



**SUSTAINABLE  
PLACES 2020**

October 27-30, 2020  
Digital Event

The background of the slide is a dark blue, low-angle photograph of a modern building's facade, showing a grid of windows and architectural lines. Two white rectangular shapes are overlaid on the right side of the image, one above the other.

**FEEDBACK<sup>®</sup>**



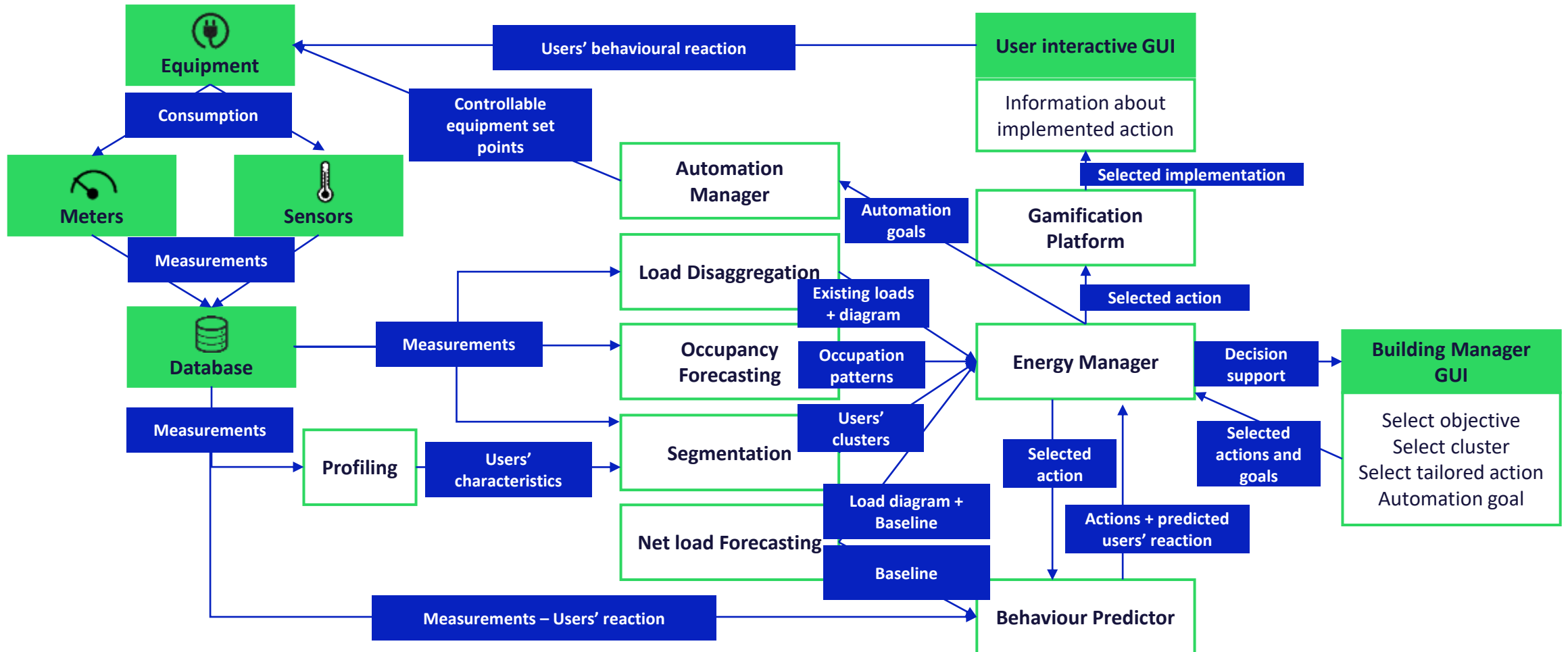
# Validation and Impact assessment methodologies

Filipe Soares, INESC TEC

Sustainable Places Conference 2020

28<sup>th</sup> of October 2020

# FEEdBACK's Platform for Energy Efficiency



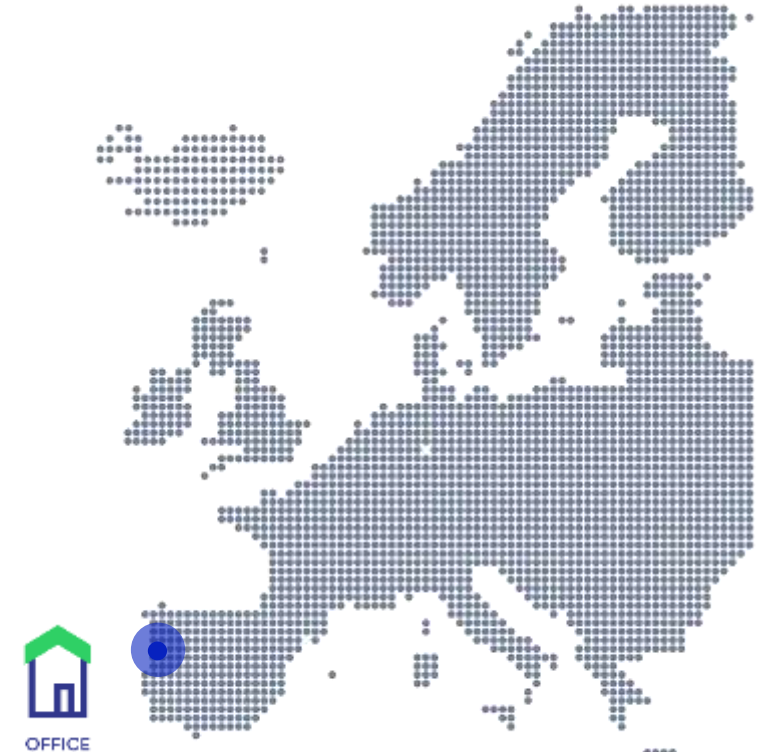
# Validated in three demonstrators

- Three demonstrators will be used at the European level, focusing on distinct environments and buildings: office, public buildings and houses

**PORTO – PORTUGAL**  
INESC TEC, Office | Oceanic climate



- 💡 **ENERGY SAVINGS**  
15%
- 📅 **BEHAVIOUR**  
75% of users registered in the gamification platform
- 📄 **COMFORT**  
Temperature: 18 °C – 22 °C | Humidity: 40% – 60%  
85% of users satisfied with the indoor temperature and humidity levels
- 🌬️ **INDOOR AIR QUALITY**  
CO<sub>2</sub>: 1000-1200 ppm in 95% of occupied areas



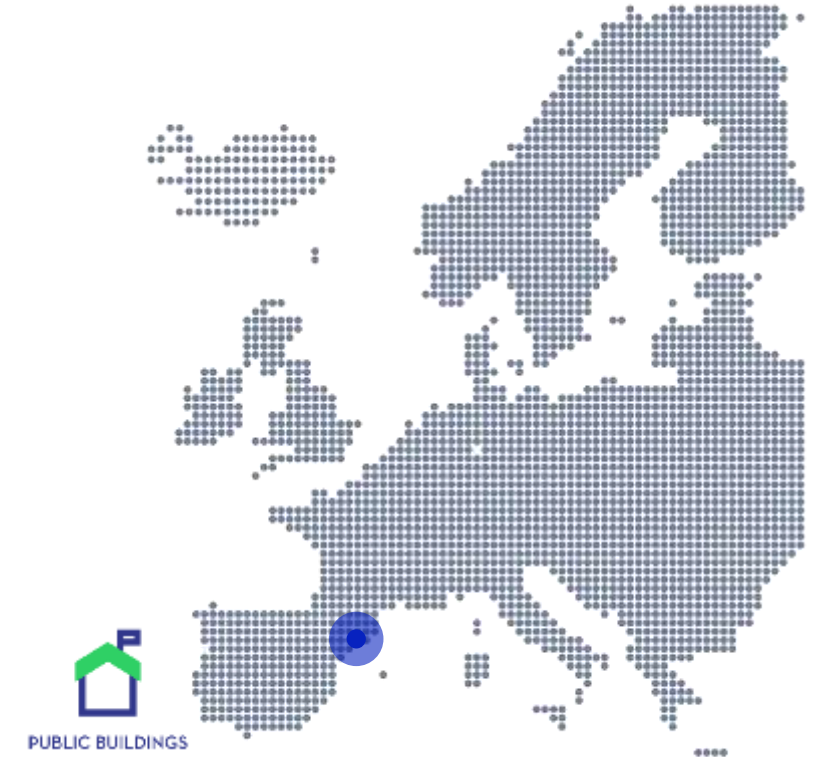


# Validated in three demonstrators

- Three demonstrators will be used at the European level, focusing on distinct environments and buildings: office, public buildings and houses

**BARCELONA – SPAIN**  
El Prat de Llobregat, Public Buildings | Mediterranean climate

- 💡 **ENERGY SAVINGS**  
12%
- 📅 **BEHAVIOUR**  
70% of users registered in the gamification platform
- 📄 **COMFORT**  
Temperature: 18 °C – 22 °C | Humidity: 40% – 60%  
80% of users satisfied with the indoor temperature and humidity levels
- 🌬️ **INDOOR AIR QUALITY**  
CO<sub>2</sub>: 1000-1200 ppm in 95% of occupied areas



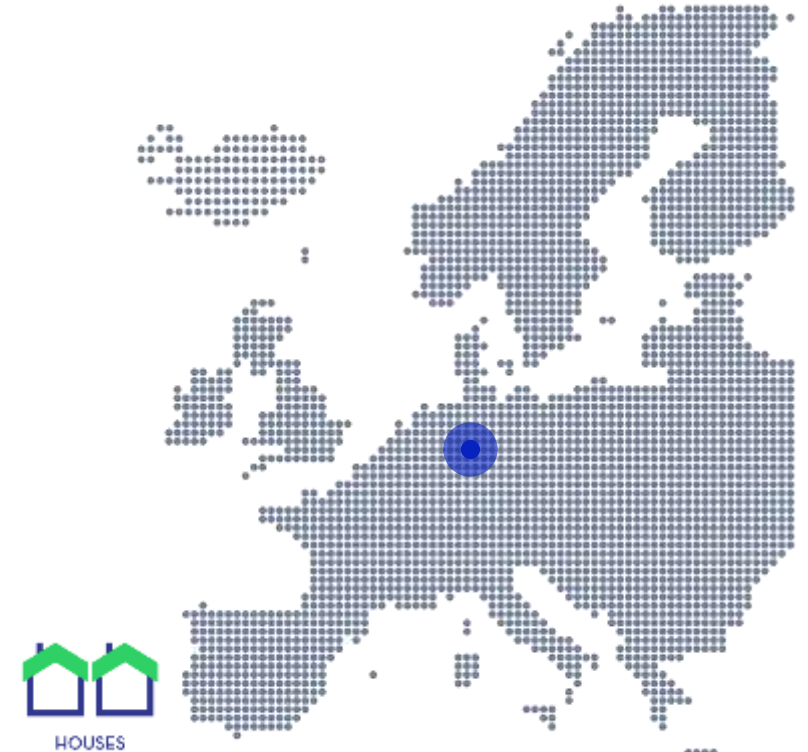
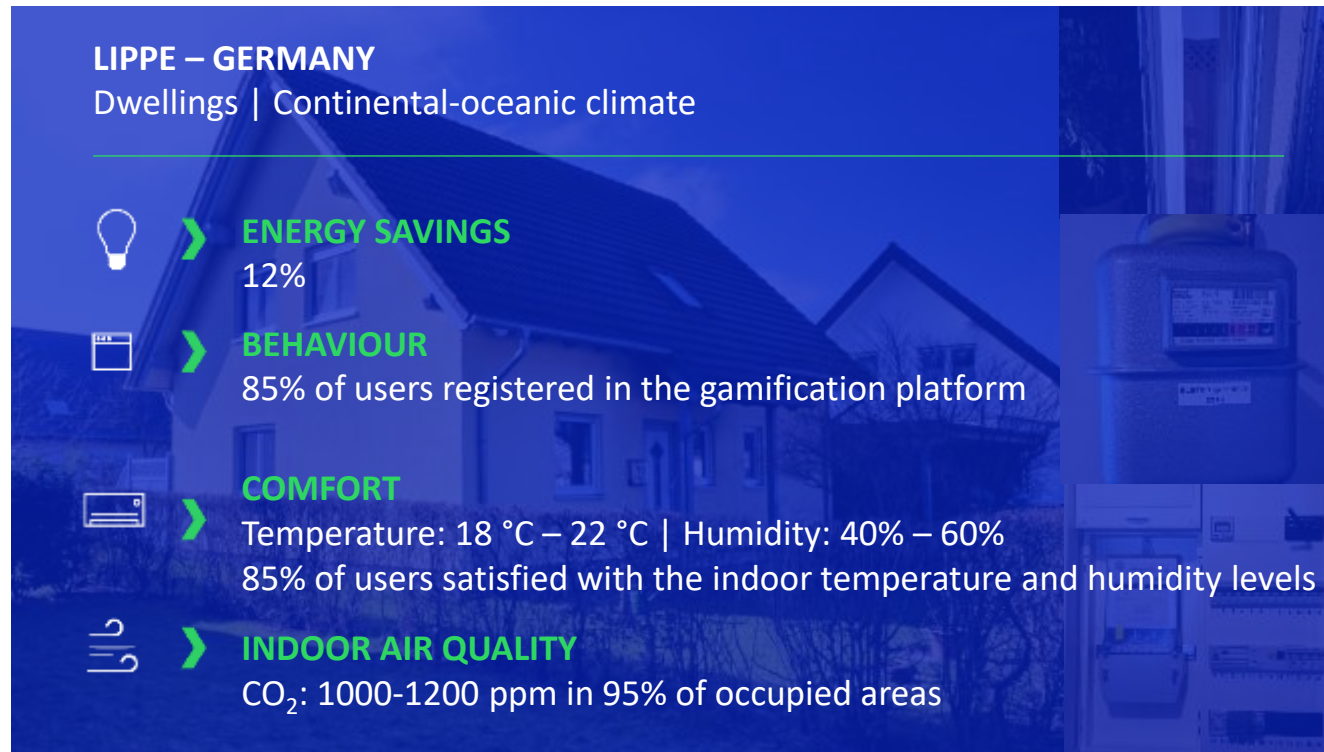
# Validated in three demonstrators

- Three demonstrators will be used at the European level, focusing on distinct environments and buildings: office, public buildings and houses

**LIPPE – GERMANY**  
Dwellings | Continental-oceanic climate

---

- 💡 **ENERGY SAVINGS**  
12%
- 📅 **BEHAVIOUR**  
85% of users registered in the gamification platform
- 📄 **COMFORT**  
Temperature: 18 °C – 22 °C | Humidity: 40% – 60%  
85% of users satisfied with the indoor temperature and humidity levels
- 🌬️ **INDOOR AIR QUALITY**  
CO<sub>2</sub>: 1000-1200 ppm in 95% of occupied areas



# Impact assessment

- Three evaluation domains

User engagement

Energy savings and comfort levels

Behavioural change



Interactive and user-friendly interface

Personalized messages and advices

Interesting games and quizzes

Performance dashboards and graphics

Challenges for your peers and colleagues

Periodic prizes to best performances

Sharing results on social media channels

# Impact assessment

---

- Three evaluation domains

User  
engagement

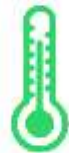
Energy savings and  
comfort levels

Behavioural  
change



## METERS:

- Electricity, gas and water
- Climate and floor lighting



## SENSORS:

- Temperature and humidity
- CO<sub>2</sub> concentration



# Impact assessment

---

- Three evaluation domains

User  
engagement

Energy savings and  
comfort levels

Behavioural  
change



### App embedded questionnaires:

- Pre and post comparison
- Crossed with real energy consumption

# After COVID-19

---



# After COVID-19

---

- Three evaluation domains were maintained

User engagement



### Simpler version of the app

- With the same learning objects but without team competition
- Released in 3 more countries

Energy savings and comfort levels

### Estimated based on self-reported behavioural change

- Through pre and post questionnaire comparison

Behavioural change



### App embedded questionnaires:

- Pre and post comparison
- Crossed with real ~~energy~~ energy consumption

# THANK YOU

---



**@FEEdBACkH2020**  
**feedback-project.eu**





IN-JET<sup>APS</sup>

LIME  
TOOLS



TU Delft



Lippe Zukunft



EPFL  
ÉCOLE POLYTECHNIQUE  
FÉDÉRALE DE LAUSANNE

INESCTEC



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 768935