



SmarterEPC

D3.3 Design and Development of the Smarter EPC Platform



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Table of Content

1	Introduction.....	9
1.1	Scope and objectives of the deliverable.....	9
1.2	Structure of the deliverable.....	9
1.3	Relation to Other Tasks and Deliverables.....	10
2	Design of the Smarter EPC Hub.....	11
2.1	Architectural Overview.....	11
2.2	Development methodology.....	13
2.2.1	Technologies and implementation.....	13
2.2.2	Development Phases.....	13
3	Core Functionalities.....	16
3.1	User Authentication and Permissions.....	17
3.1.1	Registration.....	17
3.1.2	Login.....	19
3.2	Hub Navigation.....	22
3.2.1	Main Page and Language.....	22
3.2.2	User Profile Management.....	23
3.3	Tool selection wizard.....	25
3.3.1	Step 1 - Assessment Type.....	25
3.3.2	Step 2 - Building Data.....	25
3.3.3	Step 3 - Tool recommendation.....	27
3.4	Managing buildings.....	35
3.4.1	Adding New Buildings.....	35
3.4.2	Viewing and editing Buildings.....	35
3.5	Building data.....	36
3.5.1	Uploading new building data.....	37
3.5.2	Managing Building Data.....	40
3.6	Supporting tools / Utilities.....	47
3.7	Support center.....	48
3.8	Info about the SmarterEPC hub.....	49
3.9	Admin-Specific Features.....	50

D3.3 – Design and Development of the Smarter EPC Platform

3.9.1	Accessing All Buildings.....	50
3.9.2	External Tools.....	51
3.9.3	Admin Settings.....	51
4	Integrations and Compliance.....	53
4.1	Integration with other platforms/tools.....	53
4.2	Security Features and Data Privacy.....	53
4.2.1	Encrypted Communication.....	54
4.2.2	Secure Data Storage and backup.....	54
4.2.3	Routine Security Audits.....	54
5	Conclusion.....	55
6	References.....	56



List of figures

Figure 1. SmarterEPC hub refined layered Conceptual Architecture	12
Figure 2. Initial mockup (wireframe) of the Homepage	14
Figure 3. Initial mockup (wireframe) of the User Guide – Tool Selection Wizard page	15
Figure 4. Initial mockup(wireframe) of the Data List and Upload Page - EPC	15
Figure 5. User Registration with role selection (simple user or certified assessor)	18
Figure 6. Verification email, part of the 2-step user verification process	19
Figure 7. Verification email, part of the 2-step user verification process	20
Figure 8. User password retrieval page	21
Figure 9. User password reset password verification email	22
Figure 10. SmartEPC Hub main menu, showcasing core functionalities and navigation options available to users	23
Figure 11. Multi-language support	23
Figure 12. Account information and verification page, featuring user role details, contact information fields	25
Figure 13. Choosing the Assessment Type.	25
Figure 14. Choosing Building Data (optional)	26
Figure 15. Steps to choose from available buildings and building data (optional)	27
Figure 16. Option to upload building data from local storage	27
Figure 17. Example for the SRI tool selection wizard	29
Figure 18. Example for the EPC tool selection wizard	31
Figure 19. Recommended SRI tool results	32
Figure 20. Recommended EPC tool results	33
Figure 21. Information tool tip for the suggested tool and option for downloading the converted building data	34
Figure 22. Adding a new Building	35
Figure 23. Viewing details of Building Data	35
Figure 24. Editing building details	36
Figure 25. Deleting function of Building Information	36
Figure 26. Selection menu of SRI data upload of a new Building	38
Figure 27. Selection menu of EPC data upload of a new Building	39
Figure 28. Steps to upload Joint (EPC+SRI) Data (still in development)	40
Figure 29. Option to view detailed building data	40

D3.3 – Design and Development of the Smarter EPC Platform

Figure 30. Detailed view of available data for a specific building in separate tabs (EPC and SRI)	42
Figure 31. Building SRI Data, General Info tab example	42
Figure 32. Building SRI Data, Systems tab	42
Figure 33. Building EPC Data, Building tab	43
Figure 37. Building EPC Data, Spaces tab	45
Figure 38. Building EPC Data, Elements tab	45
Figure 39. Building SRI Data, edit name option, accept or reject change	46
Figure 40. Building SRI Data download option with a pop-up to choose the appropriate schema	47
Figure 41. Building EPC Data download option with a pop-up to choose the appropriate schema	47
Figure 35. Button to delete Building SRI Data	47
Figure 36. Supporting tools	48
Figure 37. Overview of the SmarterEPC hub support center	49
Figure 38. Contents of the SmarterEPC Hub About page	50
Figure 39. Ability to access with read-only privileges all database buildings	51
Figure 40. Building data transfers to external tools	51
Figure 41. Ability to show pending user registration requests and to activate, resend email or delete user registration requests	52
Figure 42. Functionality to see a list of all user registration accepted requests and remove access to the platform for users	52

Acronyms

Acronyms	Description
EPC	Energy Performance Certificate
SRI	Smart Readiness Indicator
WP	Work Package
SSO	Single Sign-On
IoT	Internet of Things
BIM	Building Information Modeling
VM	Virtual Machine

D3.3 – Design and Development of the Smarter EPC Platform

GDPR	General Data Protection Regulation
RBAC	Role-Based Access Control
SSL/TLS	Secure Sockets Layer / Transport Layer Security
API	Application Programming Interface
HTTPS	Hypertext Transfer Protocol Secure
Certbot	Automated SSL certificate management tool
MongoDB	NoSQL database used for data storage
Hyper-V	Virtualization technology for creating virtual machines
Node.js	JavaScript runtime for backend development
Angular	Frontend framework for dynamic web applications
PrimeNG	User interface library for Angular

EXECUTIVE SUMMARY

The SmarterEPC Hub is a digital platform developed to improve the assessment and certification of building energy performance and smart readiness. This document, **D3.3 Design and Development of the SmarterEPC Platform**, presents the platform's design, key features, integration potential, and security framework to ensure efficiency in building evaluations.

The main goal of the SmarterEPC Hub is to provide a practical and user-friendly system for building assessors and stakeholders to assess and enhance energy performance through standardised tools and methods. By integrating Smart Readiness Indicator (SRI) assessments and Energy Performance Certificates (EPC), the platform enables smooth data management, interoperability, and adherence to EU regulations.

The development of the SmarterEPC Hub follows a structured, **three-phase approach**:

1. **Analysis and Understanding:** Review existing tools and methodologies to define user needs and technical requirements.
2. **Mockup Development and Refinement:** Creating and refining user interface wireframes based on stakeholder feedback.
3. **Development and Testing:** Implementing, validating, and testing the platform's initial version to ensure functionality and security compliance.

The **core functionalities** offered by the SmarterEPC hub are the following:

- **User Access Control:** Secure registration, login, and role-based access management.
- **Building Data Management:** Tools for uploading, editing, and managing building performance data.
- **Tool Selection Wizard:** A step-by-step process to help users find suitable EPC and SRI assessment tools.
- **Integration with External Platforms:** Communication with existing EPC and SRI tools for interoperability.

The platform integrates with existing EPC and SRI methodologies while aligning with EU regulatory frameworks. It connects with NextGenEPC and SRI digital tools, making energy performance and smartness assessments accessible and efficient across different regions.

The SmarterEPC Hub is designed to enhance energy efficiency and smart readiness assessments across Europe. Its adaptable architecture supports future technological and regulatory advancements. Continuous improvements, guided by user input, will make it a more effective and user-friendly tool for building energy performance evaluations. This document is an updated version of the deliverable, incorporating additional improvements based on the feedback received and the actions undertaken for continuous platform improvements.

1 Introduction

1.1 Scope and objectives of the deliverable

The SmarterEPC Hub is a comprehensive suite of digital tools designed to support building assessors and operators in evaluating and improving building energy performance and smart readiness. By providing access to a curated selection of the most advanced and up-to-date EPC and SRI assessment tools, as well as multilingual e-learning resources, the hub simplifies the process of conducting thorough and standardised evaluations. It also includes common procedures for building inspections and the generation of EPC and SRI certificates.

A central feature of the SmarterEPC Hub is its intuitive interface, which guides assessors through the process of uploading building data and selecting the tools that best align with their specific needs. Rather than developing standalone systems, the hub acts as a centralised platform that communicates seamlessly with existing interoperable tools, enabling users to leverage these resources for comprehensive assessments.

This deliverable describes the initial development and implementation of the SmarterEPC Hub, focusing on its core functionalities, validation methods, and deployment approach. Its main objective is to ensure that the hub enables seamless integration of data for Energy EPC and SRI, offers a straightforward and accessible interface for users, and operates effectively under a variety of conditions. It represents the first phase of the SmarterEPC Hub's development. Future iterations will incorporate lessons learned from validation efforts and input from stakeholders, leading to a refined and fully functional system.

1.2 Structure of the deliverable

This deliverable presents an overview of the development and implementation of the SmarterEPC Hub. It offers a step-by-step breakdown of its purpose, design, features, and integration approach with other tools. This layout ensures a logical progression, allowing readers to follow the steps of the development of the platform.

- **Section 1** outlines the main objectives, scope, and connection to other tasks within the SmarterEPC project.
- **Section 2** describes the SmarterEPC Hub architecture, focusing on its scalability, flexibility, and interoperability. It also covers the technologies used and the phased development process.
- **Section 3** details the platform's main functionalities, including user authentication, navigation, tool selection wizards, and building data management, explaining how they facilitate EPC and SRI assessments.
- **Section 4** examines the SmarterEPC Hub's integration with external tools and platforms, ensuring smooth data exchange while adhering to European regulations. Security and data privacy measures are also discussed.
- **Section 5** concludes the document by summarising key outcomes and potential areas for future enhancements.

1.3 Relation to Other Tasks and Deliverables

Task 3.3 represents a foundational technical activity within WP3 of the SmarterEPC project. It builds upon the findings of **D2.1 [1]**, **D2.3 [2]**, and **D3.1 [3]**, consolidating insights into user needs and technical specifications to develop an intelligent data collection interface for the SmarterEPC Hub.

Deliverable D3.3 is the culmination of work that builds upon the critical findings and insights gathered in **D2.1**, **D2.3**, and **D3.1**. These earlier deliverables laid the essential groundwork for understanding user needs and defining technical specifications, which directly inform the development of the SmarterEPC platform.

Contributions from Key Deliverables:

- D2.1 - Assessment of Existing Tools for EPC and SRI Calculation
- D2.3 - SmarterEPC Framework Architecture
- D3.1 - Information Collection Tool

2 Design of the Smarter EPC Hub

2.1 Architectural Overview

The SmarterEPC project acknowledges the wide array of user-friendly tools developed under European Commission-funded initiatives, which incorporate state-of-the-art methodologies for Energy Performance Certificates (EPC) and Smart Readiness Indicators (SRI). The project's mission is to curate a selection of these tools and make them easily accessible to a broad audience. A central objective of SmarterEPC is the creation of an intuitive interface that streamlines the collection of building-related data. This interface will enable the efficient extraction of essential information required for generating EPC and SRI reports using suitable calculation tools.

To achieve this, the SmarterEPC hub will feature a flexible and dynamic framework designed to adapt to evolving demands and emerging technological advancements. The system will rely on a scalable architecture capable of accommodating varying workloads and the growing volume of data and services. A core focus of the hub is interoperability, ensuring smooth integration with diverse external systems and databases. The architectural framework will be structured to expose services both at the subcomponent level and the hub level, fostering seamless communication between internal components and external entities. This communication will function across multiple platforms, programming languages, runtime environments, and development methodologies, ensuring the system remains robust and reliable. The refined conceptual architecture delivering these capabilities was highlighted in D2.3 and is illustrated in Figure 1.

D3.3 – Design and Development of the Smarter EPC Platform

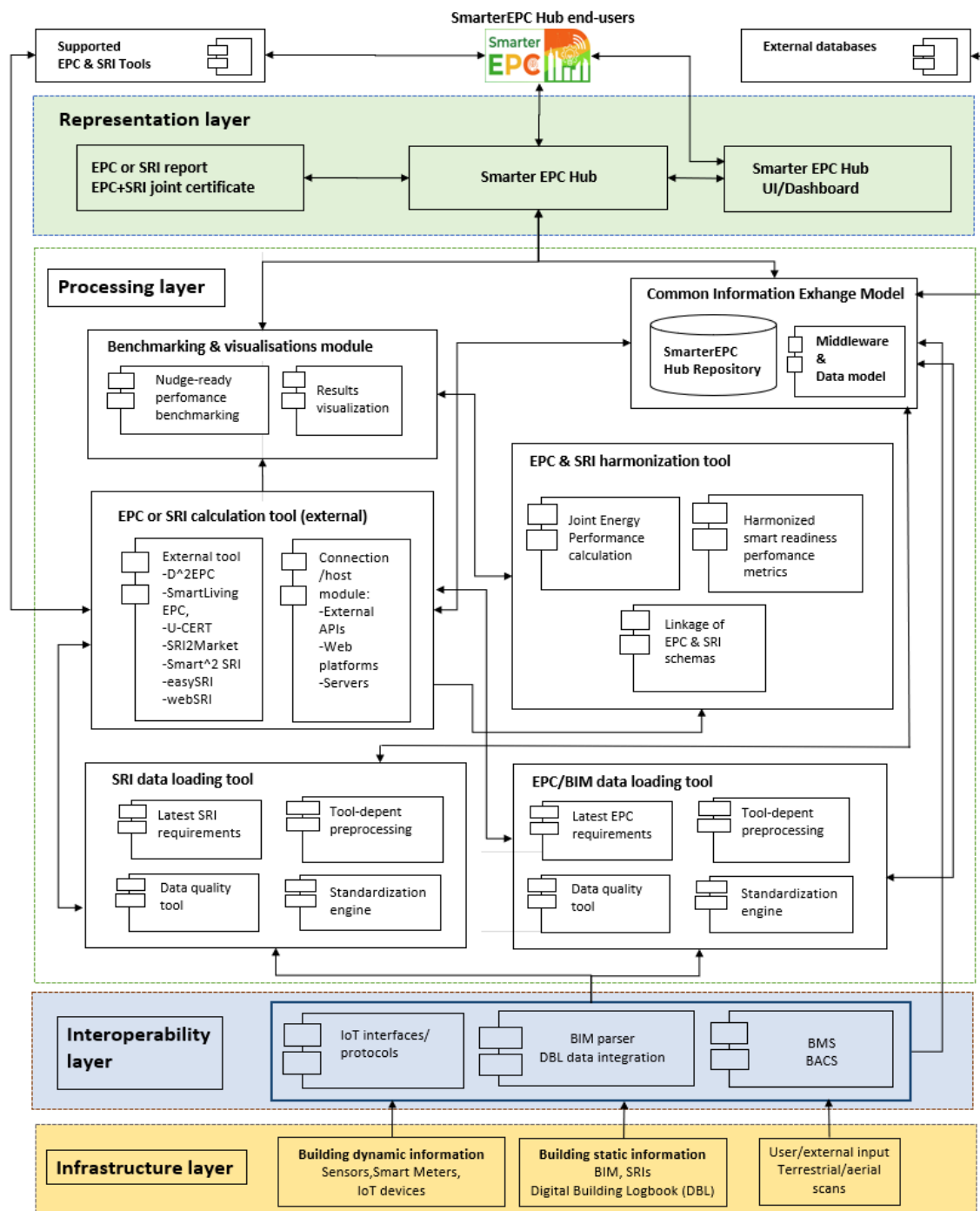


Figure 1. SmarterEPC hub refined layered Conceptual Architecture

By integrating advanced principles of scalability, interoperability, and user-centricity, the platform addresses the diverse needs of stakeholders involved in EPC and SRI processes

- **Scalability:**
 - The platform's modular architecture allows for the addition of new tools and features without requiring major system overhauls.
 - Ensures that future updates or tool integrations can be incorporated smoothly.
- **Interoperability:**

D3.3 – Design and Development of the Smarter EPC Platform

- Standardized APIs enable the SmarterEPC Hub to interact seamlessly with external tools, i.e. the NextGenEPC and SRI platforms. These APIs ensure compatibility and efficient data exchange, while also providing redirection to the most suitable tools or platforms based on user requirements. This facilitates a cohesive ecosystem of tools that work in harmony with the SmarterEPC Hub.
- **User-Centric Design:**
 - The UI (Representation layer) is built to prioritize ease of navigation and intuitive workflows, ensuring that users—ranging from building assessors to administrators—can efficiently interact with the hub.
 - The design aligns with stakeholder needs, providing accessibility and minimizing user effort through context-aware redirection, by guiding users seamlessly to the appropriate tools.

2.2 Development methodology

2.2.1 Technologies and implementation

The SmarterEPC Hub features a contemporary, modular design aimed at providing scalability, flexibility, and reliability. The system utilizes advanced technologies and frameworks to provide an effective and user-friendly experience.

- The platform's front-end is built with Angular [4], a robust framework recognized for crafting dynamic and responsive user interfaces.
- Utilizing the Sakai PrimeNG framework [5] improves the design and interactivity, guaranteeing a smooth and user-friendly experience. The platform's back-end utilizes Node.js [6], a lightweight and scalable JavaScript runtime that guarantees efficient and rapid server-side performance.
- The data layer employs MongoDB [7], a NoSQL database recognized for its adaptability and scalability, offering secure and effective storage for all data related to users and buildings. The whole platform is located under the .iti.gr domain and is accessible via HTTPS to guarantee secure communication between the users and the server.
- The application operates on a Virtual Machine (VM) set up within a Hyper-V [8] environment, ensuring excellent performance and dependability. This configuration guarantees that the platform can manage extensive datasets and several concurrent users while preserving outstanding performance.
- Furthermore, utilizing Certbot [9] automates SSL certificate management, keeping the platform secure and adhering to current web standards. This ensures encrypted communication, assuring users that their engagement with the platform is confidential and secure.

2.2.2 Development Phases

Phase 1: Analysis and Understanding

The initial phase focused on understanding and analyzing the project's objectives and requirements for the SmarterEPC Hub. This involved synthesizing information from other tasks and deliverables, particularly insights from D2.3, as well as engaging in discussions with

D3.3 – Design and Development of the Smarter EPC Platform

consortium partners. The analysis provided a comprehensive understanding of the functional and technical needs, laying the groundwork for subsequent design and development activities.

Phase 2: Mockup Development and Refinement

In the second phase, the team developed an initial set of raw mockups (wireframes) for the SmarterEPC Hub's user interface. These mockups served as a foundational design, offering a visual representation of the platform's structure and functionalities.

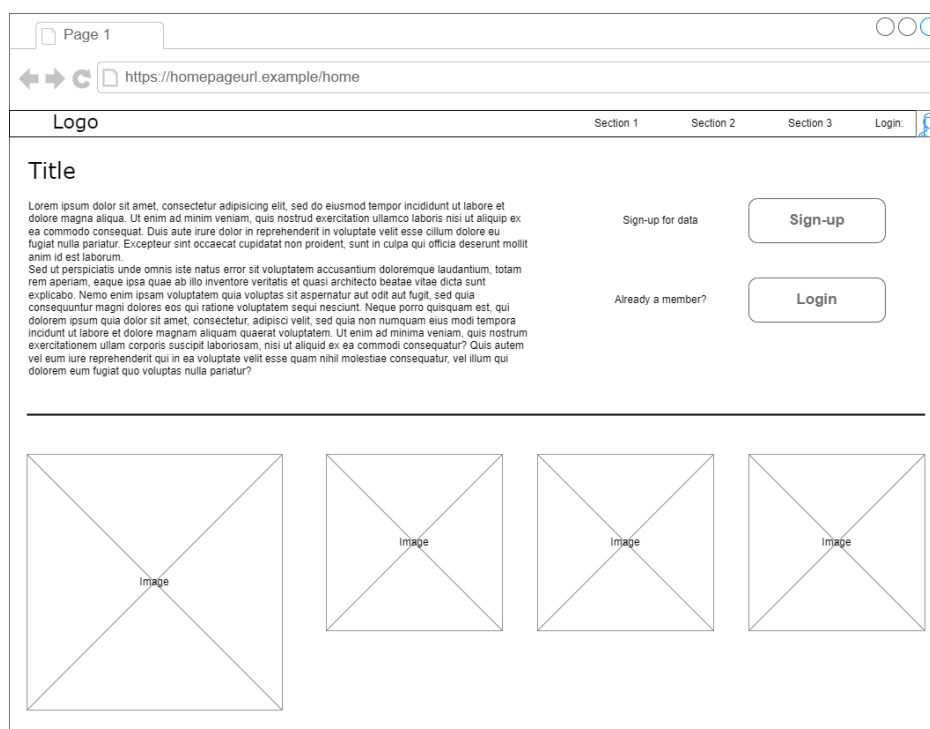


Figure 2. Initial mockup (wireframe) of the Homepage

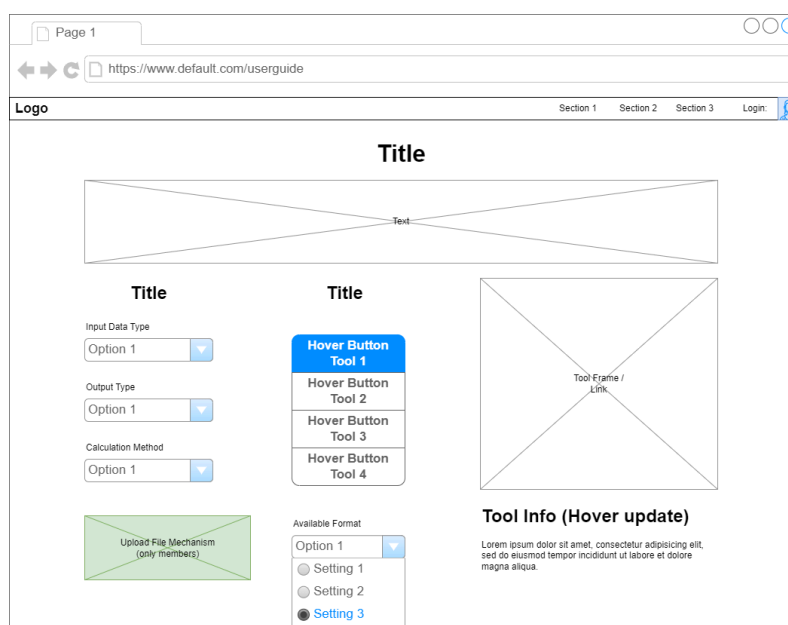


Figure 3. Initial mockup (wireframe) of the User Guide – Tool Selection Wizard page

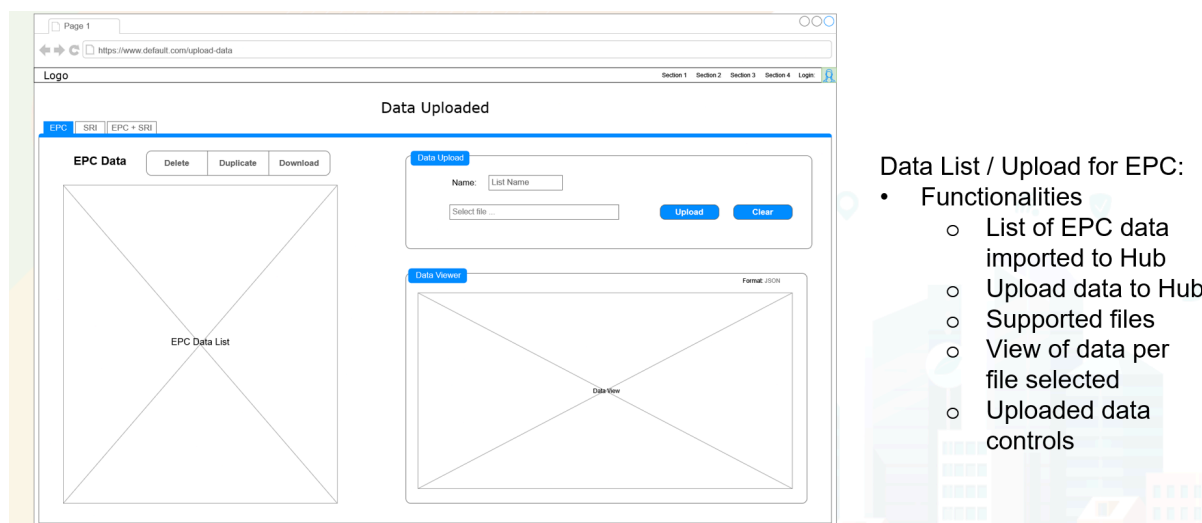


Figure 4. Initial mockup(wireframe) of the Data List and Upload Page - EPC

Consortium partners reviewed the wireframes, identifying potential issues and providing feedback for improvement. Based on this input, modifications were made, and refinements were implemented, leading to a more polished design. A new iteration of development then began, incorporating the suggested changes and enhancements.

Phase 3: Development and Testing of the First Functional Version

The third phase involved the development and deployment of a fully functional first version of the SmarterEPC Hub. The platform was made accessible online and underwent initial testing by the development team and CERTH. This testing phase identified major bugs, inconsistencies, and areas requiring further enhancement. Based on these findings, the team began implementing amendments, addressing technical issues, and incorporating additional features. The testing and refinement cycle ensured that the platform met quality, usability, and functionality standards.

3 Core Functionalities

This section explores the core features of the SmarterEPC Hub, designed to offer users an intuitive and efficient experience. It details how the hub's tools and modules collaborate to streamline building data management, facilitate EPC and SRI calculations, and support performance analysis. Each feature has been developed with a focus on usability and flexibility, ensuring accessibility for a diverse range of users.

The SmarterEPC Hub is available on this link <https://smarterepchub.itl.gr/>.

The proposed generic **workflow for EPC assessment** using the SmarterEPC Hub and supported external tools is the following:

1. The user registers on the SmarterEPC Hub.
2. The user creates a building record in the Hub.
3. EPC-related data are generated either through completion of the relevant forms or through upload of BIM (.ifc) SmarterEPC Hub-compliant files.
4. Using the Tool Selection Wizard feature, the user selects the building, where relevant, associates the corresponding building data file, and defines preferences in order to receive a recommendation for the most appropriate external assessment tool.
5. Where necessary, the Hub exports the building data in the format required by the selected external tool.
6. The user chooses the external tool for carrying out the EPC assessment and is redirected accordingly.
7. During redirection, the user is automatically registered, authenticated, and authorised within the selected external tool, while relevant EPC data may also be automatically transferred.
8. In the external tool, the user accesses the assessment environment, where project data or building files may either be imported manually or made available automatically through the previous step.
9. The user executes the EPC assessment within the external tool. In the current version, the countries supported are Greece, Cyprus, Germany, Spain, Romania, Estonia and Austria, with this pool subject to extension by the end of the project.
10. Finally, the assessment results are exported in any of the formats supported by the external tool.

Next follows the proposed generic **workflow for SRI assessment** using the SmarterEPC Hub and supported external tools:

1. The user registers on the SmarterEPC Hub.
2. The user creates a building record in the Hub.

3. SRI-related data are generated either through completion of the relevant forms or through upload of an .xlsx SRI v4.5 file, as defined in the official EU SRI assessment package.
4. Using the Tool Selection Wizard feature, the user selects the building, where relevant, associates the corresponding building data file, and defines preferences in order to receive a recommendation for the most appropriate external assessment tool.
5. Where necessary, the Hub exports the building data in the format required by the selected external tool.
6. The user chooses the external tool for carrying out the SRI assessment and is redirected accordingly.
7. During redirection, the user may be automatically registered, authenticated, and authorised within the selected external tool, while relevant SRI data may also be automatically transferred, where this functionality is supported.
8. In the external tool, the user accesses the assessment environment, where project data or building files may either be imported manually or made available automatically through the previous step.
9. The user runs the SRI assessment within the external tool. All EU countries are currently supported.
10. Finally, the assessment results are exported in any of the formats supported by the external tool.

The next subsections provide print screens and more detailed descriptions for the abovementioned generic EPC/SRI workflows, highlighting the capabilities and supported features of the SmarterEPC Hub.

3.1 User Authentication and Permissions

Secure and straightforward user authentication is at the heart of the platform, ensuring that only authorised users can access sensitive data. The SmarterEPC hub offers a unified platform for user registration and login via a Single Sign-On (SSO) service. This feature balances robust security with a seamless login experience, so users can quickly access the platform without unnecessary complications.

3.1.1 Registration

Creating an account on the SmarterEPC Hub is the initial step for new users. The registration process is streamlined to be quick and user-friendly, requiring only essential details such as an email address and password. Users are guided through a straightforward, step-by-step setup to ensure they can begin exploring the hub with ease. To enhance security, a two-step registration process is implemented. First, users provide the necessary information during registration (Figure 5). The platform currently does not enforce any functional distinction between the two roles (“Simple user” and “Certified assessor”). Both options are included

D3.3 – Design and Development of the Smarter EPC Platform

for future use, so that a dedicated verification mechanism can be enabled later to validate certified assessors and activate role-based features and permissions. Following this, a verification email is sent to confirm their details (Figure 6). Once verified, the platform administrator reviews and approves the registration request.



Register

Role:*

select role

First Name *

enter first name

Last Name *

enter last name

E-mail *

enter e-mail

Password *

enter password

Confirm Password *

repeat password

Register

Already have an account? [Log in here](#)

Role:*

- ✓ Simple user
- Certified assessor

- Role is required.

Figure 5. User Registration with role selection (simple user or certified assessor)

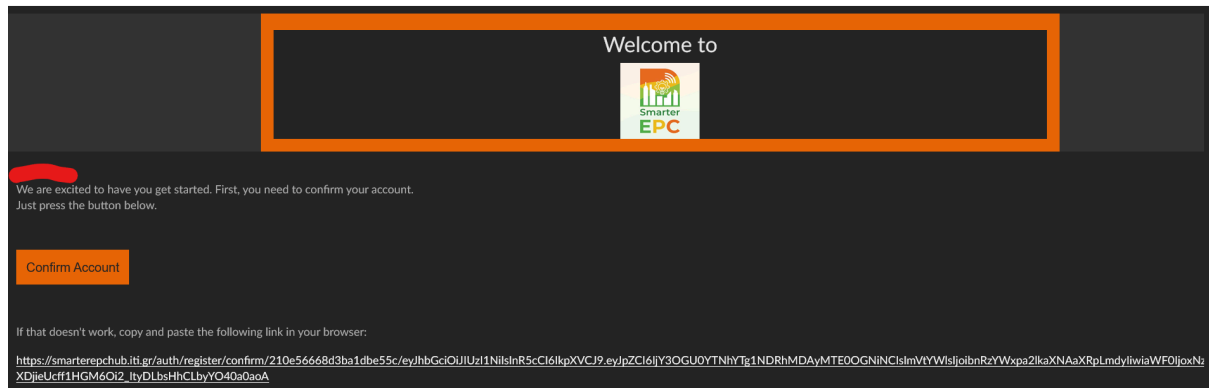
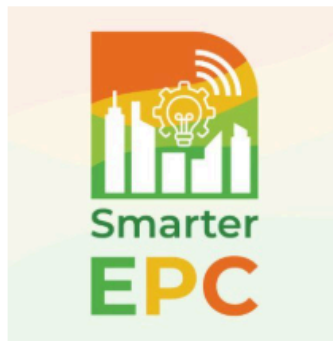


Figure 6. Verification email, part of the 2-step user verification process

3.1.2 Login

Logging into the SmarterEPC Hub is both secure and straightforward. Users simply enter their credentials to access their personalised dashboards and tools. For enhanced convenience and accessibility, the hub also supports Google login, allowing users to sign in with their Google accounts.



Login

E-mail *

Password *

[Forgot my password](#)

Login



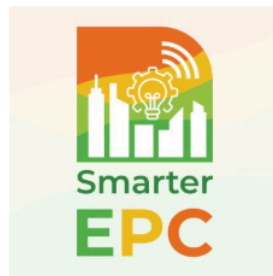
Sign in with Google

Don't have an account? [Register here](#)

Figure 7. Login page for smarterEPC Hub

To further strengthen security, upcoming versions of the hub may include two-factor authentication and CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart) to protect against unauthorised access while maintaining a user-friendly login process.

A password recovery mechanism is available to safeguard accounts while ensuring a smooth login experience for users who forget their passwords (Figure 8 and Figure 9).



Forgot Password

Oh snap!

Email not found

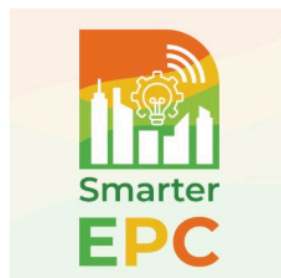
E-mail

Enter e-mail

- Email is required.
- Email must contain at least 6 characters.
- Please provide a valid email.

Request Password

Remember your password? [Log in](#)



Forgot Password

Request Success!

If a matching account was found an email was sent to allow you to reset your password. Please make sure to check both your inbox and spam emails.

Figure 8. User password retrieval page

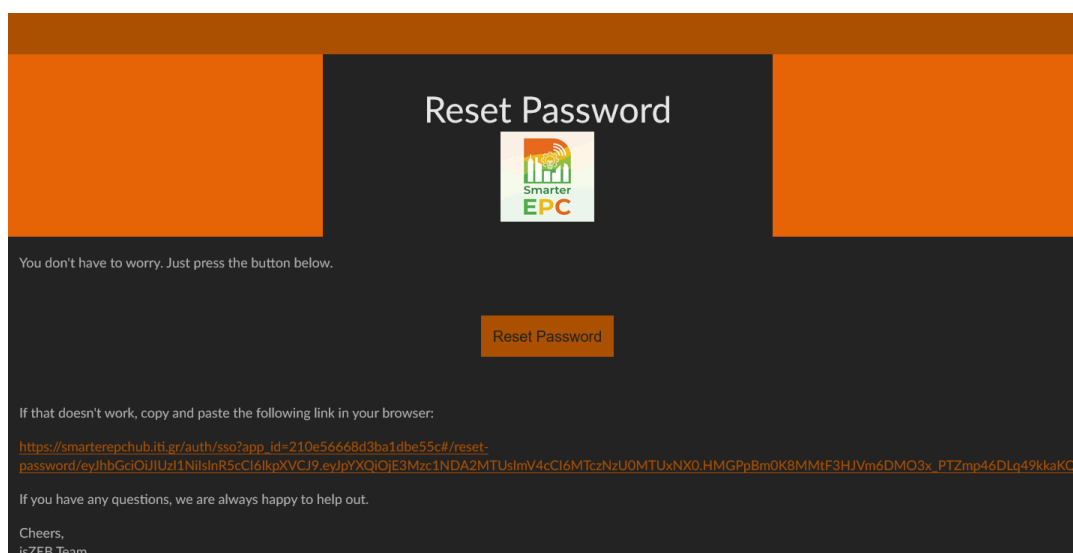


Figure 9. User password reset password verification email

3.2 Hub Navigation

Navigating the platform has been designed to feel natural and straightforward, so users can easily find the tools and information they need. The interface ensures that all essential features are just a click away, providing a smooth and frustration-free experience.

3.2.1 Main Page and Language

The main page serves as the central menu for navigating all major sections of the SmarterEPC Hub (Figure 10). Whether managing building data, accessing the tool selection wizard, using utilities, or using the support/user guide menu, the page is designed to be user-friendly and logically structured, enabling users to quickly and easily reach the features they need most.

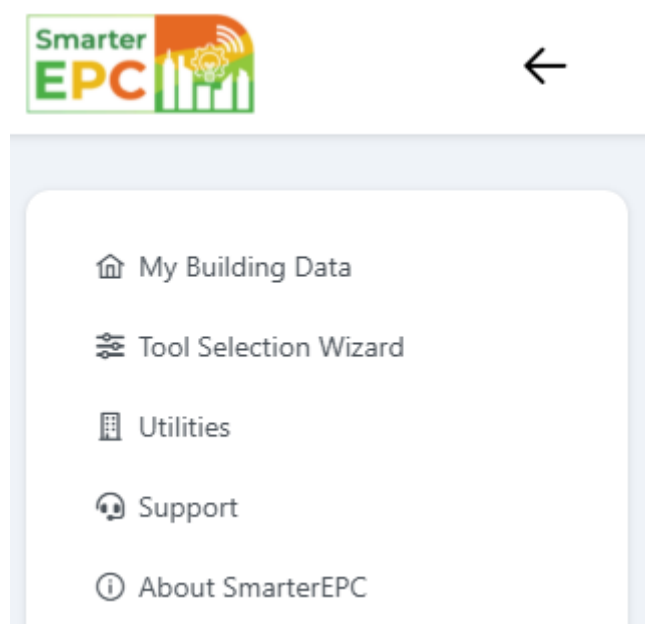


Figure 10. SmarterEPC Hub main menu, showcasing core functionalities and navigation options available to users

Recognising that every user has unique needs, the platform allows customisation of its interface. Users can choose their preferred language (Figure 11); currently, 7 languages (EN, EL, FR, IT, NL, RO, FI) are supported out of the 24 EU official ones.

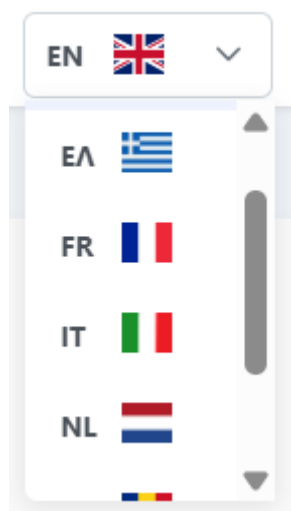
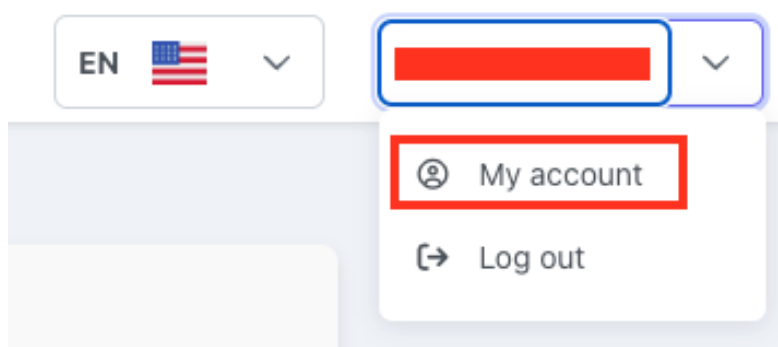


Figure 11. Multi-language support

3.2.2 User Profile Management

Figure 12 showcases the user account interface, where individuals can review and modify their personal information. Users have the ability to update their profiles, ensuring their details remain current and accurate.



D3.3 – Design and Development of the Smarter EPC Platform

Edit

Account and Contact Information

Role

super admin

First Name*

SuperAdmin

Last Name*

Organization Name

Organization Name

E-mail*

Contact Phone Number

* The fields are necessary to create an account

← Exit edit mode

Cancel Changes

Save Changes

Account and Contact Information

Role

super admin

First Name*

SuperAdmin

Last Name*

Organization Name

Organization Name

E-mail*

Contact Phone Number

* The fields are necessary to create an account



Figure 12. Account information and verification page, featuring user role details, contact information fields

3.3 Tool selection wizard

The SmarterEPC Hub features its own selection tool wizard, which helps users identify and select the most suitable tool for their specific needs. This wizard aligns with the project's goal of integrating and simplifying access to EPC and SRI tools by guiding users to the most appropriate option based on their inputs and requirements.

3.3.1 Step 1 - Assessment Type

Figure 13 illustrates the first step in the tool selection wizard, where users choose the assessment type. This step is critical for tailoring the recommendations to the specific needs of the building under analysis.

The screenshot shows the 'Tool Selection Wizard' interface. At the top, a progress bar indicates four steps: 1. Assessment Type (highlighted with an orange circle), 2. Building Data, 3. Features, and 4. Results. A 'Restart Wizard' button is located in the top right corner. The main content area asks, 'Which Assessment Type do you want to perform for your building?'. Below this question, there are three options presented in boxes. The first box, labeled 'SRI' below it, contains the text 'Smart Readiness Indicator' and a circular gauge icon. The second box, labeled 'EPC' below it, contains the text 'Energy Performance Certificate' and a bar chart icon. These two boxes are grouped by a red border and separated by the word 'OR'. The third box, labeled 'SRI and EPC' below it, contains the text 'Smart Readiness Indicator Energy Performance Certificate' and icons for both a gauge and a bar chart.

Figure 13. Choosing the Assessment Type.

3.3.2 Step 2 - Building Data

In the next stage, users are presented with the option to include building data in the assessment process. This step allows for a more personalised analysis by incorporating relevant building-specific information.

D3.3 – Design and Development of the Smarter EPC Platform

Tool Selection Wizard

1 Assessment Type 2 Building Data 3 Features 4 Results

Restart Wizard

Upload building Data
Select a file to use for the assessment type of your building

Building
Select a building

Building Data
Select a building data file **Upload**

We will make it compatible with the recommended assessment tool
Then you will be able to use it at the appropriate format for your building assessment

< Previous **Skip >** **Next >**

Figure 14. Choosing Building Data (optional)

Figure 15 provides a guide for selecting existing buildings or associated data stored within the platform. It simplifies the process by enabling users to utilise pre-uploaded data.

Tool Selection Wizard

1 Assessment Type 2 Building Data 3 Features 4 Results

Restart Wizard

Upload building Data
Select a file to use for the assessment type of your building

Building
Test
Test
Test2
Test building
Testbuilding2
testbuildi100

Building Data
Select a building data file **Upload**

We will make it compatible with the recommended assessment tool
Then you will be able to use it at the appropriate format for your building assessment

< Previous **Skip >** **Next >**

Step 1

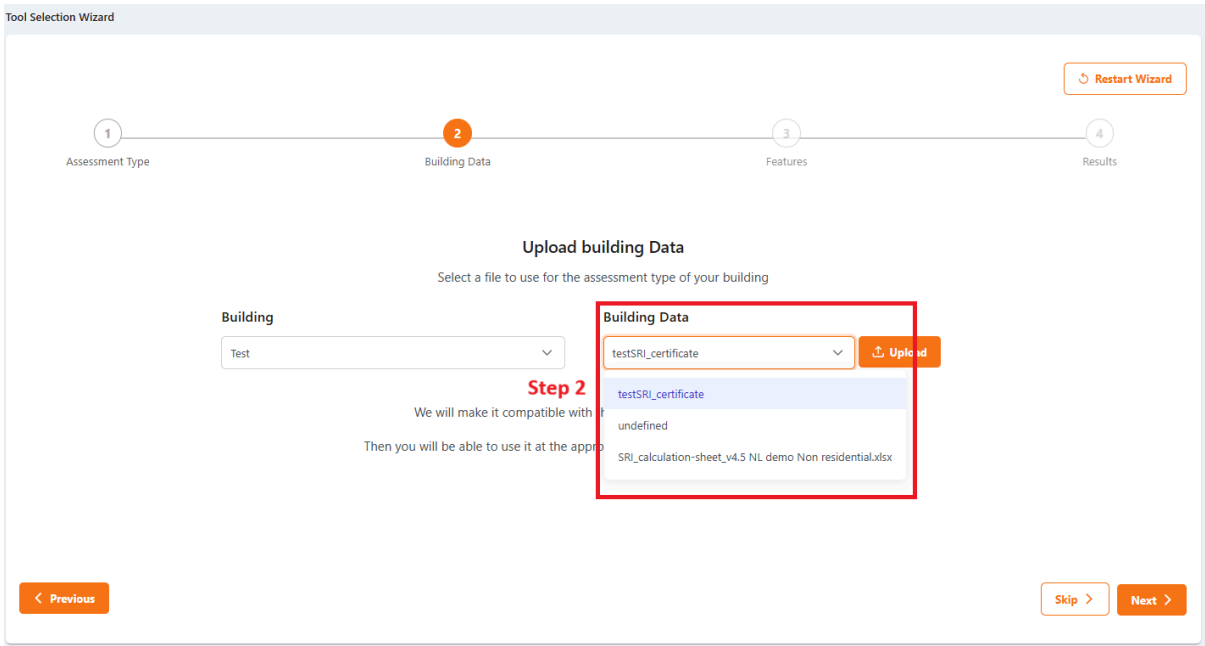


Figure 15. Steps to choose from available buildings and building data (optional)

Figure 16 shows how users can upload building data directly from their local storage. This feature ensures that users can seamlessly integrate external data into the platform in ifc format for EPC data or xlsx for SRI data.

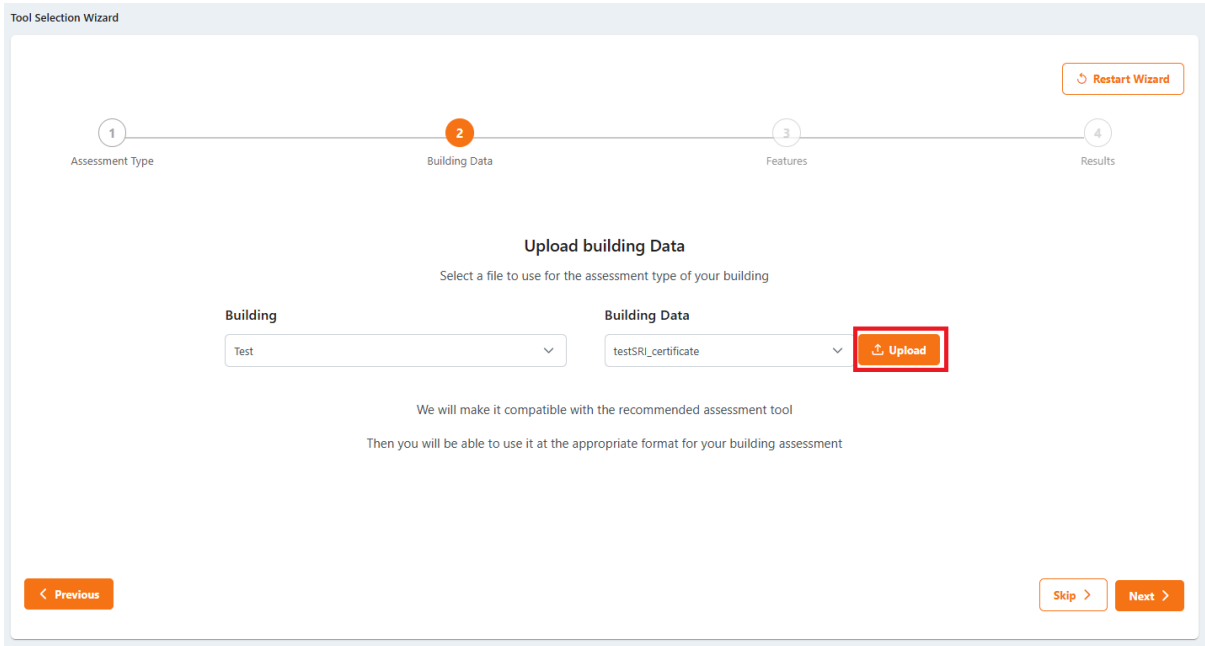


Figure 16. Option to upload building data from local storage

3.3.3 Step 3 - Tool recommendation

The SmarterEPC Hub integrates a decision-tree driven tool recommendation system designed to guide users toward selecting the most appropriate tools for their specific needs. This system leverages weighted criteria and user inputs to ensure tailored redirection, enhancing the effectiveness of the hub's functionalities. The decision-tree mechanism evaluates tools based on a series of user inputs and preferences, structured into weighted steps that assess the following categories:

- **User skill level:** Identifies whether the user is a beginner, intermediate, or expert, influencing the complexity of tools recommended.
- **Purpose of use:** Determines the primary goal, such as SRI assessment type (basic or advanced), type of Energy Certification (as-designed or operational), investment planning or recommendations
- **Preferred features:** Matches user preferences in the available advanced features such as multilingual support with national adaptations or real-time performance monitoring of buildings/IoT integration

SRI tools

The tool recommendation process within the SmarterEPC Hub is specifically designed to guide users toward the most suitable SRI tools by assigning weighted scores to user inputs across four critical steps:

Step 1 - Basic Information: Captures fundamental details, such as the user's skill level and general purpose of use.

Step 2- Purpose of use: Identifies the user's primary purpose for using an SRI tool. Common purposes include SRI assessments only, investment planning, or training, helping narrow down tools that match the intended use case.

Step 3 - SRI Assessment options: Evaluates specific SRI assessment needs, determining whether the user requires basic or advanced functionalities. It also aligns recommendations with established methodologies like Method A, B, or C to ensure compatibility.

Step 4 - Advanced functionalities and further customisation: Explores the user's additional preferences, such as real-time monitoring, support for multilingual platforms or IFC document extraction, to refine the tool recommendation.

Weighted scores are then assigned to tools like easySRI, Smart², SRI2MARKET, and U-CERT, dynamically guiding users to the most suitable tool for their requirements. This efficient process simplifies decision-making while ensuring optimal outcomes. By applying these weighted factors, the SmarterEPC Hub dynamically redirects users to the most suitable tool for their needs, minimising effort while ensuring optimal outcomes.

Figure 17 depicts the tool selection wizard for SRI tools. It assists users in identifying the most suitable SRI tools for their buildings.

D3.3 – Design and Development of the Smarter EPC Platform

Tool Selection Wizard

1 Assessment Type 2 Building Data 3 Features 4 Results

Restart Wizard

User's Skill Level? (Can select only one)

☐ Beginner

☐ Intermediate/Expert

Next >

Tool Selection Wizard

1 Assessment Type 2 Building Data 3 Features 4 Results

Restart Wizard

25%

Purpose of Use? (Can select more than one)

☐ SRI Assessment

☐ Investment Planning and Smart Readiness Recommendations

☐ SRI Learning or Training

< Previous

Next >

Figure 17. Example for the SRI tool selection wizard

EPC tools

The EPC tool recommendation process within the SmarterEPC Hub is specifically designed to guide users toward the most suitable EPC tools by assigning weighted scores to user inputs across four critical steps. This methodology ensures a seamless, tailored tool selection experience, allowing users to make informed decisions based on their specific certification needs.

Step 1 - Basic Information: The first step in the EPC tool recommendation process gathers essential details to define the certification scope. Users specify whether they aim to certify an individual building or a larger-scale project, such as a neighbourhood. For building-level certifications, the system prioritises tools suited to detailed assessments like design-stage performance or operational energy efficiency. For neighbourhood-level certifications, tools that manage broader data inputs and provide aggregated results are recommended.

Step 2 - Type of Energy Certification: This step identifies whether the focus is on pre-construction evaluations or post-construction performance. As-Designed Energy

D3.3 – Design and Development of the Smarter EPC Platform

Certification assesses a building's performance against its design specifications, while Operational Energy Certification evaluates real-world energy efficiency after construction.

Step 3 - Certification Preferences: This step refines tool recommendations based on user priorities. For As-Designed Certification, preferences may include cost-optimal design, BIM integration, or suitability for non-residential buildings. For Operational Certification, preferences may focus on human comfort, transparency in aggregated results, or life-cycle performance. Aligning recommendations with specific goals ensures the selected tool meets project needs.

Step 4 - Advanced Functionalities and Further Customisation: The final step considers advanced features like digital twin creation, integration with logbooks and renovation passports, energy benchmarking, or neighbourhood-level certification support. Additional options, such as AI-driven energy recommendations, multilingual platforms, and real-time IoT

Weighted scores are assigned to tools like D²EPC and SmartLivingEPC, dynamically guiding users to the most suitable tool for their specific needs. The SmarterEPC Hub evaluates user inputs across key steps—such as certification scope, energy certification type, user preferences, and advanced functionalities—by assigning weighted factors at each stage to calculate overall suitability. By applying these weighted scores, the SmarterEPC Hub dynamically redirects users to the tool best suited for their requirements. For instance, D²EPC may be recommended for users focusing on detailed building-level certifications or cost-optimal designs, while SmartLivingEPC may be prioritised for neighbourhood-level certifications or projects requiring life-cycle performance analysis and multilingual support.

Figure 18 shows the Energy Performance Certificate (EPC) tool selection wizard. This step helps users choose the right EPC tools tailored to their assessment needs.

D3.3 – Design and Development of the Smarter EPC Platform

The figure displays two screenshots of the 'Tool Selection Wizard' interface. Both screenshots show a progress bar at the top with four steps: 1 Assessment Type, 2 Building Data, 3 Features, and 4 Results. The current step is 3, Features, which is highlighted with an orange circle. A 'Restart Wizard' button is located in the top right corner of both screenshots.

The top screenshot shows the 'Certification Scope' section, which includes the text '(Can select more than one)' and two checkboxes: 'Building-Level Certification' and 'Complex or Neighborhood-level Certification'. A 'Next >' button is located at the bottom right of this section.

The bottom screenshot shows the 'Type of Energy Certification' section, which includes the text '(Can select more than one)' and two checkboxes: 'As-Designed Energy Certification' and 'Operational Energy Certification'. A '< Previous' button is located at the bottom left, and a 'Next >' button is located at the bottom right of this section. A progress bar below the wizard steps indicates that 25% of the process is complete.

Figure 18. EPC tool selection wizard

Results

Figure 19 displays the results from the SRI tool selection process, highlighting the recommended tools based on the user selection input.

D3.3 – Design and Development of the Smarter EPC Platform

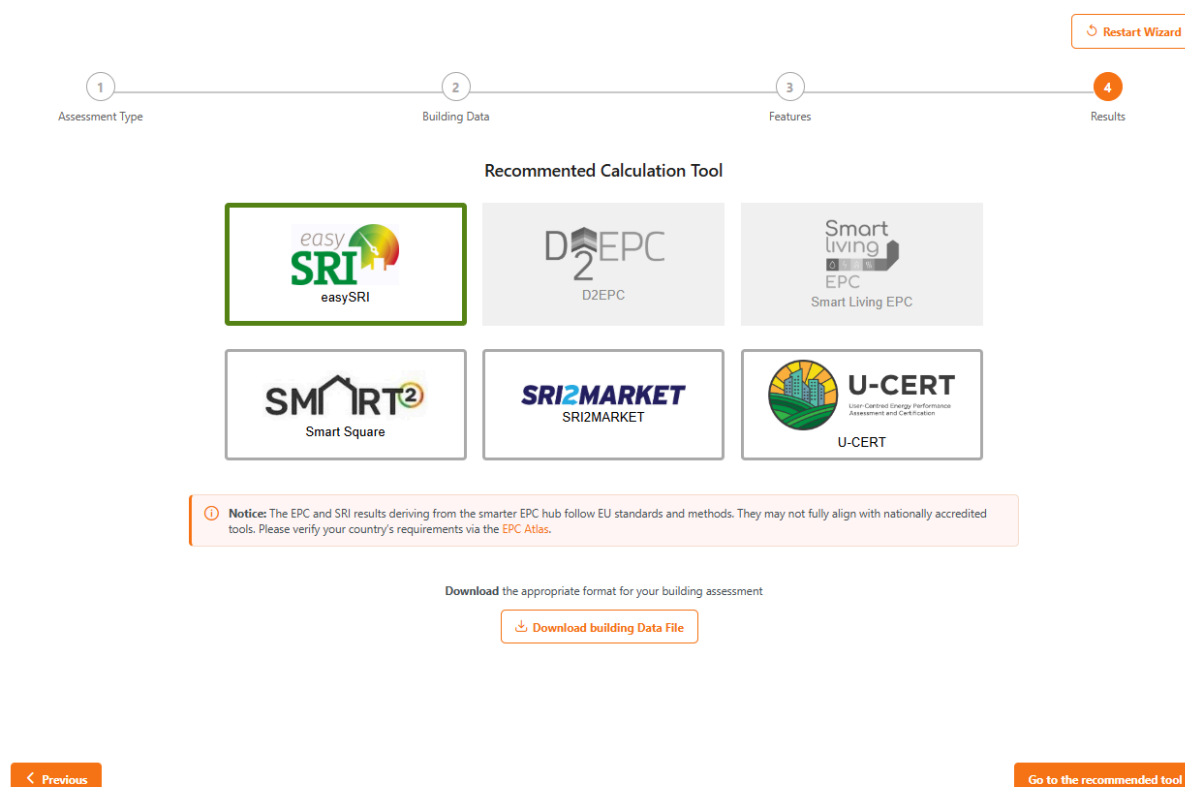


Figure 19. Recommended SRI tool results

Similar to the previous figure, Figure 20 shows the recommended tools from the EPC selection process, ensuring the user's specific requirements are met, while Figure 21 shows the information tool tip for the suggested tool and an option to download converted data. In more detail:

EPC tools:

- D2EPC offers:
 - o Digital Twin Creation: Provides a complete digital representation of the building using BIM-based static and dynamic data.
 - o Added Value Services Suite: Personalized recommendations for energy renovation, benchmarking, and forecasting.
 - o GIS Integration: Facilitates visualization of aggregated results for incentivization and restrictions.
 - o As-Designed and As-Operated Energy Certification: Supports both pre-construction and operational performance evaluations.
- SmartLivingEPC offers:
 - o Life Cycle Performance: Includes life-cycle performance in energy certification.
 - o Operational Certification: Weighted approach for building behavior assessments.
 - o Complex-Level EPC: Extends beyond single buildings to neighborhood-level certification (Building EPC & Complex EPC).

D3.3 – Design and Development of the Smarter EPC Platform

- o Digital Logbook and Renovation Passport Compatibility: Fully integrates with digital databases for renovation passports.

SRI tools:

- U-CERT is best for entry-level users or anyone who needs a simple, straightforward SRI assessment tool.
- SRI2MARKET is best when you need (i) multilingual support, national adaptations, and dynamic scorecards, and (ii) learning modules plus cross-analysis capabilities.
- SmartSquare is (i) ideal for real-time performance monitoring, IFC integration, and cost-optimal recommendations, and (ii) well-suited for advanced assessments with cloud-based functionality.
- easySRI focuses on (i) investment planning and machine-learning-based recommendations, and (ii) lets users test CAPEX-based options to improve SRI scores.

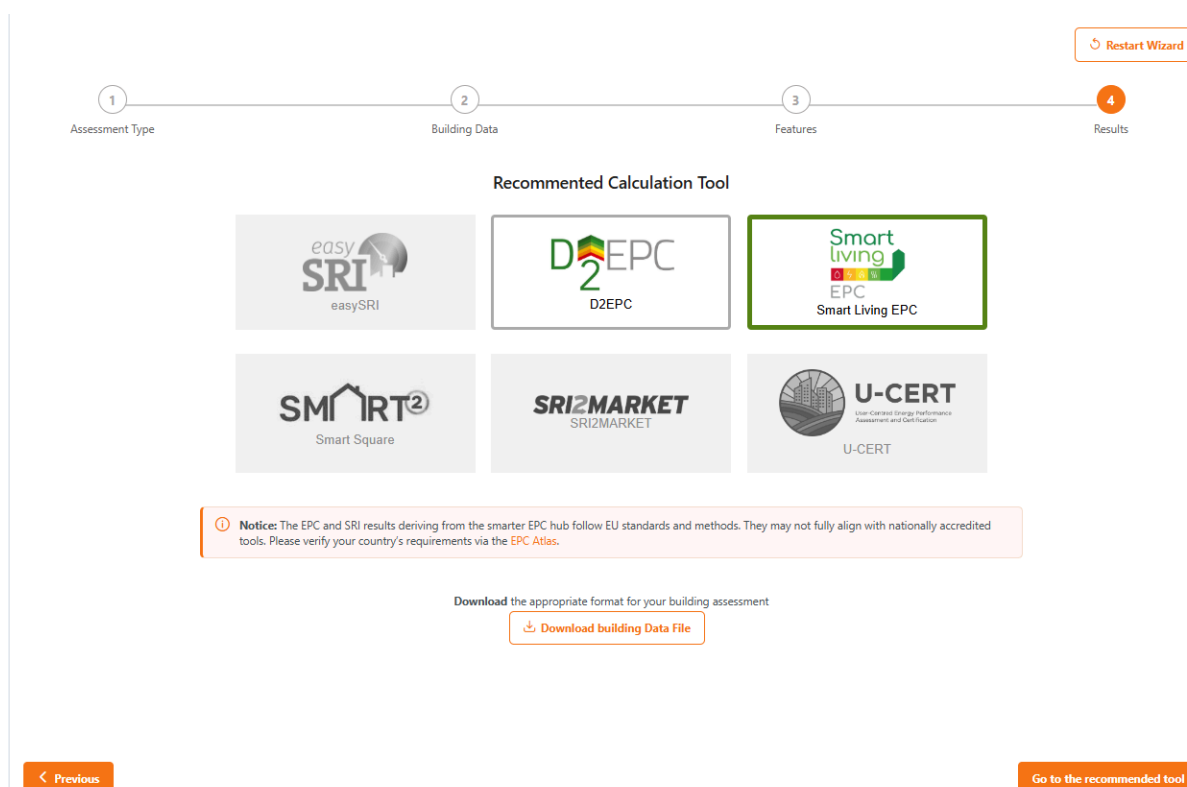


Figure 20. Recommended EPC tool results

D3.3 – Design and Development of the Smarter EPC Platform

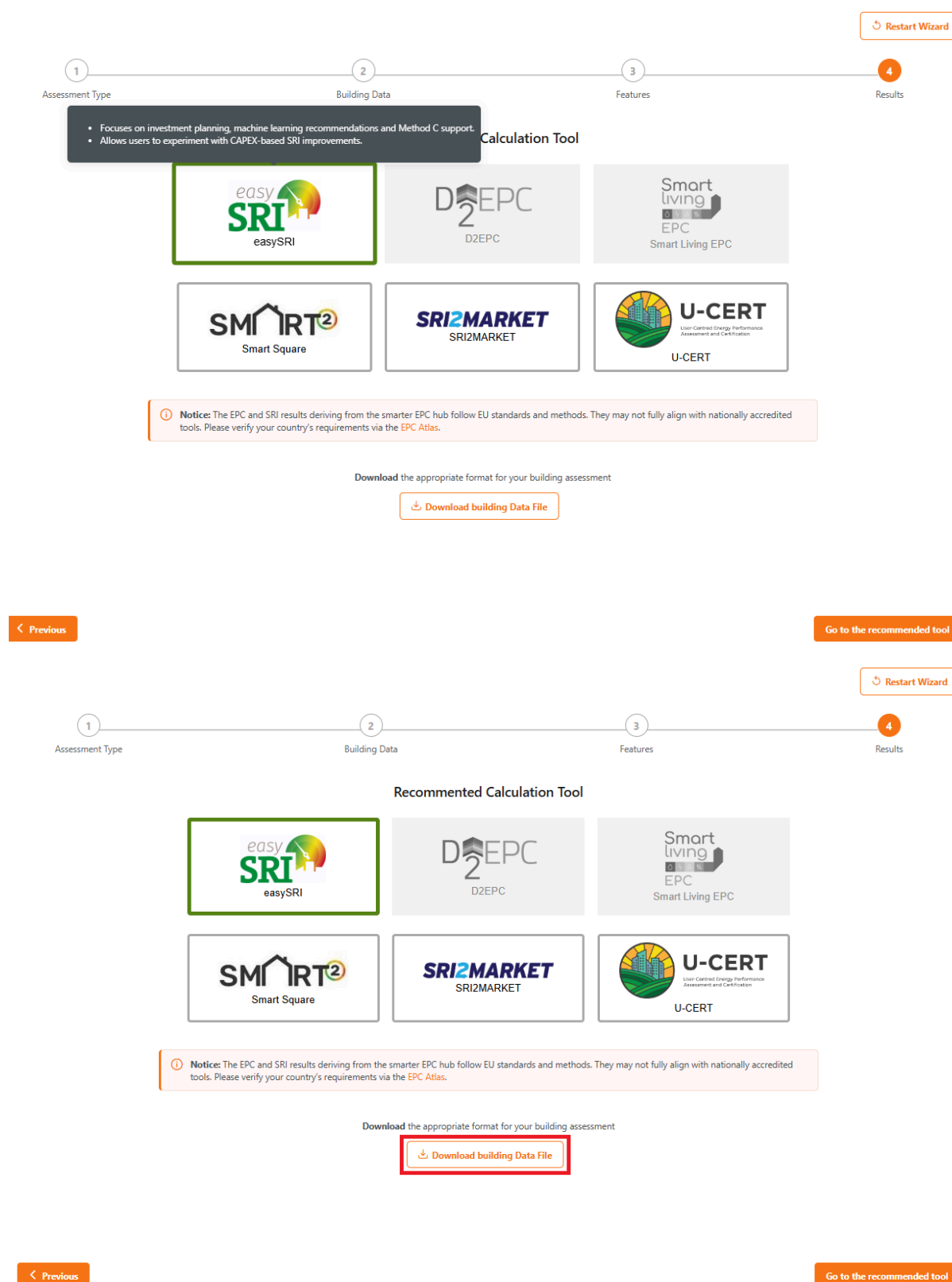


Figure 21. Information tool tip for the suggested tool and option for downloading the converted building data

3.4 Managing buildings

3.4.1 Adding New Buildings

Figure 22 demonstrates the process of adding a new building, including filling out the necessary details in a pop-up window, explaining that SmarterEPC Hub handles the collection and organization of EPC and SRI building data. All calculations are performed by external tools, to which the platform forwards the structured data for processing.

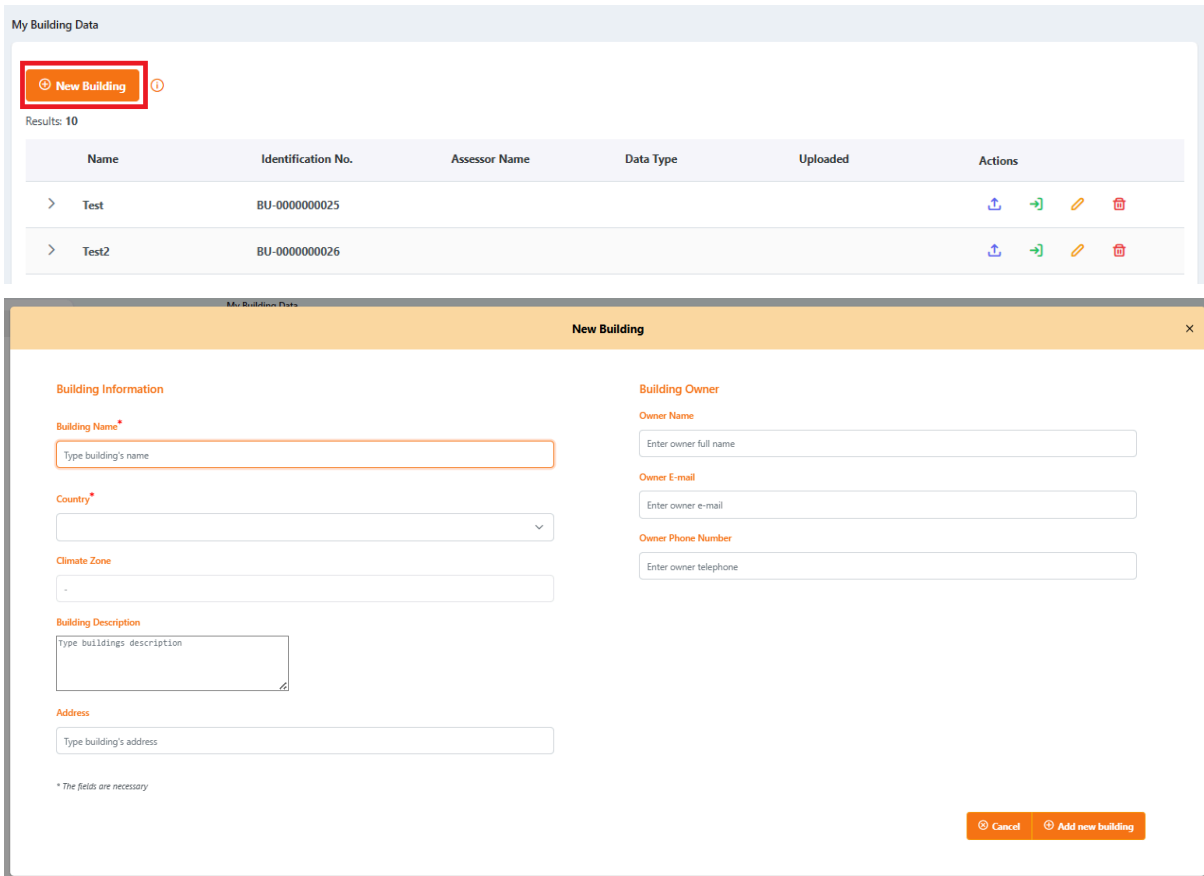


Figure 22. Adding a new Building

3.4.2 Viewing and editing Buildings

Figure 23 highlights the button that allows users to view detailed data for a specific building.

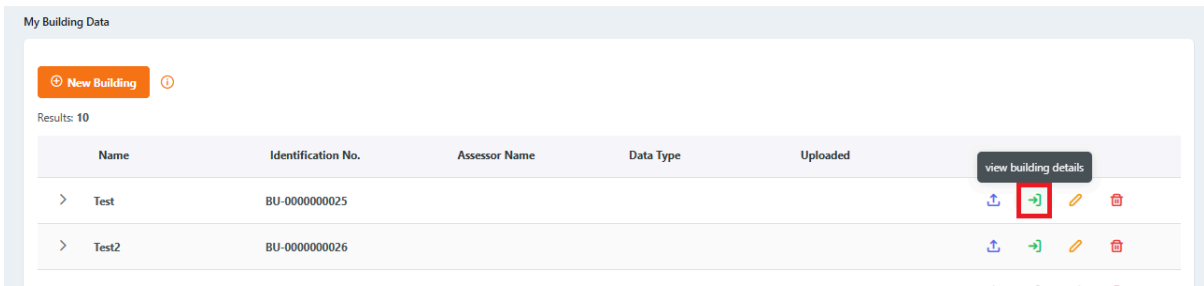


Figure 23. Viewing details of Building Data

Figure 24 illustrates the steps to edit an existing building's information, ensuring that data remains accurate and up-to-date.

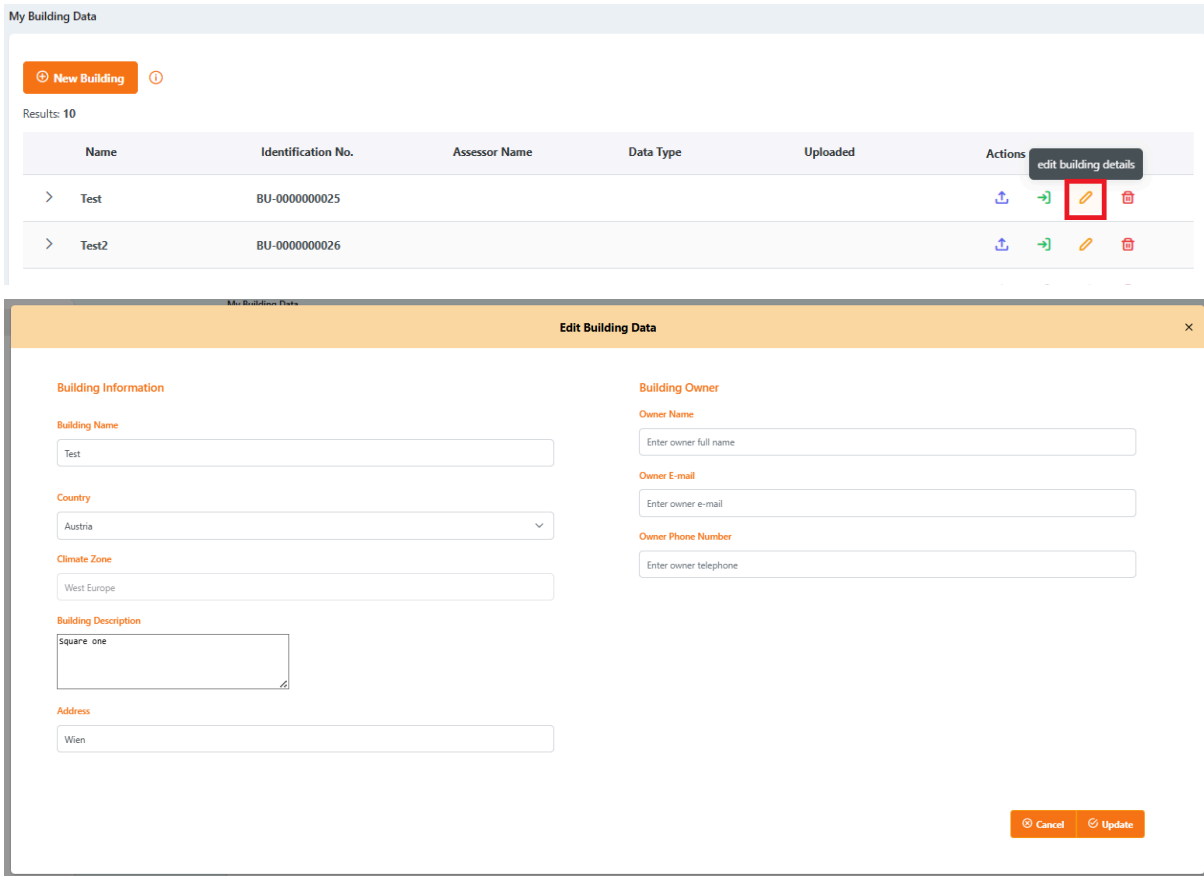


Figure 24. Editing building details

Figure 25 presents how users can delete all information associated with a building using a single button.

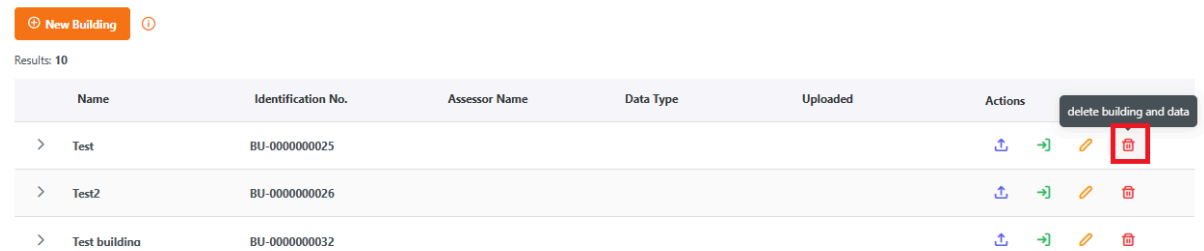


Figure 25. Deleting function of Building Information

3.5 Building data

Over time, building data may require updates or modifications. This feature enables users to easily make adjustments, such as updating operational details, adding new building

information, viewing existing entries, or removing outdated records. The goal is to ensure that the data remains accurate and relevant.

3.5.1 Uploading new building data

SRI

Keeping track of SRI certificates is a critical aspect of managing building performance. This feature allows users to upload new SRI assessments/certificates or generate them directly (Figure 26), ensuring all building documentation is stored securely and easily accessible.

The screenshot shows the 'My Building Data' interface with a table of building data. A modal titled 'Upload New Building Data' is open, asking 'For which type of calculation do you want to upload data?'. The options are EPC, SRI, and Joint Data. The SRI option is selected. The modal then asks 'How do you want to add a new certificate?' and provides two options: 'Create a new SRI certificate' and 'Upload SRI certificate from Excel (.xlsx)'. The 'Upload SRI certificate from Excel (.xlsx)' option is selected. The modal also includes a 'Certificate Name' field and 'Cancel' and 'OK' buttons.

Name	Identification No.	Assessor Name	Data Type	Uploaded	Actions
Test	BU-0000000025				Step 1
Test2					
Test b					
Testb					
testb					
Testb					
TEST					
TEST BOARD	BU-0000000079				

Upload New Building Data

For which type of calculation do you want to upload data?

Select a type

EPC

SRI

Joint Data

Cancel OK

For which type of calculation do you want to upload data?

SRI

Certificate Name: Type certificate's name

How do you want to add a new certificate?

Create a new SRI certificate

Upload SRI certificate from Excel (.xlsx)

Cancel OK

Upload New Building Data [X]

For which type of calculation do you want to upload data?

SRI [v]

Certificate Name test

SRI Calculation Method

Select one of three options

- ☒ Simplified (method A) ⓘ
- ☐ Detailed (method B) ⓘ
- ☐ Custom services mix ⓘ

Step 6

Step 7

[X] Cancel [✓] OK

Figure 26. Selection menu of SRI data upload of a new Building

EPC

Keeping track of EPC certificates is a critical aspect of managing building performance. This feature allows users to upload new EPC assessments/certificates (Figure 27). The same logic will be implemented as in the SRI approach shown above.

The Hub expects IFC files that meet the following minimum requirements:

- IFC version/schema: IFC4
- Thermal zoning: The model must include at least one thermal zone
- Spaces: The model must include at least one space, and that space must be assigned to a thermal zone
- Systems: The model must include at least one system element, represented as IfcUnitaryEquipment

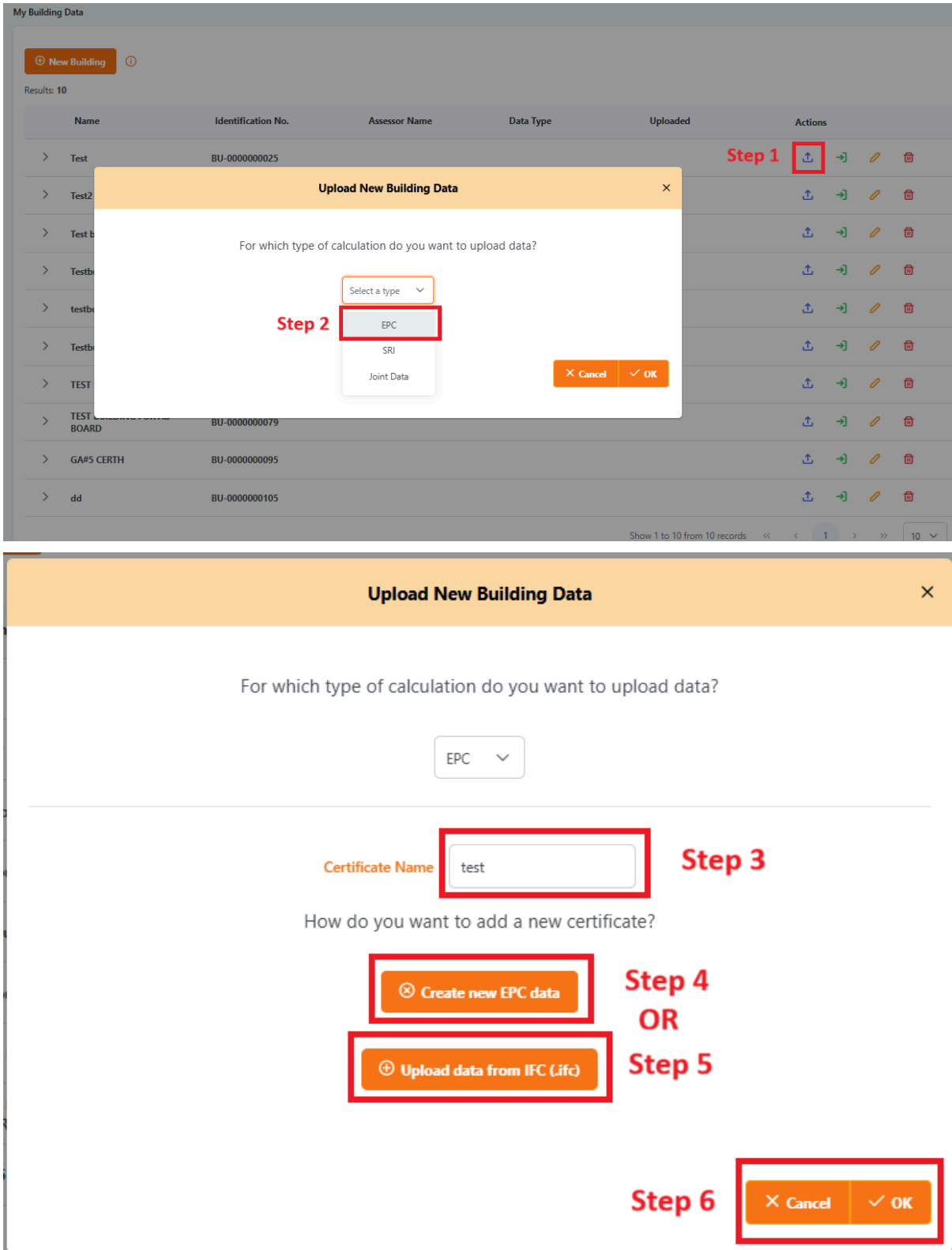


Figure 27. Selection menu of EPC data upload of a new Building

Joint data

The same functionality will eventually be developed with joint data (Figure 28), integrating EPC and SRI insights for comprehensive building performance evaluation (still in development).

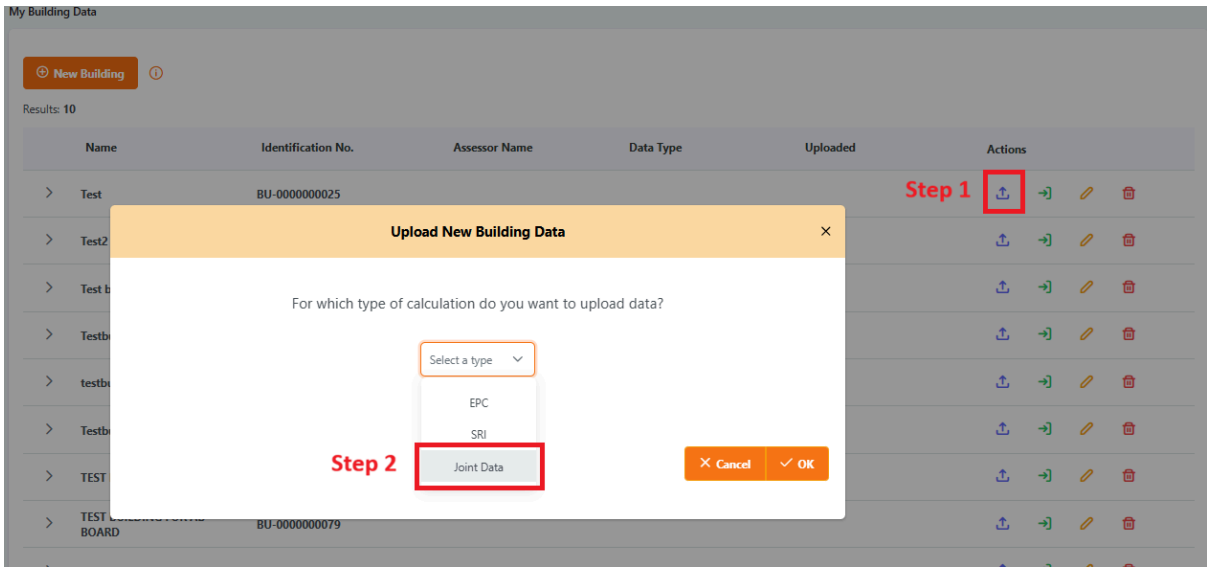


Figure 28. Steps to upload Joint (EPC+SRI) Data (still in development)

3.5.2 Managing Building Data

Viewing data

Figure 29 explains how users can access detailed SRI data for a selected building using a dedicated button.

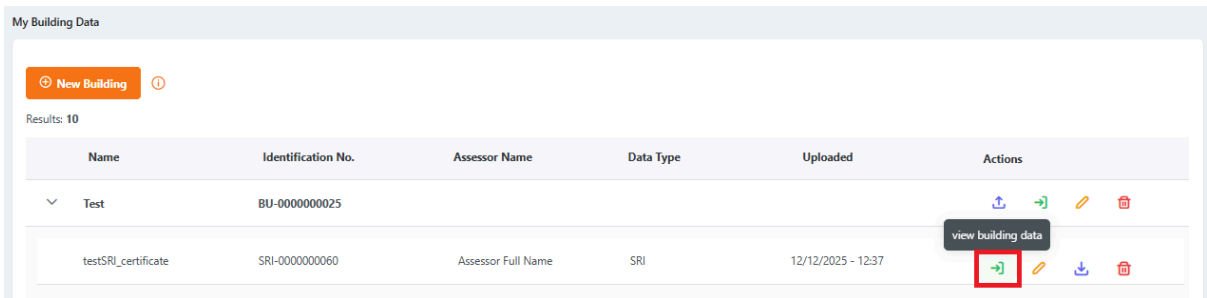


Figure 29. Option to view detailed building data

If the user selects to view building details (for a specific building), there is a redirection to another page that has two separate tabs for EPC or SRI -related data (Figure 30). Figures 31-32 show the SRI forms that the user has access to.

Figures 33-38 illustrate the set of building EPC input data that users are expected to complete across the main tabs.

- At **Building** level, users provide general identification and context information (e.g., building name, country/location, category, construction year, ownership, and basic geolocation such as latitude/longitude/altitude).
- The **Zones** tab captures the main geometric and typology characteristics per thermal zone (e.g., zone name, category, construction type, floor area, volume, and height). In Thermal Systems, users describe the core heating/cooling generation systems by specifying system name and type (e.g., heat pump), energy source, installed capacity,

D3.3 – Design and Development of the Smarter EPC Platform

coverage ratio, and key efficiency fields (production/distribution/terminal efficiencies where available).

- The **Systems** tab is used for additional technical systems (e.g., storage) including category/classification, capacity, grid connection, and installation year.
- The **Spaces** tab records space-level properties such as area, volume, height, category, lighting, and space name/identifier.
- Finally, the **Elements** tab captures envelope/component data (e.g., floors/walls/opaque elements) including element type and category, boundary/contact conditions (e.g., ground), orientation and geometry descriptors (area, perimeter, tilt, elevations), and thermal-related parameters such as absorption, shading reduction factor, and thermal transmittance (U-value).

My Building Data > Test

EPC Data SRI Data Joint Data

+ Add Data

Results: 4

EPC Data No. ↑↓	EPC Class ↑↓	Uploaded ↑↓	Actions view more
0000000098	-	12/12/2025 - 13:14	  
0000000099	-	16/01/2026 - 13:06	  
0000000100	-	19/01/2026 - 10:48	  
0000000102	-	19/01/2026 - 11:28	  

Show 1 to 4 from 4 records << < 1 > >> 10 ▾

My Building Data > Test

EPC Data SRI Data Joint Data

+ Add Data

Results: 3

SRI Data No. ↑↓	Name ↑↓	Verified ↑↓	Method ↑↓	SRI Score ↑↓	Uploaded ↑↓	Actions view more
0000000090	testSRI_certificate	-	Simplified	-	12/12/2025 - 12:37	  
0000000069	undefined	-	Simplified	17.36%	19/02/2025 - 10:37	  
0000000114	SRI_calculation-sheet_v4.5 NL demo Non residential.xlsx	-	Detailed	53.23%	28/04/2025 - 14:08	  

Show 1 to 3 from 3 records << < 1 > >> 10 ▾

My Building Data

- Tool Selection Wizard
- Utilities
- Support
- About SmarterEPC
- Super Admin

Figure 30. Detailed view of available data for a specific building in separate tabs (EPC and SRI)

My Building Data > 0000000025 > View SRI Data > 0000000069

Building Identification No.: 0000000025 Sri Version: 4.5
SRI Data No.: 0000000069 SRI Calculation Method: Simplified

General Info Systems

Building Information

Identification No.
0000000025

Country
Austria

Climate Zone
West Europe

Building Description

Address

Assessor Information

Assessing Organization Name
CERTH

Assessor Full Name

Contact E-mail

Contact Phone Number

Building Current State

Building Type*
Residential

Building Usage*
Single-family house

Total useful floor Area of the building (m²)*
<200

Year of construction*
> 2010

Building state*
Renovated

Figure 31. Building SRI Data, General Info tab

My Building Data > 0000000025 > View SRI Data > 0000000069

Building Identification No.: 0000000025 Sri Version: 4.5
SRI Data No.: 0000000069 SRI Calculation Method: Simplified

General Info **Systems**

Technical Domains

Heating Cooling Domestic Hot Water Ventilation Lighting Electricity Electric Vehicle Charging Dynamic Building Envelope Monitoring & Control

The domain is*

Select one of three options

☒ Present
☐ Absent and Mandatory
☐ Absent, not Mandatory

Assessor's notes for installed systems (up to 200 characters) (optional)

Services (5/5)

[Enable All Domains](#) [Disable All Domains](#)

Code	Description	Percentage - Level
☒ H-1a	Heat emission control	0 % ☐ FL 0 - No automatic control 100 % ☒ FL 1 - Central automatic control (e.g. central thermostat) 0 % ☐ FL 2 - Individual room control (e.g. thermostatic valves, or electronic controller)

Figure 32. Building SRI Data, Systems tab

D3.3 – Design and Development of the Smarter EPC Platform

My Building Data > 0000000025 > View EPC Data> 0000000098

Inform EPC Tools

BuildingZonesThermal SystemsSystemsSpacesElements

Name ⓘ

Altitude (m)* ⓘ

Country* ⓘ

Select a country

Latitude (degrees)* ⓘ

Location* ⓘ

Select a location

Longitude (degrees)* ⓘ

Category* ⓘ

Select a Category

Ownership ⓘ

Construction Year* ⓘ

Zone* ⓘ

Figure 33. Building EPC Data, Building tab

My Building Data > 0000000025 > View EPC Data> 0000000126

Inform EPC Tools

BuildingZonesThermal SystemsSystemsSpacesElements

▼ Building A:376866

Name ⓘ

Building A:376866

Area (m²)* ⓘ

112.34936000000023

Category* ⓘ

Office

Volume (m³)* ⓘ

449.3974400000001

Construction Type* ⓘ

Heavy

Height (m)* ⓘ

Figure 34. Building EPC Data, Zone tab

D3.3 – Design and Development of the Smarter EPC Platform

My Building Data > 0000000025 > View EPC Data> 0000000126 Inform EPC Tools

Building Zones **Thermal Systems** Systems Spaces Elements

Add Thermal System

▼ Outdoor LG simple box KRIPIS v2 SYSTEMS:ARUN100LTE4:350321 🗑️

Name ⓘ	Category ⓘ
Outdoor LG simple box KRIPIS v2 SYSTEMS:ARUN100LTE4:350321	heat_pump
Energy Source ⓘ	Capacity ⓘ
Electricity	31500
Efficiency ⓘ	Coverage Ratio ⓘ
	1
Production System Efficiency ⓘ	Distribution System Efficiency ⓘ
5.74	
Terminal System Efficiency ⓘ	

> Element 2 🗑️

Figure 35. Building EPC Data, Thermal Systems tab

My Building Data > 0000000025 > View EPC Data> 0000000126 Inform EPC Tools

Building Zones Thermal Systems **Systems** Spaces Elements

Add System

▼ Battery Storage 🗑️

Name ⓘ	Capacity (kilowatt) ⓘ
Battery Storage	0
Category ⓘ	Classification ⓘ
battery_storage	
Grid Connection ⓘ	Installation Year ⓘ
	1000

Figure 36. Building EPC Data, Systems tab

D3.3 – Design and Development of the Smarter EPC Platform

My Building Data > 0000000025 > View EPC Data> 0000000126 Inform EPC Tools

Building Zones Thermal Systems Systems **Spaces** Elements

▼ Space 1

Area (m²)* ⓘ	Lighting ⓘ
46.32000000000016	37.161216
Category* ⓘ	Volume (m³) ⓘ
space	185.28000000000065
Height (m) ⓘ	Name ⓘ
4000.0000000000005	1

> Space 2

> Space 3

Figure 37. Building EPC Data, Spaces tab

My Building Data > 0000000025 > View EPC Data> 0000000126 Inform EPC Tools

Building Zones Thermal Systems Systems Spaces **Elements**

▼ Floor:Concrete-Domestic My floor:350452

Name ⓘ	Area (m²)* ⓘ
Floor:Concrete-Domestic My floor:350452	46320000
Category* ⓘ	Orientation* ⓘ
Opaque element	H
Contact* ⓘ	Perimeter ⓘ
Ground	27.44000000000006
Absorption* ⓘ	Style* ⓘ
0.7	Floor
Shading Reduction Factor* ⓘ	Tilt (degrees)* ⓘ
1	Select a tilt
Thermal Transmittance (watt/(m²K))* ⓘ	Bottom Elevation ⓘ
0.31741077256341427	-304.99999999999994
	Top Elevation ⓘ

Figure 38. Building EPC Data, Elements tab

Editing and downloading data

Figure 39 illustrates the steps to edit the name of the SRI data, including options to accept or reject the changes.

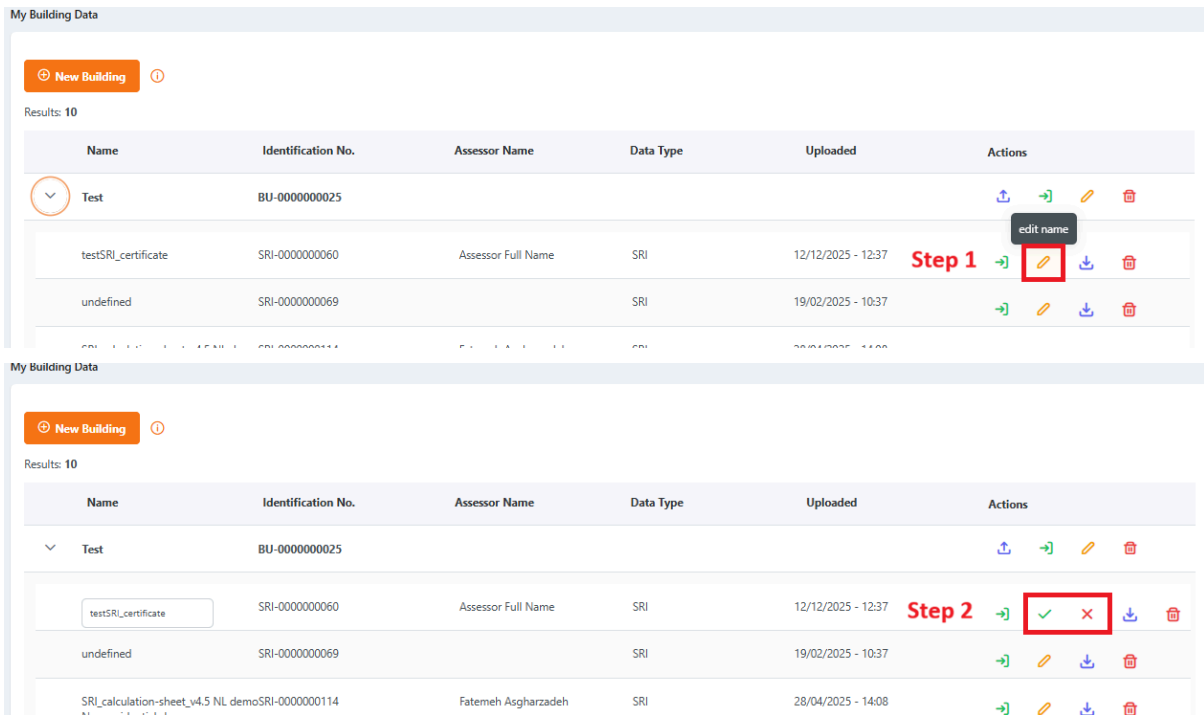


Figure 39. Building SRI Data, edit name option, accept or reject change

Figure 40 shows how to download Building SRI data, and Figure 41 shows how to download EPC data.

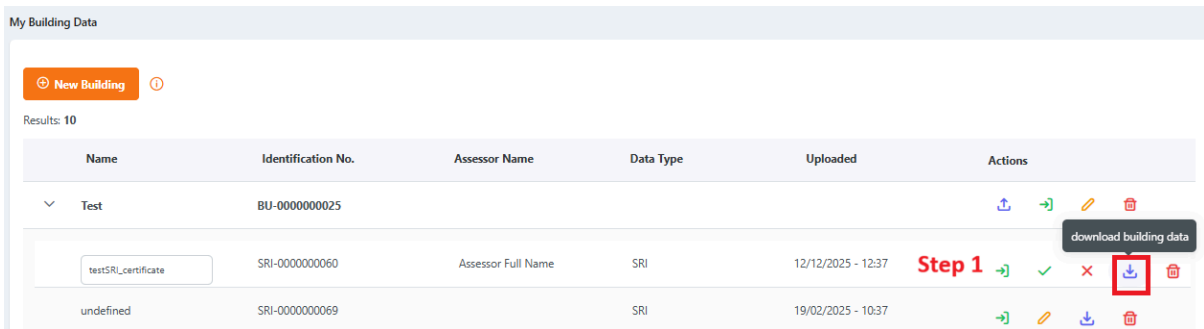




Figure 40. Building SRI Data download option with a pop-up to choose the appropriate schema

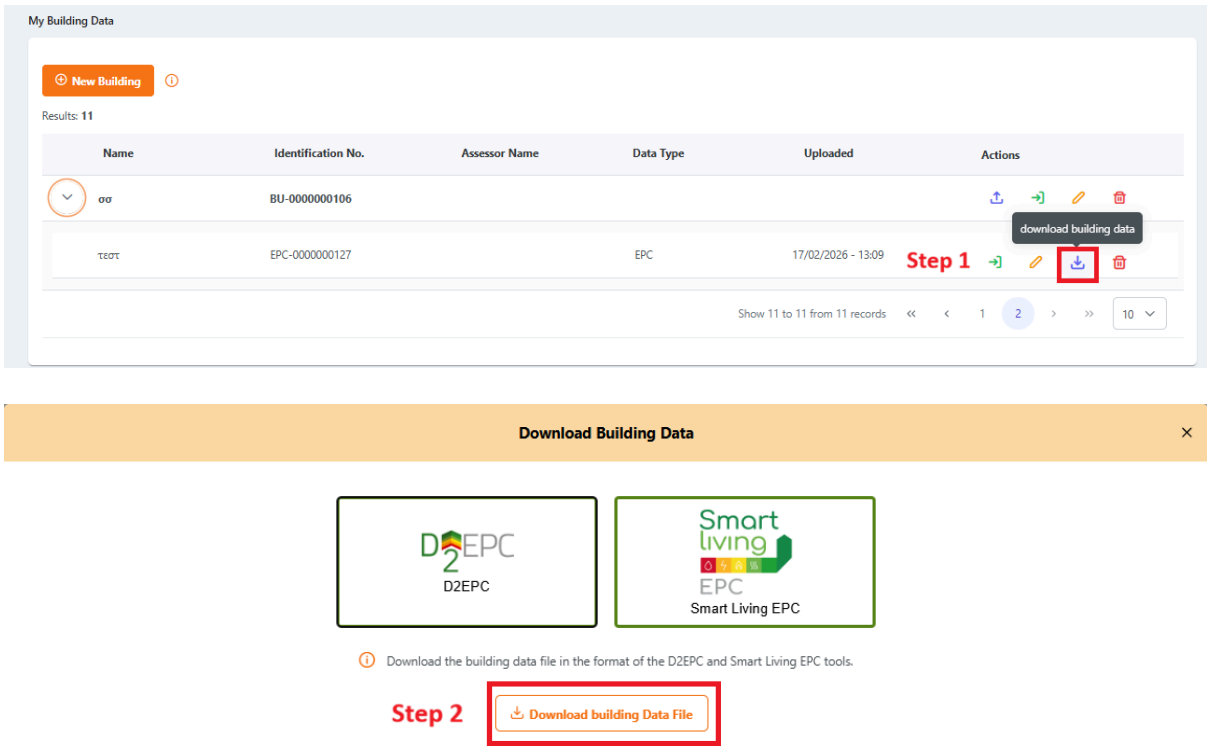
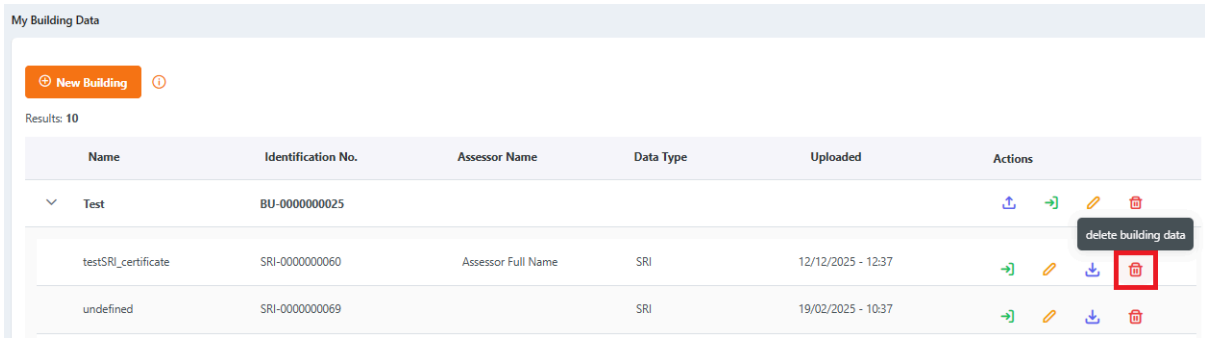


Figure 41. Building EPC Data download option with a pop-up to choose the appropriate schema

Deleting data

Figure 35 shows the button for deleting SRI data associated with a building, ensuring easy data management.



Name	Identification No.	Assessor Name	Data Type	Uploaded	Actions
Test	BU-0000000025				↕ → ✎ 🗑
testSRI_certificate	SRI-0000000060	Assessor Full Name	SRI	12/12/2025 - 12:37	→ ✎ ↓ 🗑
undefined	SRI-0000000069		SRI	19/02/2025 - 10:37	→ ✎ ↓ 🗑

Figure 35. Button to delete Building SRI Data

3.6 Supporting tools / Utilities

The SmarterEPC Hub provides supporting utilities for IFC file management to facilitate data preparation and compatibility with EPC tools (Figure 36). Users can upload IFC files via the "Read IFC files" feature to interactively explore the building's 3D geometry and component properties in a dedicated viewer, or download a pre-compatible sample IFC file through the "Download IFC file" option for testing and onboarding purposes.

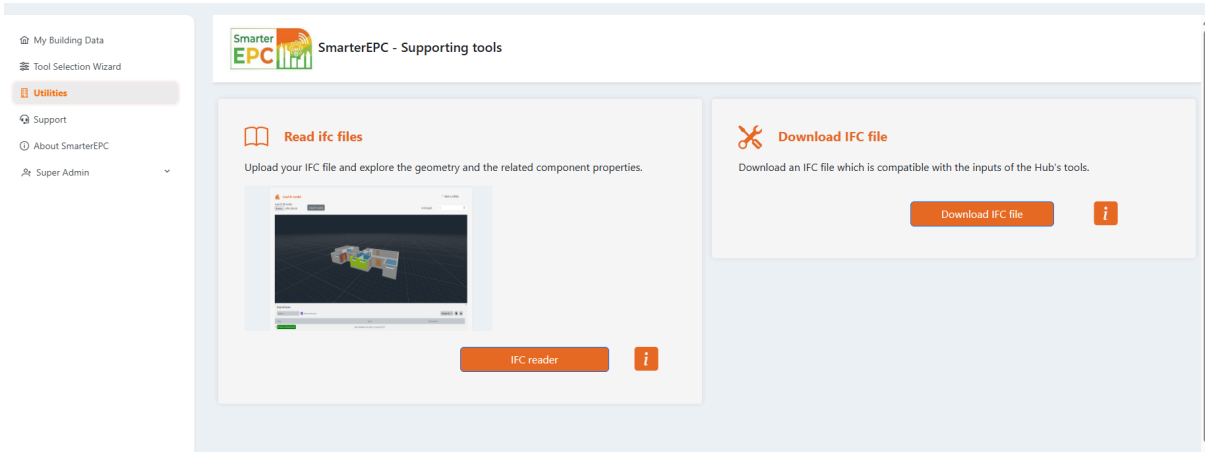


Figure 36. Supporting tools

3.7 Support center

The SmarterEPC Hub Support center (Figure 37) is a dedicated resource tailored to help users seamlessly interact with the platform. It offers detailed guidance on all major functionalities, helping users optimise the hub’s features, improve efficiency, and ensure data security. Tailored to accommodate users of varying experience levels, the support center provides clear and structured instructions to make the most of the platform’s capabilities. Whether a first-time user or an advanced professional, the support center is equipped with tips and tools to enhance the user experience.

For example, one key feature of the Support Center is the ‘Getting Started with the SmarterEPC Hub’ section, which provides essential onboarding information:

D3.3 – Design and Development of the SmarterEPC Platform

- **User Registration and Login:** Step-by-step guidance on creating an account and logging into the platform securely, including options for role-based access (e.g., Administrator, Building Assessor, or Guest).
- **Platform Overview:** A quick tour of the hub's main features, including tool selection wizards, data visualisation dashboards, and integration modules for EPC and SRI evaluations.

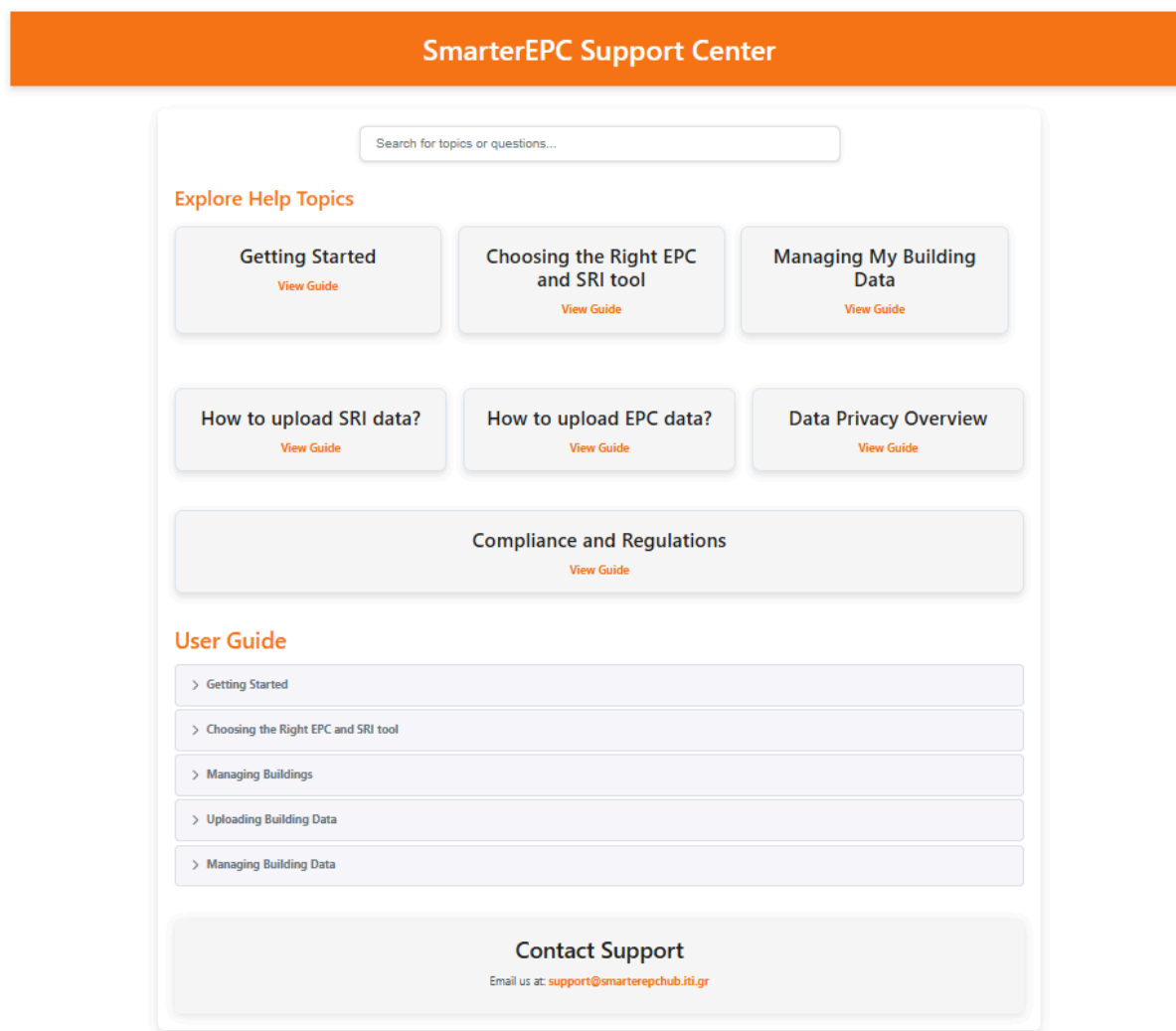


Figure 37. Overview of the SmarterEPC hub support center

3.8 Info about the SmarterEPC hub

This subsection provides an overview of the SmarterEPC Hub, highlighting its role in advancing building smartness and energy efficiency (Figure 38). It details how the platform facilitates seamless communication with EPC and SRI tools, enabling users to streamline their assessment processes and achieve energy efficiency objectives. The SmarterEPC Hub offers a user-friendly interface that simplifies data management while providing valuable insights through its intuitive features and functionalities. By supporting users with efficient

D3.3 – Design and Development of the Smarter EPC Platform

and accessible tools, the SmarterEPC Hub plays a pivotal role in driving smarter, more sustainable building practices.



Smarter EPC Hub: A Suite of digital tools for building smartness and energy performance

The SmarterEPC Hub is the cutting-edge solution for assessors and operators in the building sector to effortlessly evaluate and rate buildings. The hub will ease access to the most complete and updated EPC and SRI assessment tools as well as e-learning materials available in several EU languages.

SmarterEPC also provides common building inspection procedures for the export of EPC and SRI certificates.

An Energy performance certificate (EPC) provides information on the energy performance rating of a building and recommendations for cost-effective improvements.

The SmarterEPC standardised EPC and SRI assessments guarantee that results are credible and comparable, which is of great value for operators and final users. Assessors are guided through the hub to upload the building data, and select among the available digital tools, those aligned with their needs.

External Tools

EPC

- > D^2EPC
- > SmartLivingEPC

SRI

- > easySRI
- > Smart2
- > SRI2MARKET
- > U-CERT

Project Coordinator
R2M Solution France

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Figure 38. Contents of the SmarterEPC Hub About page

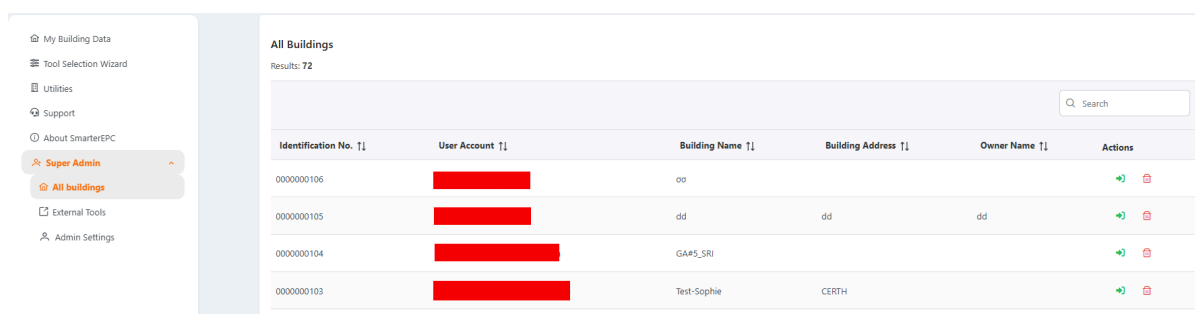
3.9 Admin-Specific Features

This section outlines the tools designed for administrators to efficiently manage the platform, its users, and building data. These features provide control and oversight, ensuring smooth operations and a well-organised system.

3.9.1 Accessing All Buildings

Administrators can view all buildings across the platform, giving them a complete overview that regular users do not have (Figure 39).

D3.3 – Design and Development of the Smarter EPC Platform



Identification No. [1]	User Account [1]	Building Name [1]	Building Address [1]	Owner Name [1]	Actions
0000000106	[REDACTED]	oo			[+] [-]
0000000105	[REDACTED]	dd	dd	dd	[+] [-]
0000000104	[REDACTED]	GA#5_SRI			[+] [-]
0000000103	[REDACTED]	Test-Sophie	CERTH		[+] [-]

Figure 39. Administrator page allowing to overview all database buildings

3.9.2 External Tools

This section displays the exact number of building datasets successfully transferred from the platform to each external tool (Figure 40), allowing administrators to track integration performance and data flow in real time.

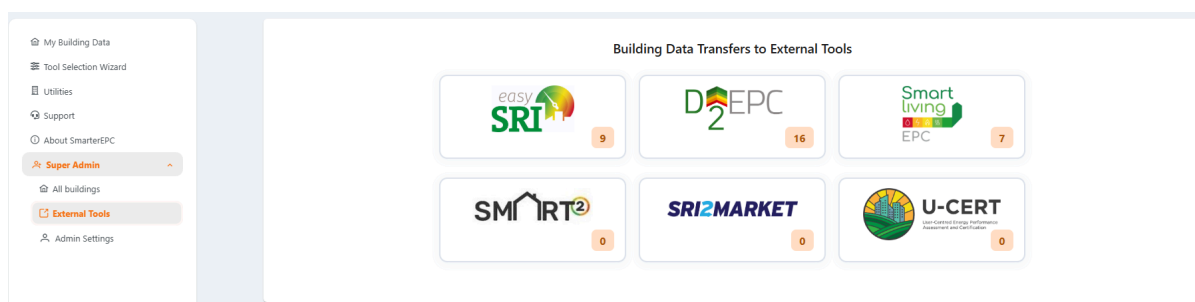


Figure 40. Number of building data transfers to external tools

3.9.3 Admin Settings

Within the admin settings menu option, the administrator has the ability to visualise the pending user registration requests that are part of the 2-step user registration mechanism, but also activate their account, resend activation emails or discard their registration requests (Figure 41). Finally, there is a list of all accepted user registration requests, and the admin also has the possibility to remove user access to the platform (Figure 42).

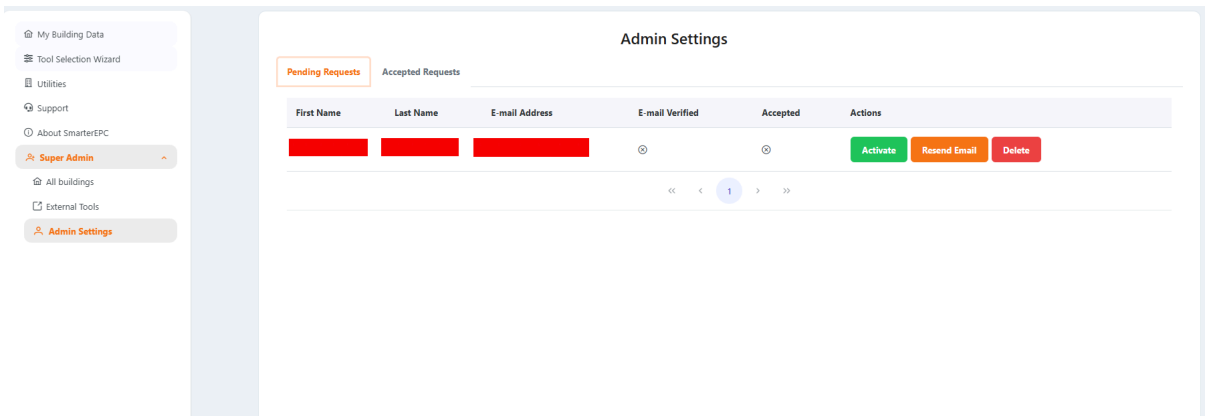


Figure 41. Administrator ability to show pending user registration requests and to activate, resend email or delete user registration requests

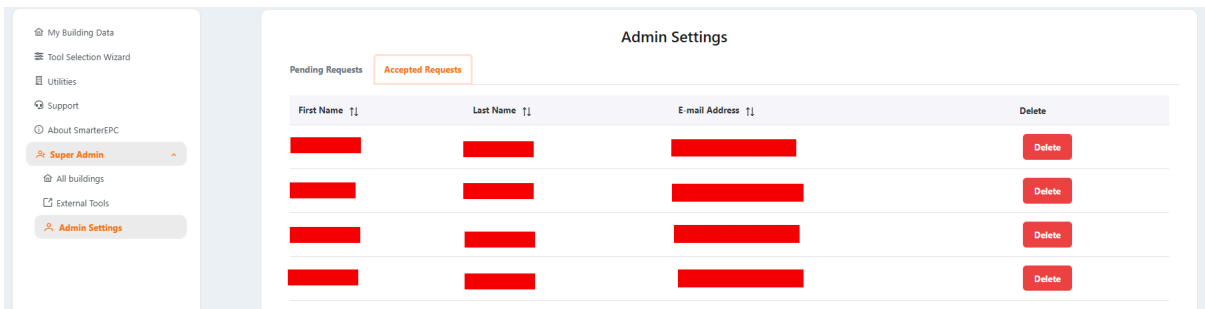


Figure 42. Administrator page functionality to see a list of all user registration accepted requests and remove access to the platform for users

4 Integrations and Compliance

4.1 Integration with other platforms/tools

The SmarterEPC Hub is an innovative digital platform designed to seamlessly integrate with existing EPC and SRI tools, while ensuring compliance with European standards and regulations. By bridging diverse systems and services, the Hub empowers users with a unified, efficient, and precise way to assess building performance and smart readiness. It should be flagged that the user account connectivity with U-CERT platform cannot take place since this platform does not support user registration. Moreover, the dual-purpose integration with EPC tools (SmartLivingEPC and D²EPC) has been finalised, meaning that users registered to the Smarter EPC Hub can automatically gain access and transfer their building data to these two EPC tools. The same stands for easySRI, yet for SRI2MARKET and SmartSquare, there is still work in progress.

The Hub introduces common procedures for building inspections, facilitating the efficient collection of data required for EPC and SRI assessments. Incorporating advanced tools and methodologies, it ensures consistency and comparability across projects, regardless of regional or national variations. The modular architecture of the SmarterEPC Hub allows it to adapt to emerging technologies and regulatory changes seamlessly. This scalability facilitates the integration of new tools and features, ensuring the platform remains versatile and aligned with the diverse requirements of Member States and evolving policy frameworks. Additionally, multilingual e-learning resources (currently 7 out of 24 EU languages) embedded within the platform offer assessors easy access to training and support materials, enabling them to navigate tools effectively and adhere to best practices.

The SmarterEPC Hub features a user-centric design, offering intuitive navigation, clear visualisation of results, and role-specific access for administrators, assessors, and building owners. Through advanced interfaces and dashboards, users can interact with integrated EPC and SRI tools to view assessments and recommendations in a cohesive format.

By harmonising EPC and SRI assessments, the SmarterEPC Hub fosters sustainability and supports the EU's energy efficiency goals. Its role as a unifying platform streamlines certification processes, promotes innovation, and enables smarter, data-driven building evaluations. With its emphasis on simplicity, precision, and regulatory compliance, the Hub represents a transformative solution for advancing energy performance and smart readiness across Europe.

4.2 Security Features and Data Privacy

The SmarterEPC Hub is designed with robust security and data privacy measures to ensure that all user and building information is protected throughout its lifecycle. Fully adhering to the General Data Protection Regulation (GDPR) and other relevant European standards, the platform guarantees that user data is managed securely, transparently, and in compliance with strict privacy norms.

4.2.1 Encrypted Communication

The SmarterEPC Hub employs HTTPS with SSL/TLS encryption, managed through Certbot, to secure all interactions between users and the platform. This ensures that data transmitted over the network is encrypted, safeguarding it from potential interception or unauthorised access during communication.

4.2.2 Secure Data Storage and backup

User and building information are stored securely in a MongoDB database, which incorporates advanced access controls and data encryption at rest. This ensures that sensitive data remains protected and inaccessible to unauthorised individuals. Role-based Access Control (RBAC) is implemented to strictly regulate permissions, allowing only authorised users to access specific data and functionalities. At the moment, two types of users are supported: i) the simple user that has access to the tool selection wizard and any support material and ii) the assessor that has access to the tool selection wizard, building data management and all support material. The currently implemented RBAC is subject to change as the Smarter EPC project evolves.

To preserve data availability and integrity, the SmarterEPC Hub implements consistent backup protocols and a comprehensive disaster recovery plan. This ensures that user data remains safe and retrievable even in the event of technical issues or system failures. The platform operates on a reliable Hyper-V Virtual Machine environment, delivering high performance, scalability, and stability.

4.2.3 Routine Security Audits

The platform's back-end, built with Node.js, undergoes regular security assessments and vulnerability testing. This proactive approach helps identify and mitigate potential risks, ensuring that the system remains resilient against emerging threats. Encrypted passwords and other robust authentication mechanisms further protect user accounts, guaranteeing that only authorised individuals can log in and interact with the platform.

5 Conclusion

The SmarterEPC Hub attempts to simplify and enhance the efficiency of energy performance certification and smart readiness assessments. By incorporating the connectivity with various EPC or SRI web tools, it streamlines the process, assisting users in navigating assessments through a seamless and user-friendly interface tailored for a variety of requirements. A notable aspect of this project is its intuitive design, which facilitates smooth data management, straightforward tool selection, and adherence to European regulations. The SmarterEPC Hub is designed to expand and adjust, guaranteeing its relevance as technology and policies change. Its capability to link with current EPC and SRI tools further establishes it as a crucial central resource for evaluating building performance.

Security and data privacy have been essential factors. The SmarterEPC Hub adheres to GDPR regulations, utilising robust encryption and authentication methods to protect user information. Extra security elements like Single Sign-On (SSO), role-based access management (RBAC), and routine security assessments improve its reliability and trustworthiness. To make sure that the platform addresses real-world requirements, evolving stages have been created, so that early feedback can be received for continuous enhancements. This methodical approach guarantees that the system stays both robust and flexible from the early stages until its final released version.

In the future, the SmarterEPC Hub will keep evolving with enhanced features like improved connection with NextGen EPC and SRI tools and a possibility to upload joint EPC + SRI data. Through collaboration with industry experts, policymakers, and end-users, the project seeks to establish a standardised and efficient system for evaluating energy performance and smart readiness throughout Europe and various member states.

To conclude, the SmarterEPC Hub aims to enhance the practicality and accessibility of building performance certification. It simplifies complexity while encouraging data-driven choices. It aids sustainability initiatives, regulatory adherence, and the broader implementation and integration of smart building technologies in the building sector.

6 References

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