POOLING CONCEPTS FOR DOMESTIC HEAT SUPPLIERS IN AUSTRIA

AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

FLEX+

powered by klima+ energie fonds

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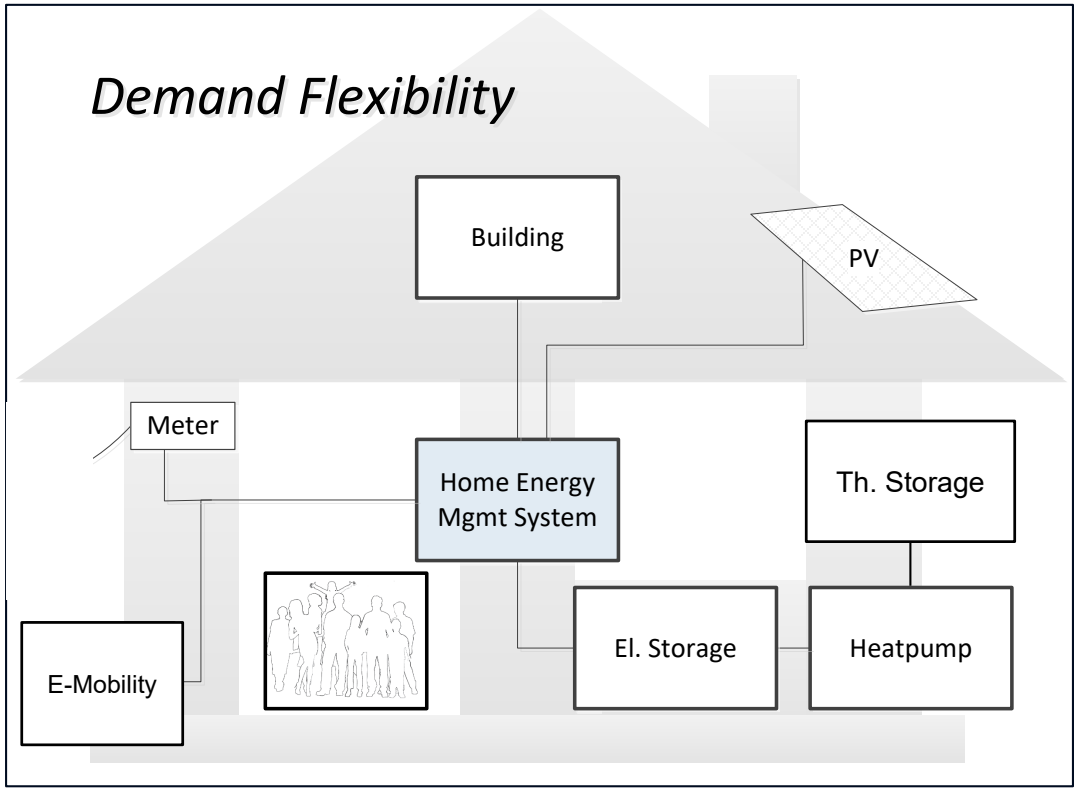
4DH
4th Generation District Heating Technologies and Systems

MOTIVATION

- Increasing **flexibility** of customers
  - Electrification of heat and mobility
  - Increasing number of batteries to increase PV self-consumption rate
- Improved **regulatory framework** for market participation of small flexibilities
- Cost reduction potential through **existing ICT infrastructure** of the components, which can also be used for measurement, billing and control



Quelle: IEA DSM Task 17

RESEARCH QUESTION

How can **prosumer** flexibility such as heat pumps, boilers, e-mobility and batteries be **used on large scale** in the various electricity markets, while considering the interests of individuals?

Multiple **demonstrators** for all components

1. Pooling in **component-pools**
   - Integration of the components' flexibility into a component pool
   - Considering component-specific interests
2. Integration via **Energy Management Systems** (EMS)
   - Considering relations between components
   - Taking into account complex interests such as the optimal coordination of multiple flexible components

KEY FACTS FLEX+

- Project perios: 3 years (05/2018 – 04/2021)
- Funding: 4th Austrian Energy-Research programm (Energieforschungsprogramm)
- All project partners of „Flexibility-Value-Chain“

market	IT	components	customers	research
TIWAG	World-Direct	Fronius (batteries)	W.E.B.	AIT
aWATTar		iDM (heat pumps)	Sonnenplatz Großschönau	FHTW
ENAMO		Austria Email (boilers)		EEG
		Kreisel (e-mobility)		SCCH
		MS.GIS (smart home)		

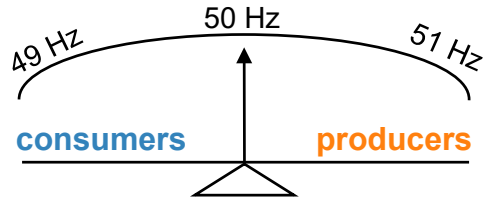
CONSUMERS IN ELECTRICITY MARKETS

Day-ahead und intraday spot markets

- Consumers can reduce their electricity costs
- Lower technical requirements for market participation

Balancing markets

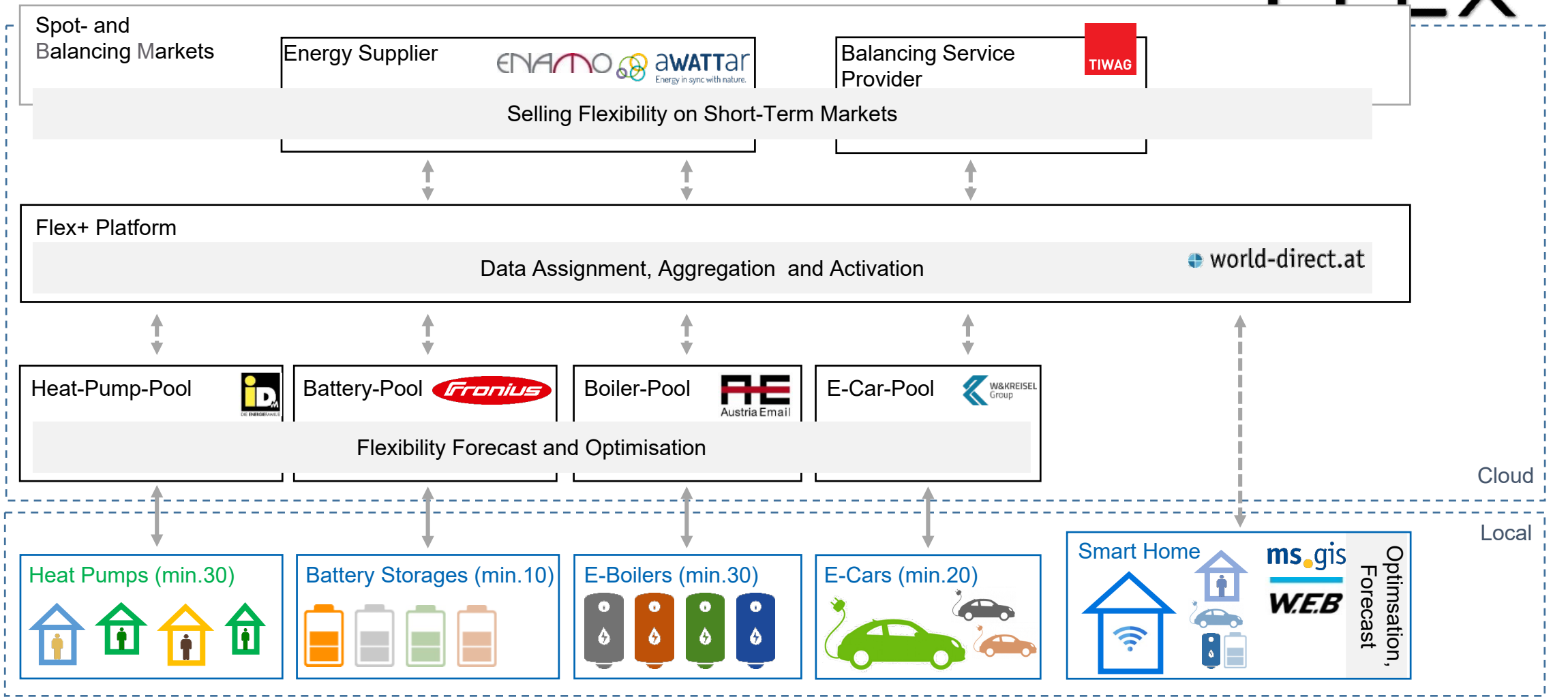
- Consumers can support the electric transmission grid + earn revenues
- 3 types of balancing energy: primary, secondary, tertiary
- Strict technical requirements for market participation
  - Fast reaction times: a few seconds / a few minutes -> Bidirectional communication
  - Minimum pool size: 1 MW / 5 MW, but not necessary when pooling concept is implemented



Main Use Cases

- Secondary balancing market (full reaction time in 5 minutes) + Day-ahead spot market + Intraday spot market for “catch-up effects” of the balancing markets
- Day-ahead spot markets + Intraday market optimization of flexibilities

PARTICIPATION OF FLEXIBILITY ON SHORT-TERM ELECTRICITY MARKETS



NEXT STEPS

- Large-scale online questionnaire to identify the „own interests“ of customers
- Simulation of all pools & energy management system for different markets
- Live demonstration for all pools and bigger customers with energy management system
- On-going: Definition of products and business models for all stakeholders
- **Future research: H2020 project “REACT”**. Technical and business ecosystems are developed to demonstrate the potential of the large-scale deployment of RES and storage assets on geographical islands.

FUNDING

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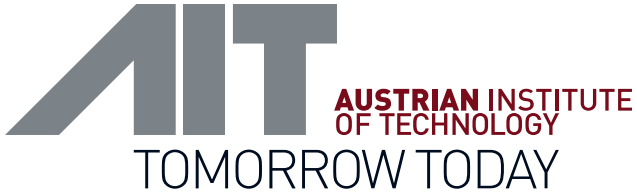
THANK YOU FOR YOUR ATTENTION



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