003 et 2012 Entre 2013 et 2015 Après 2015

Adresse du logement concerné par les travaux

Nom de ma commune :

SAINT-JEAN-DE-BOISEAU

Ma situation

Mon/Notre revenu fiscal de référence :

Merci de saisir un montant €

En savoir plus ▾

Mon foyer se compose de :

personnes

En savoir plus ▾



- House technical description

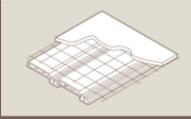
Mon type d'habitation

 Maison	 Appartement	 Inconnu
---	--	---

Précédent Suivant

Habitation type

Composition de mon plancher

 Dalle béton	 Solives bois	 Poutrelles acier	 Voûte brique
 Terre battue	 Inconnu	Floor type	

Précédent Suivant

Etc

Année d'installation de mon chauffage principal

< ou = à 5 ans	Entre 5 et 10 ans	Entre 11 et 15 ans	Plus de 15 ans
Inconnu	Age of heating system		

Précédent Suivant

• Self-diagnosis results using a color scale

Légende

Satisfaisant
 A surveiller
 A traiter
 Non défini

Toiture

Programmation

Régulation

Fenêtres

Plancher bas

Chauffage principal

Chauffage secondaire

Murs

Ventilation

Eau chaude sanitaire

Isolation :

Ma toiture En savoir plus ▾

Mes murs En savoir plus ▾

Mon plancher bas En savoir plus ▾

Mes fenêtres En savoir plus ▾

Eau chaude sanitaire :

Mon eau chaude sanitaire En savoir plus ▾

Chauffage :

Mon chauffage principal En savoir plus ▾

Mon chauffage secondaire En savoir plus ▾

Ma régulation En savoir plus ▾

Ma programmation En savoir plus ▾

Ventilation :

Ma ventilation En savoir plus ▾

- Informations about each source of energy consumption

Isolation :**Ma toiture**

En savoir plus ▾

Votre toiture semble mal isolée. Elle est la piste d'amélioration prioritaire de votre logement. La toiture est le poste de déperdition énergétique le plus important dans un logement son isolation vous permet de diminuer vos consommations énergétiques et améliore le confort de votre logement en hiver comme en été.

Par ailleurs, votre toiture peut également être le support d'une installation de production d'électricité avec des panneaux photovoltaïques. Vous pouvez tester son potentiel solaire sur <https://nantes-metropole.insunwetrust.solar/>, site développé avec le soutien de Nantes Métropole.

Mes murs

En savoir plus ▾

Vos murs ne sont pas isolés. Ils représentent une piste d'amélioration prioritaire de votre logement. Une bonne isolation de vos murs vous permet de diminuer votre consommation énergétique, d'augmenter votre confort thermique et de supprimer les sensations de murs froids dans votre logement. Un diagnostic énergétique peut vous permettre de déterminer le type d'isolation le plus adapté à votre logement.

Mon plancher bas

En savoir plus ▾

Votre plancher n'est pas isolé. Il représente une piste d'amélioration potentielle de votre logement si la configuration technique le permet (cave, vide sanitaire accessible, garage en sous-sol ...) ou dans le cas d'une rénovation complète de votre logement. Un diagnostic énergétique plus approfondi ou les services d'un maître d'œuvre peuvent vous permettre de définir les solutions les plus adaptées à votre logement.

Mes fenêtres

En savoir plus ▾

La performance de vos fenêtres semble moyenne. Leur remplacement peut représenter une piste d'amélioration potentielle de votre logement. Vérifiez que vous disposez également d'un système de ventilation performant qui permette un renouvellement de l'air suffisant suite à l'amélioration de l'étanchéité de vos fenêtres (grilles d'entrée d'air sur les fenêtres des pièces de vie, bouche d'extraction d'air dans les pièces humides ...).

Eau chaude sanitaire :**Mon eau chaude sanitaire**

En savoir plus ▾

Votre système de production d'Eau Chaude Sanitaire semble correct. En cas de dysfonctionnement, il pourrait être intéressant d'étudier son remplacement par un système de production d'eau chaude sanitaire utilisant une énergie renouvelable. [En savoir +](#)
Afin de maintenir sa performance et garantir un fonctionnement en toute sécurité, pensez à faire entretenir votre installation régulièrement. [En savoir +](#)

Chauffage :**Mon chauffage principal**

En savoir plus ▾

Votre système de chauffage principal semble devoir être remplacé. Un diagnostic énergétique plus approfondi peut vous permettre de définir les solutions de chauffage les plus adaptées à votre logement. Le type d'énergie que vous utilisez fait partie des plus chers. Il serait économiquement intéressant d'étudier la possibilité d'en changer. Un conseiller Espace Info Energie peut vous accompagner dans votre réflexion.

Mon chauffage secondaire

En savoir plus ▾

Ma régulation

En savoir plus ▾

Votre logement dispose d'un système de régulation. Cela vous permet de maintenir la température des pièces à une valeur constante correspondant à vos besoins. Vous bénéficiez d'un meilleur confort et pouvez mieux contrôler vos consommations en énergie.

Ma programmation

En savoir plus ▾

Nous vous recommandons d'équiper votre logement d'un système de programmation. Cela vous permet de paramétrer les consignes de températures et les horaires de fonctionnement en fonction de l'occupation de votre habitation: 1°C de moins c'est 7% de consommation en moins et l'énergie la moins chère est celle qu'on ne consomme pas !

Ventilation :**Ma ventilation**

En savoir plus ▾

Votre logement dispose d'un système de ventilation mécanique contrôlée (VMC). Veillez à régulièrement nettoyer les bouches d'aération (et les filtres si double flux) pour maintenir un bon fonctionnement.



- Request for linking to professionals

Je trouve des professionnels qualifiés



Chaque projet de rénovation est unique,

MERCI DE SÉLECTIONNER LE OU LES PROFESSIONNELS AVEC LESQUELS VOUS SOUHAITEZ ÊTRE MIS EN RELATION :



Bureau d'étude thermique



Maître d'oeuvre



Entreprises du bâtiment

Entreprises du bâtiment

- Je souhaite faire une rénovation globale coordonnée par une seule entreprise
- Je souhaite choisir mon/mes entreprise(s) par poste de travaux

Je souhaite intervenir sur :

- Menuiseries
- Isolation
- Chauffage
- Eau chaude sanitaire
- Ventilation

Works categories

- List of companies (reachable without account creation)

The screenshot shows the 'MON PROJET RENOV' website interface. At the top, there's a navigation bar with 'Accueil', 'Mon logement', 'Mes aides financières', 'Mon conseiller', 'Mon projet travaux', and 'Mes documents'. Below this, a section titled 'Liste des professionnels partenaires par type de travaux :' is visible. Under the 'Menuiseries' category, two companies are listed: 'B2M Menuiserie' and 'Couvresseurs de l'Atlantique'. The 'Couvresseurs de l'Atlantique' entry includes contact information and a map of Nantes. Below the company list, there is a table with two columns: 'Type de travaux' and 'Commentaire du professionnel'.

Type de travaux	Commentaire du professionnel
Murs	Isolation des murs par l'extérieur avec bardage
Planchers	Isolation des combles perdus
Toiture	Isolation des combles et isolation par l'extérieur (sarking)
Menuiseries	Fenêtres de toit sur couverture ardoise, tuile ou zinc

Figure 2. Route for assessing the user’s house

The user can also continue the route and make the contract verify by Mon Projet Renov: companies have to upload their contract on the platform to be verified by the administrator. Mandatory references to obtain financial helps, number of professional certification, date of house visiting, etc, are checked and validated. This functionality has never been used by companies (see paragraph 3.5.1 below).

Individuals’ data were planned to be stored as anonymous and open data. Considering the low amount of collected data, that hasn’t been implemented.

3.3.2 Roles

Several actors are gravitating around the platform.

- Administrator

The platform is run by an administrator paid by Nantes Metropole. The administrator can also earn money if work estimations are signed: 34 € for 1 estimations for one house, 52 € for 2 estimations for one house, 69 € for 3 estimations for one house.

- Users

The user is surfing on the platform. He gathers informations and advices for free. In order to get professionals coordinates, he needs to enter personal data.

- Companies

Companies listed are construction works companies, design offices or project management offices. They have to be labelled “Reconnu Garant de l’Environnement RGE” which is a national label certifying that the company is well trained for energy renovation. They also have to sign a convention with Mon Projet Renov. The data base is driven with a voluntarist approach: companies presenting mandatory prerequisites can be listed on the platform if they ask for it. They were informed through national organizations, see paragraph about 3.3.3.2 below.

3.3.3 Communication

The aim of the platform is to increase the number of renovated houses in Nantes area. Nantes Metropole implemented a targeted communication plan. The targets are individuals, professionals and stake-holders linked to energy renovation market.

3.3.3.1 Communication to individuals

In order to reach individuals, flyers and posters were available in several places: town halls, real estate agencies, banks, notarial offices, charity locals, etc.

Meetings were organised to inform elected representatives, metropolitan technicians, real estate agents, bankers, etc, about Mon Projet Renov existence. The aim is to sensitize and inform them about the platform and make them spread the information to their clients or citizens. They were chosen because they are legitimate and have a privileged relationship with individuals.

Articles were published in local press, presenting real interviews with individuals. Newspapers were also used to display advertisement for the platform, as well as websites with large audience.

A large poster campaign in the city has also been planned from the 7th of November 2018 until the 20th of November.

Housing fairs were prepared gathering Mon Projet Renov partner professionals and energy associations providing unbiased advices. Individuals can directly speak to them, ask questions and visit all stands. The fair also offer visitors a chance to assist to conferences about housing renovation.

Thermographic walks were also organised to make citizens aware of heat loss through houses walls, windows, doors, rooves.



Local energy information corners called Espace info Energie guide individuals through renovation route. Those offices are financed by the national agency for environment and energy control (ADEME), the Region and Nantes Metropole. They are a relay for such initiatives.



Article in local press



Housing fair



Poster campaign

Les représentants des acteurs professionnels du bâtiment

	<p>CAPEB 44 4 rue de l'aéronautique 44340 Bouguenais Tel : 02 40 08 99 60 Contact mail : https://www.apeb.fr/nantaisequie.com (contact)</p>		<p>FFB 44 4 Impasse Serge Reggiani 44900 Saint Herblain Tel : 02 40 20 19 70 Contact mail : accueil@444.fbbatiment.fr</p>
	<p>CCI 44 16 quai Ernest Renaud 44100 Nantes Tel : 02 40 44 60 00 Contact mail : info.clients@mercedesnantes.cci.fr</p>		<p>CMA 44 5 allée des Jardins 44980 Saint-Luce sur Loire Tel : 02 51 13 83 00 Contact mail : dgma44@cm.nantes.fr</p>
	<p>Unifa : Union nationale des syndicats français d'architectes Tel : 06 15 31 67 28 Contact mail : https://unifa44.fr/contact/ Site : http://unifa44.fr</p>		

Le soutien de l'Union Européenne

Ce projet a reçu un financement du programme de recherche et d'innovation Horizon 2020 de l'Union européenne en vertu de l'accord de subvention n° 731297.

Webpage

Figure 3. Channels of communication

3.3.3.2 Communication to professionals

In order to increase the number of partnerships with professionals, meetings and professionals breakfast were organized with national professionals organisations such as Confédération de l'Artisanat et des Petites Entreprises du Bâtiment, (CAPEB), meaning Confederation of Handwork and small building companies or the Building French Federation (Fédération Française du Bâtiment, FFB).

E-mailing campaigns were sent to certified professionals to inform them of the platform existence and convince them to subscribe and become project partners.

3.4 Spin off on local stake-holders

A cartography created by ESADE partner of mySMARTlife (see deliverable D1.6) represents below the several actors of the local economy and the relationships between stake-holders. This map is using the Value Creation Ecosystem (VCE) method and shows the global ecosystem of housing retrofitting in Nantes area.

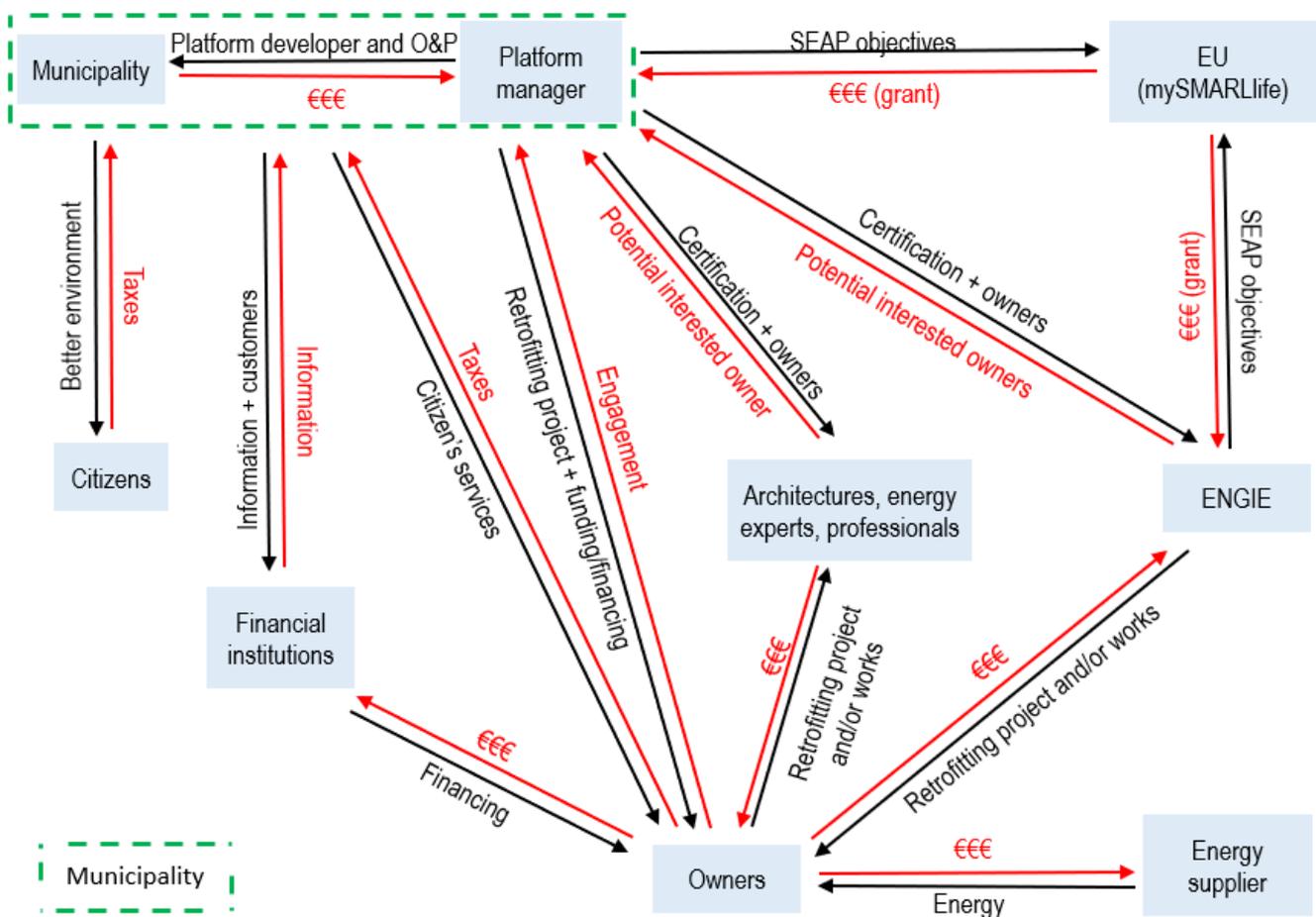


Figure 4. Mon Projet Renov Value Creation Ecosystem

A complementary tool to MPR Value Creation Ecosystem is the City Model Canvas (CMC) from « Business Model Canvas » (Osterwalder, 2010). City Model Canvas allows to understand how a city

handles its resources in order to create and gather value for its citizens through public projects. It shows key aspects a city has to consider when setting up a project.

Mission statement: To reduce the city's greenhouse emissions from buildings improving their energy efficiency and promoting renewable energies				
Key Partnerships <ul style="list-style-type: none"> • EU • Architectures, energy experts, professionals (Individuals, SMEs, Habitat operators, Energy, Construction and Digital devices companies - IoT, Big data, Home solutions, etc.) • Financial institutions • ENGIE • Citizens • Other mySMARTlife partners • Professionals structures in charge of the certification 	Key activities <ul style="list-style-type: none"> • Public tender for the service (platform manager) • Platform operation (maintenance, running, etc.) • Owners' engagement campaigns and feedback • Educational and training programs for citizens, technicians, operators, etc. • Quality certification for professionals • Evaluation and monitoring • Owners/tenants competition to reduce its consumption to more than 8% (savings) 	Value Proposition <ol style="list-style-type: none"> 1. To retrofit existing building stock of Nantes Métropole, in particular those dwellings built at least 15 years ago, in order to improve their energetic performance 2. To improve energy efficiency, reduce energy consumption and reduce of households energy bills (savings) 3. To produce and promote green energy 4. To increase and improve urban healthiness and quality of live of citizens through less fuel consumption and dwelling's comfort 	Buy-in & support <ul style="list-style-type: none"> • Owners' acceptance, mainly related to financial and funding concerns • Tenants acceptance, mainly related to rentals increase : they don't have the choice and rentals increases possibilities are legally limited • Professional and companies suppliers interested in the service 	Beneficiaries <p>Owners / tenants of houses and apartments built at least 15 years ago in <i>Nantes Métropole</i></p>
Budget costs <ul style="list-style-type: none"> • Up to 70% of capex costs of retrofitting interventions • Capex and opex cost of the platform service • Municipality funds 		Revenue streams <ul style="list-style-type: none"> • Private owner taxes (e.g. building and planning permits) • Price per tone of CO₂ avoided (e.g. grants based on value tones of CO₂ avoided) • HORIZON H2020: mySMARTlife (EU grant – short term) Savings <ul style="list-style-type: none"> • Reduction in municipal budget allocated for fuel poverty 		
Environmental costs <ul style="list-style-type: none"> • Environmental impact in energy use during retrofitting works (short term) • Rebound effect 		Environmental benefits <ul style="list-style-type: none"> • Less energy consumption (emissions of CO₂) of households because of an optimization and efficiency of retrofitted interventions • Less air pollution • Production of green energy 		
Social risks <ul style="list-style-type: none"> • Possible increase of privacy concerns because of monitoring activities and data collection in private spaces • Possible process of gentrification among cities because of an increase in prices of the building stock 		Social benefits <ul style="list-style-type: none"> • Increase of environmental awareness of citizens • Improvement and increase of the smart social ecosystem development • Better standards of social cohesion among citizens and improvement of their levels of quality of live • Better urban healthiness that reduces health problems of citizens • Reduce of digital divide (access to network and usage of IoT) Energy poverty and reduce of energy bills • Economic development: job creation, new business opportunities, company's creation and development, etc. 		

Figure 5. City Model Canvas (CMC) from « Business Model Canvas » (Osterwalder, 2010)

3.4.1 Smart economy

Nantes renovation ecosystem around Mon Projet Renov is reaching a large spectrum of stakeholders, from citizens to major French companies or institutions. This Figure 4. Mon Projet Renov Value Creation Ecosystem drawn by ENSADE shows all those stake-holders, their relations and the smart economy resulting from the ecosystem.

MPR platform is directly related to most of ecosystem actors : Nantes Metropole, citizens, financial institutions, owners, professionals, European Union and Engie, which) is a French electricity and gas production, sale and distribution company known as GDF Suez prior to April 2015.

MonProjetRenov platform is directly related to local companies. It promotes local energy renovation specialized companies that struggled to get labelled “Reconnu Garant de l’Environnement RGE”. This label goal is to upgrade “classical” companies’ knowledge about energy renovation. It furthers knowledge and seriousness in Nantes economic fabric and its area. Mon Projet Renov goal is to count 200 companies by 2019. Closeness of companies are emphasized on the platform: companies used to work together are highlighted. Construction site coordination is indeed easier when companies belong to networks.

MPR platform is also in the centre of all interactions. Mon Projet Renov is aiming to reinforce local dynamism within all stake-holders. Several partnerships have been created with professional organizations and local actors groups to create new suitable offers:

- Involvement contract for professionals based on usual estimates and invoices models from professional organization FFB and CAPEB ;
- Common model of energy audit written with professional auditors ;
- Incentive measures to promote global renovation: use of flat rate benefit for architects created by “renovation architects” non-profit organization.

Mon Projet Renov reaches several trades type, which make the project attractive.

3.4.2 Platform business model

The platform is fully financed by Nantes Metropole. In return, Nantes Metropole own all data collected through the platform and can guarantee that those data will not be used for other purposes than to help people in their project and for global statistic .

In France, white certificates called CEE can be used by individuals to finance their energy retrofitting. White certificates are documents attesting that an energy amount has been saved by making an action to improve energy performance. White certificates are usually tradable: an individual certifies that he made an action to improve energy performance and virtually sells it to an energy supplier. It can be a part of financement for households.

The platform could have integrate a service for individuals to help them selling their white certificates. The idea was eventually dropped out due to the lack of personalization of this service in the chosen administrator offer. The service provider indeed only proposed a redirection to an external white certificates specialized website. A white certificate service might be an opportunity to develop in the future.

3.4.3 Local renovations

The Mon Projet Renov platform has changed housing renovation landscape in Nantes Metropole. To what extent? Is it marginal? Is it a massive change?

Nantes Metropole is struggling to gather informations to provide a solid feedback. The number of houses renovated, the nature of works done and the investment amount due to Mon Projet Renov is hard to find. The next subsections presents the platform navigation statistics.

3.5 Actors feedback

A statement after 18 months shows the following results.

3.5.1 Mon Projet Renov Statistics

Number of visits (from people located in Nantes Métropole by google) Around 4,000

Average time spent on the platform	5 minutes
Average number of webpages visited	6
Most popular webpage	About financial helps
Number of accounts created	278
Number of request for linking between individuals and professionals	125 for works (from 63 people i.d. 2 works per people in average) and 24 for studies
Number of works or studies estimates	590 (3,7 per person in average)
Number of links between individuals and professionals for works or studies	180 (1,2 per person in average)
Number of links between individuals and support	35
Number of companies registered	56
Number of companies currently still registered after 18 months	45 (Goal : 200 in 2019)
Number of signed contracts loaded the platform	1

Table 10. Mon projet Renov statistics

Those 4,000 visitors of the platform can be compared to the 260,000 number of Nantes Metropole households. Most part of visits did not lead to contractualization between individuals and professionals.

Most part of visitors gather informations but leave the platform without creating a profile. Nonetheless, among the created accounts, more than the half asked for a link with a professional or contacted at least one professional of the platform. Visitors also asked for support and advices through a professional mission. This is a warranty for the works quality, and this predicts for real energy renovation : a project manager or a member of a national information and advice network on energy efficiency (Espace Info Energie EIE) can more easily convince a citizen to renovate his/her house in an holistic and efficient way. The statistics also show that when an individual asks for a cost estimation, he asks for several estimations, which means that he wants to renovate various part of the house. (2 per project in average)

The main part of companies registered through de platform are works companies. 40% of them are small companies (less than 5 employees). Some of them are Project management companies or design offices.

3.5.2 Users experience

A survey was driven among the 278 individuals that created an account. 24 % of them answered the questionnaire. The following results may not be representative of all users: only motivated owners might have answered.

The main services used by visitors are :

- Financial help identification (59,1%) ;
- Link to professionals (54,5%) ;
- House energy assessment (27,3%).

The users mainly feel comfortable with the use of the platform although some of them report bugs or difficulties during navigation.

57,6% of answerers assert that works are going on in their house or that an contract has been signed. Nevertheless, there is no financial interest for the owner to continue the project through the platform. That explains why no contracts have been signed on Mon Projet Renov.

47,1% of owners committed with their house renovation did not use Mon Projet Renov professionals linking. Most of them choose to call companies.

3.5.3 Companies' feeling

Companies were involved in the feedback in going around the table. Main remarks are:

- The different financial helps presentation is very interesting and accessible

- There is a lack of interest for companies of being linked to individuals : during those last month, they easily find clients without the help of the platform
- The service of free advices has to be more highlighted, as well as the possibility to mature its project with the help of a project management team and/or a design office
- Nantes Metropole role does not include checking registered companies seriousness and professionalism. Possible conflicts can then occur and be detrimental to the image and the credibility of Nantes Metropole. As the linking is globally little used, and as the new web national website faire.fr listed certified compagnies, it is suggested to stop this possibility in the next version of the website and to link towards the national website for a list of companies.
- As the certification for project management team is now developed, it is proposed to ask for mandatory certification for project management team as it is asked for work companies.
- Demotivation risk exists when estimates are sent to individuals with no response.
- The risk of companies' loss in the list does exist. Nantes Metropole has to find attractive services to keep them and catch other construction businesses.

4. Platform replicability

4.1 Strengths to be kept

MPR platform provides lots of free information: financial helps, advises, list of certified companies to do the works or supervise them. The website offers a centralisation of all national and regional financial helps that are manifold and depend on several organizations: French owners are usually lost among all those possibilities. Here the website filters directly the helps the owner can benefit according to his personal situation.

There is no mandatory user journey: actions can be done in any desired order.

Companies are committed with Mon Projet Renov : if they receive a demand, they make an offer only if there are in capacity to visit the house to do works estimate into two weeks. It ensures owners to receive estimates quickly.

Platform supplies a really diversified offer: owners can receive until 6 answers from different companies.

A visitor can have a first assessment of his/her house without calling a counselor.



4.2 Weaknesses to be challenged

The house self-assessment does not establish the level of priority of the works, it only lists works that can be done. A non-knowing owner can be confused and frightened when reading this long work catalog. Nantes Metropole is already working on this weakness and is now proposing financial helps for energy audit / diagnosis in order to encourage owner to ask (and pay for people above a certain income) for help when prioritizing works. The enlight of the possibility to ask for a first level of free advices is also planned.

The platform does not include self-rehabilitation advises or financial helps for self-rehabilitation. This is a rising practice in France and the lack of accompaniment and financement is a recurrent issue. There will be no improvement in Mon Projet Renov future development; Nantes Metropole prefers to drive individuals towards local certified professionals rather than to teach them how to renovate their house without interacting with Nantes economic fabric. Self-rehabilitation can still be a challenge for a replicated platform.

MPR platform suffers from a lack of traceability: after linking individuals to professionals, companies do not use the platform. Nantes Metropole gathers no info about how many offers have been signed, how many houses have been renovated, which works have been done, how much have been invested, etc. The project of stopping the linking between owners and professionals will not help to collect more informations throw the platform but some others may be collected throw the new helps proposed by Nantes Métropole.

User journey does not feel fluid for everyone: bugs have to be corrected.

4.3 Opportunities to be caught

Users' data could be collected thanks to national platform France Connect so that data are already filled. France Connect is a platform gathering citizens' information such as name, surname, date of birth, fiscal number, social welfare number, etc. It prevent individual to enter data for each national website: data are recorded and automatically entered. This is a real saving time. Nantes Metropole website is already linked to this France Connect platform. This may be studied in case of developing an online possibility to ask for a financial help.

A dedicated page with a glossary could be added to the current website. A Frequently Asked Questions (FAQ) could aslo be included in this additional page.

Financial helps dedicated to energy audit / diagnosis could be proposed by Nantes Metropole to promote the need of being driven by a professional in the works choice. This opportunity is currently (November 2018) realized and the help has already been created by Nantes Metropole (250€ for every diagnosis).

The platform could include self-rehabilitation advises, financial helps and links to teaching centres or associations.

Bugs have to be corrected and design thinking improved.

Nantes Metropole needs to improve individual renovations traceability. A goodwill gesture could be a way to drive visitors to use the website until works are done. How much can a city give to an individual for feedback? Nantes Metropole is currently wondering about increasing financial helps for high performant houses renovations (BBC labelled, which labels renovated houses with high performances) in exchange of personal data.

In order to create a ripple effect, Mon Projet Renov could display a counter on the home page: number of renovated houses, saved energy amount, avoided greenhouse gases emissions amount, etc. It is currently difficult for Nantes Metropole to get a feedback, but this is already a suggested improvement.

The website offers a centralisation of all national and regional financial helps that are manifold and depend on several organizations: french owners are usually lost among all those possibilities. In addition to this strength, the platform offers the edition of pre-completed formulars when this is possible. The service could be emphasized in adding a new service: financial helps file transmission. An owner could enter data and create a file that Nantes Metropole could send to all funders: for instance Nantes Metropoles financial helps services, Bretagne Pays de la Loire regional helps services, ANAH, and other local or national funders. This would ease owners administrative procedures and encourage individuals to renovate their house; Nantes Metropole goal would be more easily achieved.

A link with local energy information corners (called Espace Info Energie) could be created to schedule appointments between individuals and information corners counsellors.

A new service could also be offered by Mon Projet Renov : energy consumptions follow-up. It raises questions about energy consumptions data.

4.4 Threats to be avoided

Brokers/middlemen are already efficient on linking users to companies, as well as public websites (j'ecorenov, faire.fr) that already lists certified companies. Mon Projet Renov could remove this functionality.

Private sector has definitely entered this market. Their solutions are usually integral yet the user does not feel confident because of data asked early in the process.

4.5 Synthesis

The following figure presents a SWOT matrix. It does not claim to be comprehensive and mandatory for a replication: many other additional services could be imagined.



Figure 6. SWOT Matrix

5. Conclusions

Mon Projet Renov (MPR) is a remarkable initiative to face directly one of the main barriers to retrofitting and buildings, and more generally the energy transition of cities: the lack of trust and information available to residential private owners.

An online platform such as MPR offers a very concrete and complete response, at a reasonable cost (online platform). It presents a large number of advantages: free but reliable information with high dissemination potential, no conflict of interest from the developer (the city is interested in both the residents' satisfaction and the local companies' well-being), technical and financial solutions offered, involvement of local companies, and diversity of the offer.

This way the platform represents a solution which is as accessible as possible for private residential owners, in the complex context of retrofitting of buildings, where even large groups of experts can suffer difficulties to agree on the "optimal" solutions to be developed. For example, the prioritization of the retrofitting actions will still remain a common issue in some cases, due to the diversity of contexts, solutions, and the complexity of the ex-ante energy (and economic) performance assessment.

Even if private competitors are appearing and will inevitably increase their offer to support the private owners in the field of "retrofitting support platforms", local authorities still seem to have an important role to play in the development of these tools for different reasons: need to pave the way for new services to the residents, larger trust in public services, assurance of fairness between the different stakeholders, information directly accessible to local authorities helping them to develop and fine-tune adequate political and financial tools (for the common interest).

Finally, many lessons can be learnt from the Mon Projet Renov initiative, especially to help other cities around the world to offer similar services, thus improving the energy performance of the existing buildings, optimizing the activity of the local companies, and improving the well-being of the residents by making them actor at the same time of what represents one of the biggest challenges for urban energy transition.

mySMARTLife offers the opportunity to disseminate this knowledge to the partner cities within the consortium, but also to the mySMARTLife Cities Network, and hopefully many more cities beyond these groups.