

JOINT FINAL CONFERENCE

Next Generation Energy Performance Assessment,
Rating and Certification

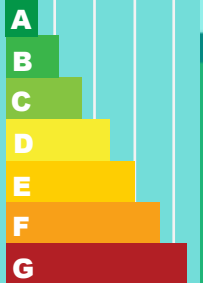
Towards a Smart and Decarbonised Future for European Buildings

Part 1: Overall context

Quick introduction and perspectives:
D²EPC, E-DYCE & ePANACEA

24 May 2023

Brussels and online





Smart European Energy Performance Assessment & Certification

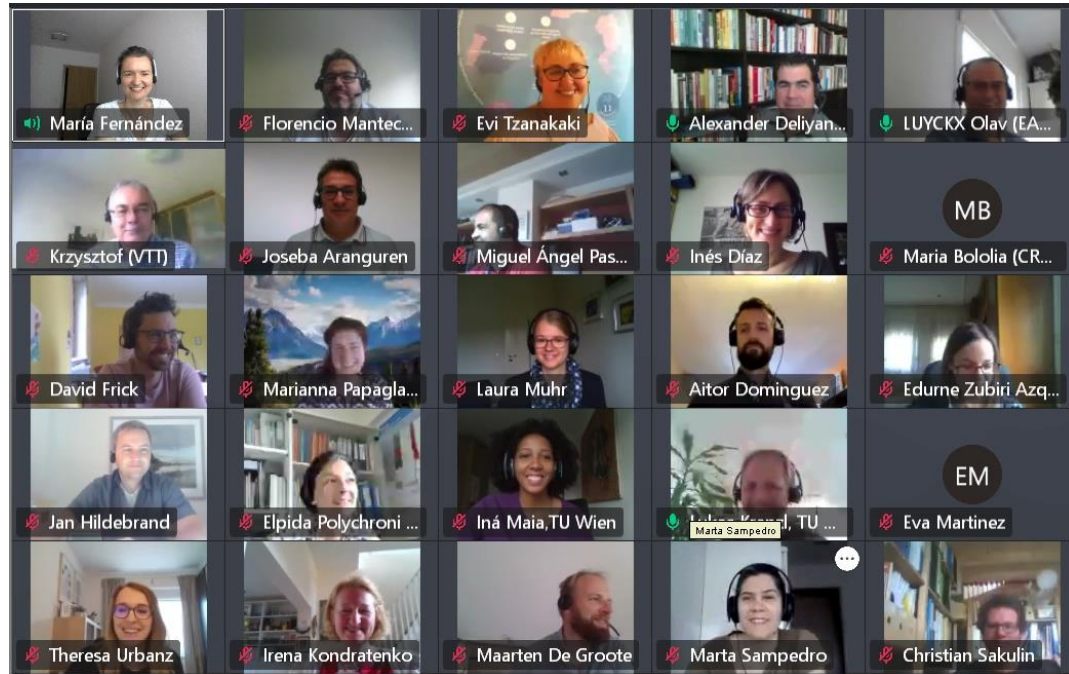
María Fernández Boneta, Project Coordinator
National Renewable Energy Centre - CENER



This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 892421

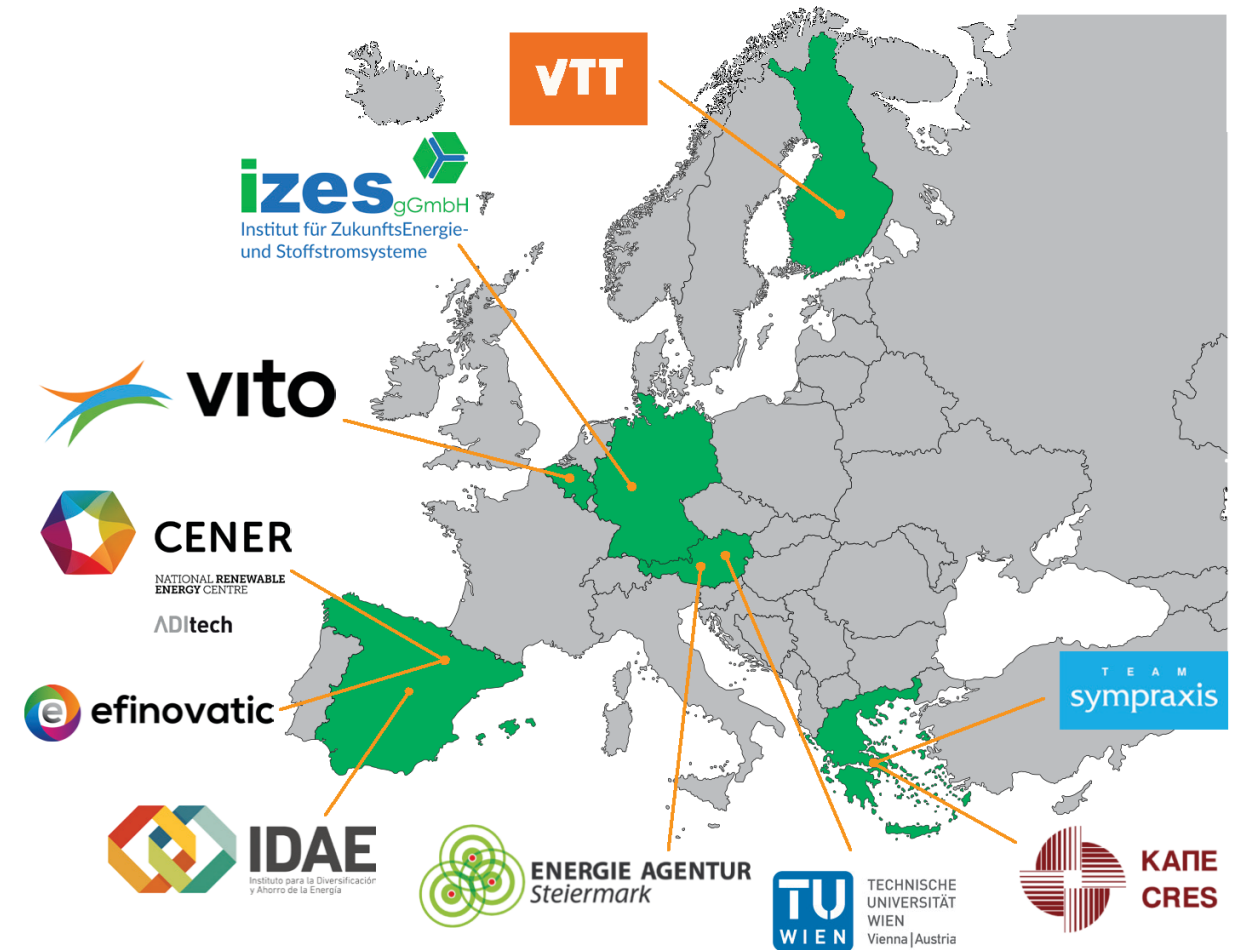
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ePANACEA team

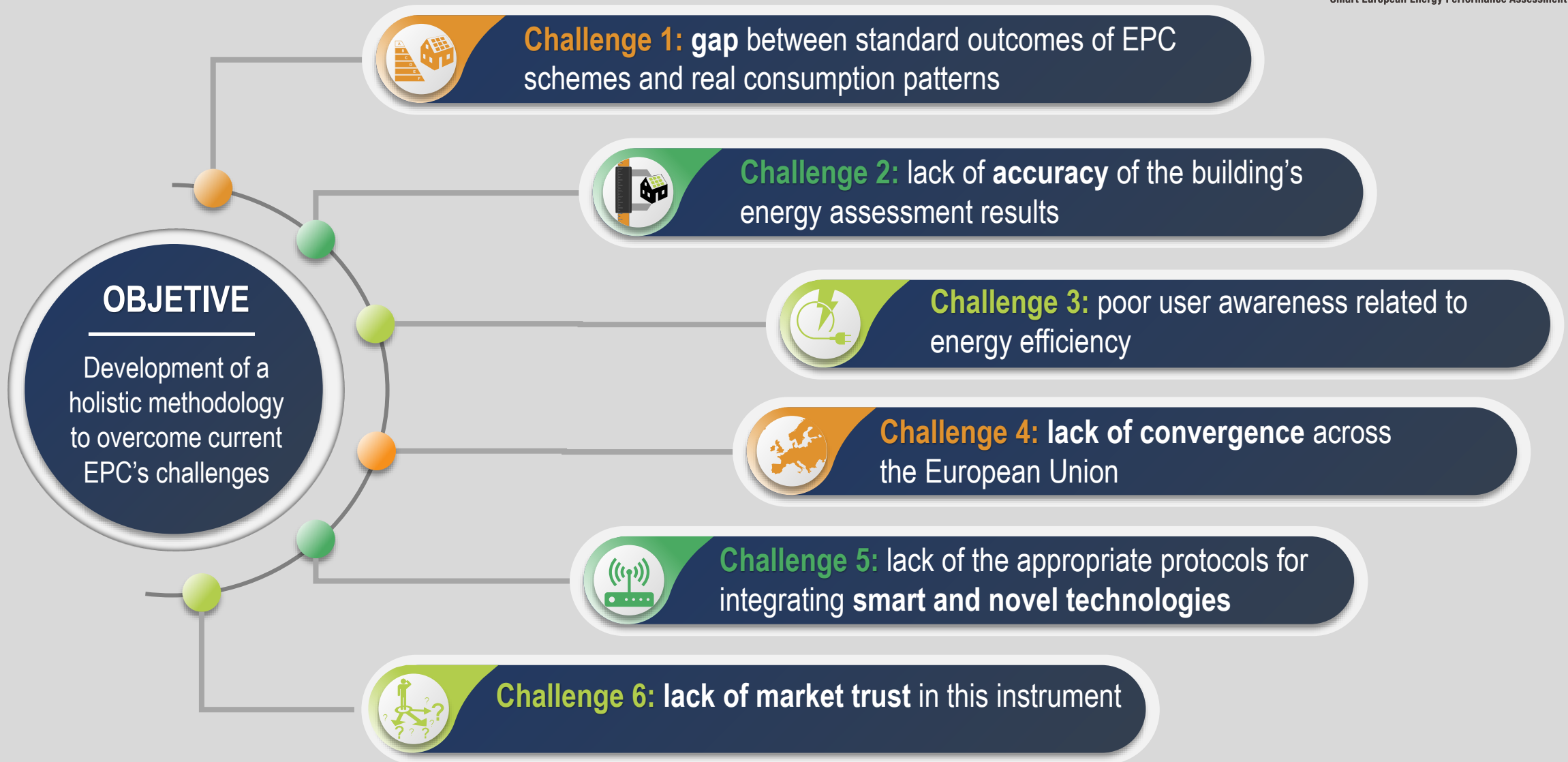


KOM, 22&23 June 2020

- **Project duration: June 2020 – May 2023 (36 months)**
- **Funding: Horizon 2020 (EU Research and Innovation programme)**
- **Next-generation of Energy Performance Assessment and Certification - IA 2019**
- **10 partners & 6 countries (Spain, Belgium, Germany, Austria, Finland and Greece) : 4 research centres, 1 university, 3 energy agencies, 2 SMEs**

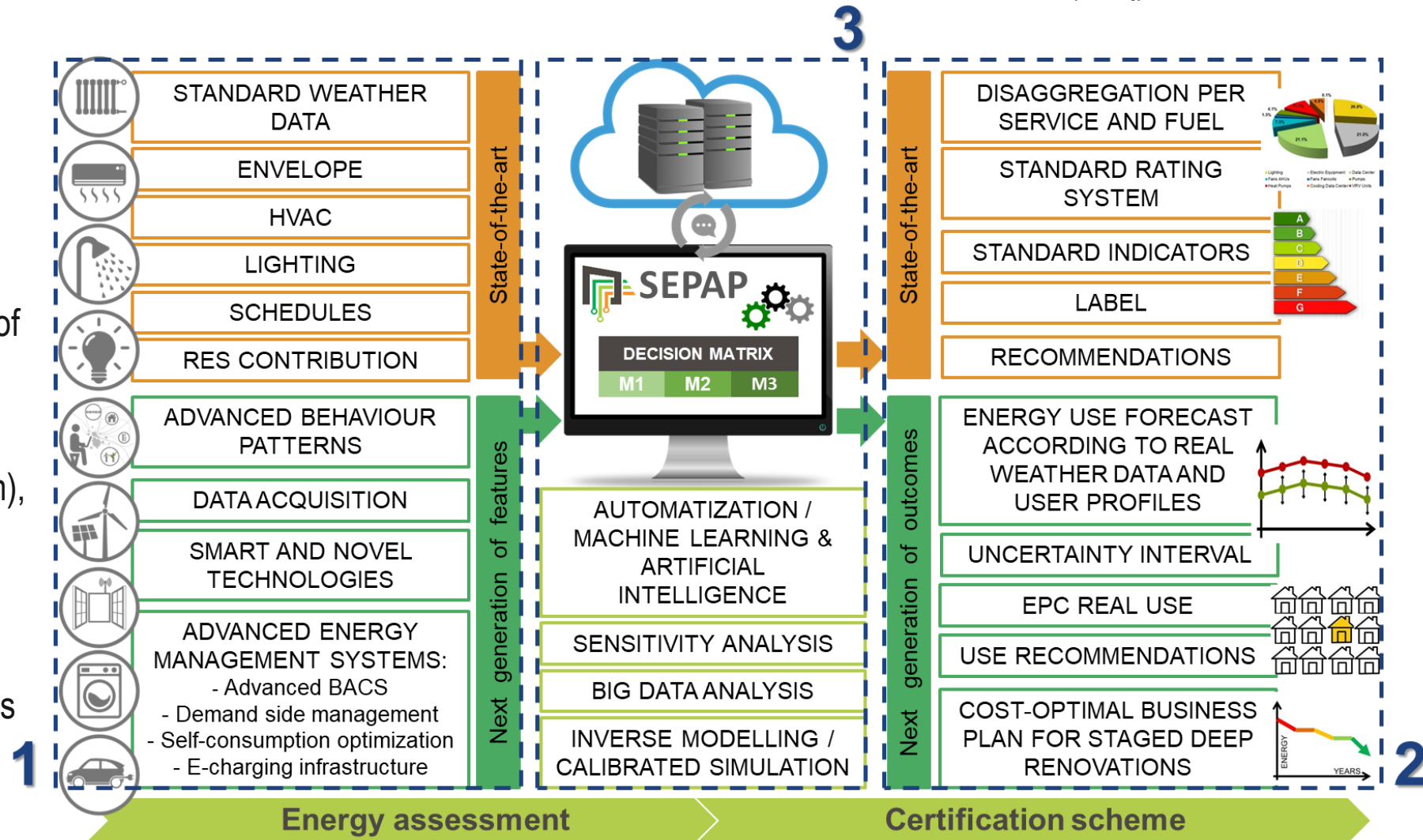


Why ePANACEA?

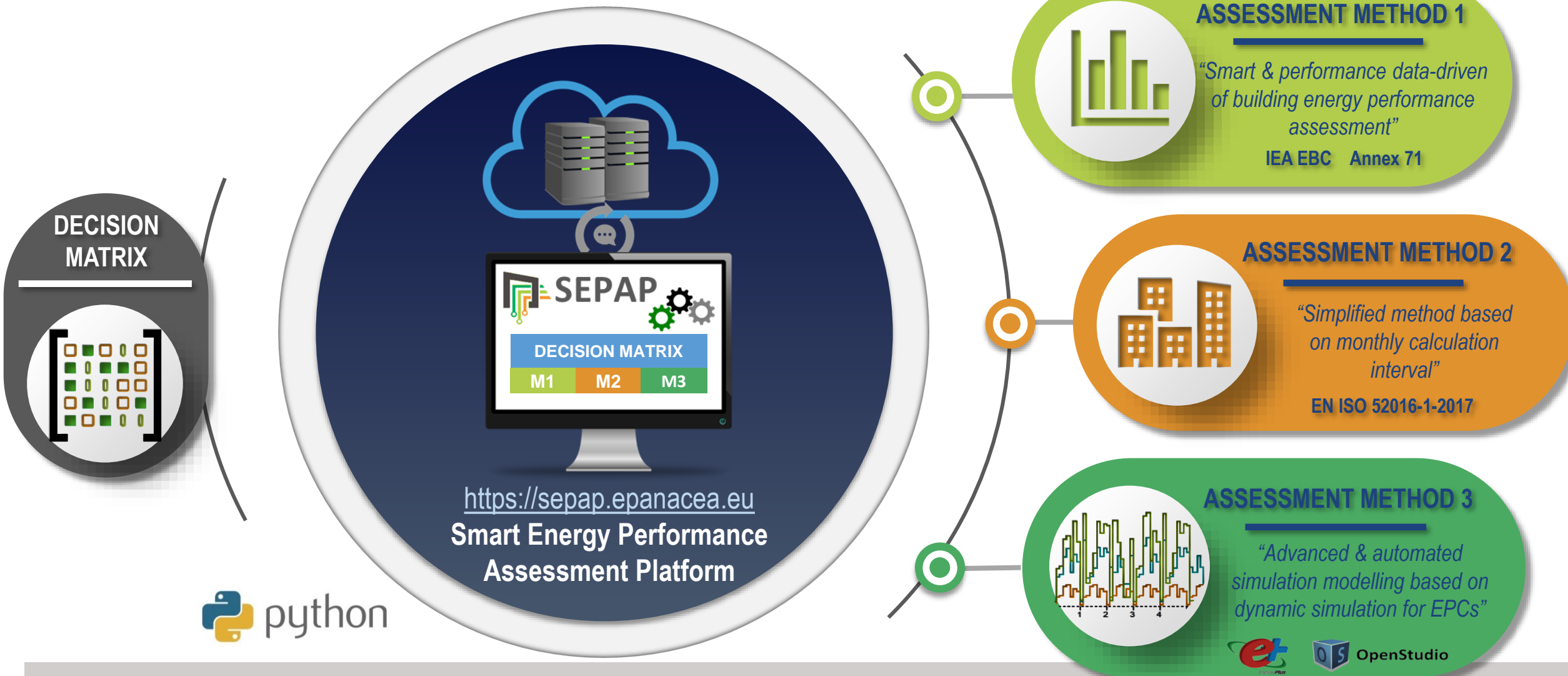


Overall concept

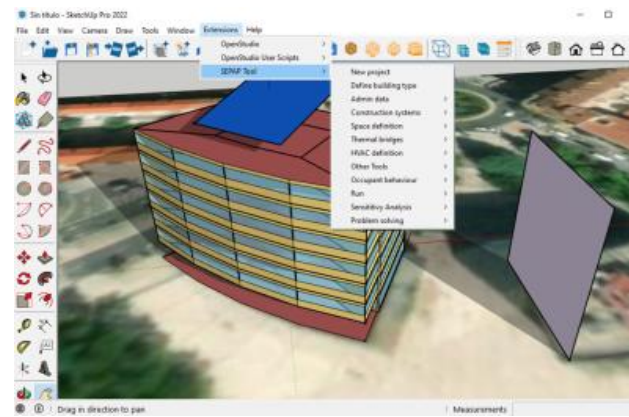
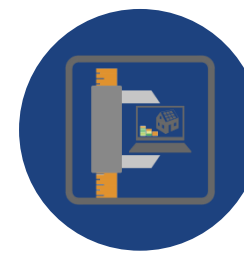
- The overall methodology concept aims to develop innovative approaches for both energy assessment and certification schemes, going beyond the state of the art.
- The SEPAP (Smart Energy Performance Assessment Platform), developed under the project, will integrate modular, flexible and customisable web based tools, incorporating innovative techniques such as inverse modelling and machine learning.









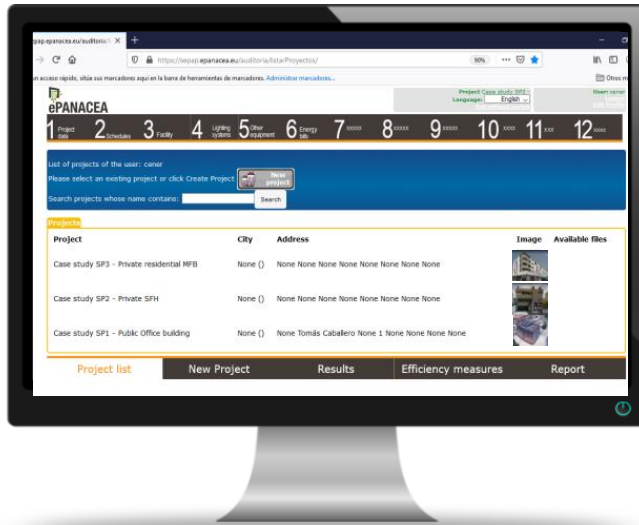
Three assessment methods



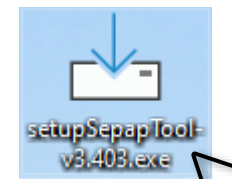
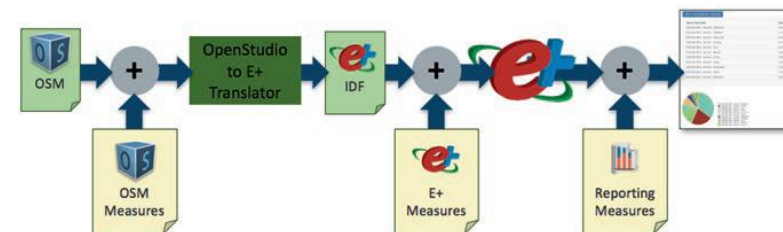
Run on cloud



-  EnergyPlus simulation engine
-  Open Studio SDK
-  OS SketchUp Plugin
-  OpenStudio Application
-  PAT-Parametric Analysis Tool
-  OpenStudio Server



<https://sepap.epanacea.eu>

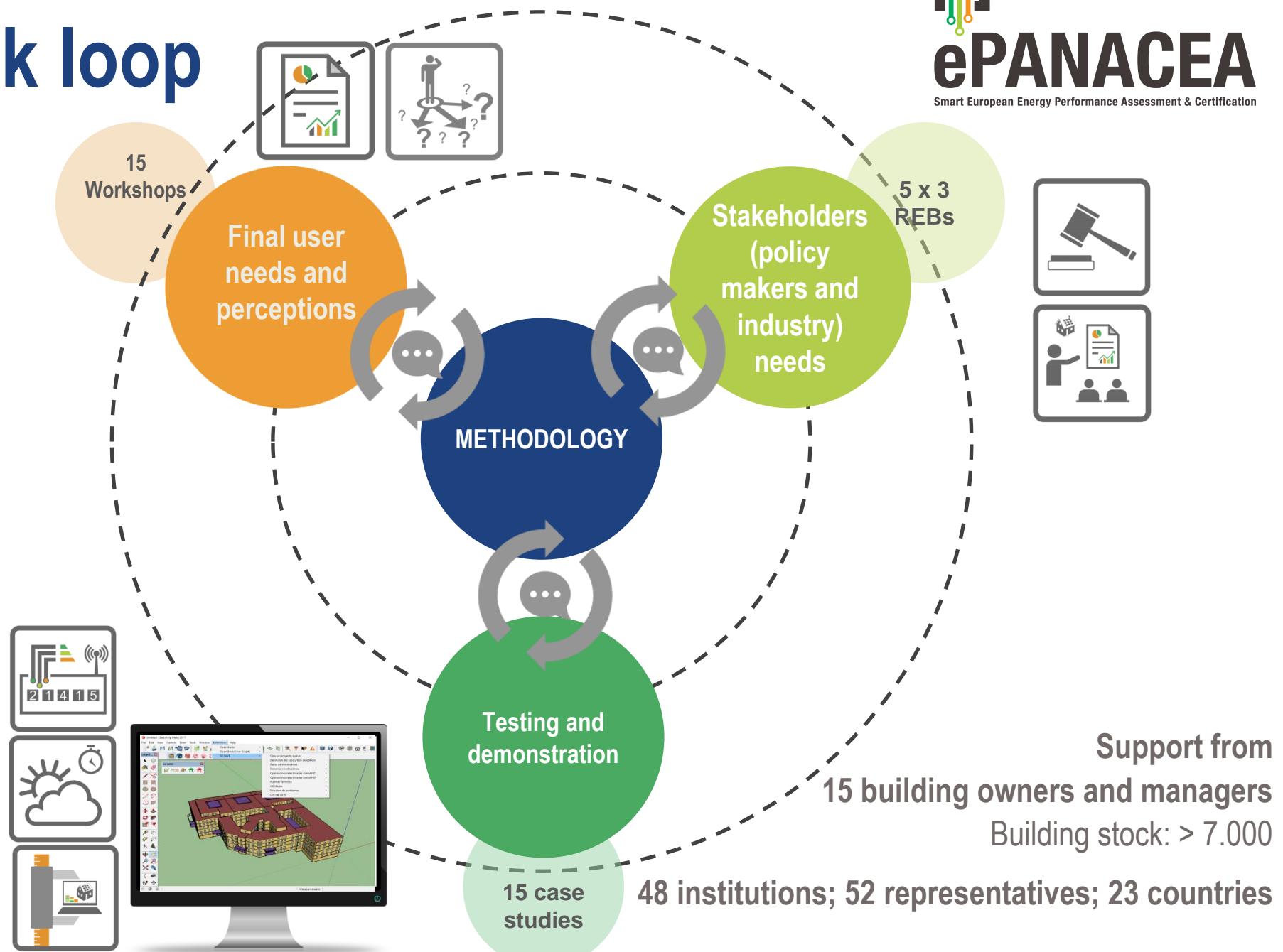


Triple feedback loop

- User-friendliness
- Clarity of information
- Enhanced user awareness of energy efficiency
- Occupant Behaviour patterns

- Instil trust in the market
- Mobilize investments
- Reduce energy consumption
- Reduce CO2
- Meet objective 2050
- Quantitative impacts
- Building renovation roadmaps and building passport

- Technical perspective
- Accuracy
- Cost-effectiveness
- Training

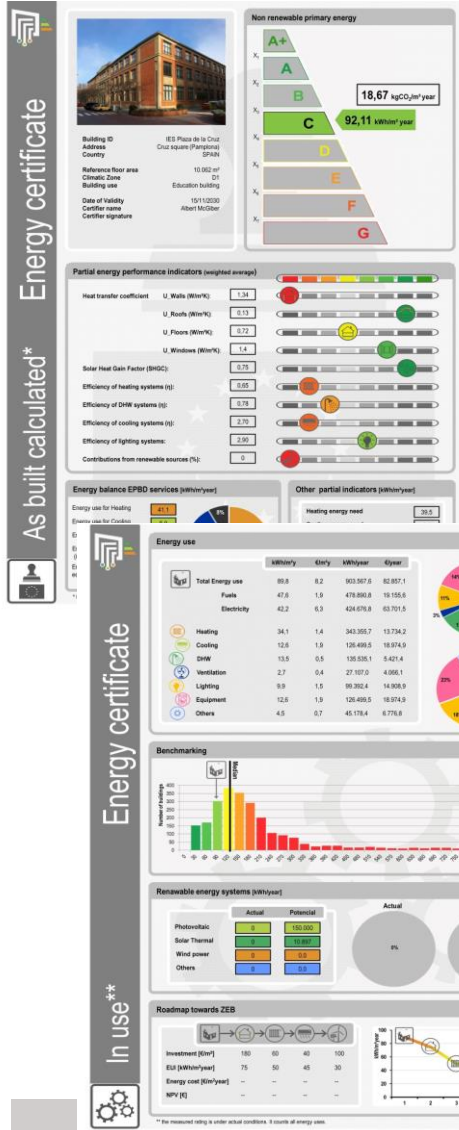


End-users perceptions

Energy certificate

As built calculated*

In use**



Building ID: IES Plaza de la Cruz
Address: Cruz square (Pangloss)
Country: Spain
Reference floor area: 10,362 m²
Climate Zone: D1
Building use: Education building
Date of Validity: 15/11/2020
Certifier name: Albert McGibber

Non renewable primary energy: 18,67 kgCO₂/m²year

Partial energy performance indicators (weighted average):
 Heat transfer coefficient: U_Walls (W/m²K): 1,34
 U_Roofs (W/m²K): 0,13
 U_Floors (W/m²K): 0,72
 U_Windows (W/m²K): 1,4
 Solar Heat Gain Factor (SHGC): 0,75
 Efficiency of heating systems (η): 0,65
 Efficiency of DHW systems (η): 0,78
 Efficiency of cooling systems (η): 2,70
 Efficiency of lighting systems: 2,90
 Contributions from renewable sources (%): 0

Energy balance EPBD services (path/year): Heating need: 361,5

Energy use:
 Total Energy use: 85,8 MWh/year
 Fuels: 47,8 MWh/year
 Electricity: 42,2 MWh/year
 Heating: 34,1 MWh/year
 Cooling: 12,6 MWh/year
 DHW: 13,5 MWh/year
 Ventilation: 2,7 MWh/year
 Lighting: 9,9 MWh/year
 Equipment: 12,6 MWh/year
 Others: 4,5 MWh/year

Benchmarking: Heating need: 361,5 kWh/m²year

Renewable energy systems (path/year):
 Photovoltaic: 150,000 kWh/year
 Solar Thermal: 10,000 kWh/year
 Wind power: 10,000 kWh/year
 Others: 10,000 kWh/year

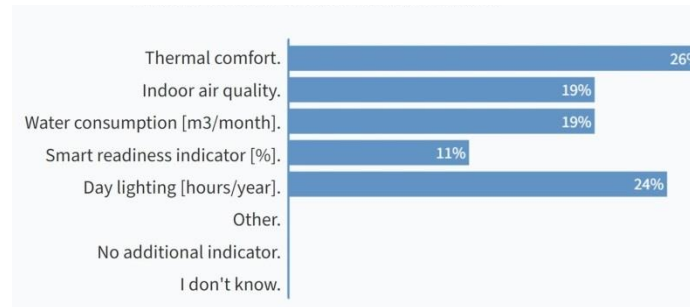
Roadmap towards ZEB:
 Investment (€): 180, 60, 40, 100
 EPBD (kWh/m²year): 75, 50, 40, 30
 Energy cost (€/m²year): -
 NPV (€): -

** As measured using in-situ actual conditions. 8 months of energy use.

Which figure do you like better (A or B)? Please click on the figure you prefer.

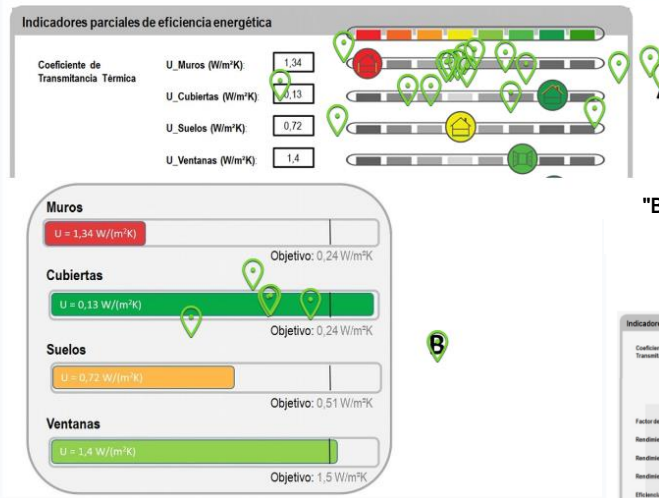


Please, select the additional indicators you think the EPC should include.



15 workshops with end-users

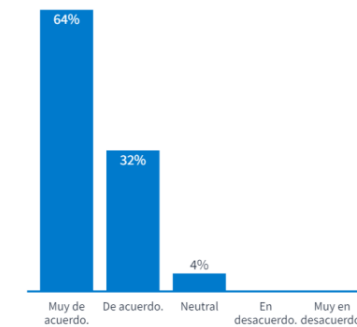
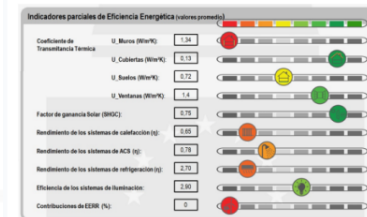
Which visualization do you like better? (A or B)? Please click on the visualization you prefer.



The presented energy saving tips are useful for me.

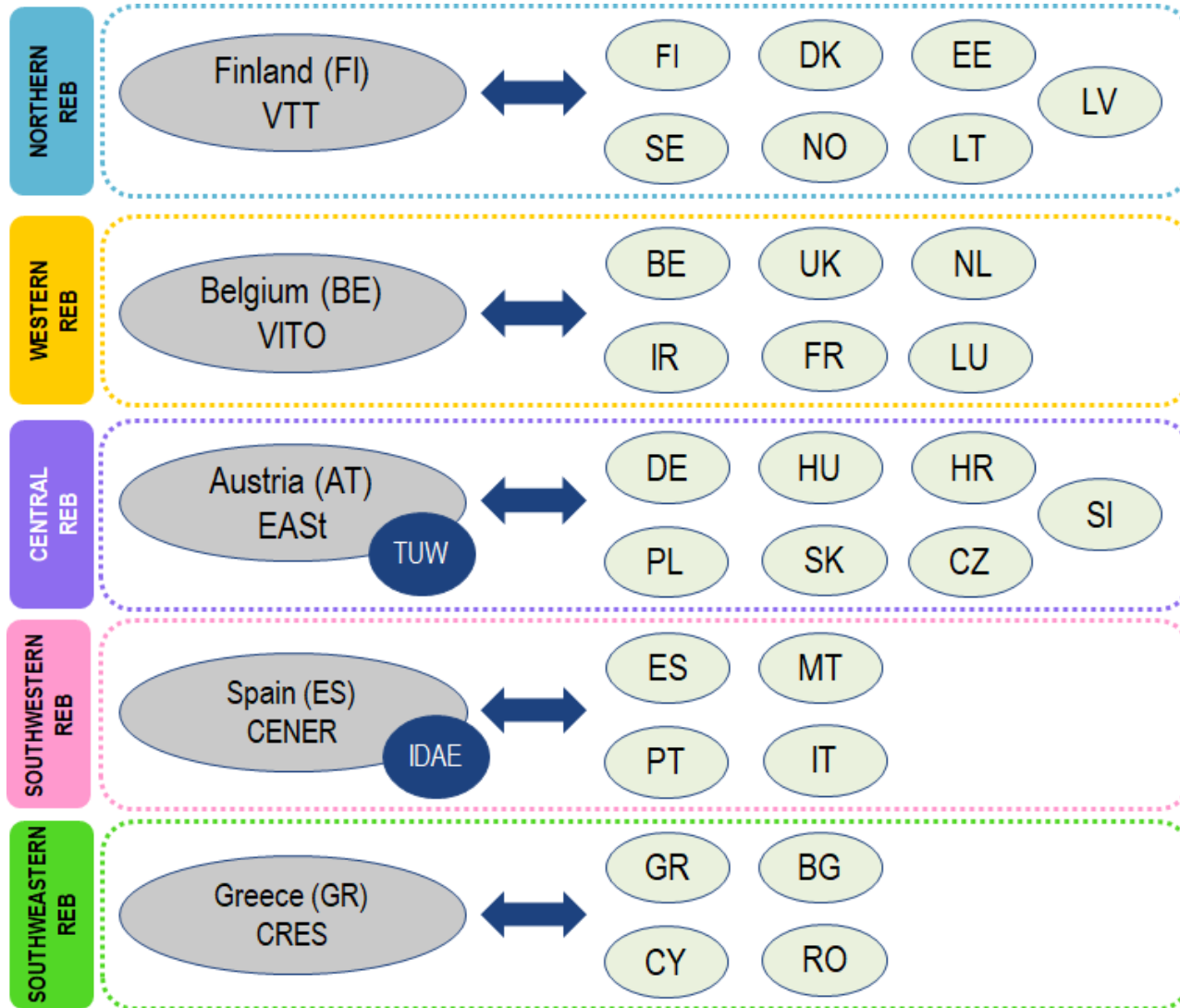


"Based on this figure I find it easy to understand where the weak spots in the building are".



ePANACEA has conducted 15 workshops during the project lifetime (3 per pilot country), focused on integration of end-user perceptions, needs and feedback.



Validation and dissemination



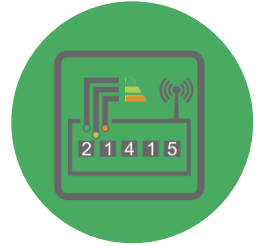
5 Regional Exploitation Boards (REBs)

ePANACEA project manages 5 REBs covering the whole European Union through five geographical regions, comprising European policy makers, certification bodies, consumer associations, professional associations and other relevant stakeholders from EU-27+Norway+UK, involved in the definition and validation of the assessment methodology.



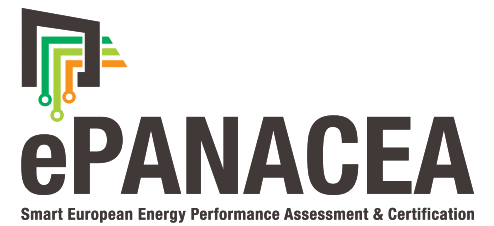
-  5 REB coordinators
-  National/regional stakeholders

Testing and validation



15 case studies in 5 pilot countries

Open access and other online resources



www.epanacea.eu



www.twitter.com/H2020ePANACEA



www.linkedin.com/company/h2020epanacea



Github.com/ePANACEA



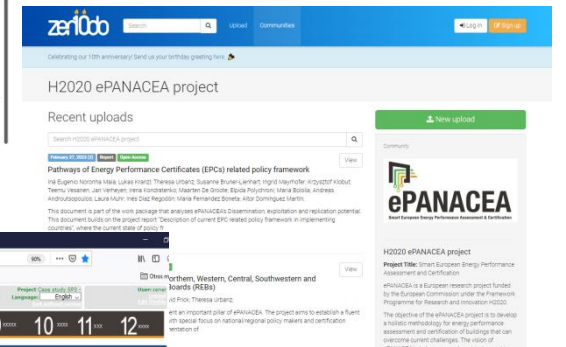
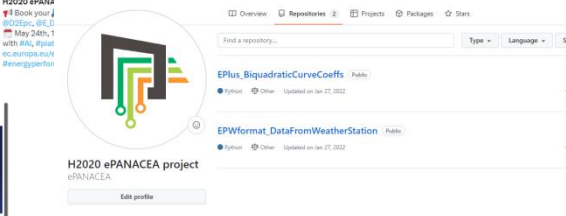
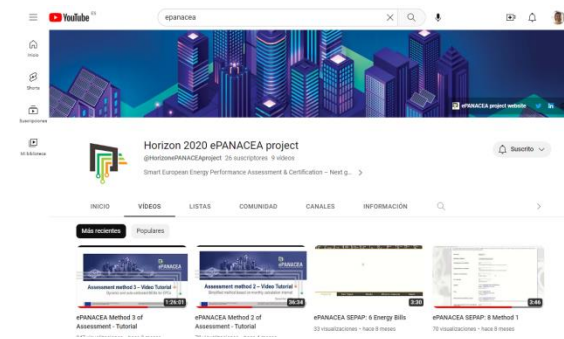
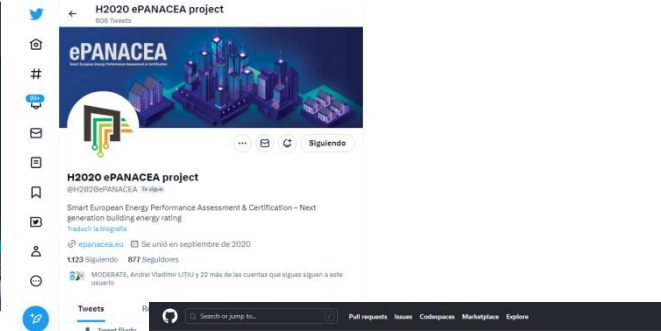
[H2020 ePANACEA project | Zenodo](https://zenodo.org/record/3444444)



[Horizon 2020 ePANACEA project – YouTube](https://www.youtube.com/watch?v=...)



sepap.epanacea.eu



| Project | City | Address | Image | Available files |
|--|------|---------|-------|-----------------|
| Case study SP3 - Private residential WF8 | None | None | None | None |
| Case study SP2 - Private SPH | None | None | None | None |
| Case study SP1 - Public Office building | None | None | None | None |



Thank you for your attention

For further information, please contact via contact@epanacea.eu

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