



# Main REHVA activities supporting the use of the EPB standards

**Andrei Vladimir Lițiu**

REHVA Project Consultant /  
KTH PhD Candidate

# Contents

- EPB Center - services for EPB standards implementation - recordings
- ALDREN project - modular tools for certification of buildings (EVCS + EPB standards)
- CEN-CE project - training and certification for building professionals (EPB standards) - recordings
- U-CERT project - next generation EPCs (EPB standards + SRI + measured data → operational rating)



# The project

<b>Type</b>	Service Contract
<b>Contract</b>	ENER/C3/2017-437/SI2-785.185
<b>Title</b>	SUPPORT THE DISSEMINATION AND ROLL-OUT OF THE SET OF ENERGY PERFORMANCE OF BUILDING STANDARDS DEVELOPED UNDER EC MANDATE M/480
<b>Start</b>	September 21, 2018
<b>Duration</b>	3 years



# The project team

## Coordinator:

*Jaap Hogeling,*  
Netherlands



## Experts on the EPB standards:

- *Dick van Dijk*, The Netherlands
- *Dirk Van Orshoven*, Belgium
- *Gerhard Zweifel*, Switzerland
- *Jean-Daniel Napar*, France
- *Johann Zirngibl*, France
- *Laurent Socal*, Italy



Federation of  
European Heating,  
Ventilation and  
Air Conditioning  
Associations

*Jaap*  
*Hogeling,*  
Netherlands

*Anita*  
*Derjanecz,*  
Belgium



*Annet*  
*van der Horn,*  
Netherlands

# Background

December 2010: Mandate M480

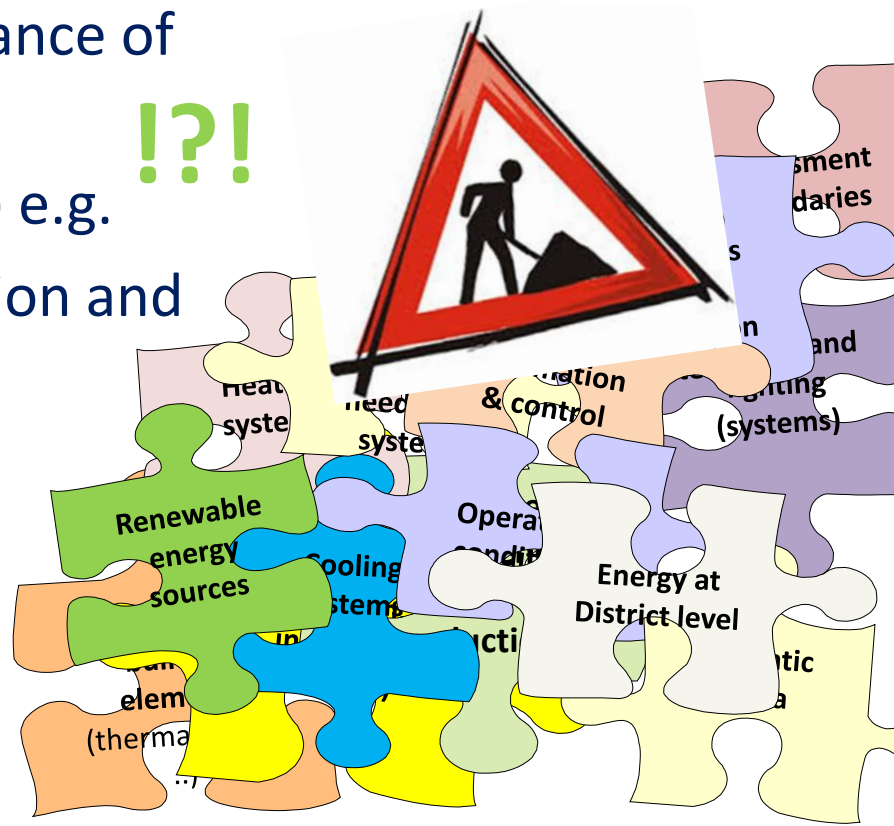
European Commission to CEN



“Develop a consistent set of standards to assess overall Energy Performance of Buildings”

Support the EPB Directive (EPBD) e.g.

- Energy performance certification and check compliance against minimum EP requirements;
- Harmonized procedures, with flexibility for national contexts.





## Current status



- The whole set of EPB standards was published in 2017<sup>1)</sup>:
  - **53 EPB standards** at European (CEN) level out of which for the moment **17 EPB standards** also global (ISO) level **ISO 52000s**;
  - **39** accompanying **EPB technical reports**.
- Implementation in national building regulations:
  - **EPBD! in Europe**;
  - Revised EPBD (2018), Annex I mentions explicitly 5 “overarching” EPB standards.

---

<sup>1)</sup>: 1 standard, 1st May 2019



# The role of the EPB Center

- Support Member States and National Standardization Bodies (NSBs) to complete the **national annexes** of the overarching EPB standards;
- Disseminate **information** and **promote** the use of the overarching **and** other EPB standards;
- **Provide information services** for all involved stakeholders, such as industry, researchers, engineers and building professionals, financial institutions on the EPB standards.



# National Annexes to the 'overarching' standards

Priority is given to the 'overarching' standards: mentioned in Annex 1 of the revised EPBD.

Each standard describes an important step in the assessment of the energy performance of buildings:

- **EN ISO 52000-1**: Weighted overall (primary) EP, share of renewables;
- **EN ISO 52003-1**: Overall EP indicators;
- **EN ISO 52010-1**: Climatic data for energy calculations;
- **EN ISO 52016-1**: Energy needs (heating/cooling) and indoor temperatures;
- **EN ISO 52018-1**: EP indicators at building fabric level.



# Knowledge tools

- **FAQ** on key issues (*How to fill in the annexes? How to use the standards?, How to find my way..., How to understand...., Where to find.....*);
- Calculation **tools** for key individual standards;
- **Case studies**: pool of practical examples tailored to the needs of different stakeholders;
- **Workshops** and EPB standards webinar series.



# Thank you for your attention!

*EPB Center offers **specific services** tailored to **exact needs** of **stakeholders** (individual or clusters).*

More information on  
the set of EPB standards:

[www.epb.center](http://www.epb.center)

Contact: [info@epb.center](mailto:info@epb.center)



This document has been produced under a contract with the European Union, represented by the European Commission (Service contract ENER/C3/2017-437/SI2-785.185).

**Disclaimer:** The information and views set out in this document are those of the author(s) and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

# ALDREN

**AL**liance for  
**D**eep energy  
**RE**novation in buildings

## Translating building performance into financial asset



**ALDREN** ALliance  
for Deep RENovation  
in buildings



# 8 European partners are working together to increase the building energy renovation rate and quality

**CSTB**  
*le futur en construction*



(research)



(certification)



(development application)



# Why **ALDREN**?

- only about **1-2%** of the building stock is **renovated each year**;
- only around **15 %** of building refurbishments **incorporate significant** energy efficiency improvements.

energy savings are not the trigger for renovation

Some reasons:

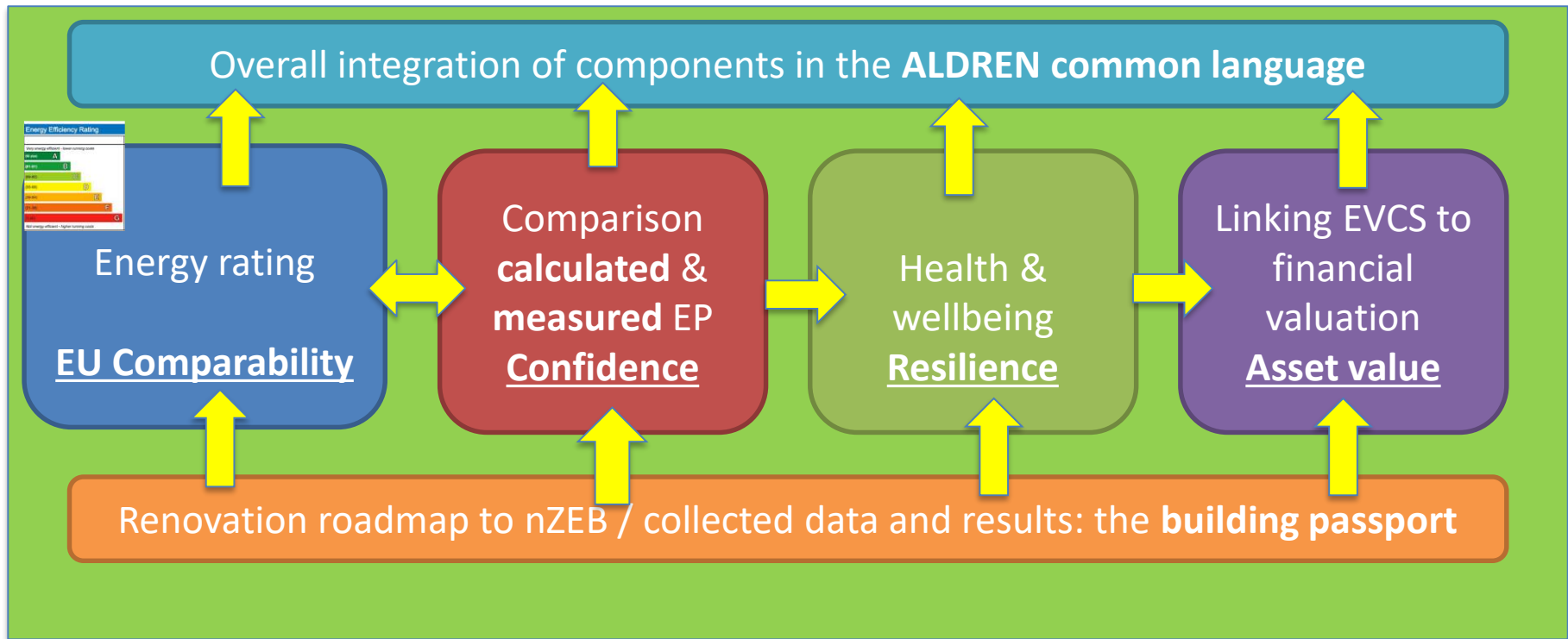
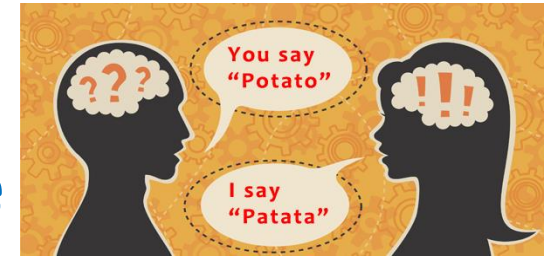
- no sufficient financial interest;
- absence of a holistic strategy;
- lack of communication between the different stakeholders
- (building professionals, building owners, finance).



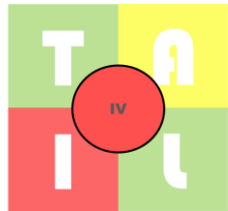
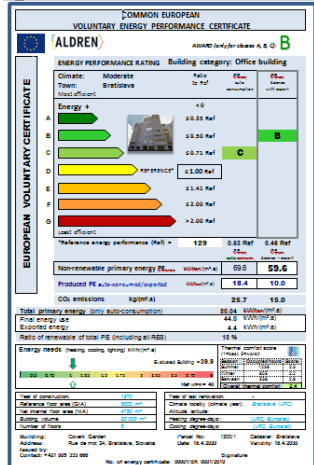
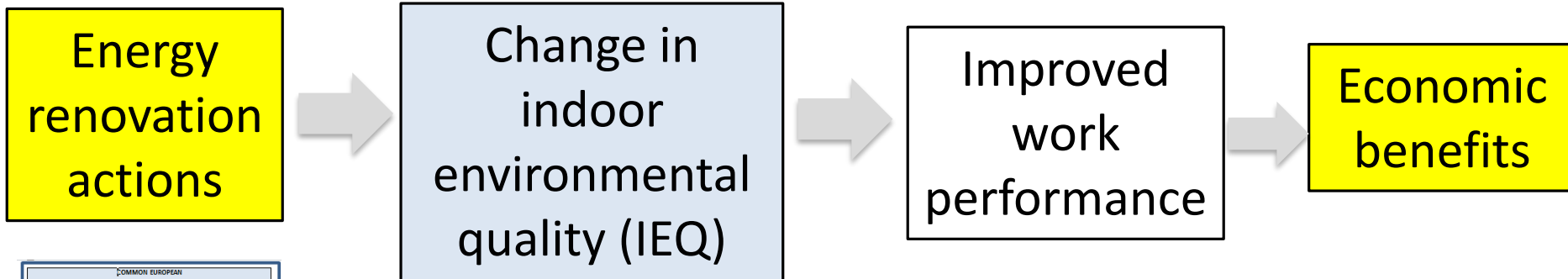
Communicate **all benefits** of energy renovation  
and **not only the energy savings**:  
**The ALDREN common language**

# The ALDREN common language

## 6 topics for an European Voluntary Certification Scheme related to energy renovation



## Link between energy renovation and economic benefits



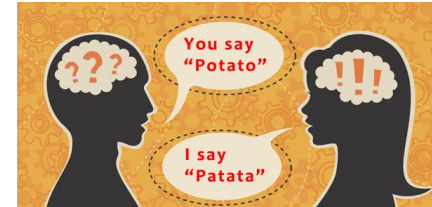
## TAIL describing

- Thermal,
- Acoustic,
- Indoor air quality,
- Lighting

*EN 16798–1 (indoor environm. input param)*

# Résumé

- Energy savings alone do not trigger building renovation
  - *ALDREN offers an holistic approach on energy (e.g. linking it with health and well being, finance)*
- Communication between the different stakeholders involved in building renovation is needed
  - *ALDREN express building performance in reliable, transparent indicators and translate them into financial asset*



A methodology to stimulate the increase of renovation rate and quality has been created

But...



A methodology to stimulate the increase of renovation rate and quality has been created

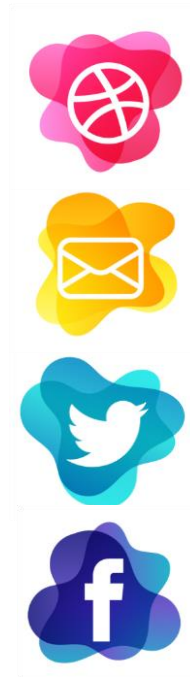
**...nothing will happen...**



**...without a strong  
strategic partnership for  
market uptake**



# JOIN ALDREN!



WEB: [www.aldren.eu](http://www.aldren.eu)

E-NEWSLETTER subscription

TWITTER: @H2020\_ALDREN

FACEBOOK: H2020Aldren





# CEN-CE✓

CEN EPB Standards Certified Experts



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 785018.

# 1) What is CEN-CE – the key aims?

**CEN-CE: CEN standard Certified Experts**

EU-wide training / qualification scheme based on EPBD mandated CEN standards



H2020 - Project on increase Construction skills of professionals

related to

- Reducing energy consumption and carbon footprint (climate change)  
(EU commitments)

CEN-CE is focused on use of **CEN standards** developed in  
**CEN/TC 228 Heating and waterbased cooling systems**  
**CEN TC/371 Overarching standard for global indicator**

A **sustainable business case** should to be defined.

**Training and certification materials to be used by other organizations**



# CEN-CE is a piece of the EP-Building puzzle

Part of a **European quality benchmark** based on **EU CEN standards** ( e.g.H2020 ALDREN project)

Building professionals and users are asking for

- **Quality / reliability (keep the promises)**
- **Comparability (level playing field for products)**
- **Transparency (technology neutral assessment)**



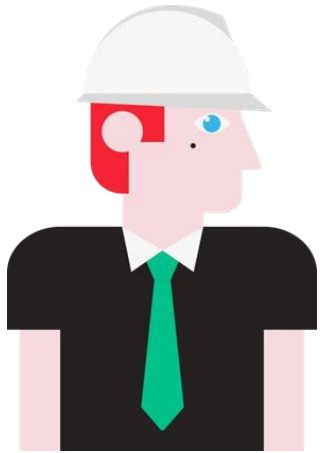
## Why CEN-CE now?

European standards related to EPBD under Mandate 480 were positively voted in January 2017 and published in 2017.

Training is needed to **bring them into application** and to **support the transposition of the EPB Directive**

# Content of CEN TC228 standards (overview)

## (Heating, Domestic Hot Water, water based cooling systems)



- **Heat load calculation** (the 12831 series e.g. for sizing);
- **Energy calculation** (the 15316 – series e.g. for regulation) innovative approaches (e.g. on-site CHP); solutions including renewables (e.g. on-site wind turbines);
- **Economical calculation** (cost optimum);
- **Measured energy** (e.g. reliability)
- **Inspection.**

Some are related to the **daily work of HVAC** professional (e.g. design), others are related to **upcoming challenges** (e.g. global cost calculation).

Training on **individual technical topics is not enough to ensure good quality** of installation. The training on **transversal know-how is needed (holistic approach)**.

# CEN-CE results

EU-wide training / qualification scheme based on EPBD mandated CEN standards

➤ **EU-wide training scheme per standard:**

- PPT (fundamentals, main topics of the standard);
- Handbook (resuming the calculation procedures);
- Excel sheet (to evaluate impact of different parameters).



➤ **Qualification and certification schemes for CEN-CE experts**

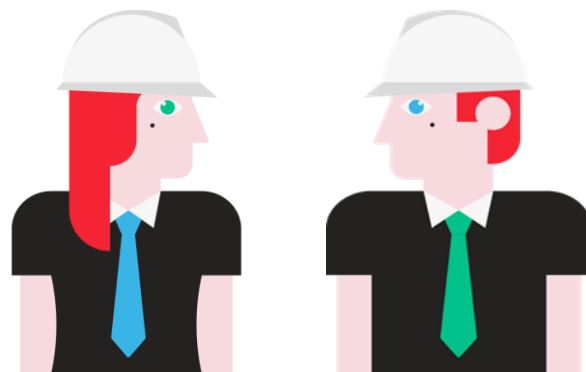
- Pre- requisites to enter the training, qualification scheme;
- Exams;
- List of experts;
- Etc.



# Advantages for HVAC created by CEN-CE

## For CEN-CE certified experts

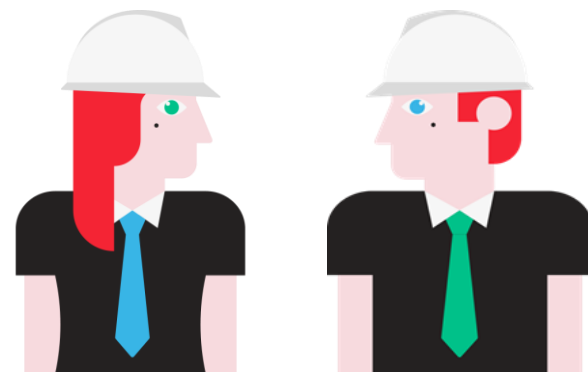
- Gain **recognition on the market** for:
  - Quality / reliability;
  - Comparability;
  - Transparency.



by using **best know-how** based on **European standards** (state of art),

- gain on **visibility** (referenced in CEN-CE expert data base);
- **be trained on harmonized procedures** (training, tools) allowing professionals to **work EU wide**.

# Advantages for HVAC created by CEN-CE



## For industrials

- **Harmonised databases for products**  
because based on CEN standards in line with Ecodesign;
- **A coherent and transparent level playing field**  
technology neutral in Energy performance assessment of buildings. Fair competition between technical solutions;
- Possibility to **show performance of their products EU – wide.**

# The next challenges – the market uptake

## CEN-CE particularity:

based on international standards (state of art = “security”)

## But where is market demand? Three potential drivers (resume)

### 1) Professional skills in design, energy consumption

Pros: state of art, increased quality needed

(towards nZEB's, cost optimum, integration of renewables)

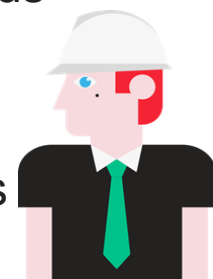
Cons: national mandatory procedures, double work



### 2) Voluntary (e.g. HQE) and mandatory certifications schemes (e.g. EPC's)

Pros: Discussion with HQE, Member States using more and more standards

Cons: Long time schedule



### 3) Industrials

Pros: Modular structure of standards related to product, Industrial trainings

Cons: Maybe not the right target group (installers)

## ...and finally

### ➤ CEN-CE created

a EU wide common training and qualification scheme for heating and cooling professionals

- harmonizing daily work (heat load) and
- adding skills on upcoming challenges (nZEB, renewables)

to **reduce energy consumption** and **carbon footprint** (EU commitments)

### ➤ To bring it to the market





# CEN-CE✓

CEN EPB Standards Certified Experts

**[www.cen-ce.eu](http://www.cen-ce.eu)**



CEN EPB Standards  
Certified Experts



Cen\_Ce\_



@CEN\_CE\_



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 785018.



# U-CERT

User-Centred Energy Performance  
Assessment and Certification

# U-CERT IN A NUTSHELL

U-CERT is a Horizon 2020 project (September 2019 – August 2022) with the main aim to introduce a next generation of user-centred Energy Performance Assessment and Certification Scheme to value buildings in a holistic and cost-effective manner.

- Facilitate convergence of quality and reliability, using the EPB standards developed under the M/480 mandate, enabling a technology neutral approach that is transparently presenting the national and regional choices on a comparable basis;
- Encourage the development and application of holistic user-centred innovative solutions, including the smart readiness of buildings;
- Encourage and support end-users in decision making (e.g. on deep renovation), nudge for better purchasing and instil trust by making visible added (building) value, using EPC's.

U-CERT has a focus on strengthening actual implementation of the EPBD by providing and applying insights from a user perspective and creating a level playing field for sharing implementation experience to all involved stakeholders, facilitated and empowered by the EPB Center.

## 3 TRANSITION PATHS ENVISIONED BY U-CERT



**A full and smooth implementation of the EPBD and EPB standards under mandate M/480**

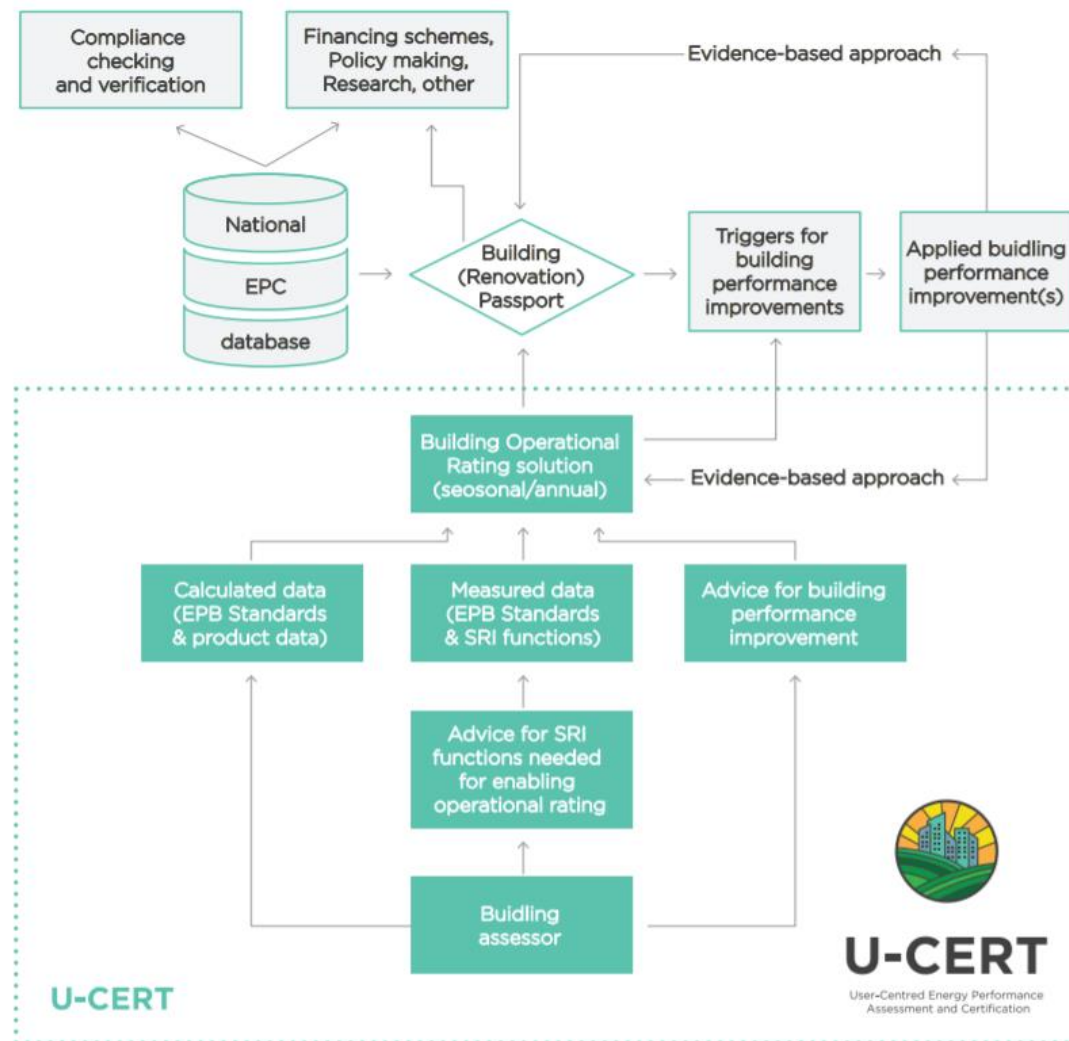


**User centred design for facilitating and accelerating building performance improvements (ranging from behaviour change all the way to deep renovation)**



**Leveraging synergies between the Smart Readiness Indicator for buildings and the set of EPB standards for shifting the current EPC paradigm to an evidence-based approach e.g. building operational rating**

# Visualising U-CERT's endeavour



# EXPLORE SYNERGIES AND GET INVOLVED!

??? Do your activities relate to the overall Energy Performance of Buildings Directive? Or specifically to building performance assessment and management, the Energy Performance Certification schemes, the set of Energy Performance of Buildings standards, financing building performance improvements? Or you are an end-user of Energy Performance Certificates?

!!! Then definitely get in contact with U-CERT team for discussing about possible synergies with U-CERT activities worth exploring together with the overarching goal of facilitating the transition to a sustainable European built environment!

- **Contribute to the development of U-CERT methodology;**
- **Contribute to the development of U-CERT digital tools and their testing on case studies;**
- **Participate in U-CERT workshops (national and EU levels);**
- **Participate in U-CERT roadshow (national level);**
- **Participate in U-CERT trade fair seminars (national and EU levels);**
- **Participate in U-CERT trainings (national and EU levels);**
- **Assess strategic partnerships.**

THANK YOU FOR  
YOUR ATTENTION!

[www.u-certproject.eu](http://www.u-certproject.eu)



U-CERT PROJECT



@cert\_u



U-Cert Project



**U-CERT**

User-Centred Energy Performance  
Assessment and Certification





Thank you!  
Questions?  
No? Great! Bye!

[avl@rehva.eu](mailto:avl@rehva.eu) or [litiu@kth.se](mailto:litiu@kth.se)