SMARTeeSTORY

D1.5

SMARTeeSTORY SRI-based assessment tool for historic buildings

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Project Acronym	SMARTeeSTORY
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Associated Task	T1.5 - Design tool for historic buildings digitalization based on SRI methodology
Deliverable Lead Partner	TECNALIA
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List of Abbreviations

Acronym	Description
D	Deliverable
EC	European Commission
ICT	Information and Communications Technology
ROI	Retorn of Investment
SRI	Smartness Readiness Indicator
T	Task
WP	Work Package

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Executive Summary

This document represents the deliverable D1.5 SRI-based assessment tool for historic buildings of the European project "Integrated, interoperable, smart and user-centered building automation and control system for better energy performance of non-residential historic buildings coupling physics & data-based approaches" hereinafter also referred with its respective project acronym SMARTeeSTORY.

Deliverable D1.5 summarizes the work performed in T1.5, which main aim is to create a webApp to ease the calculation of the SRI, following the detailed calculation included in Method B – Expert SRI assessment according to the "Final report on the technical support to the development of a smart readiness indicator for buildings" from EC [1]. This task is divided in two stages:

i) Up to M18 (October 2024): this is the current version of the webApp. Its main functionality is to recreate the detailed calcuation of the SRI.

ii) Up to M24 (April 2025): based on the previous version of the tool, new functionalities will be included as an added value to the basic calculation of the SRI. These include:

   a. definition of targets and objectives to achieve according to specific criteria (economic, environmental, energetic or a mix of them);

   b. provide solutions for SRI upgrade in accordance with the criteria selected;

   c. financial calculation that will provide to the end-user a high-level estimation about the viability of the investment via the valorization of savings achieved and the calculation of the return of the investment (ROI).

The current version of the webApp, developed by TECNALIA, addresses the developments expected on the first stage.

The developments of stage II will be developed by RINA-C and TECNALIA and validated by REA, AEA, TUD, who will test the tool also in accordance with the experience gained within the project. The outcomes of this second stage will result on a design tool for historic buildings digitalization based on SRI methodology and will be reported in D1.6.

1 Introduction

The present deliverable summarizes the work performed on the first stage of *T1.5 - Design tool for historic buildings digitalization based on SRI methodology,* which main outcome is a webApp that replicates the detailed calculation of the SRI included in Method B – Expert SRI assessment according to the "Final report on the technical support to the development of a smart readiness indicator for buildings" from EC.

This webtool will ease the calculation of the SRI through a user-friendly interface that incorporates the methodology of the calculation sheet prepared by the EC. This includes information on the technological readiness of buildings to interact with their occupants and the energy grids, their capabilities for more efficient operation and improved performance through using ICT technologies.

1.1 Purpose and scope of the document

The purpose of the present deliverable is to explain the main features of the early version of the webtool developed within the first stage of T1.5.

1.2 Contributions of Partners

SMARTeeSTORY partners have provided feedback during the development of this early, basic version of the webApp. The feedback has been gathered during the second general assembly and WP1 meetings.

2 SMARTeeSTORY SRI-based assessment tool for historic buildings

The SRI webApp is based on the SRI methodology provided by EU in excel format. The initial approach is based on using the excel as a calculation engine, so if the SRI methodology changes and so does the excel file, the application can continue to work using the new one (with minimal changes). The backend (or server) is where the processing is done. The "intelligence" and operations are on this part. Otherwise, the frontend (the wepApp itself) is in charge of displaying and retrieving data (the data entered by the user and the data generated by the backend) but does not perform any calculations. This initial approach is detailed in Figure 1.

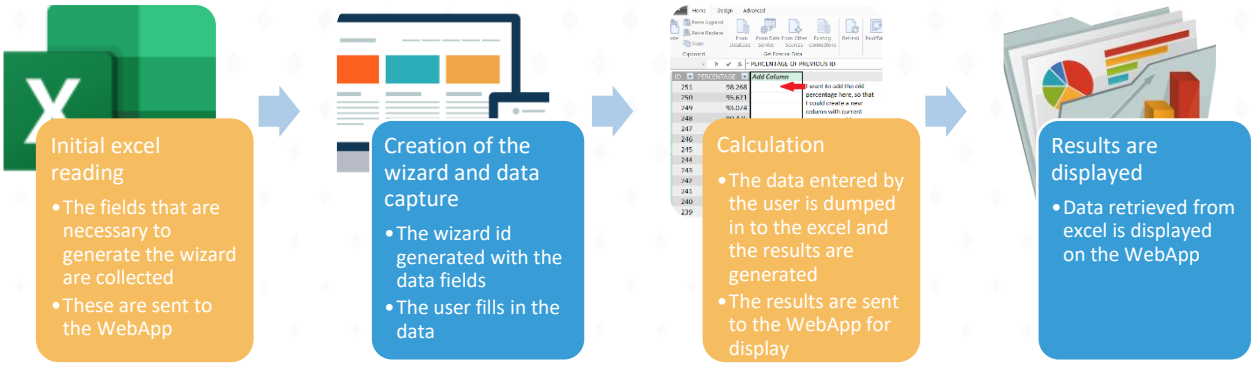

Figure 1. Initial approach for the webApp creation. In yellow: backend. In blue: front end.

To provide a user-friendly environment for the user that will enter the information of the building to be assessed, the webApp includes several features, as explained in following sections.

2.1 Access to the webApp

The tool is accessible via: https://projects.hei-tecnalia.com/SMARTeeSTORY

2.2 SRI webApp main menu

The webApp has an upper menu allowing these actions:

Figure 2. WebApp upper menu.

- **Display helping pdf.** Allows a dual view, showing the helping pdf and the working data simultaneously.
- **Download SRI file.** It is possible to save and download the current status of the assessment process, so the process could be continued in any other moment.
- **Upload SRI file.** It is possible to load previously saved file, in order to continue working with the SRI calculations.
- **Change the webApp languange**. Currently, in English, French and German.

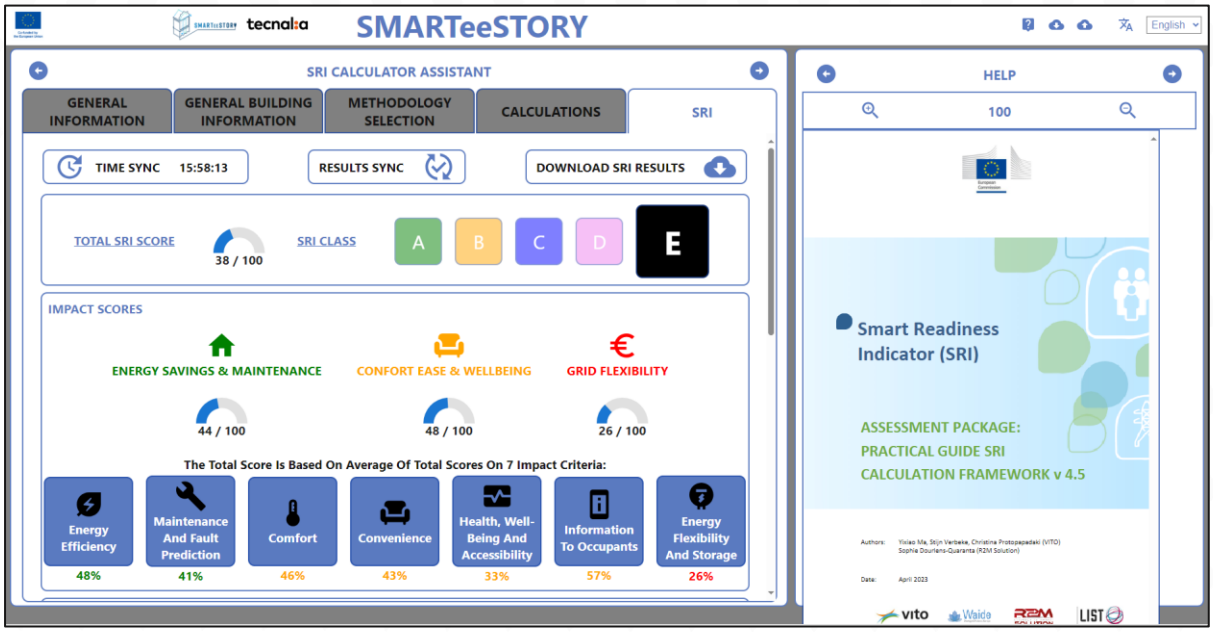

Figure 3. Dual View with the helping pdf

2.3 Sections

The webApp has been structured around several sections to assist the user on the SRI assessment. In order to obtain the SRI score, it is mandatory to finish all the steps of the calculator assistant. The assistant has 5 tabs, 4 of them to insert data and the last one to display the SRI value calculated with the inserted data. These tabs are:

- General information tab. (*Data insertion) The information about the person that is doing the calculations. It is worth mentioning that this information (or any information) is not collected or saved by the webApp and only the user can access to it.

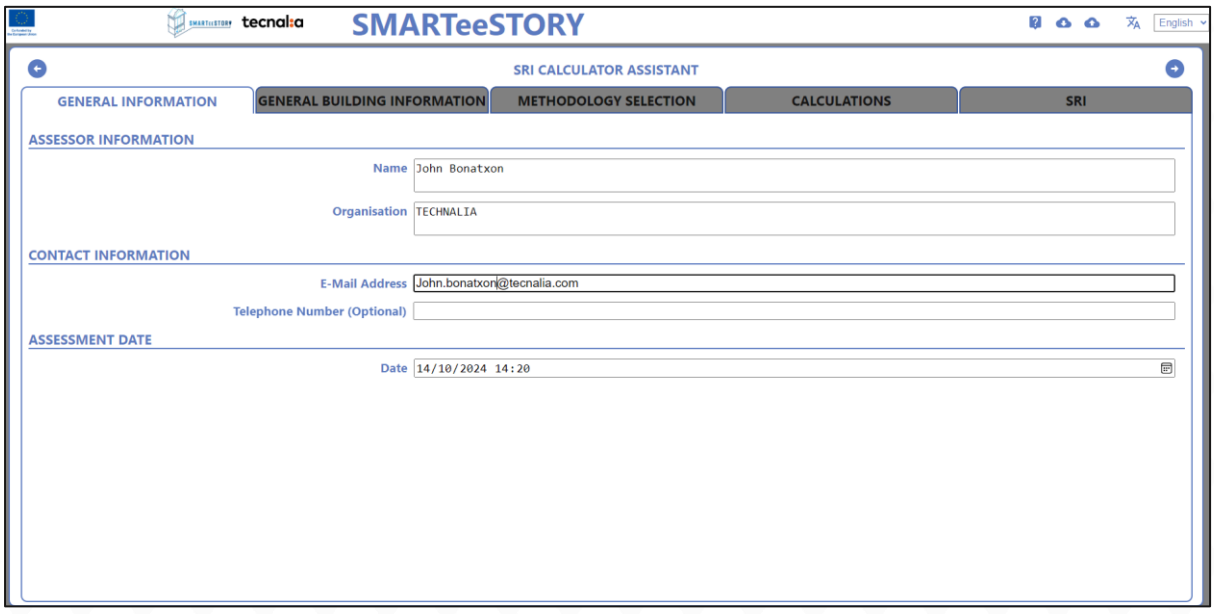

Figure 4. General information tab

- General building information tab. (*Data insertion) General information about the building that is going to be analyzed.

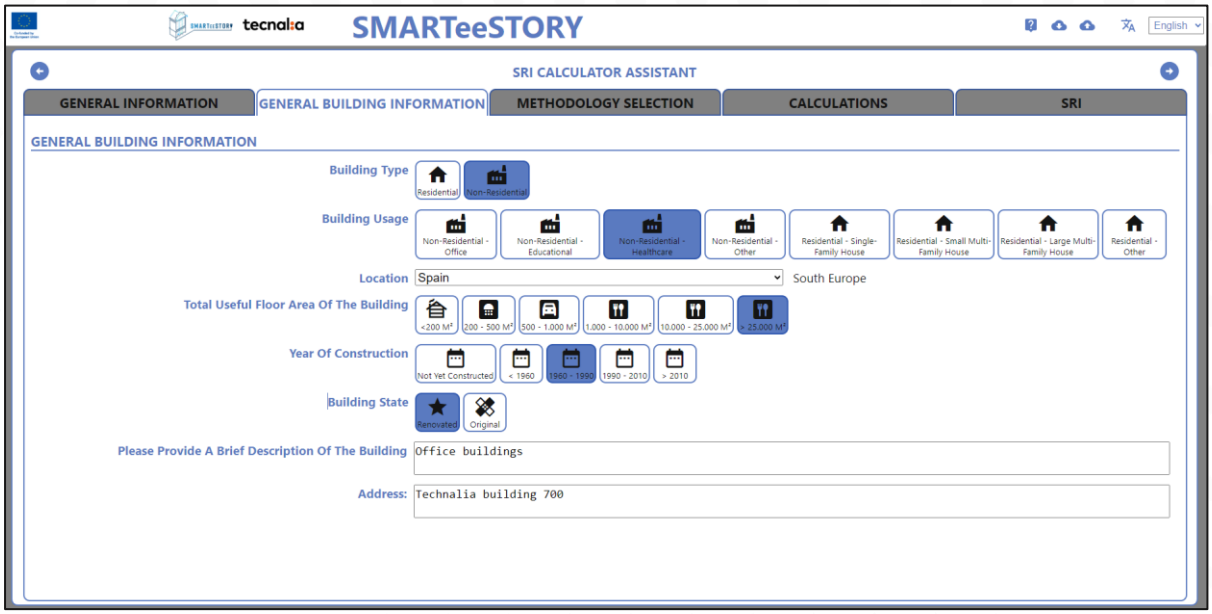

Figure 5. General building information tab

- **Methodology selection tab. (*Data insertion)** A selection of the domains present in the building.

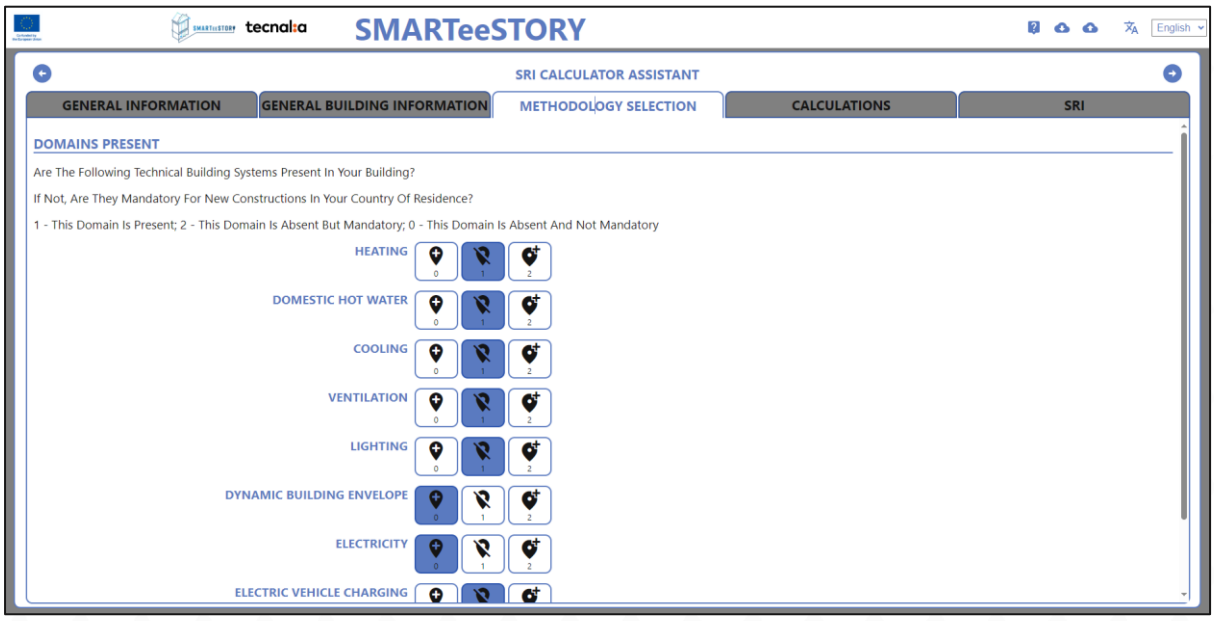

Figure 6. Methodology selection tab

- **Calculations tab. (*Data insertion)** Data about the different domains.

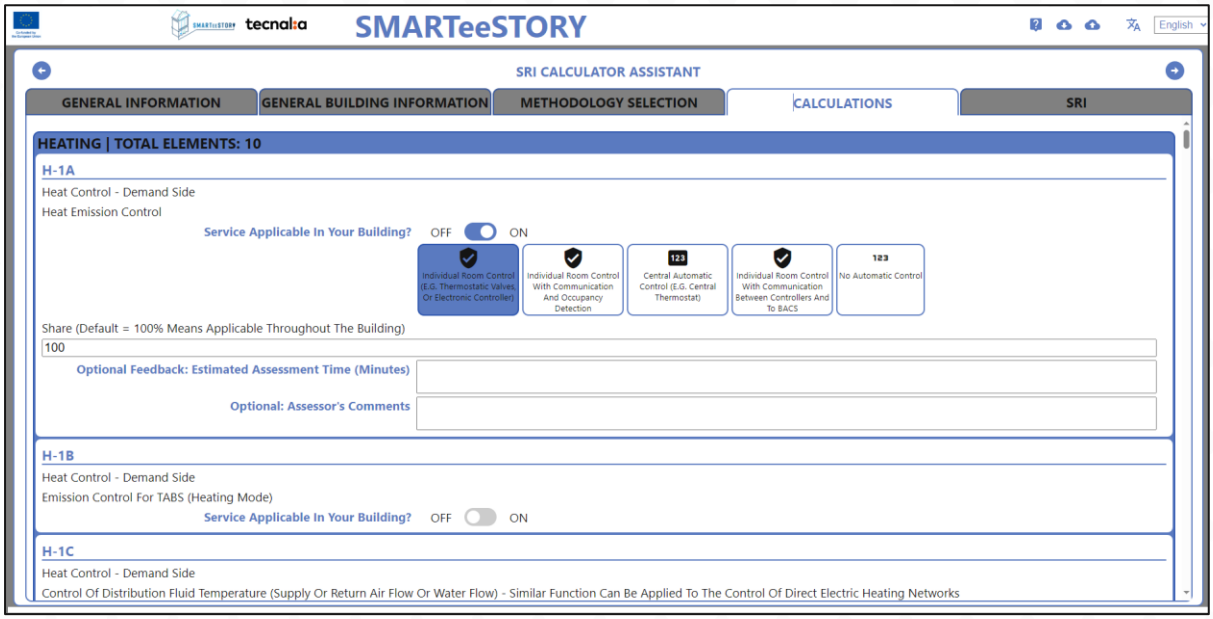

Figure 7. Calculations tab

- **SRI tab. (*Final result)** In this tab, it is possible to download a PDF with the obtained result.

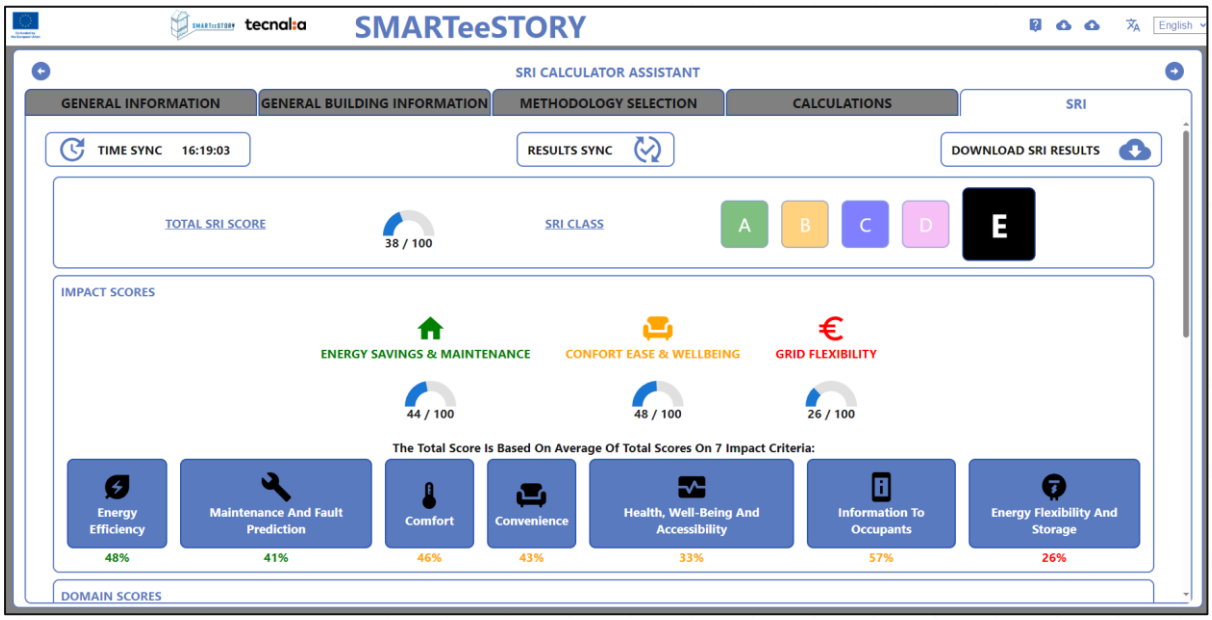

Figure 8. SRI result tab

More information on the SRI could be accessed by scrolling.

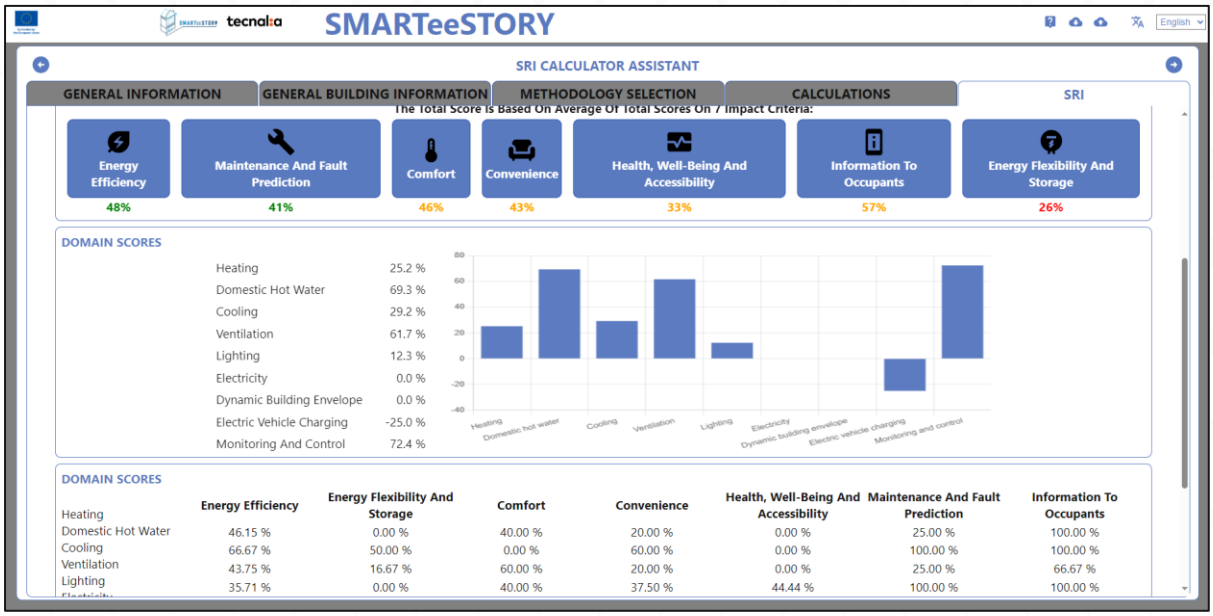

Figure 9. SRI results tab 2nd view

During the process to get the results, if there are some errors or an incomplete data, a red alert display will appear in the webApp showing the error or the missing data.

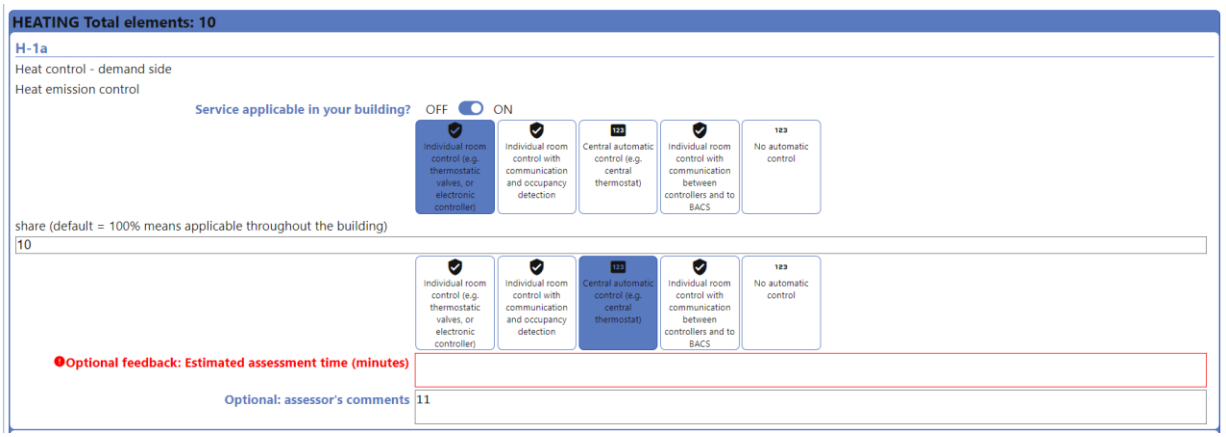

Figure 10. Alert message

3 Conclusions

Along this document, the structure, main sections and functionalities of the webApp have been described. The webApp allows users to upload specific building information to assess the SRI of any specific building, recreating the functionalities of the excel file prepared by the EC on a user-friendly environment and supported by a virtual assistant.

This early version of the webApp will be the basis for the second stage of T1.5, which will include new functionalities, as an added value to the current SRI assessment process. These functionalities include definition of targets and objectives, the provision of solutions for SRI upgrade in accordance with the criteria selected; and financial calculation that will provide to the end-user a high-level estimation about the viability of the investment via the valorization of savings achieved and the calculation of the ROI.

4 References

1. European Commission: Directorate-General for Energy, Verbeke, S., Aerts, D., Reynders, G., Ma, Y. et al., Final report on the technical support to the development of a smart readiness indicator for buildings – Summary, Publications Office, 2020, https://data.europa.eu/doi/10.2833/600706

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