

# SUSTAINABLE PLACES

**2019** June 5-7, 2019  
Cagliari, Italy

## Exploitation of Business Models for Deep Renovation

### Chair

**Dr. Simona D'Oca, Arch.**

Huygen Engineers and Consultants

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INGENIEURS & ADVISEURS



## Exploitation of Business Models for Deep Renovation

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### Agenda 11:00 – 12:30

- 11:00 – 11:15: TripleA-reno: Storytelling for user-centred business models
- 11:15 – 11:30: ProGETonE: IPR Management Issues
- 11:30 – 11:45: P2endure: Local Renovation Platform (e-marketplace)
- 11:45 – 12:00: 4rinEU: Enabling Well-funded investments
- 12:00 – 12:15: STUNNING: Refurbishment packages business models
- 12:15 – 12:30: TURNKEY RETROFIT: Integrated home services
- 12:30 – 13:00: Q&A

Dr. Simona d'Oca, Arch,  
Prof. Annarita Ferrante, UNIBO  
Oana Schippers-Trifan, DEMO Consultants  
Roberta Perneti, EURAC  
Nicolas Peraudeau, DOWEL Management  
Regis Decorme, R2MSolutions

**TripleA-reno**

**PROGETONE**

**P2ENDURE**  
PLUG & PLAY BUILDING RENOVATION

**4RinEU**  
Reliable models for deep renovation

**STUNNING**



*Concept Paper*

## **Technical, Financial, and Social Barriers and Challenges in Deep Building Renovation: Integration of Lessons Learned from the H2020 Cluster Projects**

Simona D'Oca <sup>1,\*</sup> , Annarita Ferrante <sup>2</sup>, Clara Ferrer <sup>3</sup>, Roberta Perneti <sup>4</sup>, Anna Gralka <sup>5</sup>, Rizal Sebastian <sup>5</sup> and Peter op 't Veld <sup>1</sup>

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## Attractive Acceptable Affordable

deep renovation by a consumers orientated and performance evidence-based approach

**Starting date:** 2018-05-01  
**Ending date:** 2021-04-30, ongoing project

**Total cost:** EUR 2 000 011,75  
**Coordinated in:** Netherlands

**Call for proposal:** H2020- EE-11-2016-2017  
**Funding scheme:** CSA - Coordination and support action

**Topic:** [Overcoming market barriers and promoting deep renovation of buildings](#)



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Objective of the TripleA-reno exploitation plan is to develop a **[gamified] platform** that serves a **service for key stakeholders** involved in the **renovation journey**.

Aim is this **platform-based service [business] model** is facilitate understanding, communication exchange, decision making, practices among the TripleA-reno ecosystem.



Different types of **platform** can be distinguished.

- Services marketplace (Like Booking.com and hotel tonight)
- Product marketplace (Like Amazon and Ebay)
- Payments platforms (Like Paypal)
- Investment platforms (Like CircleUp)
- Social Networking platforms (Like Facebook and Nextdoor)
- Gaming platforms (like League of Legends, Fortnite and Magic)

These platforms have an impact on the market because of the **strong focus on marketing, attractiveness and lower prices of the service provided**, and because of their **direct connection to manufacturers and brands**.

**This is consistent with the vision of TripleA-reno to make deep renovations attractive, acceptable and affordable.**



The TripleA-reno platform gets success by:

1. Developing trust between the demand and supply side, attracting potential users;
2. Offering a brokerage service that supports the renovation decision making process, material purchase and professional support selection;
3. Prioritizing affordability of renovation solutions (i.e. including information on access to incentives, tax reduction for deep renovation process);
4. Responding to interest areas, and target users' needs;
5. Developing a one-stop-shop service supporting the **user journey**;

**The user journey is the path suppliers and users follow in discovering, using and reviewing the platform.**

**Focusing on the **user journey** helps to frame the experience of using the TripleA-reno as a whole, and for the different stakeholders involved.**

**Exploitation of Business Models for Deep Renovation**  
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**Triple -reno**

Road Show Awareness  
5 June 2019  
Vaulx-en-Velin (France)



## Exploitation of Business Models for Deep Renovation

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TripleA-reno

Road Show Awareness  
5 June 2019  
Vaulx-en-Velin (France)

What kind of problems TripleA-reno gamified platform will solve?

Who will use/buy (the results from) the TripleA-reno gamified platform?

Why the TripleA-reno gamified platform will be better than the existing ones?

What new knowledge (Key Exploitable Results - KERs) the project will generate?

How the results will be delivered to users/customers? Who are the users/customers?



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The logo for TripleA-reno features the word "Triple" in a teal sans-serif font, followed by a stylized teal triangle icon composed of three smaller triangles, and the word "reno" in a teal sans-serif font.

**TripleA-reno**

Road Show Awareness  
5 June 2019  
Vaulx-en-Velin (France)



In the TripleA-reno Road Show, we are using a **storytelling approach to recollect the customer journey** in deep renovation, under the perspective of the different stakeholders involved the whole process.

This activity will help the project consortia to have a clearer understanding what solutions and services to be exploited through a **platform-based business model service**.

Directives and practical insights that support the experimentation with user-centred exploitation strategies in will be elaborated as outcome of several workshops



# Triple -reno

**MOTTO**

*ORDINARY WORLD*

*SPECIAL WORLD*

 **HELPER**

 **HERO**

 **TREASURE**

**TRIALS:** \_\_\_\_\_

**CRISIS:** \_\_\_\_\_

**CALL TO ADVENTURE:**  
\_\_\_\_\_

 **MONSTER**

**RESULT:**  
\_\_\_\_\_



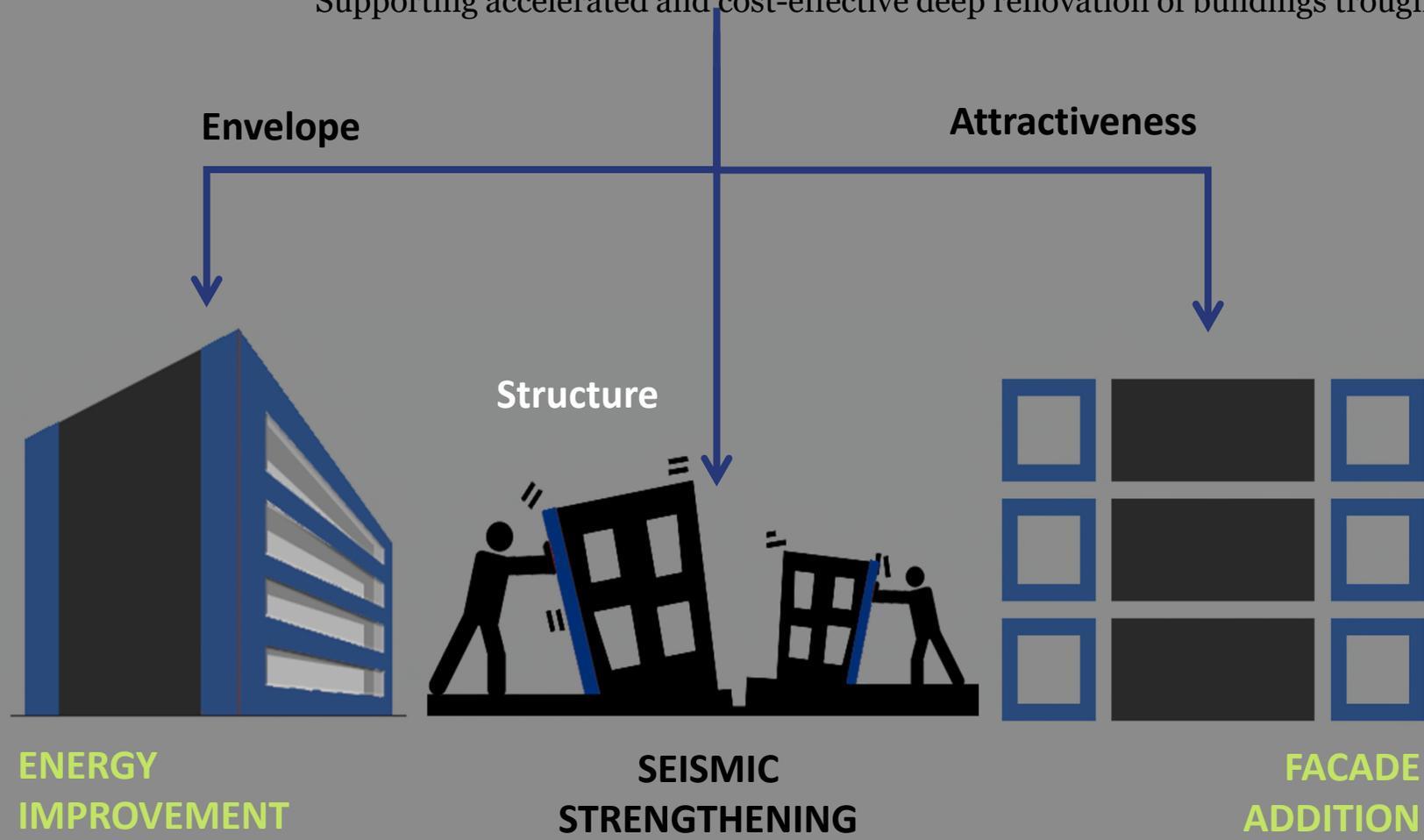
# Triple -reno



**Gunther and Sabine – Bavaria – Germany – Late 50ies**

Small individual landlord with 1 own house and two rental apartments

**Starting date:** 2017-05-01  
**Ending date:** 2021-04-30, ongoing project  
**Call for proposal:** Call: H2020- EE-10-2016-IA- Innovation action  
**Funding scheme:** Innovation Action  
**Topic:** Supporting accelerated and cost-effective deep renovation of buildings trough PPP



**Presentation of Pro-GET-onE project**  
Annarita Ferrante, Christoph Peters



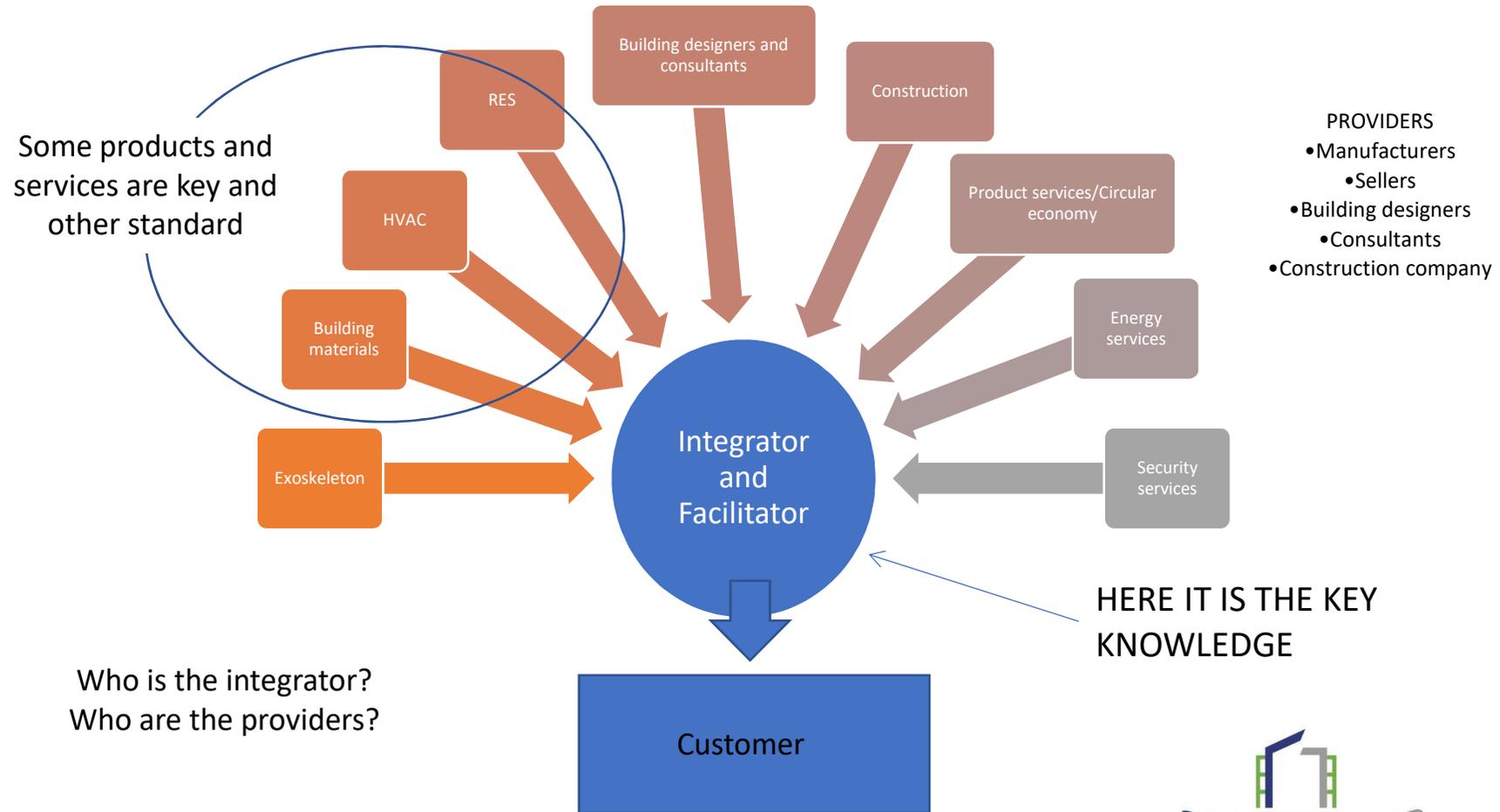
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# The GET offer: **Inte**Grated **Eff**icient **T**echnologies

on Buildings' Envelopes





## Is there a market for these synergy ?

Demand is high but latent (lack of finance, low awareness of problems and value of solutions)

There is value to be considered:

“Richter scale 6 earthquake can lead to the collapse of 50,000 homes”

“Every Euro invested in earthquake prevention saves 7€ in losses avoided”  
(Prof. Margani)

Social benefit of inclusion

Financial benefits: value added to property, reduced insurance risks, reduced costs (maintenance and energy use)

Urgent need for deep refurbishment to meet EU and UN sustainable development goals (e.g. triple annual rate of renovation to 3%)\*

**Market = coincidence of factors: + safety, +value, - energy & emissions**

E.g. [EU Energy Efficiency Directive \(2012/27/\)](#) requires 3% rate of renovation by now.

See also: [References: https://www.eurima.org/energy-efficiency-in-buildings/deep-renovation.html](https://www.eurima.org/energy-efficiency-in-buildings/deep-renovation.html)



## The business case

+ Trust, + Expertise , + Synergies

Cost effectiveness through combined solutions and added value:

Safety (seismic protection/prevention)

Quality of life: improved living space  
(with associated social and societal benefits)

inclusion

health

well being

Added value:

energy efficiency (+comfort, - bills)

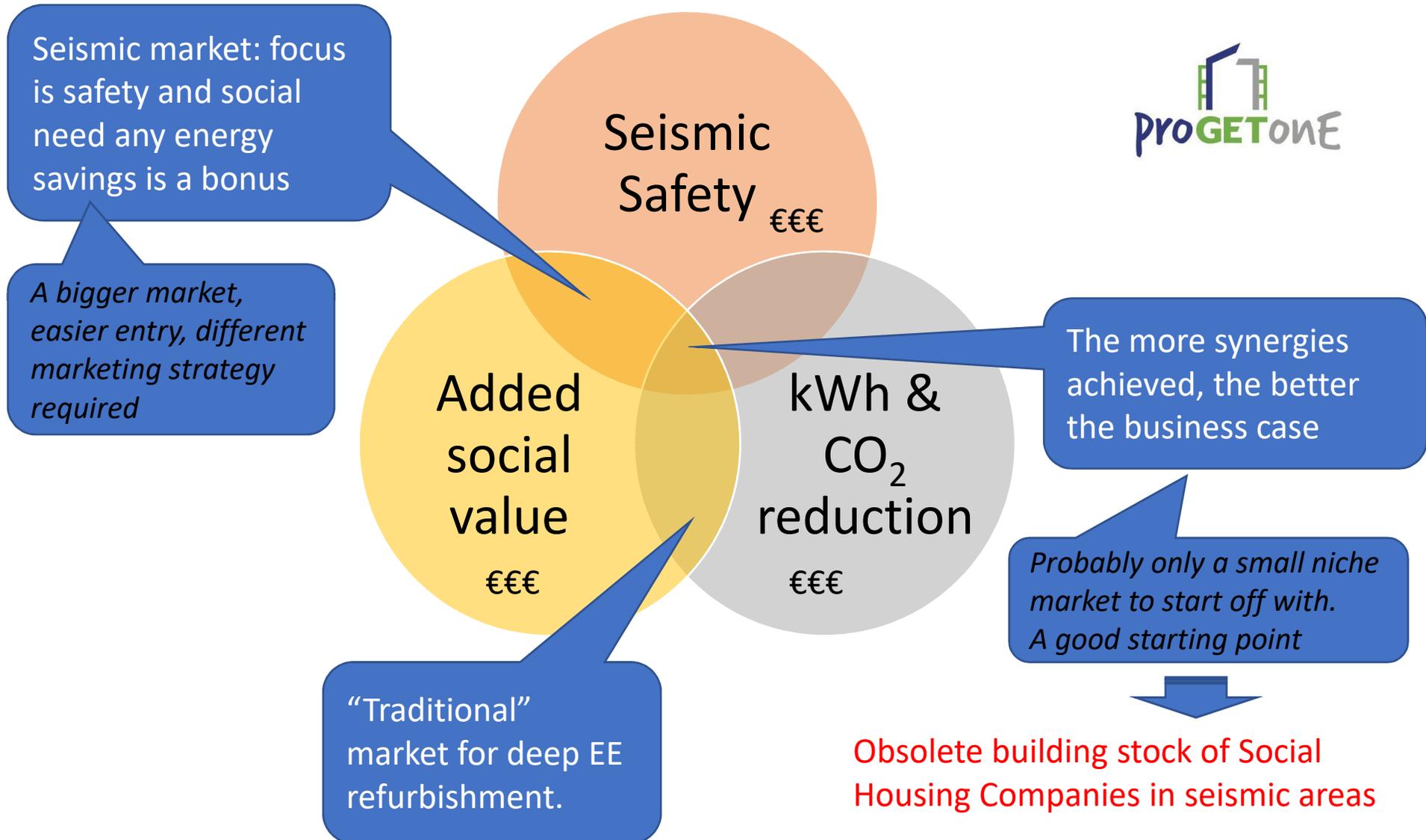
Increased property value

Reduced maintenance costs

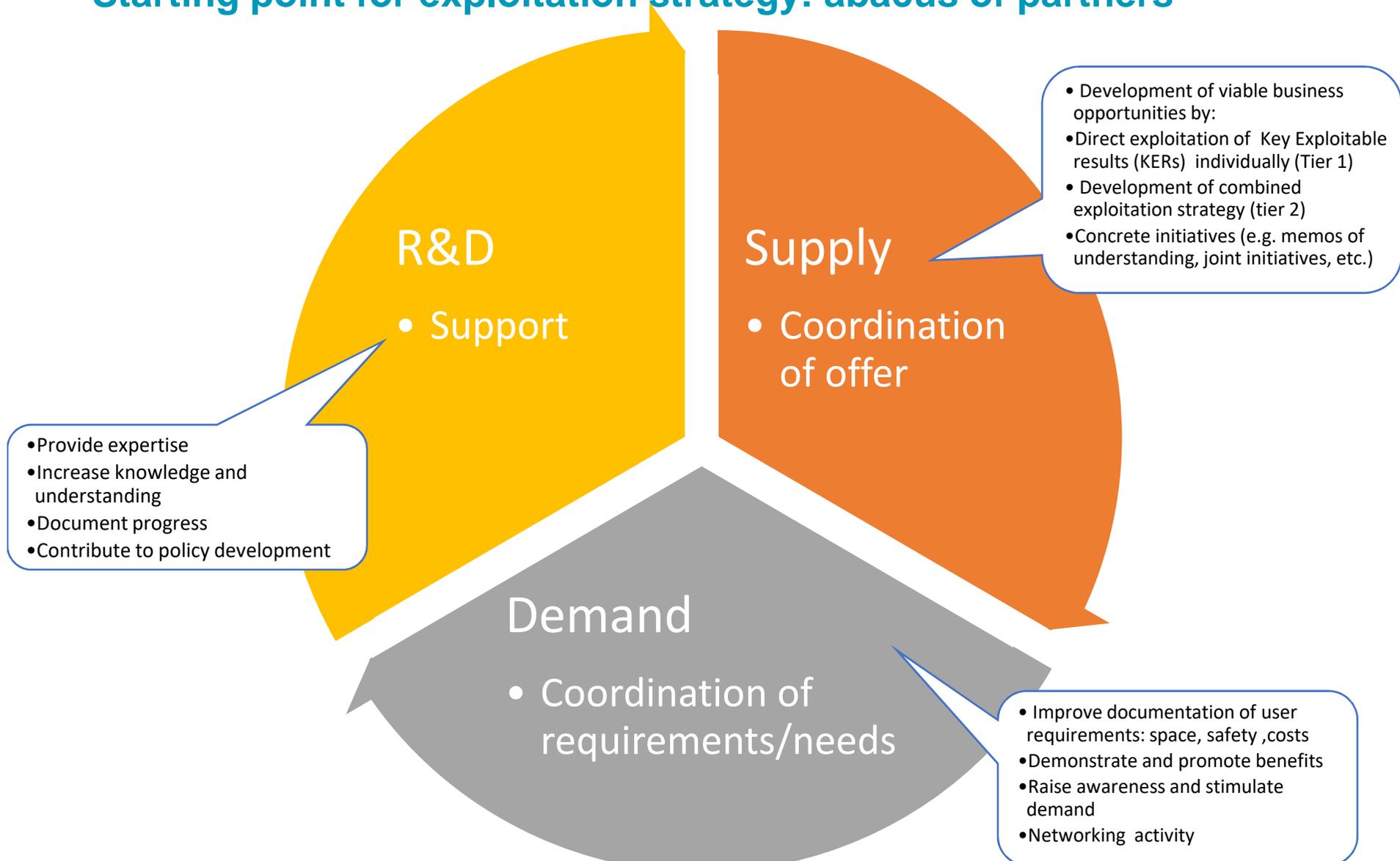




## The market & business case = coincidence of factors



## Starting point for exploitation strategy: abacus of partners





## Range of final, tier 2, exploitation result envisaged

### Minimum

- Memos of Understanding (MoU) amongst partners
- for **collaboration and joint exploitation**

### Maximum

- **ProGETone marketplace Platform**
- for the promotion of cost competitive integrated seismic/spacegaining/energy efficient/exo-skeleton based building refurbishment



## IPR management

### WHAT results can be exploited and HOW? (WP10)

- **T10.2 Business plan for the commercial-scale implementation of the GET system**
- **T10.3 Exploitation Plan** - defining a successful exploitation route for the results achieved by the project

### Management of IP (WP1)

- **T1.7 Intellectual Property (IP) management and protection** – deals with the management of the IP (share of rights, ownership, legal binding issues, confidentiality etc. ) generated by the project in order to guarantee proper protection



## Intellectual Property

Legal rights which result from **intellectual activity** in different fields

**Intellectual Property** refers to creations of the mind

- industrial and scientific fields
- literary and artistic fields

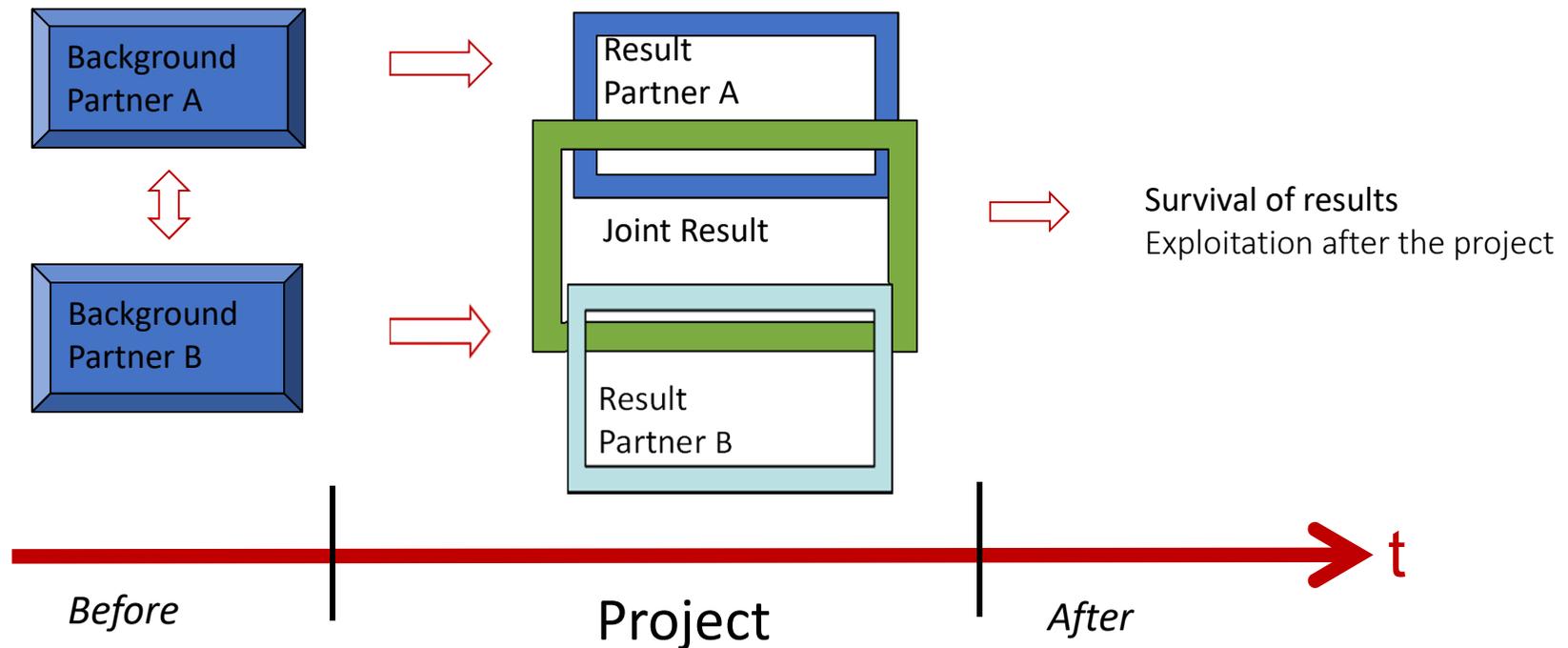
### **Intellectual Property Rights**

- are exclusive and time-limited rights
- allow to prevent others from use, make or sell your intangible assets (control)





## IP Issues in Competitive Research





## **IP Issues - Agreements** *After*

**Joint ownership agreements:** set out share of ownership of jointly owned results, rights of use, exploitation issues, distribution of revenues, etc.

**License agreements:** set out the terms under which one party can use intellectual property owned by another party

**License to a Spin off**

**Transfer agreements**



## IP Issues in Competitive Research Joint ownership of Results

### Joint owners:

- ✓ Shall (must) agree among themselves on the **allocation and the terms of exercising the ownership of the result** (in the absence of such an agreement, a default joint ownership regime is foreseen in the CA);
- ✓ may define respective **shares of ownership**, if they are not divided equally
- ✓ may agree that **patent applications** will be filed and maintained by only one participant on behalf of the others
- ✓ have to **clarify management issues**: sharing of costs arising from the legal protection procedures (patent filing and examination fees, renewal fees, prior state of the art searches, infringement actions, etc) and exploitation of jointly owned results (sharing of revenues, profits)



## IPR Management - Patents

What not to do when considering filing a patent application



- **No publication** prior to filing  
e.g. no article, press release, conference presentation/poster/proceedings or blog entry



- **No sale** of products incorporating the invention prior to filing



- **No lecture or presentation** prior to filing  
except under a **non-disclosure agreement (NDA)**



- Seek **professional advice**
- **File before others do!**

## Exploitation of Business Models for Deep Renovation

Oana Schippers-Trifan, DEMO Consultants, info@p2endure-project.eu



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**Plug-and-Play Product and Process Innovation  
for Energy-efficient Building Deep Renovation**



**Starting date:** 1 September 2016  
**Ending date:** 30 August 2020  
**Total cost:** EUR 5,318,599.93  
**Coordinated in:** The Netherlands  
**Call for proposal:** H2020-EE-2016-PPP  
**Funding scheme:** Innovation action  
**Topic:** Collaborative local deep renovation platform



## Content

- What is P2Endure?
- What barriers hamper large scale deep renovation?
- What are our objectives?
- What is the solution P2Endure proposes?
- What is the P2Endure 4M process?
- What are the P2Endure Plug-and-Play solutions?
- What are the supporting ICT tools?
- What does it take to ensure a successful and sustainable market uptake of the P2Endure innovative solutions?





P2Endure promotes **evidence-based innovative solutions** for deep renovation based on prefabricated **Plug-and-Play** systems in combination with on-site robotic 3D-printing and BIM, demonstrated and monitored at 11 real and 2 virtual projects in 4 geoclusters with EU-wide replication potential.



**16 (8 SME, 5 IND, 2 HES/RES, 1 PUB)**





## **Barriers that hamper large-scale deep renovation of the building stock**

- Technical barriers
- Financial barriers
- Social barriers
  - Uncertainty of the actual performance of the deep renovations
  - Disturbance to inhabitants





## P2Endure Solution

P2Endure will resolve the barriers for wide-scale implementation of innovative solutions:  
the absence of solid empirical **evidence** that such innovative solutions **deliver the expected performance:**

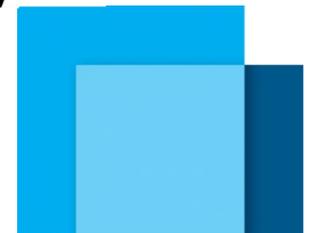
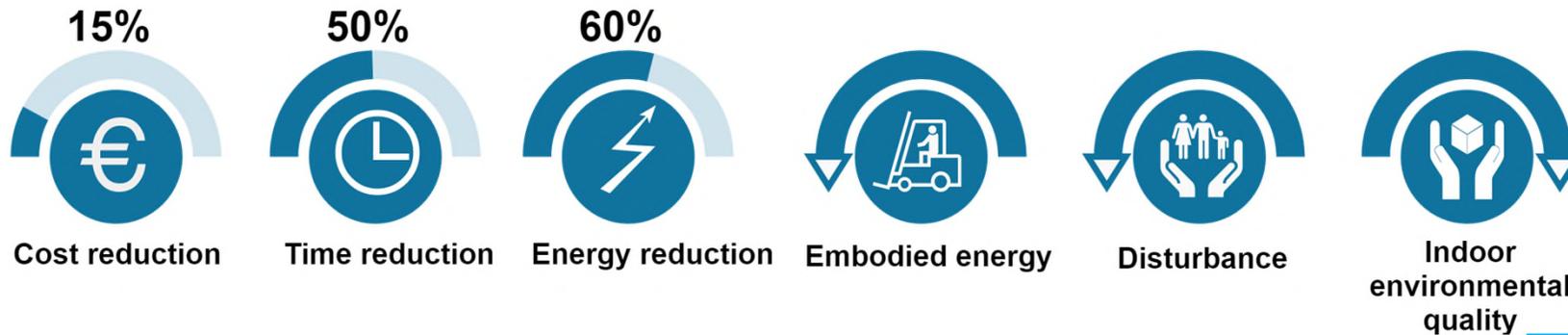
- Energy
- Financial
- IEQ

By

- Processes (4M –modular processes)
- Innovative Plug-and-Play systems / products
- Supporting ICT Tools



For rapid and low disturbance on-site assembly





**Purpose:** to develop a detailed technical plan and economic feasibility report for deep renovation, as starting point for the renovation design.  
**'3D scan to BIM' process.**



**Purpose:** to develop the deep renovation design ready for execution.  
**'BIM to BEM' process.**

**Purpose:** to monitor and guarantee the high-quality execution of the construction works, and to monitor the Indoor Environmental Quality and Energy Performance after deep renovation.

**Purpose:** to improve, test and implement PnP prefab components for deep renovation and to execute deep renovation activities.





# Innovative Plug-and-Play solutions

## Components for building envelopes

- Light weighted Plug-and-Play façade panels
- Plug-and-Play façade elements
- **Smart Energy Efficient windows**
- Rooftop retrofitting / Extension module

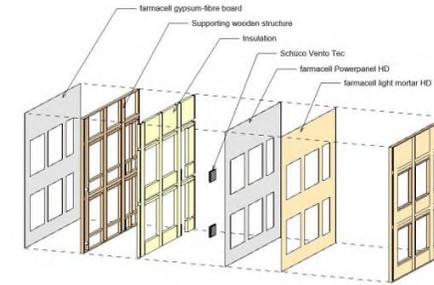
## Technical systems

- Plug-and-Play bathroom unit
- Plug-and-Play HVAC systems
- **IEQ control systems**
- Connection to energy grid and RES production

## On-site 3D technologies

- 3D scanning (geomatics) - laser and photogrammetry
- **On-site 3D printing and robotics**

## ICT Tools for deep renovation

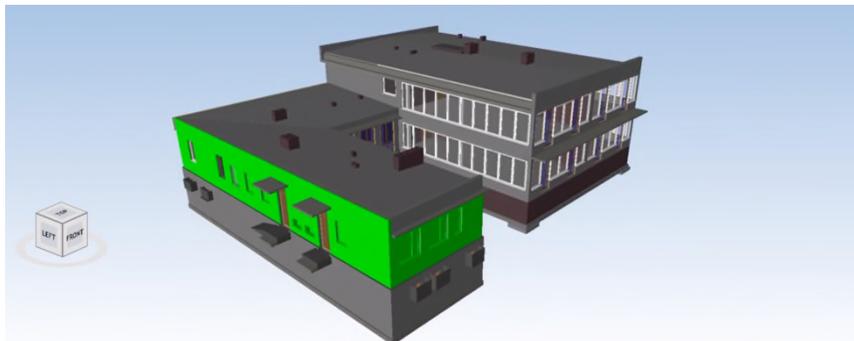
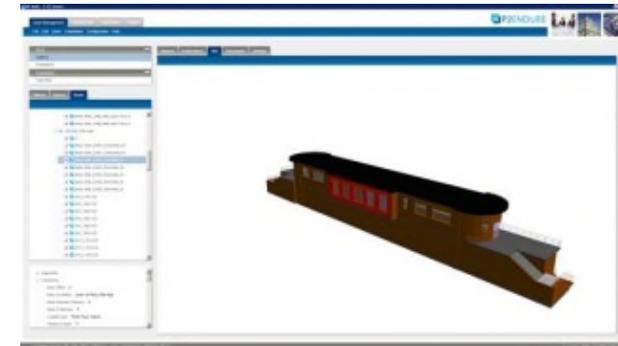




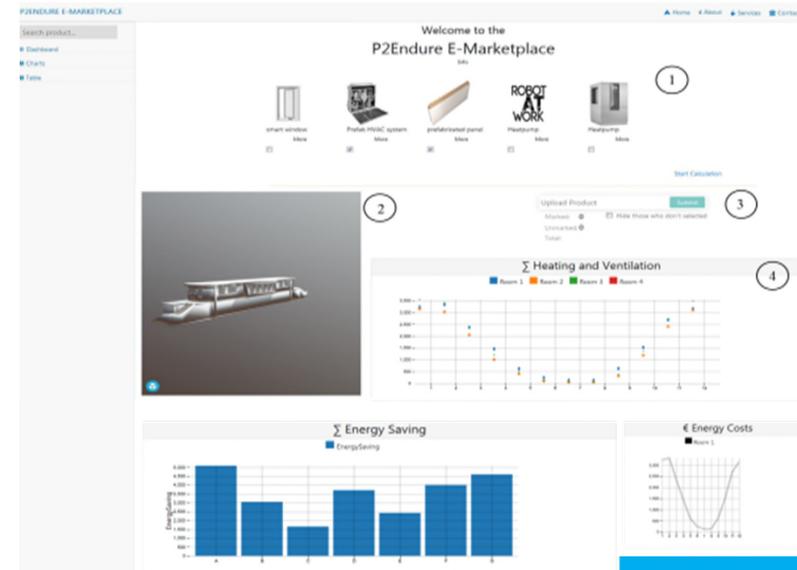
**Supporting ICT Tools**

BIM based

- Building Condition Assessment
- LCC and asset management
- Energy monitoring (parametric modeller)
- 4D (time) and 5D (costs) analysis



Name	Start	Finish	Budgeted Total Cost (BAC)
Modeling works - construction phase 1	04.10.2019	04.11.2019	62,377,000
Installation of window frames on 1st floor	11.10.2019	14.10.2019	1,210,000
Installation of window and external insulation elements	11.10.2019	14.10.2019	1,412,000
Installation of window	11.10.2019	14.10.2019	60,000
Installation of Prefabricated panels on upper level	14.10.2019	14.10.2019	14,200,000
Installation of Prefabricated panels on lower level	14.10.2019	14.10.2019	14,200,000

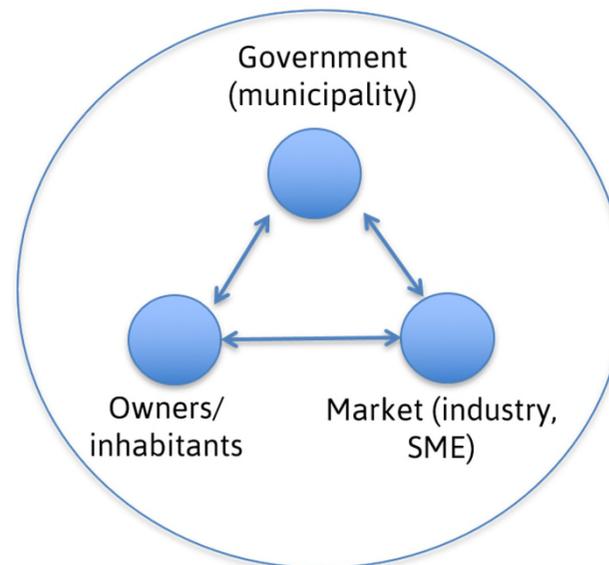




Up-scaling large deep renovation → Replication →

## P2Endure local district renovation platform

- Demand <=> supply: local district alliance
- Support decision-making of the renovation process
- Clear evidence on energy, cost and time performance





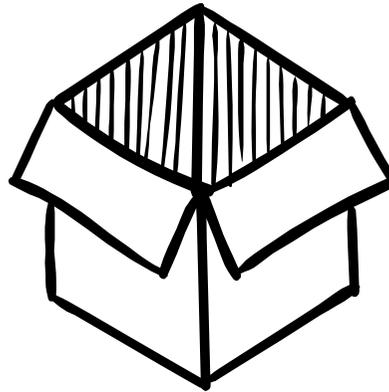
## P2Endure e-Marketplace concept

### Out-of-the-box solution

Simulation platform to provide clear and comprehensible information to compare energy saving options

Marketplace for renovation products

Targeted at RE developers, designers, building owners and construction companies



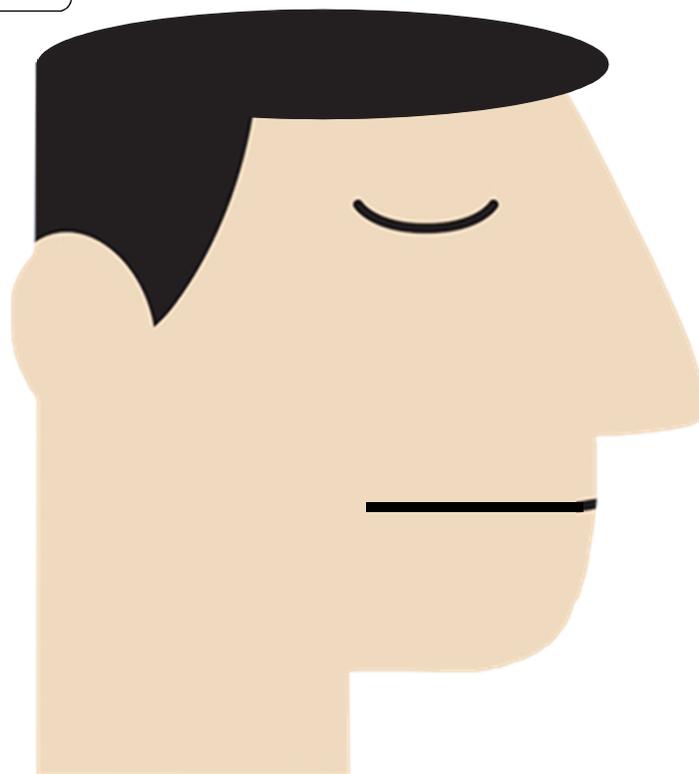
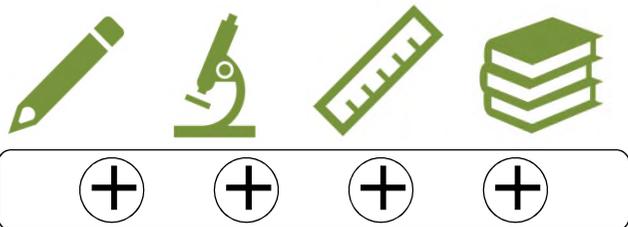
Supports process of planning, buying, and making

Applied on a local district market





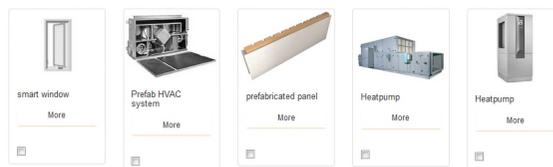
You have a renovation project or product?  
The P2Endure Marketplace concept can help!  
...but you don't know how to integrate it into the  
market?





Welcome to the  
**P2Endure E-Marketplace**

Info



(P2Endure-)Products

Start Calculation

Visualisation of the (as is)  
building model



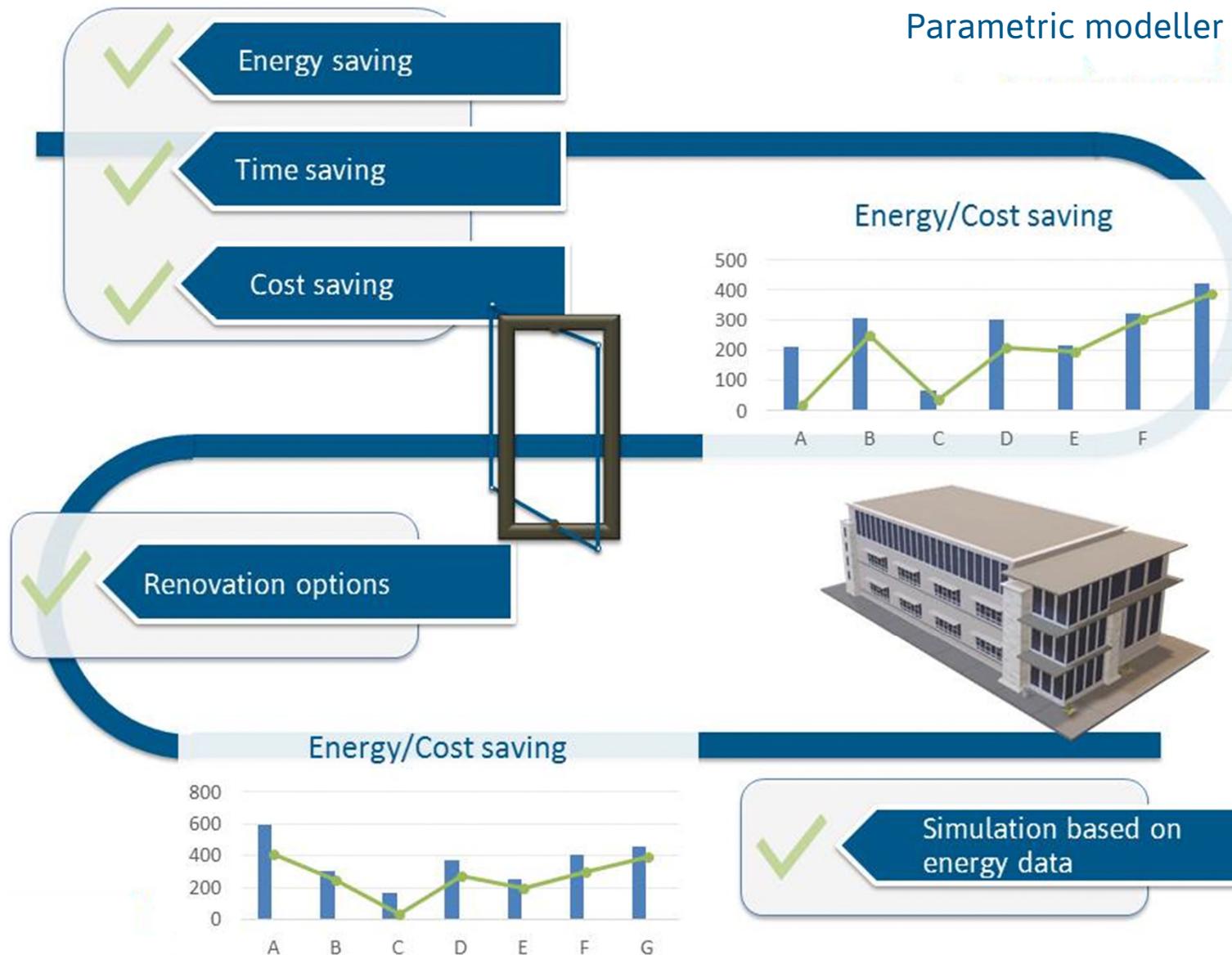
Present energy data based  
selected design options

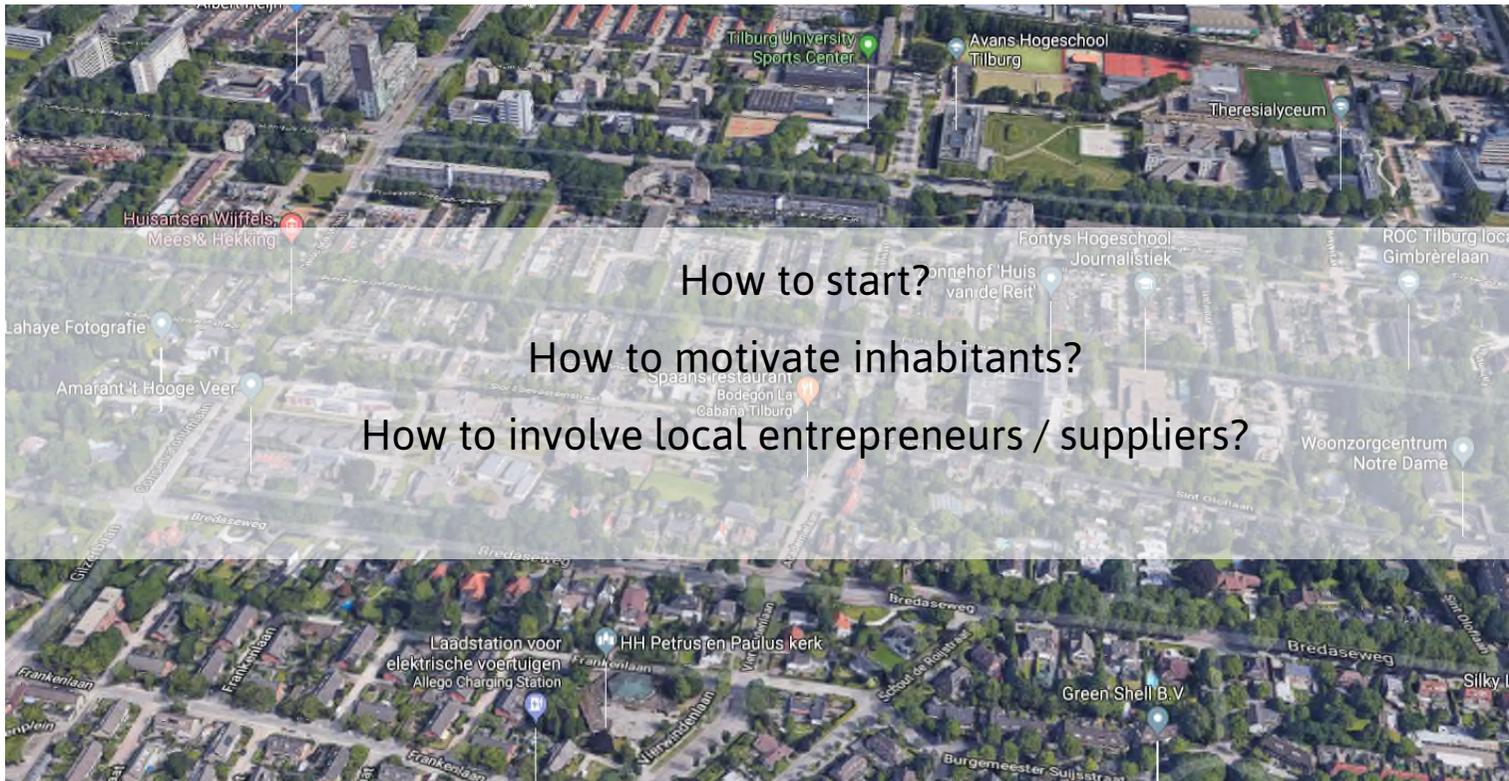
Visualisation of (as is) energy  
data





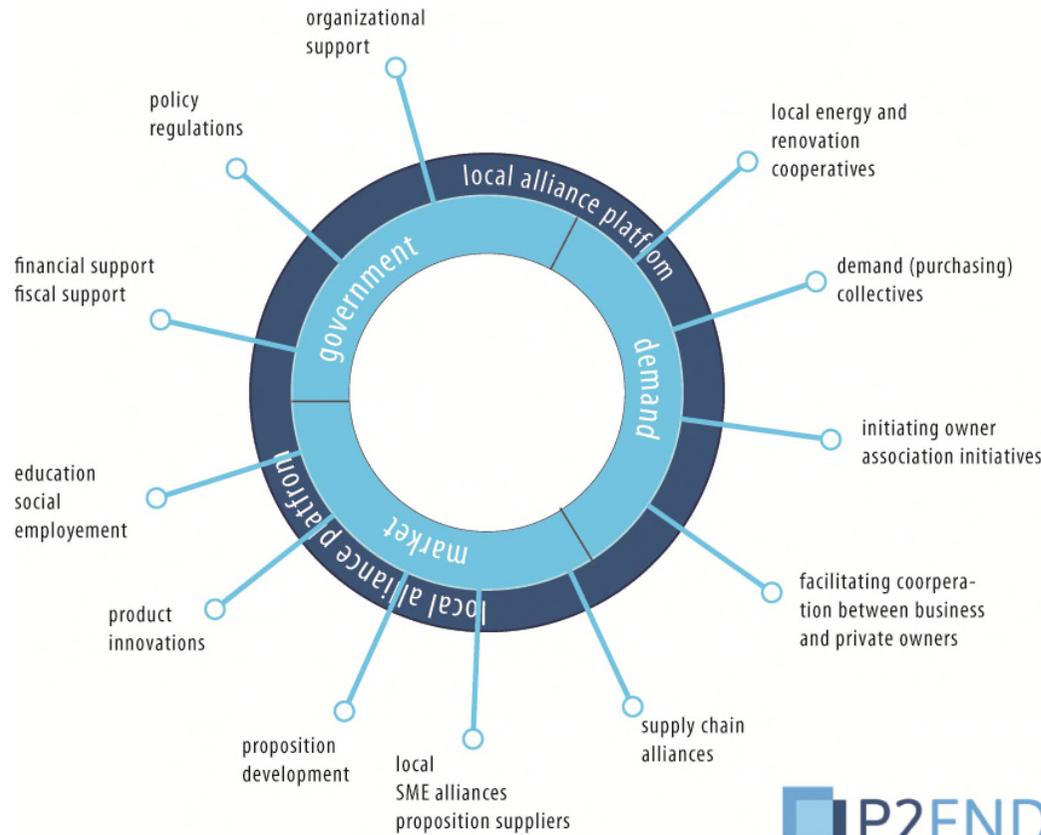
Parametric modeller workflow





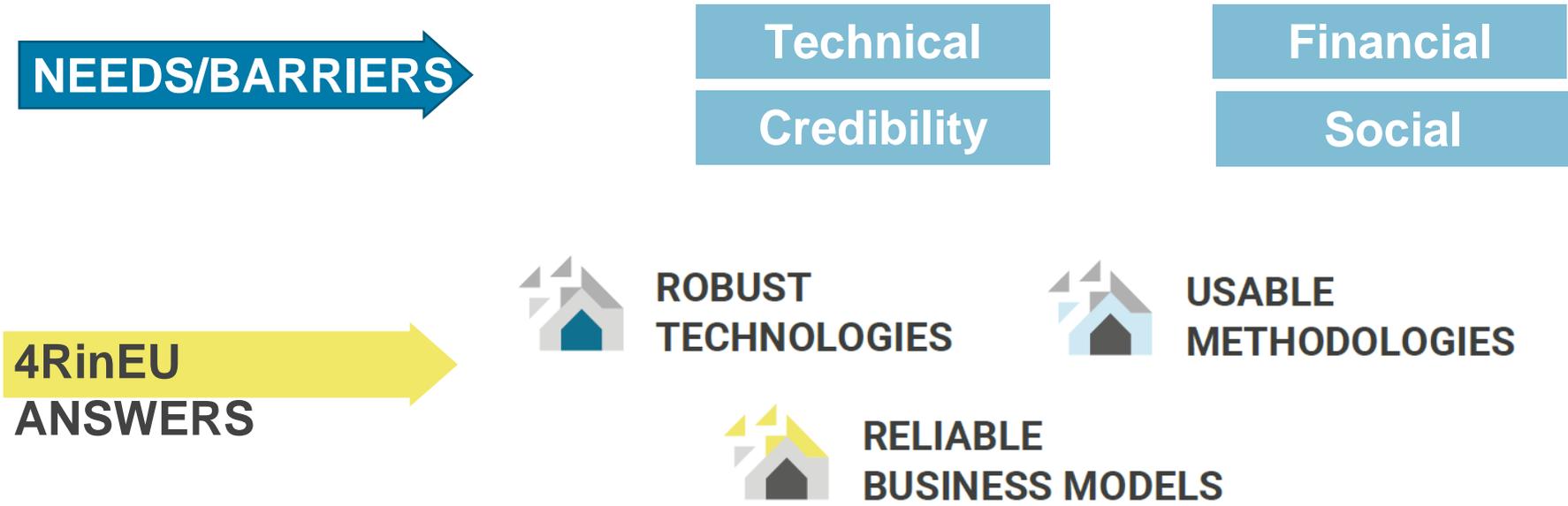


Testing of district alliance approach in Tilburg (NL)





**Fact: we are far from the targeted 3% EU building stock renovation**



**Impact: to increase efficiency of the whole deep renovation process**



**4RinEU - Technologies**

**TO REDUCE ENERGY DEMAND**



**Prefabricated Multifunctional facade**  
 gumpp & maier  
 solutions made of timber

**TO IMPROVE ENERGY EFFICIENCY**



**Plug&Play Energy Hub**

**TO IMPROVE OPERATION**

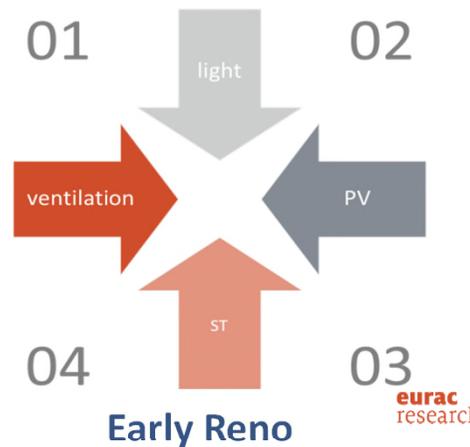


**Sensible Data Handler**



eurac research

**Comfort ceiling fan operation**



eurac research

**Early Reno**



acciona  
 Infraestructuras

**Component end of life**



## 4RiNEU - Methodologies

To support the stakeholders along the **whole renovation process**, helping to understand renovation issues and associated potentials, to ensure an effective and **participated design**, to manage the construction site and **reduce the working time and the associated failures**.

TO ACCURATELY UNDERSTAND  
THE RENOVATION POTENTIALS



Cost-Optimal Energy Audit

TO ENSURE EFFECTIVE AND  
PARTICIPATED DESIGN



Investor and user-oriented  
design platform

TO REDUCE CONSTRUCTION  
TIME AND FAILURES



Deep renovation  
implementation  
management



## **4RinEU - Business models**

Fed with the technologies and the methodologies.

They will drive the investors in deep renovation, supporting them to identify the **level of risk of renovation process** and enable **well-founded investments** supported by tailor-made financial tools.

**TO IDENTIFY THE LEVEL OF RISKS AND TO  
ENABLE WELL-FOUNDED INVESTMENTS**



 **SINTEF**

**Cost-Effective rating system**

# Exploitation of Business Models for Deep Renovation

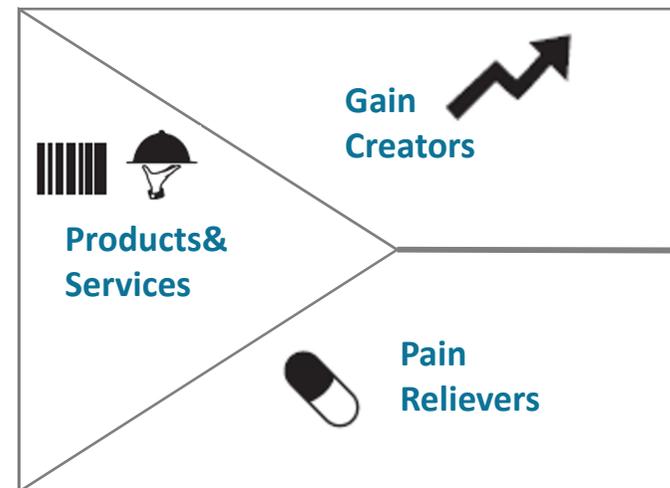
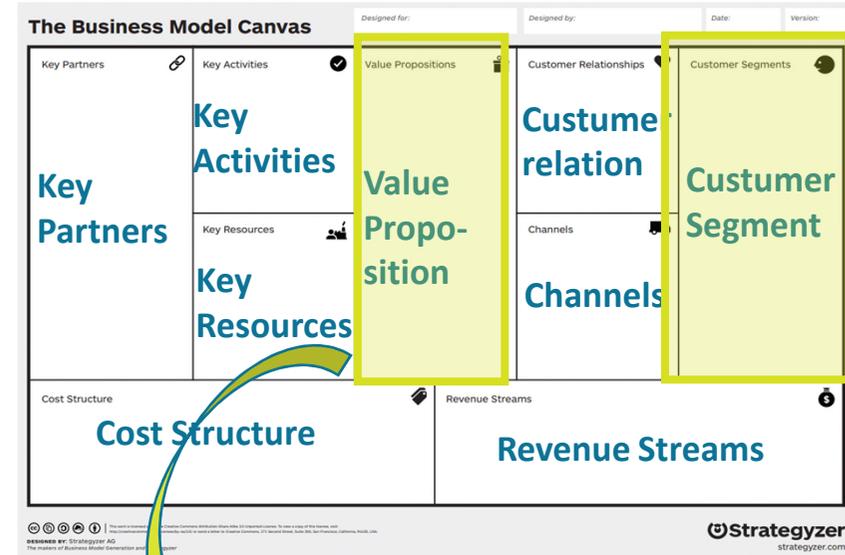
Roberta Perneti (eurac research), Marco Pietrobon, Giulia Guazzi (R2M)



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## 4RinEU - Exploitable results

#	Type of ER	Exploitable result
1.	Product, Knowledge/IP	Prefabricated multifunctional façade
2.	Knowledge/IP	Comfort ceiling fan smart operation
3.	Product	Plug & Play Energy Hub (PPEH)
4.	Process/Methodology	Early-RENO
5.	Product	Sensible Building Data Handler
6.	Process/Methodology	Guidelines and technology concepts for managing building end of life
7.	Service, Process/Methodology	Cost-optimal energy audit
8.	Product	Deep renovation BIM based collaborative design platform
9.	Process/Methodology	4RinEU Strategy towards Deep Renovation
10.	Process/Methodology, Knowledge/IP	Cost-effectiveness rating system



# Exploitation of Business Models for Deep Renovation

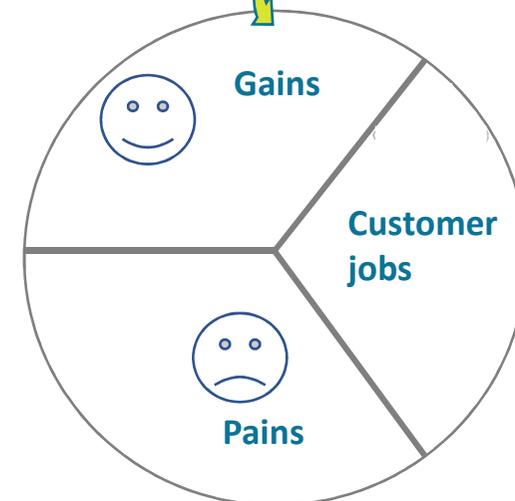
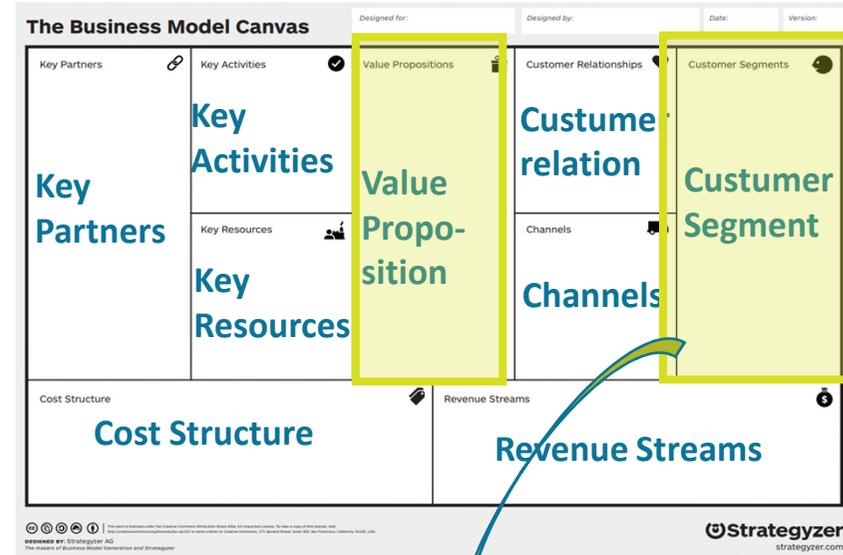
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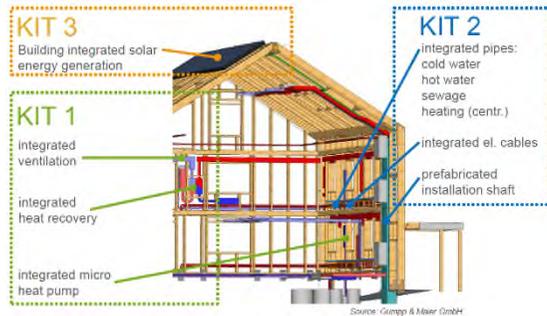
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8.	Product	Deep renovation BIM based collaborative design platform
9.	Process/Methodology	4RinEU Strategy towards Deep Renovation
10.	Process/Methodology, Knowledge/IP	Cost-effectiveness rating system





## 4RinEU - Value proposition – PM facade



### Development process

Technical concept



Prototyping & lab test



Guidelines and support for the implementation

### Products & Services

- Multifunctional prefabricated façade: prefabricated façade components integrating functions (opaque and transparent façade surfaces, aesthetic quality, thermal insulation, air tightness, solar shading devices, natural ventilation, mechanical ventilation with heat recovery - vents, ducts, fans, units, ... -, plug & play energy hub, etc.)
- Design and construction as integrated service
- Consulting and design services to support other construction companies, public bodies, etc.



## **4RinEU - Value proposition – PM facade**

### **Gain Creators**

- Quality and performances assurance
- Environmental sustainability for materials and procedures
- Opportunity to have faster and high quality solutions for renovation
- Integrated and comprehensive solutions for renovation (multifunctional facade)
- Avoiding needs of moving for building occupants
- Opportunity to have one unique contact/responsible for design and construction
- Solution suitable for high performance level buildings

### **Pain Relievers**

- Uncertainty in quality and performances
- Uncertainty in time and costs
- Contacts and coordination with several and a lot of responsible actors involved
- In many cases, building occupants can remain in their apartments without moving temporarily
- ...



## 4RinEU - Customer segmentation– PM facade



Customer Job(s)

- Certain and faster time
- Certain and lower costs
- Certain features and performance
- Environmental sustainability reputation

Gains 

- Renovation solution with faults and low performances
- Uncertainty in performances
- Longer time for renovation
- Higher costs for renovation
- Needs to deal with many different actors of the chain
- Needs for tenants to move out during renovation

Pains 

- Guaranteeing and procurement of maintenance and refurbishment of multi-families residential buildings
- Procurement of Energy retrofit of multi-families residential buildings
- Adopting environmental sustainability solutions
- Controlling and reducing time and costs of renovation intervention

**Housing companies  
- public and private**



## 4RiNEU - Customer segmentation– PM facade

- Support to the design of PMF
- Support to develop technical documents of public tender including PFM
- One contact responsible for many aspects integrated in PMF
- Chance to offer innovative, high quality and sustainable product

Gains



- Lack of knowledge in the field of PMF
- Needs to deal with many different actors / responsible people of the chain
- Uncertainty in quality offer by the components after the installation - design quality gap issues

Pains



Customer Job(s)

- Design and consulting activities for refurbishments
- Energy analysis, energy and environmental certification for refurbishments
- Quality checks and assurance during the renovation work on-site

**Designers and  
Consultants**



## 4RiNEU - Customer segmentation– PM facade

- Certain and faster time
- Certain and lower costs
- Certain features and performance
- Saving of money for energy bills
- Better comfort condition in their apartment

Gains 

- Renovate their buildings saving costs and time
- Saving energy bills costs
- Improve thermal and visual comfort condition of their apartments

 Customer Job(s)  
   
 

- Renovation solution with faults and low performances
- Uncertainty in performances
- Longer time for renovation
- Higher costs for renovation
- Needs to deal with many different actors of the chain
- Needs for tenants and owners to move out during the refurbishment

Pains 

**Building Owners**



## 4RinEU - PM façade – further exploitation opportunities

- **Engineering - consulting services** from the company: role as project facilitator / coordinator and consultant for prefabricated and multifunctional components (like in Oslo demo site)
- **Consultancy for public bodies** (e.g. municipalities, social housing) needs experts supporting the renovation for the design phase
- **“Expertise hub”** for refurbishment intervention

gumpp & maier  
solutions made of timber

4RinEU  
partner -  
consultant

LSE Lindal Smith  
Elementer

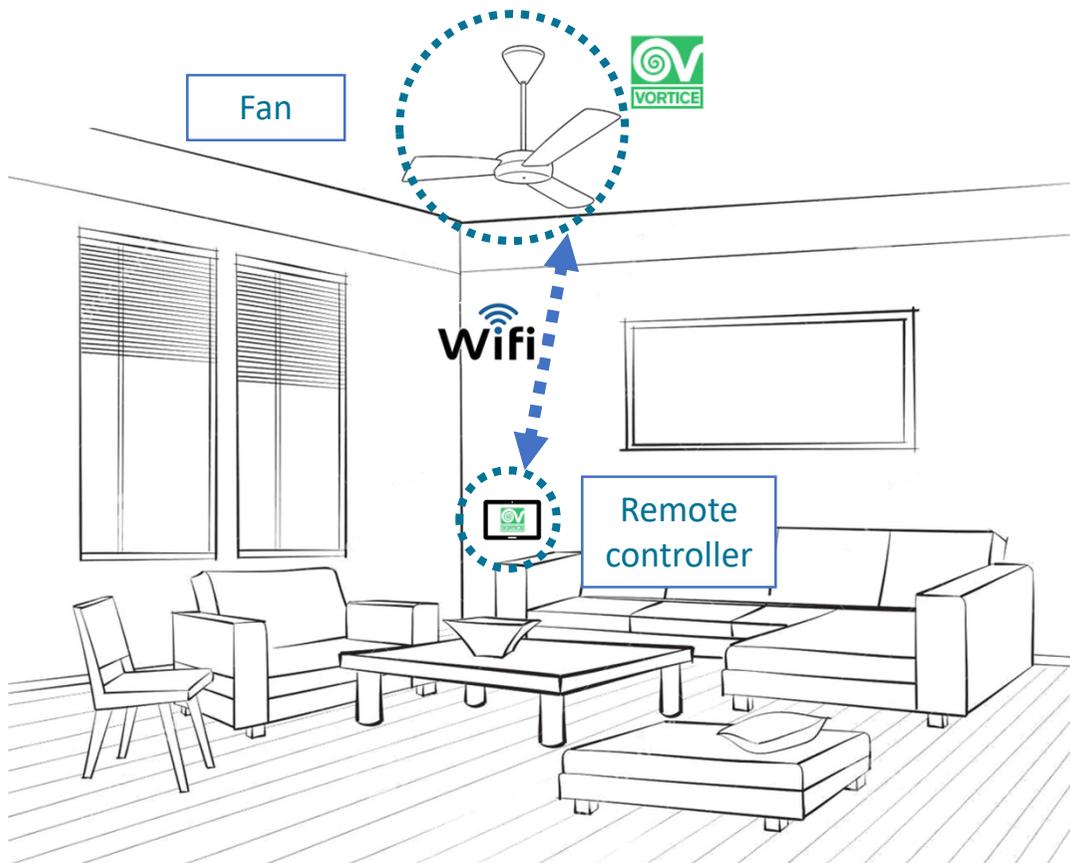
Local  
manufacturer





## 4RinEU - Ceiling fan control algorithm

- Lead beneficiary - eurac



- the result of 4RinEU is a control algorithm tested in eurac facilities
- Exploitation: set-up a collaboration with VORTICE → implementation of the algorithm in a real product



## 4RiNEU - Cost-effective rating tool

Identification of a set of Key Performance Indicators dealing with 5 thematic areas:

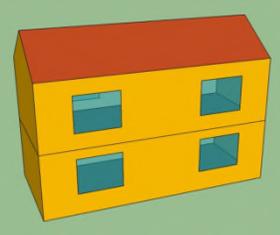
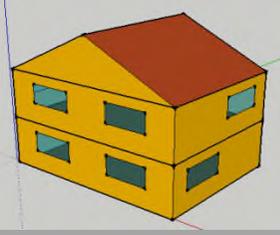
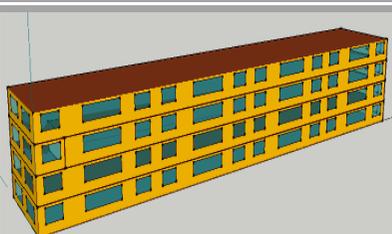
- Energy
- Environment
- Comfort & IAQ
- Economic issues
- Building site management

KPIs	
<b>Energy</b>	
Energy demand for heating/cooling/ventilation/DHW production	[kWh/m <sup>2</sup> ]
Energy produced via PV system	[kWh/m <sup>2</sup> PV surface]
Electricity self-consumption	[kWh/m <sup>2</sup> ]:
Energy produced via ST systems	[kWh/m <sup>2</sup> ] - [kWh/m <sup>2</sup> ST surface]
ST energy balance	[kWh/m <sup>2</sup> ] - [kWh/m <sup>2</sup> ST surface]
<b>Environment</b>	
Co <sub>2</sub> Emissions	kg CO <sub>2</sub> /year
<b>Comfort &amp; IAQ</b>	
Number of hours category IV cold/IV hot	[h]
Overheating Degree Hours	[°C]
N. hours where CO <sub>2</sub> concentration is higher than limits Category I	[h]
<b>Economic issues</b>	
Net Present Value of the renovation (25 years)	[€/m <sup>2</sup> ]
Investment cost for the renovation	[€/m <sup>2</sup> ]
Energy Costs (Before/After Renovation)	[€/m <sup>2</sup> ]
<b>Building site management</b>	
Total work duration /Task duration	[d], [h]



# 4RiNEU - Cost-effective rating tool

## Background of the tool

Geo-cluster Geometry	Building characteristics
	Archetype: TERRACED HOUSE (TH) Reference floor area: 88 m <sup>2</sup> Floor Height: 2.8 m
	Archetype: SINGLE FAMILY HOUSE (SFH) Reference Floor Area: 228 m <sup>2</sup> Floor Height: 2.5 m
	Archetype: APARTMENT BLOCK (AB) Reference Floor Area: 1330 m <sup>2</sup> Floor Height: 2.6 m
	Archetype: MULTIFAMILY HOUSE (MFH) Reference Floor Area: 3456 m <sup>2</sup> Floor Height: 2.8 m

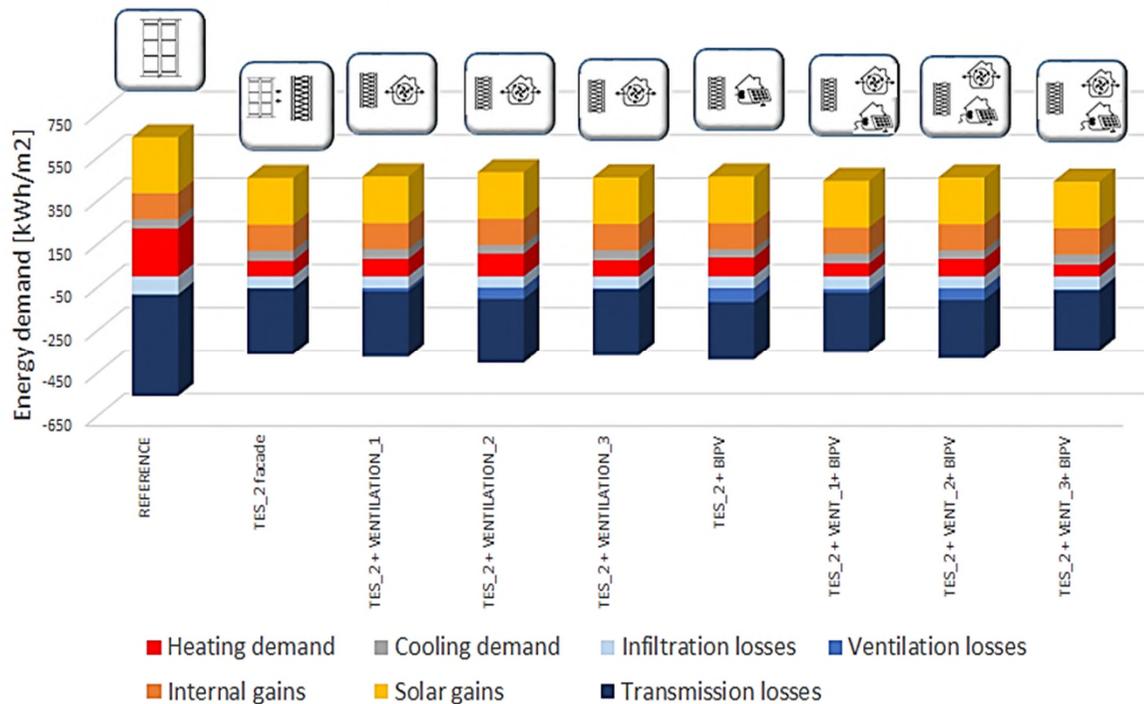


24 building archetypes in 6 reference countries

- Definition of the renovation concepts
- Performance assessment of a set of variants



# 4RinEU - Cost-effective rating tool



- Renovation priority – one of the five thematic area
- Context
- Building type



4RinEU renovation package maximising the effect on the renovation priority

## Presentation of STUNNING project

Nicolas PERAUDEAU, Consultant at DOWEL Management



**SUSTAINABLE  
PLACES**  
2019 June 5-7, 2019  
Cagliari, Italy



**STUNNING**

**Topic: Sustainable business models for the deep renovation of buildings**

Starting date: October 2017

End date: September 2019

Call for proposal: H2020- EEB-2017

Funding scheme: CSA (Coordination and support action)

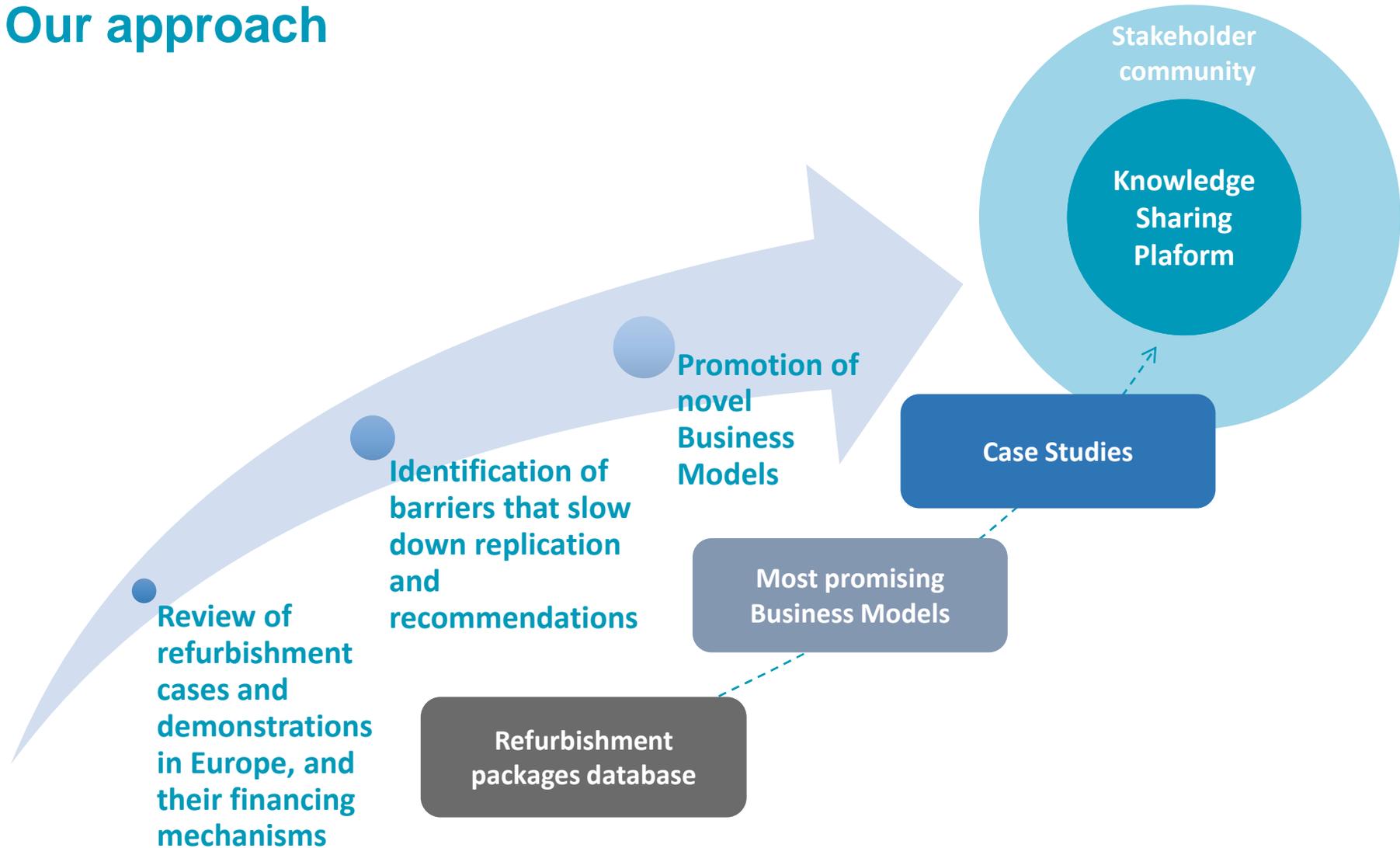
Total cost: 1.045 M€

Consortium:





## Our approach



## Our work on refurbishment packages

- **Review of existing/emerging technical solutions for building refurbishment**
  - Integrated approach, i.e. combination of solutions that are implemented together to optimise energy efficiency
  - Commercial packages
  - Innovative solutions developed by EU projects
- **Calculation of cost-benefit indicators**
  - Economic indicators for different types of packages, based on real data (renovation cases) or demonstrations.
- **Presentation on the Renovation Hub**





## Our work on refurbishment packages

	Envelope retrofitting					Energy Efficient Heating, Ventilation and Air Conditioning				Building integrated renewables			Building energy management		
	Internal insulation	External insulation	Energy efficient windows	Prefab facade	Multifunct. facade	Heat pump	Biomass boiler	District Heating	Ventilation with heat recovery	PV	Solar thermal	Geo-thermal	BEMS & monitoring	Smart Grid integration	Storage

« Conventional » deep retrofitting with ETICS

X

X

X or X or X

X

X and/or X

X

Energie - type Sprong

X

X

X

X and/or X



X

X

X

X



X

X

X



X

X

X

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X



X

X

X

X



X

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X

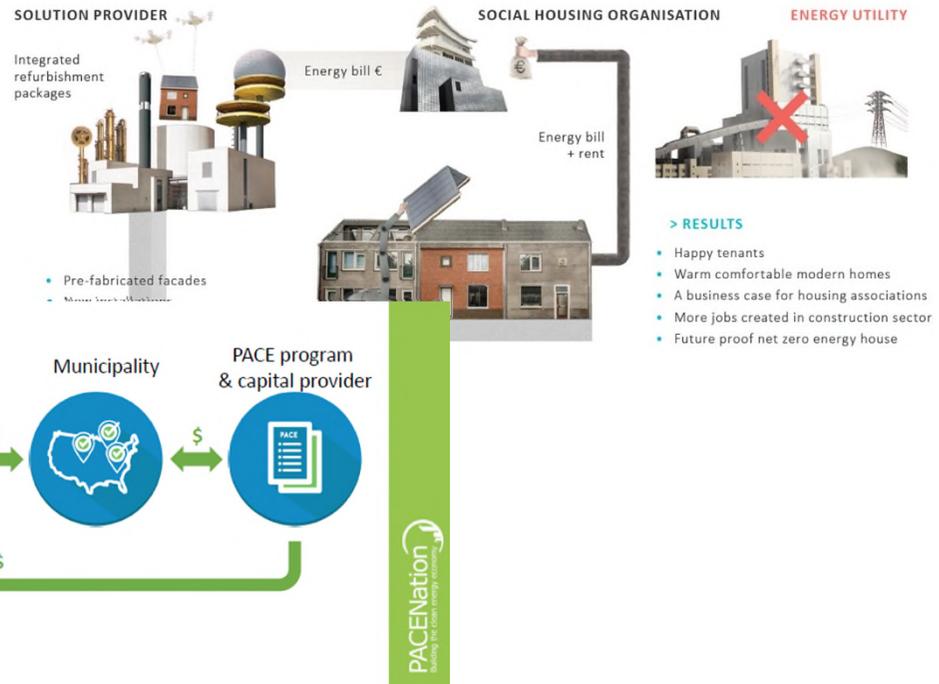
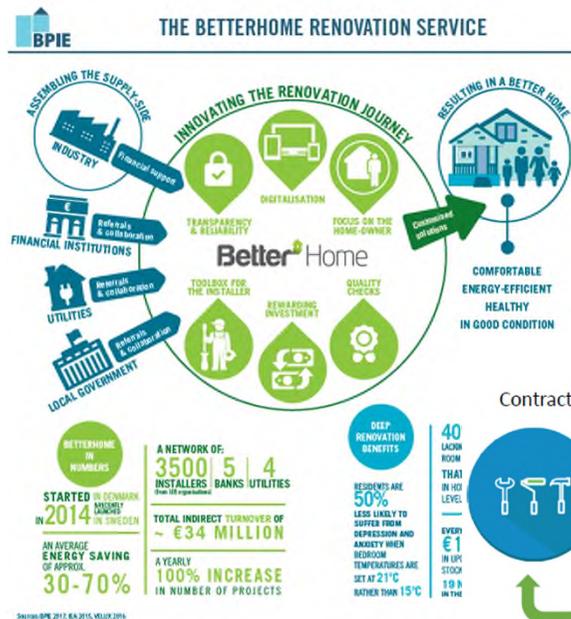
X

To be continued ....



## Our work on business models

- Analysis of innovative business models for building refurbishment
- Selection and promotion of most promising ones
  - Through the Renovation Hub, webinars, final joint event, etc.
- Concrete examples of implementation through case studies





## Our work on business models



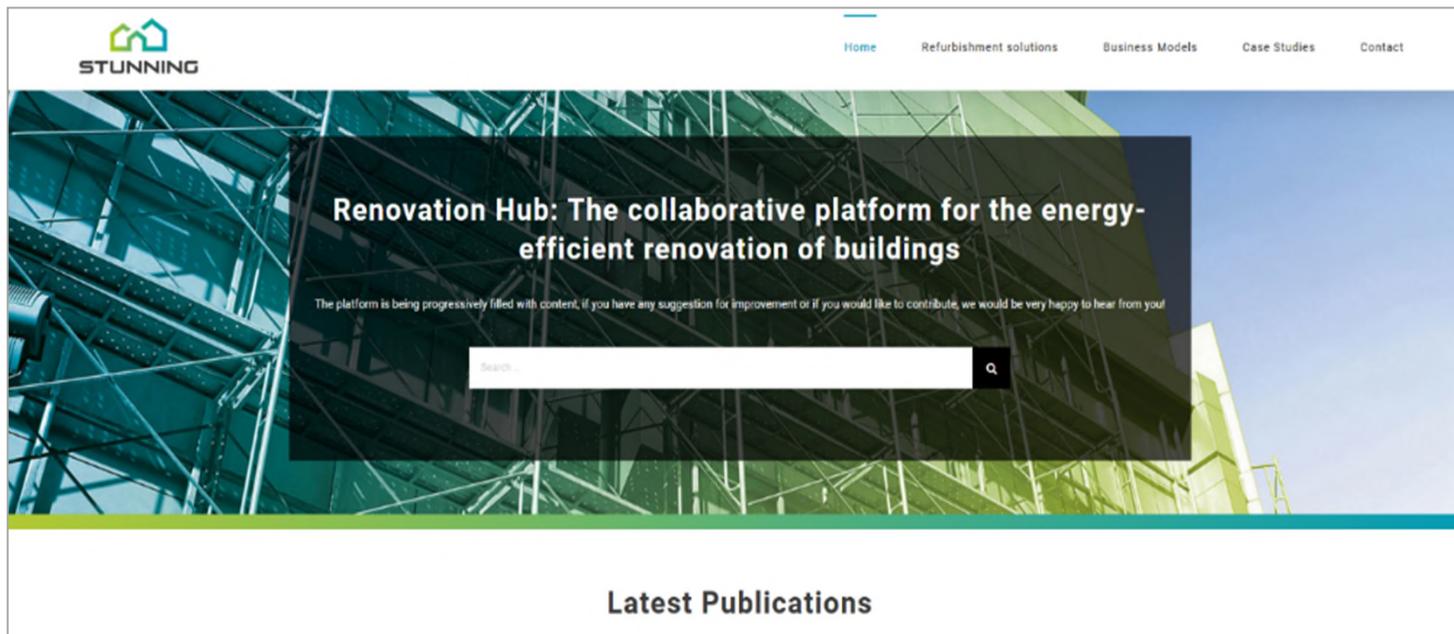


## Knowledge Sharing Platform – The Renovation Hub

**Sustainable Collaborative Platform to share knowledge on renovation packages and business models for energy-efficient building refurbishment**

- Neutral and quality-checked information
- To be sustained beyond the end of the project

<https://renovation-hub.eu/>





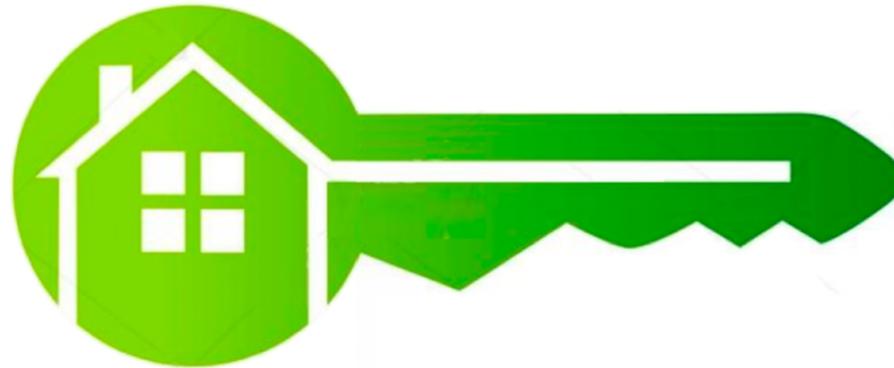
## Key findings on barriers and packages

- **Most of the barriers to energy renovation are non-technical**
  - Financing
  - Information, acceptance by building owners & decision-making process
  - Skills of contractors/ SMEs
  - ...
  
- **In order to allow the massification of renovation, successful refurbishment packages must:**
  - Be developed with a **systemic, integrated and user-centered approach**, from design to operation
  - Be combined with training activities to **build up skills**
  - Be implemented in a **coordinated approach** involving all actors
  - Be supported by **innovative business models and smart financing**



## Key findings on business models

- **Innovative business models and smart financing are required to support and accelerate the deep renovation of the EU building stock**
  - Move risk and financial burden from owners to institutional investors or banks
  - Better account for non-energy benefits (e.g. property value) to decrease risk and payback time
- **What needs to be taken into account by a successful BM?**
  - Be user-centered
  - From pains to gains:
    - Focus attention more broadly on the multiple benefits of energy renovation
    - Disconnect from the “kWh” and “payback” rationale: co-benefits such as comfort and health
  - Develop collaboration models at all levels
    - Partnerships between manufacturers
    - Involvement of third parties financiers and banks, or ESCO providing financial support
    - Alliances for economies of scale
  - Raise awareness
    - Pilot projects
    - Replication



## TURNKEY RETROFIT

TURNKEY solution for home RETROFITting

<b>Starting date:</b>	2019-06-01
<b>Ending date:</b>	2021-11-30, ongoing project
<b>Total cost:</b>	EUR 1,5M
<b>Coordinated in:</b>	France - CSTB
<b>Call for proposal:</b>	H2020- <u>EE-2-2018</u>
<b>Funding scheme:</b>	CSA - Coordination and support action
<b>Topic:</b>	<u>Integrated home renovation services</u>



- **TURNKEY RETROFIT will develop and replicate an integrated home renovation service** which will be initially operated in **France, Ireland and Spain.**
- The project will point to **further replication across Europe and Internationally** in particular via the GBC's Europe Regional Network.
- The TURNKEY RETROFIT service will be developed as a **home-owner-centric renovation journey**, which will transform the complex and fragmented renovation process into a **simple, straightforward and attractive process for the home-owner.**
- It will include the initial technical and behavioural diagnosis, technical offer, contract development and agreement, structuring and provision of financial support, as well as the on-site coordination of works and quality assurance. It will be a service-oriented model where the home-owner is offered **tailor-made solutions** through the whole customer journey.



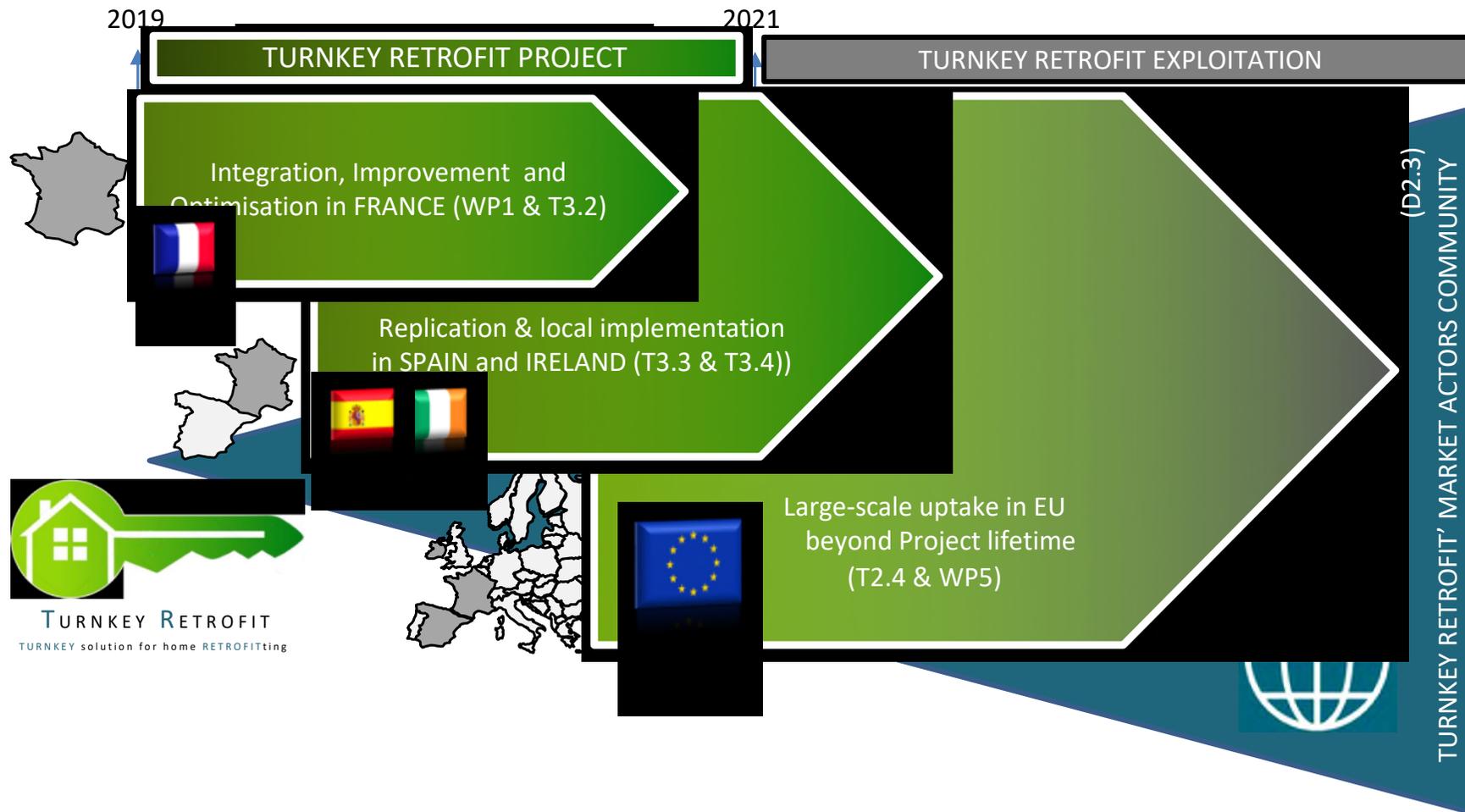
### CONVENTIONAL RENOVATION PROCESS



### TURNKEY RETROFIT PROCESS



Service accessible through a **user-friendly digital platform**. It will address **drivers of building renovation that go beyond a desire to reduce energy bills** and increase asset value, such as home improvement, increased comfort, enhanced health & quality of life.



# Exploitation of Business Models for Deep Renovation

Régis Decorme, R2M Solution



**SUSTAINABLE  
PLACES**  
2019 June 5-7, 2019  
Cagliari, Italy



<b>Number of users / supported refurbishment operations / other metrics:</b>	<ul style="list-style-type: none"><li><input type="checkbox"/> 100.000 members on the Izigloo platform</li><li><input type="checkbox"/> 50.000.000 modelled buildings</li><li><input type="checkbox"/> 100.000.000 vectorized plots</li><li><input type="checkbox"/> 8.000.000 analysed property listings</li><li><input type="checkbox"/> 700 data items loaded on a single address</li><li><input type="checkbox"/> More than 110.000 supported real estate projects on Renovation / Energy / Financing / Move – (80.000 of them on renovation).</li><li><input type="checkbox"/> <b>750 single-family homes integrated renovations supported per year</b> – <i>Note: in this figure, only the renovations where Izigloo has taken care of the whole process (from the initial diagnosis to the coordination and completion of the works) are considered.</i></li></ul>
<b>Supported building-types</b>	Detached and semi-detached houses
<b>Network of supply-side actors:</b>	<ul style="list-style-type: none"><li><input type="checkbox"/> Izigloo project advisors intervene by supporting and selecting professionals from a <b>pool of 3000 verified and certified partners.</b></li><li><input type="checkbox"/> All Izigloo partners are required to sign the Izigloo commitment charter focused on efficiency, rapidity, exemplarity, communication, excellence, and a quality post-works assistance.</li></ul>



MES LOGEMENTS ▾ MES PROJETS MES SERVICES AIDE Régis Decorme ▾

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### 844 Chemin de la Chèvre d'Or, 06410 Biot

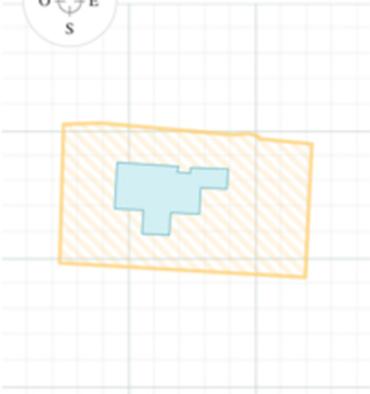
Année de construction : 1990 | Propriétaire : Régis

[Caractéristiques](#) [Cadre de vie](#) [Profil énergétique](#) [Carte](#) [Documents](#)

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#### Détails du logement

Section cadastrale	N° de parcelle	Superficie de la parcelle
AK	0237	941 m <sup>2</sup>



-  Jardin : 802 m<sup>2</sup>
-  Logement

Mitoyenneté : Non

Surface emprise au sol	138.72 m <sup>2</sup>	Nombre d'étages	2
Surface habitable	277.44 m <sup>2</sup>	Hauteur sous plafond	2.5 m
Surface utile	323.06 m <sup>2</sup>	Hauteur du bâtiment	8.4 m

Ensoleillement et bâtiments gênants

#### Jusqu'à -10% sur votre facture



- Jusqu'à -10% sur le prix du kWh du gaz et de l'électricité
- Un service client disponible du lundi au samedi

> [Découvrez comment réduire votre facture](#)

---

#### Votre conseiller

N'hésitez pas à nous laisser un message

 [Ecrivez-nous](#)

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# Exploitation of Business Models for Deep Renovation

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**izigloo** easy home, easy life    MES LOGEMENTS    MES PROJETS    MES SERVICES    AIDE    Juliette Bensoussan

Caractéristiques    Cadre de vie    **Profil énergétique**    Carte    Documents

### Vous avez eu un 6.

Vous êtes sur la bonne voie pour remettre votre maison dans le bon sens.



**6/10**

Voir le récapitulatif de mes réponses

La note 6/10 indique que votre habitat peut encore être amélioré niveau confort ou isolation. Les notes entre 4 et 7 sont les notes les plus répandues en France. Vous êtes moyennement isolé, vos systèmes font le travail mais ne sont plus tout jeunes ! Mais soyez rassuré, une amélioration de votre note est possible et loin d'être compliquée. Une simple isolation ou un changement de système suffit afin de diminuer de façon significative votre consommation énergétique. Le retour sur investissement peut être intéressant, surtout si vous améliorez plusieurs postes à la fois.

Vous voulez nous faire part de votre avis sur les résultats obtenus ?

### Vos plans travaux

Nous vous recommandons 3 formules pour entamer les travaux dans votre maison. Prenez rendez-vous avec un conseiller izigloo pour préciser vos projets !

 <b>POUR COMMENCER</b>	 <b>ALLER PLUS LOIN</b>	 <b>EN FAIRE PLUS</b>
Les travaux essentiels à réaliser	Les travaux les plus rentables	Les travaux les plus efficaces pour vos économies d'énergie
Changement de fenêtres, porte-fenêtres, ou fenêtres de toit. ✓	Changement de fenêtres, porte-fenêtres, ou fenêtres de toit. ✓	Changement de fenêtres, porte-fenêtres, ou fenêtres de toit. ✓
Installation d'une ventilation simple flux hygroréglable de type B. ✓	Installation d'une ventilation simple flux hygroréglable de type B. ✓	Installation d'une ventilation simple flux hygroréglable de type B. ✓

#### Jusqu'à -10% sur votre facture



- o Jusqu'à -10% sur le prix du kWh du gaz et de l'électricité
- o Un service client disponible du lundi au samedi

> Découvrez comment réduire votre facture

---

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<b>Number of users / supported refurbishment operations / other metrics:</b>	<ul style="list-style-type: none"><li><input type="checkbox"/> <b>4 000 multi-family dwellings already supported</b> in their renovation project – average of 30% energy savings, mainly deep renovation operations.</li><li><input type="checkbox"/> 80% of financial feasibility proposals submitted by Operene resulted in actual renovation works</li></ul>
<b>Supported building-types</b>	Multi-family buildings
<b>Network of supply-side actors:</b>	<b>More than 40 SMEs committed</b> to conduct the refurbishments operations

# Exploitation of Business Models for Deep Renovation

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## Qui êtes vous ?

- 25 entreprises du secteur du BTP
- 12 corps de métiers représentés
- 5 territoires représentés :
  - Grand Lyon
  - Metro de Grenoble
  - Savoies
  - Ain
  - Drôme



# Exploitation of Business Models for Deep Renovation

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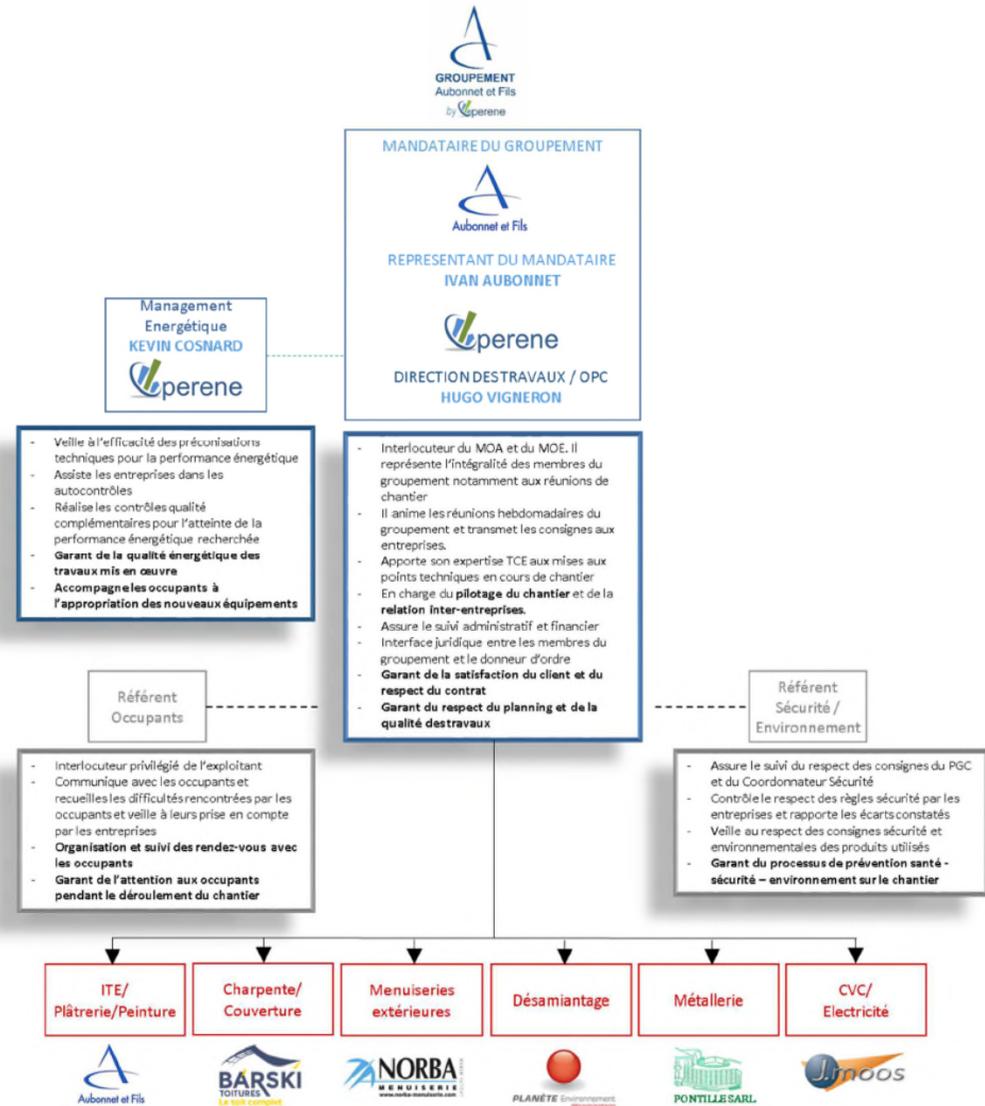
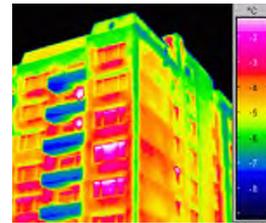
Les Hautins à Saint-Genis-Pouilly



Les 5 Chemins située 5 rue François Mitterrand à Tassin-la-demi-lune



Résidence Les Cervidés Sauvage située à Bourgoin Jallieu



# Exploitation of Business Models for Deep Renovation

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	 izigloo <small>easy home, easy life</small>	 perene	 TURNKEY RETROFIT
Multi-family housing		X	X
Single-family housing	X		X
Innovative business models	X	X	X
Added-value services going beyond energy renovation	X		X
Digital supporting tools	X		X
<i>Other European initiatives and their key strength(s) which will be considered:</i>			
 Energie Sprong	<i>Innovative business models</i>		+
 Better Home	<i>Digital supporting tools &amp; Innovative business models</i>		+
 SIRE ReformANERR	<i>Proven communication methods with stakeholders</i>		+

**Exploitation of Business Models for Deep Renovation**  
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