



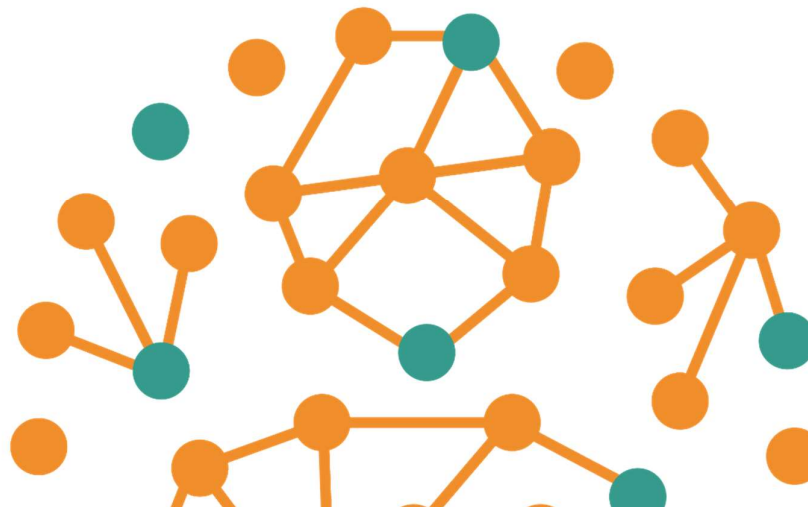
D4.4 –REFEREE maintenance protocol



www.refereetool.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000136.



REFEREE: Real Value of Energy Efficiency Results from the scoping analysis

Project Acronym	REFEREE
Project Title	Real Value of Energy Efficiency
Grant Agreement No	101000136
Project Start Date	1 October 2020
Project End Date	31 March 2024
Call Identifier	LC-SC3-EC-4-2020
Funding Scheme	Research and Innovation Action (RIA)
Project Website	http://referreetool.eu/
Deliverable Information	
Deliverable No	D 4.4
Deliverable Title	REFEREE maintenance protocol
Work Package No	4
Work Package Lead	MCRIT
Contributing Partners	ISINNOVA, CE, CSD, MCRIT, BAUM, EEB
Deliverable Type	Report
Dissemination Level	Public
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Contributors	-
Contractual Deadline	31 st December 2023
Delivery Date	9 th February 2024

Version Management

Version	Date	Author	Description of Change
1.0	09/02/2024	Efrain Larrea, Jaume Jorba, Ramon Català, Isaac Farradellas, Andreu Ulied	Draft Final

Partners

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1 Approach

1.1 About REFEREE

REFEREE is a European-funded Horizon 2020 project that started in October 2020 and will run until April 2024.

To deliver the European Green Deal, which sets out the roadmap making Europe the first climate-neutral continent by 2050, we need to accelerate our efforts to improve the energy efficiency of our buildings, transport, and industry. In this context, REFEREE aims to analyze and quantify the direct and indirect non-energy impacts of energy efficiency investments and develop an easy-to-use tool to support policy makers at the national, regional, and local level. Modelling and quantification will build on E3ME model.

REFEREE will help households, businesses, financing institutions, policy makers and other relevant stakeholders to evaluate the multiple impacts of their energy efficiency choices.

To maximize the impact of the REFEREE policy support tool, stakeholders will be involved from the inception of the project, through concrete opportunities for its co-development, pilot studies, and focused dissemination and communication actions.

More information on REFEREE available at www.refereetool.eu.

1.2 Objectives

This report presents the maintenance protocol for the REFEREE online tool.

The tool has been developed as a web based system hosted on a server running unattended. However, there are circumstances which might require human intervention. This deliverable defines the needs of human resources and IT infrastructure for the correct operation of the REFEREE tool, which is available at <https://projects.mcrit.com/referee/>.

2 Structure of the REFEREE system

The REFEREE system uses different servers to host its different components and is structured with the usual separation between frontend/backend/database.

- The frontend is a webpage programmed using HTML5 and javascript libraries. This frontend communicates with the backend via web services and is hosted in Server 1
- Server 1 hosts the framework that manages the connection with the frontend, serving the webpage of the system. Changes or modifications of the online interface are implemented within this server. This is hosted in the cloud of a hosting provider.
- Server 2 is a local server physically managed by MCRIT at its premises. It hosts the processes of creation of the excel reports for both the national and local models and runs the python scripts of E3ME lite linked to the national model. This server might require some maintenance during the normal operation of REFEREE.
- Server 3 handles the creation of online graphics by using a specific service of Google and Looker Studio. This server is managed externally and automatically and no intervention is required. Also there is no cost associated to it, while Google maintains its policy of free usage of Looker Studio.

The following image illustrates the different pieces that compose the system:

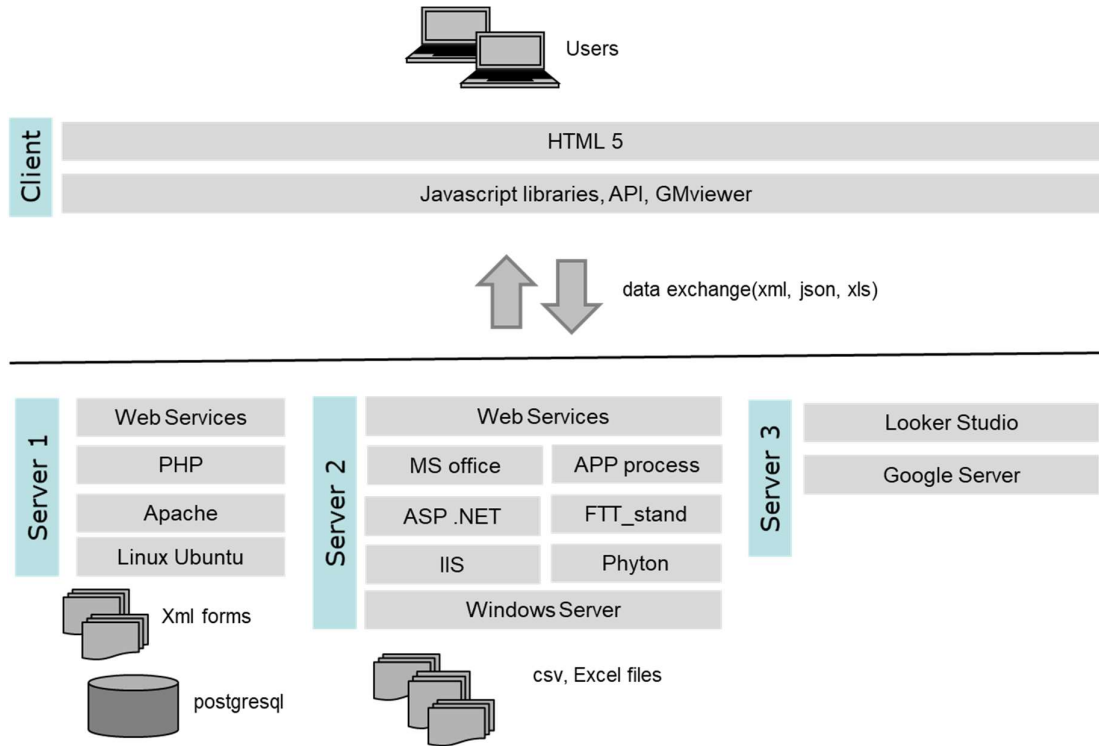


Figure 1. Architecture of REFEREE system

The general website of REFEREE is hosted in yet another server but this does not interfere in the management of the REFEREE online system.

3 Maintenance of the REFEREE system

3.1 Infrastructure and personnel

As explained earlier, the REFEREE system is hosted in different servers: two of them are entirely in the cloud. The third one is currently managed by MCRIT. In order to transfer the system to a new managing entity, it would be necessary to transfer the ownership of the cloud servers and maybe migrate them to another provider if desired. For the local server, either there is a new one physically at the premises of the new manager or this can also be hosted in the cloud.

This local server needs to run Windows and just requires python and MSOffice (Excel at least). Apart from that, it does not need heavy requirements in terms of performance. However, the faster the processor and the more RAM memory is available, the faster the model will run.

In terms of personnel, half person-day per week should be more than sufficient to maintain the server in proper status.

3.2 Operation

The REFEREE system receives events through the online website for running both the national and local models automatically. It can receive simultaneous petitions and handles them without human intervention.

However, some specific processes occurring in the Server 2 of the system may require intervention:

- Each run of both national and local models automatically generates an excel report of results that may be downloaded from the results web page of the model. The creation of this excel report uses a specific MSOffice library that can hang during the process of creating the report under certain circumstances that cannot be foreseen (brief loss of connection of the client with the server for instance). This leads to an eventual accumulation of open excel processes in the server, which may cause the process of generating new excel reports unresponsive. When this happens, there is a need for a manual cleaning of the process pile in the server or a full reboot of the server.
- After a certain amount of runs, plenty of intermediate and results files accumulate in the server folders. Although there is no concern in terms of available disk space, it is a good practice to periodically remove older files so that it is easier to navigate within these folders in case there is a need to investigate a specific file. These folders are:

- C:\PROGRAMES\FTT_stand_alone\MultipleBenefits\Outputs
This is the location where E3MElite writes the csv output files. It also contains a specific last.json file with the inputs of the last scenario that has been run.
- C:\inetpub\wwwroot\WebExcel\Download
This is the location of the Excel report files for the national and local models.
- A run might result in strange results for a certain combination of policies. In order to investigate possible issues it might be necessary to run locally from the server this scenario using a special debug mode. This is accomplished by using a json file of the scenario to inspect, which can be found in the Outputs folder (last.json) mentioned earlier or by intercepting the information sent by the national model web interface, by clicking F12, copying the json data and saving it in a text editor as json.

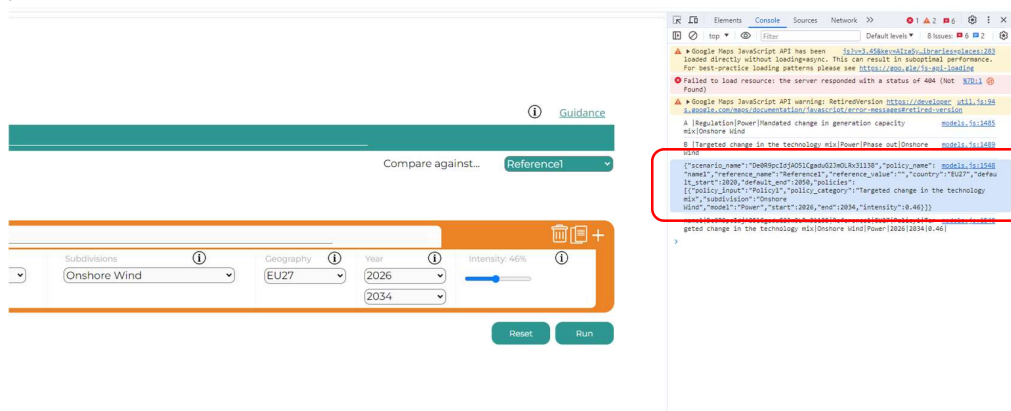


Figure 2: Intercepting the input json of the national model from the user interface

Then we open a command window (press Windows key, then type "cmd" and run as administrator) and we then copy the following line:

"C:\Program Files\Python\Python39\python"
Referee_tool_batch_run.py last.json

This launches the run process and allows checking the log window for any eventual error.

If there is a need to update the code of E3MElite, the process is as follows:

- CE releases a new package of code as a zip file (usually exchanged in a shared Google Drive folder)
- This zip file has to be copied in the folder C:\PROGRAMES\ of Server 2
- The existing folder C:\PROGRAMES\FTT_stand_alone has to be renamed or deleted
- Unzip the new code so that we have again a folder C:\PROGRAMES\FTT_stand_alone

- Run this command lines in order to include some needed additional files:

```
copy C:\PROGRAMES\FTT_update\AppProcess.txt
```

```
C:\PROGRAMES\FTT_stand_alone\Input_code\AppProcess.txt
```

```
copy C:\PROGRAMES\FTT_update\last.json
```

```
C:\PROGRAMES\FTT_stand_alone\MultipleBenefits\Outputs\last.json
```

Another update that might be necessary due to changes or improvements in the model, involves changes in the Excel files of the national and local models. These are Excel templates located in a specific folder C:\inetpub\wwwroot\WebExcel\Templates

- The file for the national model is “Global Policy Assessment Tool.xlsx”
- The file for the local model is “H2020_REFEREE_PolicySupportSystem_Local.xlsx”

If a change in the template is needed, just by replacing the file in the previous folder will update it and make it available to the users of the online tools.