D3.1. The BuildUPSpeed MAP tool definition

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Revision history

Date	Version	Author	Revision by	Comments
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Jun. 2026	**V3.0**	Ana Sanchis Huertas, Vera Valero, Miriam Navarro Escudero (IVE)	Sara Dorregaray Oyaregui (ACR), Eren Cavusoglu (DEMO)	

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Acronyms

BIM	Building Information Modelling
B-MAP	BuildingUPSpeed Market Activation Platform
CJ	Customer journey
GIS	Geographic Information Systems
IFC	Industry Foundation Classes
LAB	Local Advisory Board
MAP	Market Activation Platform
MCDA	Multi-criteria decision analysis
PPP	Public and private partnership
SME	Small and medium enterprises
WS	Workshop

List of illustrations

Summary

The overall aim of BuildUPspeed is to accelerate the volume and depth of deep renovation of the EU building stock, supporting the EU renovation wave, by promoting and implementing industrialized renovation solutions. BuildUPspeed builds upon and capitalizes the results and outcomes from relevant and related H2020 projects on deep renovation, specifically projects and actions on prefabrication, BIM adaptation for renovation and industry 4.0. The project will also enhance the people and context -centred renovation process at a local and pan-EU level to make deep renovation more attractive for consumers and investors (from the public and private sectors), environmentally friendly and cost effective. Moreover, BuildUPspeed will also use the approach and utilize networks of several chapters of the 'Energiesprong' and 'Stroomversnelling' (like in NL, IT, FR, AT).

For this purpose, BuildUPspeed will develop and implement digital and physical Retrofitting Market Activation Platforms, and will validate them on a national MS level in five Pilot Markets and Pop-up Factories, representative of singular social-geographical-economical-policy ecosystems in Europe with the objective for a further roll out in other MS's and at the European level to support Public and Private Partnership (PPP), as endorsed by relevant EU umbrella associations in the private (UIPI International Union of Property Owners) and public (HE – Housing Europe) residential sectors.

According to Objective 1 of the project (Accelerate the volume and depth of building renovation by a Market Activation Platform for the promotion and implementation of industrialized renovation solutions), a turning point for the market uptake of the energy retrofitting of the EU building stock is the possibility of connecting and unlocking proven modular deep-renovation technologies and concepts to local market needs in a digitally way. This automation is intended as a support to clients (tenants, property owners, professionals and entrepreneurs, or public sector), and customization of solutions will be pursued, according to each profile concrete needs and expertise.

Therefore, WP3 – *Design and digitalization of the Market Activation Platform* - deals with the digitalization of the multi-target solutions, regarding their adaptation to regional climatic, building, socioeconomic and market conditions and the multi-level processes, regarding the "breakdown" of the overall retrofit process into standardized segments (e.g. awareness through best practices; design through BIM/ VR visualizations; implementation through local pop-up factories; feedback/ collaboration through validated channels), and will join and combine knowledge and approaches and communicate with tools already available, to optimize their uptake on local markets. This will be done through the implementation of a simplified ICT ecosystem that will scale-up other existing eco-systems such as: BIMspeed, 4RinEU and P2Endure, acting as a module per se regarding existing initiatives as re-MODULESS, METABUILDINGS and METABUILDING LABS, communicating to them through APIs and services, and as entry point to the different industrialized solutions according to a building location and a user profile. The construction of the digital platform follows the following main tasks:

- Stakeholders' requirements elicitation
- Definition of functional requirements & use cases

- Specification of the connection to existing eco-systems including specification of user experience & interface
- Implementation
- Evaluation
- Documentation
- Deployment (implantation)

The BuildUPspeed Market Activation Platform (MAP) aims to be a scalable tool to display, compare and share, based on several data sources and services, presenting attractive and analytical reports through a webtool. For the sake of effectiveness of the whole project development and maximize the potential results delivered by the end of the project duration, it is foreseen for this WP the adoption of AGILE and Scrum development methodologies (iterative and incremental development, adaptive planning, and direct and continued involvement of the consortium's members in the development process), considering the leaders of each work packages as the scrum leaders to keep the integrity and the success of each deliverable Therefore, these tasks are to be regarded not as a list, but a loop that will be progressively updated and reviewed to take into account the results and suggestions that will come from the other project WPs.

1 Introduction

This report presents the outcomes of the task “The BuildUPspeed MAP tool definition” that involves tasks T3.1, T3.2 and T3.4 in the WP3 *Design and digitalization of the Market Activation Platform*.

The primary objective of these tasks is to analyse, design, and validate the BuildUPspeed MAP tool—a comprehensive platform strategically crafted to promote user-centric deep-renovation approaches within the renovation sector.

This document serves as a comprehensive deliverable aimed at consolidating information related to the design process of the BuildUPspeed MAP tool. It encompasses sequential releases that progressively integrate generated information as the design process evolves, encompassing tasks:

- From Task 3.1 (*MAP Framework – Analysis*): It focuses on developing the framework definition for the B-MAP tool, establishing functional requirements and use cases.
- Task T3.2 (*MAP Experience – Design*): A key outcome is the design of the tool's customer journey (CJ), user experience, and mock-ups.
- Task 3.4 *(MAP use – Evaluation):* A workshop briefing, detailed agenda and a set of design assets and tools to be used during evaluation activities.

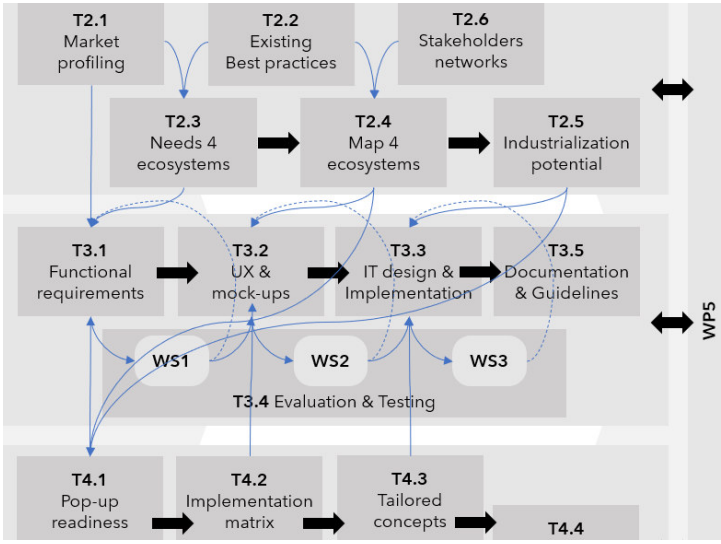


Figure 1.- Connection between tasks

Task 3.1 undertakes a systematic analysis of diverse ecosystems' market profiles, incorporating features, boundary conditions, need for industrialized solutions, and pop-up conceptualization outlined in Tasks 2.1, 2.3, and 4.1. This process involves analysing the Real Estate Management Platform (RE Suite) and other tools and project outcomes (re-MODULEES, METABUILDING and METABUILDING LABS). Stakeholders' needs and

expectations are integrated using a multi-criteria decision analysis (MCDA) into the development of use cases and the definition of functional requirements for the BuildUPspeed MAP tool.

Task 3.2 focuses on the comprehensive design of the BuildUPspeed MAP tool, shaping its system logic, interfaces, and layouts. It aims to generate an assisted customer journey map based on the insights from Task 3.1, and different solutions integration, based on Task 2.4. Consideration of market industrialization and automatization readiness allows the development of the front-end application and functionalities in the B-MAP that are translated into visualizations adapted to final user.

In Task 3.3 and T3.5 software is developed, documented and used, being reported in D3.2; and in Task 3.4, the aim is to facilitate test and evaluation of the B-MAP tool through three iterative tasks and workshops, for which clear instructions are here provided to pilot partners to decide who, when and how should be contacted to be included in the validation process of the different MAP tool releases, defining a clear path to be followed in each country and ensure that partners can run workshops autonomously in any local setting as required.

Therefore, this document compiles the outcomes of 3 tasks, dividing the deliverable into three big sections:

i) MAP Framework
ii) MAP Experience definition
iii) MAP Evaluation protocol

2 MAP Framework

The Market Activation Platform (MAP) within BuildUPspeed is crafted as a dedicated solution for the promotion and implementation of industrialized renovation practices, with a primary goal of expediting the volume and depth of deep renovation in the EU building stock. This platform, operating through a scalable digital tool, not only displays, compares, and shares information, but also generates attractive and analytical reports.

The configuration of the framework of MAP is threefold: on the one hand a background analysis is needed, then the functional requirements are to be set, according to the use cases definition.

2.1 A background analysis

This task has two ends to pay attention to: the in-house background & expectations; and the existing related tools & platforms.

2.1.1 Knowledge & objectives

Partner presentations during the first consortium meeting were analysed. They were requested to fill out a template with information on:

a. Organization profile
b. Staff
c. Added value
d. Organization goal
e. Similar projects
f. Past experiences (about circularity, urban mining, and industrialization)

Completing the information on partner profiles provides a comprehensive understanding of their strengths, objectives, and past experiences, crucial for effective collaboration in the BuildUPspeed project and the successful configuration of the Market Activation Platform (MAP). Fields from c to f are documented in Table 1.

The gathered information from each organization provides a comprehensive view of their contributions to the project consortium. In particular, the fields of added value and similar projects are crucial for understanding their capabilities and previous approaches. This detailed analysis allows the identification of similarities and valuable contributions that will give rise to the Market Activation Platform. The extensive experience accumulated by consortium members in circularity, urban mining, and industrialization forms a robust basis for their collaborative endeavour to amplify the renovation wave. The varied projects, tools, and initiatives undertaken by these organizations emphasize their dedication to advancing sustainable practices, adopting circular principles, and integrating industrialized solutions. This collective wealth of knowledge positions the consortium strategically to utilize a Market Activation Platform (MAP) as a cohesive catalyst, aligning their objectives and fostering collaboration for a more sustainable future in the renovation sector and the significant scaling up of renovation efforts.

Table 1.- Partners' background

	Added value	Organisation goal	Similar projects	Past experiences
ACR	ACR represents the market side of the Spanish ecosystem pilot for the BuildUPSpeed. ACR is pioneer in both industrialized construction and renovation projects in Spain. Thus, ACR will provide its experience in the construction sector projects as well as its knowledge of the market that can provide a holistic approach including the design and the implementation of industrialized and prefabricated solutions in a real construction worksite and the real needs and impacts of the sector.	The objective of Spanish ecosystem is, from one side, to ease the regulatory framework and facilitate the implementation of industrialized solutions at local level through the housing offices networks; and from the other side, learn by applying, test and evaluate more advanced industrialized experiences and design the business strategies and/or dissemination and training actions necessary to penetrate market and fasten and growth the renovation (and business) rates.	**StepUP** (August 2019 – October 2023). The project will deliver Plug&Play rehabilitation technologies for minimal disruption, interconnected for maximum impact on energy, costs, IEQ and user comfort. The new iterative approach to renovation, based in big data for continuous performance improvement, will reduce financial barriers and make decarbonisation of existing buildings a reliable, attractive investment.	**Circularity** Wool4Build - Improved Isolation Material for Eco-Building Based on Natural Wool (October 2015-March 2017). **Urban mining** Not apply **Industrialization** - Lean Construction - CREE system - Steel Framing - Modular prefabricated bathrooms
AEE	Through the networking of experts and international exchange, innovative and efficient renovation solutions can be disseminated. The virtual Market Activation Platform will bring together supply and demand, in an online open-source platform offering helpful and relevant information and ideas, which will accelerate the volume and depth of deep renovation of the EU building stock.	BuildUPSpeed will enable AEE INTEC to increase its knowledge and experience in the field of energy active refurbishment with prefabricated hull elements as well as circular refurbishment. Together with its industry partners, AEE is continuously developing sustainable technologies and concepts for applications to different target areas, besides other buildings. With this, it will strengthen its national and international position and will be more attractive for clients from industry and government and perform future research and development projects.	**Horizon 2020 EXCESS** FleXible user CEntric Energy poSitive houseS Grant agreement ID: 870157) **RENEWnow** - New impulses for the highly efficient energetic renovation of multi storey buildings and districts (National Research Program/ City of Tomorrow) **e80^3** - Buildinge80^3 Buildings -- "reconstruction concepts towards energy plus house standard with prefabrication, automation and network integration **RENVELOPE** - Energy Adaptive Shell to develop a cost efficient, circular, all in one solution for upgrading the existing building stock (FlagshipProjekt_4th_energy region) **IEA EBC** Annex 75 Cost effective Building Renovation at District Level Combining Energy Efficiency & Renewables	**Circularity** LCA, LCC in building renovation projects - Eu H2020 CRAVEzero - KoProLZK+ **Urban mining** ReUse of Building Materials BuildReUse - 100 percent re-use and recycling in buildings with short usage cycles **Industrialization** R&D on prefabricated building envelopes - Horizon 2020 EXCESS - RenewSchool SaLüH ! Retrofitting residential buildings with small flats affordable technical solutions for ventilation, heating and hot water

	Added value	Organisation goal	Similar projects	Past experiences
AIE	Collaboration for Sustainable Development and a resource efficient and social economy is what drives us to push for market and policy changes. We hope to be able to bring our expertise in resource management and the field of urban development into this project and push together to accelerate the transformation of the construction sector to become more resource efficient. In the project we hope to benefit from input on best-practices and a multinational perspective on renovation solutions and re-use. Working together with key players in the housing and construction sector is a welcome opportunity to work together to accelerate the market uptake of reuse and renovation of buildings in Europe.	Support and raise the re-use transfers by integrating expertise of commerce and trade. Introduce Social Urban Mining to real estate developers and inform them about realisation and potential benefits. Main target group is the real estate developer. Those are the ones that have to engage Social Urban Mining in the frame of recycling orientated dismantling of buildings. The concept itself is currently in development. AIE, as developer of Social Urban Mining and the start up BauKarussell, pushes innovation and is interested to share knowledge with other excellence hubs throughout Europe.	**BauKarussell:** BauKarussell acts as a company in the planning and implementation of recovery-oriented deconstruction through social urban mining with the involvement of social economy partners. We address building owners and institutions involved in the planning and implementation of such construction projects. **Build ReUse:** BuildReUse aims to develop fundamental concepts for the transformation of buildings with short usage cycles into a circular economy, and to promote the change in building culture that is necessary.	**Circularity** AIE is and has been working the circular transformation of multiple sectors, such as construction, food waste, packaging and the medical field. **Urban mining** Building on the experience gathered in multiple re-use projects, the creation of BauKarussel as social-urban-mining startup has put urban mining in the core of AIEs activities. **Industrialization** We work for a switch in norms and behaviours and facilitation thereof in European industries and markets. The close collaboration with industry leaders has been paramount to our successes and persistence.
DEMO	RE SUITE: - Consultancy - Software - Research	Real Estate information management. Optimal choices for creating and managing real estate.	- Reincarnate, - Inperso, - Precept. - Less energy, smarter buildings, - Smartliving EPC, - BuildUPSpeed, - BIMSpeed, - Mobilstyle, - EasySRI, - Safeway, - PRENDURE, - Enginency, - D2EPC, Inception, - INSITER, - Streamer	**Circularity** Reincarnate **Urban mining** Reincarnate **Industrialization** Insiter, P2Endure, BIMSPEED

	Added value	Organisation goal	Similar projects	Past experiences
DOMO	- Experience in important building renovation projects. - Experience in housing construction.	The missions of Domofrance are: - Manage social housing - Rehabilitate their housings - Build new housing - Develop new neighbourhoods	Housing rehabilitation with prefabricated façades (4 social landlord – 800 collective housing)	**Industrialization** Off-site construction: 400 student housing–3D Wood Module; 73 collective housing -2D industrialized facade; 62 collectivehousing3D last voyage shipping containers…
Ener2Crowd	Our expertise is deeply focused on the sustainability and in particular on the sustainable investments. We are a fintech platform with a specific goal: let people to invest in 100% green projects and get a double benefit – the first is an economical benefit given by the return on their investments, the second is an environmental benefit given by the reduction of the CO2 thanks to their investments.	We want to become the biggest sustainable investment platform in Europe with the biggest community of ethical investors.	**Lightness projects** - focus on the energy communities. **Superheero** - focus on the crowdfunding for the supermarkets with the aim to involve the clients of the supermarkets.	Project finance. Renewables Energy, Energy Efficiency, Sustainability. Business modelling.
EURAC	The research group is involved within the *Energy Efficient Buildings (E2B)* international no profit industrial association and within the *European Construction Technology Platform.* We are involved with a leading role in several *International Energy Agency* and several *European research projects.* Therefore, along the years we have developed a strong experience in energy efficient building sector, and we will bring it within the BuildUPspeed network.	**EURAC group on Energy Efficient Buildings** To counteract climate change, energy supplies must become CO2-neutral. To achieve this goal in building sector we focus our research on: - Energy flexible buildings and building clusters - Façade system concepts - Architectural solutions for natural ventilation and daylighting - Cost optimal solution-sets for NZEB with high IEQ. - The overall research driver of the group is the definition of comfortable and healthy buildings, exploiting the natural sources use of the context where they are built to minimize the energy needs.	**H2020 4RinEU** - Robust and Reliable technology concepts and business models for triggering deep Renovation of Residential buildings in EU. **H2020 INFINITE** – Industrialised durable building envelope retrofitting by all-in-one interconnected technology solutions. - **Legnattivo** (FESR Project). - **H2020 EnergyMatching** - **H2020 Cultural-e**	**Circularity** several projects with strategies on how to make the construction process, from design to end-of -life, more sustainable in terms of energy and environmental impact. Reduce, reuse and recycle are the key aspects to reduce energy and material wastes within building sector; these pillars are needed to achieve a more sustainable building stock through a better life cycle assessment. **Industrialization** technology solutions for retrofitting of existing buildings with industrialized innovative processes, both with EU and national partners, using local construction materials (as wood) and working capacities.

	Added value	Organisation goal	Similar projects	Past experiences
IBS	- 15 year experience in industrialization and prefabrication of wood frame walls - R&D experience in developing constructive system to associate wood and concrete structure	Advancing wood construction in thermal renovation, with innovative methods and prefabricated systems.	Involvement in ABER program (with Xylofutur, FCBA, Nobatek, région Aquitaine). Objective: develop innovative systems for thermal outdoor renovation and insulation Demonstration building (2019): 'Residence Canterane', renovation of 60 dwellings, (two buildings, 2 and 3 levels, 2300m² wood frame walls prefabricated with insulation, windows and cladding; occupied site)	**Industrialization** The most part of IBS activity is based on wood frame walls prefabricated in our plant, sometimes with windows and wood siding (5 000 - 10 000 m² / year).
IVE	- Working in BuildUPSpeed project represents an added value for IVE due to different reasons, such as: - Connecting and unlocking proven modular deep renovation technologies and concepts to the Valencian market needs in a digitally way. - Deeper knowledge on the EU market of industrialised & circular solutions for renovation - First experience in a LIFE project - New contacts at EU level: International collaboration with recognised partners - Opportunity to develop potential sustainable business models for BuildUPspeed services in the Valencia region	- Promote the use of industrialised solutions in the renovation of existing buildings in the Valencia region - Support all the actors in the renovation value chain by developing new products/services, such as the BuildUpSpeed platform - Quantify the economical, environmental and social benefits of industrialised renovations. - Support the Valencian Regional Government of Housing and Bioclimatic Architecture in the promotion of industrialised solutions in the region through policy instruments / initiatives.	- **DRIVE0**: Driving decarbonization of the EU building stock by enhancing a consumer centred and locally based circular renovation process – circular & industrialised renovation solutions - **INFINITE**: Industrialised durable building envelope retrofitting by all-in-one interconnected technology solutions – industrialised renovation solutions - **INPERSO**: INdustrialised and PErsonalised Renovation for Sustainable sOcieties - industrialised renovation solutions - **reMODULEES**: the Retrofitting Market Activation Platform based on the generation of standard modules for energy efficiency and clean energy solutions – similar approach to BuildUpSpeed: Platform & Capitalization	**Circularity** **RE 10:** Tool for analysing disassembly and adaptability in the renovation of residential buildings **Urban mining** **RCDs tool:** webapp to carry out the compulsary study of CDW management (according to RD 105/2008) **Industrialization** Promoting the implementation of industrialised solutions in the renovation of buildings by including them in guidelines, voluntary certifications (such as BES), building regulations, etc.

	Added value	Organisation goal	Similar projects	Past experiences
NBK	NOBATEK/INEF4 has a deep experience in sustainable construction, both at construction/renovation project (=close to the market) and innovation. We control technical and methodological development, multifactorial developments (energetic perf, LCA, circular economy, etc). Our staff works in complementary team, and overall clearly passionate	NOBATEK/INEF4 is involved in different tasks in the project, mainly regarding the evaluation of the existing prefabricated renovation solutions and the development of the platform, the study of the pop-up factory concept (wood) in France with IBS, animation of the French eco-system of the project (Rive Droite territory). Our interest is the massive development of the industrialized renovation, and support of the regional eco-system (part involved in the project)	NOBATEK/INEF4 is involved in EU project since many years, including in coordination. Main issues of our EU projects are Circular Economy, building renovation and his systems, energic management, BIM. List of our projects: https://www.nobatek.inef4.com/projets-europeen s-en-cours/ (BIM4Ren, CulturalE, HyBuild, INFINITE, VEEP, RESSEEPE, MetaBuilding, DigitalDeconstruction, RCDiGreen, E2Vent, Beem-UP, etc) We have also industrial and national innovation project regarding renovation (active or passive) systems.	**Circularity** Activities in CE for 15 years. Many projects in industrial symbiosis (wastes to construction materials), in reuse approaches in deconstruction/construction projects, draft on guidance papers in DfD and supporting system developers. **Urban mining** Urban mining addressed through reuse approaches and studies of wastes management strategies in territories (Regional to local). **Industrialization** NBK supports industrials developing industrialized passive or actives façade systems (design, simulations, prototyping, testing, promoting in the market).
PTEC	PTEC has 160 direct members, including large companies, clusters and technology centres with a wide network of connections, which indirectly helps PTEC to have an informative outreach of more than 2000 entities, mainly SMEs, thus covering homogeneously the innovation ecosystem in the Spanish construction sector. - 13 collaborative working groups - Webinars and training sessions - Communication actions - National and European projects - Events, fairs, conferences	PTEC is structured as a cooperative platform, where our members have access to a common digital space where they can collaborate with other members to achieve a common goal. The principles that enable collaboration among our members are: - Agility of operation - Transparency - Collaboration - Ethics	**Metabuilding** - Encourage investment in innovation within SMEs in the construction sector through cascade funding. - Connecting key players in the innovation ecosystem from different sectors to create an integrated value chain → Metabuilding Platform **Metabuilding labs** Create an OITB- Open Innovation Test Bed network within the construction sector to reduce one of the many barriers to entry: the cost of testing new materials for building.	**Circularity** Participation in TEKNOCIR project (*Cicular economy applied to Construction Sector*). Working group, participation in conferences. **Urban mining** Working groups → Recycling and sustainable materials **Industrialization** A working group on industrialized construction to be opened in 2023.

	Added value	Organisation goal	Similar projects	Past experiences
RHOMBERG	Accelerating construction in the field of renovation is a complex task. In our opinion, it should be approached from multiple angles: - sales/marketing processes - construction/technology/systems - circularity/sustainability The starting point is the existing building/object, which is unique. We'll then look for factors that make standardization possible. This concept was implemented into a product for balcony additions: SMART BALKON. It combines a specific project and sales process with multiple construction systems. As a next step, we're developing a façade and roof addition plus a refurbishment product.	Within the business unit, 'new business models, innovation, and digitalization' Rhomberg aims to develop solutions in the field of construction. It strongly supports the idea of sustainability & circularity. Our main focus lies in the development of easy-to-apply solutions for buildings in need of refurbishment or renovation. We always try to implement modern sales/marketing and construction processes. One major strength of our work is the understanding of a building in the context of its surroundings –this enables us to offer a diverse set of solutions. We are confident that this knowledge and the existing solutions provide tremendous value to BuildUPspeed.	**ESSBAR**–edible balcony gardens for Retrofit -an F&E project during an existing renovation - exemplifies an innovative extension system with edible vertical gardens and rainwater management can work. **SMART BALKON**- modular balcony systems that can be tailored to any type of existing building. We're striving to generate more usable space for residents through retrofitting -this increases the return on the apartments and in the end, contributes to the quality of life in Vienna. **MDab2** – a research project developing a platform that shows and evaluates the location and potential of resources & building materials of existing objects **RENVELOPE** –Energy Adaptive Shell –a project developing a cost-efficient, circular, all-in-one solution for upgrading existing building stock (FlagshipProjekt_4th_energy region)	**Circularity** NORNORM – Full Circle Workspace Subscription **Urban mining** MDab2, Recycling ground **Industrialization** Cree, WoodRocks, Office-Zero, Renowate
UIPI	- Expertise on housing policy on national, European and international level - Experience in previous relevant H2020 projects on which BuildUPspeedbuilds upon Wide network in Europe thanks to its members: UIPI will make sure that BuildUPspeed is embraced by stakeholders and therefore addresses requirements for upscaling of the concept, adoption of strategic choices by stakeholder groups of the demand side	The mission of UIPI is to protect and promote the interests, needs and concerns of homeowners and landlords at national, European and international level. Based in Brussels, UIPI represents its members vis-à-vis the EU institutions. It monitors developments at EU level and seeks to influence EU legislation and policies which have an impact on housing and real estate.	- CondoReno - TripleA-reno - Drive0 - Re-MODULES - NRG2Peers - Save the Homes - Drive 0	**Circularity** Through project Drive 0 – involvement in the preparation of Levels with DG ENVI (EU Commission)

	Added value	Organisation goal	Similar projects	Past experiences
WEBO	Expertise in production Expertise in BIM Expertise in retrofits Expertise in building processes	To scale up the renovation wave To uplift re-use of used materials To create a CO2 positive renovation process	DRIVE0 e-SAFE MORE-CONNECT	**Circularity** Yes **Urban mining** Yes **Industrialization** Yes
Zuyd University	For Zuyd, the BuiltUPSpeed project showcases how to organize the local ecosystem to arrive at a circular deep renovation and retain and apply , as much as possible , all local available energy, materials and socio-economic resources to create an ecological , economic and social impact.	The current project is in line with one of the top priorities of Zuyd addressed by the transition theme ‘ Waardevolle wijken ’ (E: Vital Neighborhoods). The Smart Urban Redesign (SURD) research centre aims to contribute to the knowledge development and dissemination to create vital, circular, and energy positive neighbourhoods.	**Drive 0** **Superlocal – Super Circular Estate**	**Circularity** https://www.drive0.eu **Urban mining** https://www.superlocal.eu **Industrialization** https://www.more connect.eu

As a summary, the whole consortium shares quite a vast experience in using and working with industrialized products and processes, with some clustered interest in circularity and urban mining, both complementary with industrialization and energy efficiency in the whole building life cycle. A collection of previous experiences in research projects will feed the project outcomes design, and will be capitalized for reuse of inspiration, for both project developments (section **2.1.2**) and their content (section **2.3**). The **common goals are to facilitate the introduction or consolidate the use of industrialized solution in different markets, through diverse angles: policy, procurement, financing, availability, knowledge, business**…enabled by the added values of our partners, representing a multi-level scope in terms of geography and administration level, and multi-target objective in terms of user profiles and stakeholders along the whole construction value chain representation.

2.1.2 Tools & platforms & other references

As starting point for the technological analysis of the different ecosystems' profiles, closely related to the consortium partners' tools and platforms are considered, such a DEMO's Real Estate management commercial platform (RE Suite), or others, results from research projects such as re-MODULEES platform or METABUILDING and METABUILDING-LABS.

RE SUITE

The Real Estate management platform (RE SUITE) provided by the project partner DEMO, includes several out-of-the-box applications and connecting with novel techniques and standards, enabling the establishment of some of the already envisioned BuildUPSpeed functionality: Smart tags for tracking, Data collection and modification of inspection data via tablets and smartphones; basic frameworks for Information analysis; BIM and GIS connections; workflow management, dashboarding, reporting, and monitoring; multi-user, multi-language environment; security measures, privacy, role and user management; diverse graphical 3D visualization; building element lists, inventories, querying, and filtering; or Interoperability with existing BIM solutions via IFC.

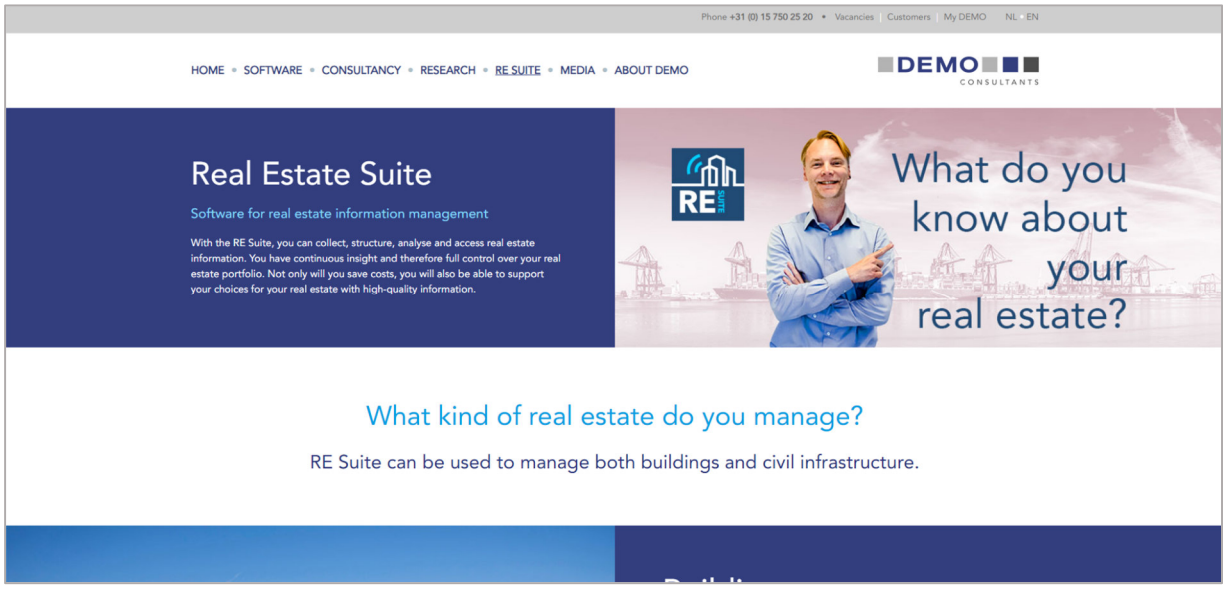


Figure 2.- RE SUITE interface

RE SUITE allows to collect, structure, analyse and access real estate information. Users have continuous insight and therefore full control over the real estate portfolio. It helps them to support their choices with high-quality information.

It contains various functionalities, applicable to both buildings and civil infrastructure:

- **Building management.**
  Space dedicated to maintenance and security through a user-friendly interface. The data collection provides reliable information and knowledge to make informed decisions.

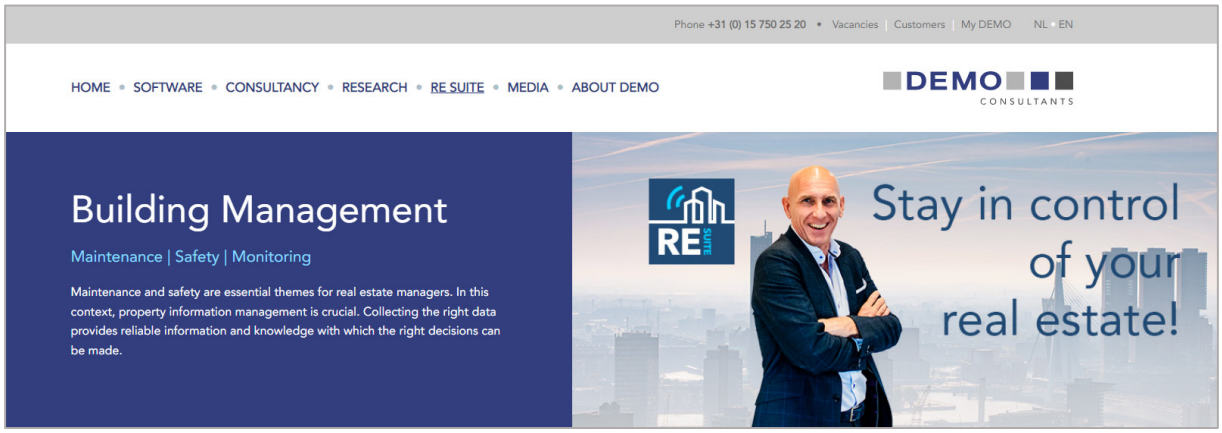


Figure 3.- RE SUITE Building management

- **RE Dashboard**
  Space designated for property managers to centralize all information about real estate. It enables understanding of the financial status, assessing energy performance, evaluating complaint handling, ensuring compliance with laws and regulations, and gauging performance against specific criteria.
  It features a user-friendly interface with various targeted dashboards and reports. This tool is designed to simplify the process, allowing the user to track, monitor, analyse, and manage real estate performance.

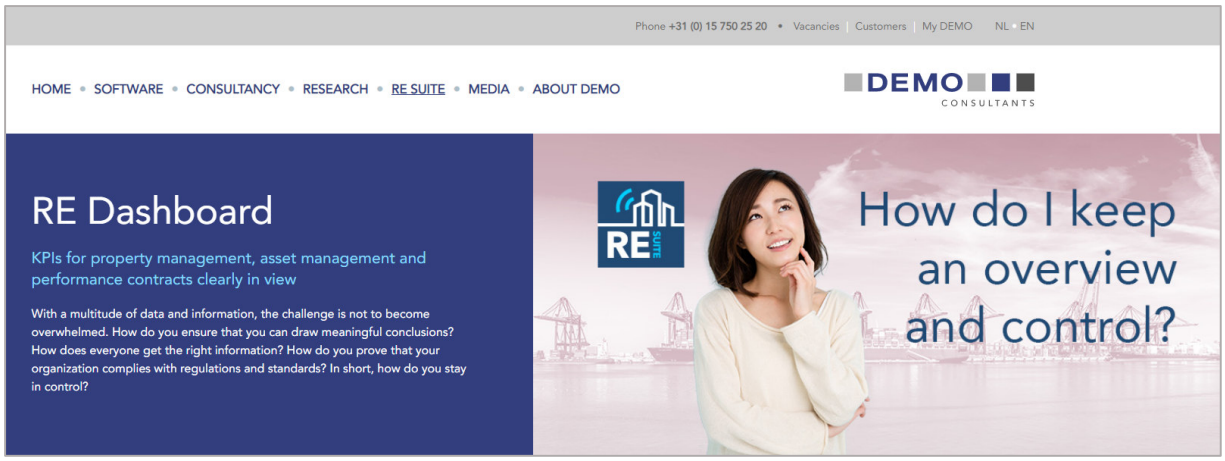


Figure 4.- RE SUITE Dashboard

- **Inspection**
  Serves as a centralized hub for building assessments, specially developed for tablets. Inspectors can seamlessly collect, register, and check data on-site. This feature streamlines the process, enhancing overall efficiency and providing information as a basis for maintenance schedules.

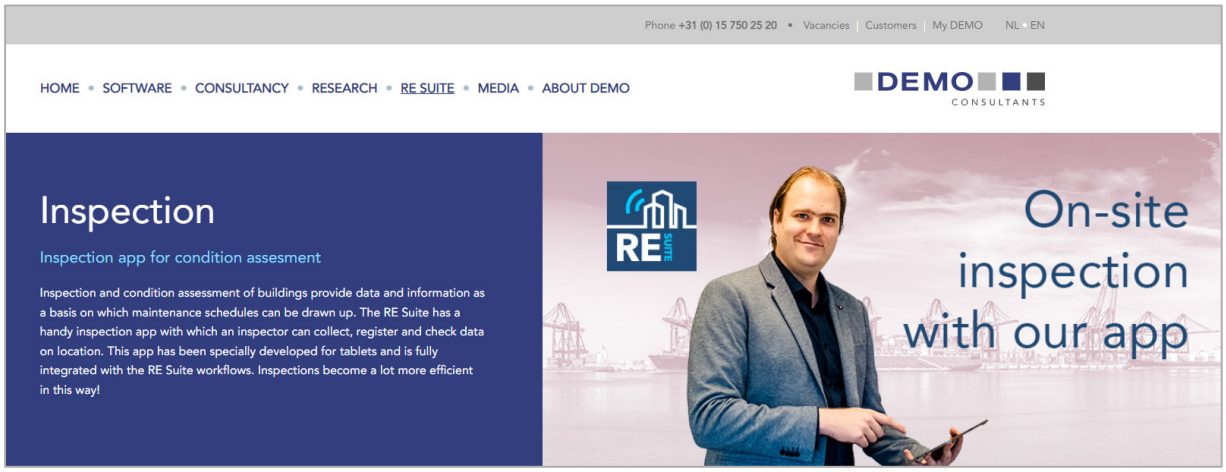


Figure 5.- RE SUITE Inspection

- **Integration BIM GIS**
  The platform incorporates advanced functionalities through Building Information Modelling (BIM) and Geographic Information System (GIS).
  BIM integration enhances efficiency and effectiveness in development and management processes for buildings and infrastructure within a digital 3D environment, supporting open BIM standards.
  GIS integration allows the geographic location of an object/asset to be related to relevant data sets, so during inspection, the exact location of an object is linked to the inspection data.

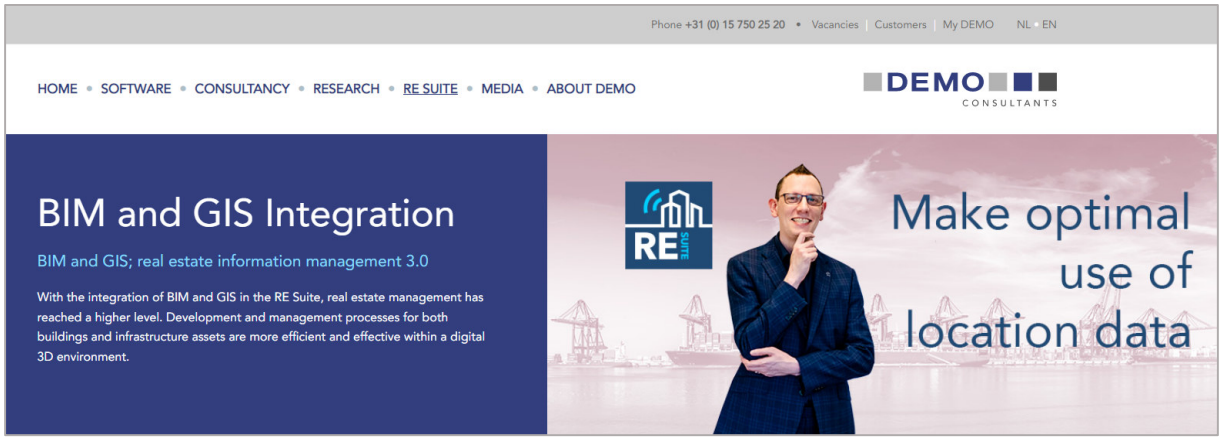
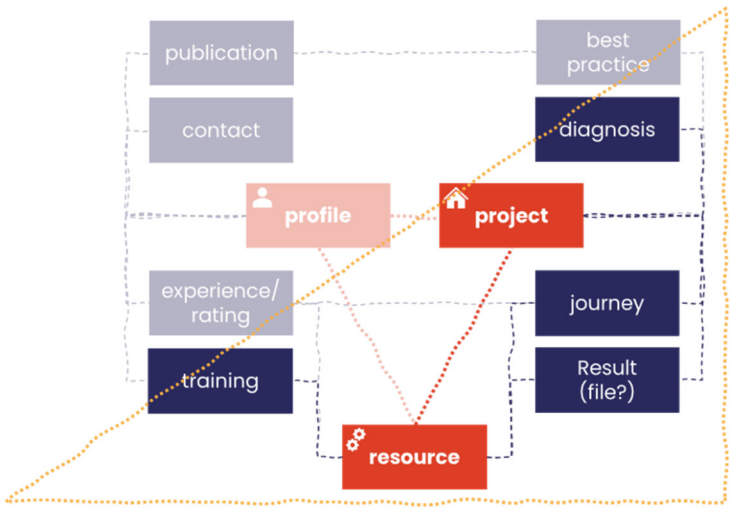


Figure 6.- RE SUITE BIM and GIS integration

- **RE Suite for monuments**
  This functionality allows the inspection and reporting on the management and maintenance of listed properties. The main functionality is to generate efficient inspections and reporting with a handy app that allows these processes just with a tablet.

In conclusion, the RE SUITE website is a multifaced tool designed for different purposes and stages of building operations, making it a versatile asset in the realm of real estate

management. Its functionalities extend from providing accurate diagnoses of building conditions to offering comprehensive solutions and analysis for efficient and effective management.



RE SUITE enables precise diagnostics and is a suitable tool for building management.

Figure 7.- RE SUITE

METABUILDING & METABUILDING LABS

METABUILDING LABS is a dynamic platform for innovation in the construction sector and emerging industrial sectors. SMEs can benefit from collaboration opportunities and financial support.

Figure 8.- METABUILDING LABS interface

The platform serves as a digital meeting place, providing SMEs with easy access to a network of innovation experts for collaboration. Moreover, METABUILDING LABS ensures stakeholders stay updated on the latest innovations.

SMEs showcase inventive products and solutions, enhancing visibility and fostering partnerships. Moreover, the project provides support in innovation, testing, and certification, ensuring product quality and viability in the market.

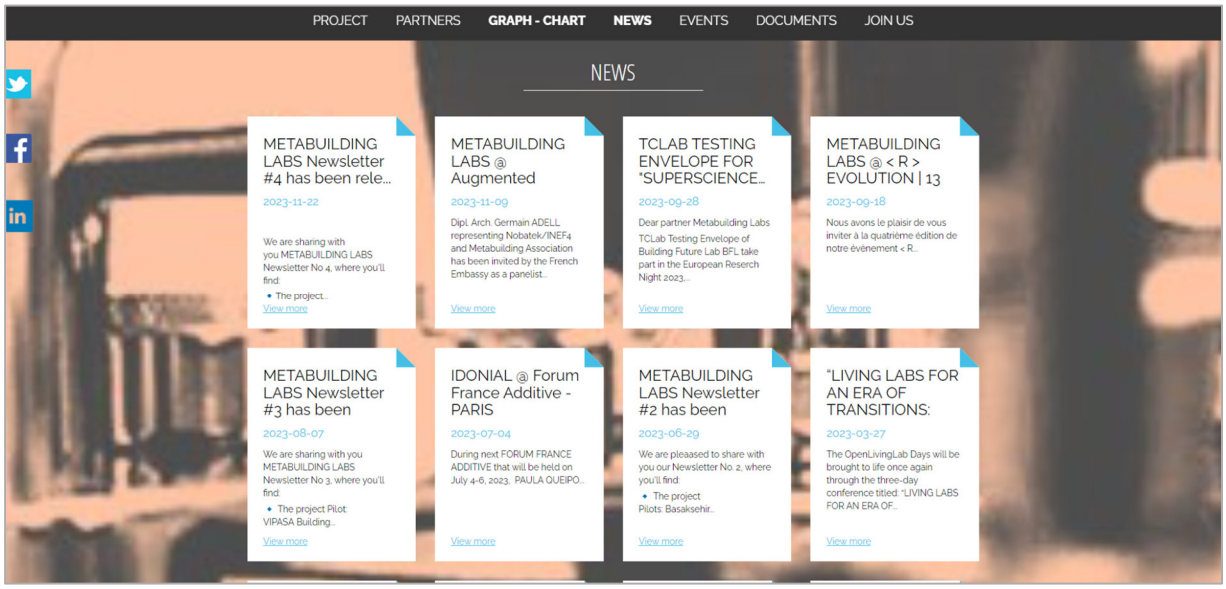


Figure 9.- METABUILDING LABS News

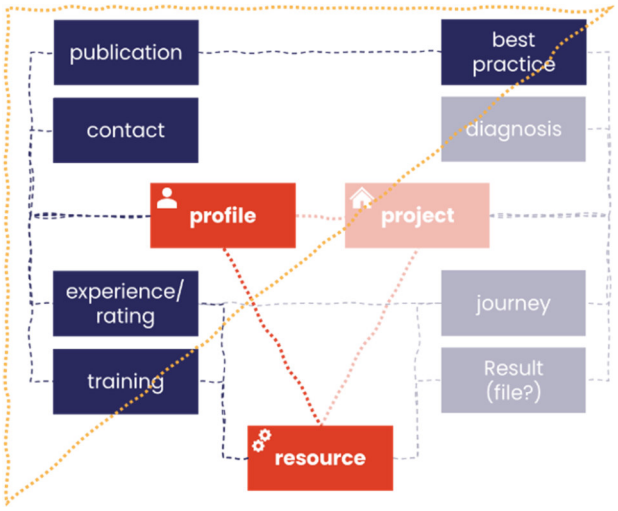


Figure 10.- Metabuilding labs

METABUILDING & LABS focus on communication & collaboration. Additionally, it serves as a showcase for innovative products and solutions in the construction sector and other emerging industrial sectors.

re-MODULEES

Re-MODULEES is a retrofitting Market Activation Platform (MAP), focusing on modules for energy efficiency and clean energy solutions. The platform aims to stimulate deep renovation by sharing knowledge, clustering efforts, and capitalizing on lessons learned from recent European projects on deep renovation, enhancing a people-centred renovation process at a local and pan-EU level, in order to make deep renovation more attractive for consumers and investors, environmentally friendly and cost effective. The project includes a GIS-based, open-source virtual renovation Hub and physical Renovation Hubs, along with Local Advisory Boards (LABs) to foster renovation.

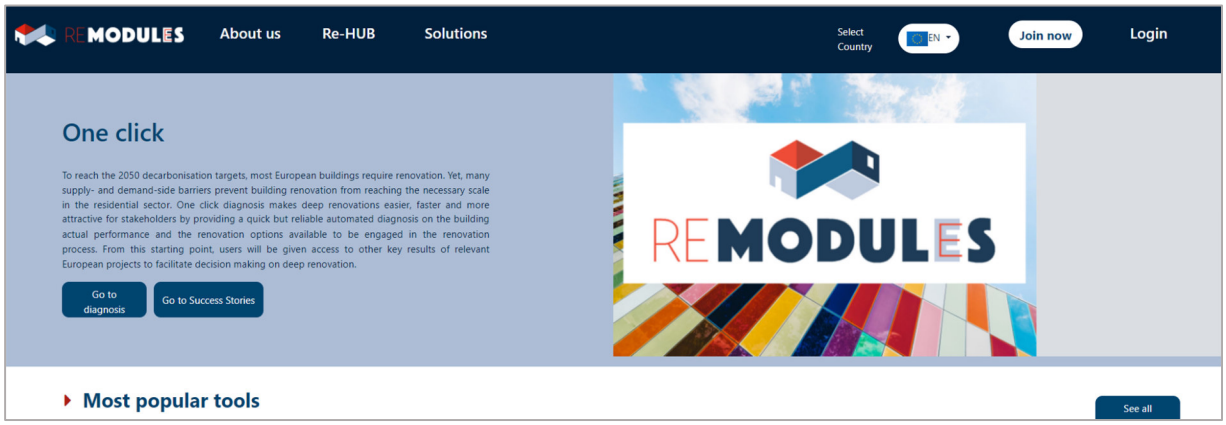


Figure 11.- Re-MODULEES interface

Re-MODULEES encompasses several functionalities:

- **Solutions Store:**
  Functions as a catalogue containing tools, solutions, and applications to support building stock retrofitting, supporting stakeholders' needs throughout the CJ. Users can employ search filters, keywords, order results, explore different menus, and propose new tools for platform implementation.

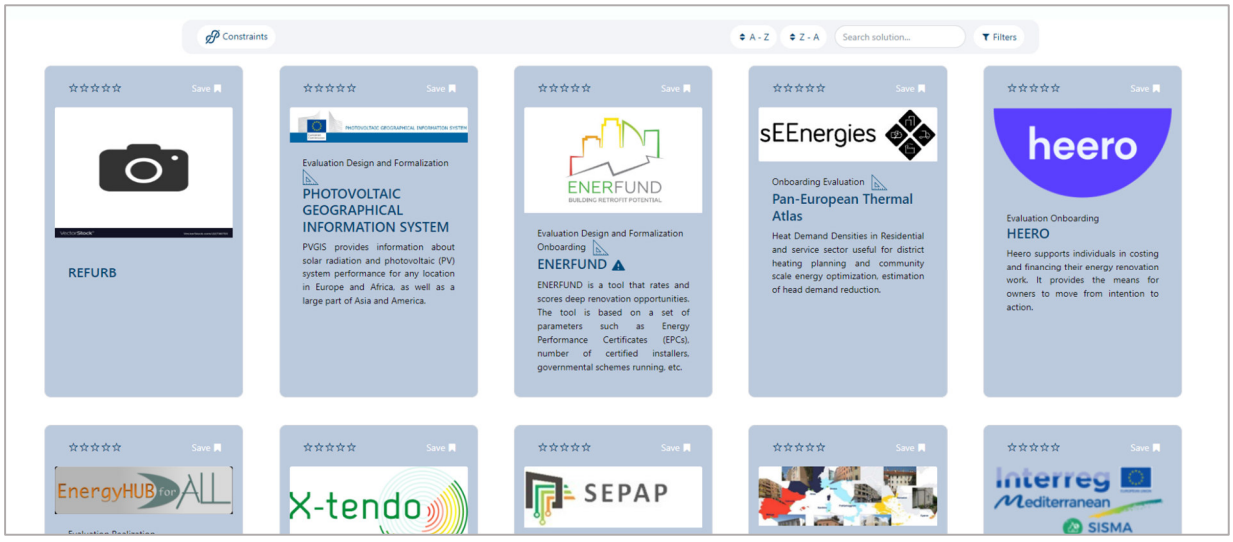


Figure 12.- Re-MODULEES solution store

- **Re-HUB**
  Serves as an interactive workspace integrating various functions:
  a. Members: Users can contact each other, save, and explore platform profiles.
  b. News: A space featuring publications on energy retrofitting, allowing users to propose new entries.

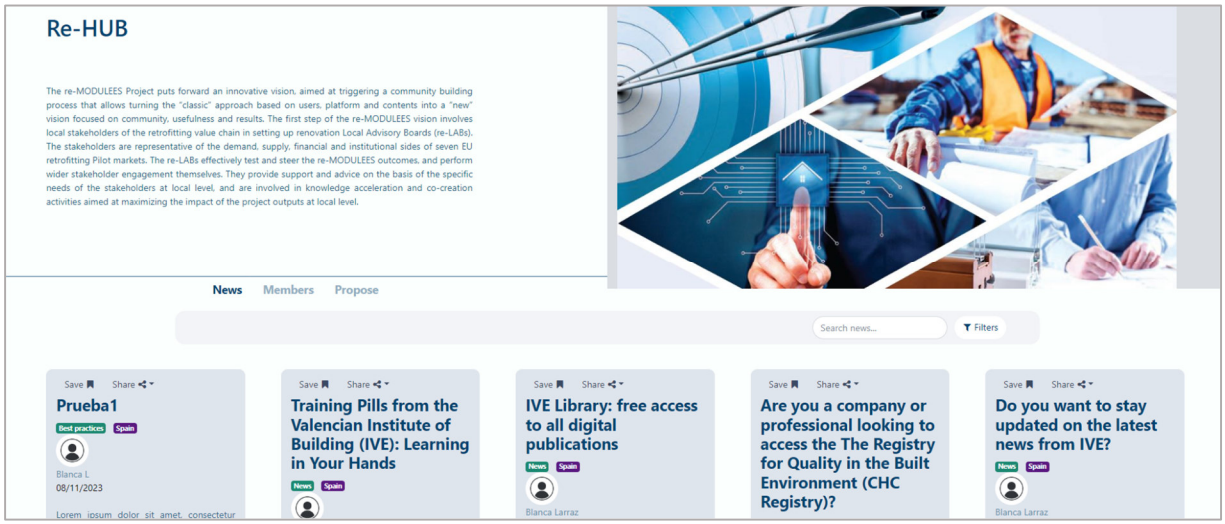


Figure 13.- Re-MODULEES Re-HUB

- **One-click Diagnosis:**
  With a single click, users can perform a self-diagnosis of their homes through a map with various layers of information, receiving two improvement scenarios: standard and advanced. Key performance indicators in energy and economics are offered for the three scenarios.

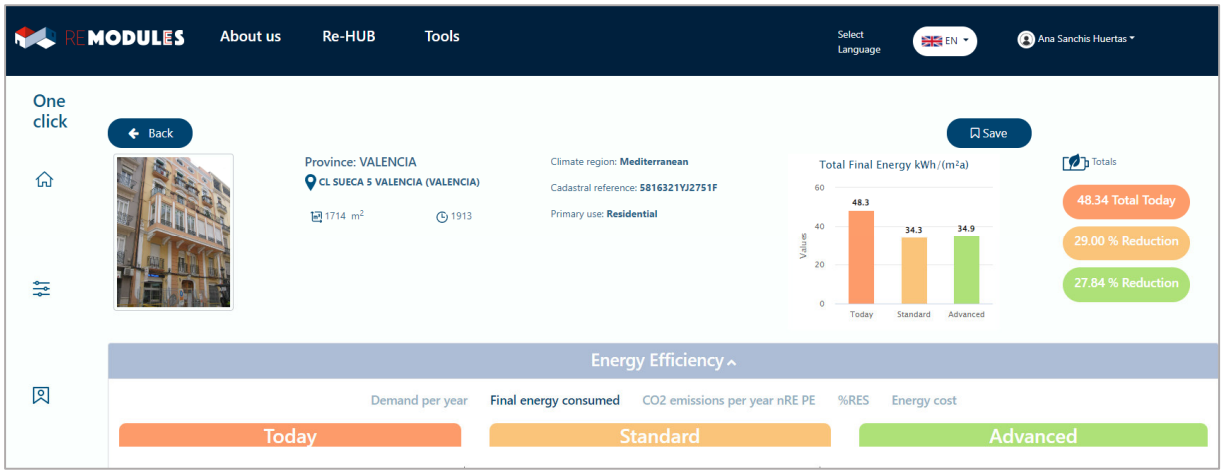


Figure 14.- Re-MODULEES One-Click diagnosis

- **Success Stories:**
  It is a repository of best practices where users can explore and save various successful cases in energy retrofitting, and it also serves as a portfolio for professional users. Intervention in building and dwelling are described, providing key performance indicators before and after renovation, including comfort data, user testimonies, and environmental quality.

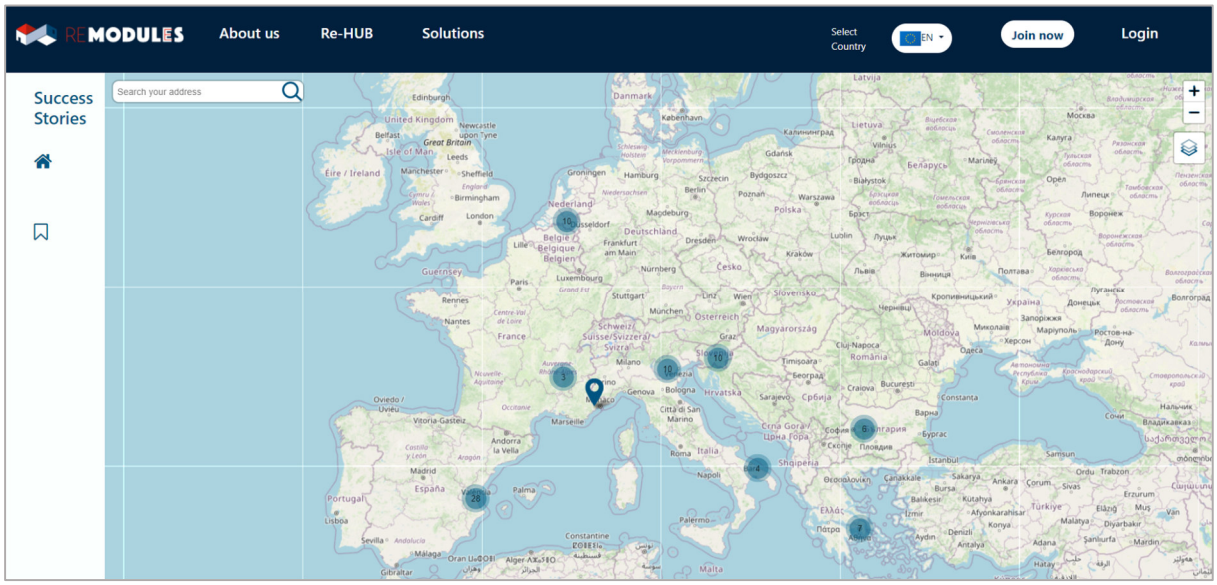


Figure 15.- Re-MODULEES One-click Success stories

- **Personal Dashboard:**
  Contains user data, allowing exploration of their rating, score, and expertise in tools, solutions, and applications throughout the CJ.

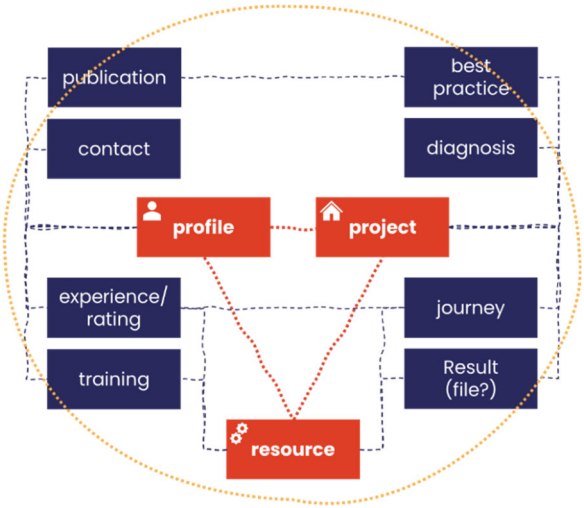


Figure 16.- Re-modulees

Re-MODULEES represents a more balanced platform in its content, including communication functions, project management, and resource showcasing.

Discussion

Once the three platforms have been analysed, and to establish the foundations for obtaining the functional requirements of the B-MAP, the consortium members were asked for their opinions and assessments on the following questions:

1 | Which platform/resources – relevant in our context- do we want to connect with? Re-modulees, RE SUITE, METABUILDING LABS, Other…

The most voted options for the first question were: Re-MODULEES, RE SUITE, METABUILDING LABS, and INFINITE Decision Tree Tool, in order of priority.

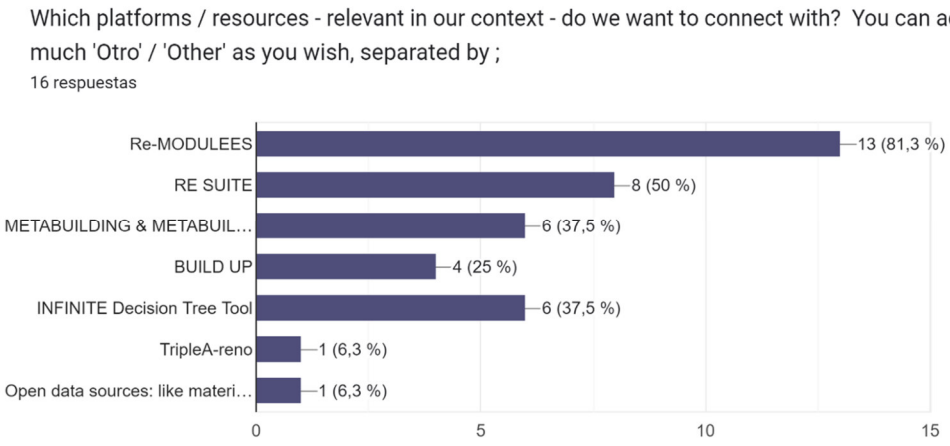


Figure 17.- Results of the CM2 questionnaire

2 | How would they be connected?

a) **Find (as in a list to find somebody/something)**
b) **Link (as an aggregator, que make physical or electronic connection between one object, machine, place, etc. and another)**
c) **Get (as in a marketplace, where to obtain or get something)**
d) **Embed (as in a super-tool, a tool inside another tool)**
e) **Platform (as a new platform version to obtain/make something)**

ReMODULEES would be connected as a platform, while RE SUITE, METABUILDING Labs, and INFINITE would function as a list.

3 | Do you have any other ideas?

There is a mention of the possibility of **integrating different tools** to increase collaboration and strengthen the outcomes of the Market Activation Platform (MAP). It is suggested to utilize Re-MODULEES as a MAP with a strong connection to RE SUITE.

4 | What kind of content do we need in out platform?

The three most voted options were:

a. Tools
b. Results
c. People, projects, best practices, and contacts

5 | How would this content be related? Propose your own relations, such as:

- **People HAVE buildings**
- **People VIEW buildings**
- **Buildings BELONG to people**
- **Buildings are VIEWED by people**
- **Solutions are APPLIED in buildings**
- **People HAVE a publication about a building or a solution**
- **Building HAVE results from the use of solutions**
- **Solutions GIVE training to people**
- **People FIND a contact from a best practice**

- Buildings HAVE results from using solutions
- People FIND contact from best practice, and CONTACT with people who LEAD projects.
- People FIND tools and practices and LEARN how to implement them
- People HAVE a publication of a building/solution
- People VIEW best practices feedback
- People VIEW solutions
- Projects ARE SUPPORTED by tools
- Projects HAVE tools
- Solutions ARE APPLIED in buildings

6 | What kind of actions do we need to enable in out platform? Discover, visit, open, share, save…

The three most voted options were:

1. Discover
2. Share
3. Visit, contact, review
4. Open, save, publish

7 | What do they connect? Propose your own connections, such as:

- **If I publish a best practice, I connect my user to a project**
- **If I publish a review of a tool, I connect my user to a resource**
- **If I save a tool result, I connect a resource to my project**

Some of the ideas were:

- If I analyse my project with a tool, I want to save results and share with others
- Publish best practices, questions and peer answers
- If I discover a good practice I'd like to implement, I can save it and get contact information
- If I share info, I can see who is interested and be contacted
- If I publish a mapping to relevant stakeholders, I connect my user to stakeholders.

While each platform (RE SUITE, METABUILDING AND METABUILDING LABS, and Re-MODULEES) serves a distinct purpose, there is a consensus on the importance of connecting them strategically to maximize collaboration and outcomes within the B-MAP.

The proposed connections involve a thoughtful integration of **projects, people, and resources** to create a comprehensive and user-friendly environment for stakeholders involved in the building ecosystem.

The questionnaire had provided valuable insights to guide the development and integration of the platforms, ensuring they align with the consortium's priorities and preferences. These opinions from the consortium were crucial as they set the **basis for developing the functional requirements for the Market Activation Platform**, and discussions replicated on each ecosystem scope, according to Task 3.4 evaluation protocols, ensured our conclusions meet the specific needs and expectations of the different stakeholders.

2.2 Functional requirements & Use Cases

In the task of defining the functional requirements to be present in the B-MAP, information from the organizational goals of each partner has been used as starting point (see Table 1).

In a collaborative effort to propel the renovation sector into a new era, organizations are uniting to scale up the renovation wave, emphasizing innovation, sustainability, and efficiency. Their collective goals are centred around technology development and enhancing market accessibility.

The essential role of a MAP becomes apparent in this context. Such a platform can serve as a unifying force, aligning the diverse goals of these organizations and providing a centralized hub for disseminating solutions, fostering technology development, and supporting the adoption of industrialized renovation. By streamlining efforts and encouraging collaboration, the B-MAP emerges as a strategic tool to efficiently achieve common objectives.

Functional requirements are features, capabilities, and functionalities that the B-MAP might have to meet user's needs and expectations. They serve as a blueprint to ensure that the final product aligns with the intended purpose and user expectations.

Here again, different angles have to be taken into account, starting from the in-house experience and assessing options with the different stakeholders.

On the other hand, the **use cases** are specific scenarios or situations in which users interact with the platform to achieve a particular outcome. The analysis of use cases allows for the examination and tailoring of the platform's functionalities to meet user needs.

As with the functional requirements, the different angles have to be taken into account, form the in-house experience to the stakeholders' expectations.

2.2.1 Functional requirements

To learn about the functional requirements of the B-MAP, during the second Consortium Meeting, in the **Working Session** 4 (WP5), developed by IVE and AEE, **ecosystem partners** from Austria, The Netherlands, Spain, France, and Italy were asked to give a brief presentation and were asked, in reference to the MAP:

- Q1: What do you want to find there?
- Q2: Who do you want to find there?
- Q3: What do you want to be able to do there?

Ecosystems were also requested to fill in an Excel file to describe the ecosystems and the functional requirements of the MAP. The conclusions and summary of these works are collected in T6.1. *Market Analysis and program requirements for MAP*. The following functional requirements were identified:

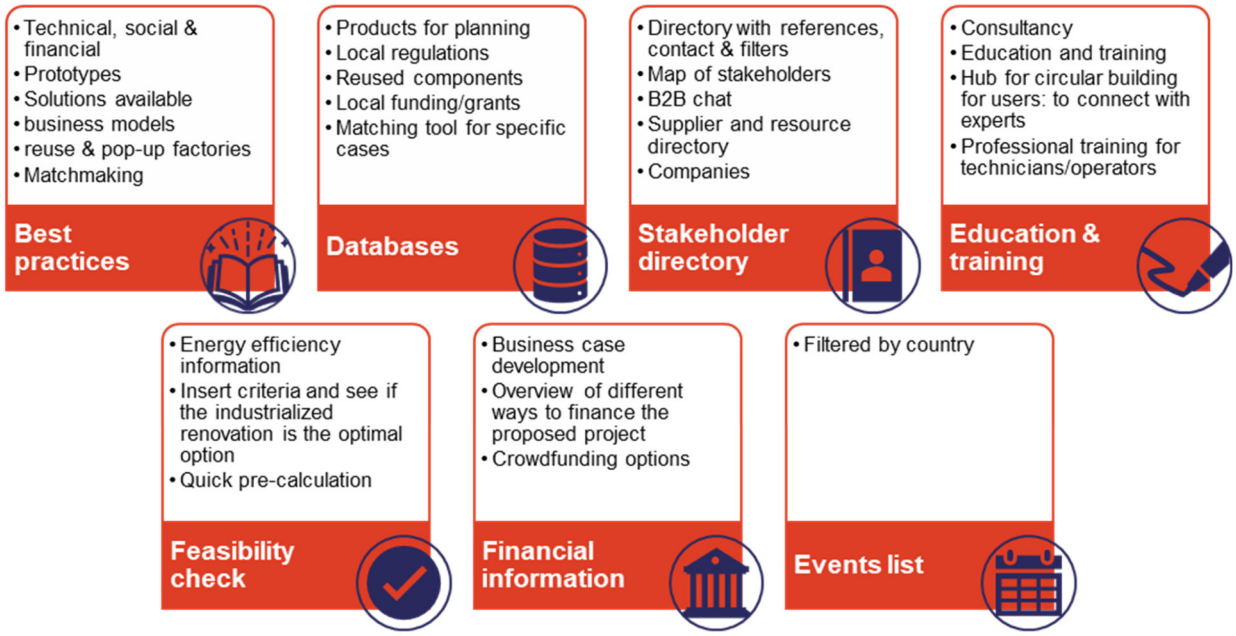


Figure 18.- Draft functional requirements summary

Once the basic identification of user requirements from the ecosystems was completed, during the third Consortium meeting, in **Working Session** 3, IVE conducted a **collaborative session with partners**, requesting attendees to:

1. Identify essential functionalities of the B-MAP
2. Deciding on the direction of the development
3. Elicit further requirements
4. Identify blind spots
5. Validate requirements

Individual functionalities

Once the feedback results from the partners were obtained, the most voted options for **functional requirements** (see Figure 19) were:

- Companies developing prefabricated/ innovative solutions
- Solutions that are already available on the market
- Examples of Reuse and Pop-up factories
- Overview of different ways to finance the proposed Project
- To connect with experts

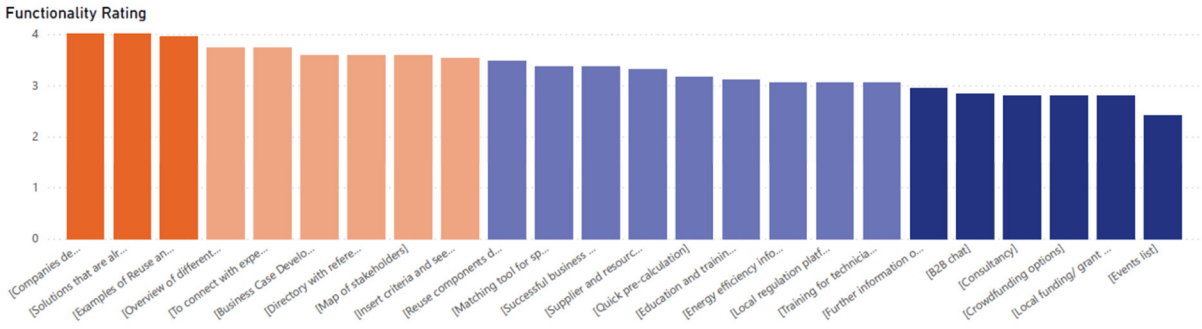


Figure 19.- Functional requirements results

However, some of the **functional requirements can be grouped** under the same **module**, meaning, consolidated under a **generic functionality** that encompasses several of them. Before analysing the functionalities, an intermediate operation is necessary since some of them may have more associated requirements, resulting in more diversified votes among the options. This does not adequately reflect the weight and importance of the identified functionality.

Clustered functionalities

In Figure 21, the considered modules and their associated functional requirements are presented, and through Figure 21, it allows a clearer vision of the essential functionalities to include in the B-MAP.

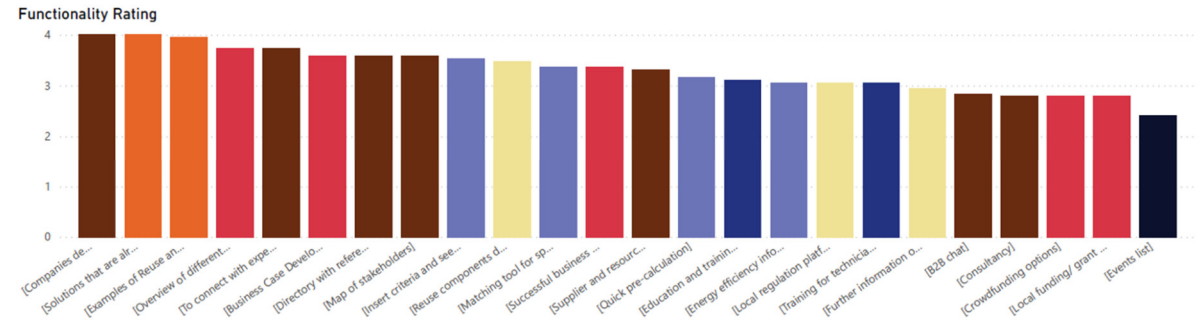


Figure 20.- Functional rating according to modules

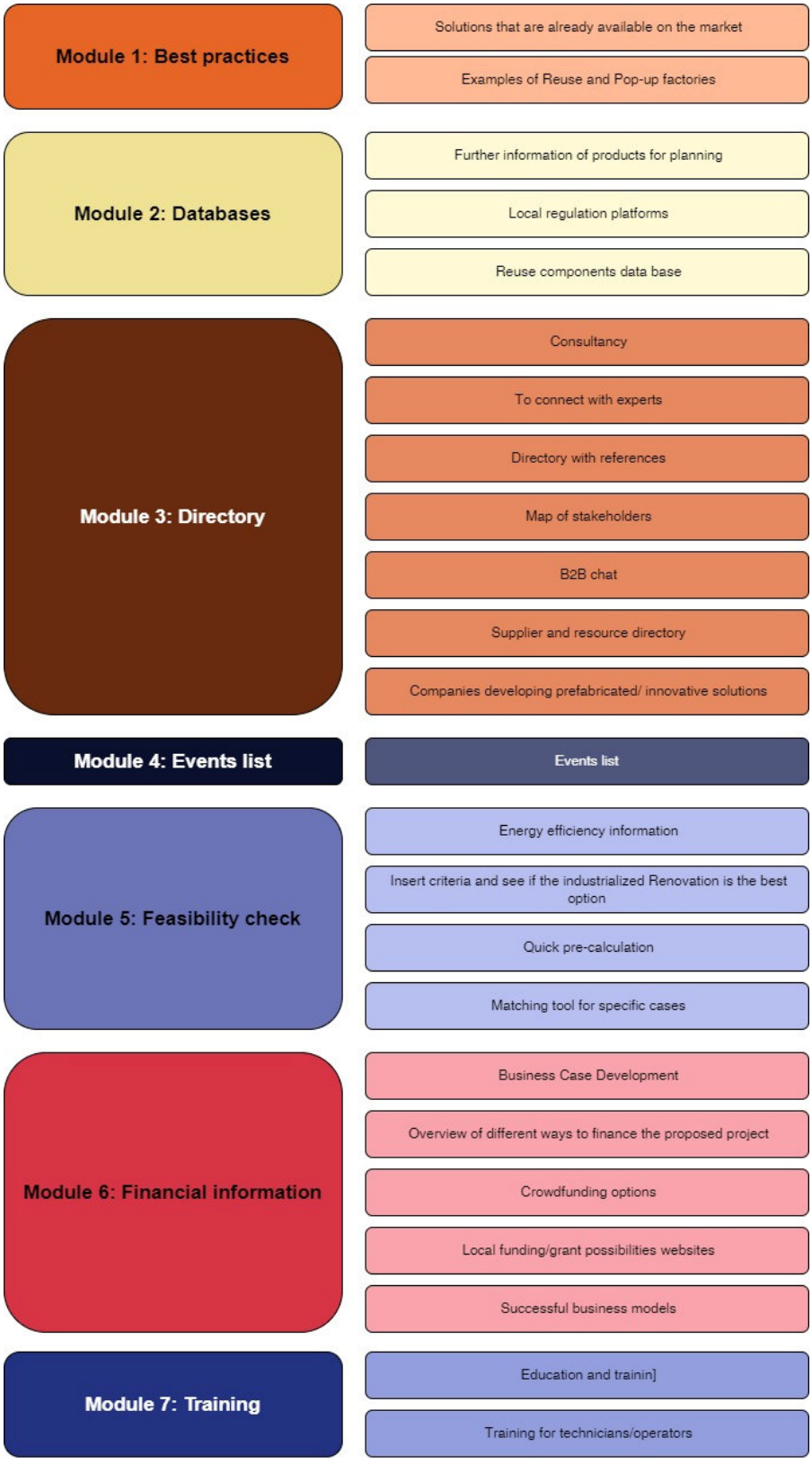


Figure 21.- Modules and functional requirements

Grouped by modules, the results of the main functionalities are displayed in Figure 22.

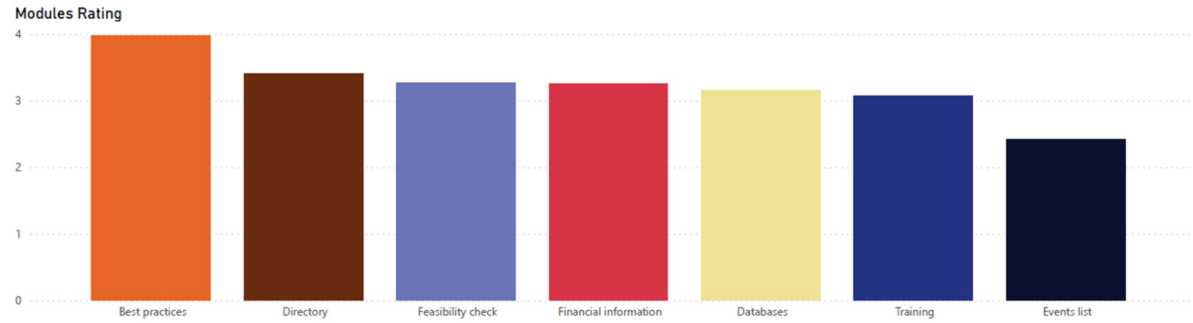


Figure 22.- Functional rating clustered in modules

Upon completion of this collaborative process, 1 main module has been identified for priority inclusion in the B-MAP, while other 3 present an even second place:

- **Best practices**: This module serves as a finder for best practices, experiences, examples, and products, presenting them in a map or list format. This will facilitate the discovery, view, and share of relevant industrialized solutions.

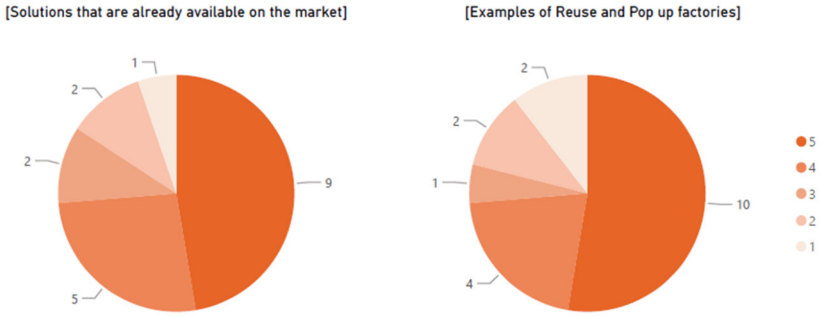


Figure 23.- Votes distribution for Best Practices functionalities

- **Directory**: This module serves as a finder for producers, presenting them in a map or list format. This will facilitate the discovery, view, and share of relevant stakeholders on the industrialization field, and therefore works similarly to previous module.

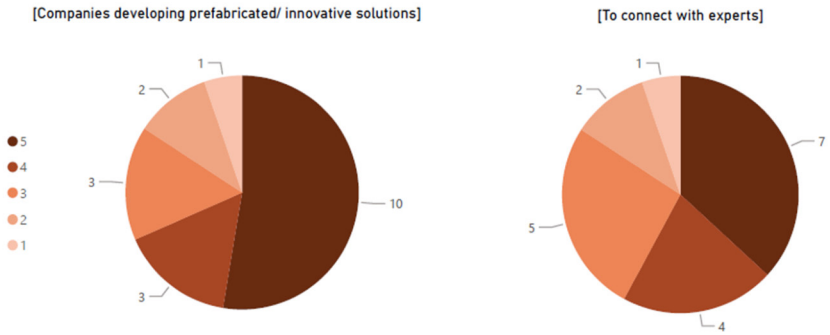


Figure 24- Votes distribution for Directory functionalities

- **Financial information**: This module serves as a finder for financing best practices, experiences, examples, and products, presenting them in a map or list format. This will facilitate the discovery, view, and share of relevant financial solutions and stakeholders on the industrialization field, and therefore works similarly to previous modules.

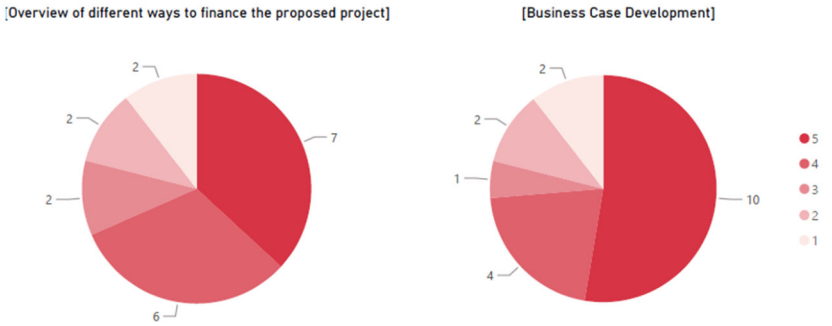


Figure 25.- Votes distribution for Financial Information functionalities

- **Feasibility check**: This module allows for checking the potential use of previously found products on a specific project, and therefore is closely related to the rest of modules.

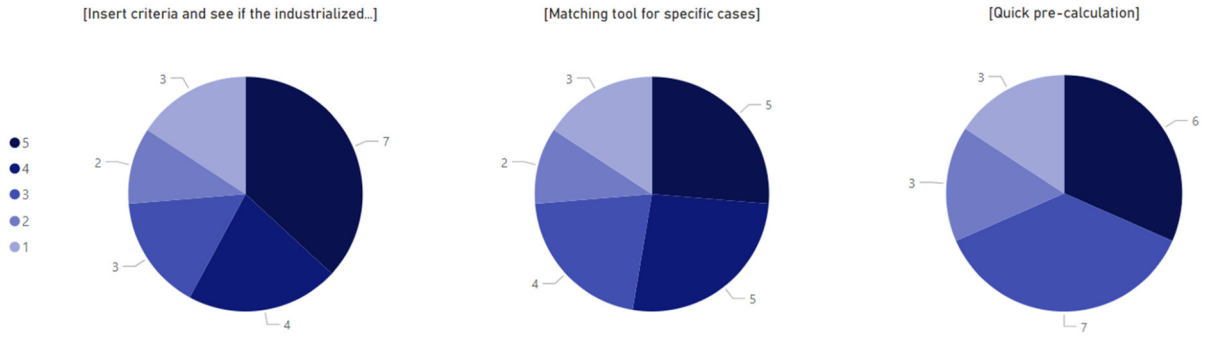


Figure 26.- Votes distribution for Feasibility Check functionalities

These functionalities are planned to be based on RE SUITE modules when similar ones exist, and draw from the Re-MODULEES platform, when a RE SUITE similar module does not exist. Finally, connections with METABUILDING registry were studied. The software development team in WP3, managed by DEMO, was responsible for the technical evaluation of both platforms to analyse their functionalities and potential.

While re-MODULEES has proven valuable as inspirational platform, it is not technically suitable as the foundation for the B-MAP due to its significant divergence from typical DEMO developments. On the other hand, RE SUITE offers robust functionality, but its strong expert-oriented design deviates from the requirements of the B-MAP to serve as a solid foundation.

The conclusion draws us to the development of a **"new" web application for the B-MAP**, strategically **incorporating reusable components from both RE SUITE and Re-MODULEES**, ensuring a comprehensive and effective solution.

2.2.2 Use cases

The use cases were developed through a collaborative task conducted during Consortium Meeting 3. Partners were requested to fill in a table similar to the following one, identifying all possible use cases based on the functionality modules outlined in section **2.2.1**.

Table 2.- user story schema

I am…	and I want to…,	so I'd use…	to get…
		Best practices	
		Directory	
		Feasibility check	
		Financial information	
		Databases	
		Training	
		Events list	

For each of the proposed functional modules of the B-MAP, the following is associated:

- **User Profile (I am)**: Describes the role of the individual or entity using the platform. E.g., *project manager, property manager...*
- **Objective (and I want to)**: Specifies the goal or intention of the user when interacting with the platform. It outlines what the user aims to accomplish or the problem they seek to solve. E.g., *find suitable prefabricated solutions for a construction project so I would use the databases*
- **Result (to get)**: Indicates the desired outcome or result that the user expects from using the identified module. It clarifies what the user gains or achieves by employing the selected module. E.g., *to get to a list of available prefabricated solutions with detailed information.*

The results of this task have allowed the development of various **use cases**, which are presented in the following diagrams (see Figure 27 to Figure 30). All the diagrams begin with one or multiple trigger points that lead entities and organizations (potential users) to utilize the identified functionalities based on their profile or role. They go through different decision stages and functionalities to achieve their goal (which depends on the user and their trigger point) when effectively using the B-MAP.

We have focused on the Best Practices and Directory modules, since they are the priority for most of the partners, according to previous section.

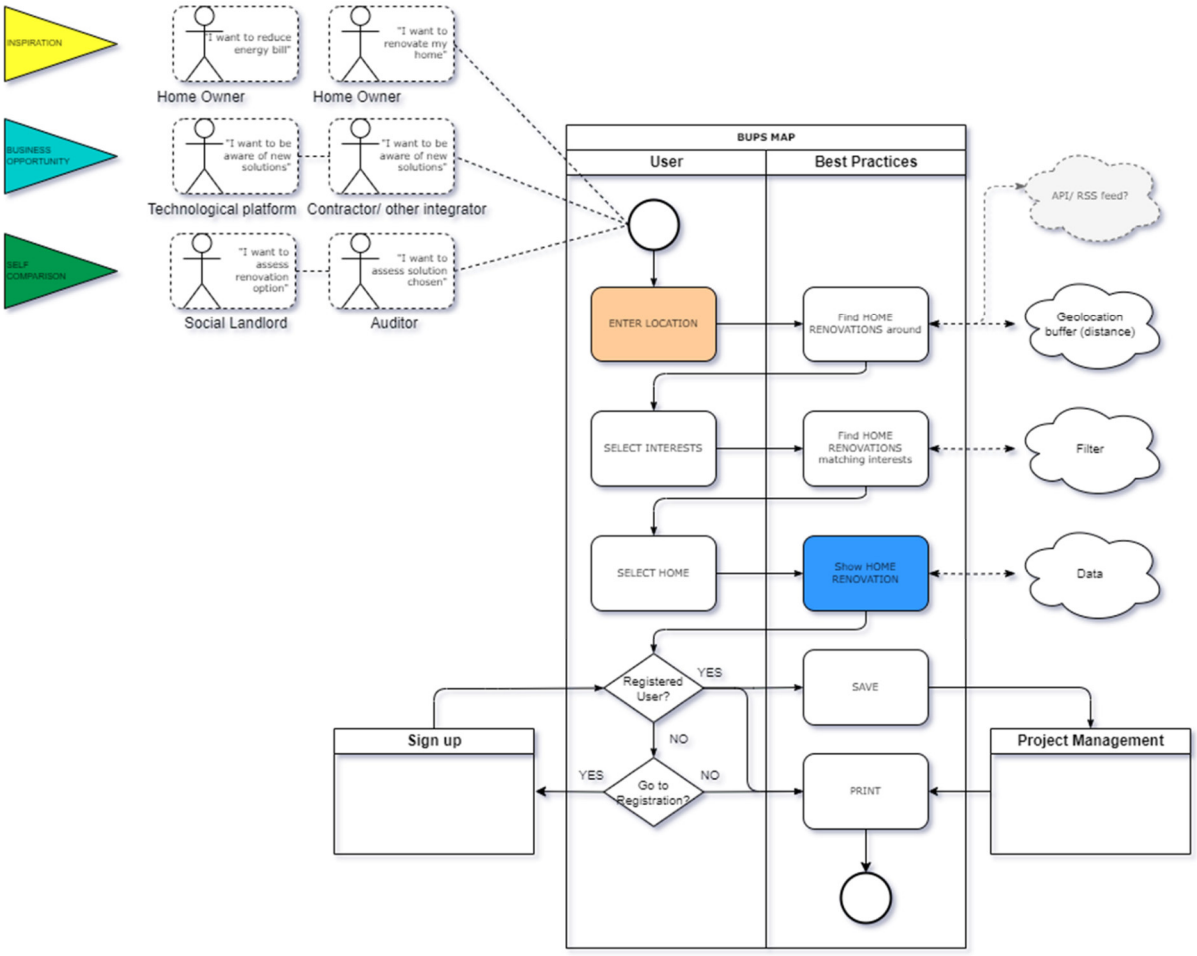


Figure 27.- Use case 1 for Best Practices module – Get

- **Get best practices:** almost all the actors in the construction value chain appreciate the Best Practices finder functionality, for different reasons and goals, triggered by diverse motivations (inspiration, business, self-assessment…). The logic is very simple and direct: a user enters a location, selects their interest through a filter-like mechanism, then select the specific results and consult the data, being for saving, sharing, printing, or just learning, inspiring, comparing, or assessing outside the platform. This complete workflow implies that a project management module and a signing-up module also exist, but it is not mandatory.

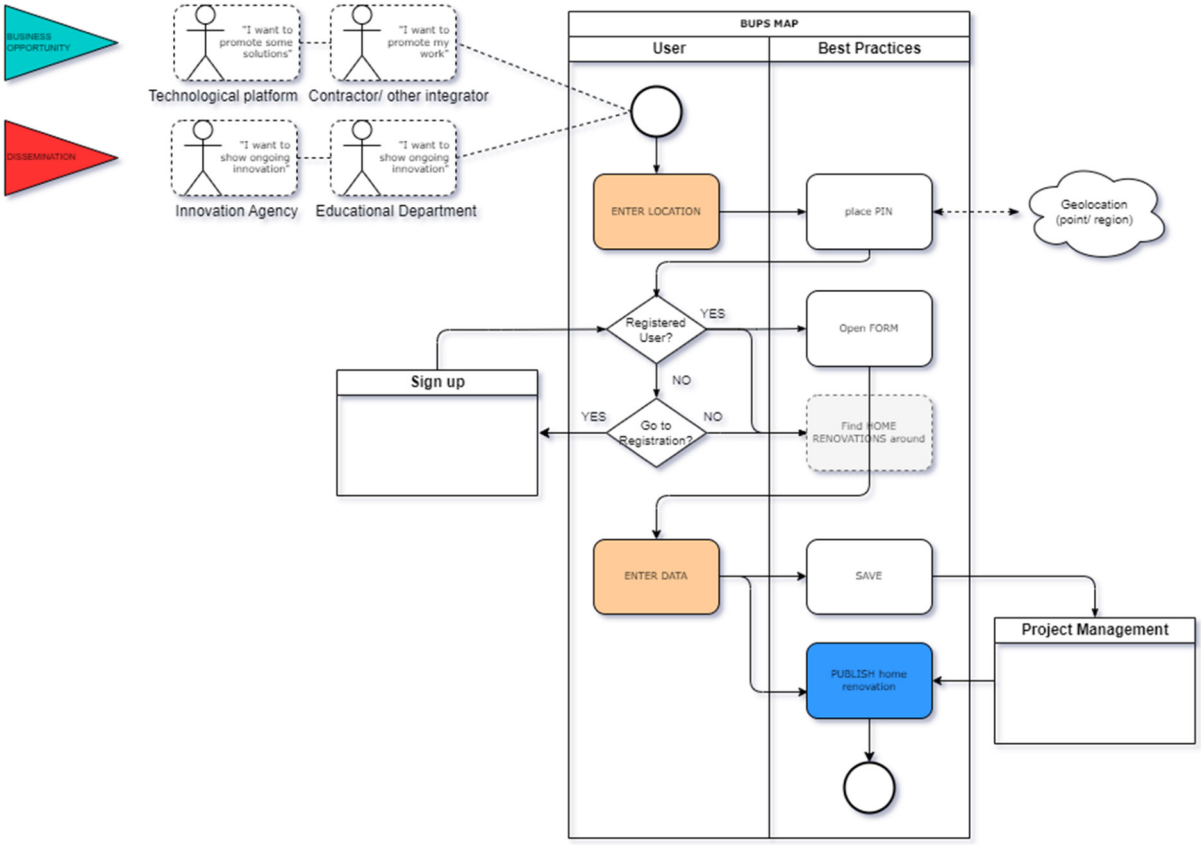


Figure 28.- Use case 2 for Best Practices module – Post

- **Post best practices:** supply side of the construction market value chain is the most interested in this functionality, involving being able to publish their own best practices experiences, to open a new business opportunity or just dissemination of successful results. The logic is again very clear, and after entering location, information has to be introduced by the user, as much complete as possible. In this workflow the project management module is optional, but the sign-in modules is mandatory so to being able to check quality and trace new publications.

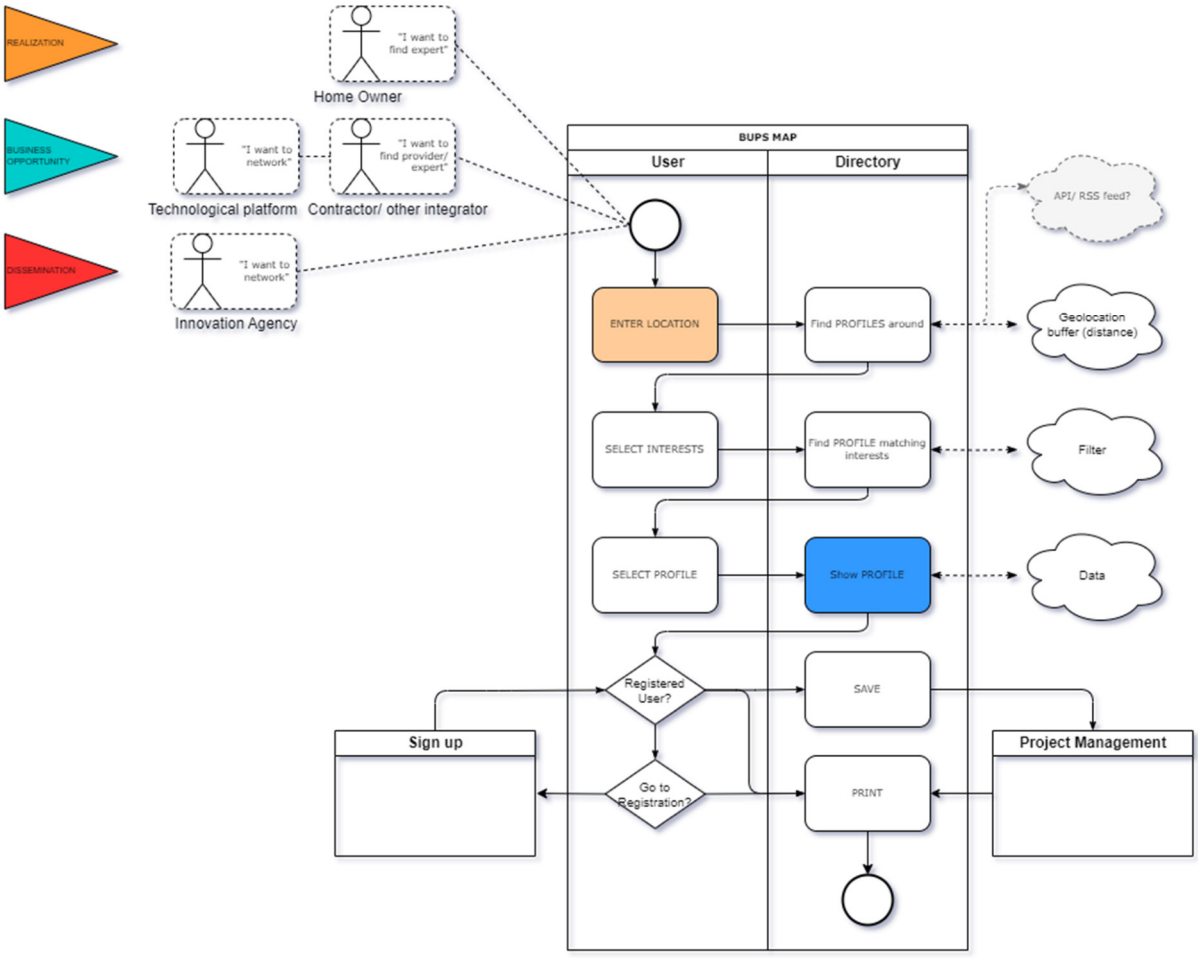


Figure 29.- Use case 1 for Directory module – Get

- **Get from directory:** Finding an expert is in the interest of all the sides in the construction value chain, being for realization, business or network, searching for the actors involved in the industrialization sector around the user is capital. Workflow is completely parallel with the best practices module.
- **Post on directory:** Publishing their own profile in the directory is just of interest of the supply side of the construction value chain, for both business and dissemination, and its workflow is also completely parallel with the one in the best practices module.

Working sessions on functional requirements and use cases are replicated on each ecosystem scope, according to Task 3.4 evaluation protocols, to ensure our conclusions meet the specific needs and expectations of the different stakeholders.

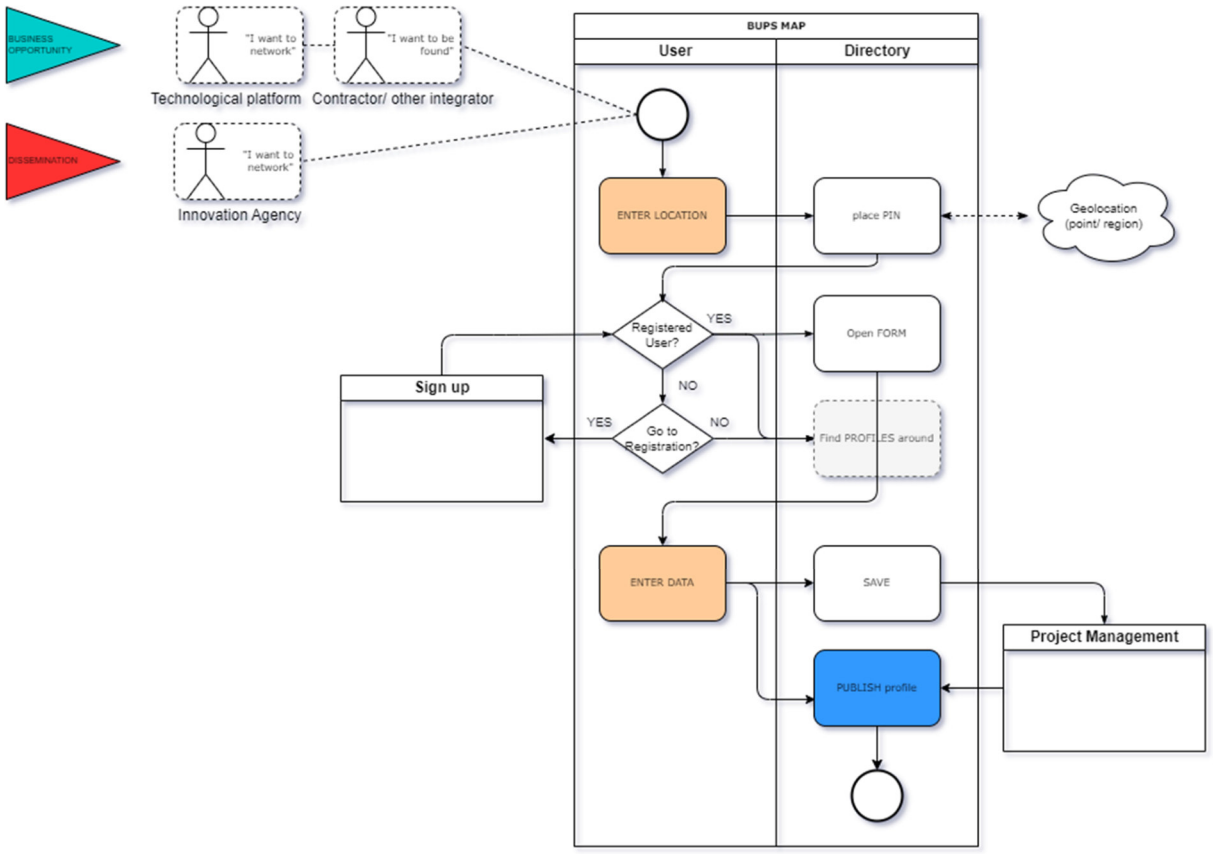


Figure 30.- Use case 2 for Directory module – showcase

Platform Modules

The parallelisms highlighted in the use cases drive the attention to the possible merge of some of the priority modules, since both best practices (experiences, examples, and products), directory (stakeholders) and financial information (financing best practices, experiences, examples, products, and stakeholders) share the same logics and workflows, and could just be different items to get and post in the same workspace:

- **Catalogue**: This module serves as a finder for (financial or constructive) best practices, experiences, examples, products, and stakeholders presenting them in a map or list format. This will facilitate the discovery, view, share, and contact of relevant industrialized solutions and related actors.

According to the reach of the development during the project duration, this extensive catalogue will start by enabling the finding functionalities, and step by step add posting capabilities (with signing-in and content managing).

On the other hand, the ability to host in the same catalogue the different categories of items (examples, products, and stakeholders – financial or not) implies a careful design of the database and a thoughtful maintenance of the datasets.

2.3 Data sources & references

Besides the analysed existing platforms, already dealing with innovation, management or centralization of building (renovation) resources in section **2.1.2**, other research project and initiatives have paved the way for introduction and settlement of industrialized products and processes in the (renovation) building sector. Their outcomes can be very helpful for this project and for the B-MAP development, and we intend to take them into account.

2.3.1 Sister projects (industrialization)

WP2 already collected replicable positive practices, processes, innovation actions, tools and technical solutions with an industrialised vision aiming to support the building renovation market, and we will not repeat the list here, but we will focus on those resources helpful for the B-MAP design and development, or complementary in terms of content collection and connection.

Figure 31.- sister project dealing with industrialized solutions

- **Infinite**: industrialised durable building envelope retrofitting by all-in-one interconnected technology solutions – analysed the current situation of the European industrialization sector, introduced a number of Infinite **kits**, and assessed the buildings characteristics affecting the design and installation of industrialized elements. It is very interesting the Definition and classification of the building stock features regarding **potential** installation of their Kits. Also, the project aims to stablish a **knowledge Hub** worth studying a connection with.
- **INPERSO**: INdustrialised and PErsonalised Renovation for Sustainable sOcieties – inspiring B-MAP user requirements for the implementation of INSPERSO technologies, mainly the special **requirements** to consider during the renovation. Also, it can be taken as a reference in the way of describing the INSPERSO technologies and how the information about the **products** is collected.
- **Drive 0**: Driving decarbonization of the EU building stock by enhancing a consumer centered and locally based circular renovation process – interesting analysis of prefabricated solutions, the categorization of solutions and building services, and Drive 0 **products** - circular products that can now be found on the official webpage.
- **BusGoCircular**: Shaping a Circular Sustainable Future – from which we have also reviewed some key core elements for circular construction and incorporated

parameters into the catalogue, such as the lifetime of products and reusability parameters. We can include the RE10 assessment for **circularity** in buildings, a tool provided by the IVE and developed within the framework of this project.

- **P2ENDURE:** Plug-and-Play product and process innovation for Energy-efficient building deep renovation - has a good review of the main innovations available for building deep renovation: Prefabricated system for building envelopes, Window replacement, Prefabricated modules for roofs with integrated RES, HVAC solutions, and so on. It can help assess the degree of development of current **solutions**.
- **BARRIO:** Fostering deep Building Renovation by Aggregating demand, developing business models and rolling out Industrialized prefabricated solutions for a decarbonized building stock - BARRIO provides a holistically designed Defragmentation Multidisciplinary Toolkit (DMT) whose key component is the Aggregated Prefabricated Industrialised Plan (APP) APPs Generation tool- a digital tool for matching the needs for interventions on clusters of buildings with aggregated offer of industrialized **services/solutions**, which could be part of the B-MAP content.

The existence of predecessors already **collecting** products, solutions, producers and best practices inspires the B-MAP data model, and the potential synergies with those still ongoing or perduring after completion are considered.

2.3.2 Wider scope (building, energy & products)

In this section we collect other initiatives related to building and energy data, repositories, or assessment tools that can inspire the content, functionalities or even interfaces of the B-MAP, given the relation they hold with our topic and target audiences.

Repositories

iEPB: Integrated EPB Assessments. A pathway for effective EPBD implementation - Task regarding Building Performance Databases Inventory collected a series of repositories and tools to which could be interesting to connect, from which we summarize the most interesting for BUPS object:

Table 3.- Data sources for building and energy data

Name	Description	Access	Country
baubook	database of construction products and producers	XML download/ registration needed	AT
GIS Styria	database of cadastral data and solar radiation and solar potential (regional)		AT
ZEUS	Data about EPCs (regional)	XML/ CSV download	AT
BIM catalogue	database of building and construction elements	IFC download	ES
i-DE	database of electricity consumption and generation	CSV download	ES

Cadastre	Public-open access databases for Cadastral data	WMS/ API	ES
Various geoportals	Public-open access databases for EPC data (regional)	WMS/ API	ES
Kadaster	Datasets about plots and building	API	NL
EP-Online	Database with energy labels and energy performance indicators.	API/ XML/ CSV	NL
BCRG	Database on energy performance of materials and products.	PDF	NL
3DBAG	Public dataset of the geometry of all buildings in LOD 2.2	API REST/ JSON	NL

Although there is a number of data sources, only a few of them offer interconnected access (machine to machine communication enabled), and for higher resolution, smaller the territorial scope is. Therefore, integration of this data is uneven for the EU context and unsystematic for project efforts. Nevertheless, B-MAP will consider them to assess their inclusion as **local enrichment or global general information** coverage.

Assessment tools

On the other hand, a number of references dealing with building and energy performance assessment have been analysed regarding user-friendliness and usability, in order to inspire a wizard approach of the B-MAP functionalities, and specifically the Catalogue module application in terms of finding solutions applicable to a specific project/ building.

- **Ik woon in een…** (*https://www.verbeterjehuis.nl/wizard*) Choose the type of house you live in and find out what you can do. By answering very visual and **simple questions**, the user gets different options for renovation with costs and benefits, to create an improvement plan in several steps, request a quote or earn about grants and loans applicable to their building.

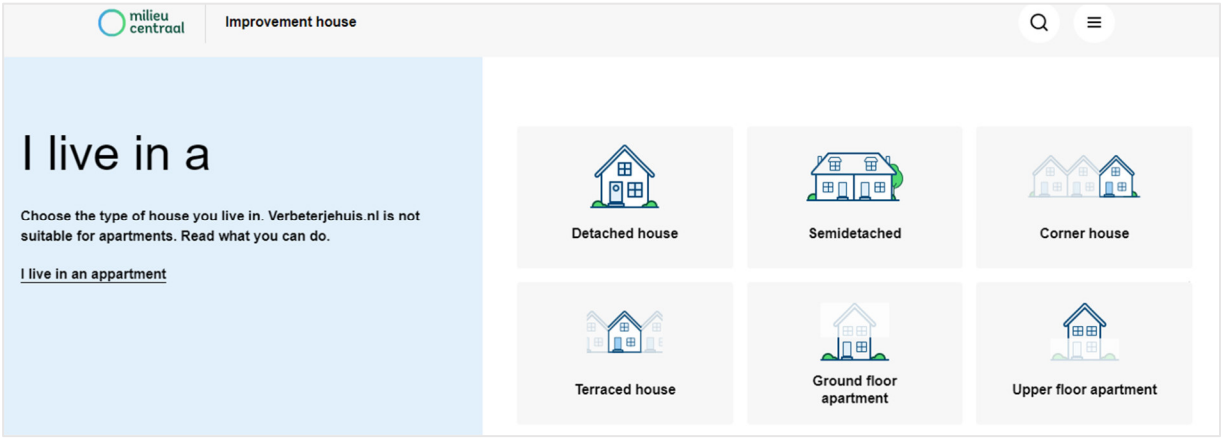


Figure 32.- "I live in a..." wizard

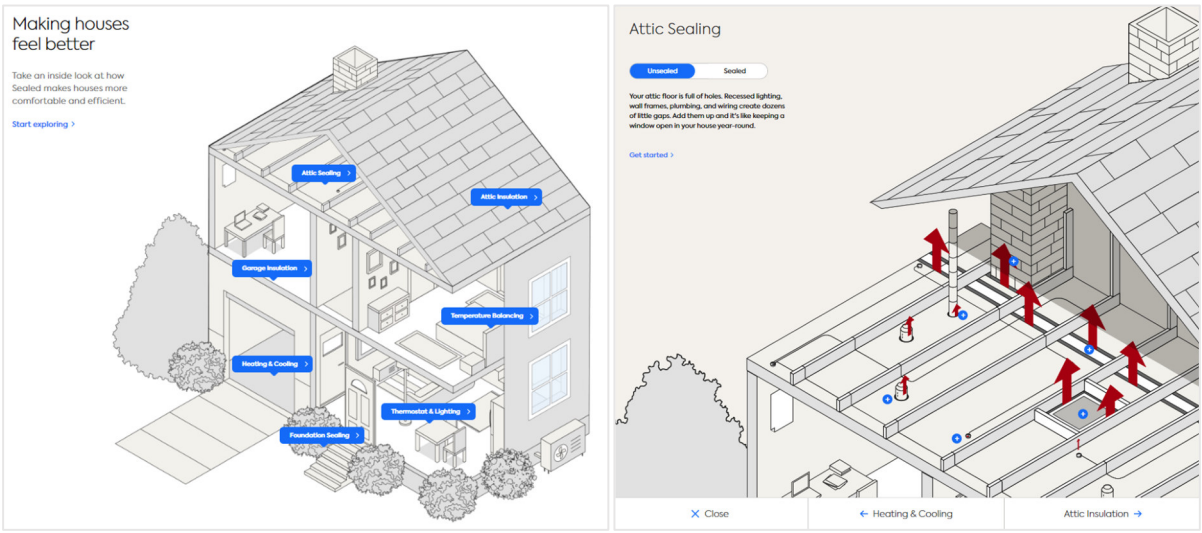


Figure 33.- "Sealed" wizard

- **Making houses feel better:** (*https://sealed.com/homeowner/*) stop home energy waste and get it electrified by exploring the solutions proposed in this **graphic** wizard.
- **Renewables Installer Finder:** (*https://installerfinder.energysavingtrust.org.uk/)* the **map** display is also an interesting layout for finding nearest references, for final users appreciate close examples and experiences.

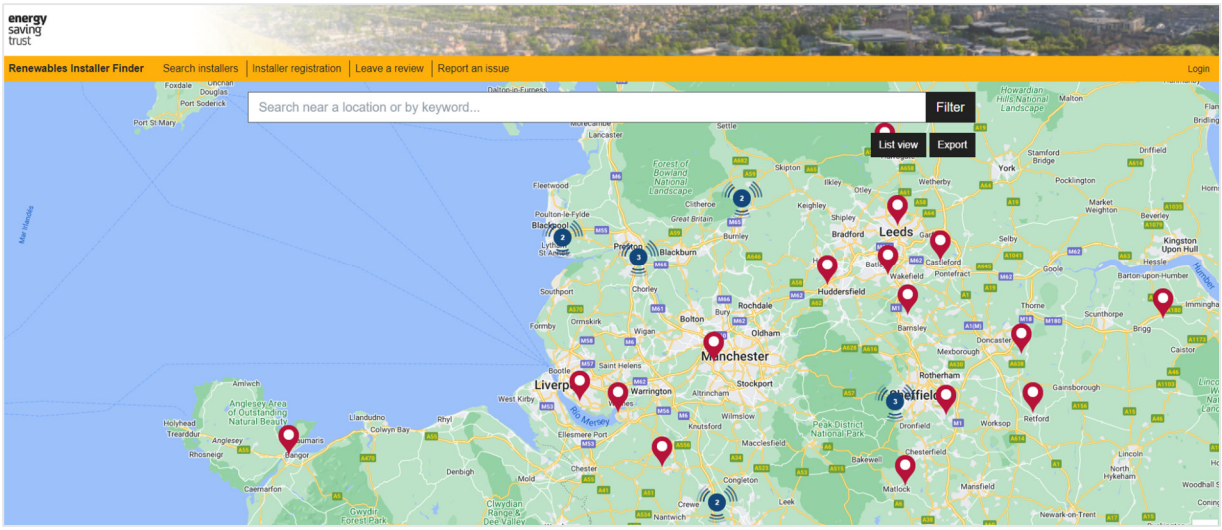


Figure 34.- "Installer finder" wizard

- **Huisscan:** (*https://huisscan.regionaalenergieloket.nl/)* HomeScan uses the address to retrieve **open data**, for example the year of construction and surface area, that allows to calculate sustainable measures applicable to a certain building. In this case simple, familiar to the final user, data, hides the access to more difficult data, that allows the tool to calculate its results.

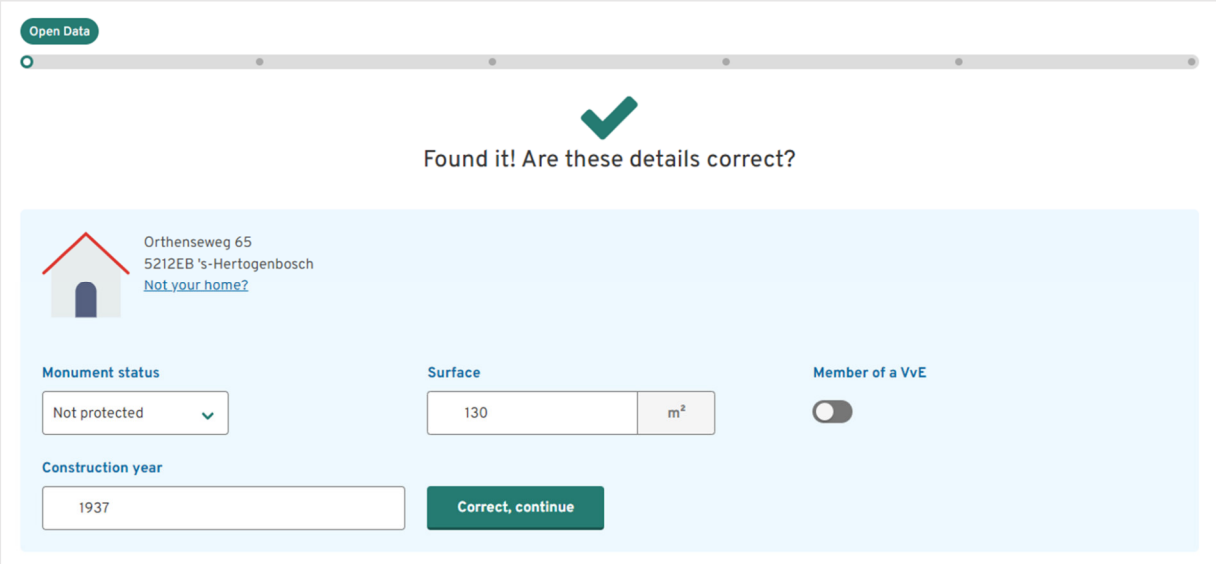


Figure 35.- "HomeScan" wizard

Advantages of this wizard approach relay on the **simplicity of use and attractiveness of layouts**, making the complexity of some of the concepts transparent to the non-expert user, which is one of the targets of our B-MAP.

Catalogues

Finally, the main functionality of the B-MAP, the catalogue, is also a usual virtual resource that can be found online for multiple purposes. A virtual catalogue is the digital version of the catalogue of products or services that an organization offers. Being virtual allows every user who comes to your site to see the available products. It will be the visible collection of the products, available for online contact, contract or purchase by users, and which has the most relevant information such as characteristics, description, price and even the opinions of other users. Especially the latter information is incredibly valuable in a digital world where on the one hand users consult technical/ functional features of a product or service, but on the other, they are looking for reviews, comments and more agile payment options. In the context of industrialized solutions, B-MAP can rely on this consolidated paradigm, and as such, we have focused on the renovation catalogue managed by IVE in Valencia Region.

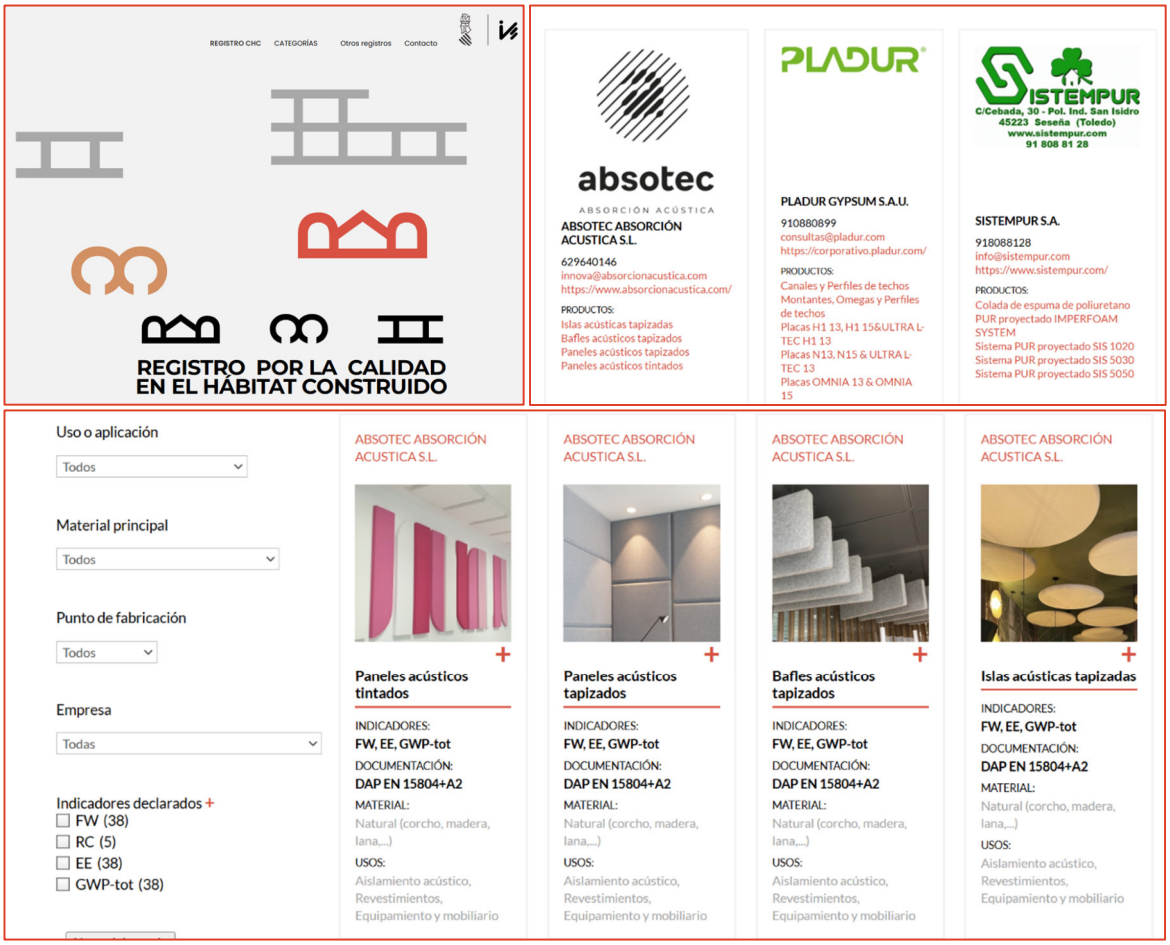


Figure 36.- "Registro CHC" Products, professionals and companies in Valencia

- **Registro CHC:** (*https://registrochc.five.es/)* The Registry for Quality in the Built Environment is a tool for general information on professionals, products or examples of good practices in the field of construction. It provides users with clear and organized information through lists and filters, in order to find and hire quality resources. It recognises professionals and companies for their effort and commitment to the quality of construction and for their interest in incorporating innovative strategies. It is of interest to users and consumers who wish to locate service companies, independent professionals, or even manufacturers, who carry out specific activities in the field of construction; also, to professionals in the construction sector, such as Property Managers or Professionals, Construction Companies or Developers who require a certain collaboration. Likewise, the CHC Register is of interest to the registered professionals or companies themselves, both for the visibility offered to them through the lists or search filters, and for the reputation that comes from having passed some type of certification, verification or recognition.

The catalogue approach brings an experienced, proofed model for connecting products, services and potential clients and collaborators, relying on 5 essential elements:

a) Good images and photographs

b) Up-to-date inventories that show the updated product, as well as saying if it is not available before making the user lose their time
c) Quality, honest descriptions that highlight the most important features
d) Links to the online product or service corporate site to get the user to explore more
e) Include the technical characteristics of the products or services because this is relevant information for those who are comparing similar offers.

Platform Modules

After the analysis and collection carried out in this section, we come back to the B-MAP platform definition in terms of functional modules or sections. Attention is given to the fifth module, originally conceived to provide access to external databases, local platforms, additional information on products and case studies, and reusable knowledge repositories:

- The **Connections** module serves as a gateway to well-established external resources, enabling users to further explore solutions, project contexts, best practices, and relevant experiences related to industrialised and circular construction.

On the other hand, specifically inspired in the assessment tools analysed and following the integration of three of the four highest-value modules, the Feasibility Check module is seen as an essential element of the B-MAP platform. While it is closely connected to the Catalogue module, it is maintained as a functionally independent component in contrast to the Catalogue, which relies on an active user-driven search process:

- the **Wizard** module (Get Renovation Tips) provides a guided workflow that assists users in identifying the most suitable experiences, reference projects, products, and stakeholders according to the specific characteristics and requirements of their project. This approach streamlines the selection process and supports the effective uptake of industrialized construction solutions.

3 MAP Experience

This section deals with the general structure and overall system logic, layouts and interfaces of the services to be offered, including connections to/ use of libraries and databases, protocols, external existing modules or services, and other software components that will lead B-MAP to be able to integrate-connect and deploy easy to read services to help users to make a well-informed decision.

These aim at generating an assisted customer journey supporting user centric deep-renovation approaches, covering all steps of the energy retrofitting process in terms of implementation of industrialized solutions, where input data related to individual renovation cases (real buildings or areas real conditions), are turned into outputs such as precise solutions and tools customized to the different user profiles and market conditions.

3.1 User journey

A first design for the MAP entry point and context description is first provided as a **user journey** map, describing the complete sum of experiences that future users could go through when interacting with the MAP tool, allowing to grasp the subjective conditions related to the user's decision making in a more holistic and realistic way than would be allowed by partial analyses or more rationalistic approaches.

3.1.1 Entry point & descriptions

The final aim of the B-MAP is to boost deep renovation, energy renovation, through the use of industrialized solutions. These solutions, to be regarded in next section, are used by different actors, applied in different buildings, also related to diverse actors, and all in all, are available in different locations, with different degrees of applicability.

When we think of the B-MAP users, we can expect both aware and non-aware users, but finally they have in common that they want to look for and/or use industrialized solution in their buildings, projects, or environments, and then, entry point is **location**-related, in both terms of building stock and market constraints.

Figure 37.- Location is the entry point

Markets

When we look for an ecosystem market profiling, meaning looking for its barriers, challenges, constraints, or definitively their **lacks**, we do it for:

- Need 1: Addressing un-aware users, so to ask the market conditions about a solution that can be used in that market conditions (**changing user consciousness**, not market conditions)
- Need 2: Addressing aware users, so to help users (i.e., policy makers & companies) introduce industrialized concepts and products in this market (**changing market conditions**, not user consciousness). As an example, if users want to encourage/introduce a specific industrialized solution in a specific market, they will ask: Why isn't yet introduced/used? How do I overcome it? If people perceive the solution as 'ugly' (negative aesthetic perception), users can put in place a nice showroom/simulator; if there is a lack of technical skills in installers, they can put in place a free training program; if there is a lack of maintenance culture, users can introduce the product as a service (coming with a maintenance service contract, like elevators)

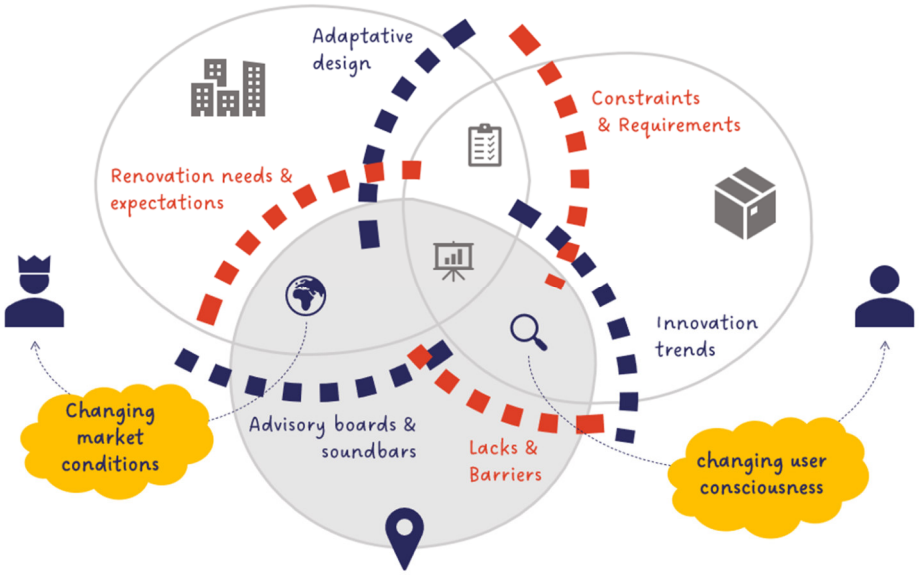


Figure 38.- Ecosytem profiling lacks, trends, needs & expectations

- How we do it? We need to have **markets profiled**, linked with the different industrialized solutions through that categorization, and with market innovation trends, so we can ask market in positive (solutions that fit the market), and ask the solutions in negative (barriers to overcome) with positive answers (innovations that will help overcome the barriers)

Solutions

Best practices on the other hand are regarded as an overview of innovative (industrialized) renovation actions, including products, experiences & experts (constructive & financial), and when profile them, we need to pay attention to their **needs** for implementation, in order to:

- Need 3: Addressing aware users, so to help them assess the potential use of a specific solution in a real working site (**changing renovation projects**, not user consciousness)
- Need 4: Addressing un-aware users, so to ask the catalogue which solution can be applied to a specific working site (**changing user consciousness**, not renovation projects)

Figure 39.- Solutions profiling: needs, constraints & requirements for implementation

- How we'll do it? We need to have **solutions profiled** in a way that they relate with and limit certain building or site characteristics, so that a specific product can ask the user real figures to check if it will fit with them; or users can ask the solutions pool which one adapts better to their project.

Matchmaking

With these two descriptions in mind, considering not only their own descriptions but also how they relate with the other objects descriptions, we tackle the **matchmaking** potential, in order to:

- Expectation A: Addressing un-aware users, so to help them **understand** by allowing them to navigate, discover, view (wizard transforming our structured data into meaningful information)
- Expectation B: Addressing aware users, so to support **decision** making by enabling filtering, comparing, connecting (catalogue turning that previous information into applicable knowledge)

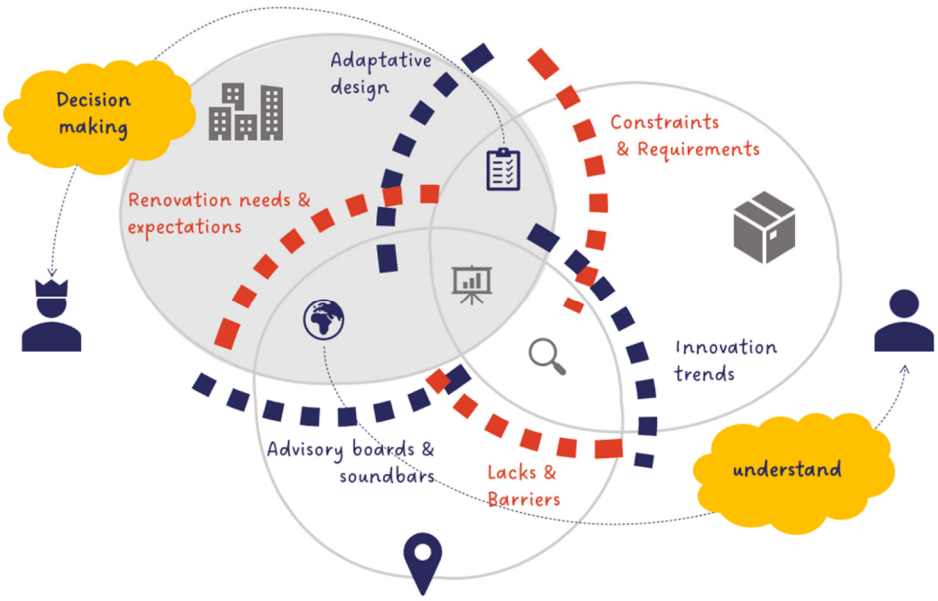


Figure 40.- Matchmaking market and solutions to real buildings

- Expectation C: Addressing future, so to **adapt** solutions & projects, markets & users' consciousness, as industrialization is introduced and slowly small changes are in place by aggregating, summarizing, analysing (upgrading & connecting mechanisms paving the way for continuous improvement, thus evolving from knowledge to wisdom)

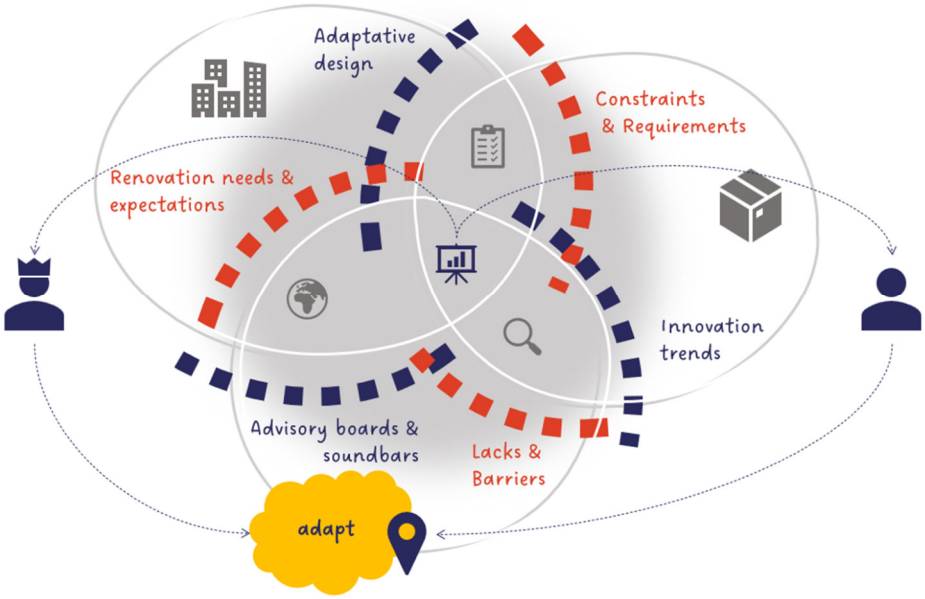


Figure 41.- Addressing future to adapt markets & users' consciousness

- How we'll do it? Implementing descriptions and **relationships** into the different objects above, and with the users' profiles and platform functionalities, which will be accessed in different ways from a unique entry point related to a certain location.

3.1.2 User experiences

Knowing the starting point (location-based landing page, data) and the different ends (information, knowledge, wisdom) of the B-MAP, we will now describe the customer journeys joining the first to the later ones.

Catalogue (including Connections) vs Wizard approaches rely on the presentation of the customer journey. While the catalogue approach gives the (expert) user freedom to interact with the application features, since we consider they already know the parameters under which they are looking for results; the wizard approach directs the users through a defined path, giving them small space for decision making, but to answer to the served criteria, in order to get to a result.

According to previous section, expectation A addresses un-aware users, so to help them **understand** by allowing them to navigate, discover and view the stored solutions available for them and/or already applied around them, so to help **change user consciousness**

- **asking the catalogue about success stories around the user specific building or working site or similar to their own building inspires the design wizard customer journey described in Figure 42.**

  Information provided by this wizard comes from the best practices and pilot experiences collected and described in WP2 and guides the user to find out how the industrialized renovation of their building could look like, in terms of energy efficiency, but also in terms of the other benefits of using industrialized solutions.

  1) Users start with a location (this can be done through a map or a specific address, but also can be retrieved form the IP), which would determine the language and filter some data related to a specific country.
  2) Then, the use of the building to renovate has to be specified. Design wizard data is mostly about residential buildings, so, if not residential, some warning or derivation to other sections of the B-MAP should be presented. The use of the building can be asked to the user or can be retrieved from some webservices (urban, cadastral, or other) through previous location.
  3) If user know exactly what component they want to renovate, they will be guided to the **feasibility wizard**, to look for solutions and products applicable to the specific component. If they are not asking for a specific project, but just curious about industrialized solutions around, they'll be guided to the **market wizard** questions.
  4) If user prefers to be guided by the wizard, will then be asked about a deep or partial renovation options, according to which, different data and examples will be retrieved form the B-MAP DB.
  5) Next, some characteristics of the building are needed in order to find the best fitted examples and options for the user interests: year of construction or last full refurbishment, number of dwellings, number of floors and/or situation related to neighbour buildings (isolated or detached). Buildings too young will be driven to the feasibility wizard so to scout single renovations solutions, since those buildings, per se, are not in need of a deep (or partial) renovation.

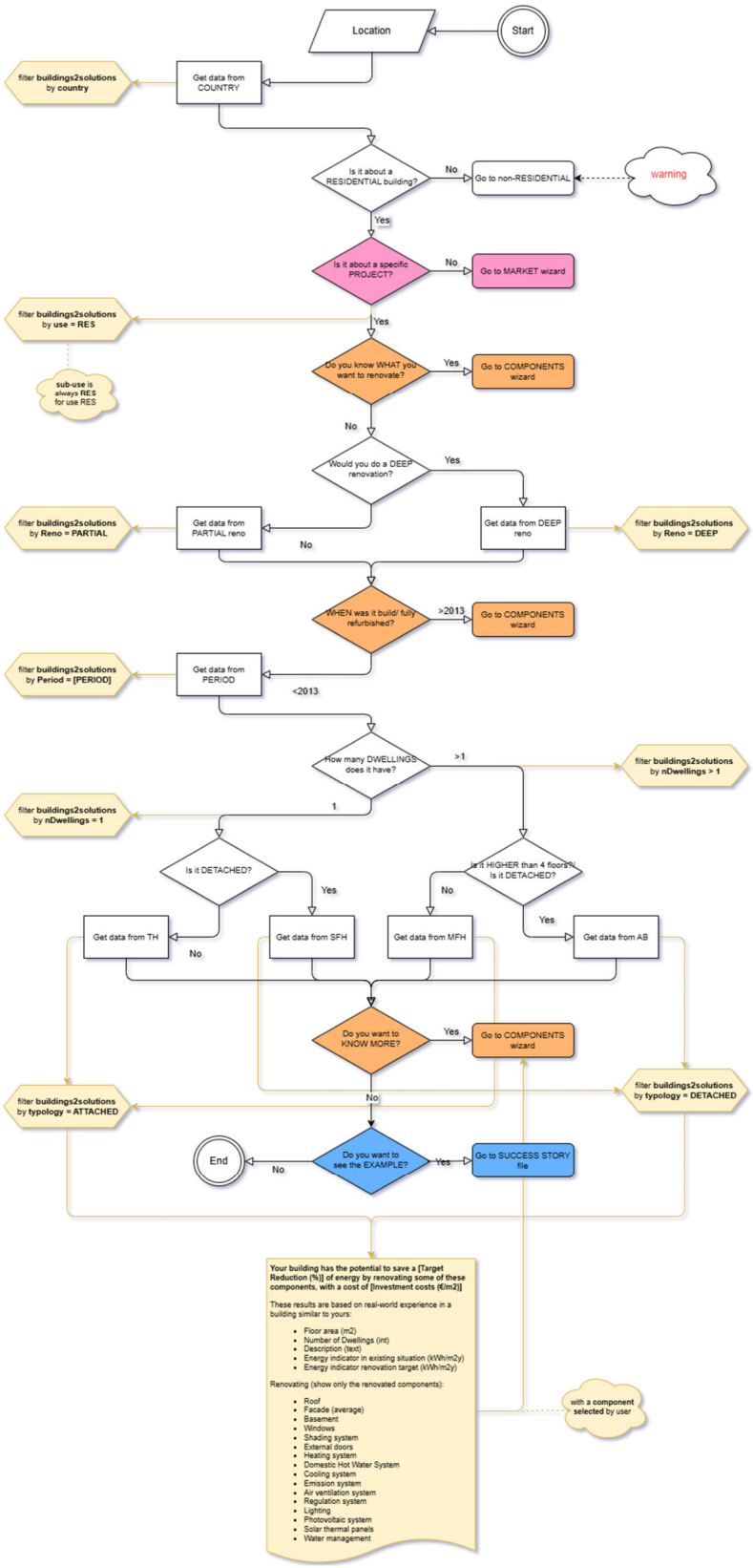


Figure 42.- Design wizard customer journey

6) With all this information, user will be provided with a set of solutions that have already been applied to buildings similar and/or close to theirs and their energy results and approximative cost, so they can imagine and have a starting point to design their own industrialized renovation.

7) If they wish to learn more about the kind of solutions provided, they can from here visit the feasibility wizard or catalogues to check specific products.

- **On the other hand, asking the catalogue which solution can be applied to a specific building or working site component around the user inspires the feasibility wizard customer journey described in Figure 43.**

  Information displayed in this wizard comes from the technical solutions and best practices collected and described in WP2 and guides the user to find out specific industrialized solutions that can be applicable to a specific component of their building.

  1) Users start with a location (this can be done through a map or a specific address, but also can be retrieved form the IP), which would determine the language and filter some data related to a specific country.

  2) Then, the use of the building to renovate has to be specified. Feasibility wizard data is mostly about residential buildings, but general solutions are also displayed. The use of the building can be asked to the user or can be retrieved from some webservices (urban, cadastral, or other) through previous location.

  3) If user does not know exactly what they want to renovate, they will be guided to the **design wizard**, to look for inspiration from the similar or closest buildings to their own, that have already been renovated. If they are not asking for a specific project, but just curious about industrialized solutions around, they'll be guided to the **market wizard** questions.

  4) If user prefers to continue within this wizard, will then be asked about the component they intend to renovate, according to which, different data and examples will be retrieved form the B-MAP DB.

  5) B-MAP hosts different levels of maturity products, so it is important now to let the user know and ask (or assume that it is the case) if they wish to look for product ready to be implemented in their building (not a prototype). If they would answer NO, the market wizard would be more interesting for them, and directions will be shown in that sense.

  6) Having selected the specific component to renovate, a set of questions regarding the applicability of solutions in the specific building will be presented. These questions propose the solutions needs to be applicable, and user should answer YES or NO to each of them.

  7) With the set of answers, the feasibility wizard will offer the user the collection of products that are applicable in their case, allowing to iteratively select one or another in order to see more information of that product in the catalogue.

  8) User can finally decide to either finish the session or look for products related to other components of their building.

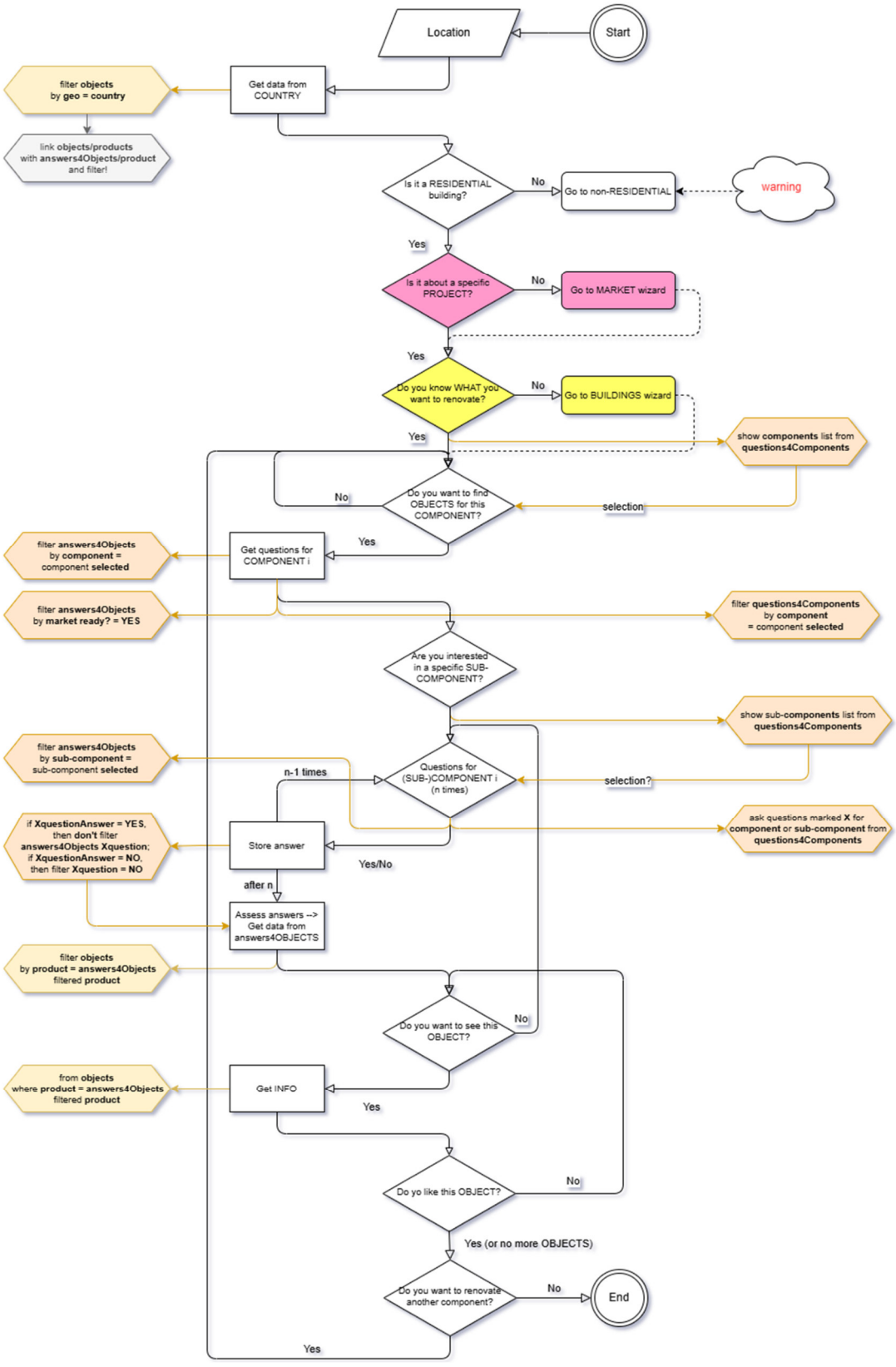


Figure 43.- Feasibility wizard customer journey

Expectation B, on the other hand, addresses aware users, so to support their **decision making** by enabling the assessment of solutions applicability or comparison of different products, and aiming at **changing renovation projects** and **market conditions**:

- **asking a specific solution its potential to be used on a real working site building component works in parallel with the feasibility wizard customer journey depicted in Figure 43, displaying, for expert users, the requirements for implementing the solution found on the catalogue.**

  This information comes from the technical solutions collected and described in WP2 and guides the user from a specific industrialized solution that could be applicable to a specific component of their building with a checklist of specific requirements. In this case user jumps directly into step 6) from a selected solution and from step 7) checks if it is applicable to their project, finding out a collection of alternative products that are applicable in their case.

- **asking a specific market about the constraints that need to be solved in a specific market so to introduce a specific solution, and what innovative trends can be put in place to solve them inspires the definition of the market wizard customer journey depicted in Figure 44.**

  Information displayed in this wizard comes from the analysis in terms of market lacks and solutions needs and constraints carried out in WP2 and would guide users to discover business opportunities regarding introduction of industrialized solutions in their contexts.

  1) Users start with a location (this can be done through a map or a specific address, but also can be retrieved form the IP), which would determine the language and filter some data related to a specific country.
  2) Then, the use of the building to renovate has to be specified. Market wizard data is mostly about residential buildings, but general solutions are also displayed. In case of not residential, some warning or derivation to other sections of the B-MAP should be presented. The use of the building can be asked to the user or can be retrieved from some webservices (urban, cadastral, or other) through previous location.
  3) In this context, introducing new objects into a specific market is the objective, so next question is about local availability. Products not available are potentially interesting regardless their market readiness, but local products which are not yet market ready are also targets. Local market ready products can be further explored on the **Feasibility wizard**.
  4) Next, a set of questions regarding the lacks and constraints of the specific market will be presented. These questions ask the users' potential capabilities to overcome market conditions hampering the introduction of a certain product in the market, and user should answer YES or NO to each of them.

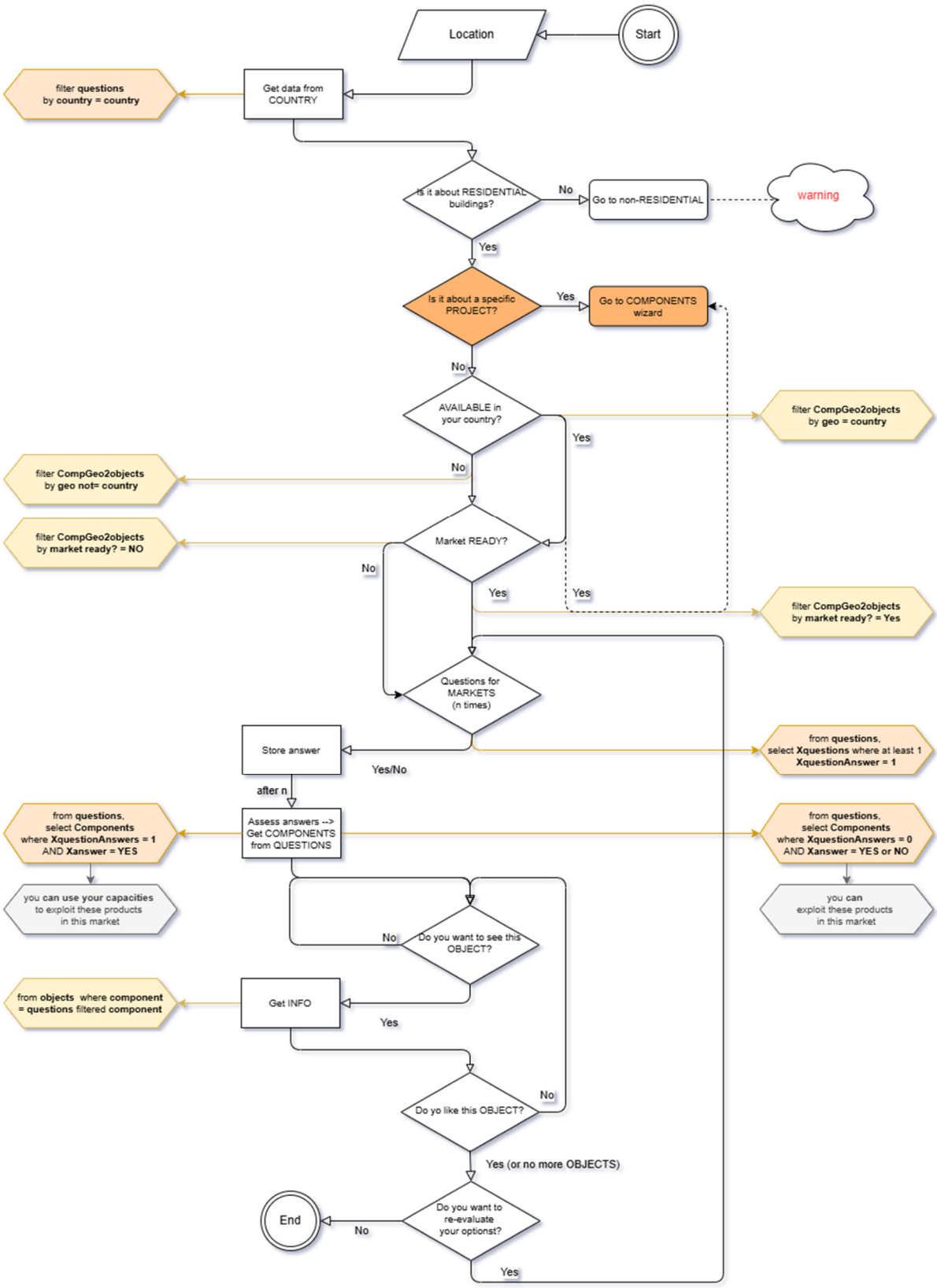


Figure 44.- Market wizard customer journey

5) Then, with the set of answers, the market wizard will offer the user the collection of products that are applicable in their case, allowing to iteratively select one or another in order to see more information or an example of application of that product, based on the best practices collection.

6) User can finally decide to either finish the session or look for products related to other market conditions.

Finally, expectation C addresses **adaptation** by enabling not only freely filtering the catalogue for both expert and non-expert users, but also updating and upgrading mechanisms, making the platform evolve and **continuously improve** understanding and decision making, better changing users' consciousness, projects and markets.

- **asking the catalogue about the needs, constraints, lacks, trends, requirements of each type of resource according to each user knowledge and concerns inspires the definition of the surf Catalogue filtering options, free navigation and upgrading mechanisms' customer journey depicted in Figure 45.**

  This information comes from the different resources collected and described in WP2 and WP5 about experts, solutions, best practices or other objects related to industrialization, and guides the user to find out their best fitted opportunity.

  1) Users start with a location (this can be done through a map or a specific address, but also can be retrieved form the IP), which would determine the language and filter some data related to a specific country.

  2) Then, the type of resource has to be selected (solution, success story, actor, document...). If the user misses some type of resource, they can visit BUPS website or contact to ask for it. When selection is done, a first filter is applied and both a map and a list display a first set of results.

  3) Map can be zoomed or panned to better set a location filter.

  4) List and map pins can then be consulted, and items can be selected one by one.

  5) Also, user can refine the results displayed by introducing some keywords that would filter according to the content of the stored free text fields (title, subtitle, description…)

  6) On the other hand, a set of filters are also available, for the user to select according to the options of the stored domain/category fields (actor role, solution material, success story building typology…)

  7) Another option is, for some kind of users, to **add a new item** to the list, which would have fields pre-filled according to the filters set in the moment of launching the form. This content will be validated by the administrator before publishing.

  8) Once the user selects and item form the (filtered) map or list, information about it is displayed, and some actions, according to user profile will be made available (print, download, contact, like, share…)

  9) User can close the information and be driven back to the catalogue to either select another item form the actual results or run another set of filters.

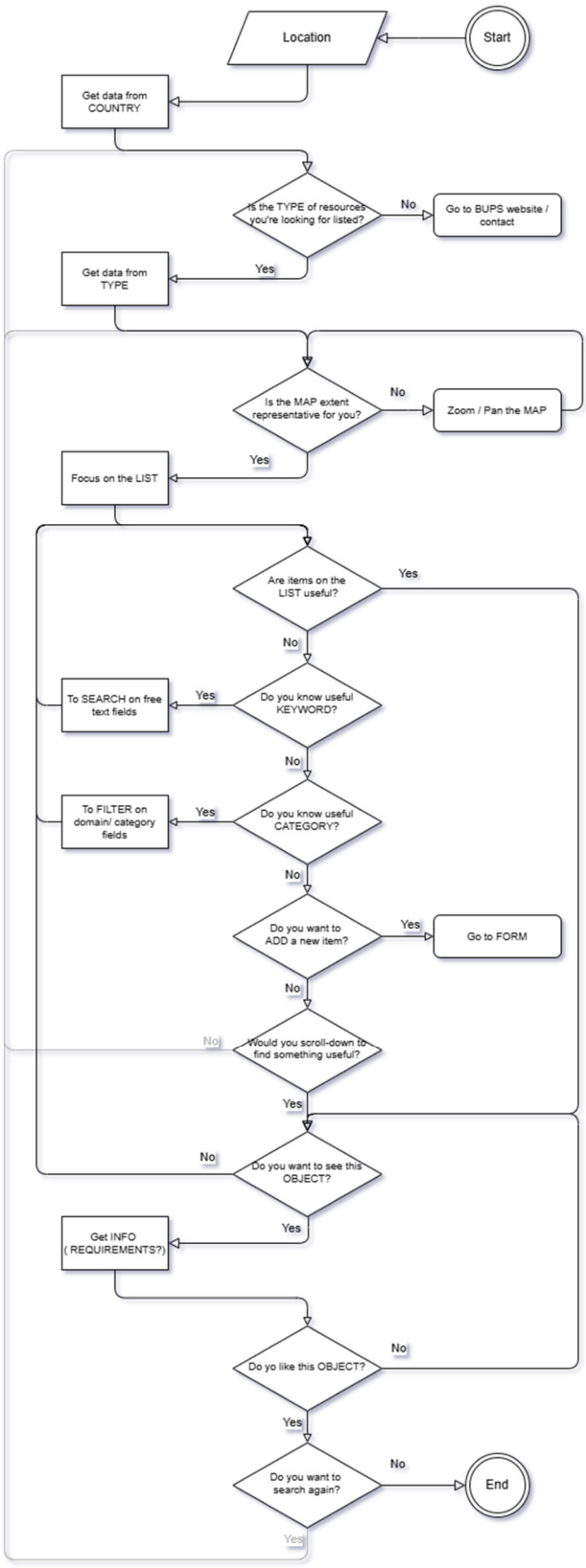


Figure 45.- Surf Catalogue customer journey

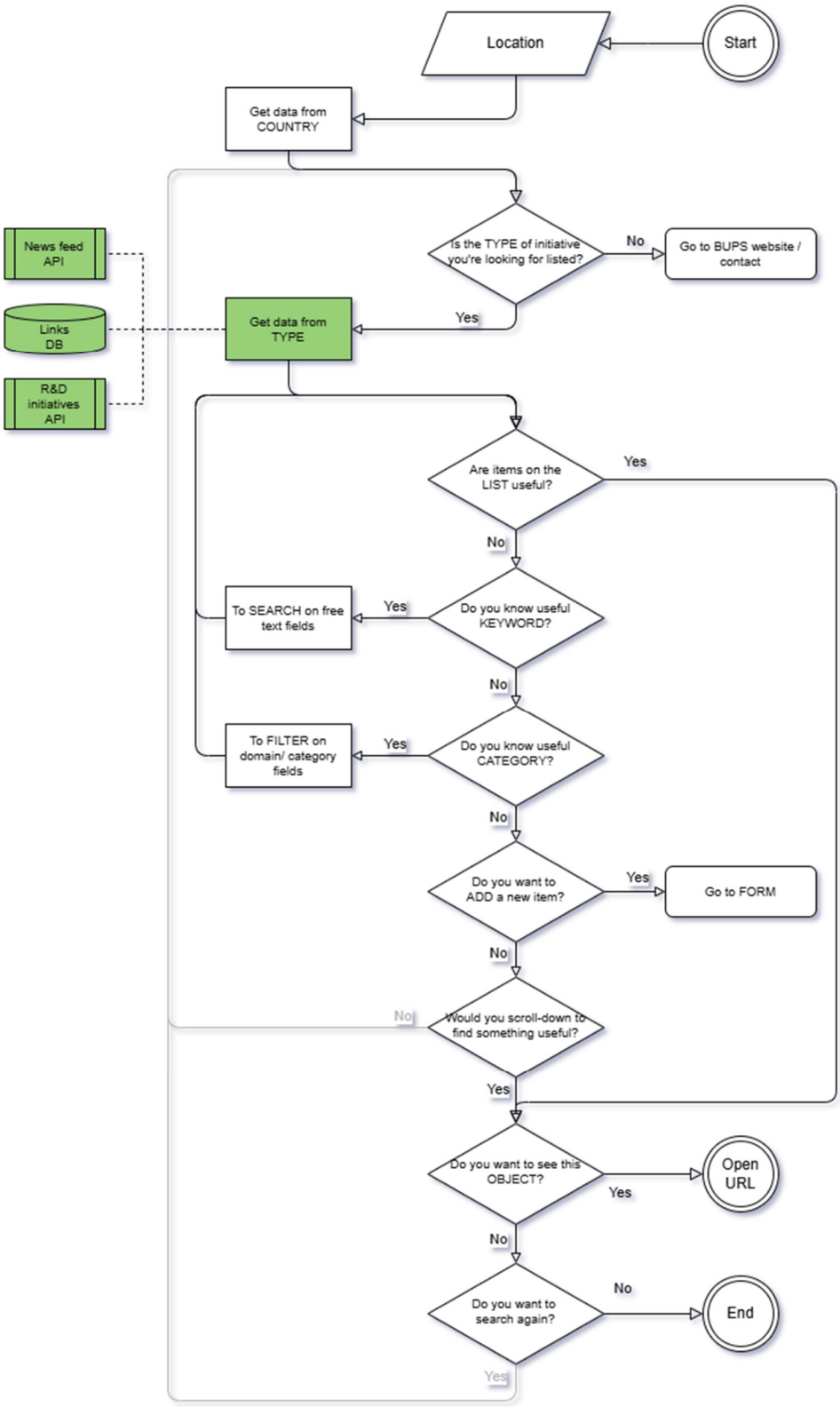


Figure 46.- Find out connections

- **By connecting, aggregating and summarizing other industrialization related initiatives we arise users' consciousness and awareness and pave the way for strategic planning, by the find-out connections customer journey as depicted in Figure 46.**

  This information comes from the different resources discovered, collected and described in WP3 and WP6 about existing platforms, networks and initiatives related to industrialization, and guides the user to find out their best fitted resource. It works like the surf catalogue, with small internal differences:

  2) According to the type of initiative, a different search engine, connection or DB is activated (KPIs from Eurostat, research projects from EC APIs, news fed DB…)
  8) Once the user selects and item form the (filtered) map or list, they are driven to the initiative URL as retrieved form the search engine, connection or DB.

Taking time to recap at this point, we can see how these diverse customer journeys inside the catalogue module quite respond to the functionalities highlighted in first sections, and how exhaustive, step by step analysis of the elements that form the body of knowledge of BUPS project can come to a single way of organization that, depending on how it is accessed and followed, can address very varied needs.

3.2 Solutions integration

Now, the different **solutions integration** will be defined. These will be composed of a general description, objectives and added values, technical features, testing and validation level, eventual market roll-out attempts and shortcomings or barriers hampering its market uptake. The customer journeys expected for the different user profiles and market conditions will be considered in order to establish the industrialization readiness, including pop-up factory concept readiness and matching between building or areas characteristics and solutions/ concepts requirements. Therefore, for each industrialization concept we will define the needed input data, the services or tools to assist assessment and/or applicability, and the outputs provided, in a way they can interact between each other.

3.2.1 Adding/ connecting to data

The effectiveness of the B-MAP depends strongly on the way new data can be incorporated and how it can interact with external sources. Two complementary approaches are foreseen: **top-down** connections managed by platform owners or authoritative sources, and **bottom-up** contributions coming directly from users or automated internet-based processes.

Top-down approach

This approach is characterised by the controlled input of data into the B-MAP environment, ensuring accuracy, reliability and standardisation.

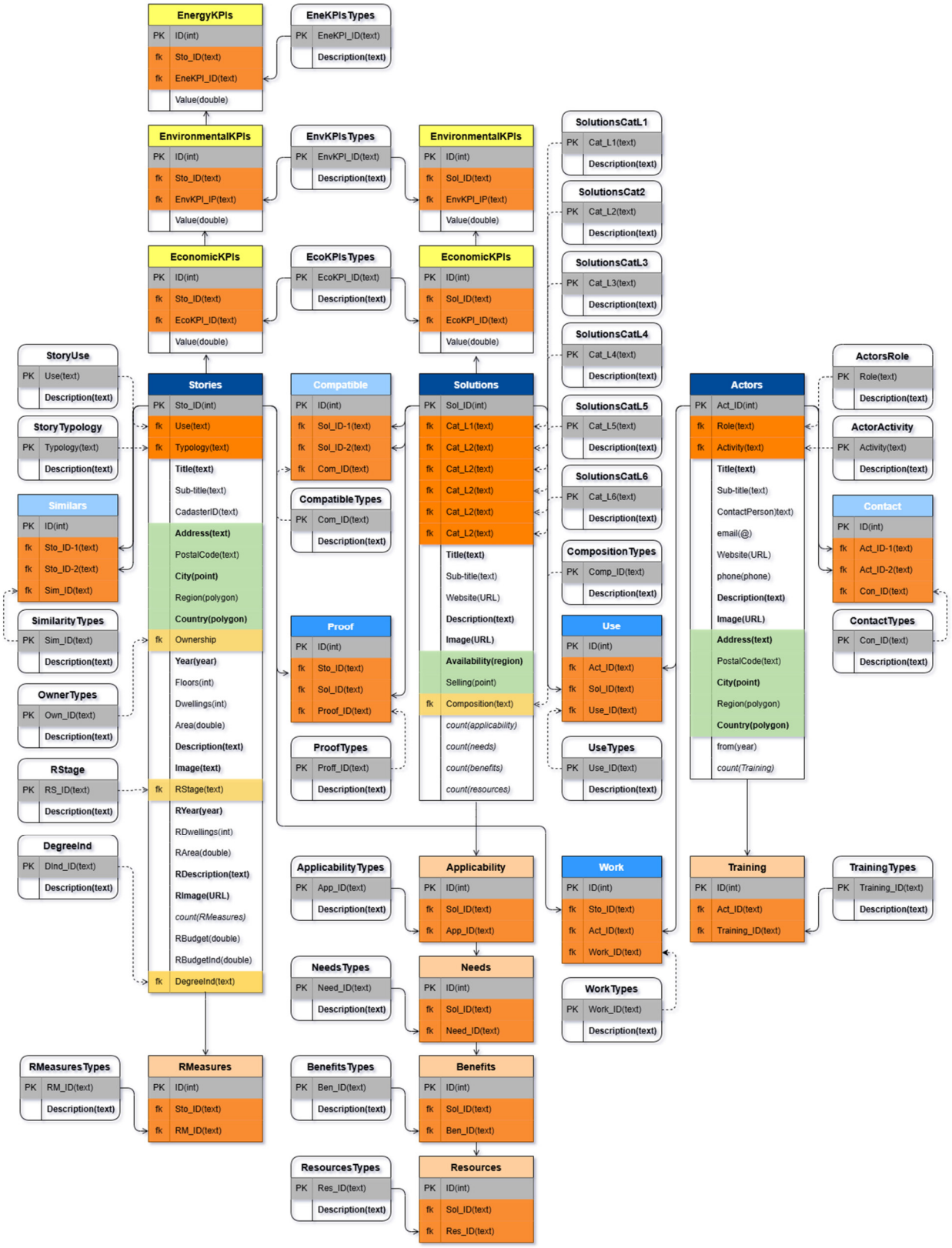


Figure 47.- The B-MAP Catalogue Data Model

- **Direct data input into the database**: Platform owners or administrators can fill in predefined templates (e.g. Excel files aligned with the Data Model – see Figure 47). This guarantees structured information from the start but requires dedicated staff and validation steps.
- **Datasets upload**: External repositories can be transformed to fit the B-MAP Data Model through Extract-Transform-Load (ETL) processes. This method allows bulk imports, enabling the reuse of valuable existing datasets (e.g. national cadastres, BIM catalogues). However, complexity increases with heterogeneity of formats.
- **API or web service connections (WMS, REST)**: This option provides the most robust long-term solution, enabling continuous synchronisation with authoritative data sources (e.g. Eurostat indicators, national EPC registries). It ensures that B-MAP information remains up to date without manual intervention, though it requires technical agreements and stable service providers.
- **Integrated web form** within the B-MAP: Authorised users can access a web-based form embedded in the B-MAP to manually add or update data directly through the platform interface. This approach is user-friendly and suitable for decentralised data contribution by validated stakeholders, while still allowing the platform to enforce predefined fields, validation rules, and user permissions.

In summary, direct database input is the simplest and fastest to implement, while API/web services represent the most sustainable and scalable strategy. Dataset uploads provide a middle ground, useful for initial deployment phases. Therefore, a progressive roadmap is recommended—start with structured templates, complement with bulk uploads from key partners, and consolidate with API connections for stable external sources.

- In this context, BUPS has put in place a **feeding template** corresponding with the DM that administrators are in charge of uploading into the DB. This template is available for download in excel format and its structure can be seen in Figure 48.

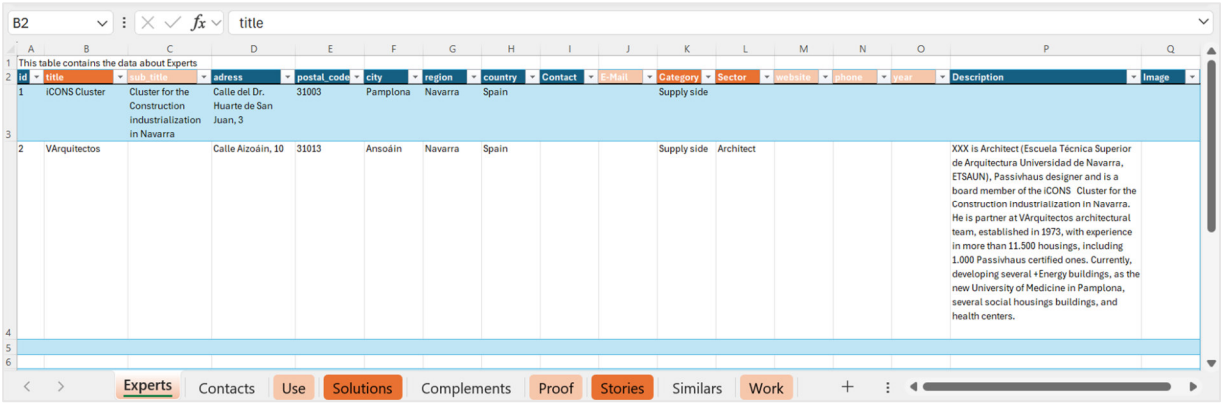


Figure 48.- Collecting data according to B-MAP DB

Bottom-up approach

This approach aims to harness the potential of the crowd and open internet resources to enrich the platform with dynamic, practice-based information.

- **User-proposed data**: Professionals, companies or researchers can submit data through online forms integrated in the platform. To ensure quality, contributions should be validated by administrators or automated filters before publication. This mechanism is especially relevant for updating best practices, new solutions, or company profiles in the catalogue module.
- **Automated extraction from feeds, news or indexed results**: Web crawlers or RSS feeds can detect new references, projects or products relevant to industrialised renovation. This strategy increases coverage and timeliness but raises challenges in terms of filtering, standardisation and copyright compliance.

In summary, user-proposed data is easier to manage and ensures community engagement, but it requires moderation to maintain quality. Automated extraction can quickly enlarge the dataset, but robustness depends on the ability to filter noise and validate results. Therefore, bottom-up mechanisms should be deployed carefully, starting with controlled user contributions, complemented later with semi-automated feeds that are curated by experts.

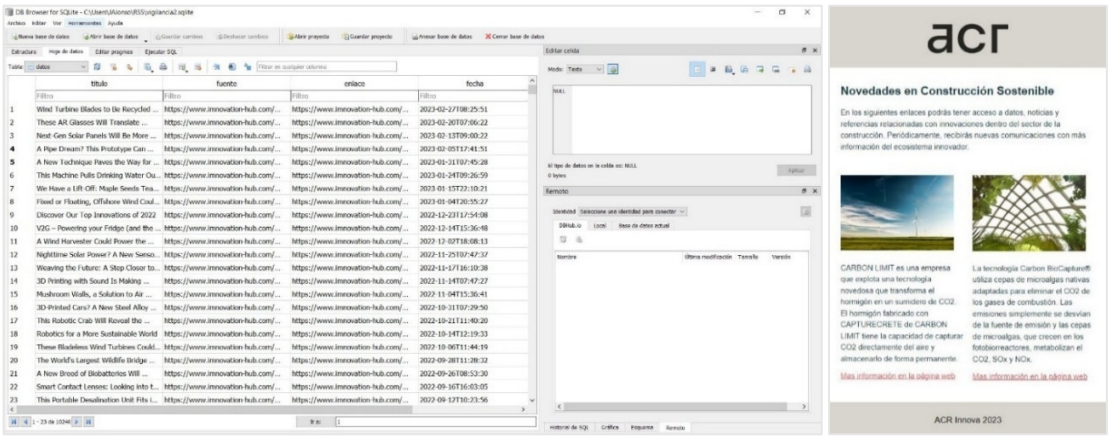


Figure 49.- Forms & browsers | News

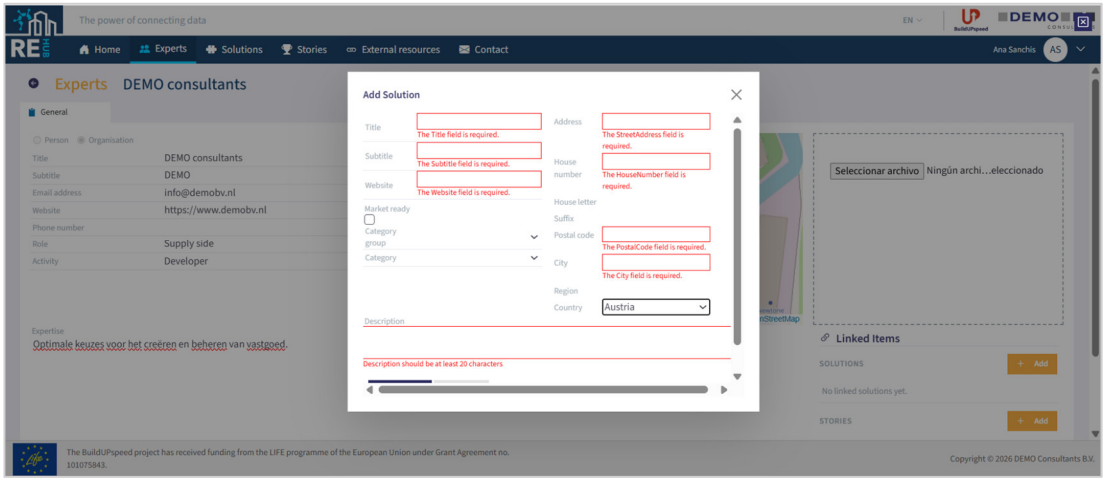


Figure 50.- Input, update web form for authorised users

- In this context, BUPS has put in place an **input form** corresponding with the DM that administrators are in charge of validate before persisting into the DB. This form is accessible for specific user roles in the online B-MAP (see Figure 50).
- It was also tested an **automatic feed** inspired in BUPS partner ACR corporative automated newsfeed reflected in Figure 49.

3.2.2 Relating/ interconnecting data

A key added value of the B-MAP lies not only in the capacity to store diverse resources, but in the ability to interconnect them in a way that matches users' questions with the most relevant solutions. **Matchmaking** between datasets, users and their requirements transform static information into actionable knowledge.

The B-MAP catalogue incorporates different types of objects—solutions, best practices, financial schemes, stakeholders in the directory, events or training materials. On their own, these items already offer useful information. However, the true potential of the platform is realised when these elements are connected to one another and to user queries.

For instance:

- A **property manager** seeking a prefabricated façade system should not only find product descriptions, but also related best practice cases, the companies offering such systems, and potential financing schemes.
- A **local policymaker** exploring industrialisation strategies in their region should be able to discover which solutions have already been applied in similar contexts, by which actors, and what barriers were encountered.

This matchmaking requires a structured approach to data modelling and relationships.

Defining objects & relationships

The starting point is to define a clear **data model** (see Figure 47) where each object type (solution, project, stakeholder, financial tool, event…) is described through attributes and identifiers. Beyond their internal descriptors, objects must include references that link them to other types of entities.

Examples of relationships include:

- *Solutions* are applied in *buildings*.
- *Best practices* demonstrate the use of *solutions* by *stakeholders*.
- *Users* can view, save, or comment on any of these resources.

By formalising these relationships in the database structure, the B-MAP ensures consistency and traceability. More importantly, it enables the creation of **search chains**—queries that traverse multiple datasets to provide enriched results.

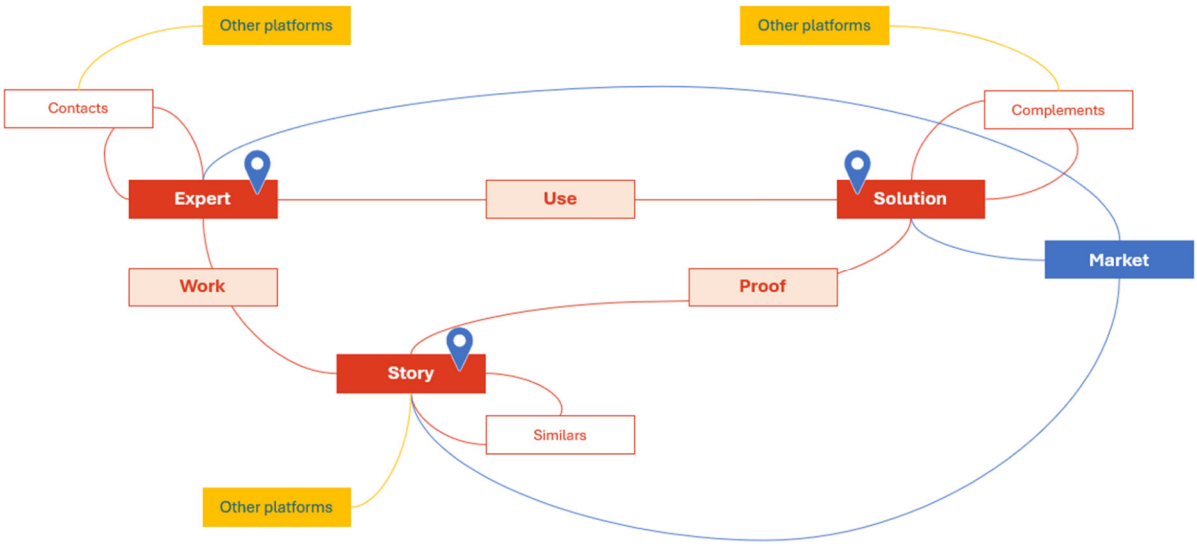


Figure 51.- Relating objects

Figure 51 illustrates how the different B-MAP objects (Expert, Story, Solution, Market) are interlinked with each other and with external resources ("Other platforms"). It serves as a visual example of how the database goes beyond storing isolated information, by establishing dynamic links that enable chained searches and intelligent navigation.

- **Expert**: node connected to *Contacts* and *Work*. An expert is not an isolated actor but is associated with stories (best practices) and with the solutions he/she has applied.
- **Story**: node that represents experiences or reference cases. It is linked to experts (who participated), to solutions (what was applied), and to other comparable cases (*Similars*). This enables users to navigate from one case to others with similar features.
- **Solution**: node that contains industrialised technologies or products. It is related to *Proof* (evidence or validations), to *Complements* (complementary solutions), and to the *Market*, reinforcing the connection between technical innovation and applicability in real contexts.
- **Market**: external node that closes the loop, representing ecosystem conditions (regulation, availability, acceptance). Its link with solutions allows assessing feasibility depending on location.

Furthermore, all main nodes are connected to **Other platforms**, reflecting the importance of interoperability and knowledge exchange with previous European initiatives (e.g. Re-MODULEES, METABUILDING, Drive0).

This scheme demonstrates that matchmaking is not a linear search ("user → result"), but a network of relationships:

- A user may start from an *expert* and end up discovering *solutions* and *stories*.
- A *story* may lead to contacting the *expert*, reviewing the *proof* of a *solution*, and validating its applicability in a *market*.

- Through connections with *Other platforms*, the scope extends beyond the B-MAP's own repository.

B-MAP is therefore an interconnected ecosystem of data that enables users to discover, compare, and filter resources according to their needs and market conditions.

Describing objects & relationships

Each relationship must be described not only by existence, but also by **conditions and attributes**. For example:

- A solution may only be applicable to buildings of certain typology, age or climate.
- A financial scheme may only apply to SMEs or social housing providers.
- A best practice may illustrate not only the technical installation but also the measured performance gains.

Capturing such details allows the system to apply **filters and matchmaking rules**. This is crucial for guiding users through wizards and catalogues: a non-expert user can enter a location and a building type, and the system will automatically filter solutions, projects and actors that match those conditions.

Figure 52 provides a detailed representation of the main objects considered in the B-MAP data model and highlights the need to carefully design attributes and relationships to ensure consistency and usability.

- **Work**: defines the professional roles and activities associated with Experts (e.g. prescriber, reseller, assembler, manufacturer, quality control) and related them to specific Stories. These attributes determine the way experts contribute to the value chain, clarifying whether they generate knowledge, deliver services, or provide technical validation.
- **Proof**: relates to Solutions and Stories by capturing the evidence of their performance (tested, implemented, recovered, reused). Proof attributes provide credibility and maturity indicators that are essential for decision-making, as they distinguish between experimental, validated, or already deployed practices.
- **Use**: connects Solutions with Experts, specifying how a solution is applied (knows/trained, uses per design, commercialises, stores, assembles, manufactures). These descriptors transform a solution from being a passive entry in the database into an active element with clear applicability conditions.
- **Contacts**: enrich the Expert node by mapping the type of relationships they maintain (friend, mentor, collaborator, partner, representative). This network-oriented attribute reflects the social and professional capital of experts, facilitating matchmaking not only by technical expertise but also by relational ties.
- **Complements**: describe the interdependencies of Solutions (usually together, needed, compatible, similar). This attribute acknowledges that industrialized renovation rarely relies on isolated products, but on systems of compatible components. By formalizing complements, B-MAP supports solution bundling and integrated offers.

- **Similar**: links Stories, allowing clustering by typology, by period, or by component. This feature helps users identify comparable cases, benchmark performance, and extrapolate lessons learned to their own context.
- **Market**: functions as a transversal node describing the ecosystem conditions where solutions and stories are implemented. Attributes include constraints, lacks, needs, and trends. By incorporating these descriptors, the B-MAP ensures that the matchmaking process is not purely technical, but contextualized: a solution proven elsewhere may face barriers in a different market unless local conditions (e.g. skills, regulations, user acceptance) are taken into account.

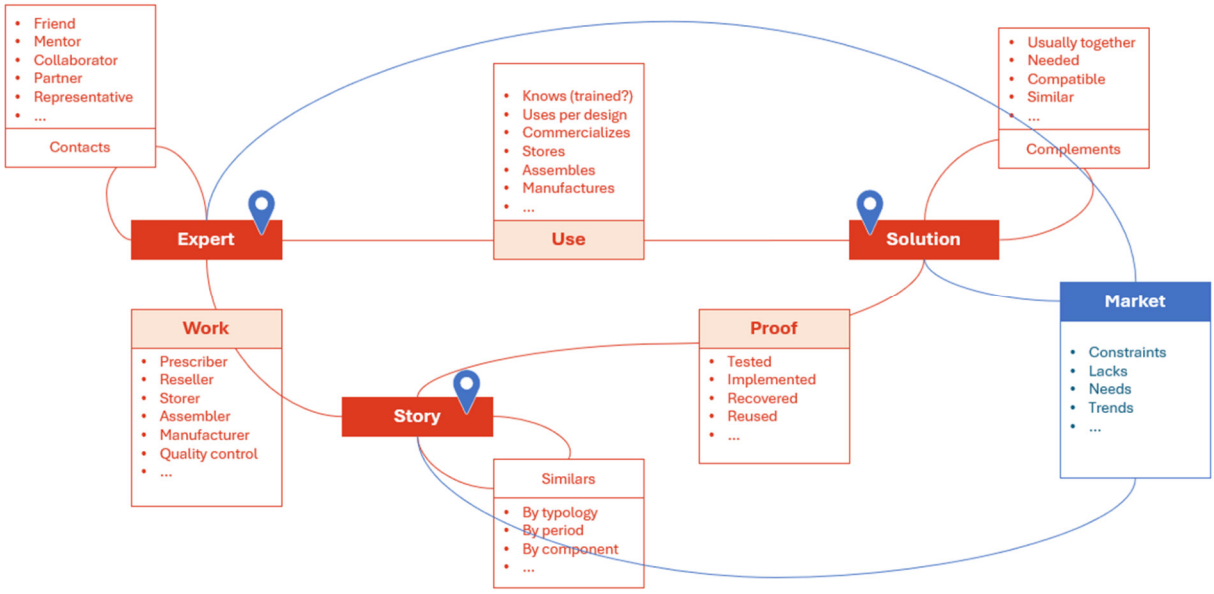


Figure 52.- Describing objects & relations

This layered description shows that carefully designing attributes around Work, Proof and Use, Contacts, Complements and Similars, and Market ensures that each core object (Expert, Solution, Story) is not only self-contained but also embedded in a network of meaningful relationships. By carefully defining these attributes and relationships, the platform ensures that each object:

- Is **self-descriptive**, with enough metadata to be searched, filtered and compared.
- Can be **linked dynamically** with other objects (e.g. a solution validated by a proof, applied in a story, deployed by an expert in a specific market).
- Supports **chained queries**, enabling users to start from one entry point (e.g. an expert) and navigate across stories, solutions, and markets.

This structured description turns the B-MAP into more than a static catalogue—it becomes a knowledge graph where every object is enriched with context and relationships, allowing advanced matchmaking, discovery and decision support.

Matchmaking

Without structured relationships, the platform would behave like a simple repository where users can only perform keyword searches. By contrast, **interlinked data** enables:

- **Chained searches**: e.g. from a solution → to related projects → to financing options → to companies able to implement it.
- **Context-sensitive filters**: narrowing down results not only by keywords, but by technical, geographical or financial attributes.
- **Knowledge discovery**: identifying patterns, such as which solutions are most common in certain climates, or which actors collaborate most frequently.
- **Scalability and integration**: structured data can be exposed via APIs to other platforms, maintaining interoperability across EU initiatives.

In summary, the structured and interconnected organisation of B-MAP data transforms the platform into more than a static archive—it becomes a **decision-support environment**. This is what allows the platform to respond dynamically to diverse user needs, whether they are tenants, property owners, SMEs or policymakers, and to accelerate the adoption of industrialised renovation across Europe.

3.3 Mock-ups

Finally, the **front-end** application and functionalities are designed according to market maturity and preparedness for industrialization and automatization, this is, taking into account the possibilities and/or limitations that data and services availability could cause on each market (e.g. enter location: get map or get list), so the customer journeys (including integration with/ connection to solutions for each step) turn into user experiences, to be translated into visualizations adapted to the final user.

3.3.1 Functional mock-ups

Functional mock-ups are early visual and interactive representations of the B-MAP platform, developed to test how the system's functionalities will be presented to the end user. Unlike purely aesthetic prototypes, functional mock-ups **focus on the logic, flow and usability** of the tool, ensuring that the customer journeys defined in previous sections are effectively translated into practical user experiences.

As for **validation of functionalities**

- They allow the consortium to check whether the defined modules (e.g. catalogue, directory, feasibility check, financial information) are correctly implemented in terms of navigation, inputs and outputs.
- By simulating the steps that a user will follow (e.g. entering location → selecting filters → viewing solutions), mock-ups confirm that the envisioned logic is feasible and user-friendly.

For the **user engagement and feedback**

- Functional mock-ups serve as a communication tool with stakeholders, enabling them to visualise and interact with the system before full software development.

- This early engagement ensures that potential usability issues are detected at a low-cost stage and that user expectations are aligned with the final design.

In summary, functional mock-ups act as a bridge between design and development**.** They make abstract requirements tangible, reduce risks during implementation, and facilitate agile iteration by incorporating user feedback before committing resources to coding.

In this context, DEMO prepared the mock-ups below, that can be used for WS 2 in pilot ecosystems and roadshows.

Landing Page

The landing page of the B-MAP mock-up is conceived as the main entry point to the platform, guiding users towards the different functionalities in a clear and structured way.

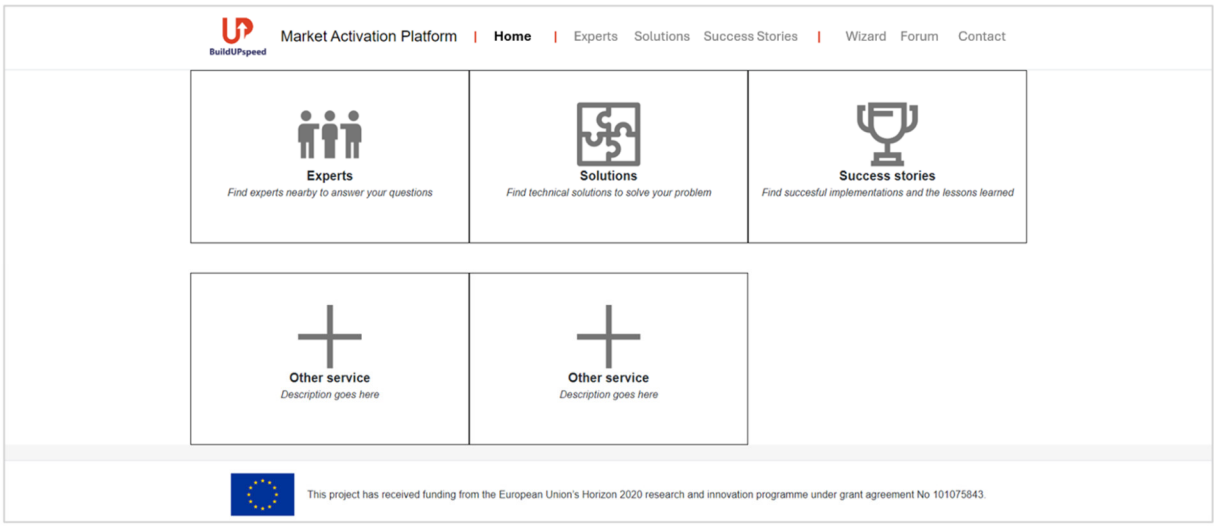


Figure 53.- B-MAP landing page | Home mock-up

At the top, a **navigation bar** is permanently displayed across all screens of the platform, ensuring consistent access to the main modules:

- **Home** – the starting page, providing orientation and context.
- **Experts** – access to the directory of professionals and organisations.
- **Solutions** – entry to the catalogue of industrialised renovation technologies and products.
- **Success Stories** – access to best practices and reference cases.
- **Wizard** – interactive guided paths for non-expert users, enabling step-by-step discovery of solutions.
- **Forum** – a collaborative space for questions, discussions, and peer learning.
- **Contact** – a channel for direct communication with the platform administrators or support team.

The design highlights that the landing page drives the user towards two main functionality **blocks**:

- **Catalogue** functionalities: through Experts, Solutions and Success Stories. These sections present structured lists or maps of resources, allowing users to search, filter and compare.
- **Complementary functionalities**: through the Wizard, Forum and Contact sections. These provide guidance, interaction and support, complementing the catalogue with more personalised or collaborative experiences.

The mock-up underlines that all access points to the catalogue ultimately lead to a harmonised interface, where users can browse and interact with resources in a consistent way. This coherence is crucial for user experience, as it ensures that navigation is intuitive and predictable across different sections.

Catalogues

The mock-up of the Catalogue module illustrates how users will access and explore the core resources of the B-MAP, such as experts, solutions and success stories.

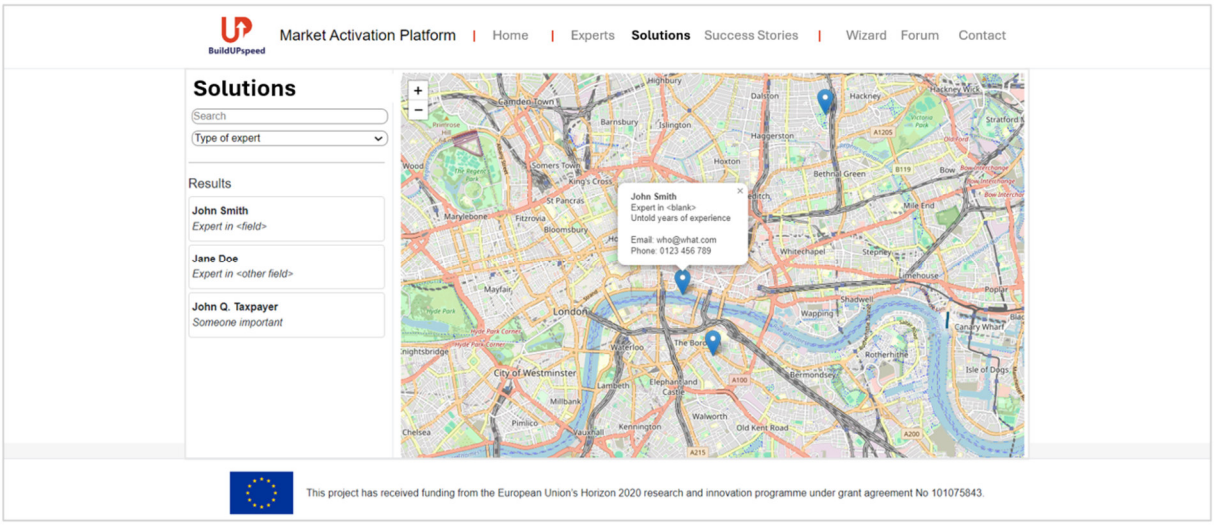


Figure 54.- B-MAP Catalogue module | Solutions mock-up

Each catalogue screen is structured into two main components, first, the map area, which:

- Provides a geographical interface where resources are displayed as location-based pins.
- Users can zoom, pan, and search by location to identify relevant cases near them.
- By clicking on a pin, detailed information related to the selected resource is displayed.
- The map dynamically responds to user actions performed in the panel, ensuring that filters or searches are immediately reflected on the visual layout.

Then, the Panel area, which:

- Functions as the main control space for searching and filtering.
- Users can enter keywords, apply filters by category (e.g. building typology, solution type, stakeholder role), or sort results.

- The panel displays result cards summarising each resource (e.g. solution description, expert profile, project snapshot).
- Users can click on a card to open full details, while simultaneously seeing its location on the map.

This dual design (map + panel) ensures that the catalogue supports both geographical exploration and attribute-based filtering. It combines intuitive navigation for non-expert users with advanced filtering for professional users.

By integrating these features, the catalogue mock-up demonstrates how the B-MAP will allow users to discover, compare and connect resources in a consistent and user-friendly way, bridging spatial context with structured information.

Info cards

The Info Cards are designed as the **detailed information interface** of the B-MAP Catalogue. When a user clicks on a resource in the panel or on a pin in the map, an info card opens, providing an enriched view of that element. Key features include:

- **Expanded information**: Cards display structured details about the resource (e.g. for a solution: technical description, maturity level, proof of application; for an expert: profile, role, contacts; for a story: project description, context, outcomes).
- **Visual clarity**: Each card is conceived as a concise, easy-to-read component, combining text, icons, and potentially images, to support quick understanding of the resource.

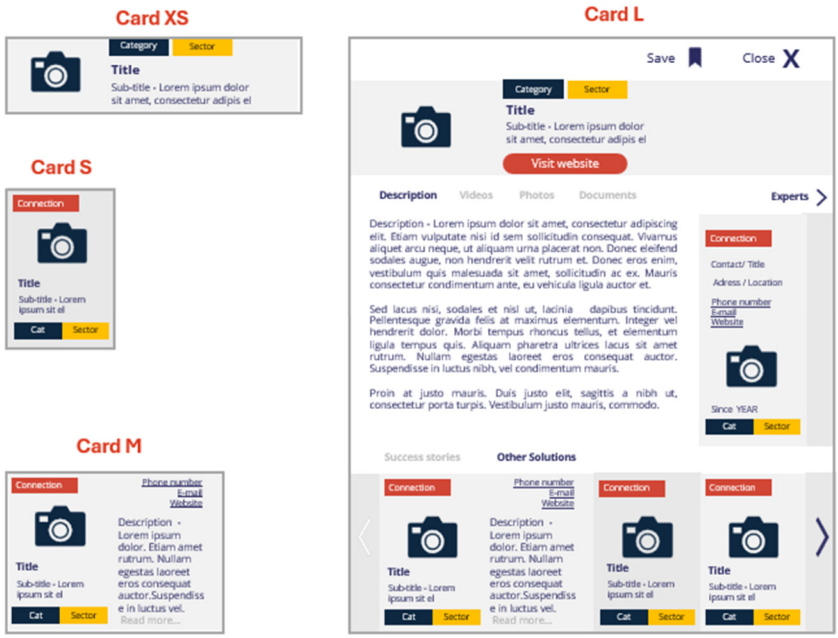


Figure 55.- B-MAP Catalogue module | Info cards mock-up

- **Interactivity**: Beyond information, cards may enable additional actions such as saving the resource, sharing it, printing it, or directly contacting the associated expert or organisation.

- **Integration with navigation**: Clicking on a card highlights the corresponding location on the map, reinforcing the spatial connection between information and context.

The mock-up underlines that info cards serve as the operational layer of the catalogue: they turn general search results into **actionable insights**, enabling users to decide what to do with the information (compare, connect, or implement).

In this way, Info Cards complete the catalogue experience by bridging search and discovery with decision and action, supporting both non-expert users seeking guidance and professionals looking for detailed specifications.

Wizards

The Wizard functionality is conceived as a **guided pathway** within the B-MAP, aimed at supporting users—particularly non-experts—in navigating complex renovation processes or concepts. Unlike the catalogue, which allows free exploration, the wizard leads the user step by step through a structured decision-making process.

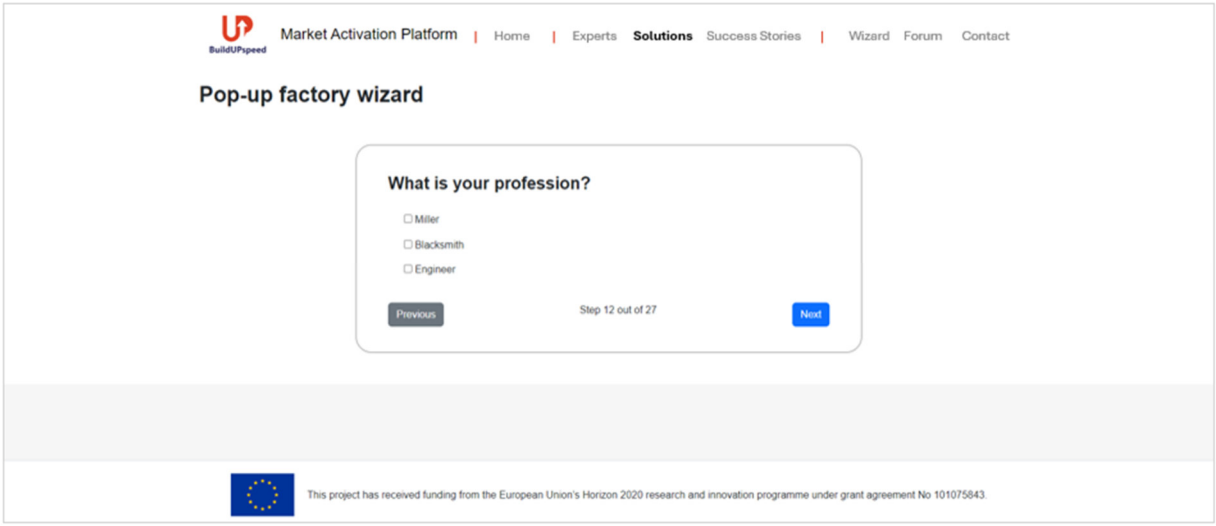


Figure 56.- Wizards mock-up

Two types of wizards are foreseen:

- **Renovation Wizard**: focused on guiding users in the design or selection of renovation options.
- **PuF Wizard**: supporting users in the understanding and adoption of the *Pop-up Factory* concept.

Regardless of the entry point, all wizards lead to a consistent screen design that presents:

- A **series of simple, sequential questions** (e.g. type of building, renovation scope, preferred solutions).
- **Interactive choices** where answers progressively refine the results shown.
- **Outcome visualisation**, where the wizard delivers a tailored proposal: a renovation pathway, a product or solution, or a Pop-up Factory configuration.

The mock-up highlights that wizards are not only about simplifying navigation but about translating complex technical content into accessible decision trees. This is particularly relevant for engaging non-expert users, who may not know where to start or how to filter information in the catalogue.

By combining structured questions with targeted results, the wizard functionality ensures that the B-MAP provides customised, user-friendly guidance, complementing the exploratory freedom of the catalogue with the reassurance of a step-by-step process.

3.3.2 Prototype

The next step after the development of functional mock-ups is the creation of a **prototype**. This phase focuses on two complementary objectives:

Adaptation to BUPS corporate image

The functional mock-ups, initially conceived as neutral representations of functionalities, will be refined and visually aligned with the corporate identity of BuildUPspeed.

- This includes the integration of the **project's graphic guidelines**, logos, colour palettes, typography, and overall design language, ensuring coherence with the project's branding and communication strategy.
- By adapting the user interface to the corporate image, the prototype will not only demonstrate functionality but also convey a professional, **recognisable** and trustworthy appearance to end users and stakeholders.

Deployment of an actionable prototype for first user testing

Beyond static mock-ups, the prototype will become an interactive, clickable environment where users can perform actions and navigate across modules (e.g. catalogue, directory, wizard).

- **Selected user groups** (partners, stakeholders from pilot markets, and representatives of target audiences) will be invited to test the prototype.
- These early testing sessions will provide valuable **feedback** on usability, clarity of navigation, and the adequacy of the visual design, allowing iterative improvements before the full implementation phase.

In summary, the prototype stage bridges the gap between design and real use: it translates the functional logic of the B-MAP into a visually branded, interactive tool, enabling the consortium to validate both **look-and-feel** and **user experience** with real stakeholders prior to software development.

DEMO released a **first online prototype** from which Figures below represent some captions.

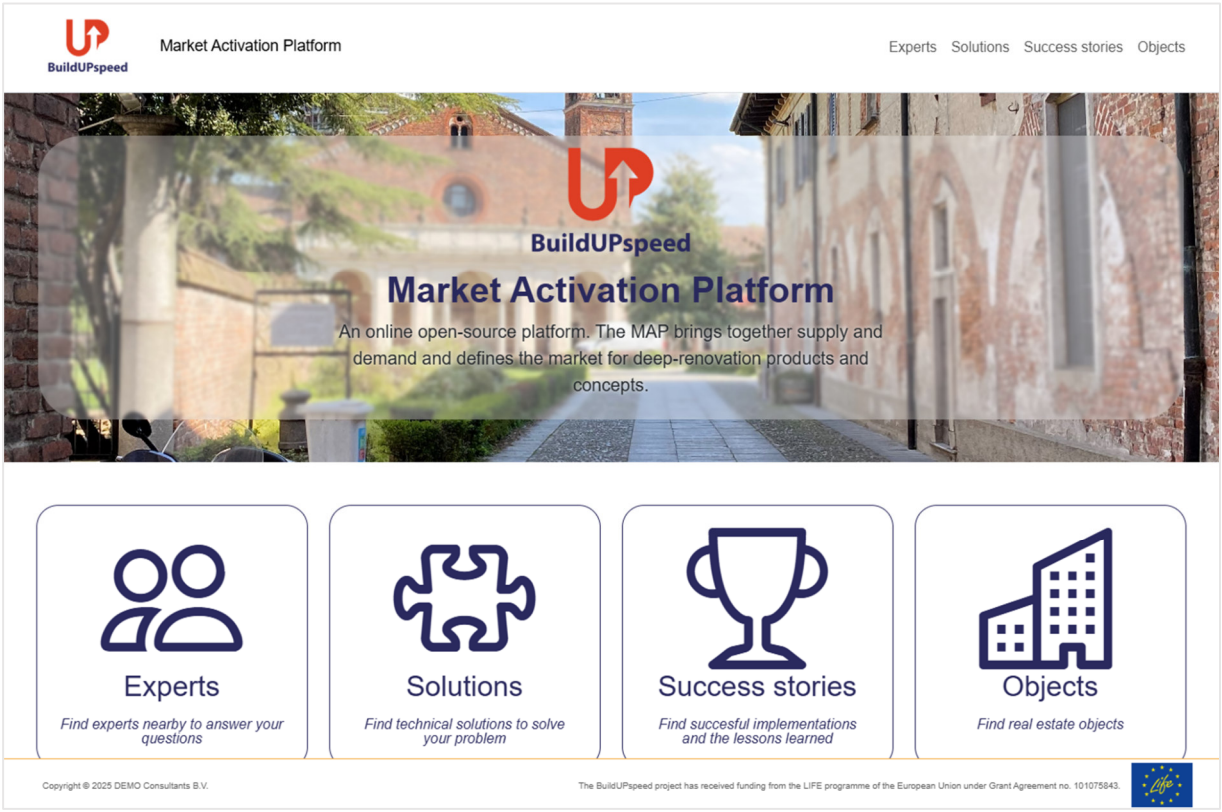


Figure 57.- B-MAP prototype landing page | Home

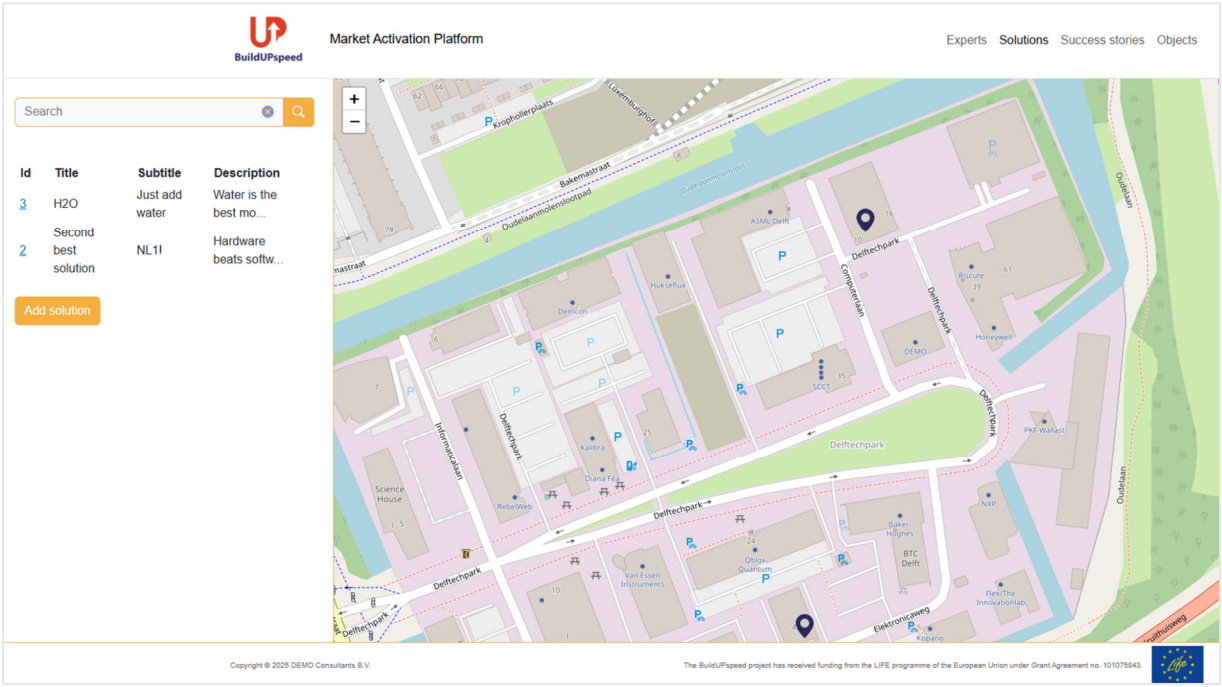


Figure 58.- B-MAP prototype Catalogue module | Solutions

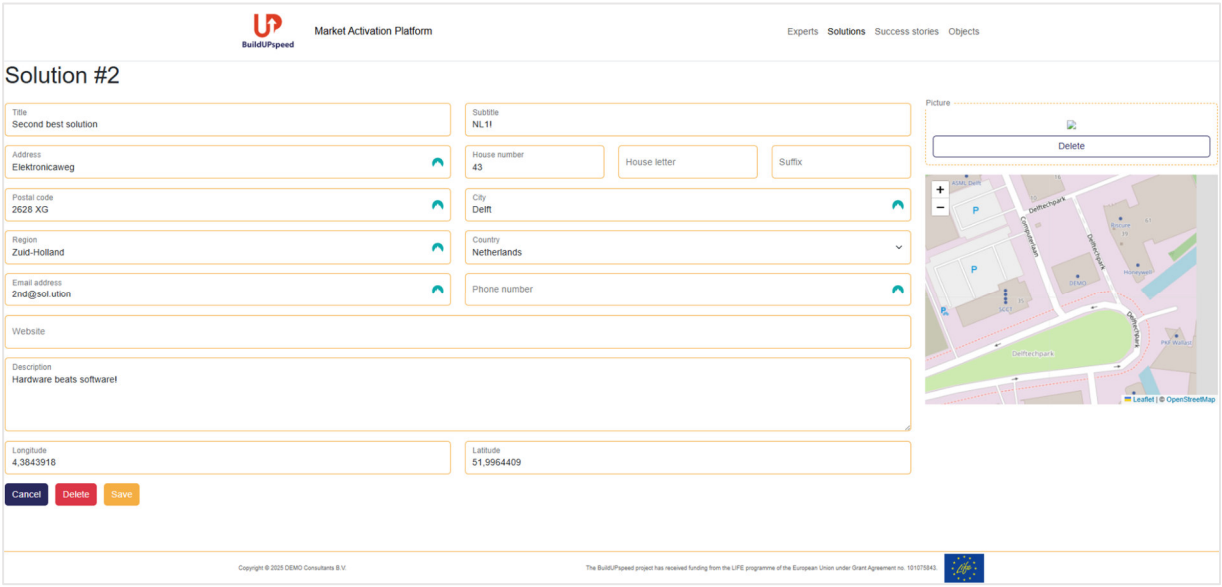


Figure 59.- B-MAP prototype Catalogue module | Info cards form

4 MAP – Evaluation protocol

The BuildUPspeed Market Activation Platform (B-MAP) is a key result of the BuildUPspeed project and has been designed as a digital hub to promote and facilitate the adoption of industrialized renovation solutions. The platform connects renovation needs with solutions, experts, success stories and market opportunities, helping different stakeholders navigate the complexity of deep renovation projects. This evaluation aims to assess the usefulness, usability, completeness and potential impact of the platform.

4.1 Briefing the platform

To ensure a common understanding of its objectives and functionalities, participants are encouraged to review the article “Market Activation Platform: Connecting People and Solutions Through Stories”[1] before starting the evaluation.

https://busmap.demobv.nl/platform

"Europe’s renovation challenge is no longer only about improving energy performance — it is about transforming the way we build. Meeting climate neutrality targets requires scaling up deep renovation across the continent, and that will not be possible with traditional, fragmented construction practices**. Industrialized renovation — based on prefabricated systems, modular components, digital design integration and off-site manufacturing — offers a way to deliver faster, more predictable and higher-quality upgrades while reducing costs, waste and disruption. The technical solutions already exist. The real challenge lies in connecting them to buildings, markets and decision-makers in a coherent and accessible way. The BuildUPspeed Market Activation Platform (B-MAP) has been developed to address exactly this gap,** rather than functioning as a simple repository of information, its aim is to act as a digital ecosystem that connects building owners, industry actors, solution providers and public stakeholders. Its purpose is to accelerate the uptake of industrialized renovation by structuring knowledge, enabling matchmaking and supporting better decision-making.

Industrialized renovation depends on **coordination**. A prefabricated façade system must match the characteristics of a specific building. A modular roof solution must be technically feasible and locally available. Market conditions — from regulation to skills and financing — must allow implementation. Without digital support, these variables remain disconnected and difficult to navigate. **Digitalization** makes them visible and

[1] https://buildupspeed.eu/news/market-activation-platform-connecting-people-and-solutions-through-stories/

interrelated. By structuring data on buildings, solutions and markets, it turns complexity into clarity.

The BuildUPspeed platform is designed around this principle. Accessible as a web-based application, it begins with a simple but powerful entry point: location. By identifying where a building is situated, the platform adapts language, filters content and aligns results with local conditions. From there, users are guided into a structured environment where industrialized solutions, success stories, and experts, are **interconnected**.

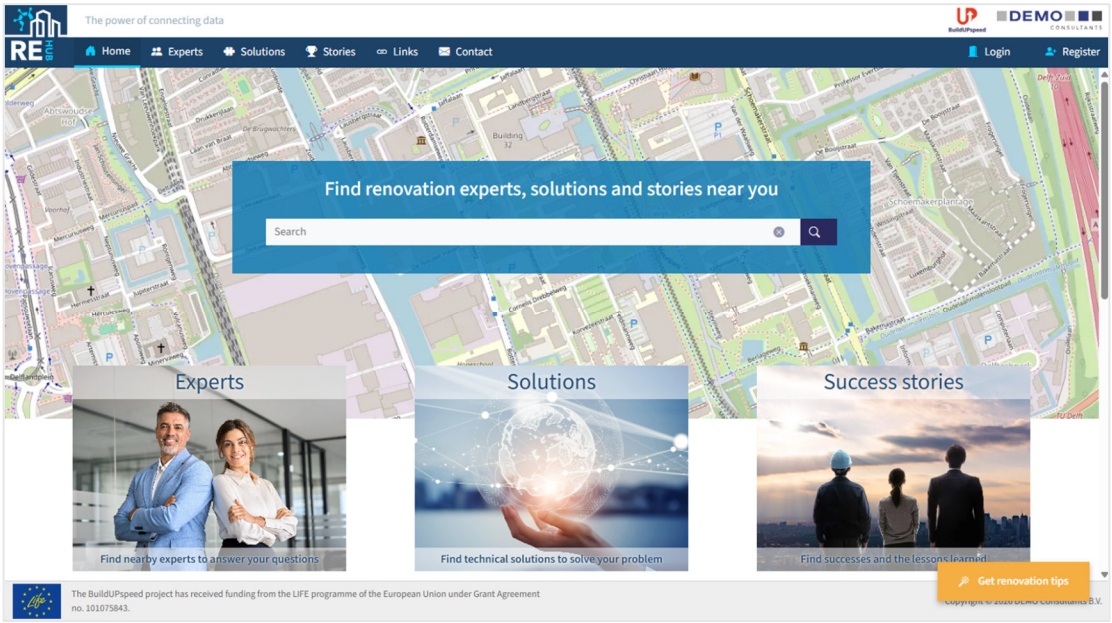


Figure 60.- B-MAP final landing page

The core of the platform functions as an intelligent **catalogue** where solutions, stakeholders and renovation examples are described through defined parameters that allow relationships to be established between them. This enables the system to match building typologies with appropriate prefabricated systems, or to identify which experts and companies are active in a given region. Instead of searching through scattered sources, users explore a curated environment where technical data, implementation requirements and real examples are presented in a coherent format.

To make this experience accessible to different levels of expertise, the platform combines free exploration with guided digital **pathways**, called wizards. Some users may already know which building component they wish to renovate; others may simply want to understand what industrialized renovation could look like for their property. The Design Wizard offers inspiration by presenting renovation examples applied to similar buildings. The Solutions Wizard allows a more technical assessment, helping users verify whether a specific industrialized solution can be implemented in their context. For actors working at market level, the Market Wizard will highlight barriers and innovation opportunities, supporting strategic decisions on how to introduce or scale solutions locally.

Through this structured journey, the platform progressively transforms information into knowledge. A building owner entering an address can move from curiosity to

determination, discovering comparable renovation cases, understanding performance impacts and identifying qualified providers. A company offering prefabricated systems can explore where their products fit, identify potential partners and assess market readiness. A policymaker will be able to analyse constraints and trends to support strategic planning. All actors navigate within the same digital environment, but with pathways **adapted** to their objectives.

What distinguishes the BuildUPspeed platform is not only the breadth of content, but the logic of matchmaking embedded in its design. Buildings, solutions and markets are not isolated entries; they are described as interconnected objects. This relational structure allows the system to **answer meaningful questions**: which solutions have been successfully applied to buildings of this type? Which products are market-ready in this region? Which conditions are limiting adoption, and what trends could help overcome them? By enabling filtering, comparison and assessment, the platform supports both immediate project decisions and longer-term strategic thinking.

As industrialization advances, this type of digital infrastructure becomes essential. **Scaling up** renovation is not only about producing more components off-site; it is about aligning demand and supply, reducing uncertainty and building confidence across the value chain. **The BuildUPspeed Market Activation Platform contributes to this transition by creating a shared virtual space where innovation becomes visible, accessible and actionable.** In doing so, it helps move industrialized renovation from isolated pilot projects toward mainstream practice. By connecting buildings with solutions and markets with opportunities, the platform supports a faster, more reliable and more scalable renovation process — an essential step toward a decarbonized European building stock.

4.2 Workshop guidelines

The objective of the evaluation session is to validate whether the BuildUPspeed Market Activation Platform effectively supports the discovery, assessment and adoption of industrialized renovation solutions by different stakeholder groups.

Rather than focusing only on user satisfaction, the session should evaluate whether participants can successfully use the platform to achieve realistic renovation-related objectives.

These activities are not mandatory. However, the introduction and platform demonstration are strongly recommended, as they help participants become familiar with the platform and provide more informed responses in the individual evaluation questionnaire.

4.2.1 Introduction & Demo

Before evaluating the B-MAP, participants should be introduced to its objectives and main functionalities through a short presentation and demonstration. This ensures a common understanding of the platform and supports more meaningful and reliable evaluation results. The next structure is proposed.

Context

(10 minutes) The moderator introduces:

- The BuildUPspeed project and its objectives.
- The concept of industrialized renovation.
- The role of the Market Activation Platform (B-MAP).
- The purpose of the evaluation session.

Participants should be informed that the objective is to evaluate the platform, not their individual performance.

A presentation is available for this purpose.

Guided Demonstration

(15 minutes) The moderator provides a short demonstration of the platform, including:

- Home page and navigation structure.
- Catalogues.
- Solutions section.
- Experts section.
- Success Stories section.
- Search and filtering functionalities.
- Relationships between resources.
- Wizards and guided journeys.

The purpose is to ensure all participants have a basic understanding of the platform before carrying out the practical exercises.

Moderator navigates the website. A video demo is also available.

4.2.2 Practical Exercise

In addition, a practical exercise based on realistic use cases is recommended to familiarize participants with the platform and enable a more comprehensive assessment of its usability, content and overall usefulness. According to different profiles, a hands-on session is proposed:

(20–30 minutes) Participants are invited to complete a short scenario-based exercise according to their stakeholder profile.

Scenario A – Demand Side Users

(Building owners, housing managers, homeowners, housing associations)

"Imagine you are responsible for a residential building constructed in the 1970s and are interested in exploring industrialized renovation opportunities."

Try to complete the following tasks:

- Find a renovation solution relevant to your building.
- Find a similar renovation example or success story.
- Identify an expert or company related to the solution.
- Identify one useful piece of information that could support a future renovation project.

Scenario B – Supply Side Users

(Manufacturers, solution providers, consultants, contractors)

"Imagine you are offering industrialized renovation products or services and are looking for opportunities to promote them."

Try to complete the following tasks:

- Find a relevant success story.
- Identify experts or stakeholders active in your field.
- Explore how your solution could fit a specific building type or market.
- Identify one potential business opportunity.

Scenario C – Public Authorities and Policy Makers

(Municipalities, Regional governments, Innovation agencies)

"Imagine you are supporting renovation activities and market development in your region."

Try to complete the following tasks:

- Explore available industrialized renovation solutions.
- Review examples already implemented.
- Identify relevant stakeholders.
- Assess whether the platform could support awareness raising or market activation activities.

A presentation is available for this purpose.

4.2.3 Discussion & Feedback

Finally, a group discussion is recommended to close the session. This provides an opportunity for participants to share their impressions, discuss strengths and weaknesses of the platform, and propose improvements, complementing the quantitative results collected through the questionnaire.

Group sharing

(15–20 minutes) Following the exercise, participants discuss their experience about different aspects. The moderator may encourage discussion by asking some of the following questions:

Usefulness

- What was the most valuable feature of the platform?
- Did the platform help you find data that would otherwise be difficult to access?
- Which section of the platform did you find most useful, and why?

Usability

- Was the platform easy to navigate and understand?
- Did you encounter any difficulties while completing the tasks?
- Were the search and filtering functionalities intuitive?

Content

- Did you find the type of information you expected to find?
- Is any important content or functionality currently missing?
- Were the descriptions and information provided sufficiently clear and detailed?

User Experience

- Did the platform guide you effectively?
- Was the amount of information provided appropriate?
- How could the user experience be improved?

Impact and Future Use

- Do you believe the platform could support the adoption of industrialized renovation solutions in your market?
- Would you use the platform again in a real renovation-related project or activity?
- Would you recommend the platform to colleagues, clients or other stakeholders?
- What would motivate you to use the platform more frequently?

Future Development

- What additional features would you like to see in future versions of the platform?
- Are there other external resources that should be connected to the platform?
- What would make the platform more valuable for your organisation or professional activities?

All comments should be documented and categorized for further analysis.

Individual Evaluation

(5 minutes)

Participants complete the B-MAP User Evaluation Questionnaire.

The questionnaire should be completed **after the practical exercise**, ensuring that responses are based on actual use of the platform rather than on the demonstration alone.

Print or transform into an online form questionnaire from next 2 pages.

This questionnaire is anonymous and should be completed during the optional evaluation session described in the previous section to collect individual feedback. Alternatively, it may have been distributed through broader online channels, accompanied by the contextual presentation and the video demonstration of the platform. **Collecting feedback through this questionnaire is mandatory for all ecosystems.**

User profile

1. Which best describes your profile?

- ○ Building owner / Homeowner
- ○ Housing manager / Property owner
- ○ Public authority
- ○ Architect / Engineer / Consultant
- ○ Contractor / Installer
- ○ Manufacturer / Solution provider
- ○ Research / Innovation organisation
- ○ Other:

Please rate the following statements from 1 to 5

Where 1) Strongly disagree; 2) Disagree; 3) Neutral; 4) Agree; 5)Strongly agree

2. The platform provides access to relevant information about industrialized renovation solutions.

○ 1	○ 2	○ 3	○ 4	○ 5

3. The platform includes the main resources I would expect to find (solutions, experts, success stories, contacts, etc.).

○ 1	○ 2	○ 3	○ 4	○ 5

4. The platform is easy to navigate and understand.

○ 1	○ 2	○ 3	○ 4	○ 5

5. The search, filtering and browsing functionalities help me find relevant information efficiently.

○ 1	○ 2	○ 3	○ 4	○ 5

6. The information provided in the platform is clear and useful for decision-making.

○ 1	○ 2	○ 3	○ 4	○ 5

7. The platform helps connect renovation needs with suitable solutions, experts and real-life examples.

○ 1	○ 2	○ 3	○ 4	○ 5

8. The platform offers a good balance between simplicity of use and amount of information provided.

○ 1	○ 2	○ 3	○ 4	○ 5

9. I would use this platform again for a renovation-related project or activity.

○ 1	○ 2	○ 3	○ 4	○ 5

10. The platform contributes to increasing the adoption of industrialized renovation solutions in my market.

○ 1	○ 2	○ 3	○ 4	○ 5

Open questions

11. What do you consider the most valuable feature of the platform?

12. What functionality, content or improvement would you recommend for future versions?

4.3 Session Evaluation

As the main purpose of the session is to evaluate the BuildUPspeed Market Activation Platform (B-MAP), it is important to define a clear evaluation framework. This ensures that the feedback collected during the session can be analysed consistently and translated into meaningful conclusions regarding the platform's usability, content, usefulness and overall impact.

The session should generate both quantitative and qualitative results.

4.3.1 Quantitative Results

Quantitative results provide a structured measure of participants' perceptions of the platform. By analysing the scores obtained through the evaluation questionnaire, it is possible to assess key aspects such as content completeness, usability, decision-support capacity, future adoption intention and perceived market impact. These indicators allow the performance of the B-MAP to be measured consistently and facilitate comparison across different stakeholder groups and evaluation sessions.

- Number of **participants**.
- Distribution by stakeholder **profile**.
- **Average score** for each evaluation indicator: Content Completeness, Usability & User Experience, Decision Support Capacity, Future Adoption Intention, Perceived Market Impact, Overall Satisfaction Index,
- MAP Validation **Success Rate**

Average scores

The evaluation questionnaire has been designed to assess several key dimensions of the B-MAP. Each indicator is derived from one or more questionnaire questions, allowing participants' perceptions to be translated into measurable results. The relationship between the questionnaire and the evaluation indicators is presented below.

Table 4.- KPIs calculation from questionnaires

Indicator	Questions	Calculation
Content Completeness	Q2 + Q3	Average score
Usability & User Experience	Q4 + Q5 + Q8	Average score
Decision Support Capacity	Q6 + Q7	Average score
Future Adoption Intention	Q9	Average score
Perceived Market Impact	Q10	Average score
Overall Satisfaction Index	Q2–Q10	Average score

The responses collected through the user evaluation questionnaire will be used to assess the performance and perceived value of the B-MAP:

- **Content Completeness:** Measures whether users consider that the platform contains the information and resources expected from a renovation marketplace.
- **Usability & User Experience:** Measures how easy the platform is to understand, navigate and use efficiently.

- **Decision Support Capacity:** Evaluates whether the information and functionalities provided by the platform help users identify suitable solutions and make informed decisions.
- **Future Adoption Intention:** Measures the willingness of users to reuse the platform in future renovation-related activities.
- **Perceived Market Impact:** Assesses whether users believe the platform can contribute to increasing the adoption of industrialized renovation solutions in their market. This indicator is considered the main validation KPI
- **Overall Satisfaction Index:** Provides a global assessment of the platform by aggregating all scored responses.

Table 5.- Suggested Interpretation of scores

Score	4.5 – 5.0	4.0 – 4.4	3.5 – 3.9	3.0 – 3.4	Below 3.0
Interpretation	Excellent	Very good	Good	Acceptable	To improve

MAP Validation

Success Rate (%): Percentage of respondents rating Q10 ('The platform contributes to increasing the adoption of industrialized renovation solutions in my market') with a score of 4 or 5.

4.3.2 Qualitative Results

Qualitative results complement the quantitative assessment by capturing participants' experiences, opinions and suggestions in greater depth. Feedback collected during the practical exercises, group discussions and open-ended questionnaire responses can provide valuable insights into the platform's strengths, weaknesses and opportunities for improvement. These results help explain the scores obtained through the quantitative indicators and support the identification of future developments and enhancements.

Comments and suggestions can be grouped into categories such as:

Table 6.- Qualitative results collection

Category	Examples
Missing content	*Financing information, additional solutions*
Usability	*Navigation improvements, filter enhancements*
Content structure	*Better categorization, clearer descriptions*
New functionalities	*User accounts, collaboration features*
Positive feedback	*Valuable examples, useful contacts*

Final Validation Question

As a final discussion point, participants may be asked:

If the BuildUPspeed Market Activation Platform were available tomorrow as a stable service, would you be willing to use it in your professional or renovation-related activities?

- Yes
- Maybe
- No

This question provides an additional indication of the platform's potential for real-world adoption and long-term impact.

5 Conclusions

For closing the document, a critical reflection focused on the achievement of its main objectives as defined in the Introduction (coming from the proposal and initial agreement) concludes that the deliverable provides a comprehensive definition of the BuildUPspeed Market Activation Platform (B-MAP) by covering the three key dimensions initially envisaged: the establishment of the MAP Framework through background analysis, functional requirements and use cases; the definition of the MAP Experience through user journeys, workflows and conceptual interfaces; and the preparation of an Evaluation Protocol to support the validation of the platform with relevant stakeholders.

The work carried out demonstrates that the development of a market activation platform for industrialised renovation requires a balanced combination of technological, market, user and stakeholder perspectives. The analysis of existing platforms, previous European projects, ecosystem needs and stakeholder expectations has enabled the identification of a set of functionalities capable of supporting the uptake of industrialised renovation solutions across different European contexts. In particular, the consolidation of the Catalogue, Wizard and Connections modules provides a coherent framework for addressing both expert and non-expert users, facilitating the discovery, assessment and adoption of industrialised renovation solutions.

From a development perspective, Sections 2 and 3 provide a clear and consistent functional specification for the future implementation of the B-MAP. The proposed modules, data relationships, customer journeys and use cases establish a common understanding of the platform objectives, expected behaviours and user interactions. The progressive refinement of requirements through consortium discussions and ecosystem consultations has contributed to a user-centred design approach that reflects the needs of the different actors involved in the renovation value chain.

It should be noted that the primary purpose of this deliverable is to establish the strategic vision, functional requirements, user experience principles and validation framework of the B-MAP. Therefore, aspects such as software architecture, database structures, interoperability mechanisms, API specifications, governance arrangements and implementation planning are intentionally addressed only at a conceptual level. These technical aspects are to be further developed and specified in implementation-oriented deliverables (D3.2).

Finally, the evaluation protocol defined in Section 4 provides a robust basis for validating the B-MAP concept and its future implementations. The combination of demonstrations, practical exercises, quantitative assessments and qualitative feedback sessions is expected to generate valuable insights regarding usability, relevance, functionality and stakeholder acceptance. Furthermore, the iterative validation approach aligns well with the Agile development methodology adopted within the project, allowing continuous refinement of the platform based on user feedback and real-world testing activities.

Lessons Learnt

One of the main lessons learned during this process is the importance of combining structured information with intuitive user experiences. While industrialised renovation

involves complex technical, market and regulatory considerations, the platform must remain accessible and useful to users with different levels of expertise. The introduction of wizard-based guidance mechanisms, location-based navigation and catalogue functionalities represents an effective strategy for transforming complex datasets into meaningful information and actionable knowledge.

Future work

On the other hand, particular attention should be given to the integration of external data sources, the validation of matchmaking mechanisms, and the continuous improvement of the user experience based on stakeholder feedback that could be integrated into the platform use.

The results of the complete activities carried out through the whole workplan and beyond will contribute to the consolidation of the B-MAP as a practical tool capable of supporting the market uptake of industrialised renovation solutions across Europe.

Final note

Finally, it should be noted that the functional requirements and user needs identified throughout this deliverable represent the complete vision of the BuildUPspeed Market Activation Platform as derived from stakeholder consultation and the analysis carried out during the conceptual design phase. During the subsequent development of the platform, these requirements were prioritised and progressively implemented according to the validation activities, technical feasibility and the resources available within the duration of the project. Consequently, not all functionalities and features described in this deliverable have been implemented in the current version of the B-MAP presented in Deliverable D3.2. Rather than representing limitations of the concept itself, the implemented platform constitutes a robust and functional first release that addresses the highest-priority user needs while establishing a scalable foundation for future developments beyond the BuildUPspeed project.