

EPC 
RECAST

ENERGY PERFORMANCE
CERTIFICATE RECAST



**Digital toolbox enhancing the performance assessment
and certification process for building retrofits**

Sarah Noyé, Tecnalia Research and Innovation, Spain

We are a leading research and technological centre in Europe.

Our mission:
Transform technological research into prosperity.

Our vision:
To be agents of transformation of companies and society to adapt to the challenges of a future in continuous evolution.

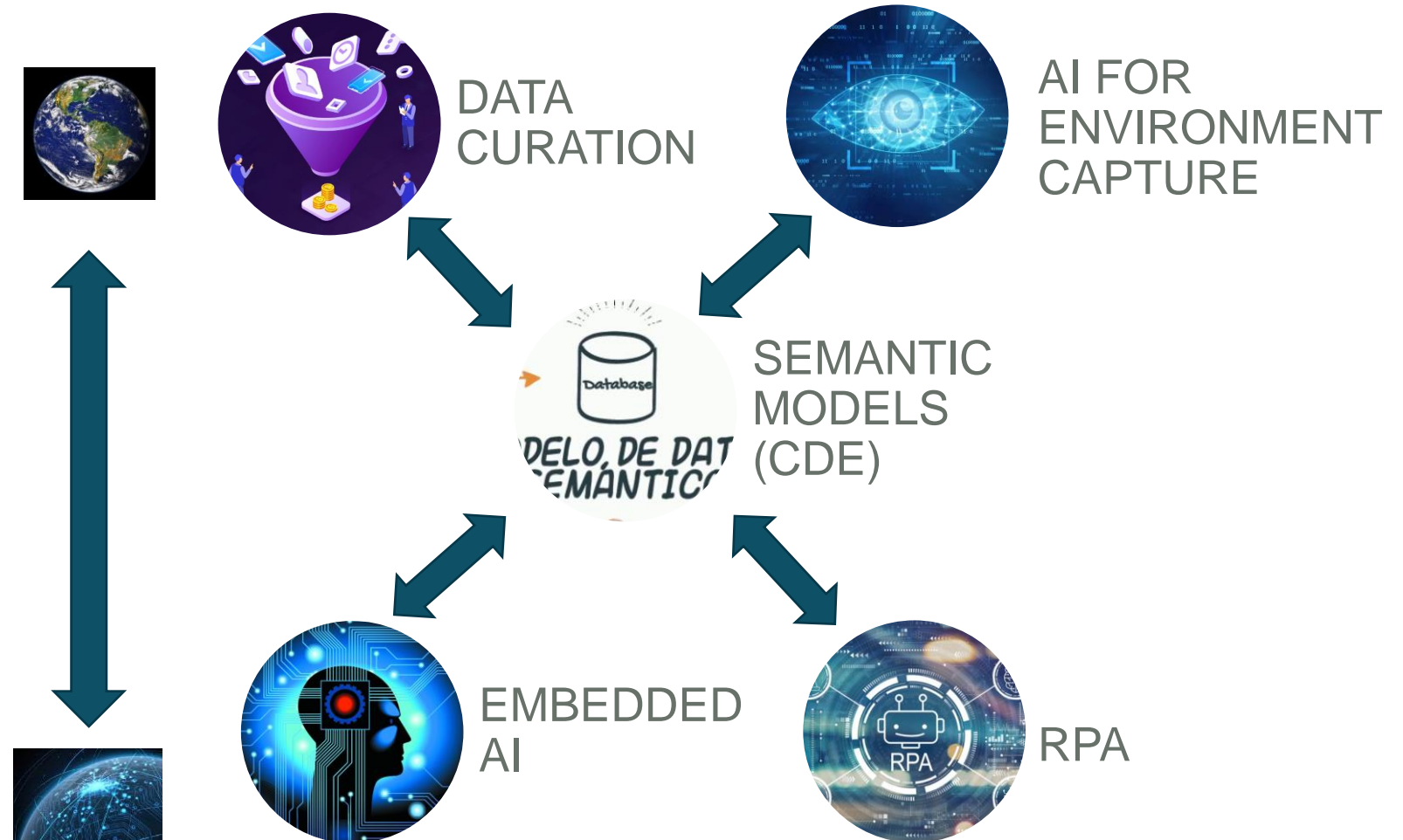


1.501 staff members



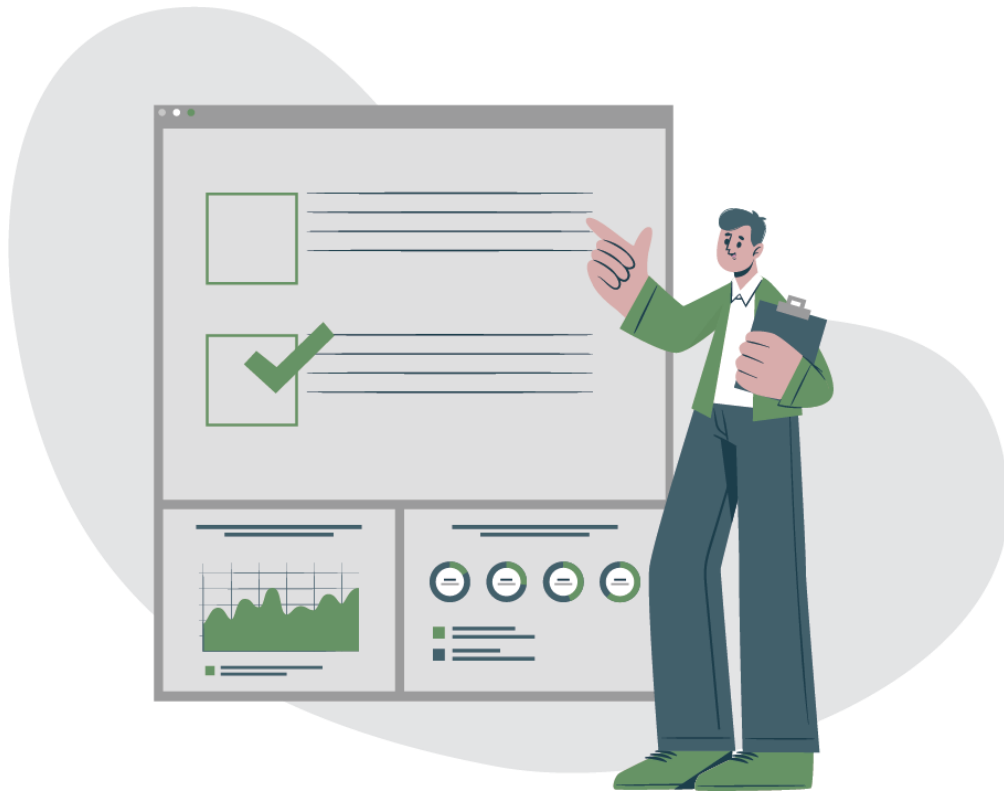
306 PhDs

Foundation TECNALIA Research & Innovation: Digitalisation and automation of construction





Challenges of EPC for renovation



- EPC RECAST will support the emergence of the next generation of regulatory Energy Performance Certificate (EPC).
- Our goal is to better and further support the assessors' work in order to achieve improved EPC reliability, comparability in between building assets, user-friendliness and to ultimately generate an impact for owners and occupants to engage them on a tangible pathway to efficient energy retrofit.
- Deliberate focus on residential buildings (existing ones).





The EPC RECAST process



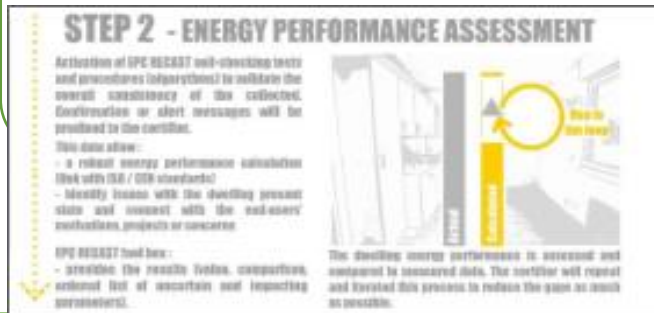
Input layer:

- Automated **data collection and enrichment** for EP assessment: on-site scans / public database
- **Quality procedures & consistency checks** linked with ISO/CEN standards (M/480 mandate) : self-checking of input data using expert rules, expert values / data consistency using data crossing tests



Energy performance evaluation layer:

- Use of **measured energy consumption** and deployment of **smart meters** : model calibration, verification / operational rating indicators



Output and recommendation layer:

- **Co-design** of the **certificate** with owners and assessors: indicators, non-energy benefits, renovation roadmap

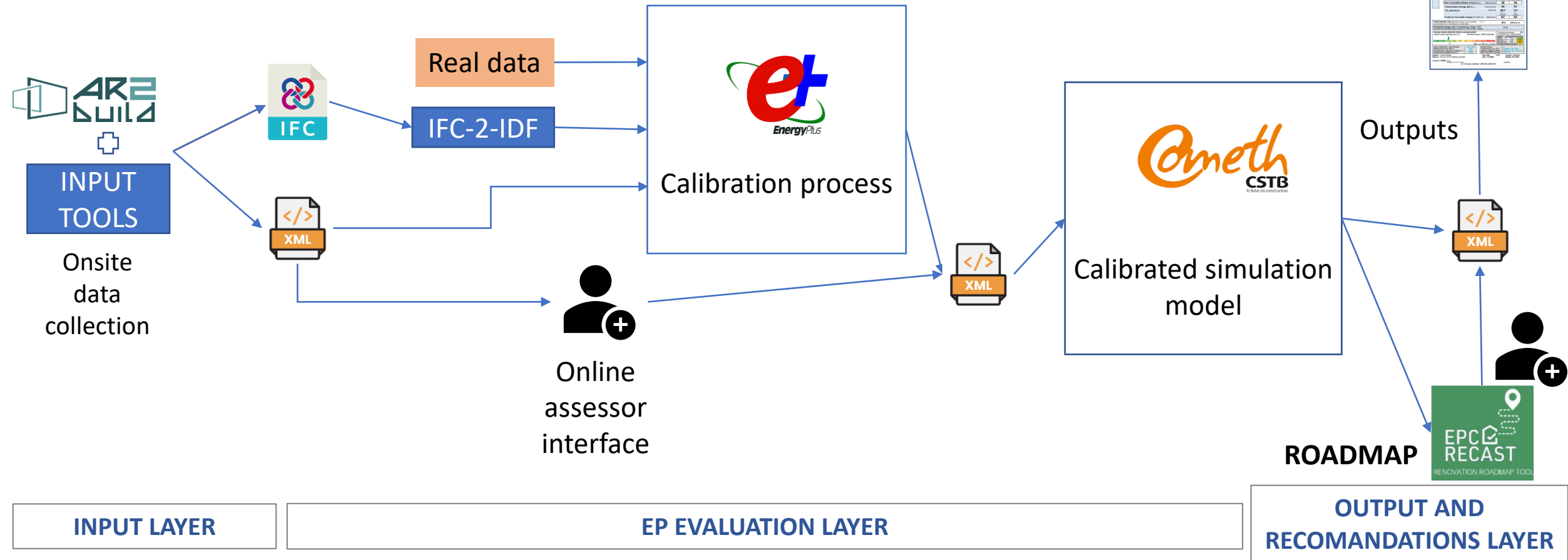


Information sharing, **common language** and **data interoperability**





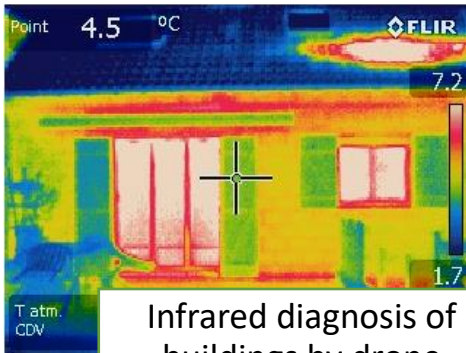
The EPC RECAST digital toolbox: core process



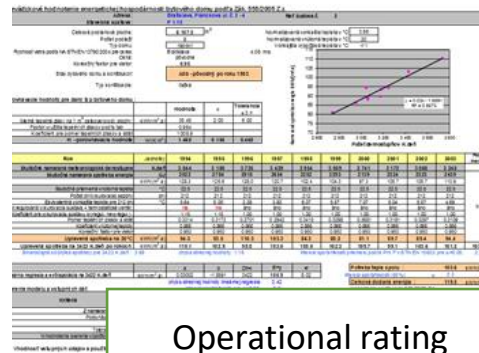
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The EPC RECAST digital toolbox: add-ons



Infrared diagnosis of buildings by drone



Operational rating



Digital logbook for dwelling

Question	
Address	
Year of construction	
Flat or House	
Main or secondary residence	
Surface of the dwelling	
Ground surface	
Floor of apartment	
How many floors in total	
Shape of the housing	
Power subscribed	
Contract type : Full	

Self-diagnosis



SRI

2. ENVOLVENTE TERMICA

Cerramientos opacos

Nombre	Tipo	Superficie [m²]	Transmitancia [W/m²K]	Modo de obtención
FACHADA OESTE	Fachada	8.52	0.67	Estimadas
FACHADA ESTE	Fachada	7.19	0.67	Estimadas
CUBIERTA	Cubierta	64.7	0.38	Por defecto

Huecos y lucernarios

Nombre	Tipo	Superficie [m²]	Transmitancia [W/m²K]	Factor solar	Modo de obtención, Transmitancia	Modo de obtención, Factor solar
V1	HUERO	3.34	3.44	0.62	Estimado	Estimado
V2	HUERO	2.64	3.44	0.62	Estimado	Estimado
V3	HUERO	3.32	3.44	0.62	Estimado	Estimado
V4	HUERO	3.74	3.44	0.62	Estimado	Estimado

Printing App for quality checks

INPUT LAYER

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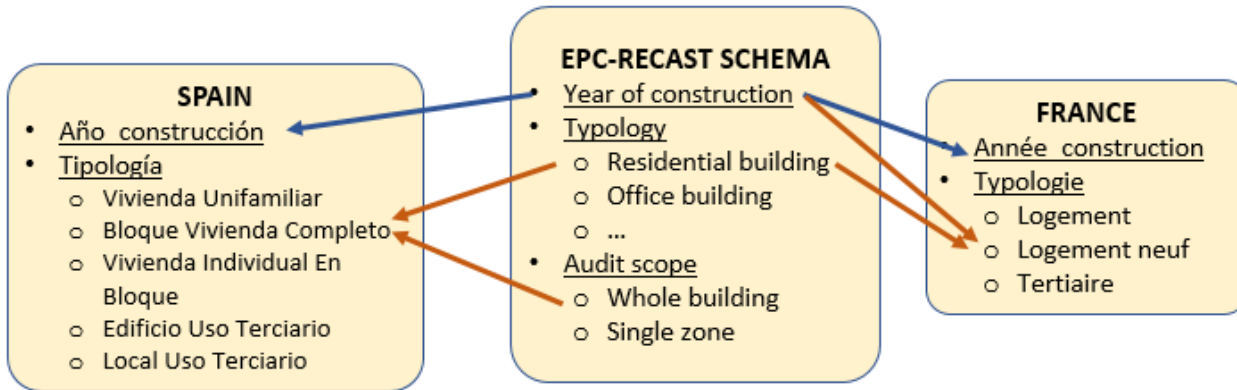
EP EVALUATION LAYER

OUTPUT AND RECOMANDATIONS LAYER



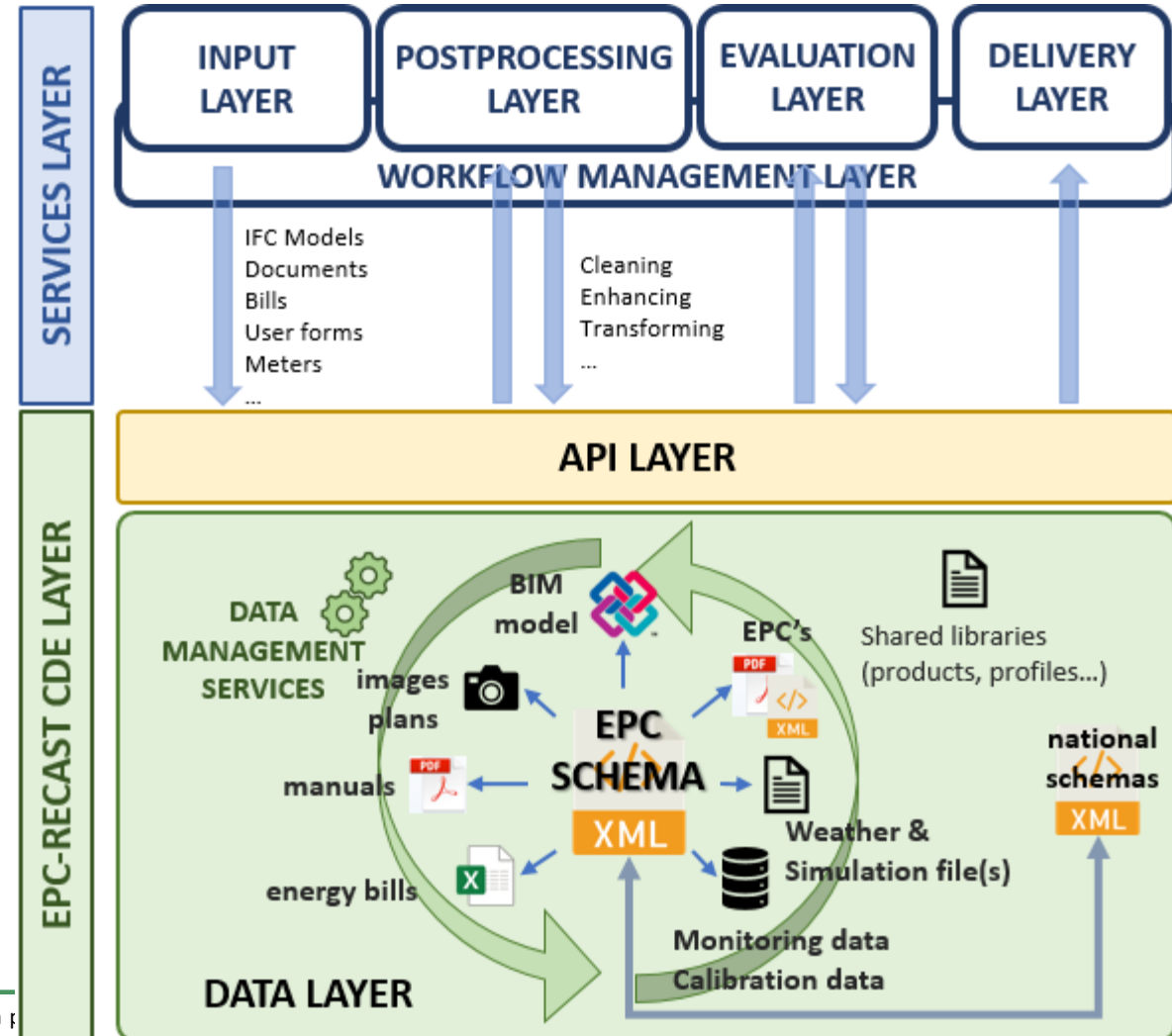


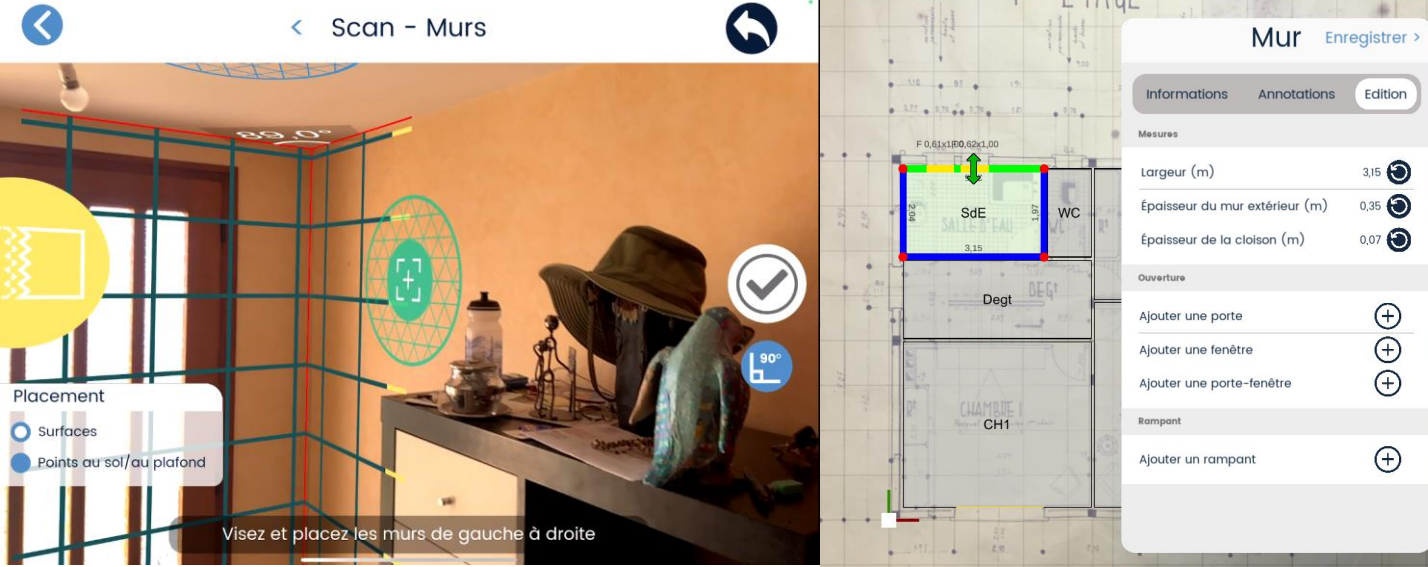
A common data environment for building energy digital tools



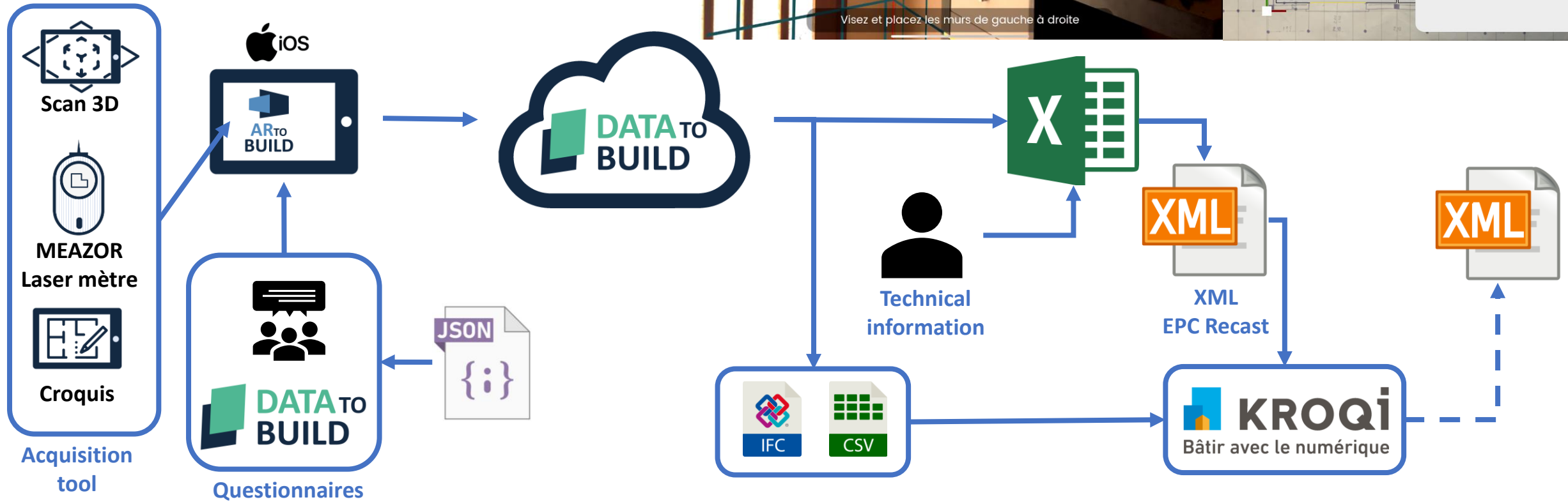
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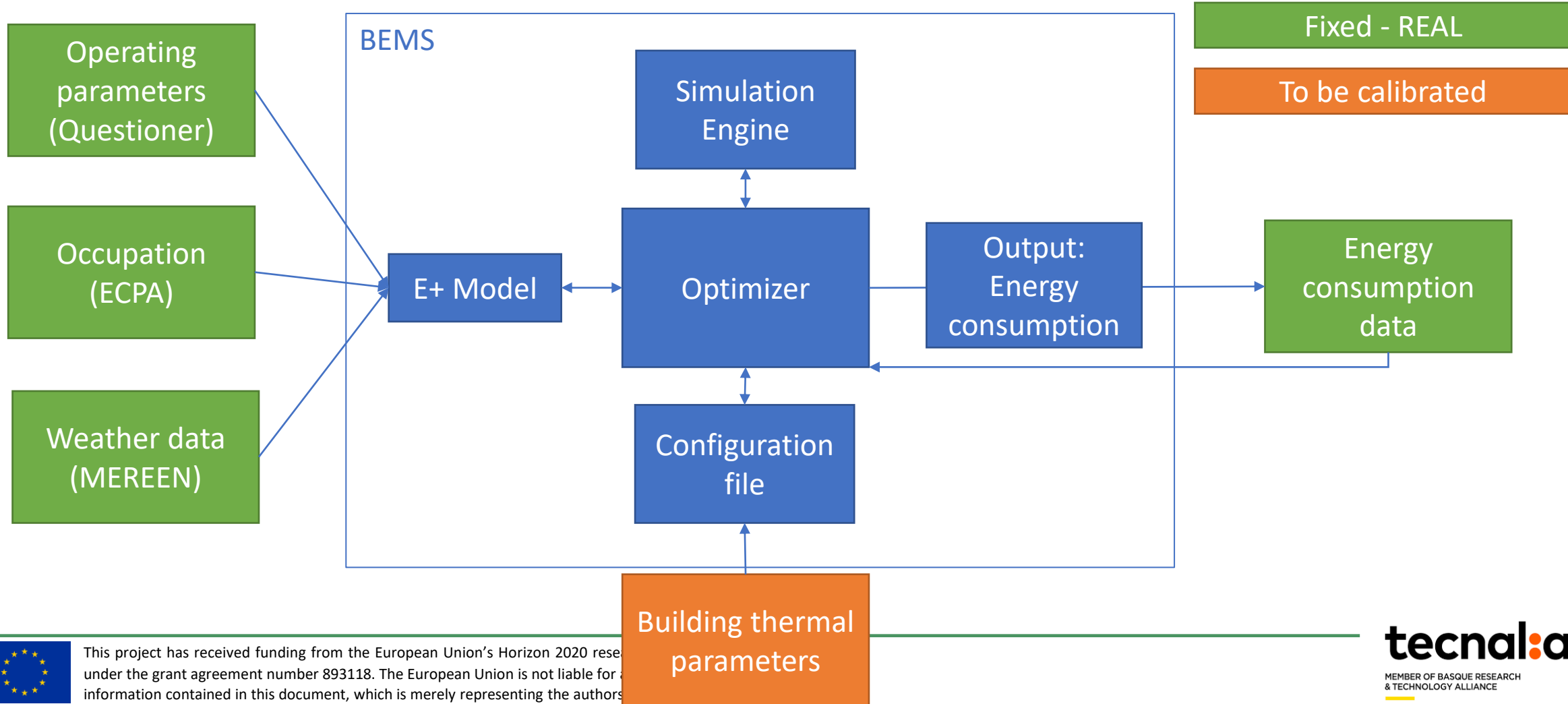


Input layer: BIM scan + questionnaires





EP layer: model calibration with real data





Output layer: Ad-hoc renovation roadmap

Aim

- Develop a tool to support building owners in defining renovation works

Process

- Define the renovation plan by selecting planned renovation actions
- Schedule planned renovation actions over time
- Assess the renovation plan (calculate KPIs such as energy class, carbon emission, cost, comfort)
- Report (KPIs overview)

Frame 1 - Body

https://www.epcrecast.com/RenovationRoadMap

MENU EPC RECAST Test CSTB

24, allée des dahlias 31400 Toulouse

Which renovation works you would like to do ?

First, you can define a renovation plan by choosing measures that should be included in this plan. On the next steps, it will be possible to organize works.

- WALL INSULATION: Yes (selected) / No
- ROOF INSULATION: Yes (selected) / No
- FLOOR INSULATION: Yes (selected) / No
- WINDOWS: Yes (selected) / No
 - Double gazed (selected) / Triple gazed
- HEATING SYSTEMS: Yes (selected) / No
 - Wood stove / Boiler / Heat pump / Electric heater
 - Secondary heating system: Yes (selected) / No
 - Electric heater / Boiler
- VENTILATION: Yes (selected) / No
 - Exhaust ventilation / Supply or energy recovery ventilation

V Renovation plan

- Definition
- Report
- Packages definition
- Organization
- Report
- Additional calculations
- Informations
- Report
- FINAL REPORT

Frame 1 - Body

https://www.epcrecast.com/RenovationRoadMap

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RENOVATION ROADMAP

STEP 1 STEP 2 STEP 3 STEP 4 STEP 5

Renovation plan

Definition

Report

Packages definition

Organization

Report

Additional calculations

Informations

Report

FINAL REPORT

Current state

Energy Class = G

Operational CO₂-eq = 72.93 kg/m²/year

Costs: Operational = 233€, Investment = 0€

Overall Thermal Score = 3.5

SRI Score = 15%

KPIs Renovation Roadmap overview

Energy Class

Non renewable primary energy [kWh/m²/year]

Operational CO₂-eq

Operational CO₂ equivalent emissions [kg/m²/year]

Costs

Operational Cost [€] and Investment Cost [€]

Overall Thermal Score

Summer and Winter thermal comfort, Acoustic, Internal Air Quality and light

SRI Score

Smart Readiness Indicator Score [%]

STEPS

Year	2022	2023	2024	2026	2028	2029
Step	1	2	3	4	5	
Energy Class	E	E	C	A	A	A
Operational CO ₂ -eq	56.12	48.92	35.43	20.97	12.56	
Costs: Operational	121€	115€	77€	28€	13€	
Costs: Investment	600€	1150€	400€	500€	800€	
Overall Thermal Score	2.8	2.6	2.3	1.9	1.5	
SRI Score	30%	45%	60%	75%	90%	



OUR TEAM



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R

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COMPARABILITY

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AWARENESS, ACCEPTANCE & USER-FRIENDLINESS

S

STANDARDS & SMART-READINESS

T

TRANSPARENCY

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