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Forum Wissenstransfer 6-1 Smart Living

Test-installations of energy-efficiency-arrangements in buildings

occasion, aim, expected results

Associated

Occasion:
19 initiators have created a regional network (green with it) to implement and announce disruptive applications in the field of ict-driven energy efficiency processes

Aim:
Unclosing new and undeveloped markets for the members (mostly sme´s)

Unique selling points (usp´s)
Bringing safe, low-cost and open source energy efficiency processes into broad population stratums.

Benefit: unlocking big market potentials like tenants in communal or associated housing companies (mio. 13,5 persons) with a high rate of organization like GdW

Headline: no googlification, based upon certified processes

Five application partners in the German Capital Region:
Three small/medium housing corporations
One medium municipal housing company
One big municipal property administrator (ppp public-private partnership)

- **330 flats with 330 flats in reference buildings**
- **representing building standards from 1955-1980**
- **reflecting building standard forms of about 220.000 flats**
- **tenants receive annual recurrent costs (Abrechnung warmer Betriebskosten)**
- **enquiry heating consumption data by third parties with proprietary protocols**
- **bill of costs heating individual consumption mostly in annual periods**
- **no transparency of heating consumption in the meantime**
- **bill of costs power energy mostly in monthly periods**
- **transparency of power consumption only in case of availability by provider**
- **status of technological facilities: very heterogeneous**

added city value:
field of action: the biggest adjusting screw is heating power!
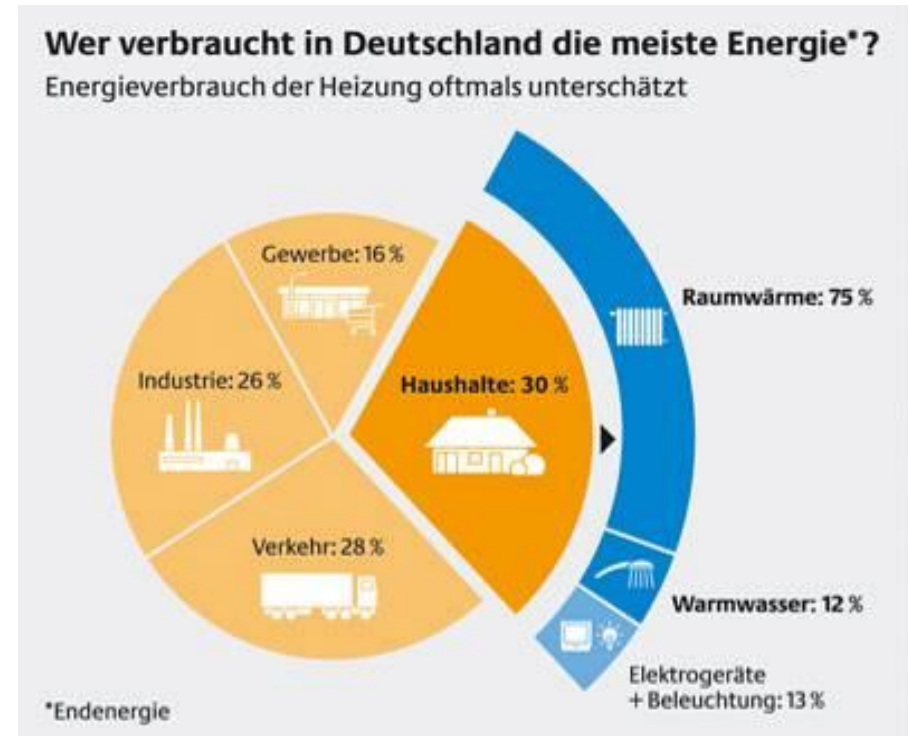
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Heating energy with enormous potential savings

30% of the energy the various apartments

75% of the end energy consuming households for heating, they are thus responsible for 15% of CO_2 emissions in Germany

The cost of energy has doubled in the last 10 years and will continue to rise

Residential buildings, are due to their high energy efficiency potentials in the focus of the political debate on the energy turnaround

Wer verbraucht in Deutschland die meiste Energie*?
Energieverbrauch der Heizung oftmals unterschätzt

Gewerbe: 16 %

Industrie: 26 %

Haushalte: 30 %

Verkehr: 28 %

Raumwärme: 75 %

Warmwasser: 12 %

Elektrogeräte
+ Beleuchtung: 13 %

*Endenergie

Source: German Energy Agency (dena) / energy data BMWi, 2011

Power energy	Heating energy	Waste	Media	Water
Energy harvesting applications	**Hvac – upscales single room management**	**Residual waste – hand waste sorting**	**Glas fibre connected smart meter gateways**	**Safe consumption transparency App**
wind to heat warm water storage	**Infrared applications**	**Residual waste – rfid-driven sorting**	**work @ home**	**Sewage water transparency app**
Safe consumption transparency app	**Safe consumption transparency app**	**Waste removal vans route optimazation**	**Mobile app energy effi-ciency for** - tenants B2C - for building owners B2B	**Energy harvesting decalcifica-tion**
Gridlab evaluation	**Block heating**	**Waste billing systems**	**Chiptechnology with pre provided energy harve-stg managmt**	
	Solar integration			

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Experienced single dropping rates

Safe collection app x **%**

SMGW + quarter software 11 **%**

Stratified storage (heating) x **%**

Predictive load curve 50 **%**

Single room management 20 **%**
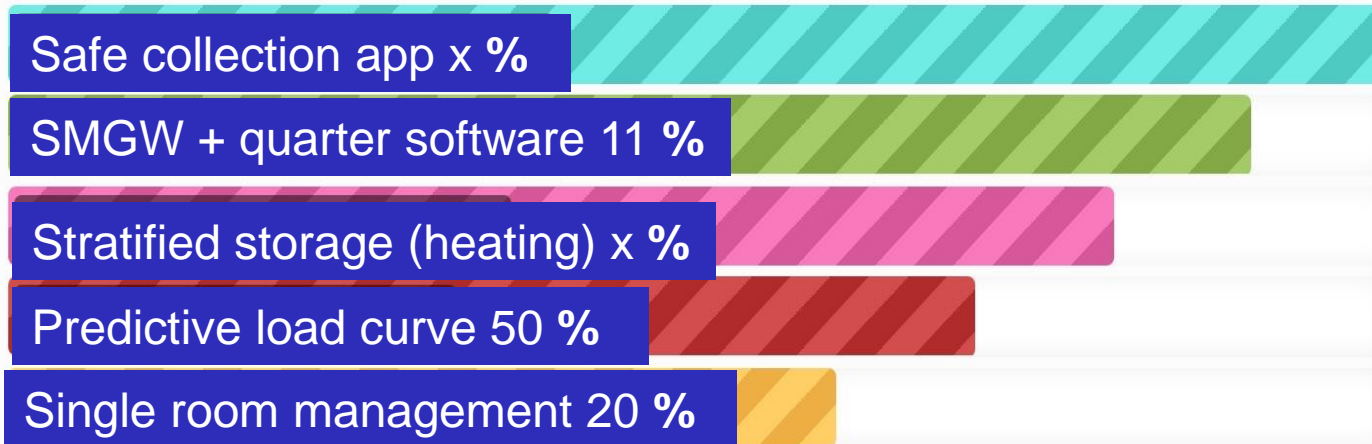
Ladder of success? Which success?
Valid rates!

How does ULD-certified single room management work?

Solar/wireless technology and innovative thermoelectric generator
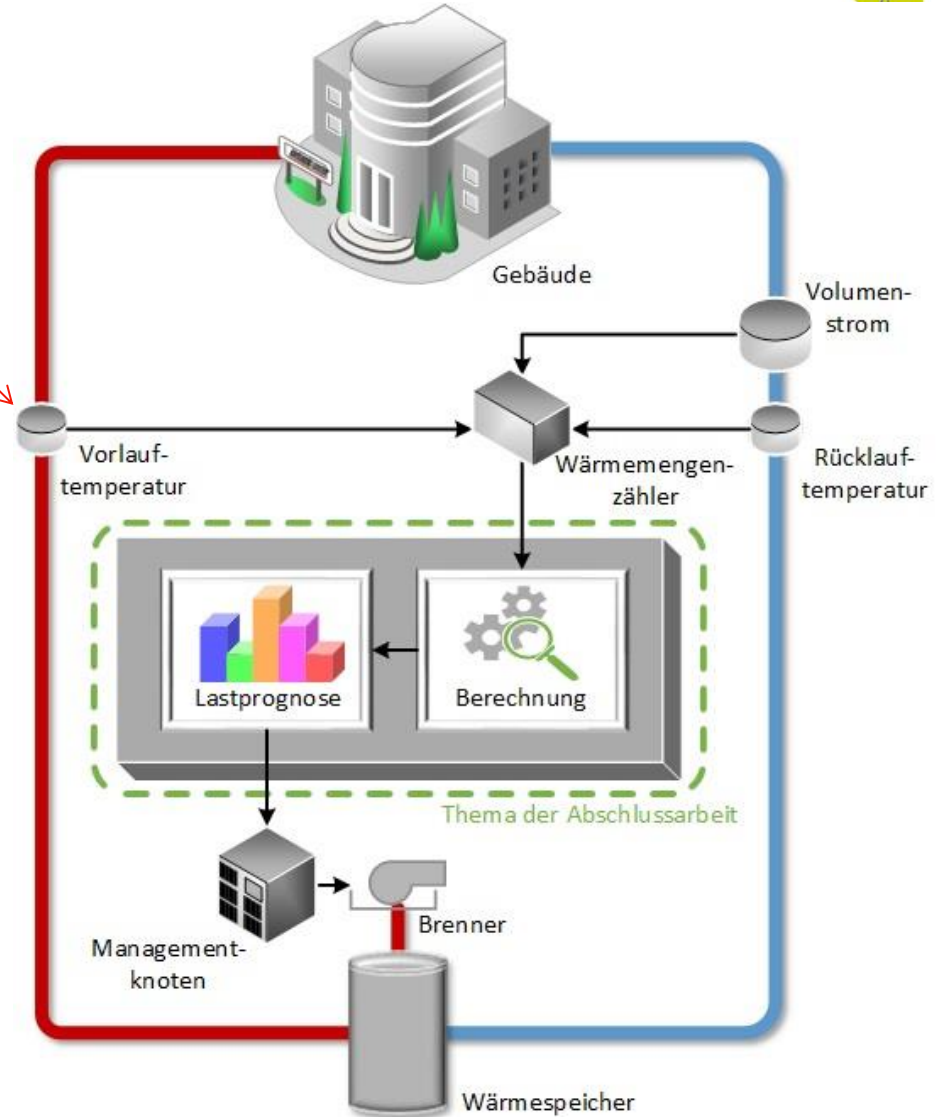
enocean®

- Learning of user-behaviour
- Automatic creation/adaptation of schedule
- Information for the user (display)
- Single button operation ("complaint-button")

- Room temperature control
- Opening/closing of the radiator valve
- Setting of value for best comfort
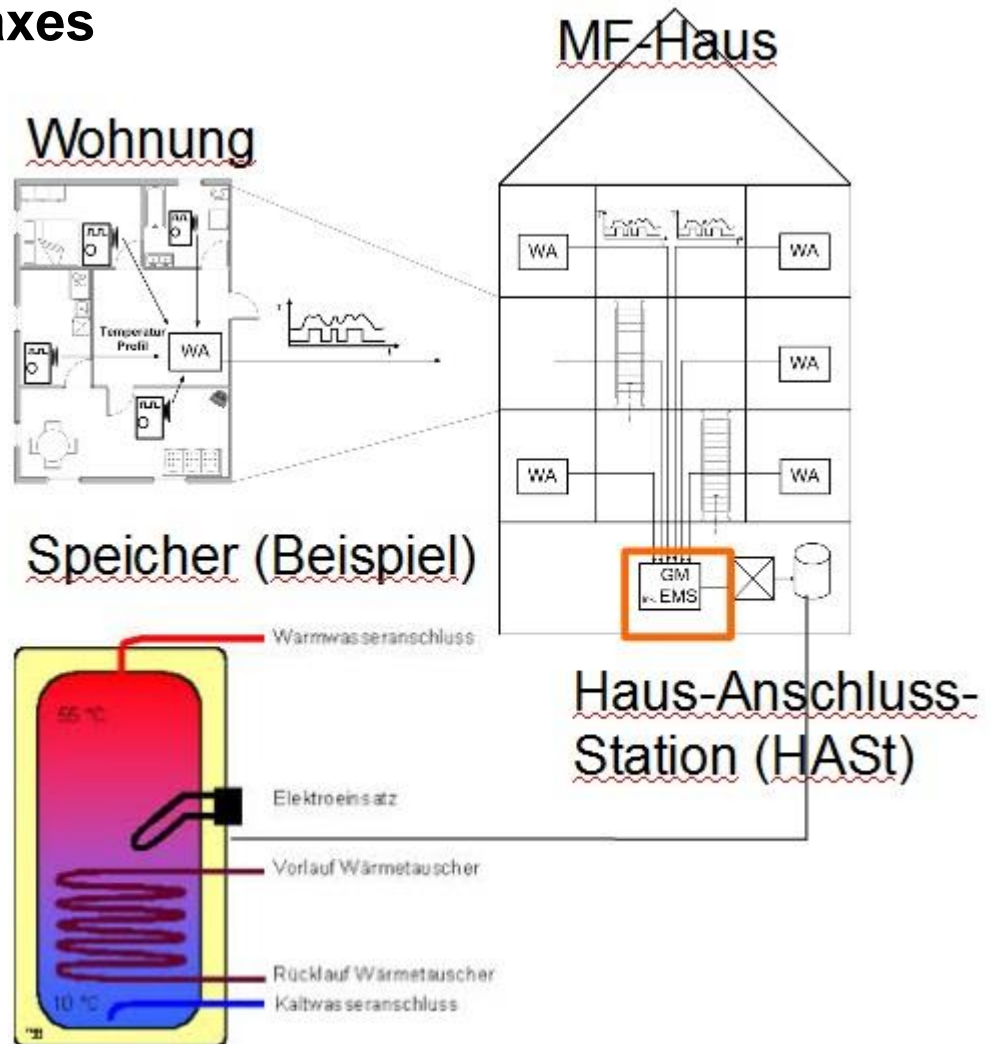- Adaptation to commercially available standard thermostat-valves
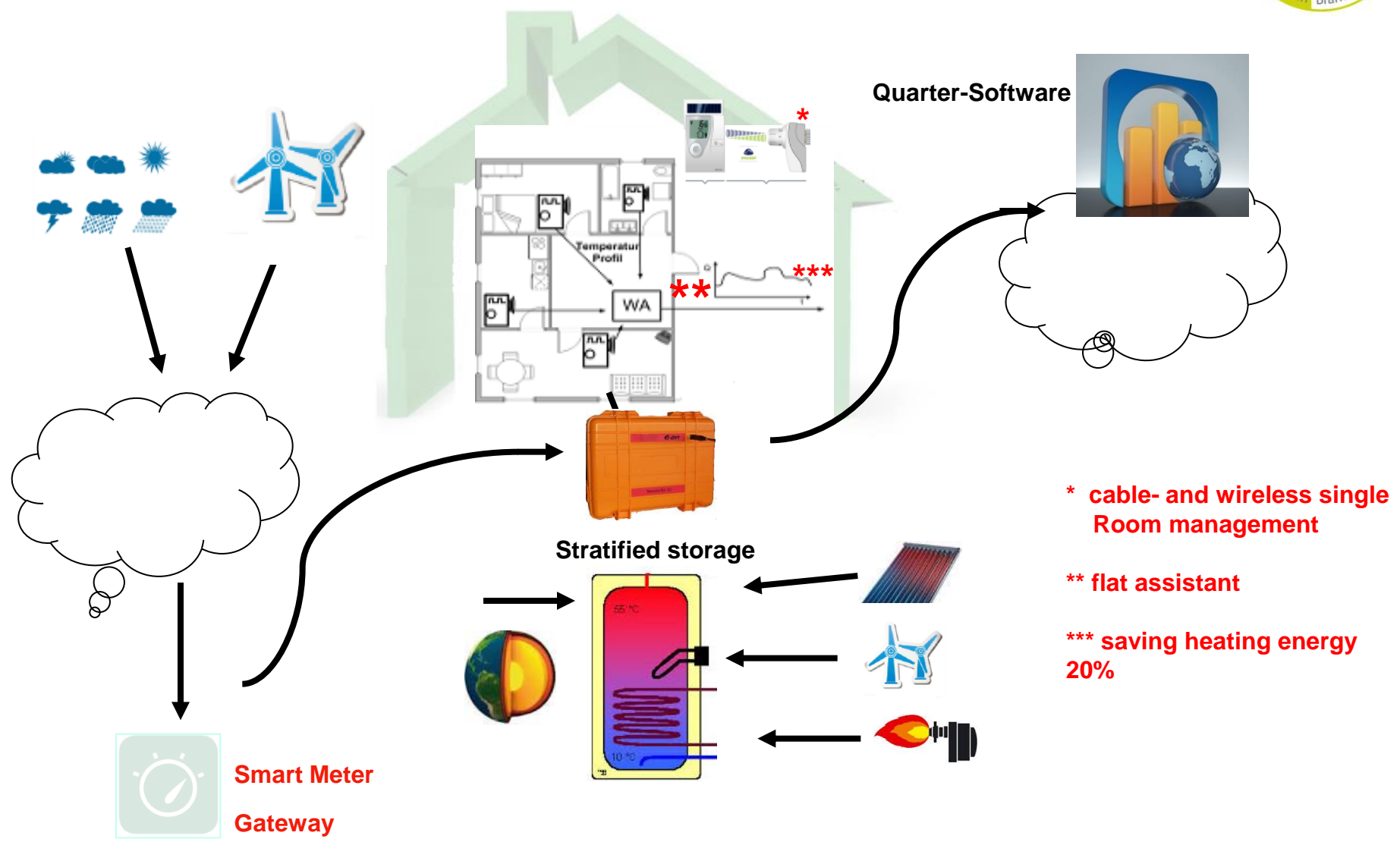
Why certified?

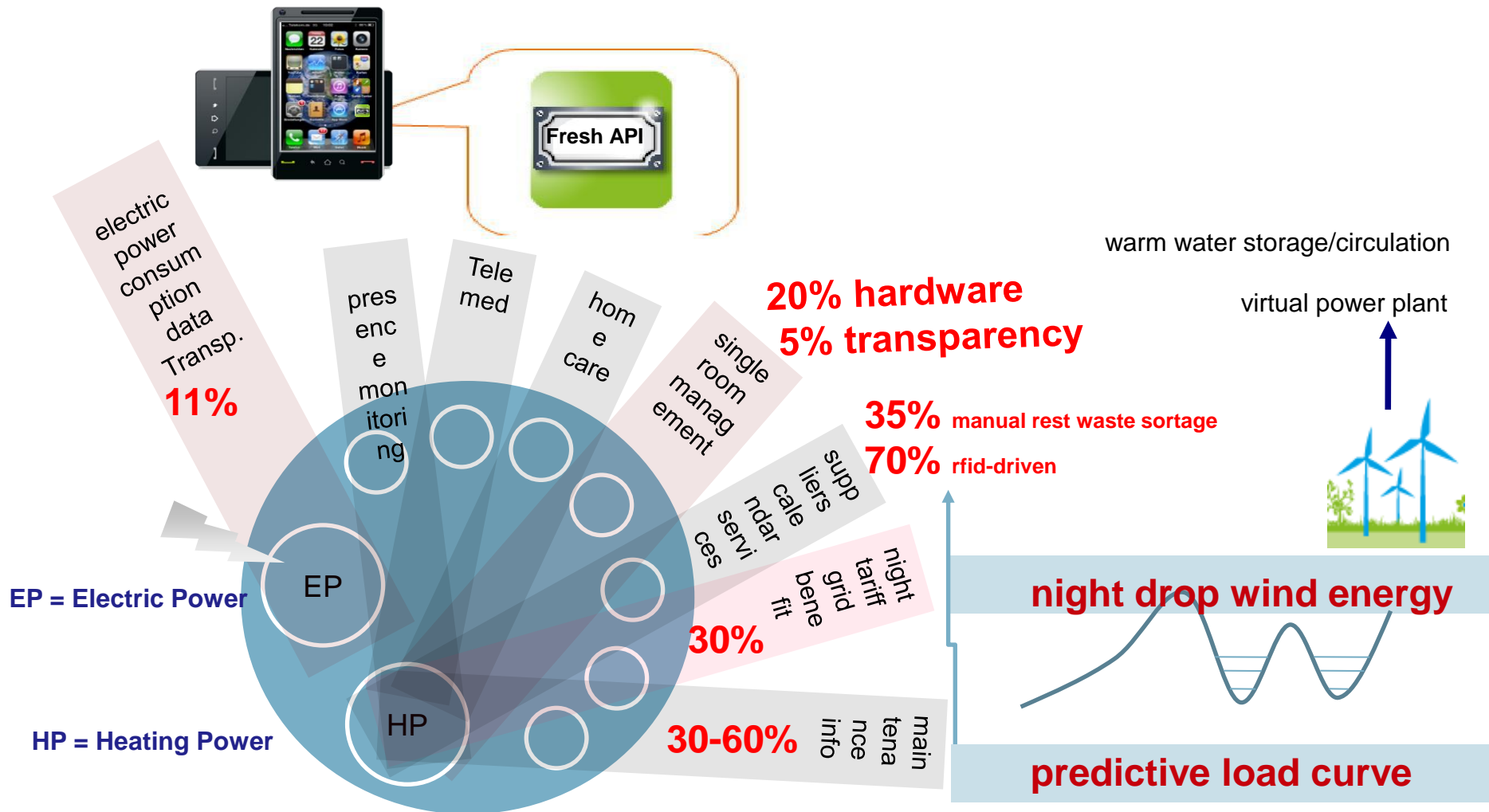**How does**
a predictive load curve
work?

Gebäude

Volumen-strom

Vorlauf-temperatur

Wärmemengen-zähler

Rücklauf-temperatur

Lastprognose

Berechnung

Thema der Abschlussarbeit

Management-knoten

Brenner

Wärmespeicher

**WINDNODE-process
unburdened from dues and taxes**

**How does
a stratified storage (heating)
work?**

Quarter-Software

Temperatur Profil

WA

**

***

*

Stratified storage

Smart Meter

Gateway

* cable- and wireless single
   Room management

** flat assistant

*** saving heating energy
20%

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Fresh API

electric power consum ption data Transp. **11%**

pres enc e mon itori ng

Tele med

hom e care

single room manag ement

supp liers cale ndar servi ces

night tariff grid bene fit **30%**

main tena nce info **30-60%**

20% hardware
5% transparency

35% manual rest waste sortage
70% rfid-driven

EP

HP

EP = Electric Power

HP = Heating Power

warm water storage/circulation
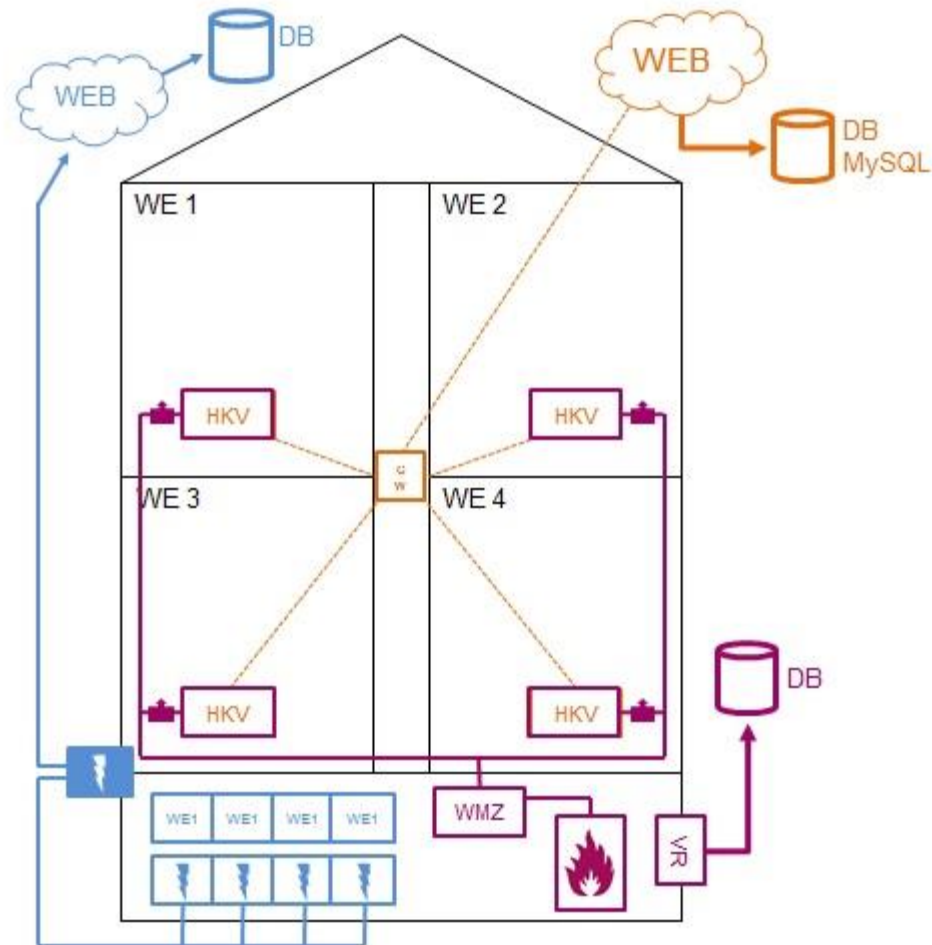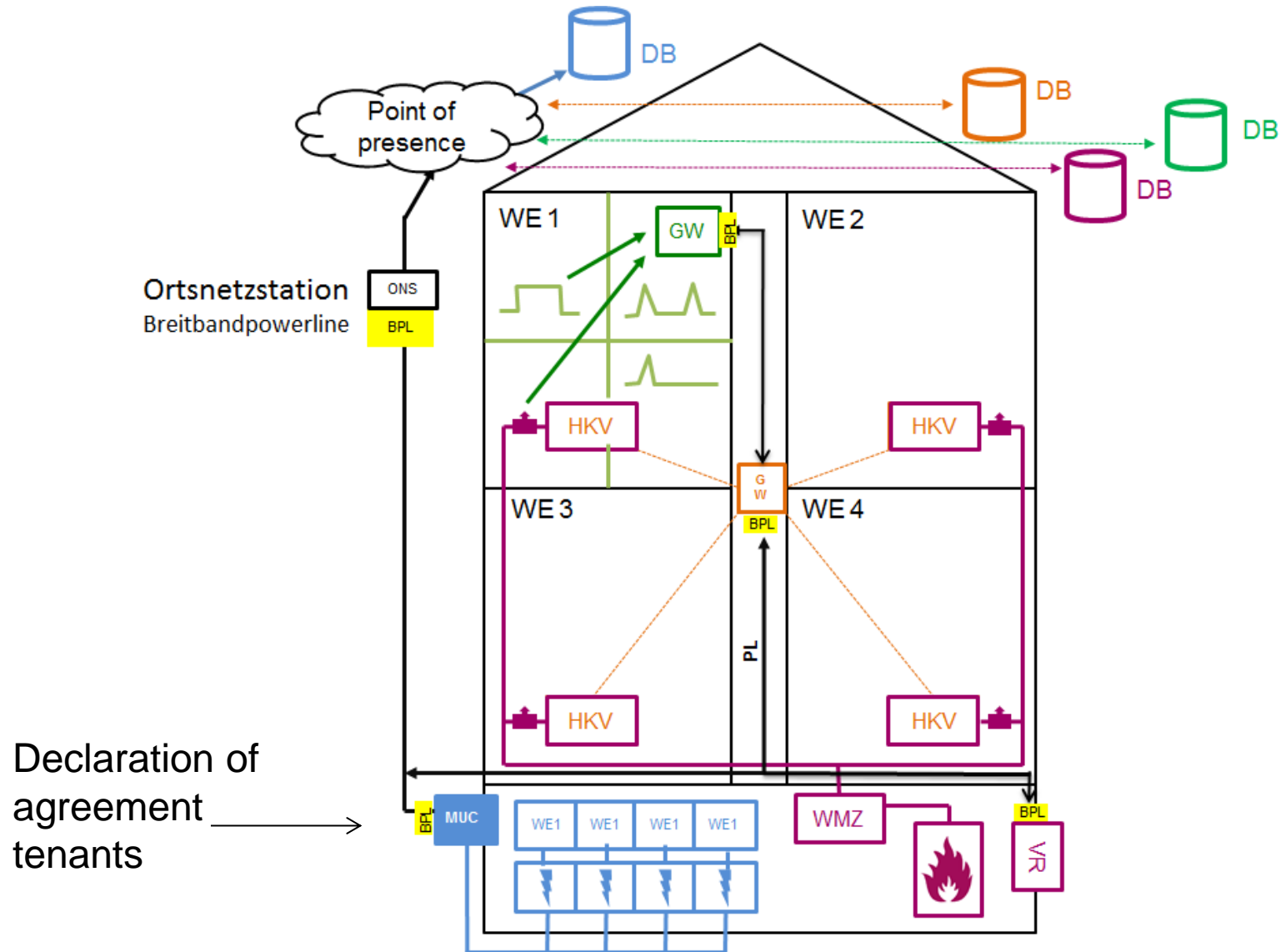
virtual power plant

night drop wind energy

predictive load curve

Life-time energy and operating cost savings
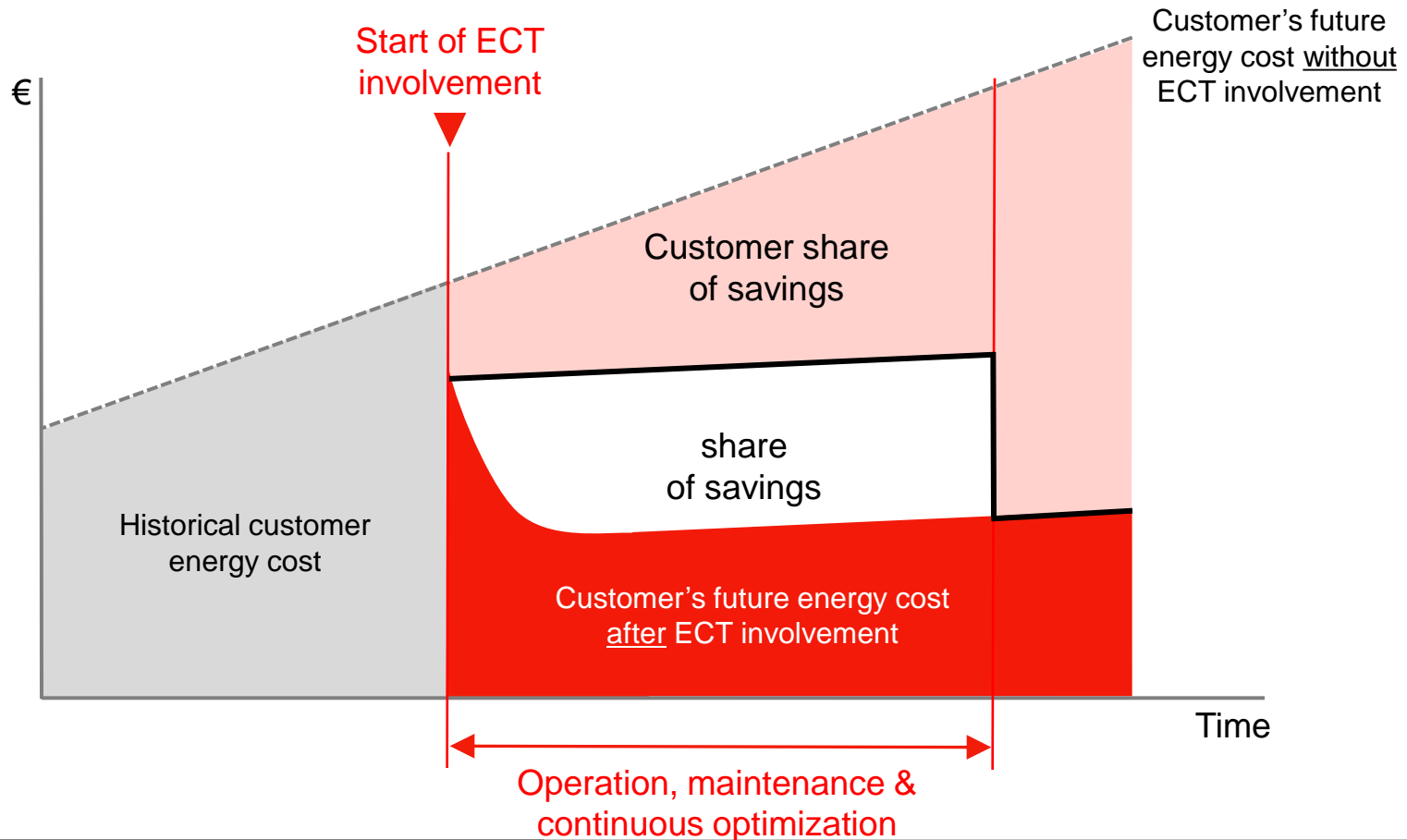
We will implement this into our

EU-calls

Thank you for your attention

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