



European Building Sustainability
performance and energy certification
Hub

The EUB SuperHub Platform modules: Features and functions



Project no. 101033916

Project acronym: EUB SuperHub

Project title: European Building Sustainability performance and energy certification Hub

Call: H2020-LC-SC3-B4E-4-2020

Start date of project: 01.06.2021.

Duration: 36 months

Deliverable title: D2.3 – The EUB SuperHub Platform modules: Features and functions

Due date of deliverable: November 2022

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Dissemination level		
PU	Public	PU

History			
Version	Date	Reason	Revised by
01	27/10/2022	ToC	<i>GEO, EIHP, CSTB, UNI</i>
02	18/11/2022	Draft	<i>GEO, EIHP, CSTB, UNI</i>
03	29/11/2022	Final draft	<i>iISBE, UNI, GEO</i>
04	02/12/2022	Final	<i>HM</i>

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Abbreviations

A	Austria
A(Vbg)	Austria, Vorarlberg
DE	Germany
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy

B2B	Business-To-Business
BACS	Building Automation and Control System
BER	Building Energy Rating
BIM	Building Information Modelling
BRP	Building Renovation Passport
D	Deliverable
DBL	Digital Building Logbook
DHW	Domestic Hot Water
E-cockpit	E-passport cockpit
EPBD	Energy Performance of Buildings Directive
EPCs	Energy Performance Certificates
EUB SuperHub	European Building Sustainability performance and energy certification Hub
GDPR	General Data Protection Regulation
GIS	Geographic Information System
HVAC	Heating, Ventilation, and Air Conditioning
IAQ	Indoor Air Quality
KPI	Key Performance Indicators
LAT	Local Advisory Team
LCA	Life Cycle Assessment
LCC	Life Cycle Cost
POV	Point of View
PPs	Project Partners
PV	Photovoltaic
PVT	Planning and Verification Tool
RE	Renewable energy
SC	Sustainability Certificate
SMEs	Small and Medium-sized Enterprises
SRI	Smart Readiness Indicator
T	Task
TBS	Technical Building System
UC	Use Case
UM	Urban Mining
VAT	Value Added Tax
VM	Virtual Marketplace

1 Introduction

This deliverable presents a summary of the work done in *Task 2.3: The EUB SuperHub Platform one stop shop Features and virtual marketplace*. The objective of the task is to outline the functions and features of the EUB SuperHub platform main modules: E-passport cockpit (E-cockpit), Planning and Verification Tool (PVT) module, the Virtual Marketplace (VM) and the E-training module which will publish training material based on the outcomes of WP4, and WP5. The research team took great care in the development of EUB SuperHub one stop shop features to ensure that developed functions address – as far possible- the needs of multiple stakeholders' groups identified in D2.1.

Beside this brief introduction, the report is divided into five main chapters. Chapter number 2 provides the reader with a high-level description of the EUB SuperHub platform modules, and the key functions contained in each one of them. The following chapter number 3 provides a detailed description of the functions provided in EUB SuperHub platform landing pages and user account management. The description provided covers the name of the function, its serial number, user role that can be used, the required precondition to use the function as well as a brief explanation of how the function works.

Chapters 4, 5 and 6, provide the same detailed description to the functions offered by the EUB SuperHub Virtual marketplace module, E-Cockpit module and the Planning and Verification tool (PVT) respectively. A description of the E-training module is not directly provided in this deliverable as the results of D2.1 and LAT meetings conducted by the project partners indicated a large resistance to the idea of creating a new E-training platform that runs in parallel to other already established platforms. Hence, the project team decided to exploit the functionalities of TRAIN4SUSTAIN [European Skills Registry](#) (ESR) platform for the use of the E-training module in the EUB SuperHub platform. The ESR platform was developed within the EU funded project TRAIN4SUSTAIN and provides dedicated E-training features that satisfy all the training use cases identified in D2.1 of EUB SuperHub. Therefore, the functions of the E-training module are not discussed in detail in this report but can be accessed via the following link:

https://train4sustain.eu/assets/content/TRAIN4SUSTAIN_deliverable_D33.pdf

The outcomes of this task will feed into the development of tasks within the WP3 (*EUB SuperHub tools development*), namely:

- *Task 3.1. Plan of the business logic of the tool taking into consideration ICT standards and GDPR issues,*
- *Task 3.2 Development of the tool modules including alpha testing and*
- *Task 3.3 Third party software connections via API.*

2 The EUB SuperHub modules a brief overview

The EUB SuperHub platform consists of four main modules:

- Planning and Verification Tool (PVT) module,
- E-passport cockpit (E-cockpit),
- Virtual Marketplace (VM) and
- E-training module.

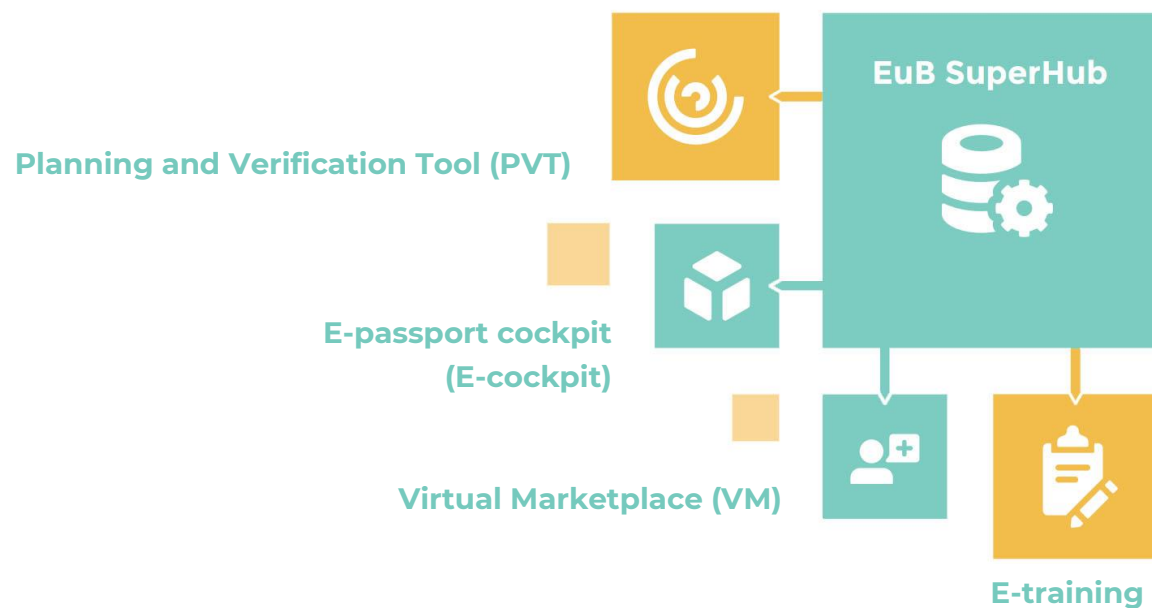


Figure 1: The EUB SuperHub platform containing four modules

The EUB SuperHub modules are intended to work together as interlocking system presenting an interactive cloud data hub for building energy and sustainability performance certificates. These modules will be supported with training material developed in WP5 (*Training, demonstration, and validation*). This chapter presents a high-level description of the four above mentioned modules and the key features they offer (see figure 2).

2.1 The E-passport cockpit (E-cockpit) module:

The E-cockpit platform is a multi-scale cloud-based geo referenced interactive database and is intended to pave the way for the full digitalization of the EPCs by promoting its transparency and storage as well as the practical application of the EPCs and other building ratings such as grant and funding procedures or rent and sale transactions. The E-cockpit module will allow to store, view key information about the existing building stock and related certificates (EPC, sustainability certificates, SRI, etc.). The certificates values can be viewed using the national or the common harmonized KPIs rating developed in T2.2. The information presented in the E-cockpit module will tie the EPCs information, sustainability and smartness rating with the building geometry and BIM model in a geo referenced database and provide policy makers and public users with reliable “intelligence” about the state of the building stock. The building information presented in the E-cockpit will

originate from the PVT module. The owner of the building can control which information about their building can be published and viewed. Thus, EUB SuperHub E-cockpit can be seen as an open access data and communication hub in which information can be exchanged in real time between building users, planners, investors, and policy makers. Thanks to the wealth of information that can be displayed in the E-cockpit, the E-cockpit user can conduct a multi building analysis in which a group of building can be selected and analysed in terms of CO₂ emissions, energy performance rating, sustainability rating, smartness, possible synergies, or other benchmarks. This will facilitate providing holistic suggestions for performance improvements that target more than one building at a time.

2.2 The planning and verification tool (PVT)

The EUB SuperHub Planning and Verification tool (PVT) is an extension E-cockpit module. However, it can be viewed as the private part of the platform. In contrast to the E-cockpit, the PVT will enable building owners to claim their buildings in the platform, upload the related information and decide on the type of building information they would like to share with the public in the E-cockpit. Moreover, within the PVT the user can evaluate the actual performance of their claimed buildings based on actual building information stored in the building logbook or by means of what-if simulations to evaluate possible technology neutral interventions and retrofitting options. The PVT module will provide the user with plain language data entry interface to populate the building information and connect it to the building logbook. The personal beta-version of the EPC can be shared with an accredited auditor which will verify the input values and other supporting documents to issue the related certification. These verified documents can then be shared with the public via the E-cockpit module. Moreover, based on the logbook data and the simulation engine an EPC auditor or building planner can verify and monitor the building performance and flag out concerning data. The logbook data and the issued certificate can be shared via the PVT platform with service providers in GDPR compliant environment via the Virtual Marketplace (VM) to find an energy or consultant or other service providers. The user can also choose to share a selected set of data with the public via the E-cockpit. Having extensive information stored in the PVT module allow the user to conduct on the fly hourly energy simulation for a large number of building stock and compare them to reference benchmarks to flag out any performance discrepancies. This will enable both the user and the EPC issuer to apply appropriate corrective measures.

2.3 The Virtual marketplace (VM) module

The VM will facilitate the match making connection between the building users, auditors, solution, funding providers as well as other market actors and service providers. The Virtual Marketplace (VM) will be open to a wide range of service providers who can deliver auditing, consulting, and funding across the EU (SMEs, constructors, professionals, auditors, banks etc.). These actors can join the VM for free and offer their solutions and technologies to the users in form of digital yellow pages via the VM. Building owner and users can also join the VM to search for a qualified service provider for their project. For example, the owner can share the building EPC and other certificates via the VM platform with VM funding agencies

and/or service providers in GDPR compliant environment to elaborate on service quotation. Moreover, the VM can be used by building planner to find an auditor or specialized contractor. The VM will work out qualification criteria and required for service providers to be the registered in the VM.

2.4 The E-training module

The E-training module is an independent part of the EUB SuperHub platform that serves two main objectives. The first objective is to provide training material for the platform users on how to use the EUB SuperHub platform (E-cockpit, VM and PVT modules). The second objective of the E-training module is to provide the new generation of energy, sustainability, smart solution experts and assessors with a set of advanced learning and training materials relevant for their field of expertise and collaboration module. To achieve both objectives, the E-training module will be publicly accessible and can be extended during the project and after the project duration. It will incorporate e-learning methods like wiki-pages, video-tutorials, webinars, and podcasts and will allow working in a multi-language environment. The training material used in the E-training module will be developed in WP5.

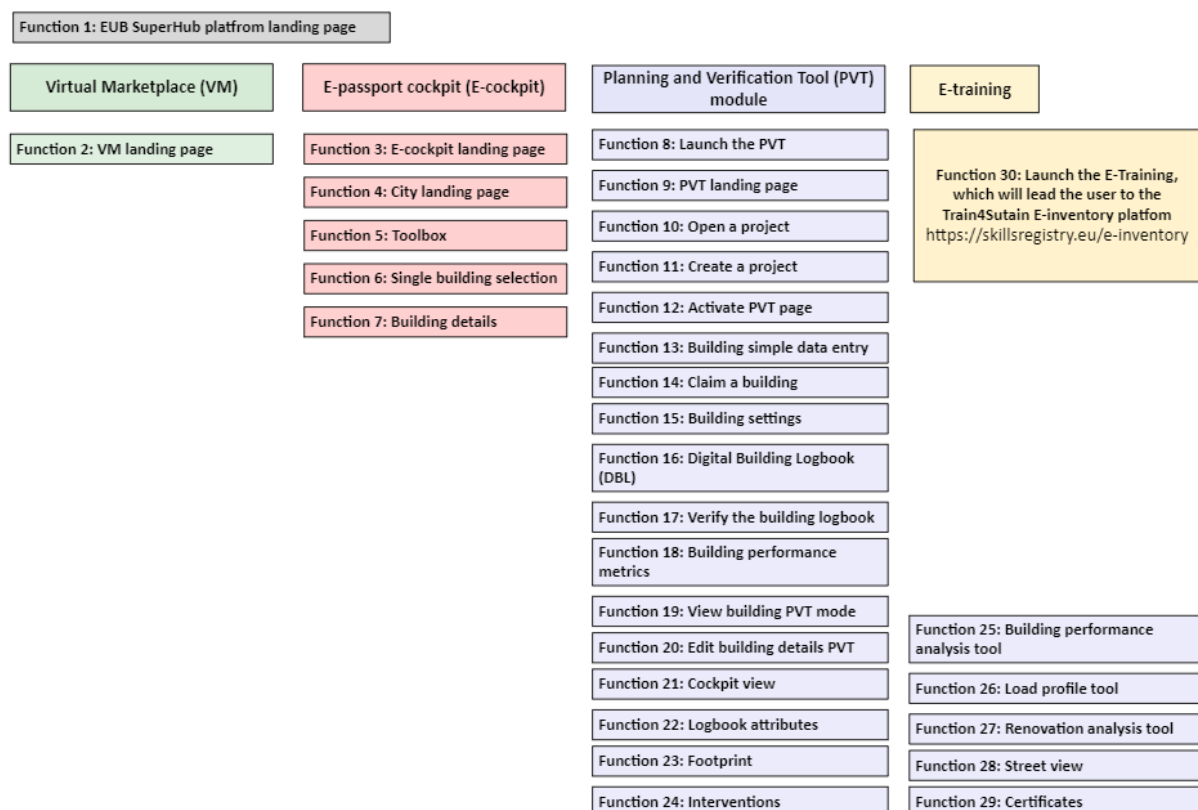


Figure 2: An overview of the EUB SuperHub platform modules main functions

3 The EUB SuperHub landing page and account management

The EUB SuperHub landing page, or the platform static page, is the first page the visitor will encounter after entering the EUB SuperHub web address. The landing page will be reachable via an internet browser and contain shortcuts to the E-cockpit, the VM, the E-training, account longing, account management, as well as the other support functions of the platform such as the contact us / support page and the disclaimer page. The following tables within chapter 3.1 present a summary of the EUB SuperHub platform landing page functions.

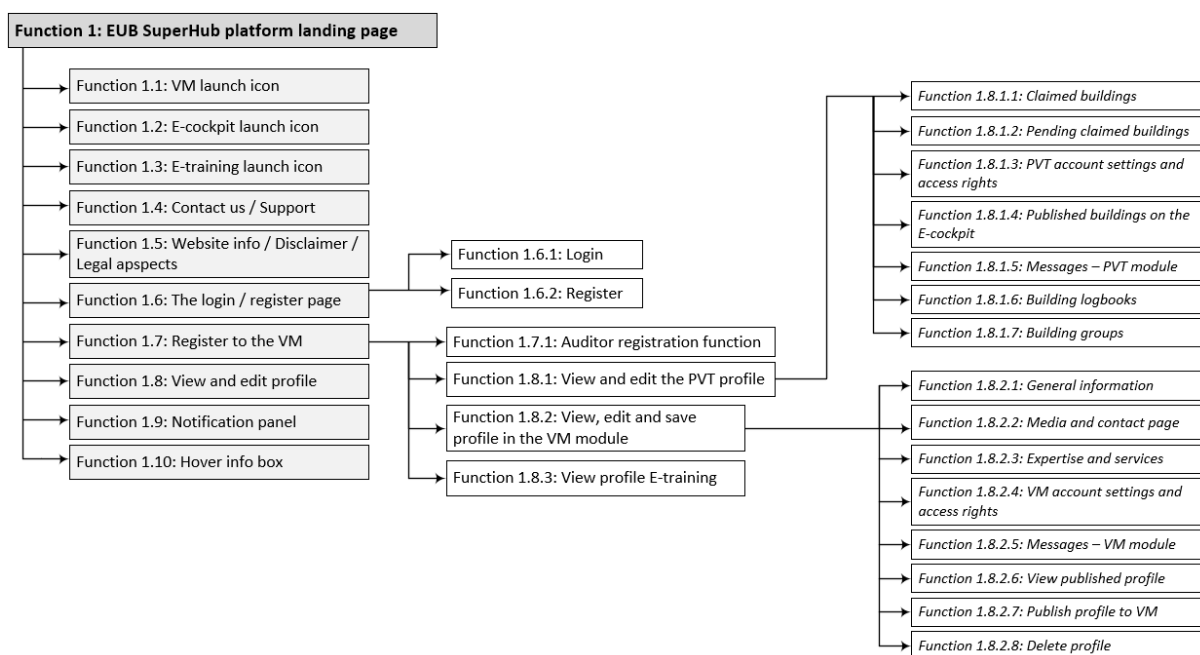




Figure 3: Overview of EUB SuperHub platform landing page main functions


3.1 Function 1: EUB SuperHub platform landing page

Function name	Function Number	Precondition	User Role (lowest)
EUB SuperHub platform landing page	1	-	Visitor
Function description	The first page of the EUB SuperHub platform, that the visitor will encounter after entering the EUB SuperHub web address.		
Sketch representation			
Comments			


3.1.1 Function 1.1: VM launch icon

Function name	Function Number	Precondition	User Role (lowest)
VM launch icon	1.1	-	Visitor
Function description	The user can click on an icon to launch the VM subpage.		
Sketch representation			
Comments			

3.1.2 Function 1.2: E-cockpit launch icon

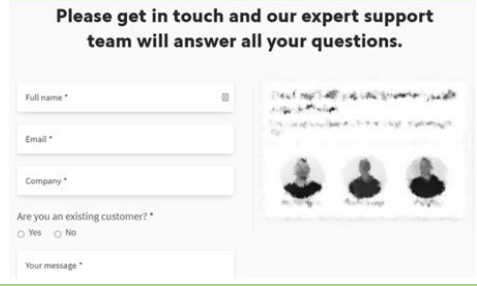
Function name	Function Number	Precondition	User Role (lowest)
E-cockpit launch icon	1.2	-	Visitor
Function description	The user can click on an icon to launch the E-cockpit subpage.		
Sketch representation			
Comments	The PVT is accessible via the E-cockpit module for registered users (see Function 8.1: Launch the PVT via the launch PVT button and Function 8.2: Launch the PVT via edit button).		

3.1.3 Function 1.3: E-training launch icon

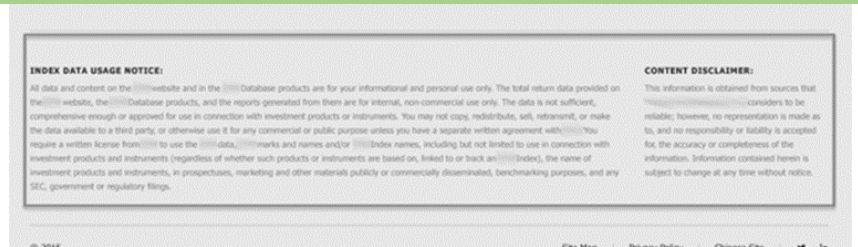
Function name	Function Number	Precondition	User Role (lowest)
E-training launch icon	1.3	-	Visitor
Function description	The user can click on an icon to launch the E-training website. By clicking on the icon, the user will be redirected to the E-INVENTORY in the TRAIN4SUSTAIN ESR platform https://train4sustain.eu/e-inventory		
Sketch representation			
Comments	The outcomes of T2.1 (<i>Use case definition, user roles and access rights</i>) of D2.1 (<i>Use case scenarios and definitions</i>) showed that users would prefer to use an already established platform for training purposes that can cover multiple topics including the EUB SuperHub rather than having dedicated platform with limited offering. Hence the decision to imbed the E-training functions of the EUB SuperHub within the TRAIN4SUSTAIN platform (see D2.1).		

	The EUB SuperHub and the TRAIN4SUSTAIN accounts will be crosslinked so that the user that is registered in either website can use the same account credentials to login into the other.
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3.1.4 Function 1.4: Contact us / Support

Function name	Function Number	Precondition	User Role (lowest)
Contact us / Support	1.4	-	Visitor
Function description	The user can reach out to the platform Admin team for support.		
Sketch representation			
Comments	The details of this function will be further elaborated in T3.2 (<i>Development of the tool modules including alfa testing</i>).		

3.1.5 Function 1.5: Website info / Disclaimer/ Legal aspects

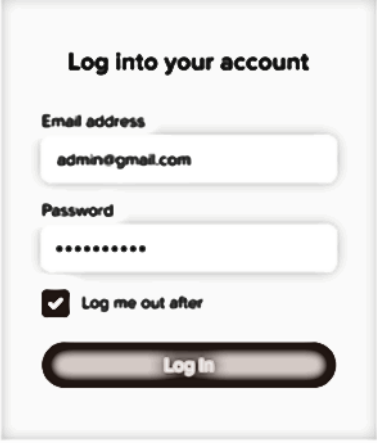
Function name	Function Number	Precondition	User Role (lowest)
Website info / Disclaimer/ Legal aspects	1.5	-	Visitor
Function description	The page will provide the user with legal details about the page.		
Sketch representation			
Comments	The details of this function will be further elaborated in T3.2 (<i>Development of the tool modules including alfa testing</i>).		

3.1.6 Function 1.6: The login / register page

Function name	Function Number	Precondition	User Role (lowest)


The login / register page	1.6	-	Visitor
Function description	Via the login / register page, the user can access their account or create an account to use the platform features that require an active account.		
Sketch representation			
Comments			

3.1.6.1 Function 1.6.1: Login

Function name	Function Number	Precondition	User Role (lowest)
Login	1.6.1	1.6.2	User
Function description	The user is to provide their username (E-mail address) and password to enter their account on the EUB SuperHub PVT, VM and E-training modules. The user will have the option to recover their account in case they lost their credentials.		
Sketch representation			
Comments	Users that have an account in the TRAIN4SUSTAIN platform can use their same login details to access their account in the EUB SuperHub platform.		

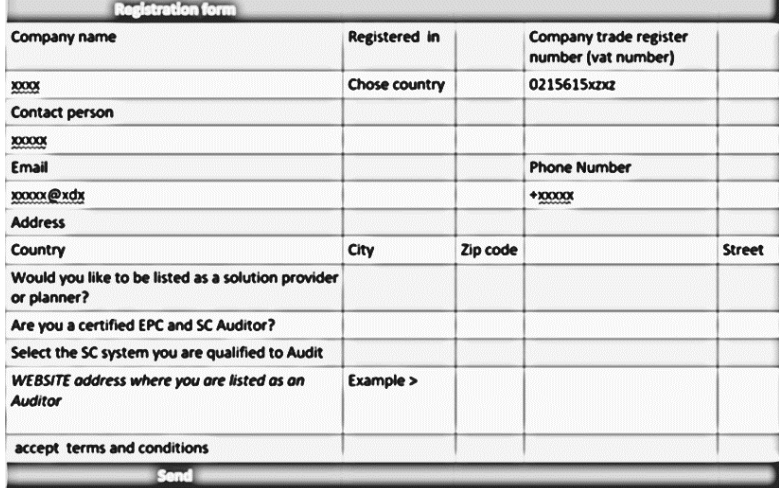
3.1.6.2 Function 1.6.2: Register

Function name	Function Number	Precondition	User Role (lowest)
Register	1.6.2	-	Visitor
Function description	<p>The user can create an account to use the platform. Consideration should be made to allow sign-up with social media or other more targeted accounts — one-click registration is seen as particularly important by practitioners.</p> <p>After successful registration, a “user” role will be assigned to their account. The user role can be changed either in the VM or in the PVT module. During the account creation the user will be asked if they are interested to be listed in VM</p>		

	<p>module. In case they are, the user will be redirected to Function 1.7: Register to the VM.</p> <p>The user role in the VM is depended on what the role the user claim in the Function 1.7: Register to the VM and is approved in the VM registration page. In this case the same role will be assigned to them in the PVT module. Only <u>a user that has successfully claimed a building in the PVT will then be granted an Owner role.</u></p>
Sketch representation	
Comments	

3.1.7 Function 1.7: Register to the VM

Function name	Function Number	Precondition	User Role (lowest)
Register to the VM	1.7	1.6.2	User
Function description	<p>Via registering to the VM, the user can get enlisted in VM marketplace. The user can choose while registering to the VM platform to be listed as:</p> <ul style="list-style-type: none"> • an independent solution provider, • a consultant, • an auditor, • an organization. <p>More than one choice is possible. All registered users to the VM need to provide their national VAT number, with which the system can check that the organization or the independent solution provider exist. The platform admin will assign the correct role to the user.</p> <p>An organization that can fulfil multiple roles such as planner or auditor must also list and link to its account, the account of the individual planners and auditors that are qualified to fulfil this role, either from the TRAIN4SUTAIN platform or from other websites that provide these credentials. The individuals named by the organization must go through the same verification steps as an independent auditor (see Function 1.7.1: Auditor registration function). If the planner, solution provider, auditor is already registered in VM EUB SuperHub system. The independent user will need to approve and accept that their account will be linked to the organization account. A notification will be sent to the user to approve or disapprove this action (see Function 1.8.2: View, edit and</p>		

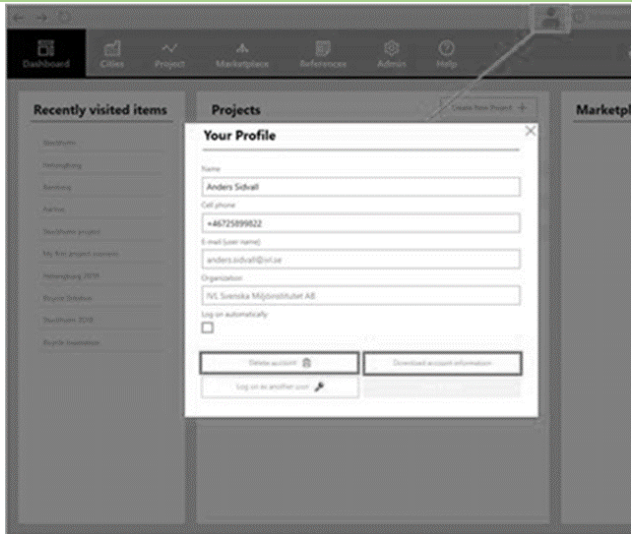
	<p>save profile in the VM module and Function 1.9: Notification panel). Likewise, a user can assign or indicate that they part of an organization. This will require the user to choose the organization they are associated with. An approval from the account creator of the organization will be needed to accept this and notification will sent (see Function 1.8.2: View, edit and save profile in the VM module and Function 1.9: Notification panel) Moreover, the user can choose to link their VM account with E training account from the TRAIN4SUSTAIN. Doing such the accreditation and training received in the TRAIN4SUSTAIN platform will appear automatically in their VM account.</p>
<p>Sketch representation</p>	
<p>Comments</p>	<p>The EU VIES VAT number validation platform can be used to verify the validity of a VAT number issued by any Member State https://ec.europa.eu/taxation_customs/vies/#/vat-validation)</p>

3.1.7.1 Function 1.7.1: Auditor registration function

Function name	Function Number	Precondition	User Role (lowest)
Auditor registration function	1.7.1	1.7	Solution Provider
<p>Function description</p>	<p>To be approved to the Auditor role, the user needs to specify the exact building certification scheme they are qualified to audit, the user can choose one or multiple schemes. The function will be mapped with national and voluntary certification systems (EPC and SC). The user will need to provide a link from each certification body showing that claimed auditor status. This will be cross checked automatically via the Admin system and grant that Auditor role to the user once approved.</p>		
<p>Sketch representation</p>			
<p>Comments</p>	<p>Example of weblinks that can be used for an automatic validation can be found on the internet, such as:</p>		

<https://www.deutsches-energieberaternetzwerk.de/energieberater suche/>
 or
https://www.dgnb-system.de/en/dgnb-auditors-consultants/dgnb-consultants/detail.php?we_cid=32825-Ahmed-Khoja

3.1.8 Function 1.8: View and edit profile

Function name	Function Number	Precondition	User Role (lowest)
View and edit profile	1.8	1.6.1	User
Function description	<p>The users can view and edit the basic information about their profile data and account. The information displayed will be initially generated based on the information entered in the Function 1.6.2: Register. The users can view their account in the VM, E-training and PVT module if they have created an account in any of these modules and the associated assigned role to them in each module. The basic information displayed in the user profile section contain information about the user E-mail address, username, which organization the E-mail is linked to the account in case they have a VM account. In Function 1.8: View and edit profile, the user can edit all the information related to their account or choose to delete a part of it or their whole account. Through the view profile the user can access their VM, E-training and / or their PVT account settings. A notification will appear in the Notification panel (see Function 1.9: Notification panel), case of change in the status of Function 1.8.1: View and edit the PVT profile Function 1.8.2: View, edit and save profile in the VM module Function 1.8.3: View profile E-training and their subsections occurred.</p>		
Sketch representation			
Comments			

3.1.8.1 Function 1.8.1: View and edit the PVT profile

Function name	Function Number	Precondition	User Role (lowest)
View and edit the PVT profile	1.8.1	10 or 13.6 or 15.3	User
Function description	<p>The Function 1.8.1: View and edit the PVT profile displays basically the information entered by the user in the PVT building settings tab (Function 15: Building settings) and the PVT (Function 14: Claim a building) see (1.8.1.1 to 1.8.1.1.6). The Function 1.8.1: View and edit the PVT profile allow the user to view their account that is connected to the PVT module. An indicator next to their account will show their highest role in the PVT. In case of a change in the status of (1.8.1.1 to 1.8.1.1.6) a notification will appear in the Notification panel (Function 1.9: Notification panel).</p> <p>For editing the PVT profile, the user needs to choose which building or group of buildings they would like to edit. Afterward the user will be redirected to the building's settings tab in the PVT (Function 15: Building settings) to edit the information entered there.</p>		
Sketch representation			
Comments	The edit function will redirect the user to PVT building settings tab (Function 15: Building settings).		

3.1.8.1.1 Function 1.8.1.1: Claimed buildings

Function name	Function Number	Precondition	User Role (lowest)
Claimed buildings	1.8.1.1	14	Owner
Function description	<p>The Function 1.8.1.1: Claimed buildings will show a list of the successfully claimed buildings along with their ID, address, and key information. The information displayed will be basically collected from the information entered in the PVT Building simple data entry (Function 13: Building simple data entry) and Claim a building (Function 14: Claim a building).</p>		
Sketch representation			
Comments			

3.1.8.1.2 Function 1.8.1.2: Pending claimed building

Function name	Function Number	Precondition	User Role (lowest)
Pending claimed building	1.8.1.2	14	User
Function description	<p>A list of the pending requests for claiming buildings in the PVT will appear in using this feature along with explanation of the status of the request. The user might receive some</p>		

	requests from the Admin to successfully complete the building claim request. This will reflect the status of PVT Function 14: Claim a building.
Sketch representation	
Comments	

3.1.8.1.3 Function 1.8.1.3: PTV account settings and access rights

Function name	Function Number	Precondition	User Role (lowest)
PVT account settings and access rights	1.8.1.3	13.6 or 15.3	User
Function description	This function will show the access rights that are granted, requested, and revoked to each building in the PVT along with the assigned role to each one. The information displayed will be collected from the information entered in the PVT Building settings tab in the PVT module (Function 15.3: Access rights).		
Sketch representation			
Comments	To edit the access rights the user will be redirected to the building settings tab (Function 15: Building settings).		

3.1.8.1.4 Function 1.8.1.4: Published buildings on the E-cockpit

Function name	Function Number	Precondition	User Role (lowest)
Published buildings on the E-cockpit	1.8.1.4	14	Owner
Function description	This function will list the buildings that are published in the E-cockpit along with the list of the selected information and certificates that are published about them. The information displayed will be basically collected from the information entered in the PVT Building settings tab in the PVT module (Function 15: Building settings).		
Sketch representation			
Comments			

3.1.8.1.5 Function 1.8.1.5: Messages

Function name	Function Number	Precondition	User Role (lowest)
Messages – PVT module	1.8.1.5	15.3	Solution provider
Function description	A chat function related to the PVT module will allow for users to communicate with each other. A notification will		

	appear next to the user icon when a message is sent or received in the PVT landing page (Function 9: The PVT landing page). The user can decide if they want to receive messages from any user or keep this function restricted to approved connections only in 15.3 (Function 15.3: Access rights) except when the user with Owner role flags a building for review, this will allow any VM member to communicate via chat with the building user with Owner role.
Sketch representation	
Comments	

3.1.8.1.6 Function 1.8.1.6: Building logbooks

Function name	Function Number	Precondition	User Role (lowest)
Building logbooks	1.8.1.6	14 or 15.3	user
Function description	The function will list the logbooks that user has access to. Via this function, the user can open and edit the logbooks or logbook sections which they are granted access to. The function will redirect the user to PVT function (Function 17: Verify the building logbook).		
Sketch representation			
Comments			

3.1.8.1.7 Function 1.8.1.7: Building groups

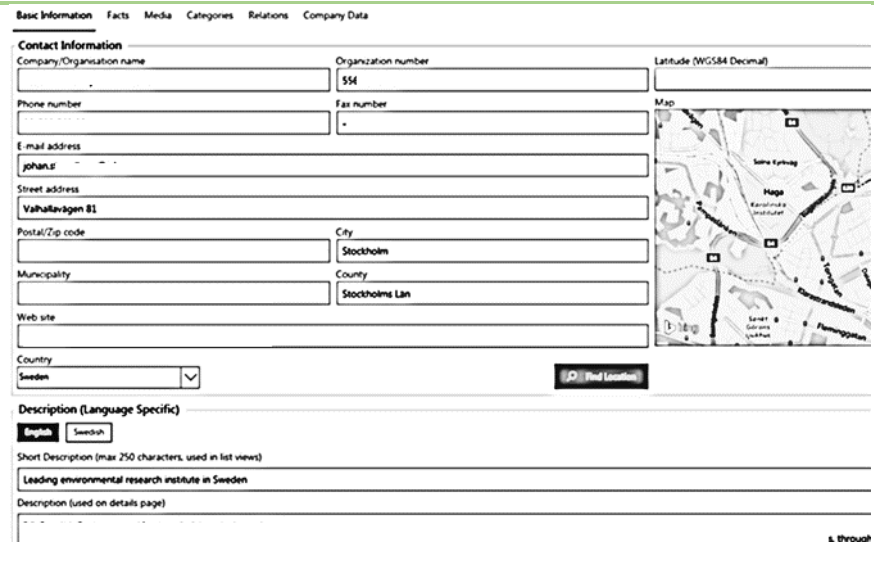
Function name	Function Number	Precondition	User Role (lowest)
Building groups	1.8.1.7	14 or 15.3	user
Function description	The function will list the building that are organized in a group via the edit button the user with the access rights will be redirected to Function 15.7: Manage building group.		
Sketch representation			
Comments			

3.1.8.2 Function 1.8.2: View, edit and save profile in the VM module

Function name	Function Number	Precondition	User Role (lowest)
View, edit and save profile in the VM module	1.8.2	1.7	Solution provider
Function description	View VM account: The user can view their account connected to the VM module. An indicator next to their account will show their highest role in the VM module. A notification will appear in (9 Function 9: The PVT landing		


	page) in case of change in the status of any of 1.8.2.1 to 1.8.2.4 functions.
Sketch representation	
Comments	

3.1.8.2.1 Function 1.8.2.1: General information

Function name	Function Number	Precondition	User Role (lowest)
General information	1.8.2.1	1.7	Solution provider
Function description	In this section the VM user will provide general information about them that will later be published in the VM page. The user can save the page for later editing, view it before publishing and/or publish this page to the VM.		
Sketch representation			
Comments			

3.1.8.2.2 Function 1.8.2.2: Media and contact page

Function name	Function Number	Precondition	User Role (lowest)
Media and contact page:	1.8.2.2	1.7	Solution provider
Function description	In this section the user can provide a link to website, their E-mail contact, link to Facebook, LinkedIn or other social media accounts, as well as to professional networks, and associations. Moreover, the user can upload logo. This info will be later used when displaying the user profile in the VM list. The user can save the page for later editing, view it before publishing and/or publish this page to the VM.		

Sketch representation	
Comments	

3.1.8.2.3 Function 1.8.2.3: Expertise and services

Function name	Function Number	Precondition	User Role (lowest)
Expertise and services	1.8.2.3	1.7 and or 1.7.1	Solution provider
Function description	<p>In this section the user can provide a description about areas of expertise, and qualification and applicability of offered solution for the KPIs (i.e., a LCA specialist or PV company). This info will be later used in the VM list and match making (See example).</p> <p>This section will be linked with the users E-training account. It will display the user achieved level of training in the TRAIN4SUSTAIN. The list of expertise will match the KPIs developed in D2.2 (<i>Definition of common transnational indicators and assessment metrics</i>) and level of competence achieved in each one as per their TRAIN4SUSTAIN profile. In case the user is an organization that ranking will match the highest ranking of its affiliates. The list can be automatically generated (in case linked with the E-training) and a notification will be sent to 9 and 1.8 (Function 9: The PVT landing page, Function 1.8: View and edit profile) in case any changes are made to it. Moreover, the user can link here their expertise to one or schemes and certification system, such as being a LEED, AG, or DGNB consultant. This info will be later used when displaying the user profile in the VM list. The user can save the page for later editing, view it before publishing and/or publish this page to the VM.</p>		

Sketch representation	<p>A brief description of the company areas of expertise</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> The user can enter a brief description about the company are of expertise ca. 100 word </div> <p>Qualifications and services</p> <p><input type="checkbox"/> EPC development</p> <p><input type="checkbox"/> Energy consultant</p> <p><input type="checkbox"/> SC Auditor</p> <p><input type="checkbox"/> LCA specialist</p> <p style="border: 1px solid #ccc; padding: 2px; display: inline-block;">Register for an E-training course</p> <p>Area of expertise</p> <p>Select a Category (multiple answer can be chosen)</p> <input type="text"/> <p>Select a criterion (multiple answer can be chosen)</p> <input type="text"/> <p>Select an Indicator (multiple answer can be chosen)</p> <input type="text"/>
Comments	<p>This section is private to the public users of the VM module. Only the entered values and chosen KPIs will be published in the VM after the users choose the Publish function.</p>

3.1.8.2.4 Function 1.8.2.4: VM account settings and access rights

Function name	Function Number	Precondition	User Role (lowest)
VM account settings and access rights	1.8.2.4	1.7 and or 1.7.1	Solution provider
Function description	<p>Here the VM user can view the Affiliates that are linked to the same VM page, and the access rights granted to them to edit the VM account information (1.8.2.1 – 1.8.2.8) or the access rights requested to be affiliated with the VM account. A request to change Access rights or to establish a connection from the VM users will appear here. An Approved connection will allow the VM user to grant the VM solution provider access rights to view a building in the PVT.</p>		
Sketch representation			
Comments			

3.1.8.2.5 Function 1.8.2.5: Messages – VM module

Function name	Function Number	Precondition	User Role (lowest)
Messages	1.8.2.5	1.7 and or 1.7.1	Solution provider
Function description	<p>A chat function related to the VM module will allow for users to communicate. A notification will appear next to the user icon (Function 2: VM landing page) in case a message is received. The user can decide if they want to receive messages from any</p>		

	user or keep this function restricted to approved connections only (see VM, Function 2.5: Send a contact request).
Sketch representation	
Comments	

3.1.8.2.6 Function 1.8.2.6: View published profile

Function name	Function Number	Precondition	User Role (lowest)
View published profile	1.8.2.6	1.8.2.1	Solution provider
Function description	This feature will allow the user to view their profile as it will be published and not in the edit mode.		
Sketch representation			
Comments			

3.1.8.2.7 Function 1.8.2.7: Publish profile to VM

Function name	Function Number	Precondition	User Role (lowest)
Publish profile to VM	1.8.2.7	1.8.2.4	Solution provider
Function description	The user will make the entered information in 1.8.2.1-1.8.2.3 public to other VM users in the VM Dashboard (Function 2.1: The VM search function).		
Sketch representation			
Comments			

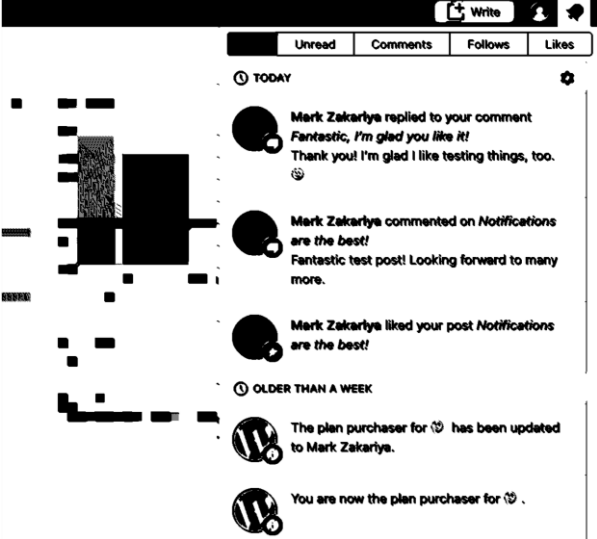
3.1.8.2.8 Function 1.8.2.8: Delete profile

Function name	Function Number	Precondition	User Role (lowest)
Delete profile	1.8.2.8	1.8.2.4	Solution provider
Function description	The user can delete a section or the whole profile from the VM module.		
Sketch representation			
Comments			

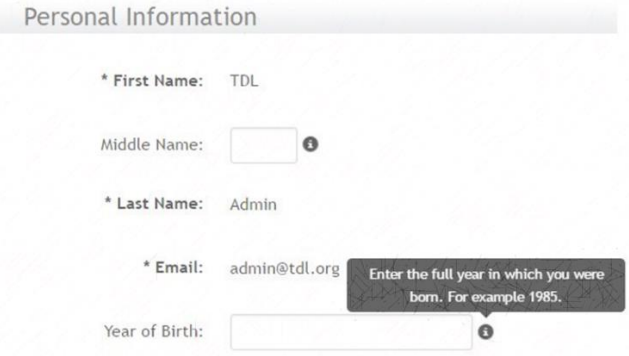
3.1.8.3 Function 1.8.3: View profile E-training

Function name	Function Number	Precondition	User Role (lowest)
View profile E-training	1.8.3	1.6.1	User
Function description	<p>This feature will allow the user to view their profile in the E-Training. As such the user will use and actually access the TRAIN4SUSTAIN European Skills Registry platform. The list of functions and features of the European Skills Registry are detailed in the TRAIN4SUSTAIN report "<i>Report on platform implementation and launch</i>" from 30.06.2021 as such it won't be detailed further in this report: https://train4sustain.eu/assets/content/TRAIN4SUSTAIN_D32_delivered.pdf</p>		
Sketch representation			
Comments			

3.1.9 Function 1.9: Notification panel

Function name	Function Number	Precondition	User Role (lowest)
Notification panel	1.9	1.6.1	User
Function description	<p>The notification panel will alert the user to new information published in the VM, PVT or E-training module as well for changes made in any of the modules. Moreover, it will show contact requests from other users as in VM (Function 2.5: Send a contact request) and show approved contact requests. Moreover, it will notify about granted access rights from other users in PVT, logbook or VM.</p>		
Sketch representation			
Comments			

3.1.10 Function 1.10: Hover info box

Function name	Function Number	Precondition	User Role (lowest)
Hover info box	1.10		Admin
Function description	<p>The hover info box will display a text box with information about elements of the page to the user as hovering over. This helps explain to the user the function of each feature or the type of information the user needs to provide to the platform such as what is a planner or an auditor or explain the requested input information.</p>		
Sketch representation			
Comments			

4 The EUB SuperHub Virtual Marketplace (VM) module

The Virtual Marketplace (VM) module is intended to facilitate the match making connection between the building users, auditors, solution providers, funding providers as well as other market actors and service providers. The VM module will be open to a wide range of service providers who can deliver auditing, consulting, and building solutions in the EU (SMEs, constructors, professionals, auditors, etc.). These actors can join the VM module for free and offer their solutions and technologies to the users in form of digital yellow pages via the VM. Building owners and users can use the VM module to search for qualified service providers for their projects. Moreover, the VM module can be used by building planners to find an auditor or specialized contractor. The following tables within chapter 4.1 present a summary of the VM module function called Function 2: VM landing page.

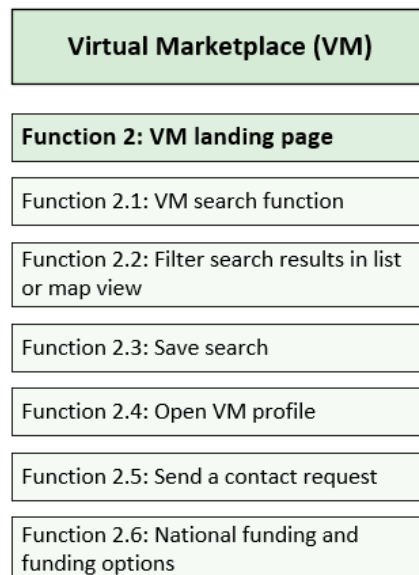
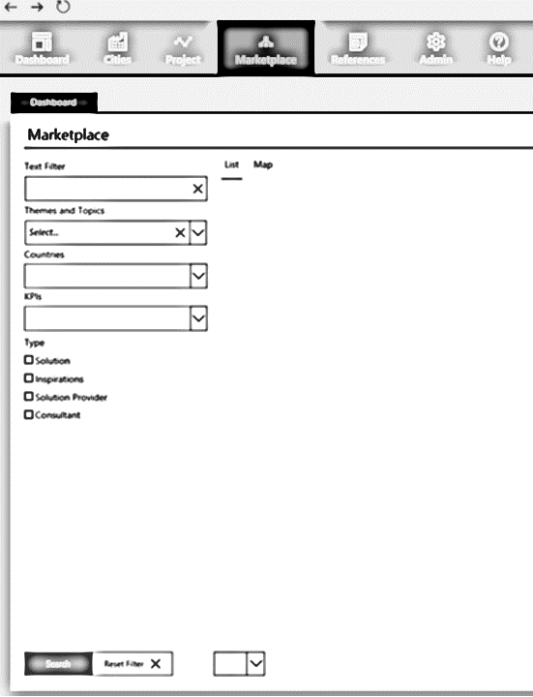


Figure 4: Virtual Marketplace (VM) module – overview of main functions


4.1 Function 2: VM landing page

Function name	Function Number	Precondition	User Role (lowest)
VM landing page	2	1.1	Visitor
Function description	<p>The Dashboard is the landing page of the VM module. The dashboard will contain a search function (Function 2.1: The VM search function) which will allow the user to search by entering free text. The user can use the filter to filter out the results by topic, KPI, expertise or certification system. The results of the search are based on information provided by the VM users in (Function 1.8.2: View, edit and save profile in the VM module and Function 1.8.2.3: Expertise and services).</p> <p>Moreover, the Dashboard will allow the VM visitors to view the VM users a list or map view. By default, the VM participants will</p>		

	<p>be appear in a list view and will be organized based on their location in relation to the IP location of the VM user. The VM visitor can save the results of their search (Function 2.3: Save search), open and view profile (Function 2.4: Open VM profile), establish connection with VM solution provider or planner (Function 2.5: Send a contact request), and use the (1.8.2.5) chat functions to communicate with the user as well as viewing view national funding options in (Function 2.6: National funding and funding options).</p>
<p>Sketch representation</p>	
<p>Comments</p>	

4.1.1 Function 2.1: The VM search function

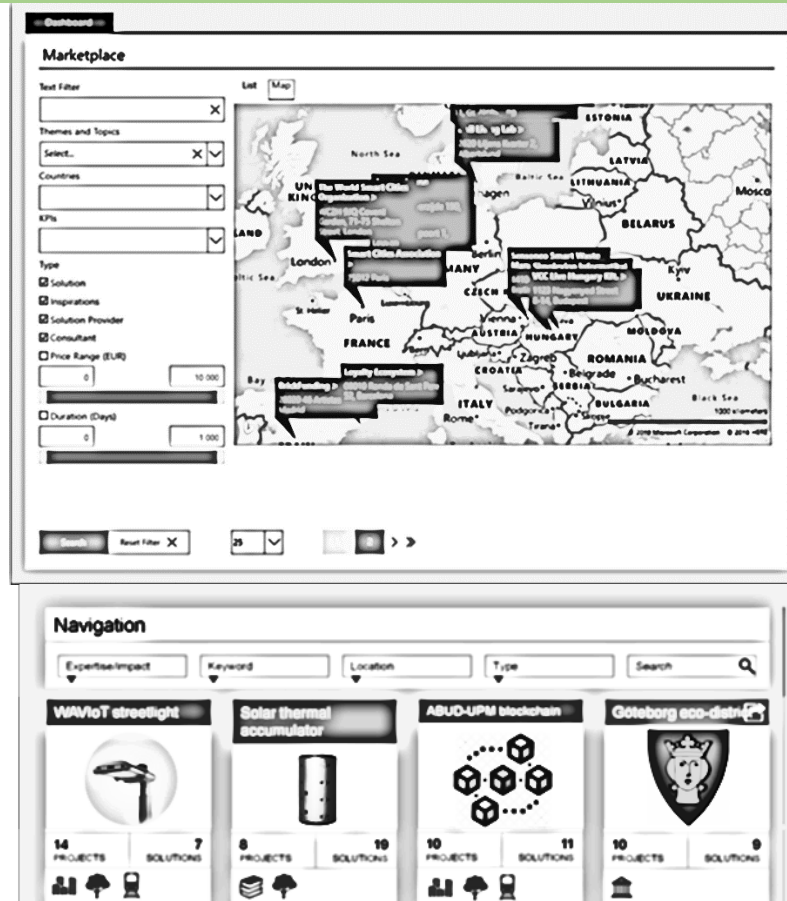
Function name	Function Number	Precondition	User Role (lowest)
The VM search function	2.1	1.1	Visitor
Function description	<p>Via this VM search function, the marketplace user can filter the search in the VM based on:</p> <ul style="list-style-type: none"> • a certification scheme - (this is to be derived from the information Function 1.8.2.3: Expertise and services as well as Function 1.7.1: Auditor registration function), • an Indicator - (this is to be derived from the information Function 1.8.2.3: Expertise and services), • a category - (this is to be derived from the information provided in the Function 1.8.2.3: Expertise and services), • a location - (this is to be derived from the information provided in the Function 1.8.2.1: General information) 		

	<ul style="list-style-type: none"> • a service type such as an Architect or building physics engineer (this is to be derived from the information provided in the Function 1.8.2.3: Expertise and services). More than one selection can be made. <p>Lastly the user can use a free text to search (this is to be matched up with from the information provided in the Function 1.8.2.1: General information & Function 1.8.2.3: Expertise and services).</p> <p>This search can also be filtered based on the VM user role, which is assigned to them in 1.7 (Function 1.7: Register to the VM) and 1.7.1 (Function 1.7.1: Auditor registration function) such as a planner, an Auditor or Solution provider.</p>
Sketch representation	
Comments	

4.1.2 Function 2.2: Filter search results in list or map view

Function name	Function Number	Precondition	User Role (lowest)
Filter search results in list or map view	2.2	2.1.1	Visitor
Function description	<p>The VM user will be able to view the VM participants sorted either as list or displayed on map based on the search result and choices made in 2.1 (Function 2.1: The VM search function). The location of the VM participants will be inferred from the information provided by them in Function 1.8.2.1: General information. The list view will sort the VM participants based on proximity of their location to the user via the IP address of the user.</p>		

Sketch representation



Comments

4.1.3 Function 2.3: Save search

Function name	Function Number	Precondition	User Role (lowest)
Save search	2.3	2.1	User
Function description	After filtering the search results, the user can choose to save the search result so that they can come back to it at later stage when they login into the VM module next time. This list can also be cleared by the user.		
Sketch representation			
Comments			

4.1.4 Function 2.4: Open VM profile

Function name	Function Number	Precondition	User Role (lowest)
Open VM profile	2.4	1.1	Visitor

Function description	By clicking on the icon that represent the VM participant in the list or the map view, the user will be redirected to the published profile page of the VM participant from Function 1.8.2.1: General information and Function 1.8.2.3: Expertise and services.
Sketch representation	
Comments	

4.1.5 Function 2.5: Send a contact request

Function name	Function Number	Precondition	User Role (lowest)
Send a contact request	2.5	1.6.1	User
Function description	After viewing the VM account, the user can establish a contact by pressing the button to send a contact request. This will open their public pages from the View Profile (Function 1.8: View and edit profile) to both sides. The contact request can be approved by the VM member. A notification will be sent to both users Notification panels (Function 1.9: Notification panel). After the connection is approved, the EUB SuperHub platform users, depending on their role, can assign access rights to the VM member to view the Building Logbook information (require Owner authorization) in the PVT module, or access their PVT page. The VM contact can be revoked or removed from 1.8 (Function 1.8: View and edit profile).		
Sketch representation			
Comments			

4.1.6 Function 2.6: National funding and funding options

Function name	Function Number	Precondition	User Role (lowest)
National funding and funding options	2.6	1.1	Visitor
Function description	The page will provide the users with a list of links to national funding agencies and possible funding options such as: https://www.bafa.de/DE/Energie/Energieeffizienzwegweiser/energieeffizienzwegweiser.html or https://www.bundesbaublatt.de/foerdermittel_3276592.html		

Sketch representatio n	
Comments	

5 The EUB SuperHub E-Cockpit module

The E-cockpit will function as a real time digital twin cloud system for building performance ratings. The E-cockpit is a multi-scale cloud-based geo referenced interactive database that will allow a wide array of stakeholders to view key information about the existing building stock and related certificates (e.g., EPC, sustainability certificates, SRI, etc.). The certificates values can be viewed using the national or the common harmonized KPIs rating developed in T2.2 (*Definition of common transnational indicators and assessment metrics for the E-Passport*) and T2.5 (*The EUB SuperHub Transnational framework and passport*).

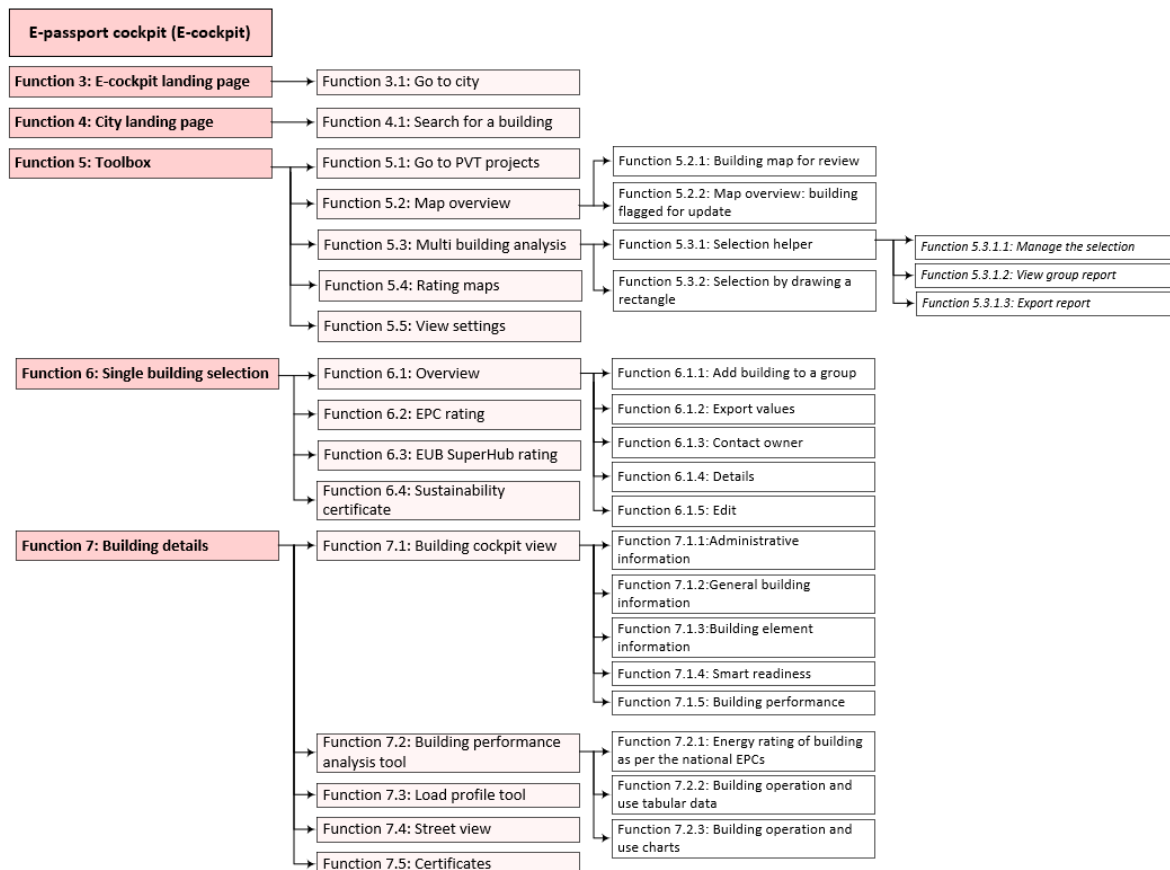


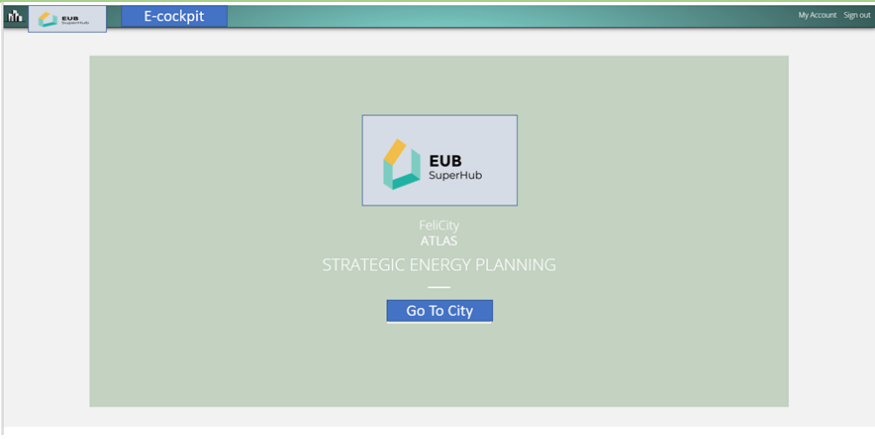
Figure 5: E-cockpit module – overview of main function

The information presented in the E-cockpit module will tie the EPCs information, sustainability and smartness rating with the building geometry and BIM model in a geo referenced database and provide policy makers and public users with dependable “intelligence” about the state of the building stock. The building information presented in the E-cockpit will originate from the PVT module. Thus, EUB SuperHub E-cockpit module can be seen as an open access data and communication hub in which information can be exchanged in real time between building users, planners, investors, and policy makers. Moreover, thanks to the wealth of information stored in the PVT database, the E-cockpit user can conduct a multi-building analysis in which a group of buildings can be selected and analysed in terms of CO₂ emissions, energy performance rating, sustainability rating, smartness, and other criteria. This will facilitate providing the policy makers

and city planners with a holistic vision on the performance of the existing building stock and on the necessary improvements that can target more than one building at a time.

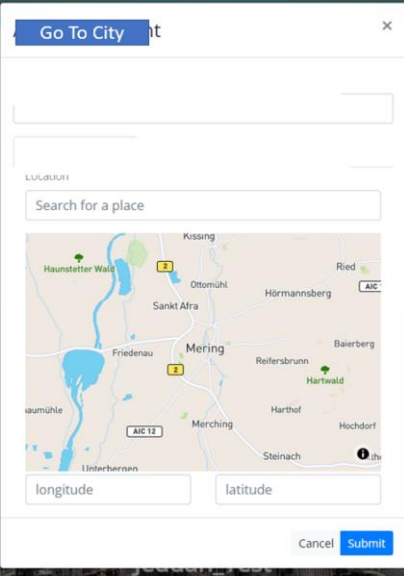
The following tables within sub chapters 5.1-5.5 present a summary of the following five E-cockpit functions: Function 3: E-cockpit landing page, Function 4: City landing page, Function 5: Toolbox, Function 6: Single building selection and Function 7: Building details.

5.1 Function 3: E-cockpit landing page

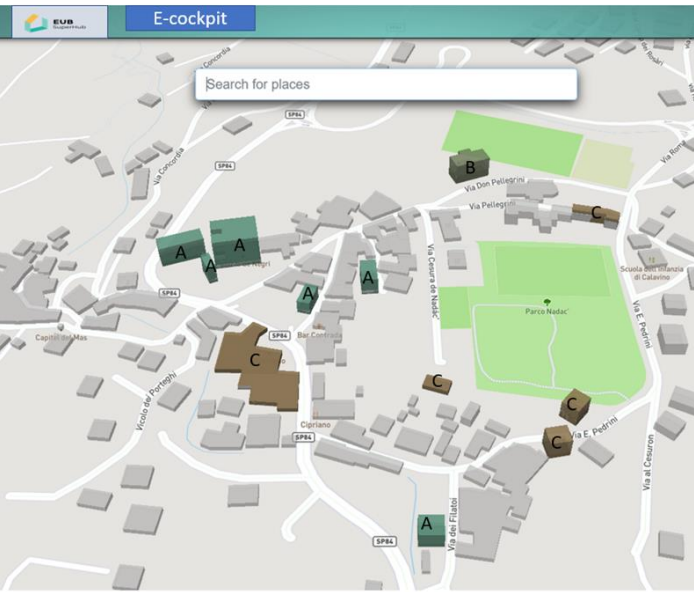
Function name	Function Number	Precondition	User Role (lowest)
E-cockpit landing page	3	1.2	Visitor
Function description	The E-cockpit landing page will start with providing the user the option to choose a city to go to view the buildings.		
Sketch representation			
Comments			

5.1.1 Function 3.1: Go to city

Function name	Function Number	Precondition	User Role (lowest)
Go to city	3.1	1.2	Visitor
Function description	By clicking on the Go to city the user can search for a city by entering its name and / or geolocation.		

<p>Sketch representation</p>	
<p>Comments</p>	


5.2 Function 4: City landing page

Function name	Function Number	Precondition	User Role (lowest)
City landing page	4	3.1	Visitor
<p>Function description</p>	<p>After entering the city or address, the E-cockpit map of that location will open for the user with a search function and the toolbox. The map will show by default the national EPC ratings of the published buildings on the map.</p>		
<p>Sketch representation</p>			
<p>Comments</p>			

5.2.1 Function 4.1: Search for a building


Function name	Function Number	Precondition	User Role (lowest)
Search for a building	4.1	4	Visitor
Function description	Using the search function, the users can enter the exact address of building to view it. Moreover, the users choose a building by clicking on the specific building with the mouse or search for a building by entering its geo coordinate (latitude, longitude). The E-cockpit will navigate the user to the location.		
Sketch representation			
Comments			

5.3 Function 5: Toolbox

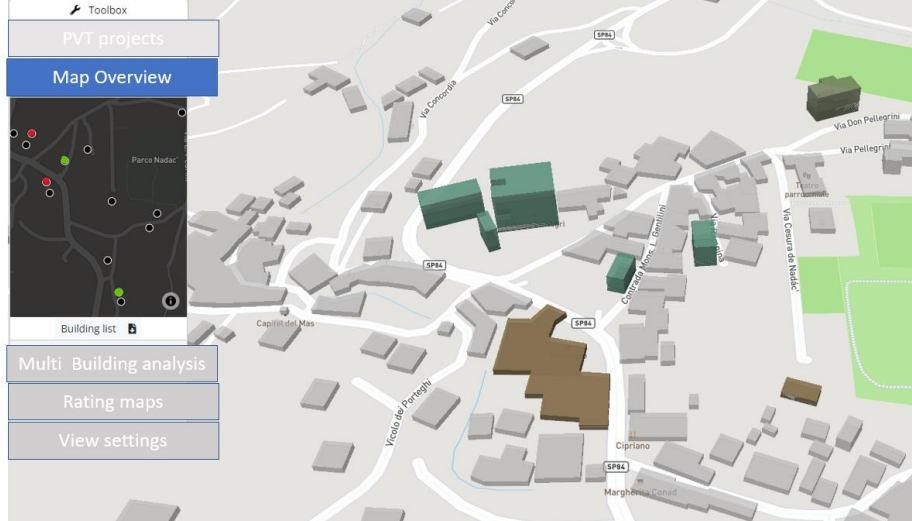
Function name	Function Number	Precondition	User Role (lowest)
Toolbox	5	4	Visitor
Function description	The user can use the toolbox to do one of the following: 1. Go to PVT projects (Function 5.1: Go to PVT projects) 2. Map Overview (Function 5.2: Map overview) 3. Multi building analysis (Function 5.3: Multi building analysis) 4. Ratings maps (Function 5.4: Rating maps) 5. Map settings (Function 5.5: View settings)		
Sketch representation			
Comments			

5.3.1 Function 5.1: Go to PVT projects

Function name	Function Number	Precondition	User Role (lowest)
Go to PVT projects	5.1	1.6.1	User

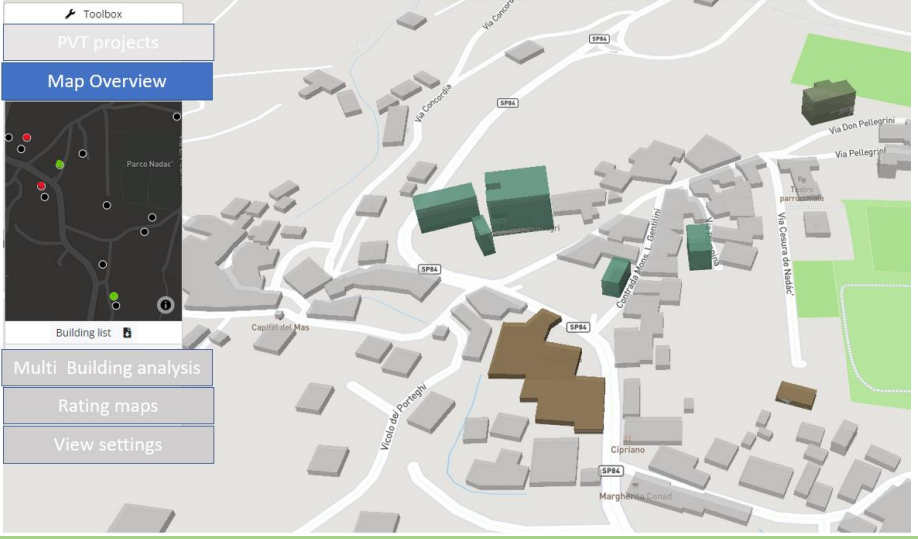
Function description	<p>The function allows the users to go to an active PVT project that is saved to their account or that they have been granted access to. The function will list all the PVT projects connected to the account. The user can select to open one of them from the drop-down list.</p>
Sketch representation	
Comments	

5.3.2 Function 5.2: Map overview

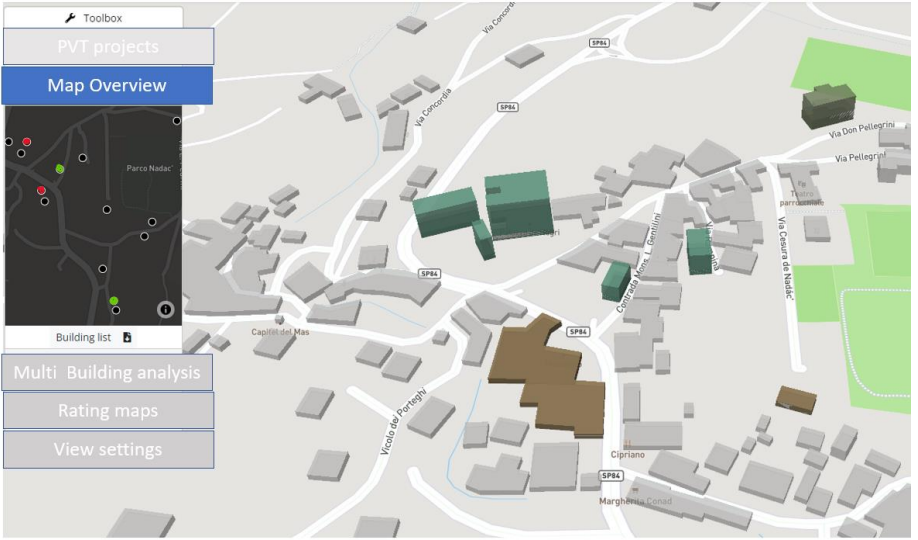
Function name	Function Number	Precondition	User Role (lowest)
Map overview	5.2	4	Visitor
Function description	<p>The function will show on map displaying in colour:</p> <ol style="list-style-type: none"> 1. the buildings that are updated or added newly to the map, 2. the buildings connected with the user account, 3. the buildings that are published to the E-cockpit. 		
Sketch representation			
Comments			

5.3.2.1 Function 5.2.1: Building map for review


Function name	Function Number	Precondition	User Role (lowest)
---------------	-----------------	--------------	--------------------

Building map for review	5.2.1	1.7	Solution provider
Function description	<p>The function will show on map displaying in colour in addition to 5.2.</p> <p>Buildings, flagged for review, appear to the assigned user or a VM Registered user only, i.e., solution provider, auditor, planner, depending on the setting entered in 15 (Function 15: Building settings).</p>		
Sketch representation			
Comments			

5.3.2.2 Function 5.2.2: Map overview: building flagged for update

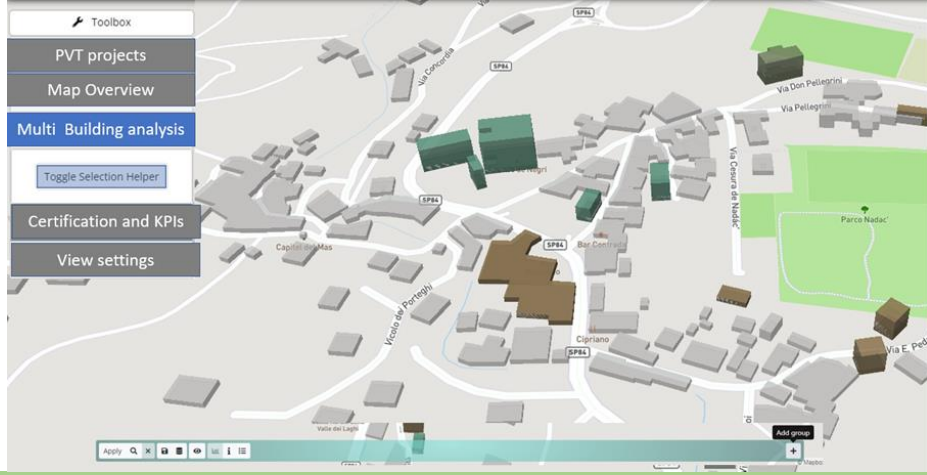
Function name	Function Number	Precondition	User Role (lowest)
Map overview: building flagged for update	5.2.2	15.6	Owner
Function description	<p>The function will show on map displaying in colour in addition to Function 5.2.2: Map overview: building flagged for update.</p>		
Sketch representation			
Comments			

5.3.3 Function 5.3: Multi building analysis

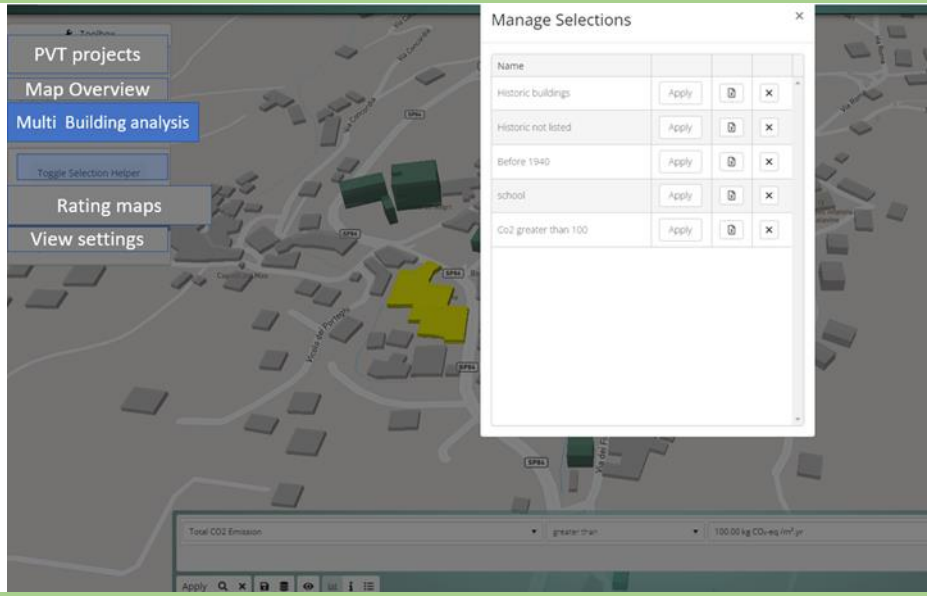
Function name	Function Number	Precondition	User Role (lowest)
Multi building analysis	5.3	15.1	Visitor
Function description	The function multi building analysis will start the multi building section helper allowing the user to select and filter a group of buildings either by a number of predefined criteria or by drawing a rectangle in the map around the building area which the user would like to analyse.		
Sketch representation			
Comments			

5.3.3.1 Function 5.3.1: Selection helper

Function name	Function Number	Precondition	User Role (lowest)
Selection helper	5.3.1	5.3	Visitor
Function description	The function selection helper will appear after activating 5.3. (Function 5.3: Multi building analysis). The user will be able to create a group of buildings for analysis based on a number of predefined criteria such as final energy demand, national EPC rating, SC rating, CO ₂ emissions, IAQ rating, etc.		

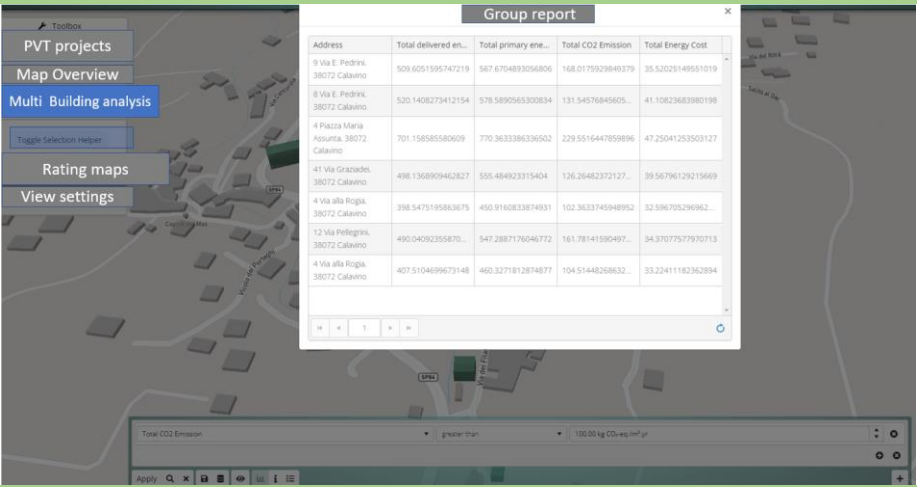
<p>Sketch representation</p>	
<p>Comments</p>	

5.3.3.1.1 Function 5.3.1.1: Manage the selection

Function name	Function Number	Precondition	User Role (lowest)
Manage the selection	5.3.1.1		Visitor
Function description	After selecting the building with the selection helper, the user can save and name the selected group.		
<p>Sketch representation</p>			
<p>Comments</p>	In the same page the user can edit the created group, save it and delete the selection or rename it.		

5.3.3.1.2 Function 5.3.1.2: View group report

Function name	Function Number	Precondition	User Role (lowest)
View group report	5.3.1.2		Visitor
Function description	The function will allow a user with visitor role to view the selected group and view the connected report but cannot save		

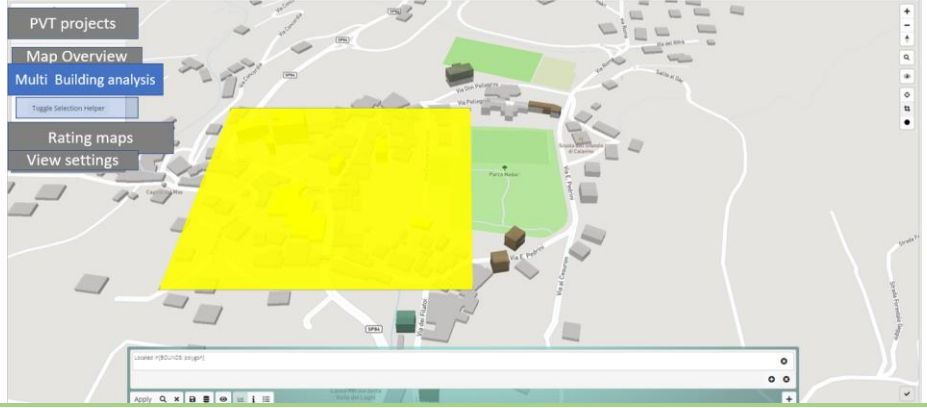
	it or export it. The report content will display the National EPC energy values and if available the EUB SuperHub KPIs values.
Sketch representation	
Comments	

5.3.3.1.3 Function 5.3.1.3: Export report

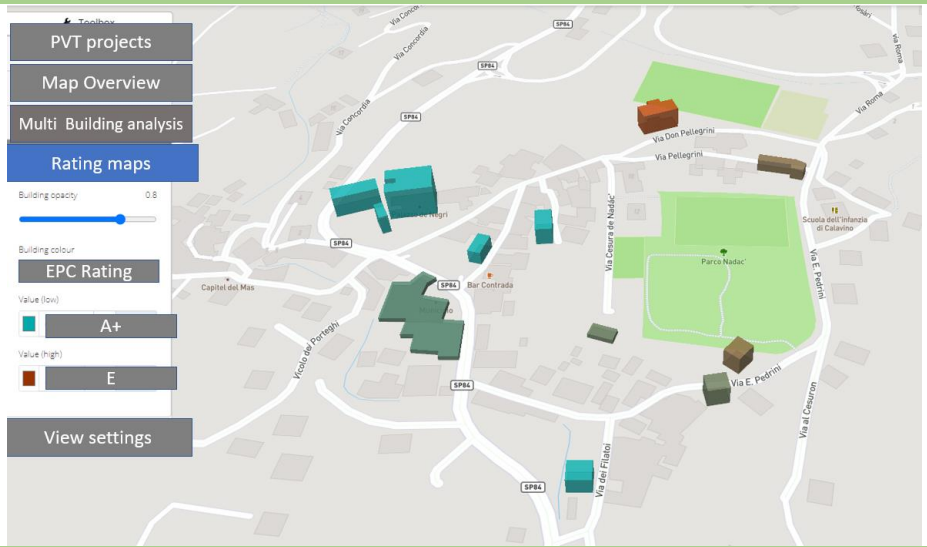
Function name	Function Number	Precondition	User Role (lowest)
Export report	5.3.1.3	1.6.1	User
Function description	The user can export the report of the building group for further processing. The report content will include only public data such as construction year, usage, area, EPC rating, energy demand, etc. or other building data that the owner allowed to be published from the PVT module.		
Sketch representation			
Comments			

5.3.3.2 Function 5.3.2: Selection by drawing a rectangle

Function name	Function Number	Precondition	User Role (lowest)
Selection by drawing a rectangle	5.3.2	5.3	Visitor
Function description	After activating multi building analysis (Function 5.3: Multi building analysis), using this function the user will be able to select a group of buildings by drawing a rectangle in the map around the area of buildings which the user would like to analyse. After this selection of a group of buildings, the same functions as 5.3.1.1 to 5.3.1.3 can be used by the user.		

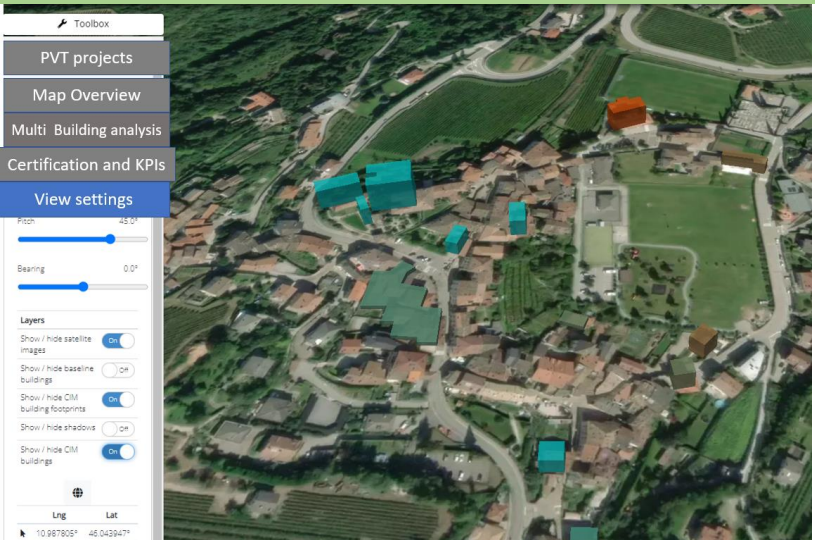
<p>Sketch representation</p>	
<p>Comments</p>	

5.3.4 Function 5.4: Rating maps

Function name	Function Number	Precondition	User Role (lowest)
Rating maps	5.4	4	Visitor
<p>Function description</p>	<p>The function allows the user to change the view of the published building in the E-cockpit based on the national EPC rating, the SC rating, EUB SuperHub rating or the EUB SuperHub KPIs and create unique maps such based on the KPIs such as building with A rating in smart readiness or the achieving a certain IAQ level or CO₂ emissions level.</p>		
<p>Sketch representation</p>			
<p>Comments</p>			

5.3.5 Function 5.5: View settings

Function name	Function Number	Precondition	User Role (lowest)
View settings	5.5	4	Visitor
<p>Function description</p>	<p>The function allows the user to edit and adjust the display settings of the E-cockpit, such as the underlayer of the map, the pitch, the colours, etc. Also, in the view setting, the user can</p>		

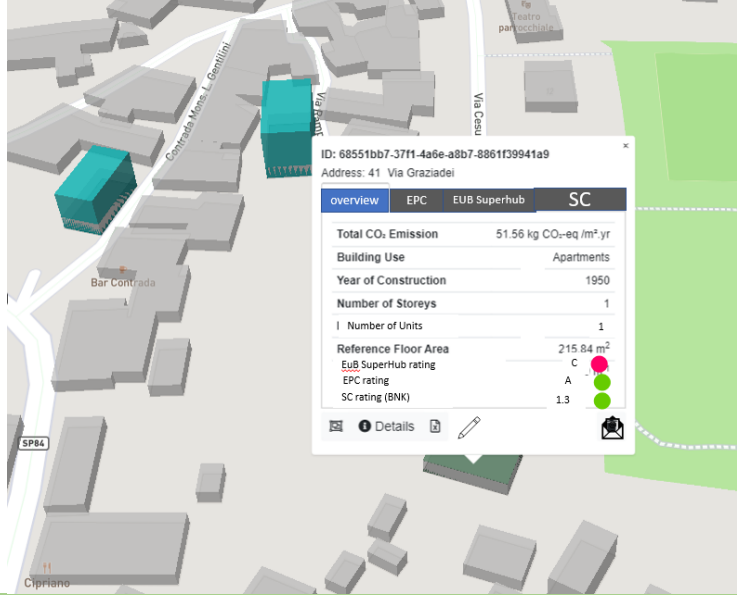
	review an older version of the map like go to a previous year of the map if data is available.
Sketch representation	
Comments	

5.4 Function 6: Single building selection

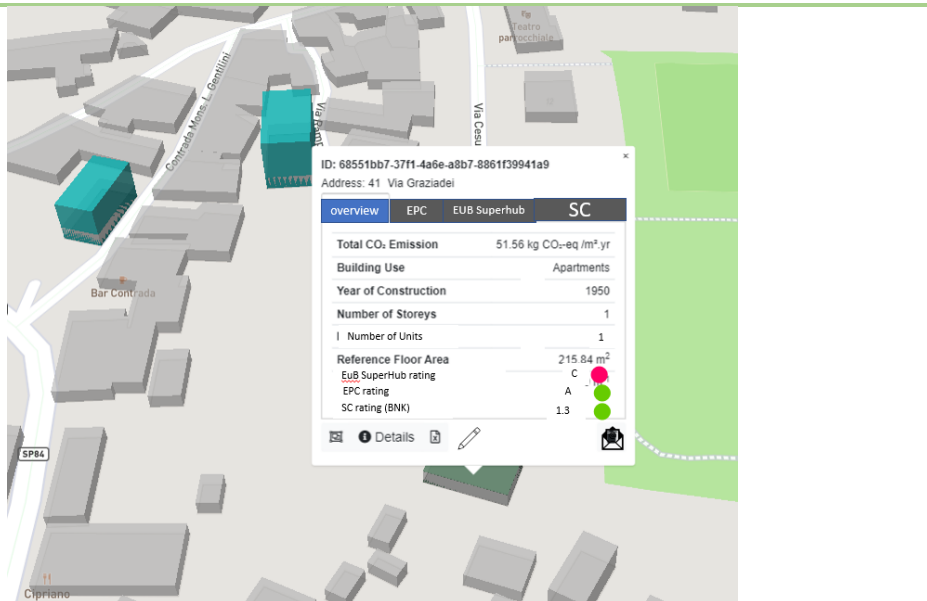
Function name	Function Number	Precondition	User Role (lowest)
Single building selection	6	15.1	Visitor
Function description	The function allows the user to click on a single building and view Published information about the building as discussed in 6.1 to 6.4.		
Sketch representation			
Comments			

5.4.1 Function 6.1: Overview

Function name	Function Number	Precondition	User Role (lowest)
Overview	6.1	4	Visitor
Function description	The overview function will display key information about the building such as its use, total CO ₂ emissions, construction year, EPC rating, SC and EUB SuperHub rating, floor area, number of units and number of stories. Moreover, the overview will display 5 buttons that the user can activate which are illustrated in Function 6.1.1: Add building to a group to Function 6.1.5: Edit.		

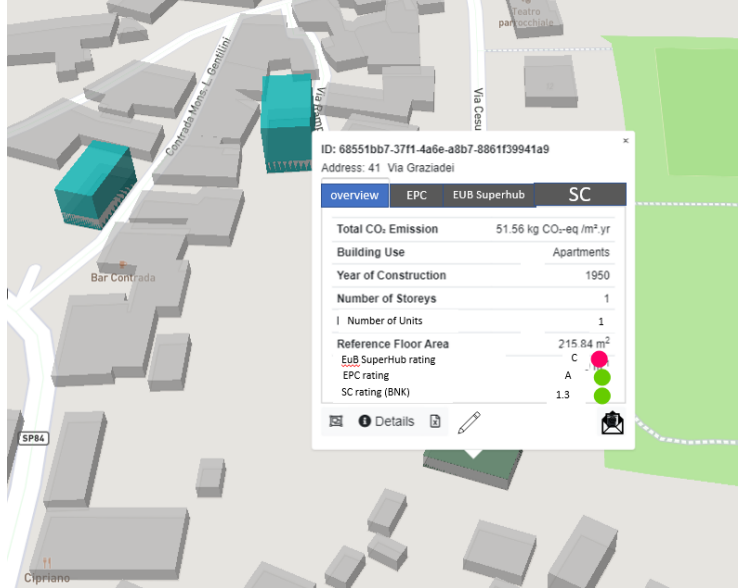
Sketch representation	
Comments	

5.4.1.1 Function 6.1.1: Add building to a group

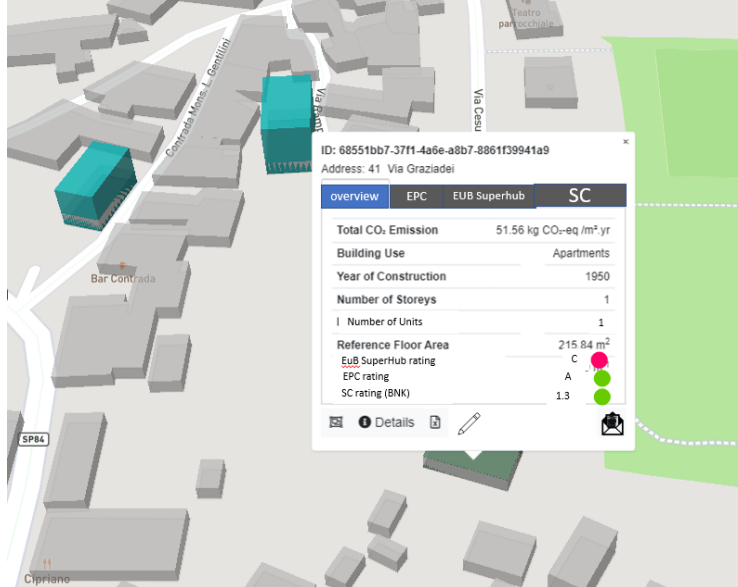
Function name	Function Number	Precondition	User Role (lowest)
Add building to a group	6.1.1	5.3	Visitor
Function description	The user can add the selected building to predefined group in 5.3 (Function 5.3: Multi building analysis).		
Sketch representation			
Comments			

5.4.1.2 Function 6.1.2: Export values

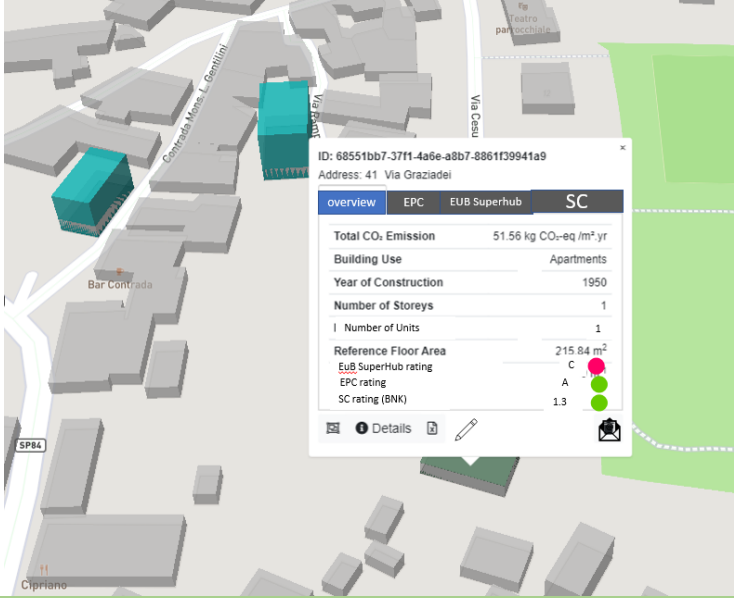
Function name	Function Number	Precondition	User Role (lowest)
Export values	6.1.2	15.4	User

Function description	The user can export the values of the building or group of buildings in CSV format for post processing
Sketch representation	 <p>The sketch shows a 3D map of a city block with several buildings. One building is highlighted in teal. A popup window is open over this building, displaying the following information:</p> <ul style="list-style-type: none"> ID: 68551bb7-37f1-4a6e-a8b7-8861f39941a9 Address: 41 Via Graziadei Overview: EPC, EUB Superhub, SC Total CO₂ Emission: 51.56 kg CO₂-eq /m²-yr Building Use: Apartments Year of Construction: 1950 Number of Storeys: 1 Number of Units: 1 Reference Floor Area: 215.84 m² EUB Superhub rating: C (indicated by a red dot) EPC rating: A (indicated by a green dot) SC rating (BNK): 1.3 (indicated by a green dot)
Comments	

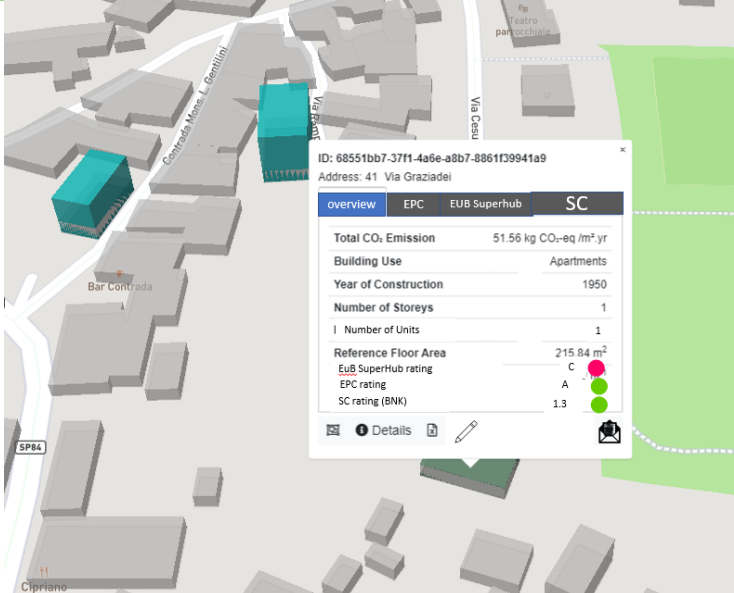
5.4.1.3 Function 6.1.3: Contact owner

Function name	Function Number	Precondition	User Role (lowest)
Contact owner	6.1.3	15.5	Solution provider
Function description	The user can contact the owner if the building is flagged for review. A request will be sent to the owner to approve connection this will open 1.8 (Function 1.8: View and edit profile) and the VM page of both users.		
Sketch representation	 <p>The sketch shows a 3D map of a city block with several buildings. One building is highlighted in teal. A popup window is open over this building, displaying the following information:</p> <ul style="list-style-type: none"> ID: 68551bb7-37f1-4a6e-a8b7-8861f39941a9 Address: 41 Via Graziadei Overview: EPC, EUB Superhub, SC Total CO₂ Emission: 51.56 kg CO₂-eq /m²-yr Building Use: Apartments Year of Construction: 1950 Number of Storeys: 1 Number of Units: 1 Reference Floor Area: 215.84 m² EUB Superhub rating: C (indicated by a red dot) EPC rating: A (indicated by a green dot) SC rating (BNK): 1.3 (indicated by a green dot) 		
Comments			

5.4.1.4 Function 6.1.4: Details

Function name	Function Number	Precondition	User Role (lowest)
Details	6.1.4	15.1	Visitors
Function description	This function will redirect the user to the building details which are published from the PVT. The list of visible information is detailed in 7 (Function 7: Building details).		
Sketch representation	 <p>The sketch shows a 3D map of a building complex. A specific building is highlighted in teal. A pop-up window is overlaid on the map, displaying the following information:</p> <ul style="list-style-type: none"> ID: 68551bb7-37f1-4a6e-a8b7-8861f3941a9 Address: 41 Via Graziadei Overview tabs: overview, EPC, EUB Superhub, SC Total CO₂ Emission: 51.56 kg CO₂-eq / m² yr Building Use: Apartments Year of Construction: 1950 Number of Storeys: 1 Number of Units: 1 Reference Floor Area: 215.84 m² EUB SuperHub rating: C (indicated by a red dot) EPC rating: A (indicated by a green dot) SC rating (BNK): 1.3 (indicated by a green dot) Buttons: Details (pencil icon), Close (X icon) 		
Comments			

5.4.1.5 Function 6.1.5: Edit

Function name	Function Number	Precondition	User Role (lowest)
Edit	6.1.5	15.3	Solution provider
Function description	By pressing on the Edit button (represented by pencil) the user will launch the PVT module.		
Sketch representation	 <p>The sketch shows a 3D map of a building complex. A specific building is highlighted in teal. A pop-up window is overlaid on the map, displaying the following information:</p> <ul style="list-style-type: none"> ID: 68551bb7-37f1-4a6e-a8b7-8861f3941a9 Address: 41 Via Graziadei Overview tabs: overview, EPC, EUB Superhub, SC Total CO₂ Emission: 51.56 kg CO₂-eq / m² yr Building Use: Apartments Year of Construction: 1950 Number of Storeys: 1 Number of Units: 1 Reference Floor Area: 215.84 m² EUB SuperHub rating: C (indicated by a red dot) EPC rating: A (indicated by a green dot) SC rating (BNK): 1.3 (indicated by a green dot) Buttons: Details (pencil icon), Close (X icon) 		

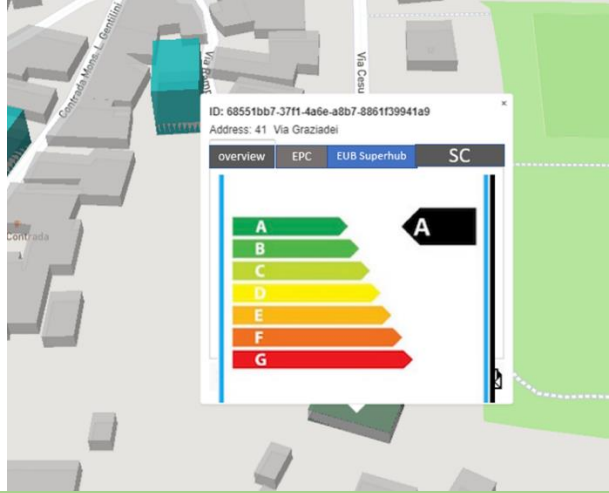
Comments	This is visible only to user that have access rights to the building.
-----------------	---

5.4.2 Function 6.2: EPC rating


Function name	Function Number	Precondition	User Role (lowest)
EPC rating	6.2	15.1	Visitor
Function description	This will show the national EPC rating / certificate of the building as its stored in the national database or in the building logbook (Function 16: Digital Building Logbook (DBL)). The source of the certificate will be indicated.		
Sketch representation			
Comments			

5.4.3 Function 6.3: EUB SuperHub rating

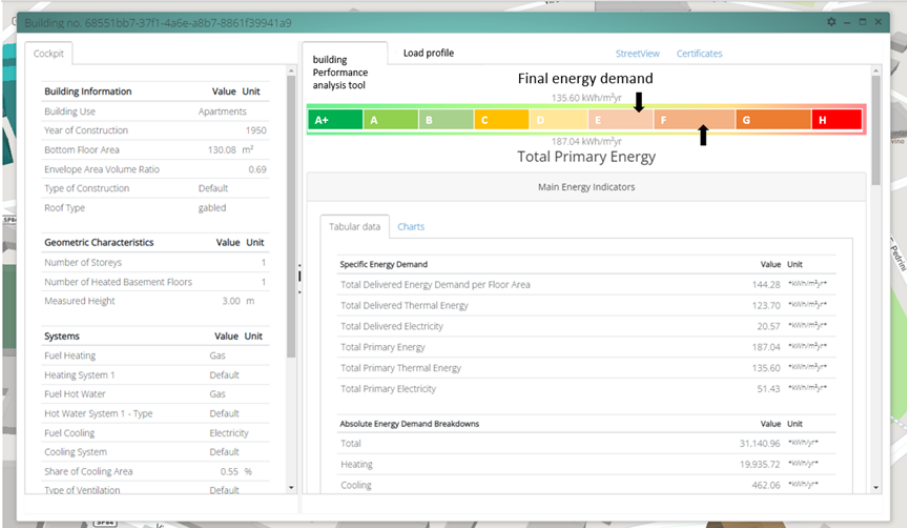
Function name	Function Number	Precondition	User Role (lowest)
EUB SuperHub rating	6.3	18.3	Visitor
Function description	This will show the EUB SuperHub rating awarded to the building. The source and date of the rating will be indicated as well as audit status of the values.		

<p>Sketch representation</p>	
<p>Comments</p>	

5.4.4 Function 6.4: Sustainability certificate

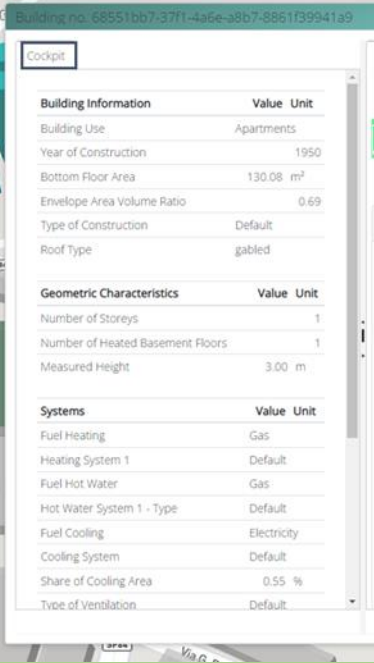
Function name	Function Number	Precondition	User Role (lowest)
Sustainability certificate	6.4	18.2	Visitor
<p>Function description</p>	<p>This will show the sustainability certificate rating awarded to the building. The source and date of the rating will be indicated.</p>		
<p>Sketch representation</p>			
<p>Comments</p>			

5.5 Function 7: Building details

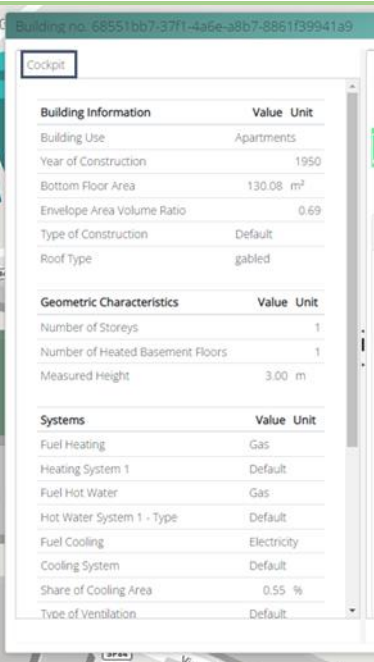
Function name	Function Number	Precondition	User Role (lowest)
Building Details	7	15.1	Visitor
Function description	<p>By pressing on the building details, performance details about the building will be readable for the user. The building detail's function will show key information about the building via:</p> <ul style="list-style-type: none"> • the building cockpit (Function 7.1: Building cockpit view), • the building performance analysis tool (Function 7.2: Building performance analysis tool), • the load profile tool (Function 7.3: Load profile tool), • the street view (Function 7.4: Street view) and • the certificates tool (Function 7.5: Certificates). <p>The above-mentioned data will be inferred either from the local EPC and/or the building logbook from the PVT module.</p>		
Sketch representation	 <p>The screenshot displays a software interface for building performance analysis. It features a 'Cockpit' tab on the left with a table of building information (e.g., Building Use: Apartments, Year of Construction: 1950, Bottom Floor Area: 130.08 m²). The main area shows a 'Final energy demand' bar chart with energy efficiency classes A+ through H, and a 'Total Primary Energy' table with values like 187.04 kWh/m². A 'Main Energy indicators' table is also visible at the bottom.</p>		
Comments			

5.5.1 Function 7.1: Building cockpit view

Function name	Function Number	Precondition	User Role (lowest)
Building cockpit view	7.1	15.1	Visitor
Function description	<p>The building cockpit view appears by default when clicking on the Details icon. The building cockpit will present key information about the building as illustrated in Function 7.1.1: Administrative information to Function 7.1.5: Building performance. The information presented is to originate from the DBL or/and local EPC database.</p>		

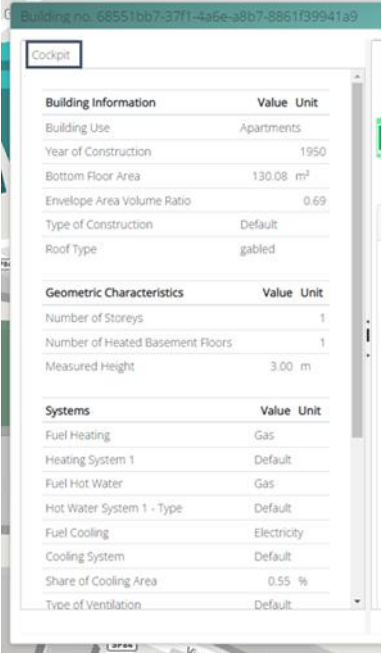
Sketch representation	 <p>Building no. 68551bb7-3711-4a6e-a8b7-8861f39941a9</p> <p>Cockpit</p> <table border="1"> <thead> <tr> <th>Building Information</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Building Use</td><td>Apartments</td><td></td></tr> <tr><td>Year of Construction</td><td>1950</td><td></td></tr> <tr><td>Bottom Floor Area</td><td>130.08</td><td>m²</td></tr> <tr><td>Envelope Area Volume Ratio</td><td>0.69</td><td></td></tr> <tr><td>Type of Construction</td><td>Default</td><td></td></tr> <tr><td>Roof Type</td><td>gabled</td><td></td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Geometric Characteristics</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Number of Storeys</td><td>1</td><td></td></tr> <tr><td>Number of Heated Basement Floors</td><td>1</td><td></td></tr> <tr><td>Measured Height</td><td>3.00</td><td>m</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Systems</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Fuel Heating</td><td>Gas</td><td></td></tr> <tr><td>Heating System 1</td><td>Default</td><td></td></tr> <tr><td>Fuel Hot Water</td><td>Gas</td><td></td></tr> <tr><td>Hot Water System 1 - Type</td><td>Default</td><td></td></tr> <tr><td>Fuel Cooling</td><td>Electricity</td><td></td></tr> <tr><td>Cooling System</td><td>Default</td><td></td></tr> <tr><td>Share of Cooling Area</td><td>0.55</td><td>%</td></tr> <tr><td>Type of Ventilation</td><td>Default</td><td></td></tr> </tbody> </table>	Building Information	Value	Unit	Building Use	Apartments		Year of Construction	1950		Bottom Floor Area	130.08	m ²	Envelope Area Volume Ratio	0.69		Type of Construction	Default		Roof Type	gabled		Geometric Characteristics	Value	Unit	Number of Storeys	1		Number of Heated Basement Floors	1		Measured Height	3.00	m	Systems	Value	Unit	Fuel Heating	Gas		Heating System 1	Default		Fuel Hot Water	Gas		Hot Water System 1 - Type	Default		Fuel Cooling	Electricity		Cooling System	Default		Share of Cooling Area	0.55	%	Type of Ventilation	Default	
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Type of Ventilation	Default																																																												
Comments																																																													

5.5.1.1 Function 7.1.1: Administrative information

Function name	Function Number	Precondition	User Role (lowest)																																																												
Administrative information	7.1.1	15.1	Visitor																																																												
Function description	<p>The building administrative information will present the user with information about:</p> <ul style="list-style-type: none"> • the building name or ID, • the building state (life cycle stage), • the building use (residential or non-residential), • the building address (street and number). 																																																														
Sketch representation	 <p>Building no. 68551bb7-3711-4a6e-a8b7-8861f39941a9</p> <p>Cockpit</p> <table border="1"> <thead> <tr> <th>Building Information</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Building Use</td><td>Apartments</td><td></td></tr> <tr><td>Year of Construction</td><td>1950</td><td></td></tr> <tr><td>Bottom Floor Area</td><td>130.08</td><td>m²</td></tr> <tr><td>Envelope Area Volume Ratio</td><td>0.69</td><td></td></tr> <tr><td>Type of Construction</td><td>Default</td><td></td></tr> <tr><td>Roof Type</td><td>gabled</td><td></td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Geometric Characteristics</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Number of Storeys</td><td>1</td><td></td></tr> <tr><td>Number of Heated Basement Floors</td><td>1</td><td></td></tr> <tr><td>Measured Height</td><td>3.00</td><td>m</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Systems</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Fuel Heating</td><td>Gas</td><td></td></tr> <tr><td>Heating System 1</td><td>Default</td><td></td></tr> <tr><td>Fuel Hot Water</td><td>Gas</td><td></td></tr> <tr><td>Hot Water System 1 - Type</td><td>Default</td><td></td></tr> <tr><td>Fuel Cooling</td><td>Electricity</td><td></td></tr> <tr><td>Cooling System</td><td>Default</td><td></td></tr> <tr><td>Share of Cooling Area</td><td>0.55</td><td>%</td></tr> <tr><td>Type of Ventilation</td><td>Default</td><td></td></tr> </tbody> </table>			Building Information	Value	Unit	Building Use	Apartments		Year of Construction	1950		Bottom Floor Area	130.08	m ²	Envelope Area Volume Ratio	0.69		Type of Construction	Default		Roof Type	gabled		Geometric Characteristics	Value	Unit	Number of Storeys	1		Number of Heated Basement Floors	1		Measured Height	3.00	m	Systems	Value	Unit	Fuel Heating	Gas		Heating System 1	Default		Fuel Hot Water	Gas		Hot Water System 1 - Type	Default		Fuel Cooling	Electricity		Cooling System	Default		Share of Cooling Area	0.55	%	Type of Ventilation	Default	
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Cooling System	Default																																																														
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Type of Ventilation	Default																																																														

Comments	The information presented is dependent on the information available and published in the DBL and local EPC data base.
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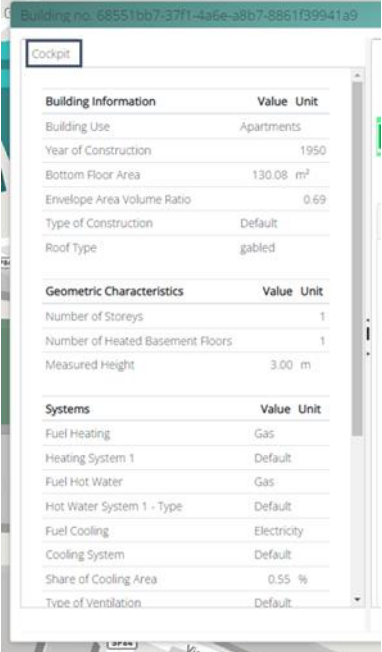
5.5.1.2 Function 7.1.2: General building information

Function name	Function Number	Precondition	User Role (lowest)
General building information	7.1.2	15.1	Visitor
Function description	<p>The General Building Information will present the user with information about:</p> <ul style="list-style-type: none"> • Year of construction, • Year of renovation, • Base height, • Number of storeys (floors), • Floor height, • Measured height, • Number of heated basement floors, • Historical status, • Physical accessibility (design for all), • Useful floor area (heated area), • Type of construction, • Use of last floor (heated or not). 		
Sketch representation			
Comments	The wealth of information presented is dependent on the information available and published in the DBL and/ or local EPC database.		

5.5.1.3 Function 7.1.3: Building element information

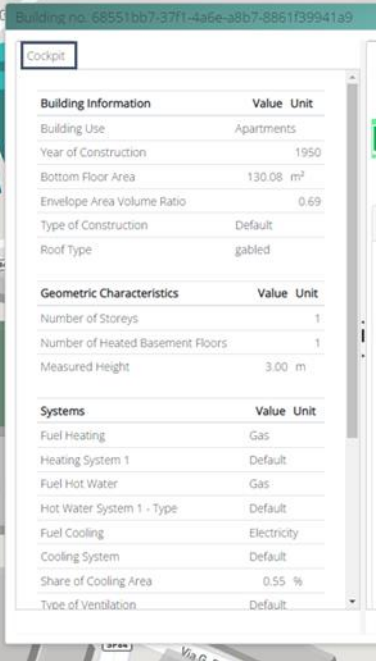
Function name	Function Number	Precondition	User Role (lowest)
---------------	-----------------	--------------	--------------------

Building element information	7.1.3	15.1	Visitor
Function description	<p>The Building element information will present the user with information about:</p> <p>1. Building envelope</p> <ul style="list-style-type: none"> • Thermal bridging • U-value wall • U-value floor • U-value of Ground floor (floor in contact with soil) • U-value roof • Type of windows • Type of sun protection • U-value skylight <p>2. Technical Building System (TBS)</p> <p><u>2.1 Space heating system</u></p> <ul style="list-style-type: none"> • Source of energy for space heating system • Type of heating system • Installation year • Energy efficiency class (EU energy label) • predicted remaining useful life according to EN 15459 <p><u>2.2 Domestic Hot Water (DHW) preparation system</u></p> <ul style="list-style-type: none"> • Source of energy for DHW system • Type of DHW system • Installation year • Energy efficiency class (EU energy label) • predicted remaining useful life according to EN 15459 <p><u>2.3 Space cooling system</u></p> <ul style="list-style-type: none"> • Share of cooling system • Source of energy for cooling system • Type of cooling system • Installation year • Energy efficiency class (EU energy label) • predicted remaining useful life according to EN 15459 <p><u>2.4 Ventilation system</u></p> <ul style="list-style-type: none"> • Ventilation system type • Ventilation rate • Energy efficiency class (EU energy label) • predicted remaining useful life according to EN 15459 <p><u>2.5 Lighting system</u></p> <ul style="list-style-type: none"> • Type of electrical lighting sources <p><u>2.6 Building Automation and Control system (BACS)</u></p> <ul style="list-style-type: none"> • BACS efficiency class (EN 15232-1) <p><u>2.7 ON-SITE Renewable energy generation and storage</u></p> <ul style="list-style-type: none"> • PV type • PV panel area • PV power rating • PV efficiency 		

	<ul style="list-style-type: none"> • predicted remaining useful life according to EN 15459 • Solar Thermal System type • Solar thermal system panel area • Solar thermal system efficiency • predicted remaining useful life according to EN 15459 <p><u>2.8 Battery energy storage system</u></p> <ul style="list-style-type: none"> • Battery type (Battery chemistry) • Total battery capacity 																																																												
<p>Sketch representation</p>	 <p>The screenshot shows a 'Cockpit' window with the following data:</p> <table border="1"> <thead> <tr> <th>Building Information</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Building Use</td><td>Apartments</td><td></td></tr> <tr><td>Year of Construction</td><td>1950</td><td></td></tr> <tr><td>Bottom Floor Area</td><td>130.08</td><td>m²</td></tr> <tr><td>Envelope Area Volume Ratio</td><td>0.69</td><td></td></tr> <tr><td>Type of Construction</td><td>Default</td><td></td></tr> <tr><td>Roof Type</td><td>gabled</td><td></td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Geometric Characteristics</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Number of Storeys</td><td>1</td><td></td></tr> <tr><td>Number of Heated Basement Floors</td><td>1</td><td></td></tr> <tr><td>Measured Height</td><td>3.00</td><td>m</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Systems</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>Fuel Heating</td><td>Gas</td><td></td></tr> <tr><td>Heating System 1</td><td>Default</td><td></td></tr> <tr><td>Fuel Hot Water</td><td>Gas</td><td></td></tr> <tr><td>Hot Water System 1 - Type</td><td>Default</td><td></td></tr> <tr><td>Fuel Cooling</td><td>Electricity</td><td></td></tr> <tr><td>Cooling System</td><td>Default</td><td></td></tr> <tr><td>Share of Cooling Area</td><td>0.55</td><td>%</td></tr> <tr><td>Type of Ventilation</td><td>Default</td><td></td></tr> </tbody> </table>	Building Information	Value	Unit	Building Use	Apartments		Year of Construction	1950		Bottom Floor Area	130.08	m ²	Envelope Area Volume Ratio	0.69		Type of Construction	Default		Roof Type	gabled		Geometric Characteristics	Value	Unit	Number of Storeys	1		Number of Heated Basement Floors	1		Measured Height	3.00	m	Systems	Value	Unit	Fuel Heating	Gas		Heating System 1	Default		Fuel Hot Water	Gas		Hot Water System 1 - Type	Default		Fuel Cooling	Electricity		Cooling System	Default		Share of Cooling Area	0.55	%	Type of Ventilation	Default	
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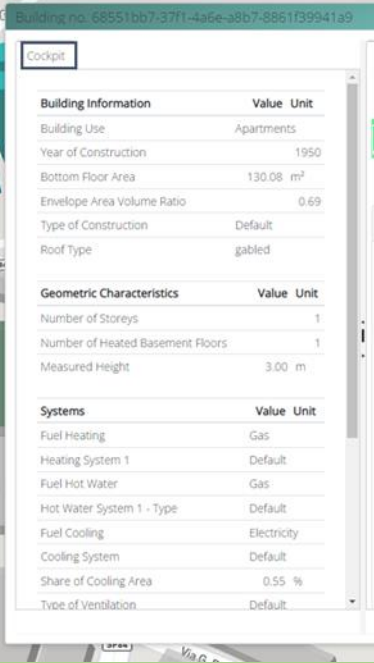
5.5.1.4 Function 7.1.4: Smart readiness

Function name	Function Number	Precondition	User Role (lowest)
Smart readiness	7.1.4	15.1/18.2/18.3	Visitor
<p>Function description</p>	<p>The Smart Readiness will present the user with information about:</p> <ol style="list-style-type: none"> <u>1. Smart Readiness</u> <ul style="list-style-type: none"> • Smart Readiness Indicator (SRI) <u>2. E-mobility</u> <ul style="list-style-type: none"> • Electrical Vehicle (EV) charging capacity <u>3. Potential</u> <ul style="list-style-type: none"> • Smart district potential • Demand response potential 		

Sketch representation	 <p>The screenshot shows a 'Cockpit' window for a building with ID '68551bb7-37f1-4a6e-a8b7-8861f39941a9'. It contains three main sections: 'Building Information', 'Geometric Characteristics', and 'Systems'. Each section lists various attributes with their values and units.</p>
Comments	<p>The wealth of information presented is dependent on the information available and published in the DBL and/ or local EPC data base.</p>

5.5.1.5 Function 7.1.5: Building performance

Function name	Function Number	Precondition	User Role (lowest)
Building performance	7.1.5	15.1 / 18.2	Visitor
Function description	<p>The building performance will present the user with information about:</p> <ol style="list-style-type: none"> 1. <u>Energy Performance Certification (EPBD)</u> <ul style="list-style-type: none"> • EPC rating (EPC label) • Issue date • Energy assessor (auditor) 2. <u>EUB SuperHub certification</u> <ul style="list-style-type: none"> • Rating label • Issue date 3. <u>Sustainability certification</u> <ul style="list-style-type: none"> • Sustainability certificate • Sustainability rating • Issue date • Auditor • 4. <u>Key performance Indicators (KPIs)</u> 		

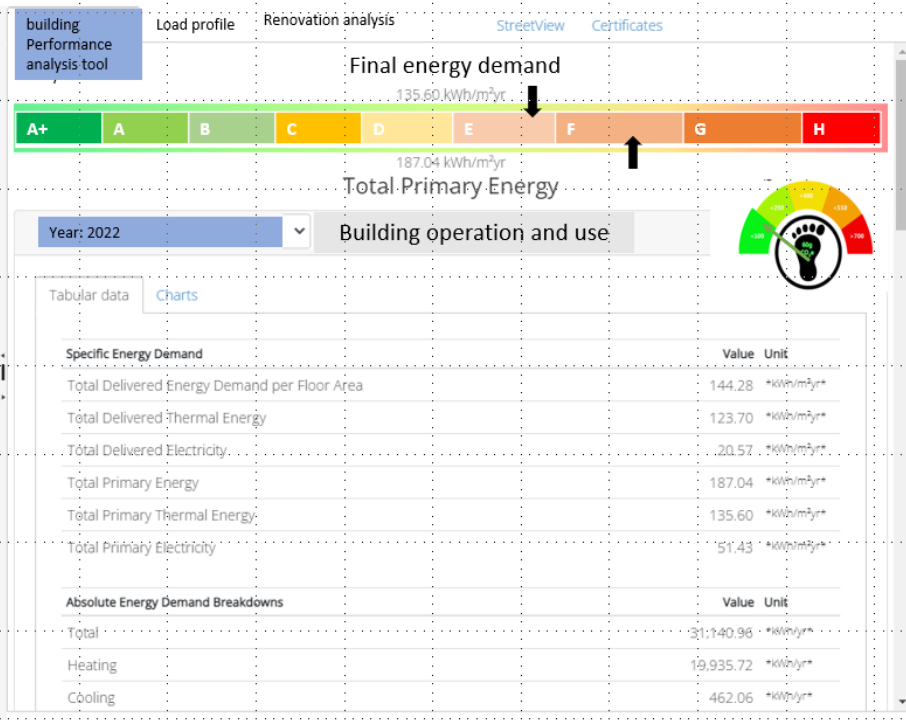
Sketch representation	
Comments	The wealth of information presented is dependent on the information available and published in the DBL and/ or local EPC data base.

5.5.2 Function 7.2: Building performance analysis tool

Function name	Function Number	Precondition	User Role (lowest)
Building performance analysis tool	7.2	15.1/18	Visitor
Function description	The building performance analysis tool will present the user of the Energy rating of building as per the national EPC (Function 7.2.1: Energy rating of building as per the national EPC) and specific values about the building performance as described in the building operation and use tabular data (Function 7.2.2: Building operation and use tabular data) and chart data (Function 7.2.3: Building operation and use charts).		
Sketch representation			
Comments			

5.5.2.1 Function 7.2.1: Energy rating of building as per the national EPC

Function name	Function Number	Precondition	User Role (lowest)
Energy rating of building as per the national EPC	7.2.1	15.1/18.2	Visitor

<p>Function description</p>	<p>The building performance analysis tool will present the user of the Energy rating of building as per the national EPC. The user can hover over the rating to get more information about the meaning of each letter used in the rating. Moreover, the final and primary energy demand as well as the CO₂ emissions specific values and units will be displayed as provided in the EPC.</p>																																												
<p>Sketch representation</p>	 <p>The screenshot shows the 'Building operation and use' section of the tool. At the top, there is a navigation bar with 'building Performance analysis tool', 'Load profile', 'Renovation analysis', 'StreetView', and 'Certificates'. Below this, a horizontal bar displays energy ratings from A+ to H. The 'Final energy demand' is shown as 135.60 kWh/m²yr, and the 'Total Primary Energy' is 187.04 kWh/m²yr. A 'Year: 2022' dropdown is visible. Below the ratings, there is a 'Building operation and use' section with tabs for 'Tabular data' and 'Charts'. The 'Tabular data' section contains two tables:</p> <table border="1" data-bbox="518 824 1348 1064"> <thead> <tr> <th colspan="2">Specific Energy Demand</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Total Delivered Energy Demand per Floor Area</td> <td></td> <td>144.28</td> <td>kWh/m²yr</td> </tr> <tr> <td>Total Delivered Thermal Energy</td> <td></td> <td>123.70</td> <td>kWh/m²yr</td> </tr> <tr> <td>Total Delivered Electricity</td> <td></td> <td>20.57</td> <td>kWh/m²yr</td> </tr> <tr> <td>Total Primary Energy</td> <td></td> <td>187.04</td> <td>kWh/m²yr</td> </tr> <tr> <td>Total Primary Thermal Energy</td> <td></td> <td>135.60</td> <td>kWh/m²yr</td> </tr> <tr> <td>Total Primary Electricity</td> <td></td> <td>51.43</td> <td>kWh/m²yr</td> </tr> </tbody> </table> <table border="1" data-bbox="518 1075 1348 1198"> <thead> <tr> <th colspan="2">Absolute Energy Demand Breakdowns</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td></td> <td>31,140.96</td> <td>kWh/yr</td> </tr> <tr> <td>Heating</td> <td></td> <td>19,935.72</td> <td>kWh/yr</td> </tr> <tr> <td>Cooling</td> <td></td> <td>462.06</td> <td>kWh/yr</td> </tr> </tbody> </table>	Specific Energy Demand		Value	Unit	Total Delivered Energy Demand per Floor Area		144.28	kWh/m ² yr	Total Delivered Thermal Energy		123.70	kWh/m ² yr	Total Delivered Electricity		20.57	kWh/m ² yr	Total Primary Energy		187.04	kWh/m ² yr	Total Primary Thermal Energy		135.60	kWh/m ² yr	Total Primary Electricity		51.43	kWh/m ² yr	Absolute Energy Demand Breakdowns		Value	Unit	Total		31,140.96	kWh/yr	Heating		19,935.72	kWh/yr	Cooling		462.06	kWh/yr
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5.5.2.2 Function 7.2.2: Building operation and use tabular data

<p>Function name</p>	<p>Function Number</p>	<p>Precondition</p>	<p>User Role (lowest)</p>
<p>Building operation and use tabular data</p>	<p>7.2.2</p>	<p>15.1/ 16/18</p>	<p>Visitor</p>
<p>Function description</p>	<p>The Building operation and use will present the user with information about:</p> <p><u>1. Metered data</u></p> <ul style="list-style-type: none"> • Metered annual delivered energy for each energy carrier (cr) (e.g., electricity, natural gas, district heating system, ...) per useful floor area • Metered total delivered annual final energy demand per useful floor area • Calculated renewable annual primary energy demand per useful floor area 		

- Total annual primary energy demand (based on measured delivered energy) per useful floor area value

2. On-site renewable energy generation

- Total in % of demand
- Electricity generation - by photovoltaics (PV) per useful floor area
- Electricity generation - by small wind turbines per useful floor area
- Thermal energy generation - by solar thermal system per useful floor area
- Thermal energy generation - by biomass per useful floor area
- Thermal energy generation - heat pump per useful floor area

3. Exported renewable energy generated on-site

- Total in % of production
- Electricity generation - by photovoltaics (PV) per useful floor area
- Electricity generation - by small wind turbines per useful floor area
- Thermal energy generation - by solar thermal system per useful floor area
- Thermal energy generation - by biomass per useful floor area
- Thermal energy generation - heat pump per useful floor area

4. Auto-consumed renewable energy generated on-site

- Electricity generation - by photovoltaics (PV) per useful floor area
- Total in % of production
- Electricity generation - by small wind turbines per useful floor area
- Thermal energy generation - by solar thermal system per useful floor area
- Thermal energy generation - by biomass per useful floor area
- Thermal energy generation - heat pump per useful floor area

5. WATER consumption

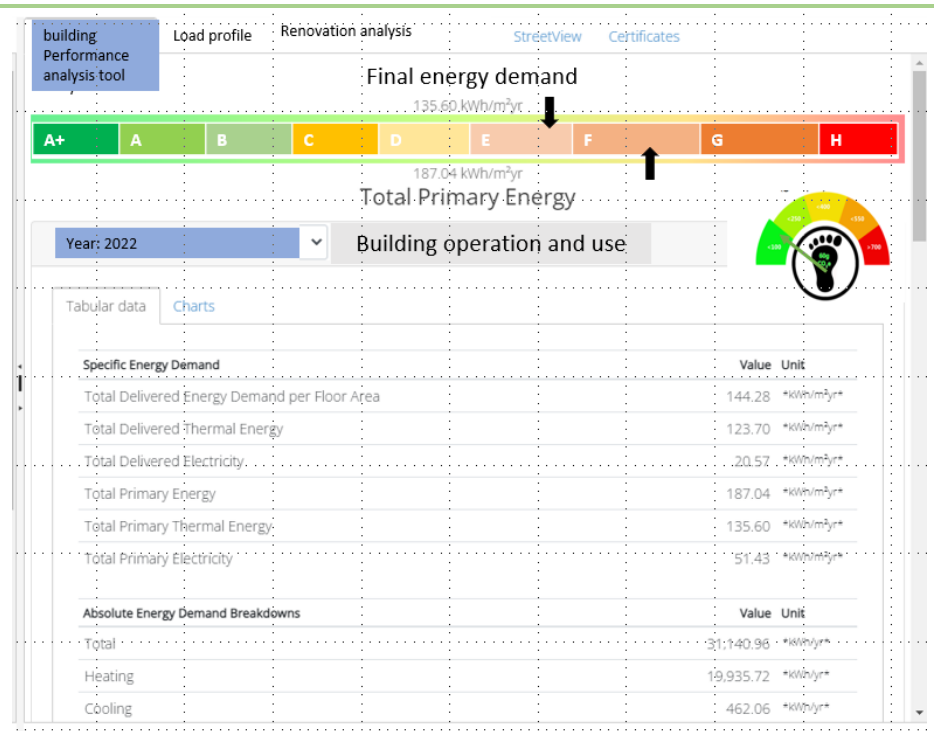
- Metered annual WATER consumption from water bills

6. Inspection of heating and air-conditioning systems (EPBD)

- Inspection of heating and air-conditioning systems (EPBD)
- Inspection type
- Inspection date

The user can choose to the year for which the above-mentioned information is displayed.

Sketch representation



Comments

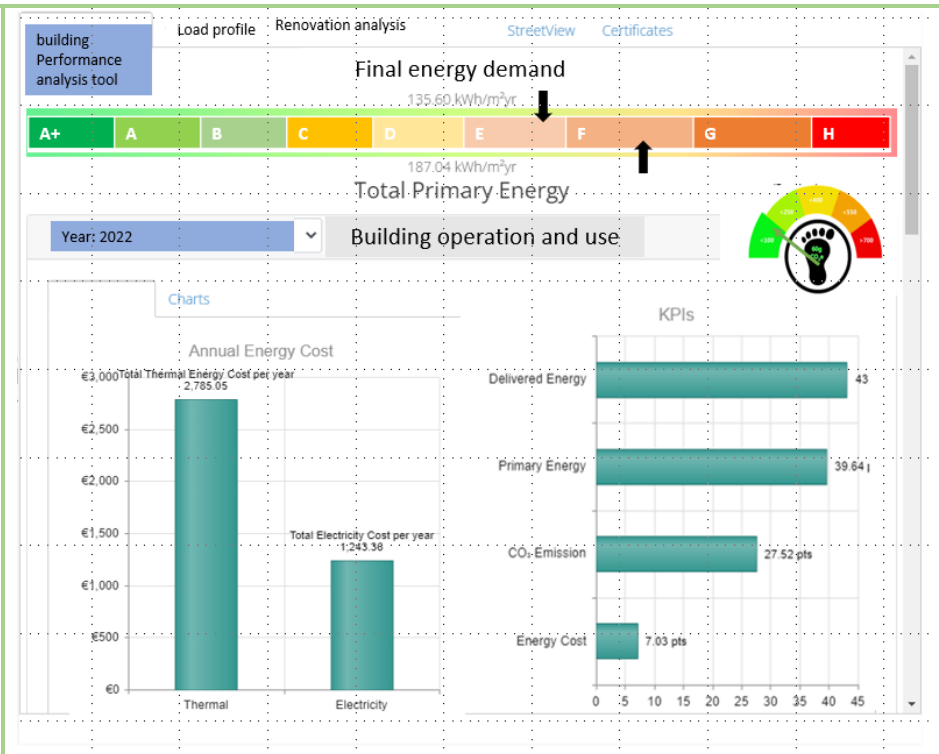
CO₂ footprint design credit: Meyerding, Stephan GH, Anna-Lena Schaffmann, and Mira Lehberger. "Consumer preferences for different designs of carbon footprint labelling on tomatoes in Germany—does design matter?." Sustainability 11.6 (2019): 1587.

The wealth of information presented is dependent on the information available and published in the DBL and/ or local EPC data base.

5.5.2.3 Function 7.2.3: Building operation and use charts

Function name	Function Number	Precondition	User Role (lowest)
Building operation and use charts	7.2.3	15.1/16/18	Visitor
Function description	The Building operation and use chart data will present the user with information about the performance of each of the EUB SuperHub KPIs in chart scale that show how far each KPI is from the ideal performance. The user can choose to the year for which the above-mentioned information is displayed.		

Sketch representation




Comments

CO₂ footprint design credit: Meyerding, Stephan GH, Anna-Lena Schaffmann, and Mira Lehberger. "Consumer preferences for different designs of carbon footprint labelling on tomatoes in Germany—does design matter?." Sustainability 11.6 (2019): 1587.

The wealth of information presented is dependent on the information available and published in the DBL and/ or local EPC data base.

5.5.3 Function 7.3: Load profile tool

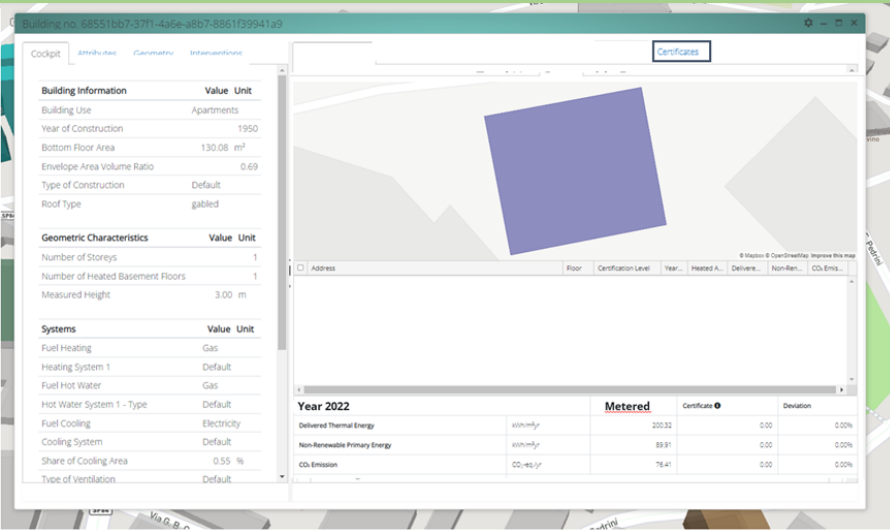
Function name	Function Number	Precondition	User Role (lowest)
Load profile tool	7.3	15.1/ 18.1	Visitor
Function description	The load profile tool will show the monthly and hourly load profile in terms of consumption and production for both thermal and electrical energy. The user can choose to the year for which the above-mentioned information is displayed.		

<p>Sketch representation</p>	
<p>Comments</p>	<p>The wealth of information presented is dependent on the information available and published in the DBL and/ or local EPC database.</p>

5.5.4 Function 7.4: Street view

Function name	Function Number	Precondition	User Role (lowest)
Street view	7.4		Visitor
Function description	The function will allow to show a street view of the building based on open access sources such as google maps.		
Sketch representation			
Comments	The wealth of information presented is dependent on the information available and published in the DBL and/ or local EPC database.		

5.5.5 Function 7.5: Certificates

Function name	Function Number	Precondition	User Role (lowest)																
Certificates	7.5	15.1/18.2	Visitor																
Function description	The certificate tool will list all the certificates (EPC, SC, EUB SuperHub, etc.) that are issued to the building and/ or the building units at the location. The list will include that rating, the auditor and the deviation between the metered values and the design EPC values.																		
Sketch representation	 <p>The screenshot shows a software interface for building certificates. On the left, there are three panels: 'Building Information', 'Geometric Characteristics', and 'Systems', each with a 'Value' and 'Unit'. The 'Building Information' panel includes details like Building Use (Apartments), Year of Construction (1950), Bottom Floor Area (130.08 m²), Envelope Area Volume Ratio (0.69), Type of Construction (Default), and Roof Type (gabled). The 'Geometric Characteristics' panel includes Number of Storeys (1), Number of Heated Basement Floors (1), and Measured Height (3.00 m). The 'Systems' panel includes Fuel Heating (Gas), Heating System 1 (Default), Fuel Hot Water (Gas), Hot Water System 1 - Type (Default), Fuel Cooling (Electricity), Cooling System (Default), Share of Cooling Area (0.55 %), and Type of Ventilation (Default). On the right, there is a map with a blue square highlighting a building. Below the map is a table for 'Year 2022' with columns for 'Metered', 'Certificate', and 'Deviation'. The table shows data for Delivered Thermal Energy, Non-Renewable Primary Energy, and CO₂ Emission.</p> <table border="1"> <thead> <tr> <th>Year 2022</th> <th>Metered</th> <th>Certificate</th> <th>Deviation</th> </tr> </thead> <tbody> <tr> <td>Delivered Thermal Energy</td> <td>200.32</td> <td>0.00</td> <td>0.00%</td> </tr> <tr> <td>Non-Renewable Primary Energy</td> <td>89.91</td> <td>0.00</td> <td>0.00%</td> </tr> <tr> <td>CO₂ Emission</td> <td>78.41</td> <td>0.00</td> <td>0.00%</td> </tr> </tbody> </table>			Year 2022	Metered	Certificate	Deviation	Delivered Thermal Energy	200.32	0.00	0.00%	Non-Renewable Primary Energy	89.91	0.00	0.00%	CO ₂ Emission	78.41	0.00	0.00%
Year 2022	Metered	Certificate	Deviation																
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6 The EUB SuperHub Planning and Verification Tool (PVT) module

The EUB SuperHub Planning and Verification Tool (PVT) module can be viewed as an editable and private extension E-cockpit module. In contrast to the E-cockpit, which allows the user to view and make district building analysis, the PVT will enable building owners to upload, share and store all energy related building information. Afterwards, the user can decide on the type of building information they would like to share with the public in the E-cockpit. Within the PVT module, the user can evaluate the actual performance of their building based on actual building metered values. Furthermore, the user can store and keep track of vital energy, smartness, and sustainability related building information thanks to the EUB SuperHub digital building logbook (DBL). The DBL provides the user with plain language data entry interface to populate the logbook. Moreover, the values of the DBL can be used to create what-if simulations to evaluate possible technology neutral interventions and retrofitting options. The what-if simulations can later be shared with a member of the VM module to provide a more accurate estimate on the required interventions. Moreover, based on the logbook data and the PVT simulation engine, an EPC auditor or building planner can verify and monitor the building performance and flag out concerning data. This will enable both the user and the EPC issuer to apply appropriate corrective measures. The following tables within chapters 6.1-6.22 present a summary of the following **22 PVT module functions**:

- Function 8: Launch the PVT
- Function 9: PVT landing page
- Function 10: Open a project
- Function 11: Create a project
- Function 12: Activate PVT page
- Function 13: Building simple data entry
- Function 14: Claim a building
- Function 15: Building settings
- Function 16: Digital Building Logbook (DBL)
- Function 17: Verify the building logbook
- Function 18: Building performance metrics
- Function 19: View building PVT mode
- Function 20: Edit building details PVT
- Function 21: Cockpit view
- Function 22: Logbook attributes
- Function 23: Footprint

- Function 24: Interventions
- Function 25: Building performance analysis tool
- Function 26: Load profile tool
- Function 27: Renovation analysis tool
- Function 28: Street view
- Function 29: Certificates

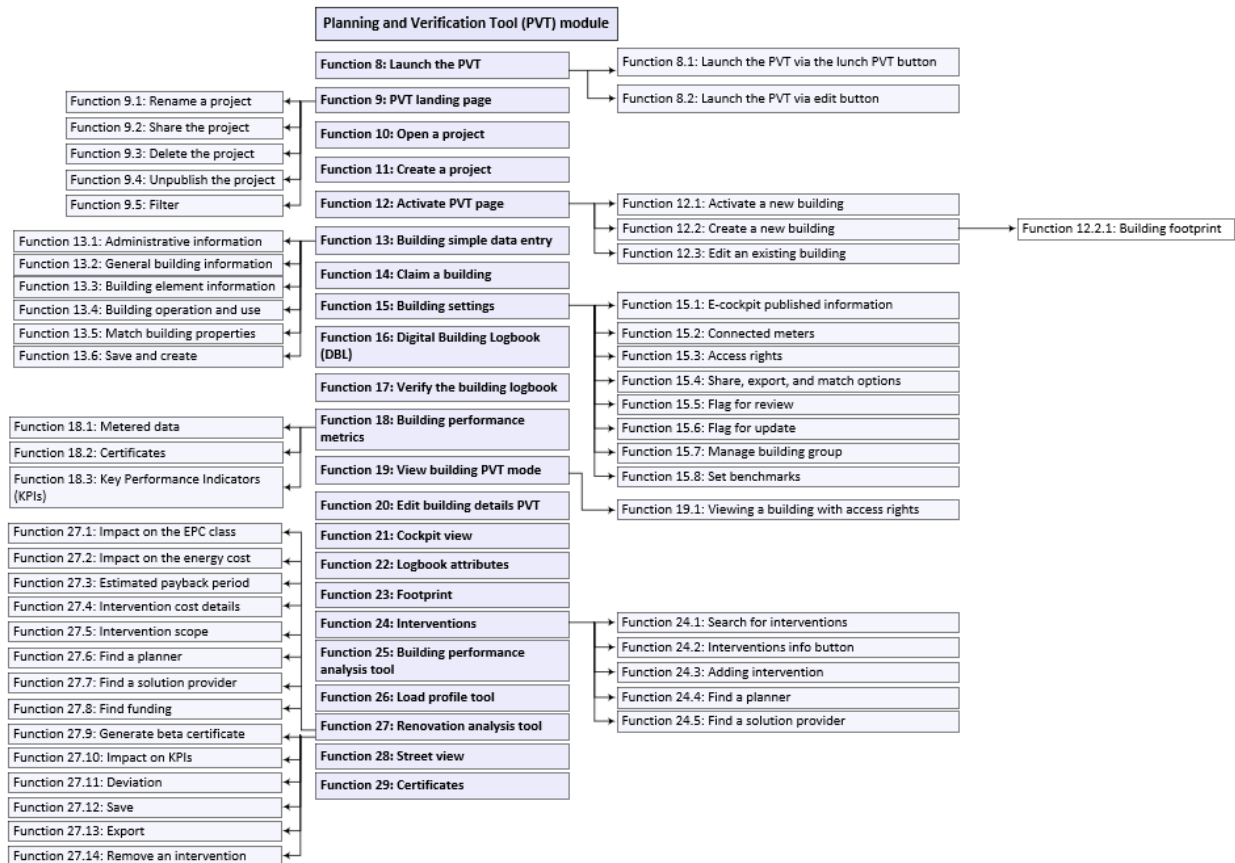
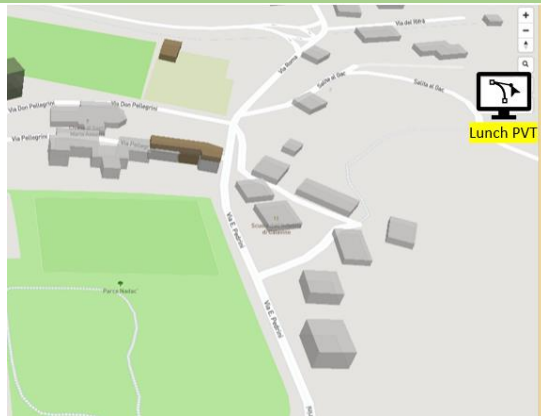


Figure 6: Planning and Verification Tool (PVT) module – overview of main functions

6.1 Function 8: Launch the PVT

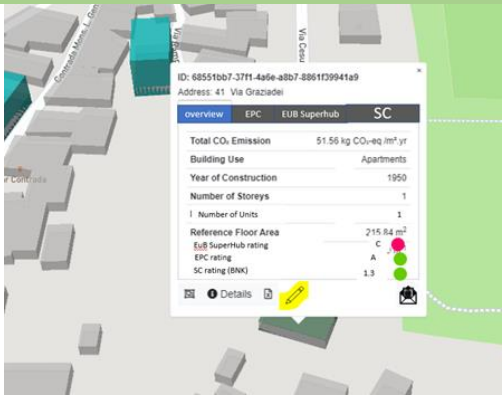
Function name	Function Number	Precondition	User Role (lowest)
Launch the PVT	8	1.6.1	User
Function description	The PVT can be launched from the E-cockpit only. The user can use launch the PVT either by clicking on the PVT launch icon in the E-cockpit (won't be active for users with visitor's roles) or via clicking on the edit button after selecting a building in the E-cockpit (the edit button will be active only for users that have the appropriate access rights).		
Sketch representation			
Comments			

6.1.1 Function 8.1: Launch the PVT via the launch PVT button

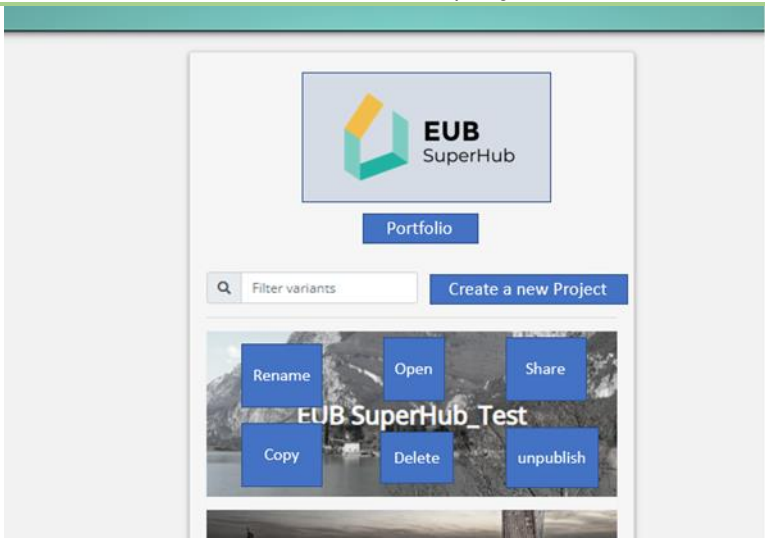
Function name	Function Number	Precondition	User Role (lowest)
Launch the PVT via the launch PVT button	8.1	1.6.1	User
Function description	The user can launch the PVT by clicking on an icon that states launch the PVT. This will lead the user to 9 (Function 9: The PVT landing page).		
Sketch representation			
Comments			

6.1.2 Function 8.2: Launch the PVT via edit button

Function name	Function Number	Precondition	User Role (lowest)
Launch the PVT via edit button	8.2	14 / 15.3	User
Function description	The user can launch the PVT by clicking on the edit button of one of the existing buildings in the E-cockpit (Function 6.1.5: Edit). This will automatically open the project that is published		

	on the E-Cockpit for editing in the PVT. This will lead the user to 20 (Function 20: Edit building details PVT).
Sketch representation	
Comments	

6.2 Function 9: The PVT landing page

Function name	Function Number	Precondition	User Role (lowest)
The PVT Landing page	9	1.6.1/15.3	User
Function description	The landing page will contain an overview of all buildings or projects the user has created or has access to. Moreover, it will allow the user to create a new project.		
Sketch representation			
Comments			

6.2.1 Function 9.1: Rename a project

Function name	Function Number	Precondition	User Role (lowest)
Rename a project	9.1	1.6.1/15.3	User
Function description	The user can choose to rename a previously saved project.		

Sketch representation	
Comments	

6.2.2 Function 9.2: Share the project

Function name	Function Number	Precondition	User Role (lowest)
Share the project	9.2	14/15.3	User
Function description	This will open the project settings (Function 15: Building settings) and allow the user to share either one or more of the saved projects (buildings) with other users.		
Sketch representation			
Comments			

6.2.3 Function 9.3: Delete the project

Function name	Function Number	Precondition	User Role (lowest)
Delete the project	9.3	13.6	User
Function description	This will delete the project from the user account.		
Sketch representation			
Comments			

6.2.4 Function 9.4: Unpublish the project

Function name	Function Number	Precondition	User Role (lowest)
Unpublish the project	9.4	14	Owner
Function description	This function will redirect the user to the building's settings tap (Function 15: Building settings). They can Unpublish the buildings or part of its information from the E-cockpit.		
Sketch representation			
Comments			

6.2.5 Function 9.5: Filter

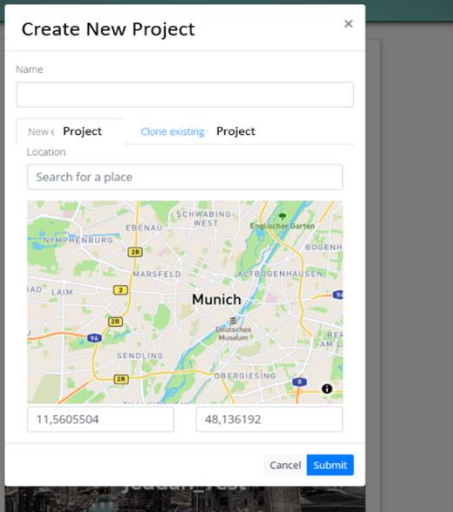
Function name	Function Number	Precondition	User Role (lowest)
Filter	9.5	1.6.1/13.6	User
Function description	This will allow the user to search for a project by its name.		
Sketch representation			
Comments			

6.3 Function 10: Open a project

Function name	Function Number	Precondition	User Role (lowest)
Open a project	10	13.6/15.3	User
Function description	This will open a previously saved project or a project that is shared with the user. The user will land then in the active PVT page (Function 12: Activate PVT page).		
Sketch representation			
Comments			

6.4 Function 11: Create a project

Function name	Function Number	Precondition	User Role (lowest)
Create a project	11	9.1	User
Function description	By pressing on a create a project button, the user will open a user interface that will allow starting either a clean sheet project or to clone an existing project to use it as starting point. The user will need to give a name to the project and choose a city to start from. The city displayed in the E-cockpit from which they launched the PVT will be open by default. The user can choose to change the city in which they plan to start the active PVT page 12. by clicking on Submit the user will be redirected to the PVT Active page 12 (Function 12: Activate PVT page).		

Sketch representation	
Comments	

6.5 Function 12: Activate PVT page


Function name	Function Number	Precondition	User Role (lowest)
Active PVT page	12	9.1/ 9.2 /11	User
Function description	The active PVT page is in essence an editable version of the E-cockpit. The user will be able to either: 12.1 Activate a new building that is not previously claimed by a user and published to the E-cockpit 12.2 Create a new building in their project 12.3 Edit an existing building that the user has access rights to.		
Sketch representation			
Comments			

6.5.1 Function 12.1: Activate a new building

Function name	Function Number	Precondition	User Role (lowest)
Activate a new building	12.1	9.1/ 9.2 /11	User
Function description	By pressing on an unclaimed building, the user can activate the building and open its simple data entry interface 13 (Function 13: Building simple data entry).		

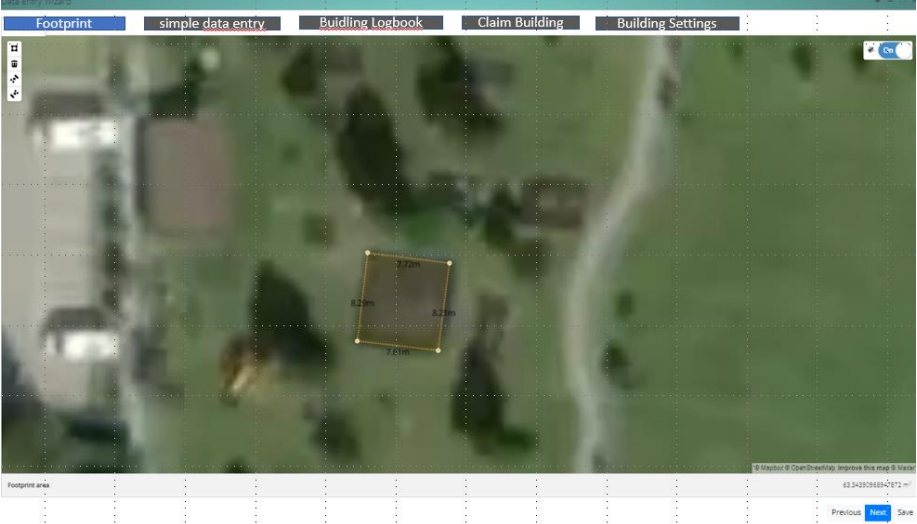
Sketch representation	
Comments	

6.5.2 Function 12.2: Create a new building

Function name	Function Number	Precondition	User Role (lowest)
Create a new building	12.2	9.1/ 9.2 /11	User
Function description	The user can click on an empty place in the map to create a new project. Buildings that are created using 12.2 cannot be published to the E-cockpit. A warning sign will appear to the user.		
Sketch representation			
Comments			

6.5.2.1 Function 12.2.1: Building footprint

Function name	Function Number	Precondition	User Role (lowest)
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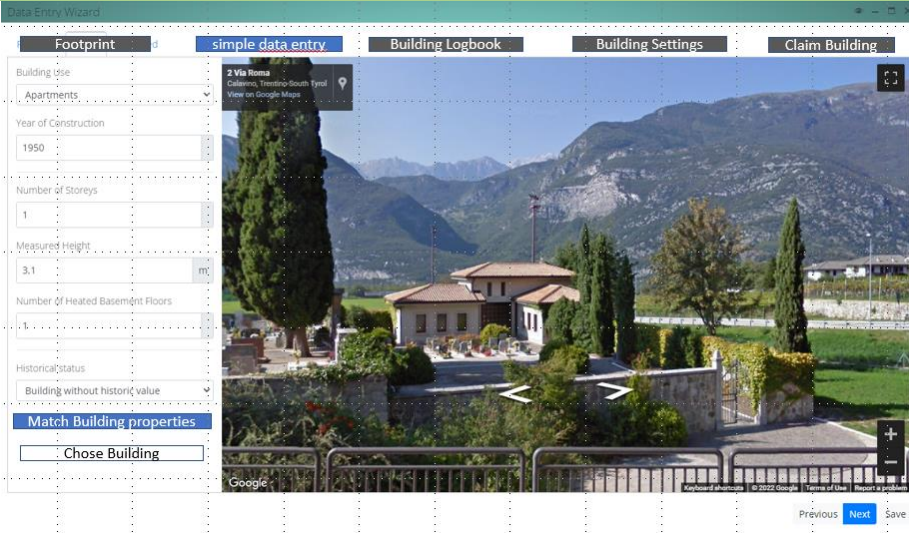
Building footprint	12.2.1	9.1/ 9.2 /11	User
Function description	The user can click on an empty place in the map to create a new project. Buildings that are created using 12.2 (Function 12.2: Create a new building) cannot be published to the E-cockpit. A warning sign will appear to the user.		
Sketch representation			
Comments			

6.5.3 Function 12.3: Edit an existing building

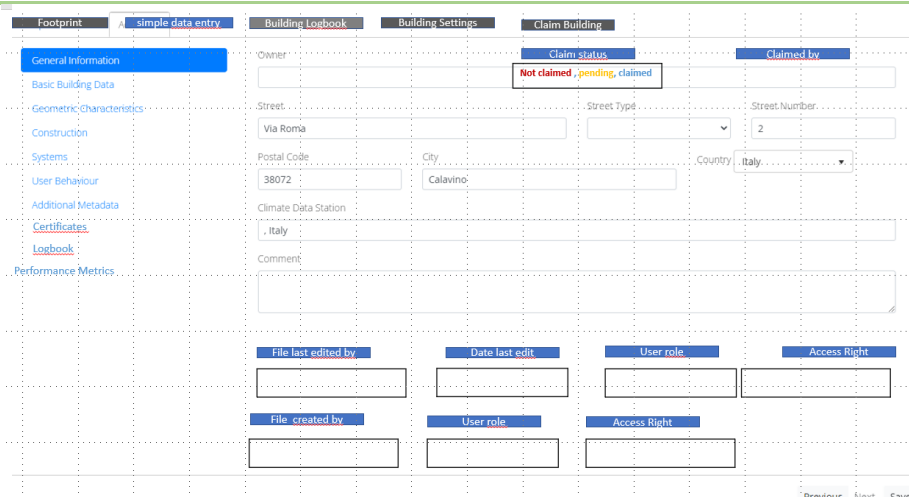
Function name	Function Number	Precondition	User Role (lowest)
Edit an existing building	12.3	12.1/13.6	User
Function description	By clicking on the edit button of one of the existing buildings that the user has access to, the user will be able to open either 13 or 16 (Function 13: Building simple data entry or Function 16: Digital Building Logbook (DBL)) depending on the building claim status and user access rights.		
Sketch representation			
Comments			

6.6 Function 13: Building simple data entry

Function name	Function Number	Precondition	User Role (lowest)
Building simple data entry	13	11/12.3	User
Function description	The simple data entry will allow to enter basic information about the building as described in 13.1 – 13.6.		

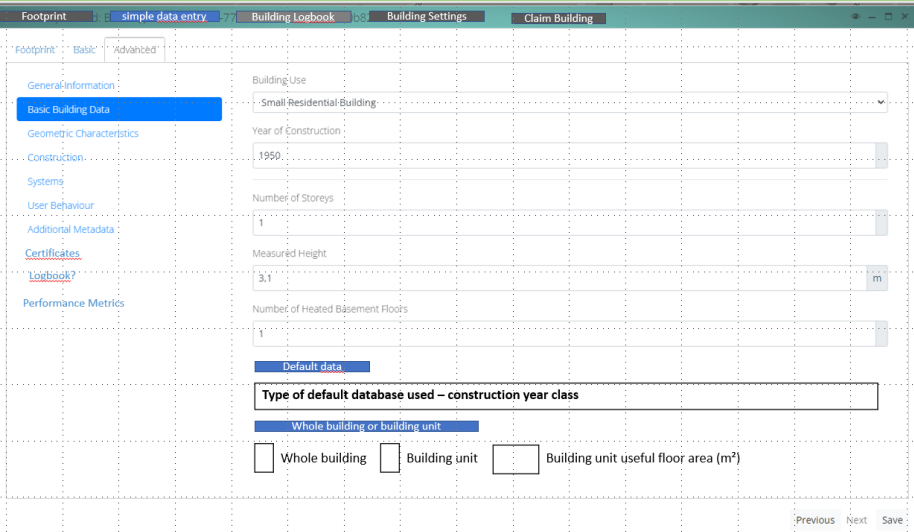
<p>Sketch representation</p>	
<p>Comments</p>	<p>The building logbook, settings and claim request tabs will not be active until the user saves this step.</p>

6.6.1 Function 13.1: Administrative information

Function name	Function Number	Precondition	User Role (lowest)
Administrative information	13.1	13	User
<p>Function description</p>	<p>By means of entering specific values, the user can enter the following information about the building:</p> <ul style="list-style-type: none"> • Building name • Building address • The name of the building owner • The contact information of the building owner • The building editor (the username of the user that edited the building in the PVT) • Comments section • The climate station used – (this will be automatically inferred from the Facility database) • The building claim status 		
<p>Sketch representation</p>			

Comments	
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6.6.2 Function 13.2: General building information

Function name	Function Number	Precondition	User Role (lowest)
General building information	13.2	13	User
Function description	<p>By means of selecting from a drop-down menu and entering specific values, the user can enter the following information about the building:</p> <ul style="list-style-type: none"> • Building state (life-cycle stage) • Building use (residential or non- residential) • Year of construction • Year of last renovation • Base height • Number of storeys (floors) • Floor height • Measured height • Number of heated basement floors • Historical status • Physical accessibility (design for all) • Useful floor area (heated area) • Type of construction • Use of last floor (heated or not) • The database used to populate default values (this will be displayed automatically by the Felicity software). 		
Sketch representation			
Comments	<p>The entered information in this step will be mapped with default values from the Felicity database that will be used to populate the information in 13.3 (Function 13.3: Building element information).</p>		

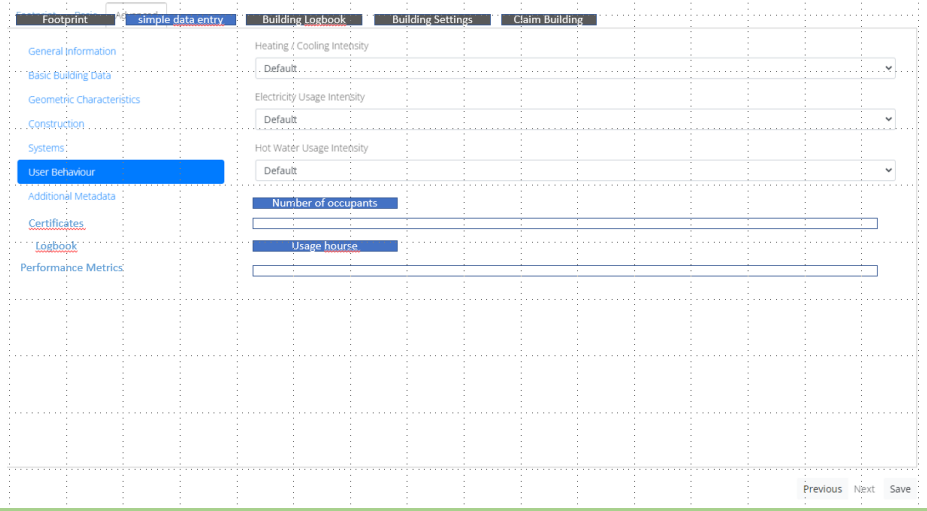
6.6.3 Function 13.3: Building element information

Function name	Function Number	Precondition	User Role (lowest)
Building element information	13.3	13	User
Function description	<p>The Building element information will allow the user to enter information about:</p> <p>1. Building envelope</p> <ul style="list-style-type: none"> • Thermal bridging • U-value wall • U-value floor • U-value of ground floor (floor in contact with soil) • U-value roof • Type of windows • U value window • The area of windows (in each direction) • Type of sun protection (in each direction) • U-value skylight • The area of skylight • U value door <p>2. Technical Building System (TBS)</p> <p><u>2.1 Space heating system</u></p> <ul style="list-style-type: none"> • Source of energy for space heating system • Type of heating system • Installation year • Energy efficiency class (EU energy label) • predicted remaining useful life according to EN 15459 <p><u>2.2 Domestic Hot Water (DHW) preparation system</u></p> <ul style="list-style-type: none"> • Source of energy for DHW system • Type of DHW system • Installation year • Energy efficiency class (EU energy label) • predicted remaining useful life according to EN 15459 <p><u>2.3 Space cooling system</u></p> <ul style="list-style-type: none"> • Share of cooling system • Source of energy for cooling system • Type of cooling system • Installation year • Energy efficiency class (EU energy label) • predicted remaining useful life according to EN 15459 <p><u>2.4 Ventilation system</u></p> <ul style="list-style-type: none"> • Ventilation system type • Ventilation rate • Energy efficiency class (EU energy label) • predicted remaining useful life according to EN 15459 <p><u>2.5 Lighting system</u></p> <ul style="list-style-type: none"> • Type of electrical lighting sources 		

	<p><u>2.6 Building Automation and Control system (BACS)</u></p> <ul style="list-style-type: none"> • BACS efficiency class (EN 15232-1) <p><u>2.7 ON-SITE Renewable energy generation and storage</u></p> <ul style="list-style-type: none"> • PV type • PV panel area • PV power rating • PV efficiency • predicted remaining useful life according to EN 15459 • Solar Thermal System type • Solar thermal system panel area • Solar thermal system efficiency • predicted remaining useful life according to EN 15459 <p><u>2.8 Battery energy storage system</u></p> <ul style="list-style-type: none"> • Battery system Battery type (Battery chemistry) • Total battery capacity
Sketch representation	
Comments	Missing information that are not provided by the user are to be replaced with data from the default database.

6.6.4 Function 13.4: Building operation and use

Function name	Function Number	Precondition	User Role (lowest)
Building operation and use	13.4	13	User
Function description	<p>The Building operation and use will allow the user to enter information about:</p> <ul style="list-style-type: none"> • The number of occupants • The daily usage times • The annual use days • Daily HVAC system operating hours • Setpoint Room Temperature Heating Period • Setpoint Room Temperature Cooling Period 		

Sketch representation	
Comments	Missing information that are not provided by the user are to be replaced with data from the default database.

6.6.5 Function 13.5: Match building properties

Function name	Function Number	Precondition	User Role (lowest)
Match building properties	13.5	13	User
Function description	The user can use this function to match the data in 13.4 (Function 13.4: Building operation and use) and 13.5 (Function 13.5: Match building properties) with another building that the user has the access rights to. By click on this function the user will be asked to choose the building they want to match its properties, and they can choose which elements in 13.4 and 13.5 they want to match.		
Sketch representation			
Comments			

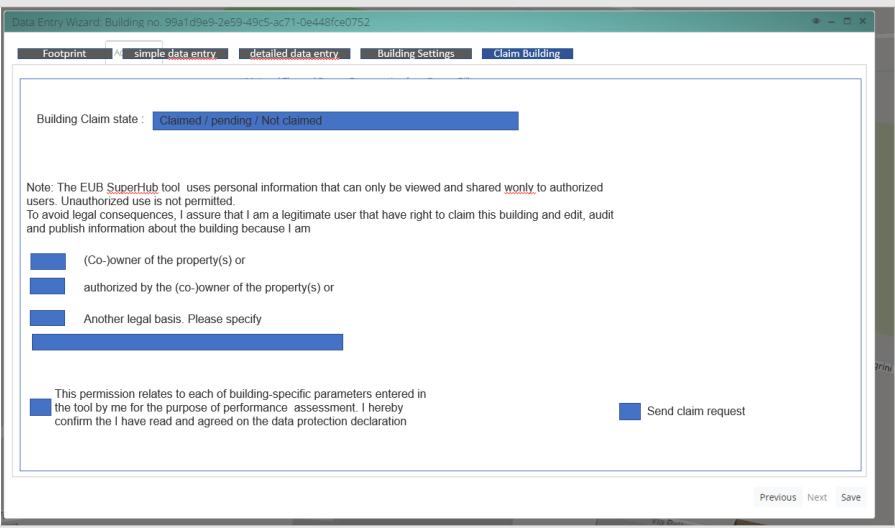
6.6.6 Function 13.6: Save and create

Function name	Function Number	Precondition	User Role (lowest)
Save and create	13.6	13.1-13.4	User
Function description	After entering the data for 13.1 (Function 13.1: Administrative information) to 13.4 (Function 13.4: Building operation and use) the user can save and create the building. The user can then proceed to 14 (Function 14: Claim a building). If the user decided not to claim the building or the claim request is pending approval. The saved project at this stage will then be visible in the PVT view (Function 19: View building PVT mode) only and the user only the following functions: the building		

	details function (Function 20: Edit building details PVT), the cockpit view (Function 21: Cockpit view), the building geometry (Function 23: Footprint), building performance analysis tool (Function 25: Building performance analysis tool), the load profile tool (Function 26: Load profile tool), the street view tool (Function 28: Street view)
Sketch representation	
Comments	

6.7 Function 14: Claim a building

Function name	Function Number	Precondition	User Role (lowest)
Claim a building	14	13.1-13.6	User
Function description	<p>After at least inputting / saving the data in the Simple data entry (Function 13: Building simple data entry) the user can submit a request to claim the building. More than one user account can claim the same building.</p> <p>The user must indicate if the basis on which they are claiming the building, such as being:</p> <ul style="list-style-type: none"> • (co-)owner, • authorized by the owner (e.g., facility manager), • other legal basis that the user must specify. <p>Successful requests will change the user roles to Owner and appear in their PVT profile in 1.8.1 (Function 1.8.1: View and edit the PVT profile). A building logbook will be created for, and the user will be granted ownership rights to a building logbook. As such the user can change and alter the building model or a unit in it.</p> <p>The owner role can assign access, view, and publish rights to chosen user (s) of the platform to each part of the building information that originate from the building logbook. The user with the role Owner can upload, link, and publish building performance certificates and performance metrics relating to their buildings in E-Cockpit but cannot verify them. Owner can flag a building for review in the building settings tab (Function 15: Building settings) and edit their building from the E-cockpit 6.1.5 (Function 6.1.5: Edit). The claim the building function will also show the state of the building claim request.</p>		

Sketch representation	
Comments	This Address Authentication method can be used to verify the user's right to claim a building https://www.mdpi.com/2071-1050/12/5/1700/htm

6.8 Function 15: Building settings

Function name	Function Number	Precondition	User Role (lowest)
Building settings	15	14/ 15.3	User
Function description	The building settings tab will control the access rights, the data export, meters, and published information about the building in the E-cockpit.		
Sketch representation			
Comments			

6.8.1 Function 15.1: E-cockpit published information

Function name	Function Number	Precondition	User Role (lowest)
E-cockpit published information	15.1	14	Owner
Function description	The user can choose which information from the 16 (Function 16: Digital Building Logbook (DBL)) Logbook entry are published and viewed in the E-cockpit 6 (Function 6: Single building selection) and 7 (Function 7: Building details).		
Sketch representation			
Comments			

6.8.2 Function 15.2: Connected meters

Function name	Function Number	Precondition	User Role (lowest)
Connected meters	15.2	14/15.3	User
Function description	<p>The user can choose this function to:</p> <ul style="list-style-type: none"> • establish a connection to meter and define its use, • obtain an overview of connected meters, • replace change a meter connection. <p>Any changes in the above mentioned will appear in notification of the building Owner 1.9 (Function 1.9: Notification panel). If the change is made by a user with access rights to this part, the Owner will still need to approve the changes made via 1.8.1.3 before the change takes effect (Function 1.8.1.3: PTV account settings and access rights).</p>		
Sketch representation			
Comments			

6.8.3 Function 15.3: Access rights

Function name	Function Number	Precondition	User Role (lowest)
Access rights	15.3	14	Owner
Function description	<p>The user with the Owner access rights can choose to grant access rights to the building to another user by entering their username and E-mail. The Owner can specify the part of the building Logbook (Function 16: Digital Building Logbook (DBL)) that the user will be granted access rights to view or edit the entered information about the building or to the logbook. The building with the user role Owner either grant an access right to VM member via (Function 2.5: Send a contact request) or approve the request coming from (Function 6.1.3: Contact owner) or assign an access right to any other registered user. A notification will appear in 1.9 (Function 1.9: Notification panel) if an access right status is changed.</p>		
Sketch representation			
Comments			

6.8.4 Function 15.4: Share, export, and match options

Function name	Function Number	Precondition	User Role (lowest)
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Share, export, and match options	15.4	15.3	User
Function description	The user can choose which building information can be exported to local file. Moreover, the user can choose the attributes part of 13.3 (Function 13.3: Building element information) and 13.4 5 that can be cloned by other users using the Match building property's function (Function 13.5: Match building properties)		
Sketch representation			
Comments			

6.8.5 Function 15.5: Flag for review

Function name	Function Number	Precondition	User Role (lowest)
Flag for review	15.5	15.3	User
Function description	A user can flag the whole or any subsection of the building logbook (Function 16: Digital Building Logbook (DBL)) to be reviewed by another user. The user can assign the review to a specific user, the user that placed the flag will also have a comment section to write some details about the review. Next to each review, the user can also indicate that state of review either being resolved or pending. The Flag for review will appear in the E-cockpit in 5.2.1 (Function 5.2.1: Building map for review) and activate 6.1.3 (Function 6.1.3: Contact owner).		
Sketch representation			
Comments			

6.8.6 Function 15.6: Flag for update

Function name	Function Number	Precondition	User Role (lowest)
Flag for update	15.6	15.3	User
Function description	A user that has access rights to the building can flag the whole or any subsection of the building logbook (Function 16: Digital Building Logbook (DBL)) to be updated by the owner. The user will also have a comment section to write some details about the requested update. For example, to inform the user about an outdated EPC or outdated entry about the building logbook. Next to each review the user can also indicate that the update has been resolved. A notification will send to both users in 1.9 (Function 1.9: Notification panel).		

Sketch representation	
Comments	

6.8.7 Function 15.7: Manage building group

Function name	Function Number	Precondition	User Role (lowest)
Manage building group	15.7	15.3	User
Function description	The user can allocate the building or remove it from a certain predefined building group. The changes will appear in 1.8.1.7 (Function 1.8.1.7: Building groups) and notification will be sent 1.9 (Function 1.9: Notification panel).		
Sketch representation			
Comments			

6.8.8 Function 15.8: Set benchmarks

Function name	Function Number	Precondition	User Role (lowest)
Set benchmarks	15.8	15.3	User
Function description	The user can choose to set a benchmark to assess the performance for each KPI. The new defined benchmarks will appear in the PVT function of 25 (Function 25: Building performance analysis tool) and 18.3 (Function 18.3: Key Performance Indicators (KPIs)).		
Sketch representation			
Comments			

6.9 Function 16: Digital Building Logbook (DBL)

Function name	Function Number	Precondition	User Role (lowest)
Digital Building Logbook (DBL)	16	14 /15.3	User
Function description	Through this function the user can launch the building logbook to edit, update, save or recover the building logbook. <u>The information entered in 13 (Function 13: Building simple data entry) will be used to populate the building logbook.</u> The exact details about data entry found in the digital building		

	logbook are elaborated in D2.4 (<i>The digital logbook: data requirements, sources and collection process</i>).
Sketch representation	
Comments	

6.10 Function 17: Verify the building logbook

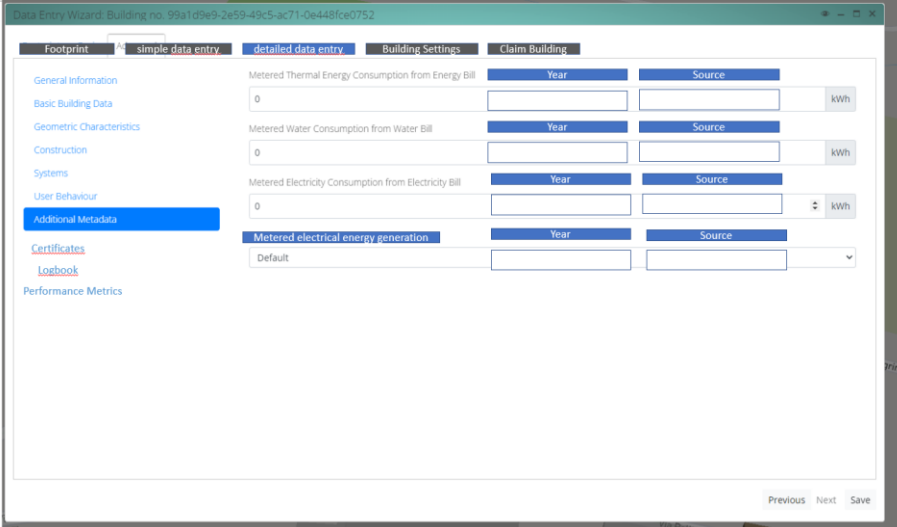
Function name	Function Number	Precondition	User Role (lowest)
Verify the Building Logbook	17	15.3	Auditor
Function description	Through this function an Auditor can verify the data entered in the building logbook 16 (Function 16: Digital Building Logbook (DBL)) and the performance metrics in 18 (Function 18: Building performance metrics).		
Sketch representation			
Comments			

6.11 Function 18: Building performance metrics

Function name	Function Number	Precondition	User Role (lowest)
Building performance metrics	18	15.3	User
Function description	Through this function the user can view the actually and historic performance of the building in regard the metered data, the building certificate and the KPIs.		
Sketch representation			
Comments			

6.11.1 Function 18.1: Metered data

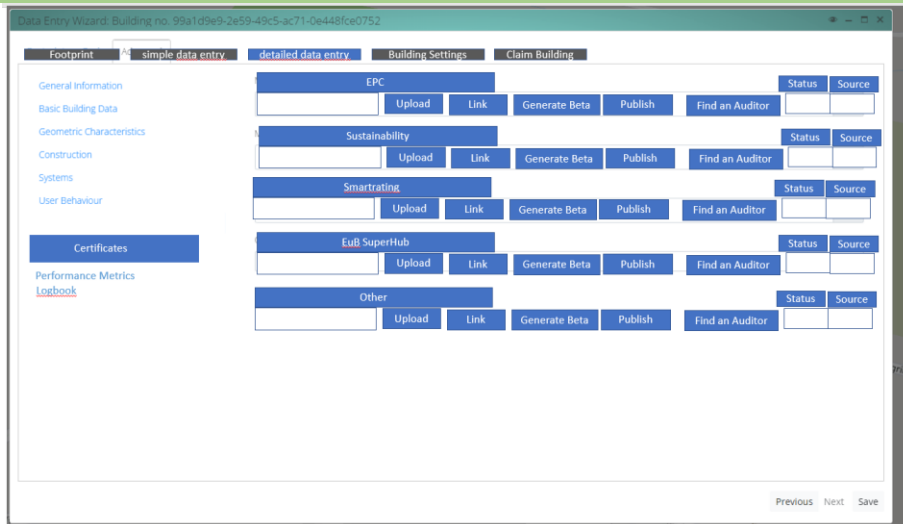
Function name	Function Number	Precondition	User Role (lowest)
Metered data	18.1	15.3	User
Function description	The user can either input or infer the building metered energy consumption and generation values from the building logbook. Inferring the data need to be established in 15.2 (Function 15.2: Connected meters) the UI will show the source		

	<p>of the input values and year. The user can view the performance of other years in the building load profile 26 (Function 26: Load profile tool) and building performance analysis tabs 25 (Function 25: Building performance analysis tool).</p>
<p>Sketch representation</p>	 <p>The screenshot shows a software window titled 'Data Entry Wizard' with a building ID. It features a sidebar with navigation options like 'General Information', 'Basic Building Data', 'Geometric Characteristics', 'Construction', 'Systems', 'User Behaviour', 'Additional Metadata' (highlighted), 'Certificates', 'Logbook', and 'Performance Metrics'. The main area contains input fields for 'Metered Thermal Energy Consumption from Energy Bill', 'Metered Water Consumption from Water Bill', 'Metered Electricity Consumption from Electricity Bill', and 'Metered electrical energy generation', each with 'Year' and 'Source' dropdowns and a 'kWh' unit selector. A 'Default' dropdown is also present. Navigation buttons 'Previous', 'Next', and 'Save' are at the bottom right.</p>
<p>Comments</p>	<p>The information displayed here will be connected with DBL - BUILDING OPERATION AND USE section.</p>

6.11.2 Function 18.2: Certificates

Function name	Function Number	Precondition	User Role (lowest)
Certificates	18.2	15.3	User
<p>Function description</p>	<p>The user can upload, view, link and publish the building performance certificates such as EPC and SRI and SC. The function will retrieve the certificates from the Digital Building Logbook. The verification status will appear next to certificate. Only an Auditor can verify the state of the certification for an already claimed building in 17 (Function 17: Verify the building logbook). Only claimed building can be publish to the E-cockpit.</p> <p>A Find an Auditor Tab will be added next to each Certificate which will match the certificate type with registered Auditors from the VM. By clicking on the tap the user will be redirected to the VM which will show Auditors that are qualified to carry out the auditing for each certificate.</p>		

Sketch representation

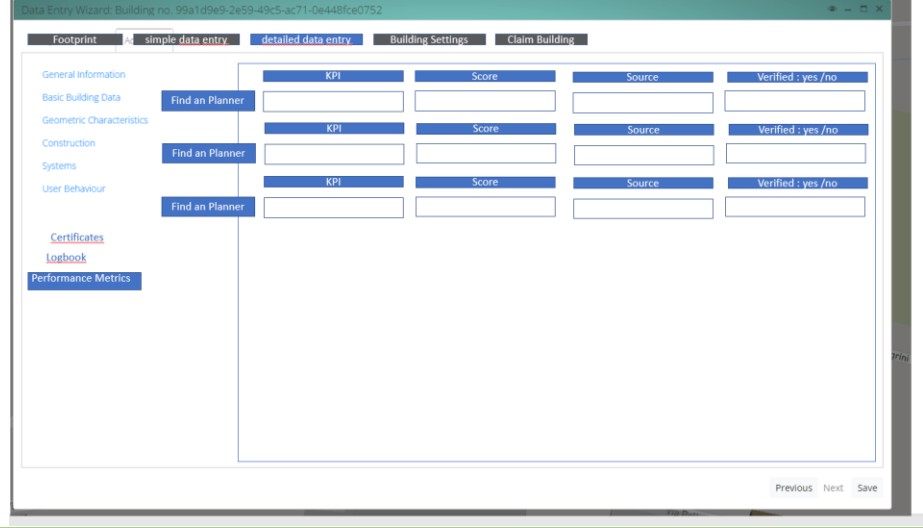


Comments

This is connected to the DBL BUILDING PERFORMANCE section.

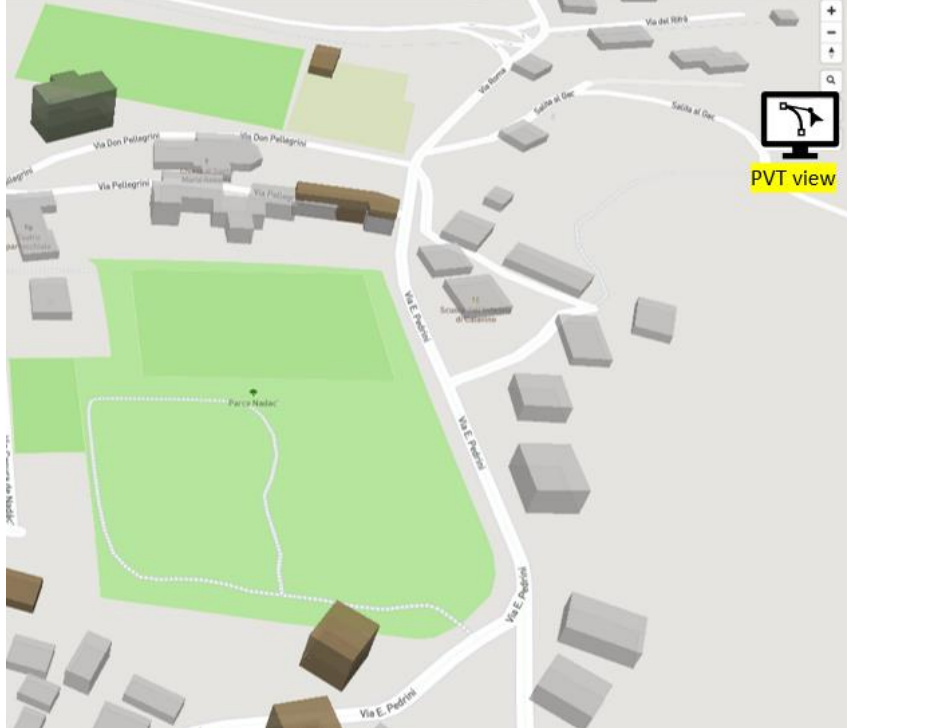
6.11.3 Function 18.3: Key Performance Indicators (KPIs)

Function name	Function Number	Precondition	User Role (lowest)
Key Performance Indicators (KPIs)	18.3	15.3	User
Function description	<p>The user can input, link, view and generate the building key performance indicators. The metrics will be listed by thematic area and KPI. Only an Auditor can verify the state of the values of the performance metrics. The function will retrieve the KPI values from the Digital Building Logbook (DBL).</p> <p>For each performance metric the user can link it to Digital building logbook. The tool will generate and display the resulting score for each KPI automatically. The user can change KPI benchmarks in 15.8 (Function 15.8: Set benchmarks).</p> <p>For each KPI the function will show the source of the inputted data (user, automatic). For input values that are seem unrealistic, for example, primary energy of 10000 kWh/m² a warning signal will appear next to each KPI.</p> <p>A Find a planner Tab will be added next to each KPI. By clicking on the tap the user will be redirected to the VM which will show VM members that are qualified to carry out the needed calculation for each KPI.</p>		

<p>Sketch representation</p>	
<p>Comments</p>	<p>This is connected to the DBL BUILDING PERFORMANCE section.</p>

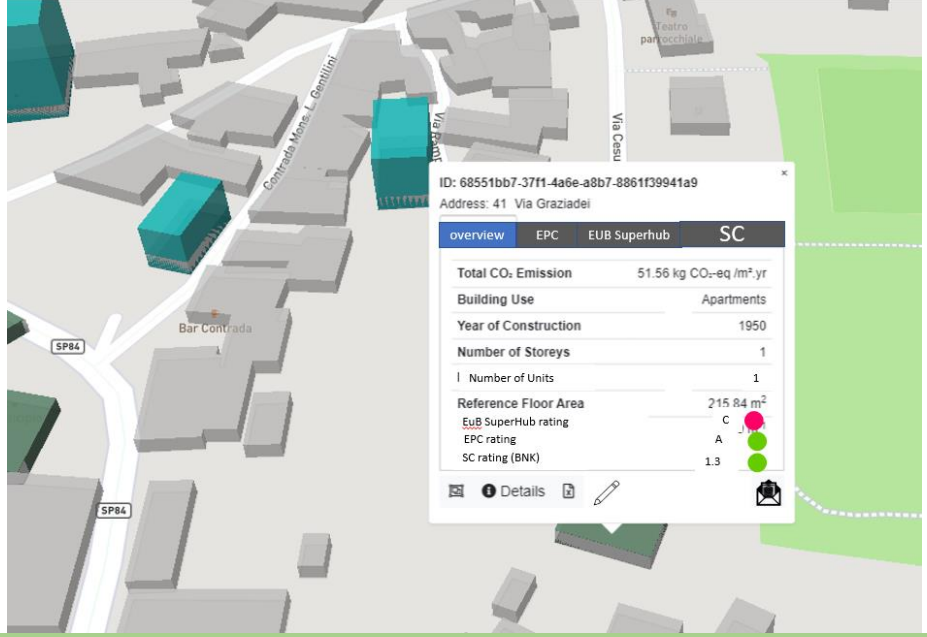
6.12 Function 19: View building PVT mode

Function name	Function Number	Precondition	User Role (lowest)
View building PVT mode	19	8	User
Function description	<p>In the PVT view mode, the user will be viewing the published buildings in the E-cockpit as well as the ones that were created by the user or the user has access to but are not published to the E-cockpit. An indication will appear in the page UI indicating to the user that they are viewing the map in a PVT view mode. The PVT view mode will basically allow the user to use the same E-cockpit functions in 5 (Function 5: Toolbox), 6 (Function 6: Single building selection) and 7 (Function 7: Building details).</p>		

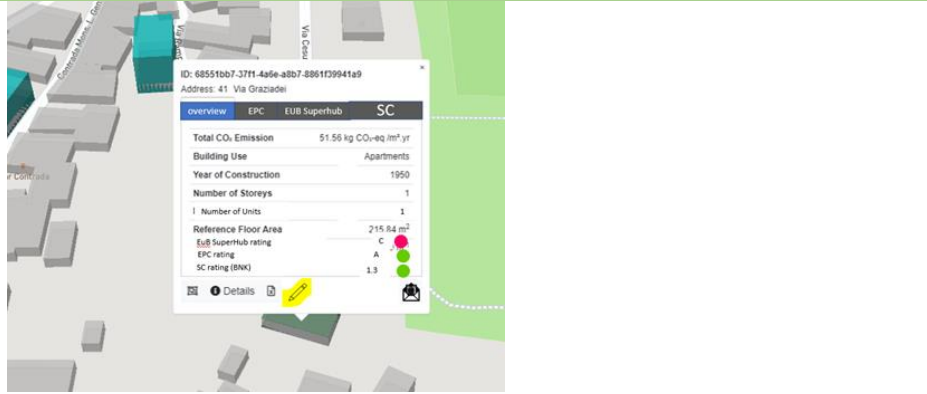
Sketch representation	
Comments	

6.12.1 Function 19.1: Viewing a building with access rights

Function name	Function Number	Precondition	User Role (lowest)
Viewing a building with access rights	19.1	8	User
Function description	By clicking on a building which the user has access rights to the user will see the an extend amount of information about the building that replicate and extend beyond the ones shown 5, 6 and 7. Such as function 18, 16 as well as function 21 (Function 21: Cockpit view) to 28 (Function 28: Street view).		

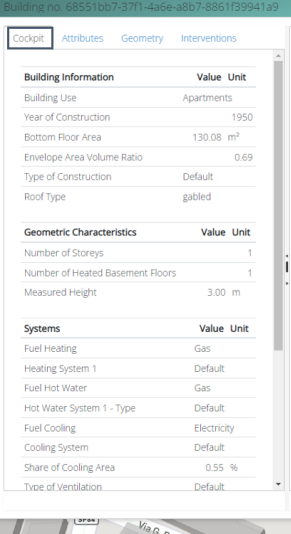
<p>Sketch representation</p>	
<p>Comments</p>	

6.13 Function 20: Edit building details PVT

Function name	Function Number	Precondition	User Role (lowest)
Edit Building details PVT	20	15.3	User
Function description	By clicking on the edit icon, the user can edit the building details in 18, 23, 24 and 27 the in PVT mode as long as they have the correct access rights.		
<p>Sketch representation</p>			
<p>Comments</p>			

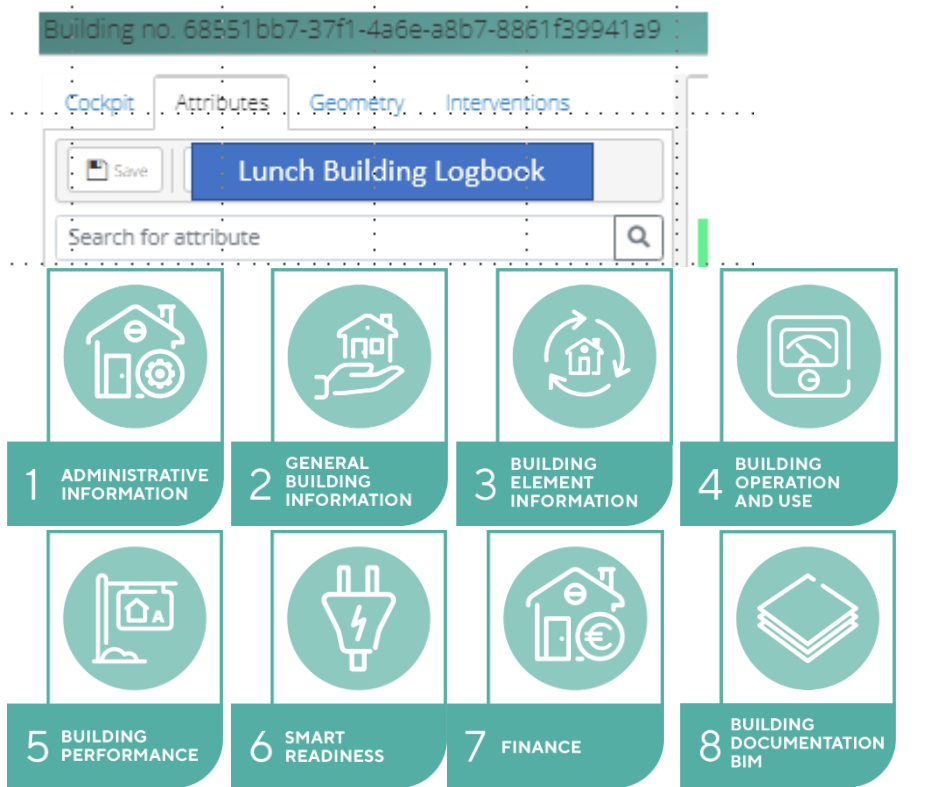
6.14 Function 21: Cockpit view

Function name	Function Number	Precondition	User Role (lowest)
Cockpit view	21	15.3	User

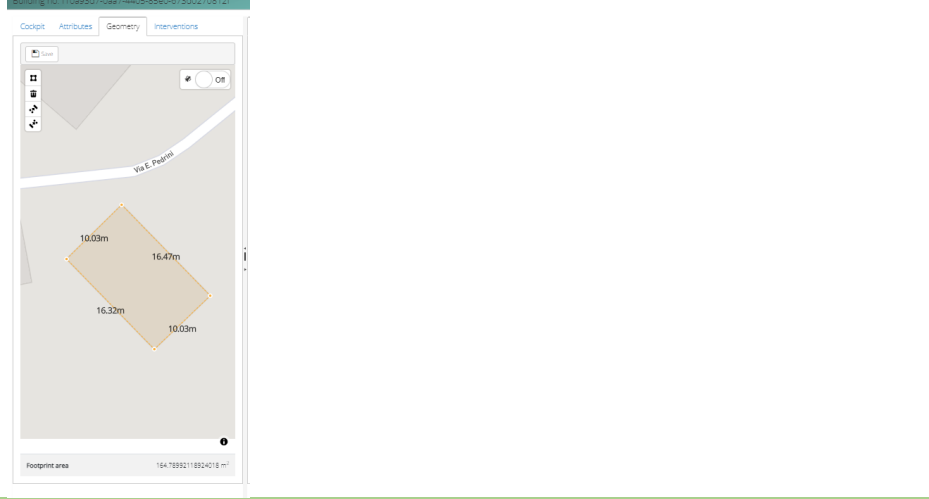
Function description	The user will be able to see the same information about the building in the cockpit view as the ones shown in the E-cockpit function 7.1 cockpit view (Function 7.1: Building cockpit view).
Sketch representation	 <p>The screenshot shows a software interface with a 'Cockpit' tab selected. It displays a table of building information, geometric characteristics, and systems. The building information includes Building Use (Apartments), Year of Construction (1950), Bottom Floor Area (130.08 m²), Envelope Area Volume Ratio (0.69), Type of Construction (Default), and Roof Type (gabled). Geometric characteristics include Number of Storeys (1), Number of Heated Basement Floors (1), and Measured Height (3.00 m). Systems include Fuel Heating (Gas), Heating System 1 (Default), Fuel Hot Water (Gas), Hot Water System 1 - Type (Default), Fuel Cooling (Electricity), Cooling System (Default), Share of Cooling Area (0.55 %), and Type of Ventilation (Default).</p>
Comments	

6.15 Function 22: Logbook attributes

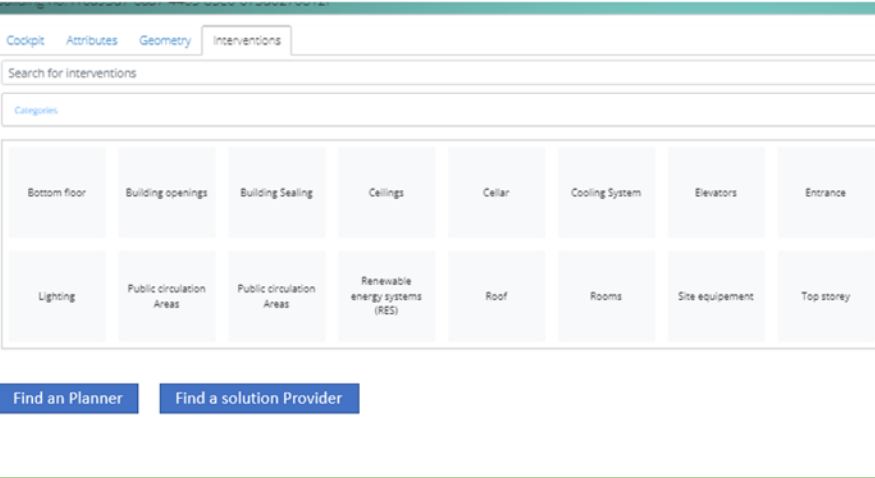
Function name	Function Number	Precondition	User Role (lowest)
Logbook attributes	22	15.3	User
Function description	<p>The user will be able to view and search for each entry in the digital building logbook (DBL) in the following categories as long as they have the appropriate access rights:</p> <ol style="list-style-type: none"> 1. ADMINISTRATIVE INFORMATION 2. GENERAL BUILDING INFORMATION 3. BUILDING ELEMENT INFORMATION 4. BUILDING OPERATION AND USE 5. BUILDING PERFORMANCE 6. SMART READINESS 7. FINANCE 8. BUILDING DOCUMENTATION BIM <p>Next to each entry the user can activate the edit button to edit the values as long as they have the appropriate access rights. Doing such the user will be redirected to digital building logbook in 16 (Function 16: Digital Building Logbook (DBL)). The user can also launch the building logbook (16) through clicking in launch the building logbook icon.</p>		

<p>Sketch representation</p>	
<p>Comments</p>	

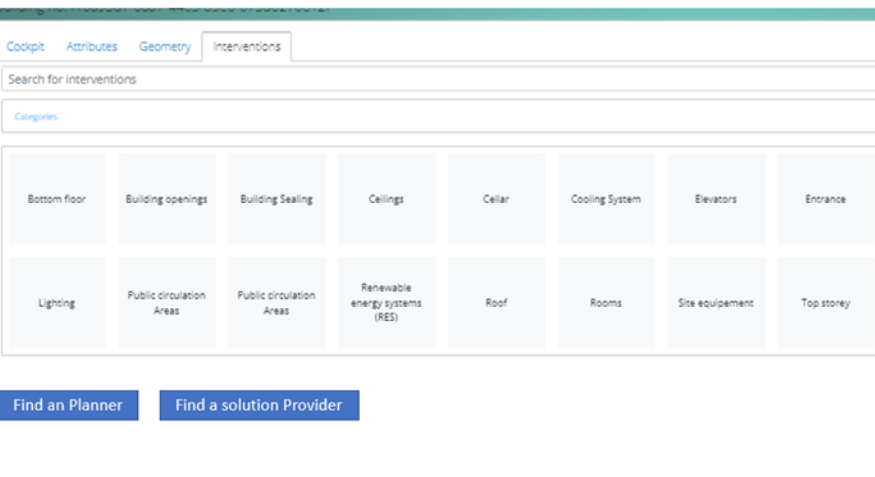
6.16 Function 23: Footprint

Function name	Function Number	Precondition	User Role (lowest)
Footprint	23	15.3	User
Function description	This function will view the building footprint and edit it in case the owner is an owner of the whole building, not just the unit.		
<p>Sketch representation</p>			
<p>Comments</p>	The edit made here will not affect the building area inputted in the logbook, it will, however, be used in the 24 (Function 24: Interventions) and 27 (Function 27: Renovation analysis tool). A warning signal will appear in case a change is made.		

6.17 Function 24: Interventions

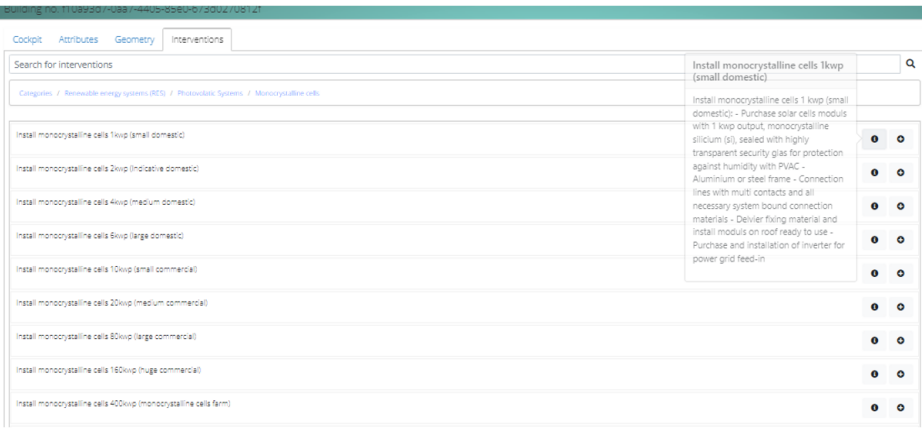
Function name	Function Number	Precondition	User Role (lowest)
Interventions	24	15.3	User
Function description	The function will allow the user to search and apply common energy renovation interventions such as adding an insulation layer to the outer wall or replacing the heating system or installing a PV system. The interventions will be categorized according to their area of application.		
Sketch representation			
Comments	The edits made here will not affect the building information inputted in the building logbook, it will, however, be used in 27 (Function 27: Renovation analysis tool). A warning signal will appear in case a change is made.		

6.17.1 Function 24.1: Search for Interventions

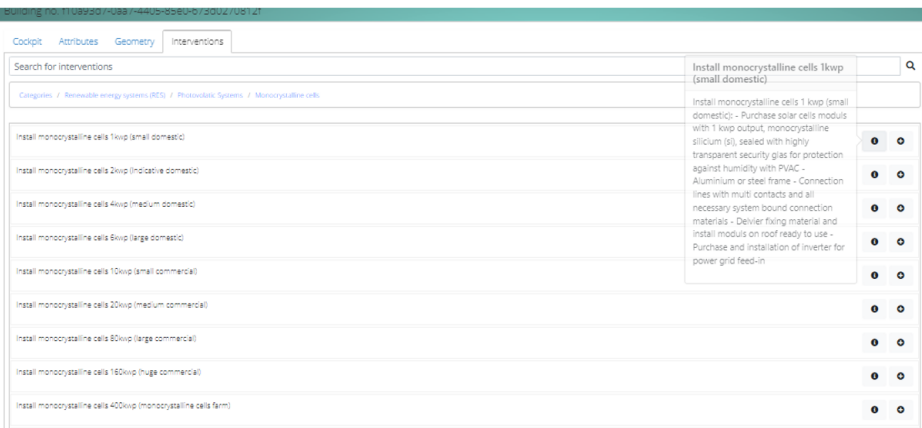
Function name	Function Number	Precondition	User Role (lowest)
Search for Interventions	24.1	15.3	User
Function description	The user can search for an intervention by entering its name in the text.		
Sketch representation			

Comments	The edits made here will not affect the building information inputted in the building logbook, it will, however, be used in 27 (Function 27: Renovation analysis tool). A warning signal will appear in case a change is made.
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6.17.2 Function 24.2: Interventions info button

Function name	Function Number	Precondition	User Role (lowest)
Interventions info button	24.2	15.3	User
Function description	Next to each intervention there is an info button that explain the intervention used and the necessary steps to apply the intervention.		
Sketch representation			
Comments			

6.17.3 Function 24.3: Adding intervention

Function name	Function Number	Precondition	User Role (lowest)
Adding intervention	24.3	15.3	User
Function description	The user can choose to apply the intervention by pressing on the add button. The intervention will then be added to the renovation analysis tab (Function 27: Renovation analysis tool).		
Sketch representation			

Comments	
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6.17.4 Function 24.4: Find a planner

Function name	Function Number	Precondition	User Role (lowest)
Find a planner	24.4	14	Owner
Function description	Next to each intervention category, the user can choose to find a planner. By pressing that icon, the user will be redirected to the list of planners from the VM page who have expertise in the interventions chosen.		
Sketch representation			
Comments			

6.17.5 Function 24.5: Find a solution provider

Function name	Function Number	Precondition	User Role (lowest)
Find a solution provider	24.5	14	Owner
Function description	Next to each intervention category, the user can choose to find a solution provider. By pressing that icon, the user will be redirected to the list of solution providers from the VM page, which has expertise in interventions chosen.		
Sketch representation			
Comments			

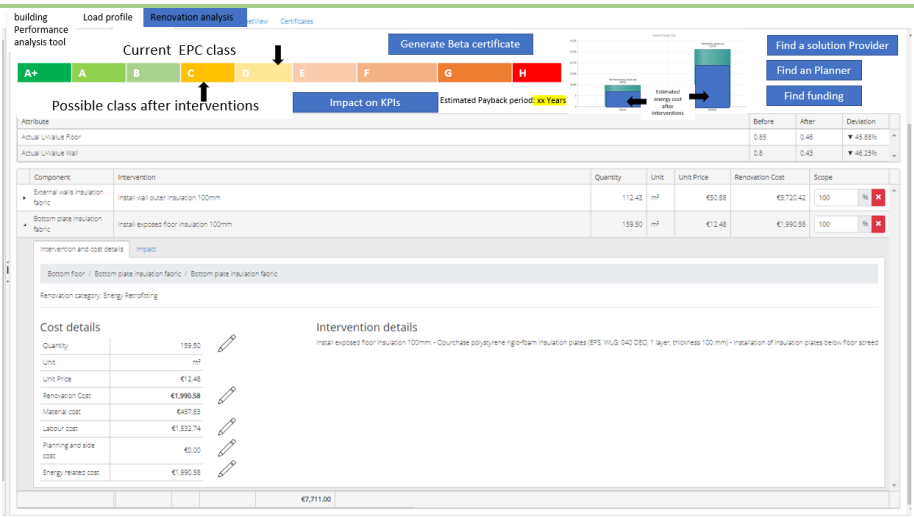
6.18 Function 25: Building performance analysis tool

Function name	Function Number	Precondition	User Role (lowest)
Building performance analysis tool	25	15.3	User
Function description	This function will display the same information as the ones presented in function 7.2 (Function 7.2: Building performance analysis tool) of the E-cockpit.		
Sketch representation			
Comments			

6.19 Function 26: Load profile tool

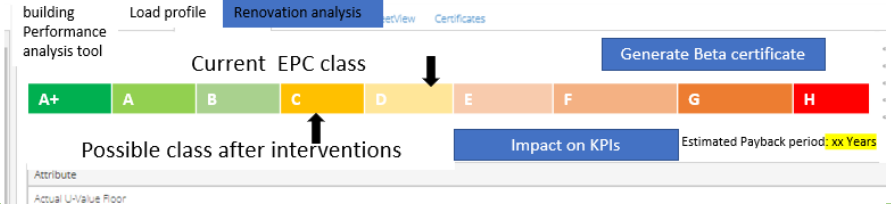
Function name	Function Number	Precondition	User Role (lowest)
The load profile tool	26	15.3	User
Function description	This function will display the same information as the ones presented in function 7.3 (Function 7.3: Load profile tool) of the E-cockpit.		
Sketch representation			
Comments			

6.20 Function 27: Renovation analysis tool

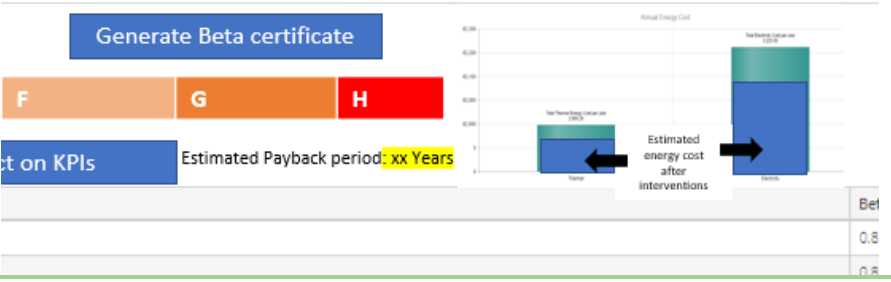
Function name	Function Number	Precondition	User Role (lowest)
The renovation analysis tool	27	24.3	User
Function description	The renovation tool will allow the user to analyse the energetic and financial impact of each added intervention. The newly added intervention will not replace the values found in the 16 (Function 16: Digital Building Logbook (DBL)) it will, however, use the building logbook values to create new calculations depending on the applied interventions, such as changing the PV area or adding an insulation which will alter the building U value.		
Sketch representation	 <p>The screenshot displays the 'Renovation analysis' tool interface. At the top, it shows the 'Current EPC class' as 'C' and 'Possible class after interventions' as 'D'. A bar chart shows the EPC classes from A+ to H. Below this, a table lists interventions: 'Exterior walls insulation fabric' (112.43 m², €12.48) and 'Bottom plate insulation fabric' (199.50 m², €12.48). A detailed view of the 'Bottom plate insulation fabric' intervention shows a total renovation cost of €1,990.58, broken down into material, labour, and energy-related costs.</p>		
Comments			

6.20.1 Function 27.1: Impact on the EPC class

Function name	Function Number	Precondition	User Role (lowest)

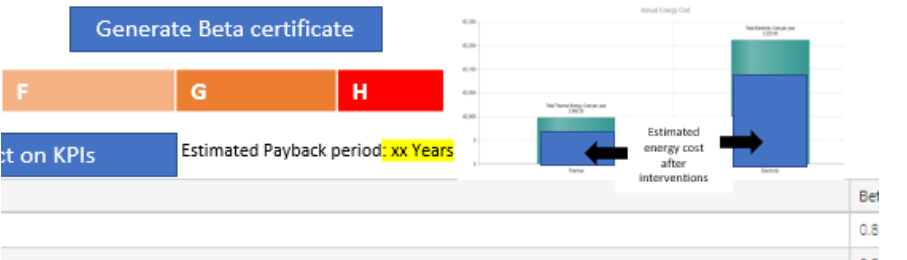
Impact on the EPC class	27.1	24.3	User
Function description	For each added intervention or combination of interventions, the tool will show the possible improvement of the EPC class that can be attained based on the application of the intervention.		
Sketch representation			
Comments			

6.20.2 Function 27.2: Impact on the energy cost

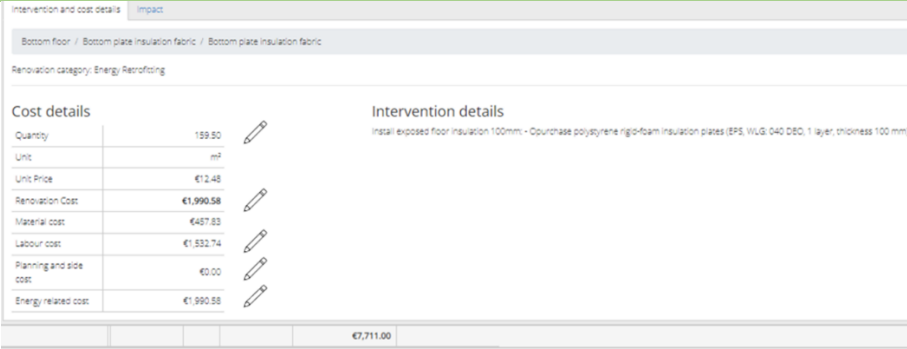
Function name	Function Number	Precondition	User Role (lowest)
Impact on the energy cost	27.2	24.3	User
Function description	For each added intervention or combination of interventions, the tool will show the possible decrease or increase of the energy cost based on the application of the intervention.		
Sketch representation			
Comments	The cost of energy is inputted in the building logbook.		

6.20.3 Function 27.3: Estimated payback period

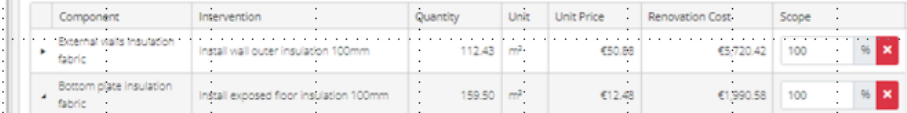
Function name	Function Number	Precondition	User Role (lowest)
Estimated payback period	27.3	24.3	User
Function description	For each added intervention or combination of interventions, the tool will show the possible payback period of the investment. This will be done by the tool calculating the cost of applying each intervention (27.5) and the possible reduction in the energy costs (the cost of energy is inputted in the building logbook).		

<p>Sketch representation</p>	
<p>Comments</p>	

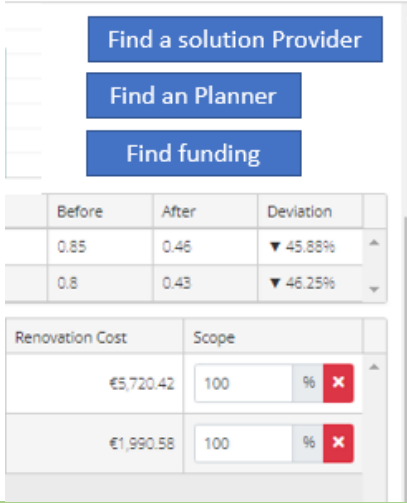
6.20.4 Function 27.5: Intervention cost details

Function name	Function Number	Precondition	User Role (lowest)
Intervention cost details	27.5	24.3	User
Function description	<p>For each added intervention user can click on the intervention to view the cost details of the intervention. This will include a text explaining the intervention as well as breakdown of the costs associated with the intervention. the user can edit and change any of the above-mentioned fields. and edit will result in creating a new intervention will be unique to that user.</p>		
<p>Sketch representation</p>			
<p>Comments</p>			

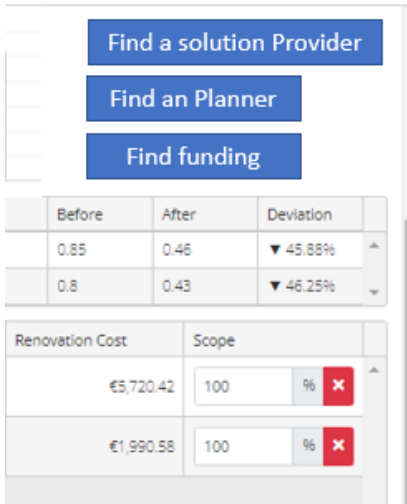
6.20.5 Function 27.6: Intervention scope

Function name	Function Number	Precondition	User Role (lowest)
Intervention scope	27.6	24.3	User
Function description	<p>For each add intervention user can click on the intervention scope to adjust the area application or its quantity or the lumpsum price.</p>		
<p>Sketch representation</p>			
<p>Comments</p>			

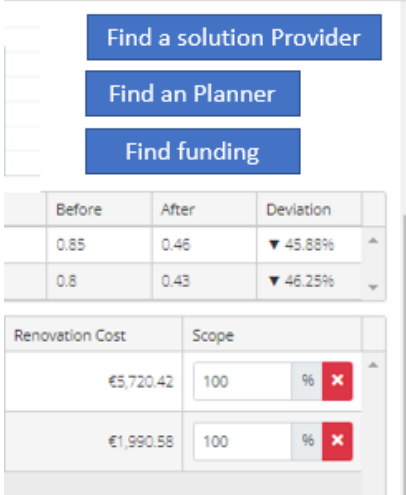
6.20.6 Function 27.7: Find a planner

Function name	Function Number	Precondition	User Role (lowest)
Find a planner	27.7	24.3	Owner
Function description	The user can choose to find a planner from the VM to verify and edit the interventions, the user can choose to share the file with a member of the VM.		
Sketch representation			
Comments			

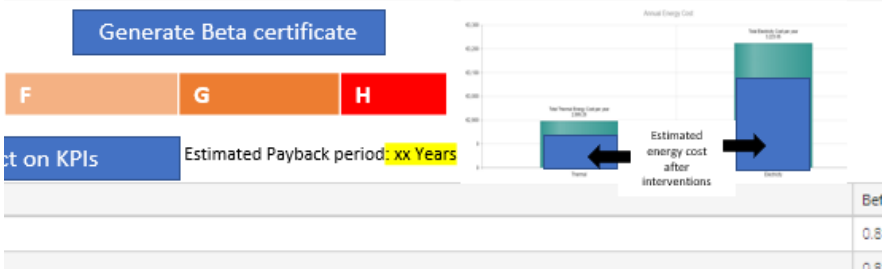
6.20.7 Function 27.8: Find a solution provider

Function name	Function Number	Precondition	User Role (lowest)
Find a solution provider	27.8	24.3	Owner
Function description	The user can choose to find a solution provider from the VM to verify and edit the interventions, the user can choose to share the file with a member of the VM.		
Sketch representation			
Comments			

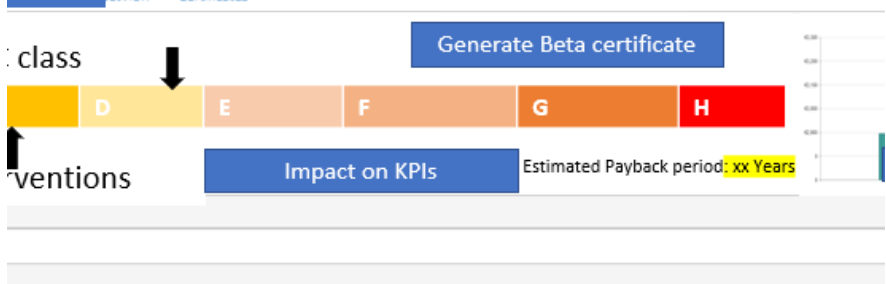
6.20.8 Function 27.9: Find funding

Function name	Function Number	Precondition	User Role (lowest)
Find funding	27.9	24.3	User
Function description	By clicking on this tab, the user will be redirected to the National funding and funding options 2.6 (Function 2.6: National funding and funding options) from the VM.		
Sketch representation			
Comments			

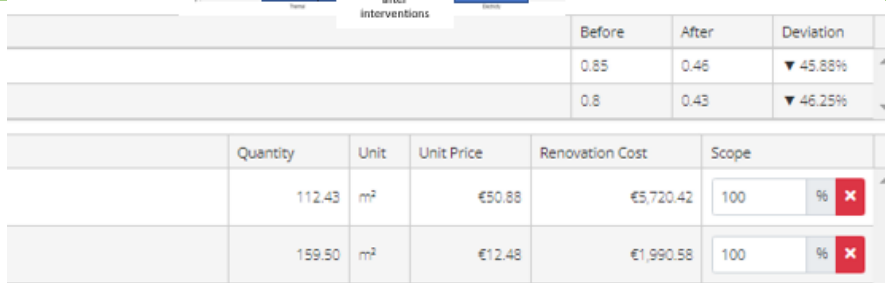
6.20.9 Function 27.10: Generate beta certificate

Function name	Function Number	Precondition	User Role (lowest)
Generate beta certificate	27.10	24.3	User
Function description	Based on the added intervention or combination of interventions, the tool can generate a beta certificate. This beta certificate will appear in 18.2 (Function 18.2: Certificates) and can be later shared with an auditor to verify.		
Sketch representation			
Comments			

6.20.10 Function 27.11: Impact on KPIs

Function name	Function Number	Precondition	User Role (lowest)
Impact on KPIs	27.11	24.3	User
Function description	For each added intervention or combination of interventions, the tool will show the possible impact of the interventions on the EUB SuperHub KPI.		
Sketch representation			
Comments			

6.20.11 Function 27.12: Deviation

Function name	Function Number	Precondition	User Role (lowest)
Deviation	27.12	24.3	User
Function description	For each add intervention the tool will show the specific value of each building component before and after adding the intervention and the % deviation of the performance.		
Sketch representation			
Comments			

6.20.12 Function 27.13: Save

Function name	Function Number	Precondition	User Role (lowest)
Save	27.13	24.3	User
Function description	The user can save the selected interventions and a new file will be created. The saved file will display the name of the last user that edit the file and the time.		
Sketch representation			
Comments			

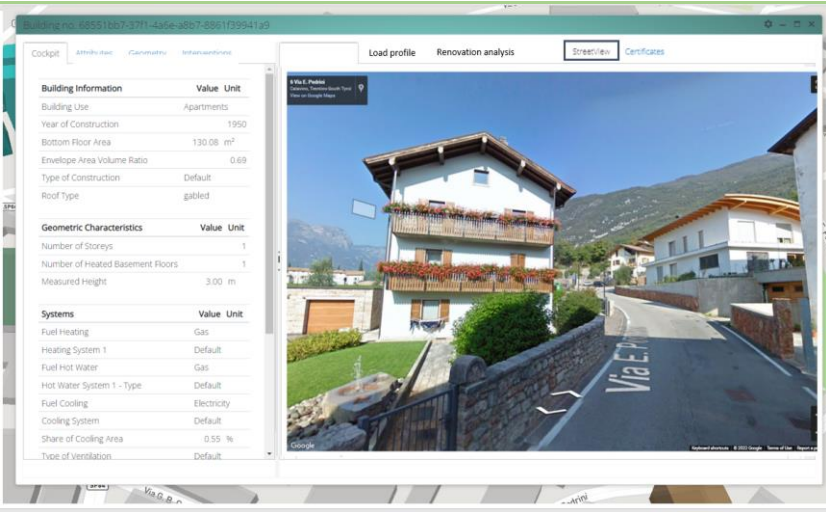
6.20.13 Function 27.14: Export

Function name	Function Number	Precondition	User Role (lowest)
Export	27.14	24.3	Owner
Function description	The user can export the building file with the selected interventions for further processing.		
Sketch representation			
Comments			

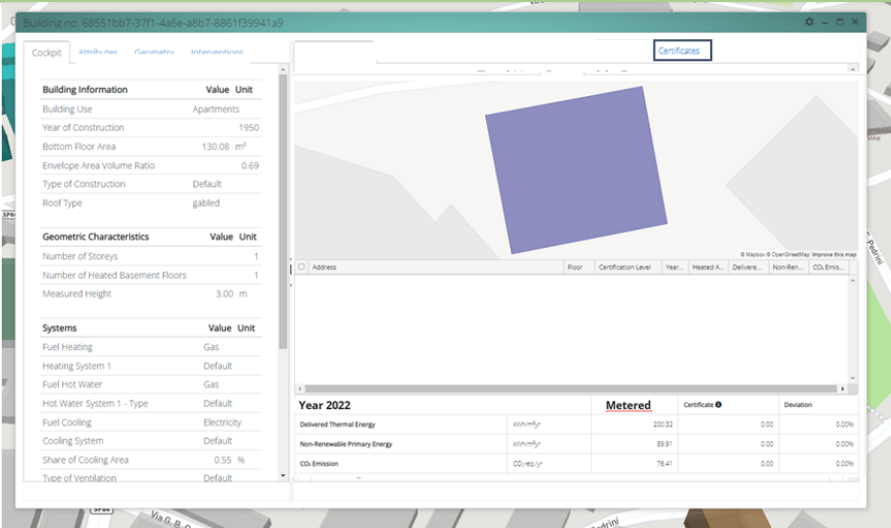
6.20.14 Function 27.15: Remove an intervention

Function name	Function Number	Precondition	User Role (lowest)
Remove an intervention	27.15	24.3	User
Function description	The user can choose to remove one or more interventions from the list.		
Sketch representation			
Comments			

6.21 Function 28: Street view

Function name	Function Number	Precondition	User Role (lowest)
Street view	28	19	User
Function description	The street view function is identical to the one in the E-cockpit 7.4 (Function 7.4: Street view).		
Sketch representation			
Comments			

6.22 Function 29: Certificates

Function name	Function Number	Precondition	User Role (lowest)
Certificates	29	19	User
Function description	The certificate function is identical to the one in the E-cockpit 7.5 (Function 7.5: Certificates).		
Sketch representation	 <p>The screenshot displays the 'Certificates' interface in the E-cockpit. On the left, there are three panels: 'Building Information', 'Geometric Characteristics', and 'Systems', each with a table of values and units. The 'Building Information' table includes fields like Building Use (Apartments), Year of Construction (1950), and Bottom Floor Area (130.08 m²). The 'Geometric Characteristics' table includes Number of Storeys (1) and Measured Height (3.00 m). The 'Systems' table lists various heating and cooling systems. On the right, there is a map showing a building footprint in purple. Below the map is a table for 'Year 2022' metrics, including Delivered Thermal Energy, Non-Renewable Primary Energy, and CO₂ Emission, with columns for Metered values, Certificates, and Deviation.</p>		
Comments			