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BUILD UP Webinar 2019.03.05

iBRoad – My path towards an energy efficient home

Alexander Deliyannis
Sympraxis Team

Maarten De Groote
BPIE

Alice Corovessi
INZEB

Lukas Kranzl
TU Wien

Martin Pehnt
ifeu

Horia Petran
INCD URBAN-INCERC

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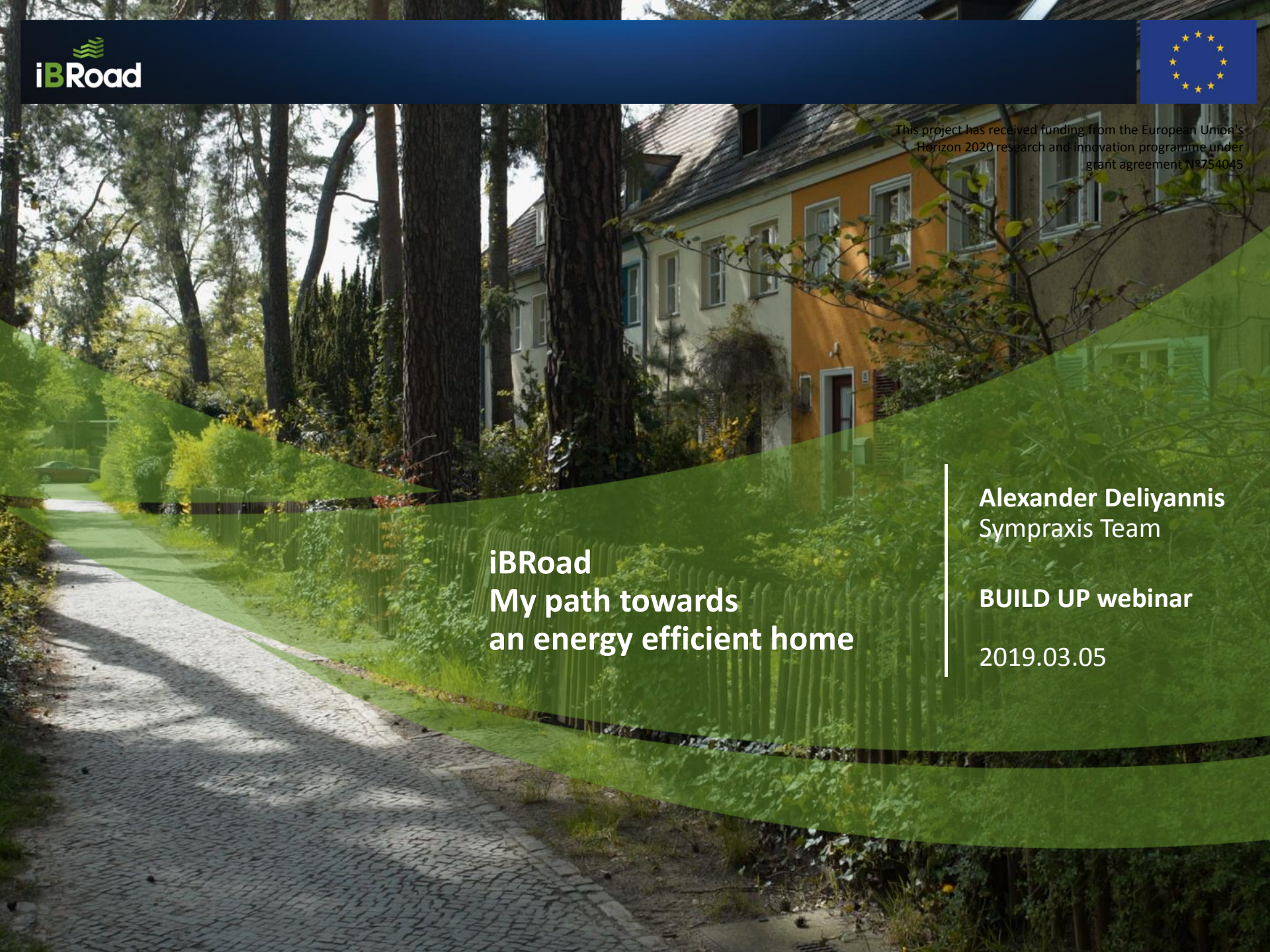
Today's BUILD UP webinar agenda

- **Introduction** – Alexander Deliyannis, Sympraxis Team, iBRoad project coordinator
- **The context of the Building Renovation Passport; first steps towards a breakthrough?** – Maarten De Groote, Buildings Performance Institute Europe (BPIE)
- **Reflections from the market across Europe** – Alice Corovessi, Institute of Zero Energy Buildings (INZEB)
- **iBRoad's vision for the Building Renovation Passport** – Lukas Kranzl, Technical University of Vienna (TU Wien)
- **iBRoad in the field: testing the Roadmap and Logbook in European countries** – Martin Pehnt, Institute for Energy and Environmental Research Heidelberg (ifeu)
- **The relevance of IBRoad; brief testimony from Romania** – Horia Petran, INCD URBAN-INCERC
- **Questions and Answers**



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iBRoad
My path towards an energy efficient home

Alexander Deliyannis
Sympraxis Team

BUILD UP webinar

2019.03.05

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Assume that you are a building owner…

- Are you considering renovating your building?
- Do you know where to start from?
- You wouldn't build a house without a plan; would you renovate it without one?
- Whom would you ask to prepare that plan for you?
- What kind of building information would that expert need? Do you have it readily available?
- Would you expect the expert to discuss your needs, preferences and financial ability when preparing the plan?
- Would financing the renovation be easier with such a plan?
- Who could help you implement the plan?

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A quick comparison of markets

- Price
- Lifespan
- Modularity
- Services
- Commodification
- Regulatory context
- Ownership

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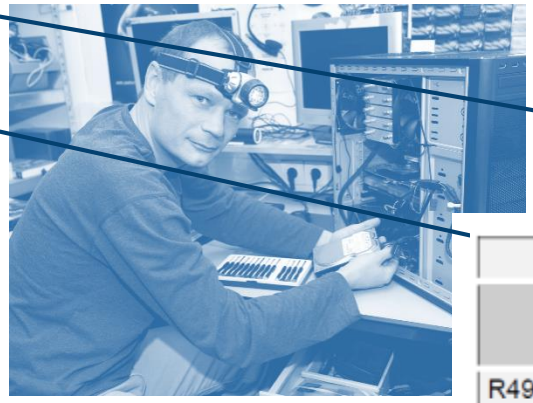
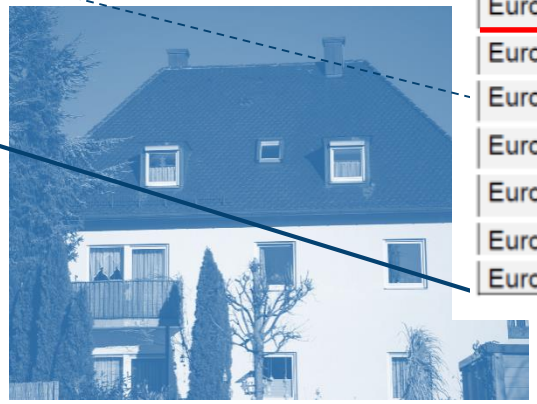
A quick comparison of markets





Legal requirements and limit values

	Law from	NOx g/kWh	PM g/kWh	HC g/kWh	CO g/kWh
R49.00	1982	18	-	3.50	14
Euro 0	1990	14.4	-	2.40	11.2
Euro 1	1993	8.0	0.36	1.10	4.5
Euro 2	1996	7.0	0.15	1.10	4.0
Euro 3	2001	5.0	0.10	0.66	2.1
Euro 4	2006	3,5	0,02	0,46	1,5
Euro 5	2009	2,0	0,02	0,46	1,5
Euro 6	2013	0,4	0,01	0,13	1,5

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Challenges

- Long lifespan, non-modularity
- Non access to finance
- Non access to finance
- Non access to finance
- Non access to finance
- Market fragmentation
- Need for education and training
- Various
- Various
- Various

Potential solutions

- Modular, upgradeable construction
- Step-by-step renovation
- 3rd party financing / ESCOs
- Energy efficient mortgage – EeMAP
- Bundling of investments
- One-Stop Shops – BetterHome DK
- BUILD UP Skills / Construction Skills
- Mass customisation – Energiesprong
- Building Renovation Passports
- Building Information Modelling (BIM)

Thank you

iBRoad

www.ibroad-project.eu

Alexander Deliyannis

a@sympraxis.eu

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The context of the Building Renovation Passport
First steps towards a breakthrough?

Maarten De Groote

Head of Research, Buildings Performance Institute Europe

My path towards an energy efficient home

Build Up webinar, 5 March 2019

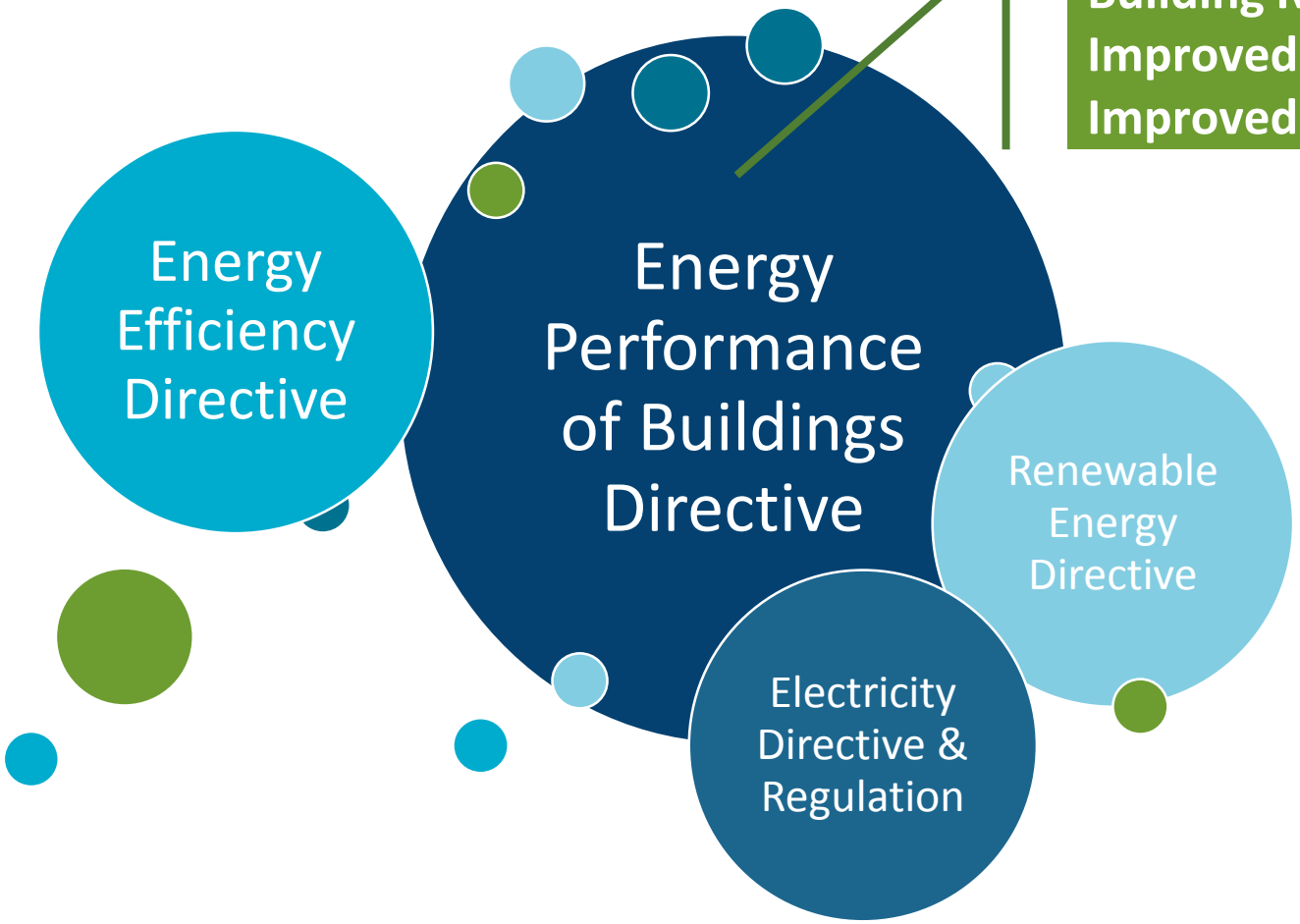
90% of our time is spent indoors

97% of EU buildings is not future proof

Sense of urgency!

EU legislation, a complex interaction of initiatives

Building Renovation Passport
Improved Renovation Strategies
Improved EPC's

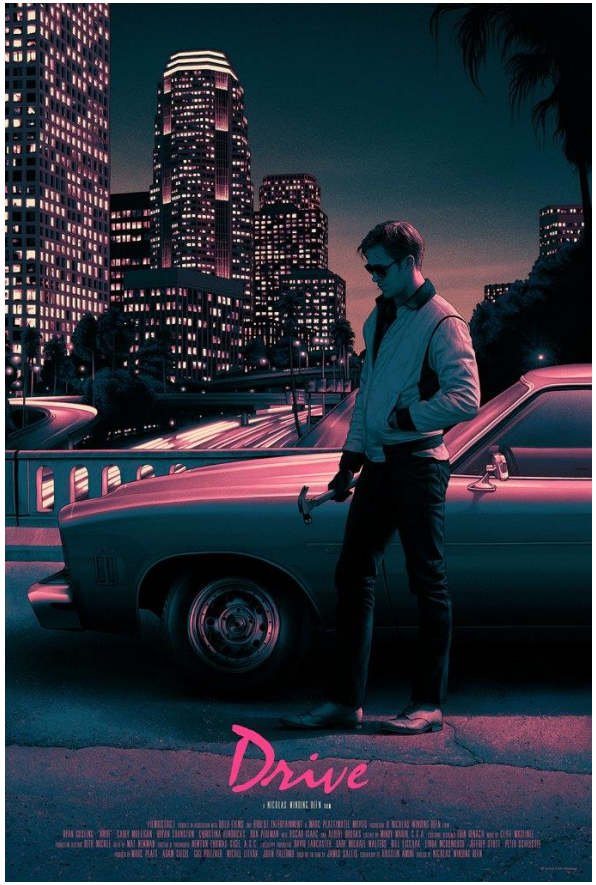


National Renovations Strategies

The essential tool for Member States to achieve impact

Milestones for 2030, 2040, 2050	Contribution to the EU energy efficiency target for 2030	Overview of the national building stock	Expected share of renovated buildings in 2020
Policies and actions to target worst performing segments of building stock	Policies and actions to stimulate cost-effective deep renovation of buildings	Including staged deep renovation, e.g. by introducing an optional scheme for building renovation passports	Actions that contribute to the alleviation of energy poverty
Policies and actions to target all public buildings	Promote smart technologies and well-connected buildings and communities	Promote skills and education in the construction and energy efficiency sectors	Estimate of expected energy savings and wider benefits, such as those related to health, safety and air quality

EPBD 2018 as main driver for BRP



Article 19a of the EPBD

- *The Commission shall, before 2020, conclude a feasibility study, clarifying the possibilities and timeline to introduce an* ***optional building renovation passport***
- *Complementary to the energy performance certificates*
- *To provide a long-term, step-by-step renovation roadmap for a specific building based on quality criteria, following an energy audit, and outlining relevant measures and renovations that could improve the energy performance.*

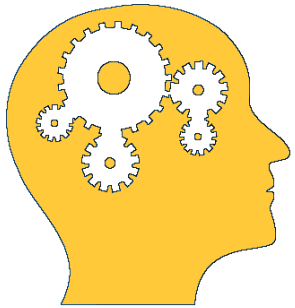
Interest to be involved? www.epbd19a.eu

DATA GATHERING

ON-SITE AND OFF-SITE

- General Information & Administration
- Building construction information
- Energy performance (e.g. EPC)
- Building operation
- Smart information

PROCESSING



BUILDING RENOVATION PASSPORT

RENOVATION ROADMAP

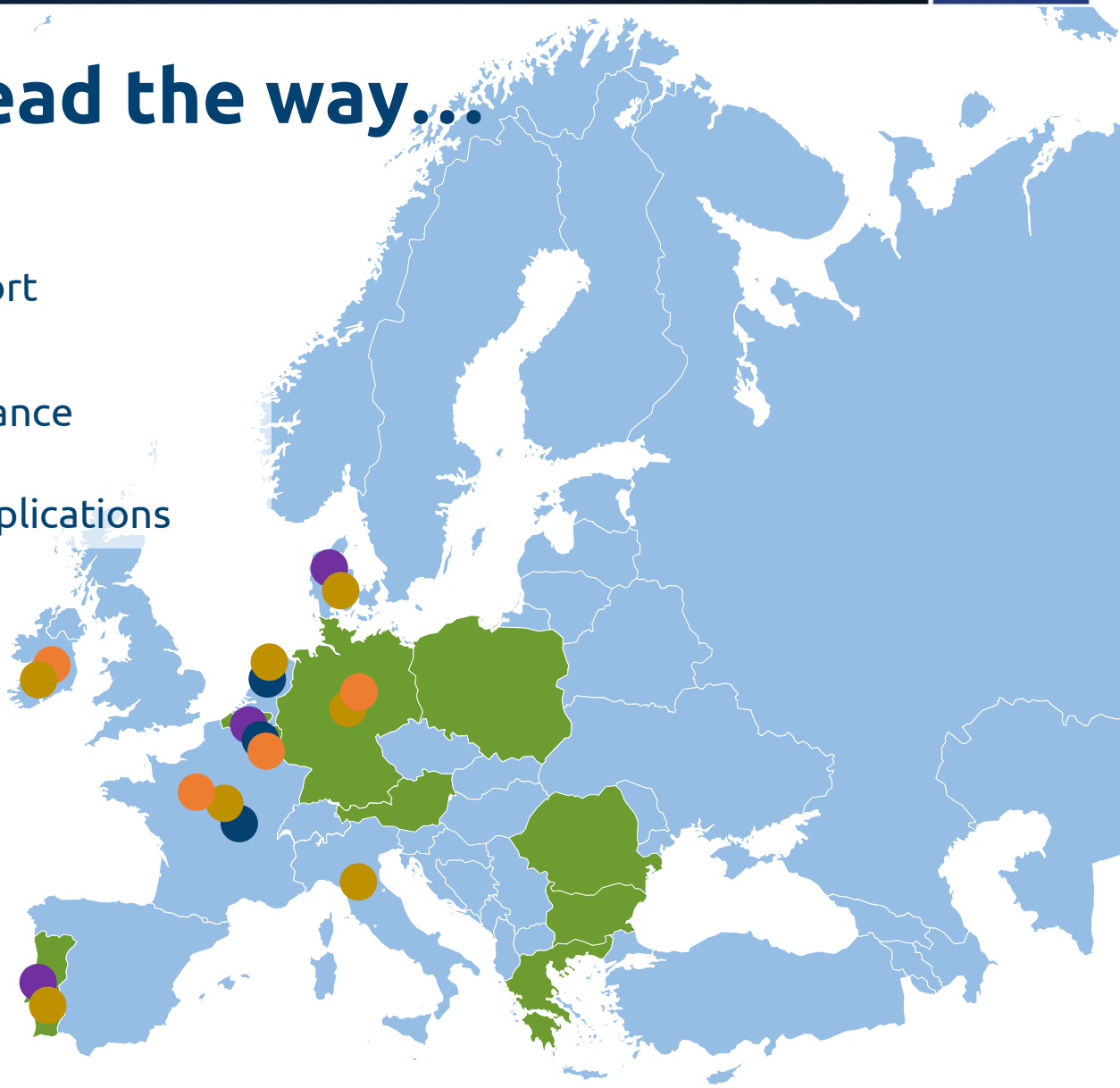
- Renovation steps in a sensible order
- Comprehensive audit
- Long-term perspective
- Tailored to individual context

BUILDING LOGBOOK

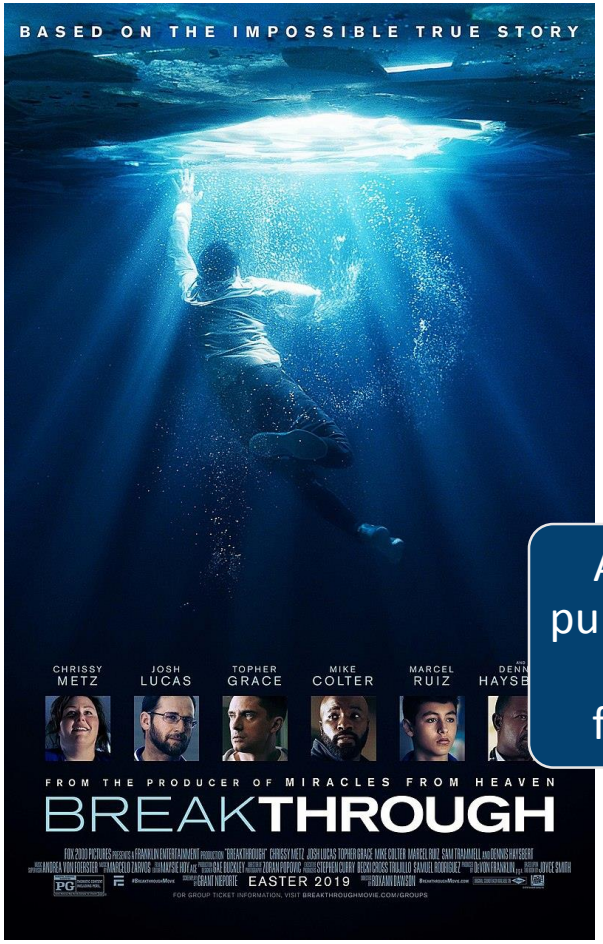
- Inventory of building-related information
- Manage and monitor real-time energy consumption
- Functionalities to users
- Linking building owners (users) and third parties

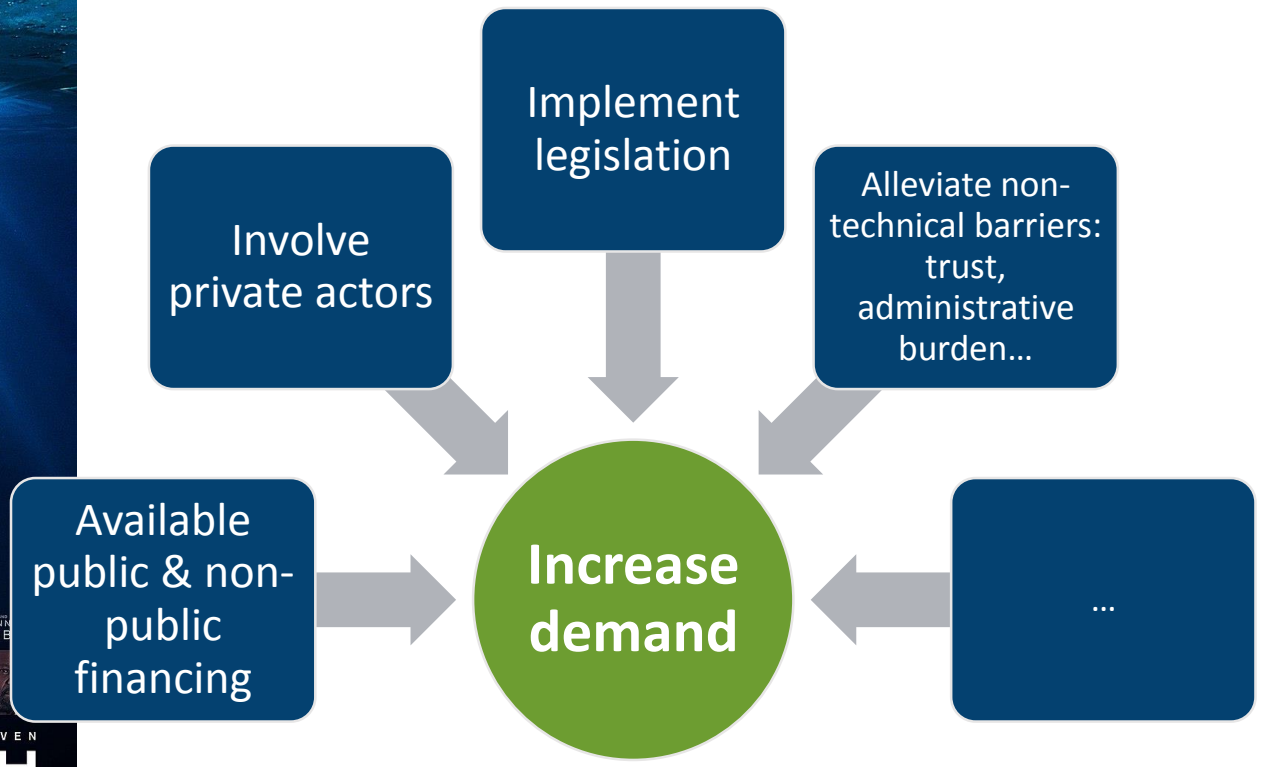
Pilot cases lead the way…

- iBRoad country
- Building renovation passport
- Logbook
- Advanced Energy Performance Certification
- One Stop Shop & online applications



Are we on a breakthrough?





It’s all about the users

- Majority of households in BG, PT and PL (>75%) finds it essential to have a plan to renovate over time to overcome problems
- Trust in the EPC’s for advice on renovation measures is very low in BG (9%), but much higher in Portugal (47%)
- In Poland most building owners plan to finance the renovation with own savings (84%)
- One on two Polish households is interested in a BRP, but not willing to pay
- One on two Portuguese households is more concerned about having a warm and comfortable home than saving energy

Thank you

iBRoad

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Maarten De Groote

maarten.degroote@bpie.eu

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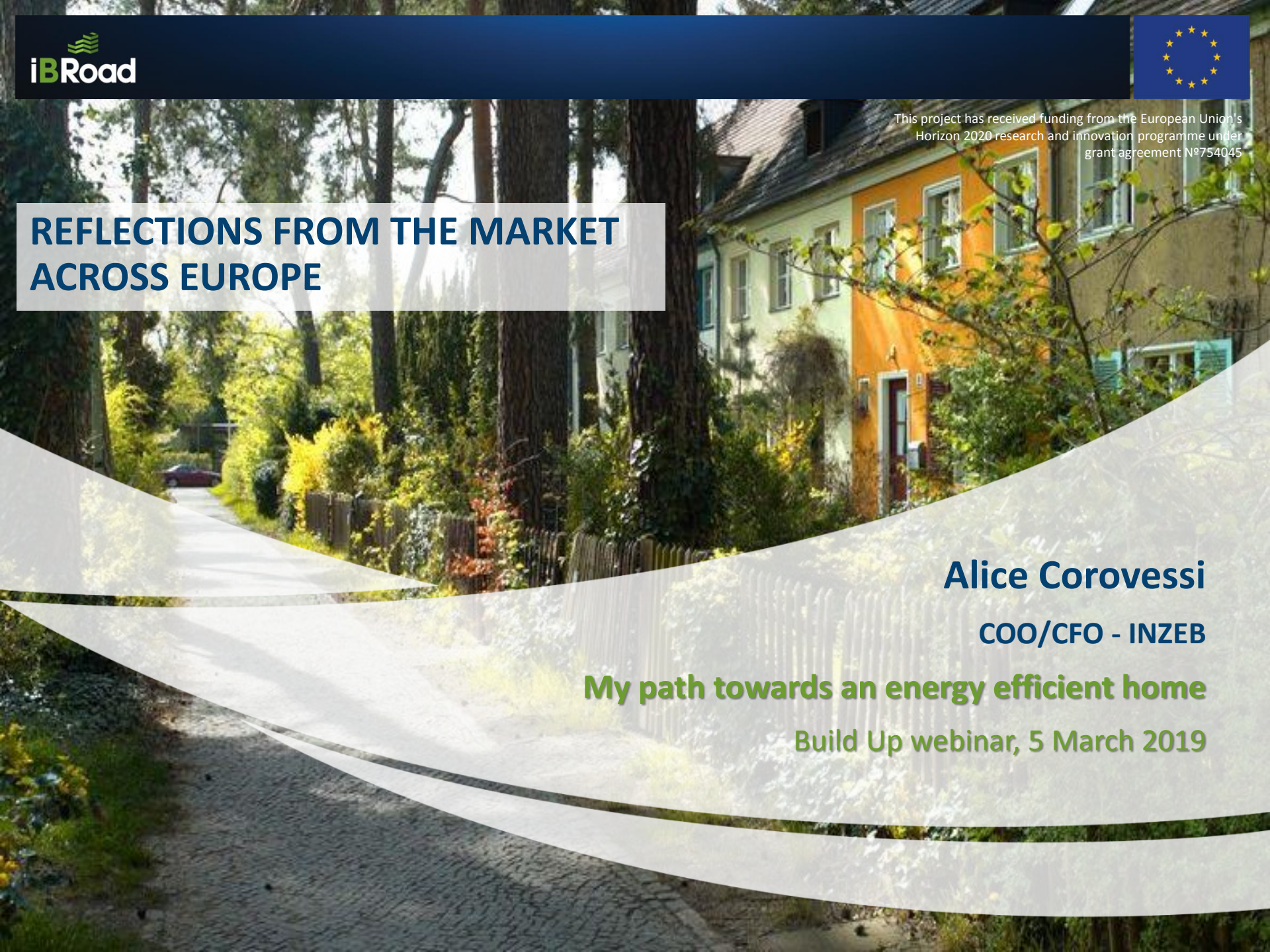

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REFLECTIONS FROM THE MARKET ACROSS EUROPE

Alice Corovessi

COO/CFO - INZEB

My path towards an energy efficient home

Build Up webinar, 5 March 2019

iBRoad is a consumer-oriented project as it strongly supports building owners in step-by-step deep renovations, removing barriers and lock-in effects.
The **adoption** and **adaptation process** of the tools to be developed within the project period, cannot be the same for all countries since special conditions exist.

THE AIMS OF THE STAKEHOLDER MEETINGS

To introduce the iBRoad project concept and tools to be developed

To identify iBRoad's replicability potential in each country as well as the interconnection with existing national tools and strategies

To discuss the potential adaptation process, the implementation barriers as well as the ways to overcome them.




In total, **114 stakeholders**, coming from:

- Public National and Local Authorities;
- Engineering and Building Associations;
- Technical Chambers and Consumer Associations;
- Building Material Industry;
- Finance Institutions;
- Academia;
- NGOs and Think Tanks, and,
- Media,

attended the meetings, providing their insights, input, ideas on how the project could can be a benefit for the building owners and tenants.







Legislative Framework

Financial Aspects

Capacity Aspects

Values for All Involved Parties




Key Findings: Values for All Involved Parties

☑ There is a strong need to educate end-users, possibly via a web platform outlining benefits and financial aspects of typical retrofit solutions. This can be accomplished via the tools to be developed within the iBRoad project.

☑ There is a need for qualitative online building renovation tools which integrate the expertise of energy consultants into the data input process.

☑ The iBRoad tools could enhance the quality of construction works.

☑ Individual building renovation roadmaps effectively coordinate the step-wise renovation measures to avoid lock-in effects.

☑ Step-by-step renovation helps the owner of the building to cope with the financial burden it poses.

☑ The renovation plan can provide information that is identical for everyone.

☑ Increased indoor comfort and the quality of the living environment, followed by lower energy bill and reduced emissions of greenhouse gases.

Key Findings: Financial Aspects

☑ Interfaces to existing funding and grant access to third parties (e.g. craftsmen) as desired will be considered success indicators.

☑ The preparation of documents related to building renovation passports must be financed wholly or partially from external assets.

☑ There is a limited willingness from customers to pay for energy consultancy inspections - people do renovations as long as there are subsidies available.

☑ Deep renovation –among others- means that a certain capital has to be made available. Who and under which conditions will provide this financing is a critical issue.

☑ Sustainable and ecological building materials should be included with price ranges.

☑ Promote the iBRoad instruments to the banks that develop and implement energy loan programs.

Key Findings: Capacity Aspects

☑ The value of professional expertise should be emphasised, so as to tackle the current practice of DIY renovations.

☑ Keeping always in mind the building owners or users and their individual needs.

☑ Supporting building owners with clear and approachable guidance is necessary. The logbook and renovation roadmap should be as simple as can be to ensure success and positive impact.

☑ It is important to monitor if all parties can collaborate on the adoption and adaptation of such tools.

☑ Renovation advice should be technology neutral; it is essential to keep the necessary information clear and simple for everyone.

Download the full report at:

https://ibroad-project.eu/results/reports/

MEMBERS AREA

https://ibroad-project.eu/members-area/

if you are already member click Login or else click Register

Login

Register

Thank you

iBRoad

www.ibroad-project.eu

Alice Corovessi
ac@inzeb.org

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iBRoad's vision for the BRP

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Lukas Kranzl, Iná Maia

BUILD UP Webinar

05.03.2019

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Objectives and expectations for the iBRoad concept

- Support long-term planning of building renovation
- Allow storage and update of building related data
- Increases awareness about past, actual and possible future building‘s status
- Automatic data exchange between Roadmap and Logbook
- Dynamic interaction with users

iBRoad Concept

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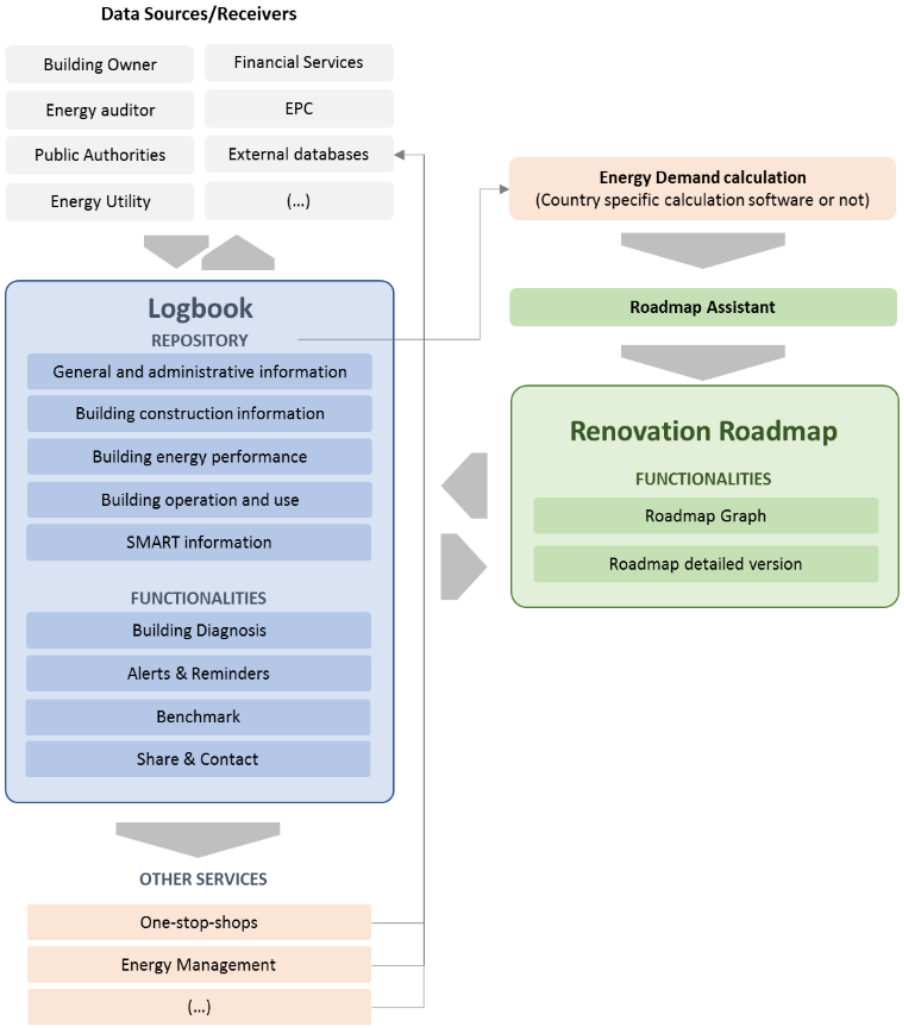

- Data internal flow
- Data exchange with external tools
- Default database

iBRoad Concept

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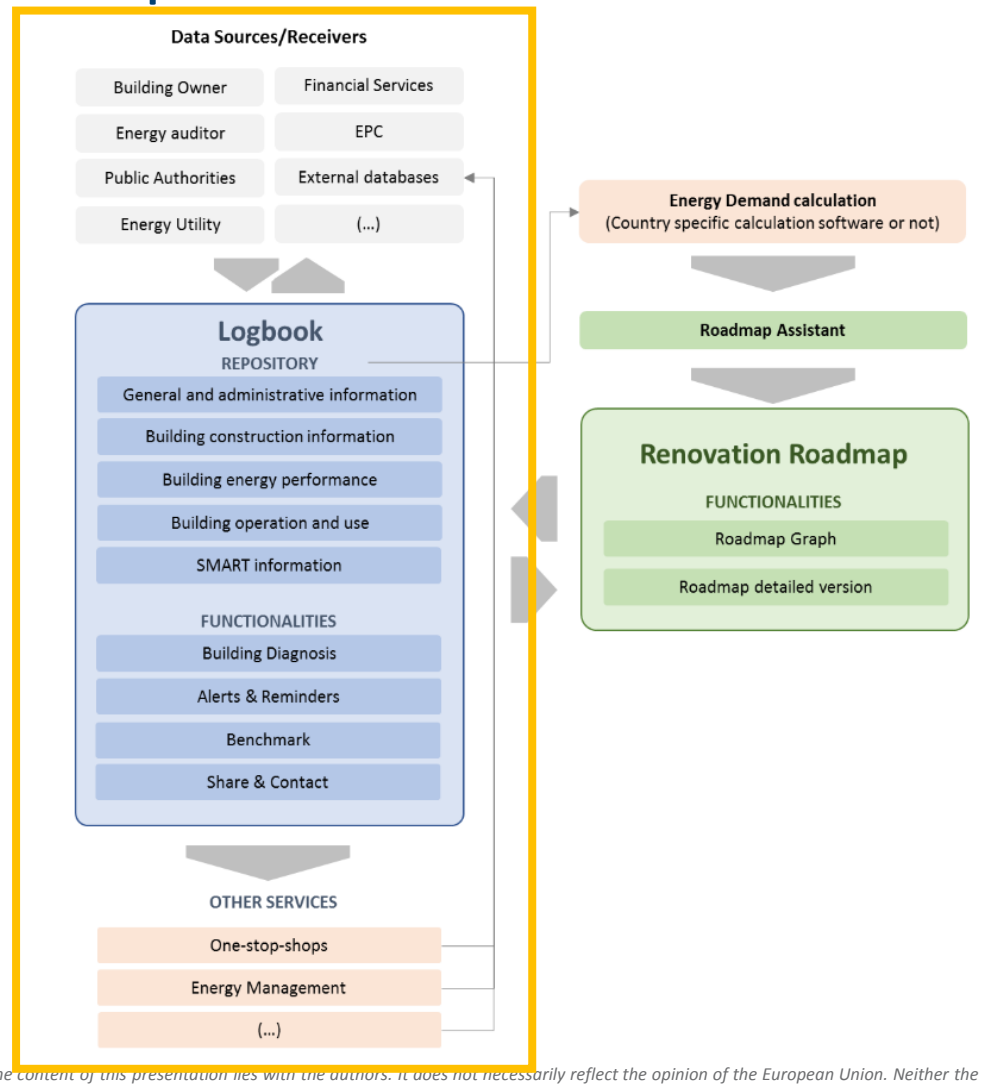

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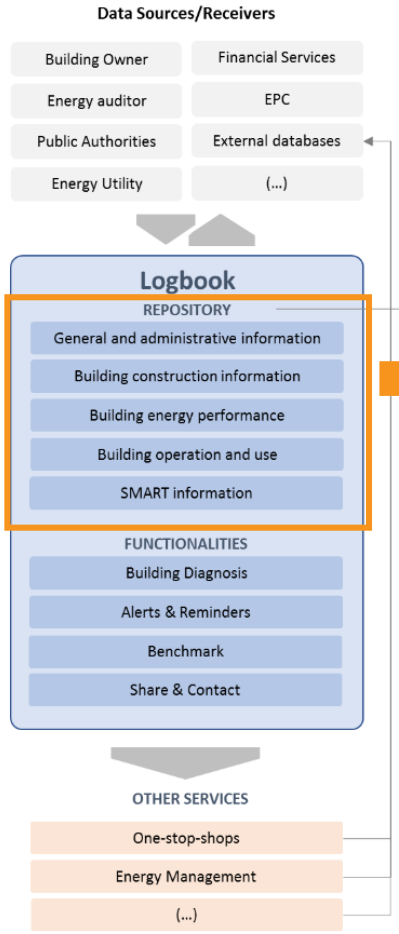
• iBRoad Concept: Logbook



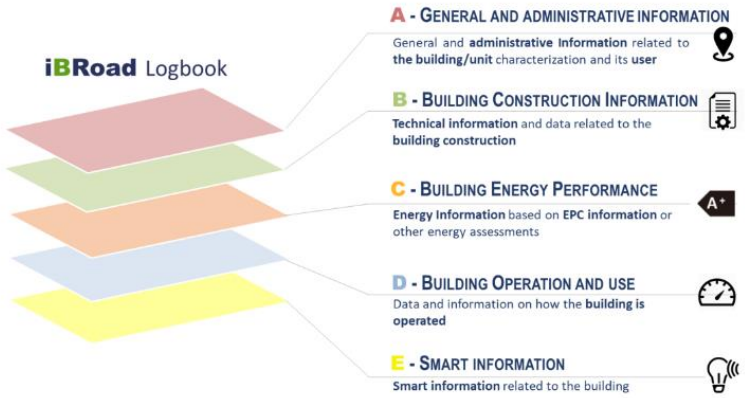


Figure 6. iBRoad-Log modules.

- **Repository**
- Functionalities
- Input Data
- Output Data

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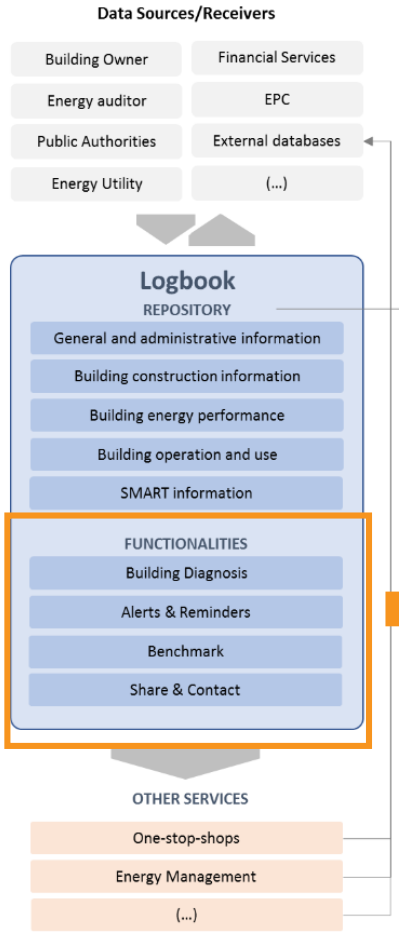
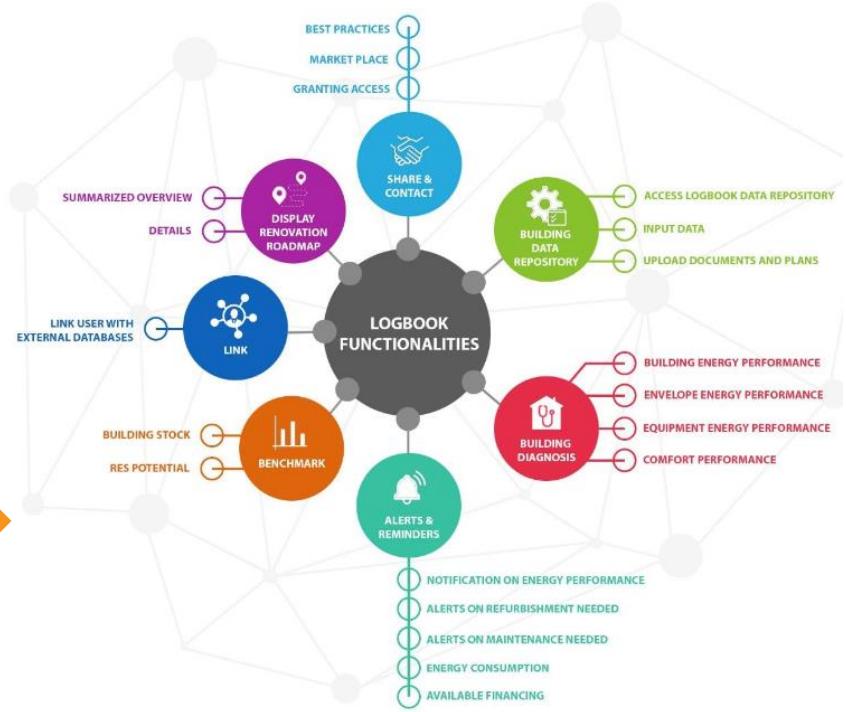
• iBRoad Concept: Logbook





- Repository
- **Functionalities**
- Input Data
- Output Data

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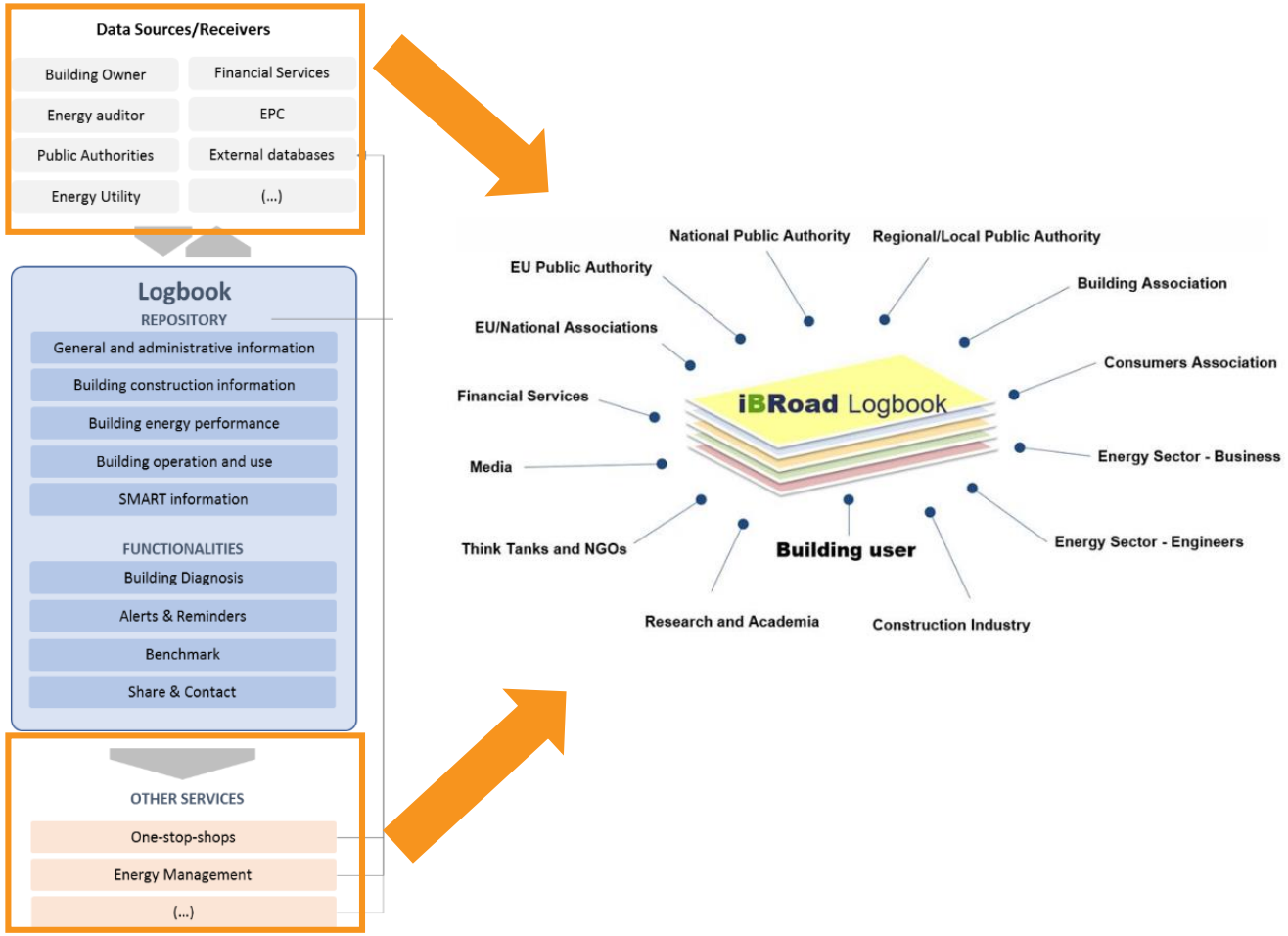
• iBRoad Concept: Logbook



- Repository
- Functionalities
- **Input Data**
- **Output Data**

iBRoad Concept

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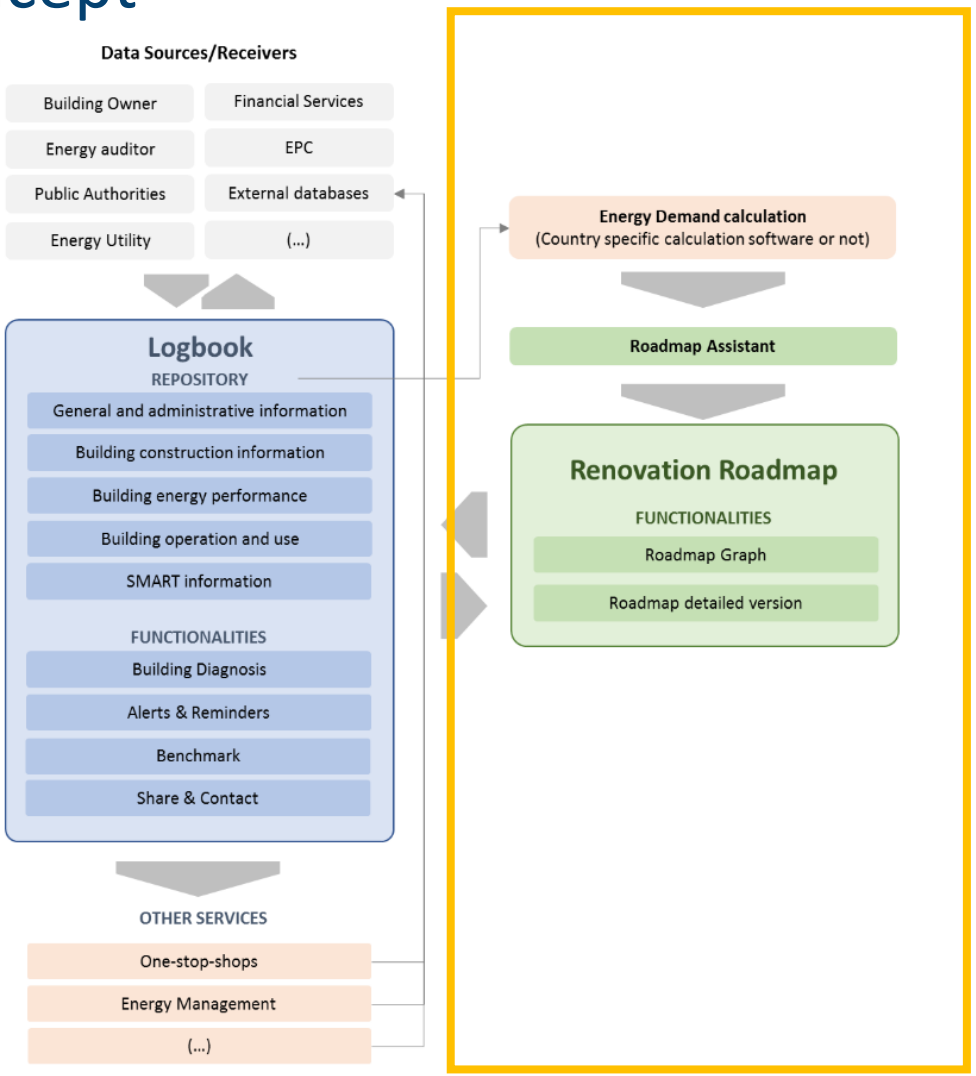

- Data internal flow
- Data exchange with external tools
- Default database

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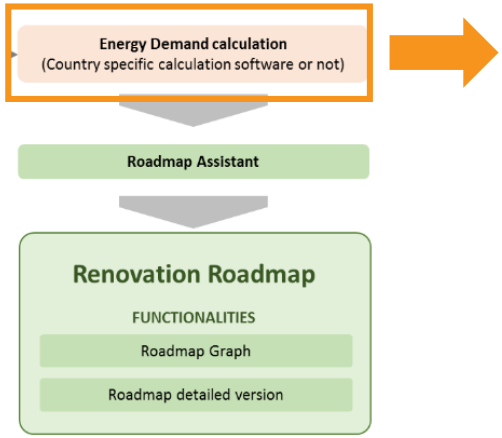
• iBRoad Concept: Roadmap



- Country specific calculation software

or

- Simplified energy demand calculation procedure
  - Open source
  - Phyton code
  - Useful energy
  - Final energy
  - Primary energy
  - CO2 – Emissions

  (Heating, Cooling and Lighting)

- **Energy demand calculation**
- Roadmap Assistant
- Roadmap plan
- Detailed Roadmap plan

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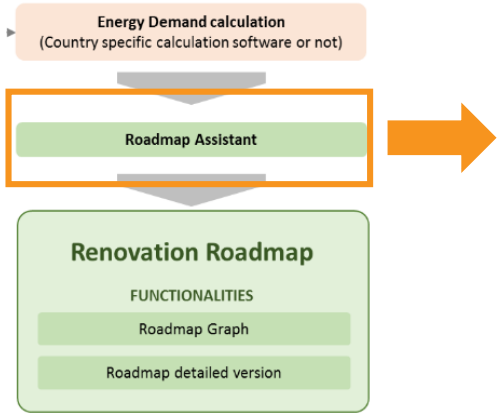
• iBRoad Concept: Roadmap



- Layouting tool
- Easy to handle
- Drop-down and free text fields
- Technical, economic and personal building data

- Energy demand calculation
- **Roadmap Assistant**
- Roadmap plan
- Detailed Roadmap plan

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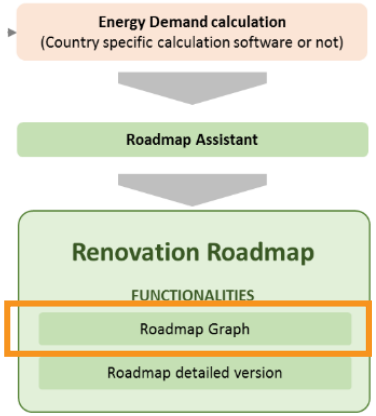
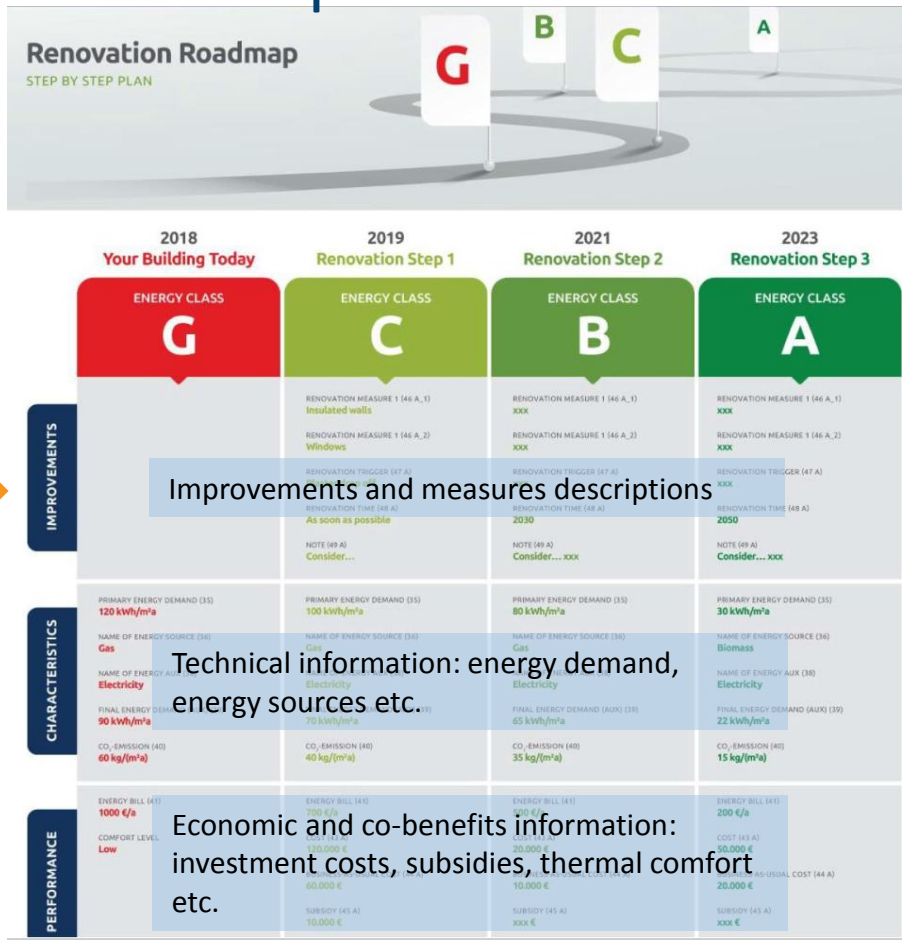
• iBRoad Concept: Roadmap





- Energy demand calculation
- Roadmap Assistant
- **Roadmap plan**
- Detailed Roadmap plan

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• iBRoad Concept: Roadmap

- Energy demand calculation
- Roadmap Assistant
- Roadmap plan
- **Detailed Roadmap plan**

iBRoad Concept

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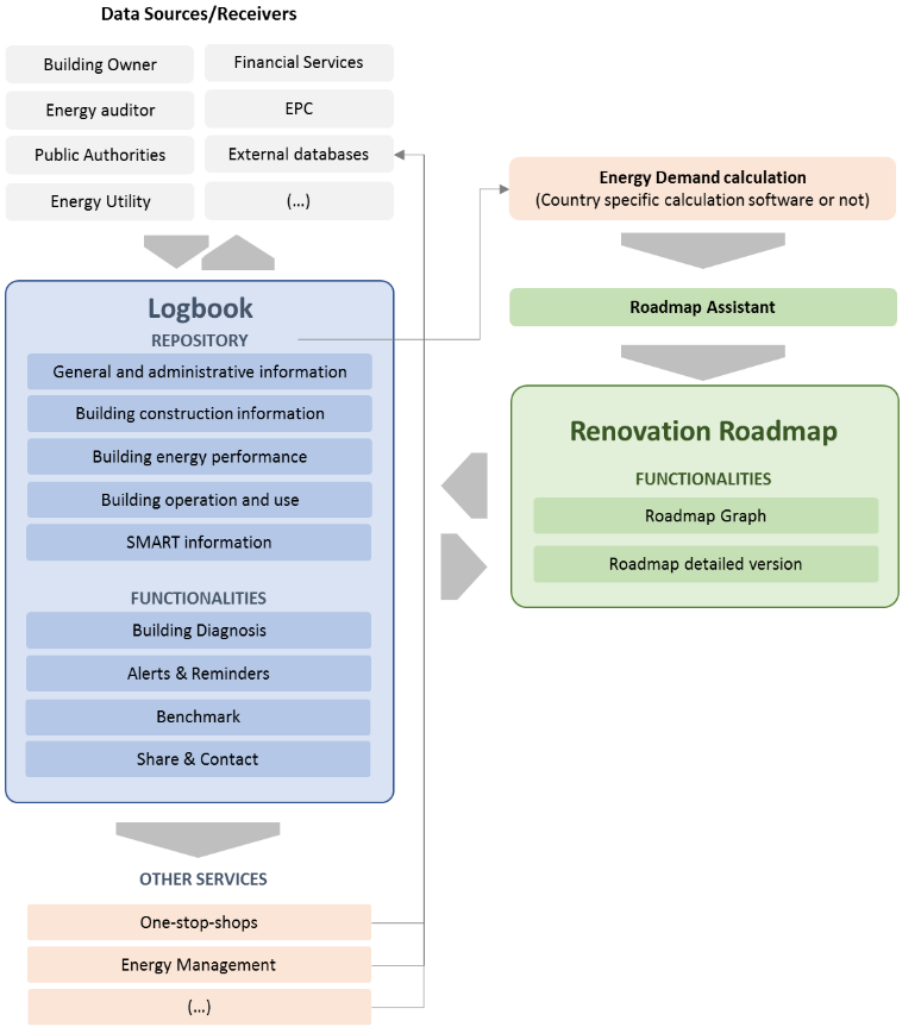

- Data internal flow
- Data exchange with external tools
- Default database

Thank you

iBRoad

www.ibroad-project.eu

kranzl@eeg.tuwien.ac.at
maia@eeg.tuwien.ac.at

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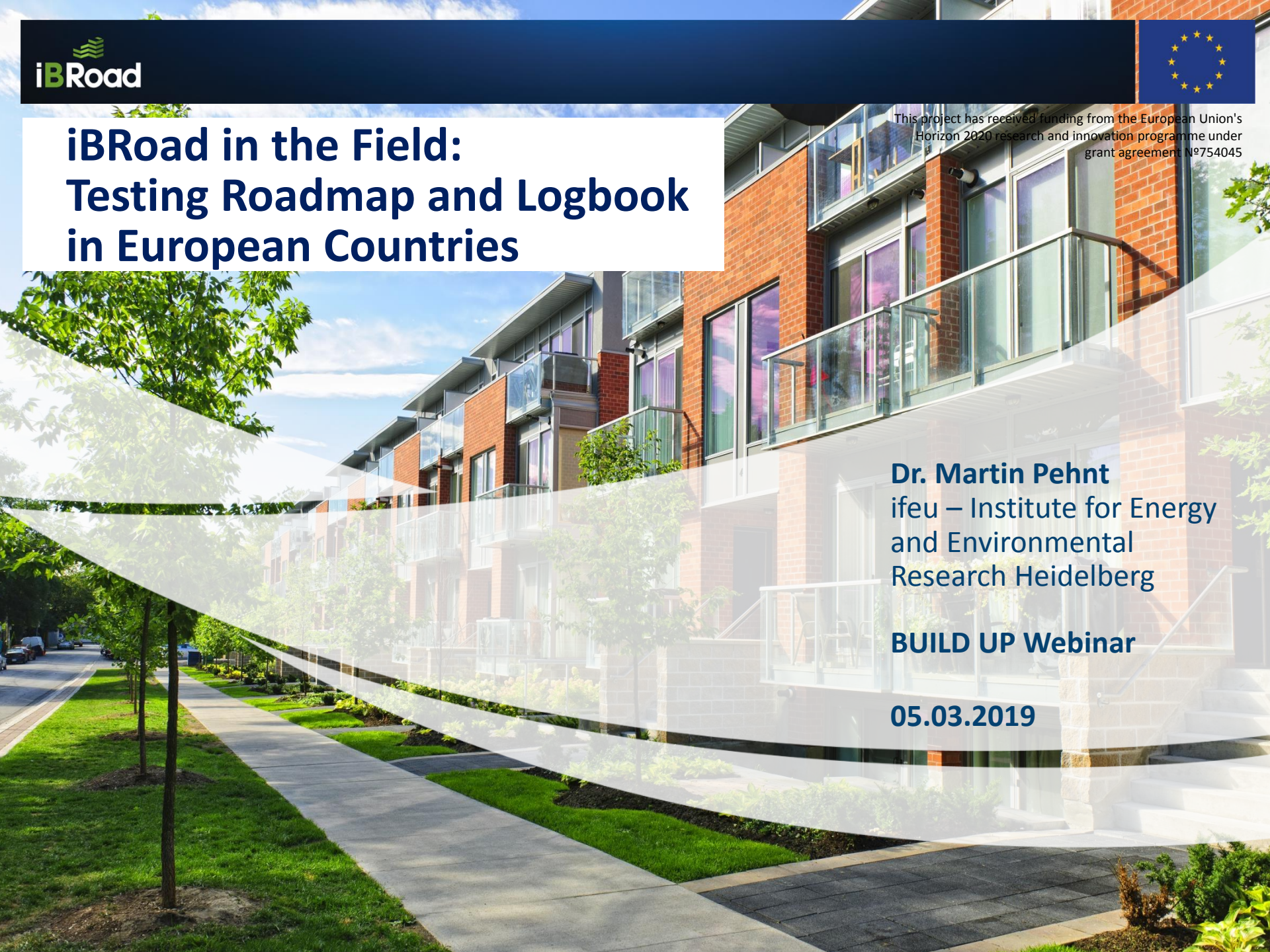

iBRoad in the Field: Testing Roadmap and Logbook in European Countries

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Dr. Martin Pehnt
ifeu – Institute for Energy and Environmental Research Heidelberg

BUILD UP Webinar

05.03.2019

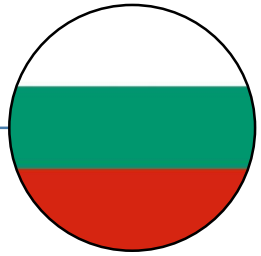
- **Content**
  - Organisation of the Field Test
  - iBRoad Roadmap
  - iBRoad Logbook
  - Evaluation of the Field Test

Framing for the Field Test

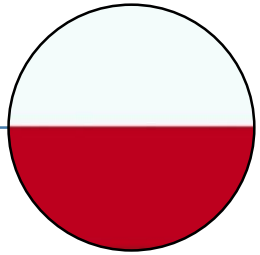
Field Test

- 3 pilot countries
- 10 energy auditors per country
- 20 real buildings per country

In addition, the logbook approach will be tested in Germany.



Bulgaria



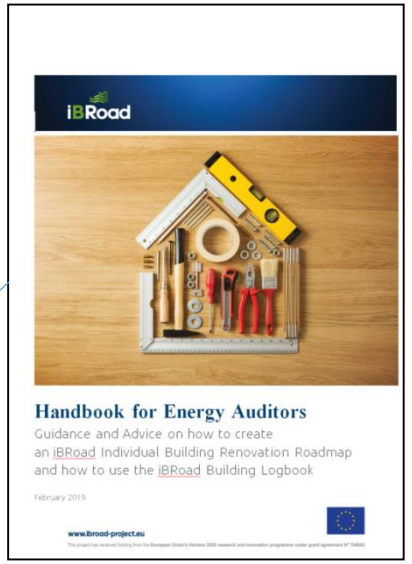
Poland

Portugal

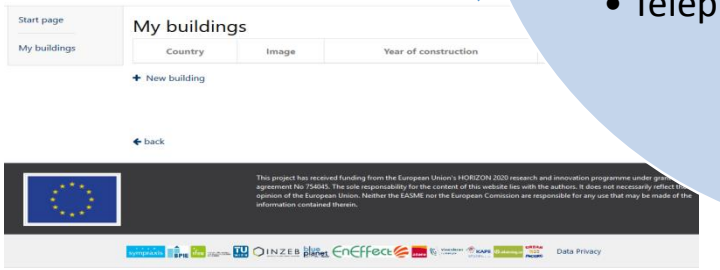
Toolkit for the Field Test

Toolkit for the field test

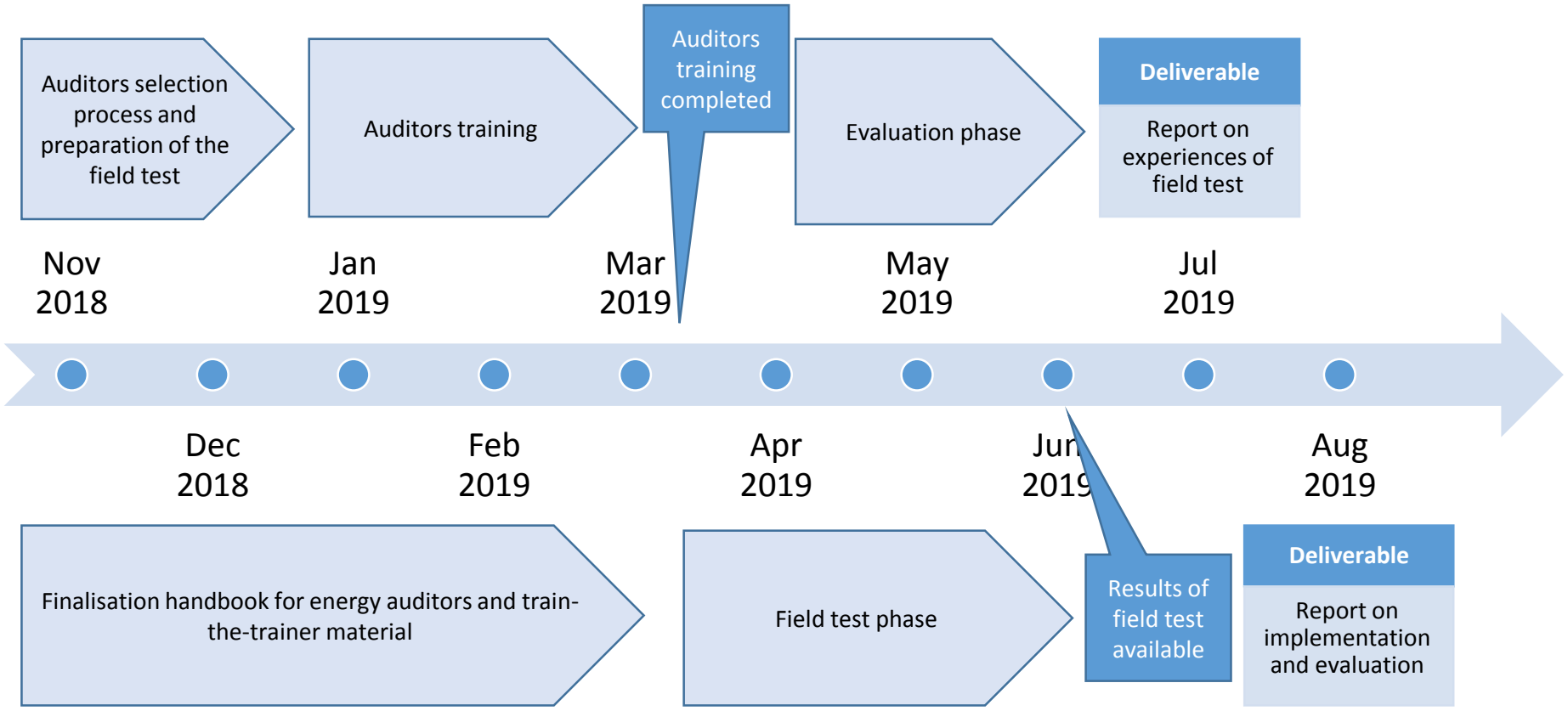
- Online tool Roadmap Assistant
- Online tool Logbook
- Handbook for auditors
- Video tutorial for auditors
- Telephone-hotline in the national language



Checklist



Field Test Schedule



Two Parts of iBRoad

iBRoad

iBRoad Plan

Step by Step Plan

ENERGY CLASS F	ENERGY CLASS D	ENERGY CLASS A
TODAY	WHEN BOILER NEEDS TO BE EXCHANGED	WHEN WINDOWS NEED TO BE EXCHANGED
YOUR BUILDING	RENOVATION STEP 1	RENOVATION STEP 2
	WHAT TO DO? • Improve the air permeability of the envelope • Optimization control system	WHAT TO DO? • Installation of a thermal insulating layer on top of concrete ground floor in contact with the ground
	INVESTMENT COSTS 456555 €	INVESTMENT COSTS 44 €
	COSTS FOR MAINTENANCE 2467 €	COSTS FOR MAINTENANCE 44 €
ENERGY BILL 159 €/a	ENERGY BILL 144 €/a	ENERGY BILL 143 €/a

iBRoad Logbook

A - General and administrative information
General and **administrative information** related to **the building/unit** characterization and its **user**

B - Building Construction Information
Technical information and data related to the **building construction**

C - Building Energy Performance
Energy information based on **EPC information** or other energy assessments

D - Building Operation and use
Data and information on how the **building is** operated

E - Smart information
Smart information related to the building

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Content of the auditor training: Roadmap principles

Best-Possible-Principle

Propose the measures with the highest possible energy efficiency

Individual Renovation Context

Consider the wishes, needs, financial situation of the homeowner and the inhabitants, and the circumstances of the building

Long-Term Perspective

Help the homeowner to understanfd the importance of having a long-term renovation strategy

Timing and Sequencing

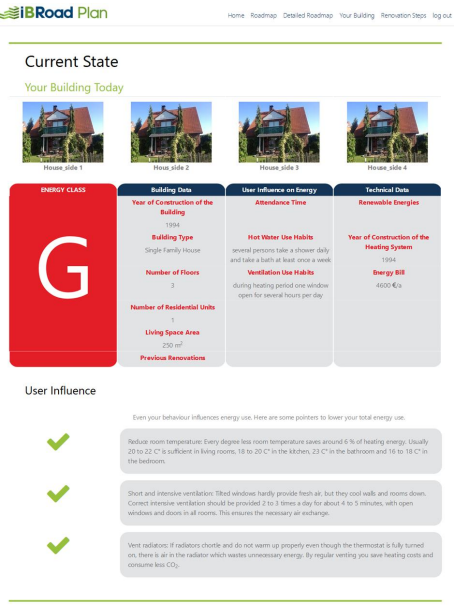
Demonstrate the homeowner that a step-by-step renovation does have several advantages

Attractive and Motivating

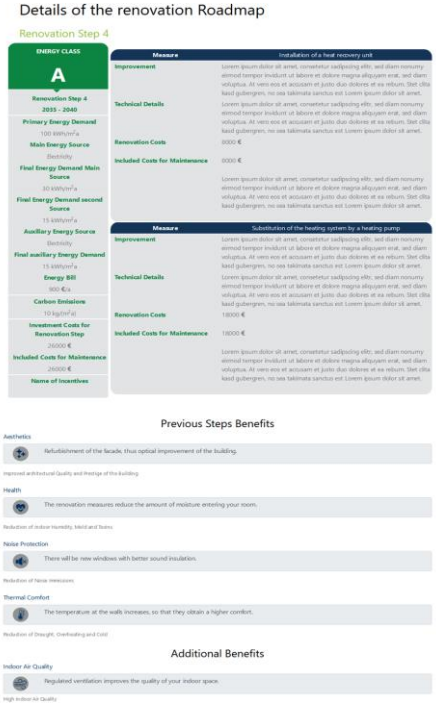
The Roadmap should be attractive and easily understandable for homeowners so that they can be motivated to take action

Content of the auditor training: Elements of the roadmap

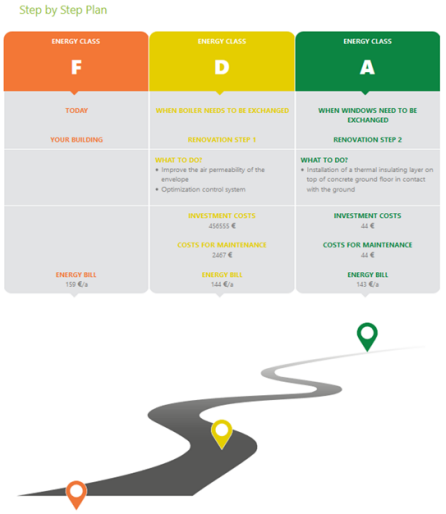
Current building state



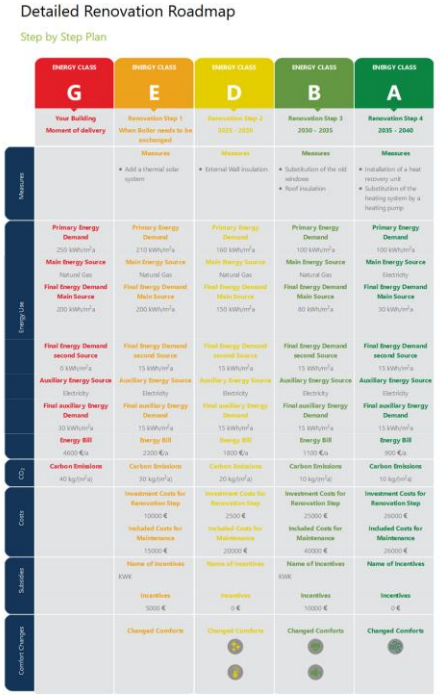
Detailed renovation step



Roadmap overview

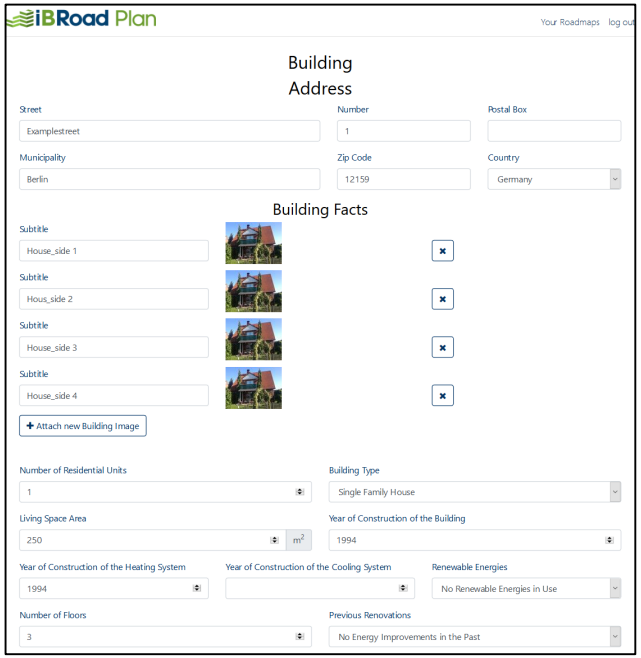


Detailed Roadmap



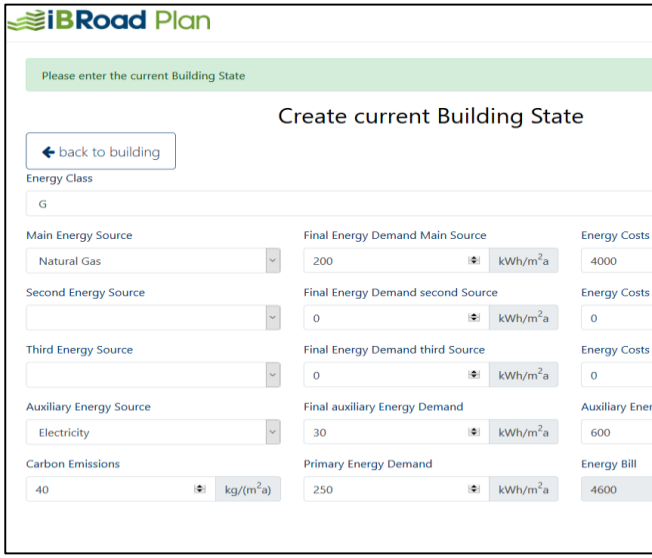
Content of the auditor training: Roadmap Assistant

Building input



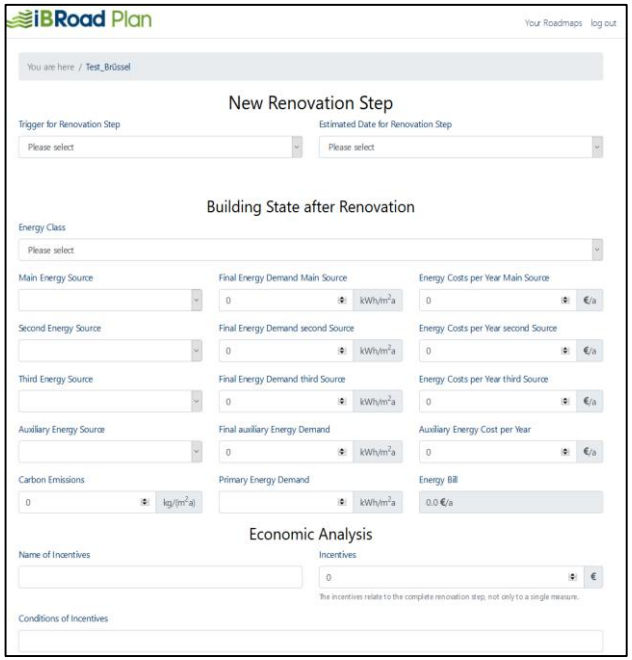
Use of the building

Energy consumption

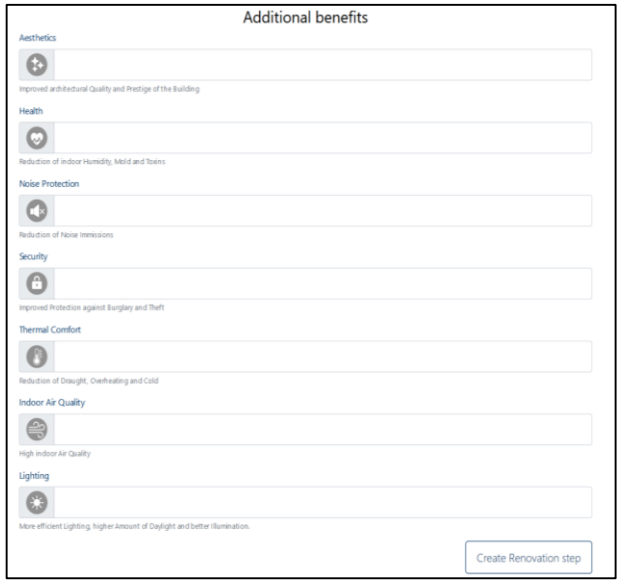


Content of the auditor training: Roadmap Assistant

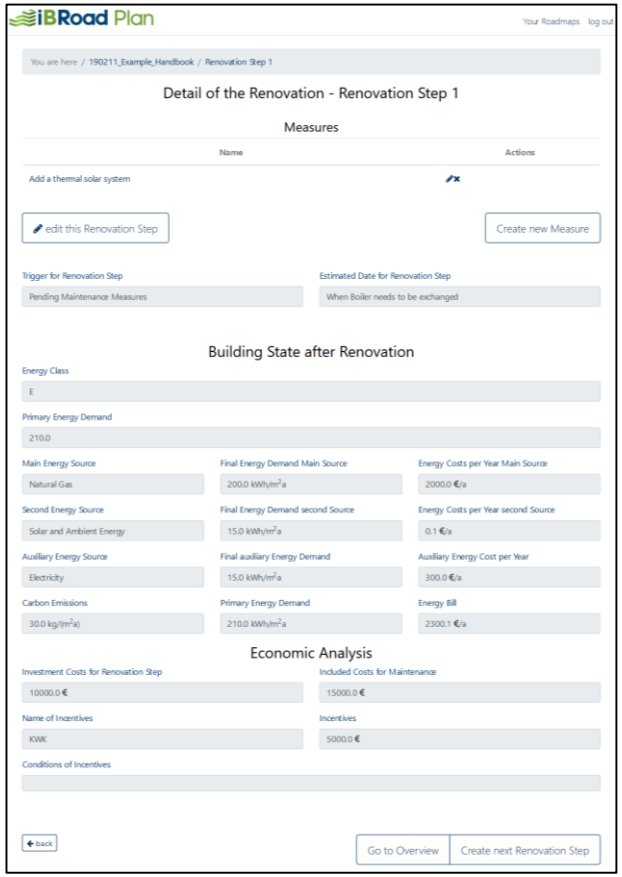
Enter renovation step



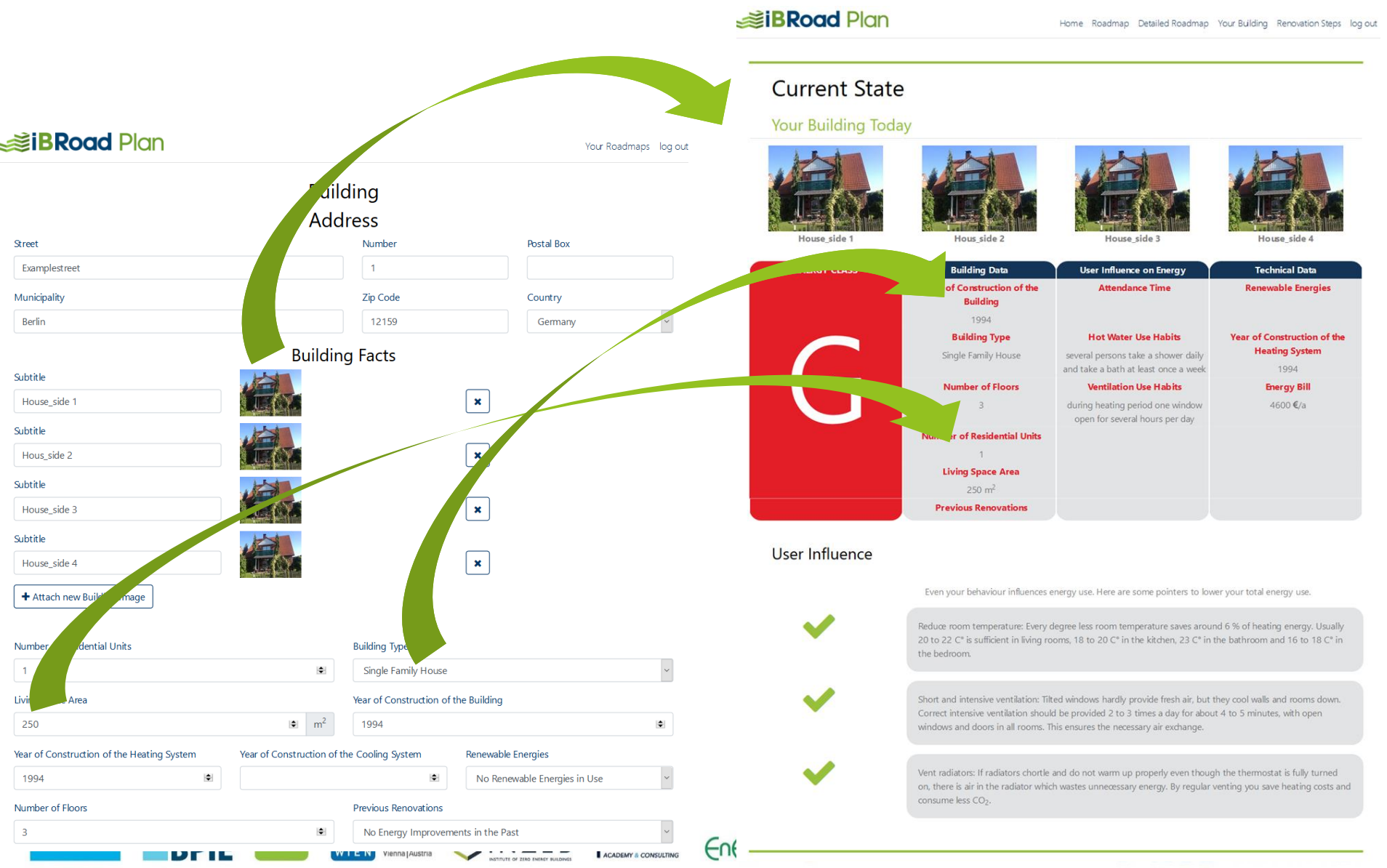
Enter co-benefits



Enter details for renovation steps



Content of the auditor training: Roadmap Assistant

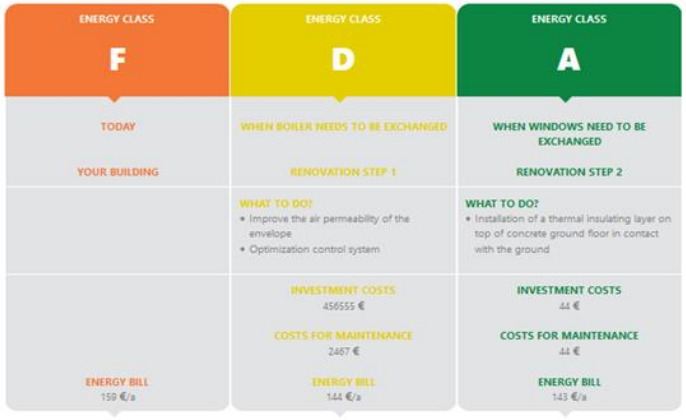


Content of the auditor training: Process of the audit

Renovation Roadmap: energy auditors carry out complete on-site audits in real buildings

Initial Contact

On-site Visit



Calculation of present building state with national calculation software

Produce Roadmap with the iBRoad Roadmap Assistant

Definition of „Renovation Packages“

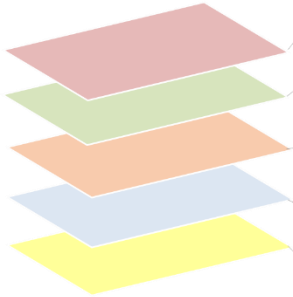
Two Parts of iBRoad

iBRoad

iBRoad Plan

Step by Step Plan

iBRoad Logbook



A - General and administrative information

General and **administrative information** related to **the building/unit** characterization and its **user**

B - Building Construction Information

Technical information and data related to the **building construction**

C - Building Energy Performance

Energy information based on **EPC information** or other energy assessments

D - Building Operation and use

Data and information on how the **building is operated**

E - Smart information

Smart information related to the building

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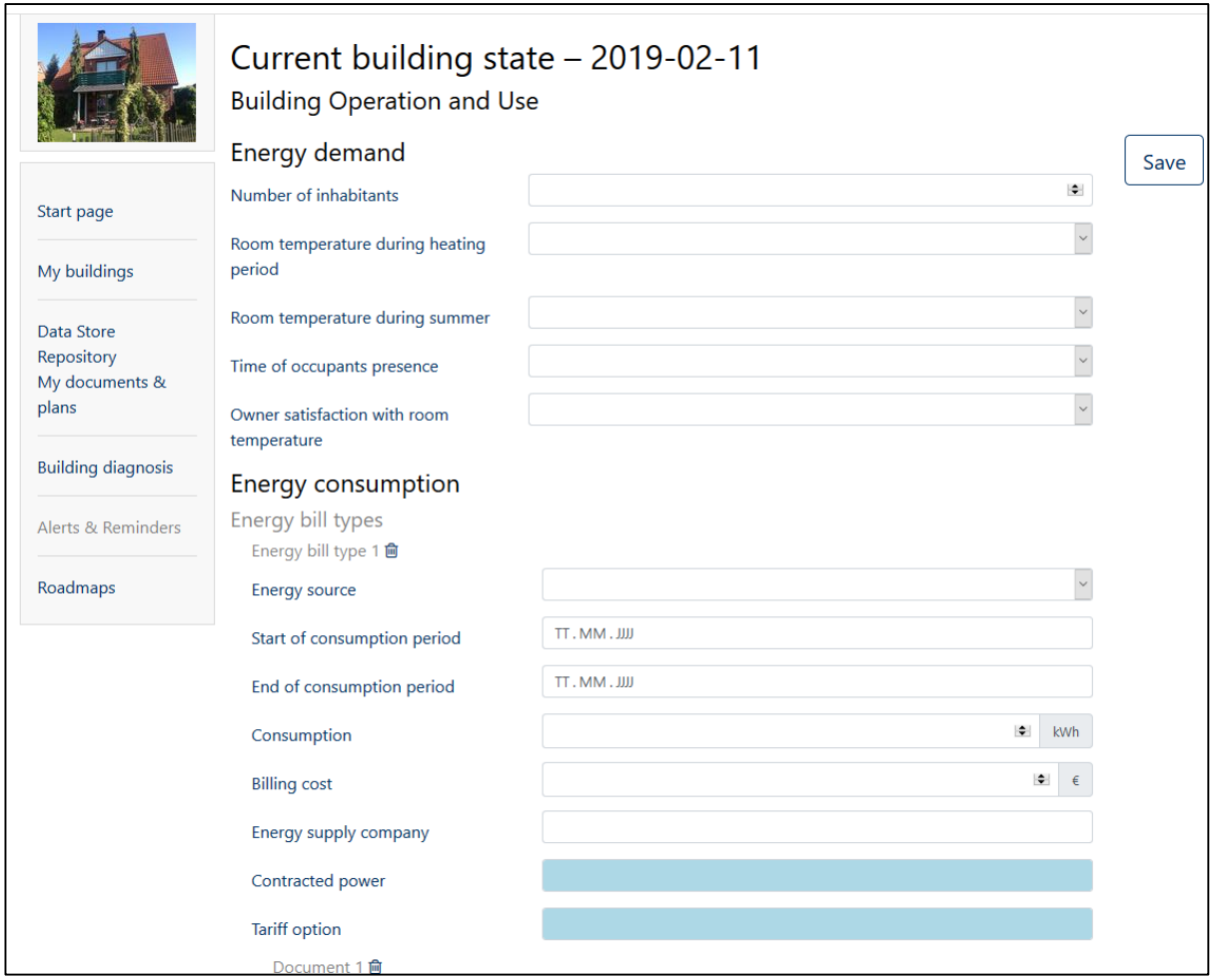
Content of the auditor training: Logbook Assistant



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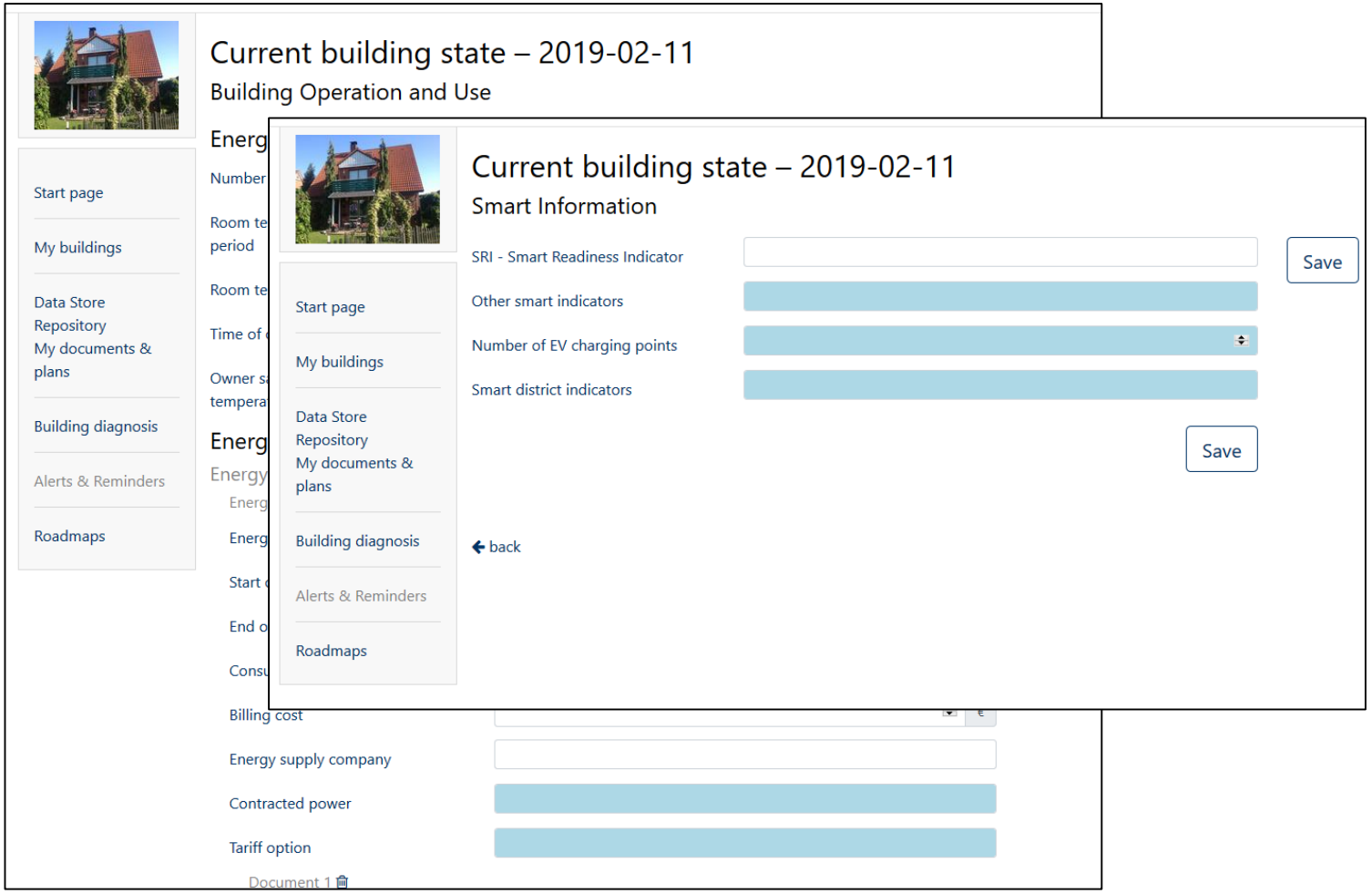

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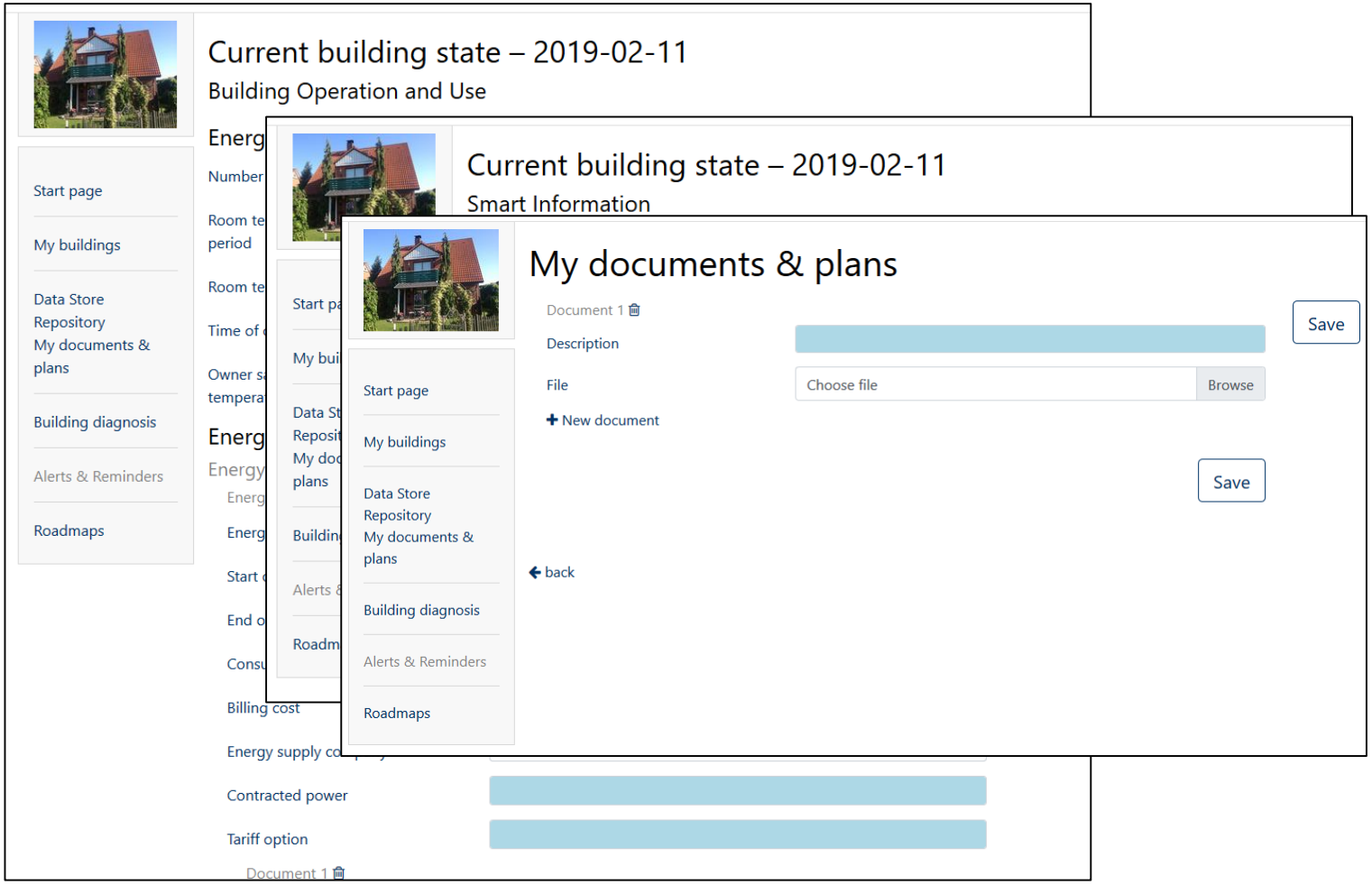

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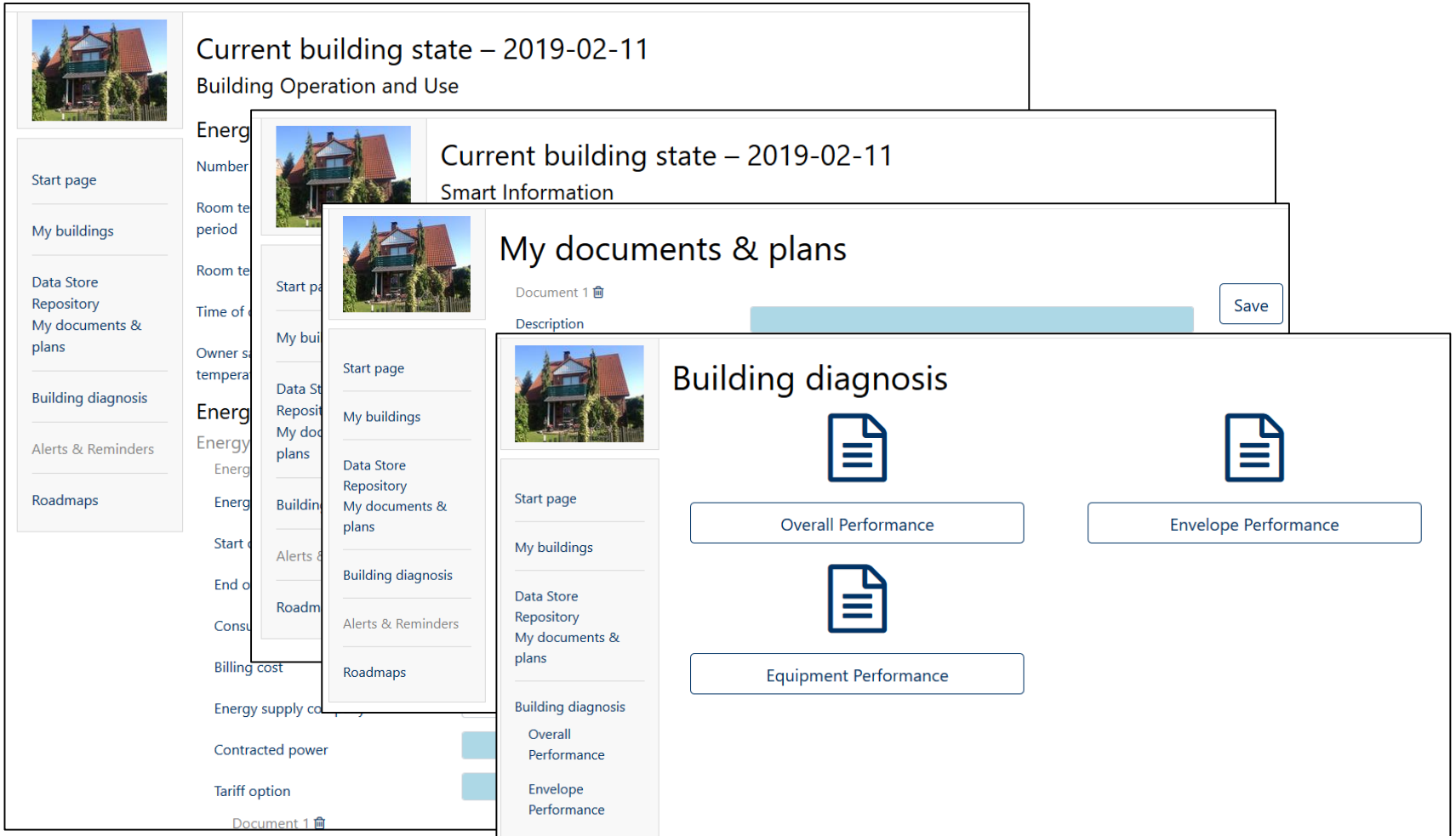

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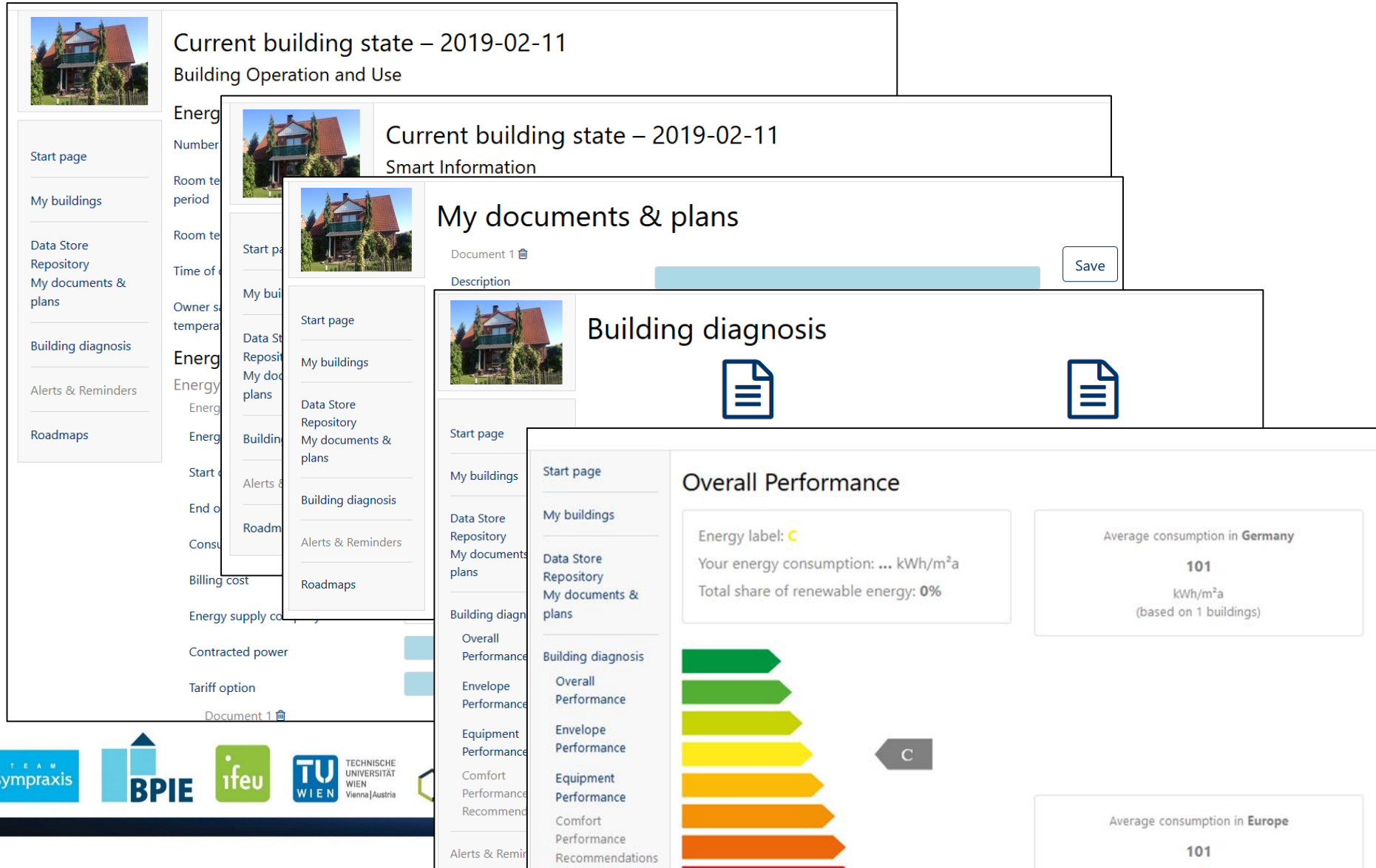

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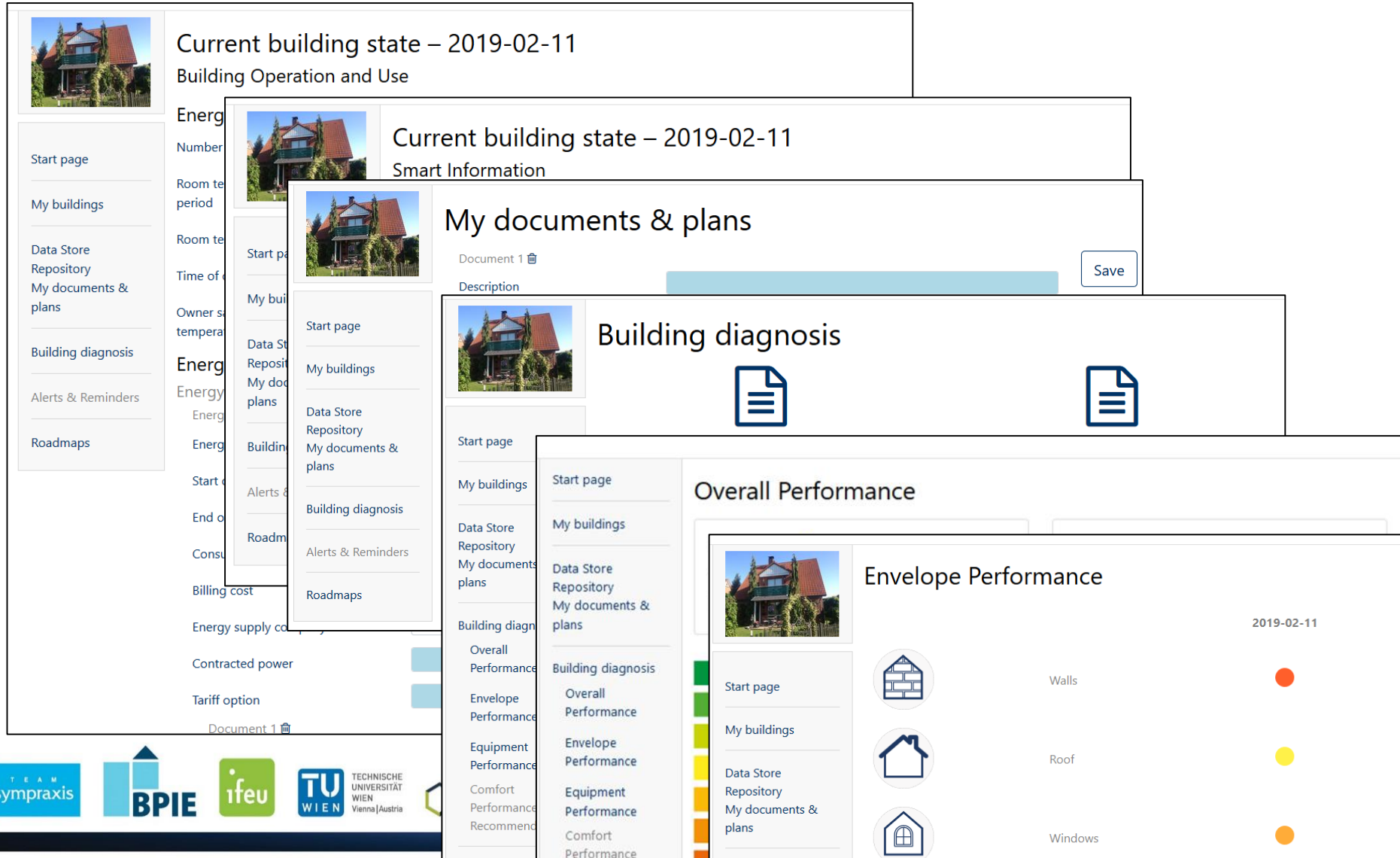

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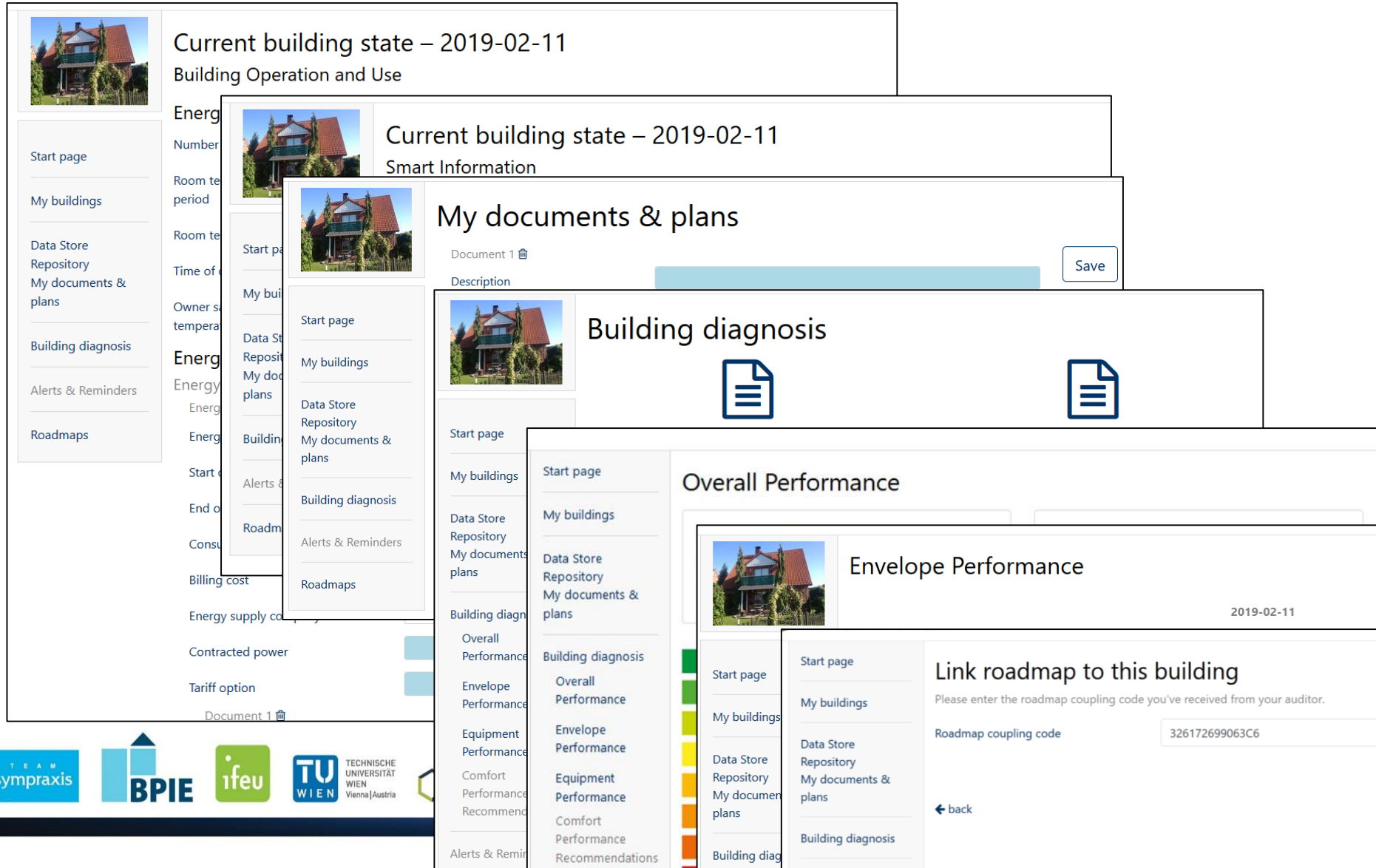


Content of the auditor training: Logbook access

Logbook Steps: alternative ways to produce the Logbook

No Roadmap audit yet

Owner creates Logbook

Owner enters data as far as possible

without Roadmap audit

Owner grants access to auditor

Auditor can use existing data to create the Roadmap

Roadmap audit ready

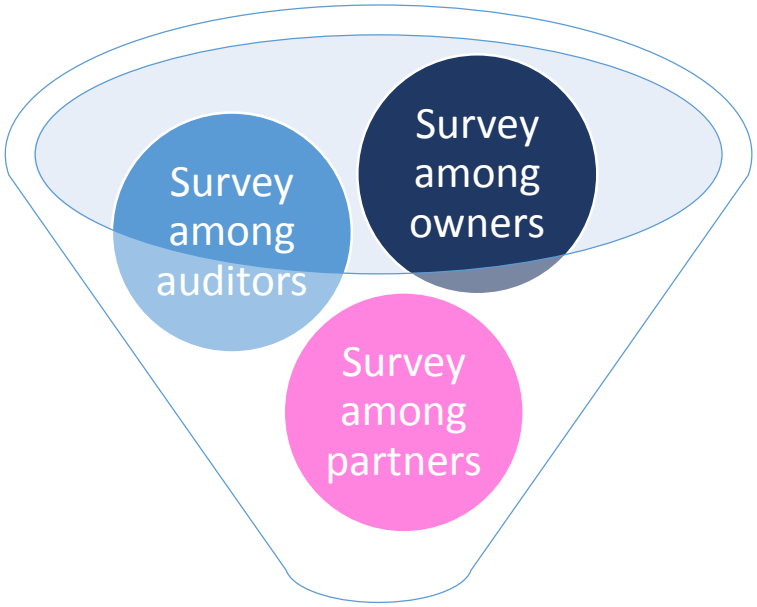
Auditor creates Logbook from Roadmap data

Auditor finalises data entry

Auditor grants access to owner

Owner uses Logbook

Evaluation



Evaluation Report

Improvement of iBRoad Tools

Thank you

iBRoad

www.ibroad-project.eu

martin.pehnt@ifeu.de

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