

# Swisscom Energy Solutions<sup>4</sup> virtual plant based on household loads

CEDEC Congress 18/10 in Brussels

CONNECTING LOCAL ENERGIES

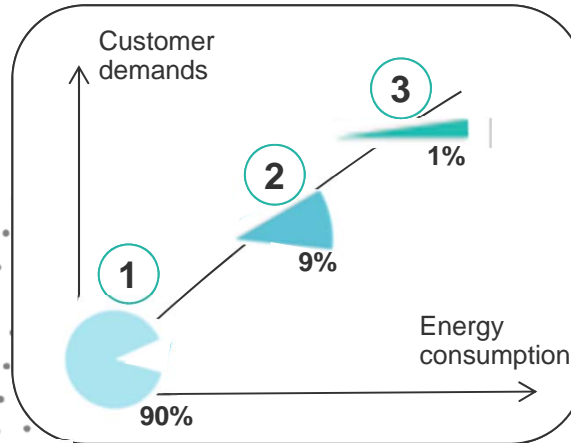
Session: The Missing Link of Flexibility (demand response  
& energy storage): silver bullets or gold-plated promises?

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Regulatory and Public Affairs for Swisscom Energy Solutions

**tiko**

# Swisscom Energy Solutions

## Vision of Smart Home



Customer segments and Value Proposition

	1	2	3
Consumption	3 MWh/year	8-10 MWh/year	Prosumer
Devices	<ul style="list-style-type: none"> <li>Washing machine</li> <li>Coffee machine</li> <li>Lighting...</li> </ul>	<ul style="list-style-type: none"> <li>Heat pump</li> <li>Night storage</li> <li>Direct heating...</li> </ul>	<ul style="list-style-type: none"> <li>Photovoltaic</li> <li>Batterie</li> <li>Electro-mobility...</li> </ul>
Readiness to pay for energy services	<ul style="list-style-type: none"> <li>Energie = Commodity</li> <li>No Readiness to pay</li> <li>Little willingness to save energy</li> </ul>	<ul style="list-style-type: none"> <li>Cost sensitive</li> <li>Eco sensitive</li> <li>Consuming-aware</li> </ul>	<ul style="list-style-type: none"> <li>Willingness to self-sufficiency</li> <li>Eco-sensitive</li> <li>Avoidance of waste</li> </ul>
Products	gadgets (e.g. Mystram)	tiko power + gadget	tiko power/sun/storage + mobility + gadget
Cross-subsidisation	none		

# One of the biggest Smart Grids in Europe

- > 6'500 participating households
- Since 2014 prequalified for Secondary reserve in CH, supply on a continuous basis since then
- Since 2016 prequalified for Primary reserve in CH, supply on a continuous basis since then
- Improvement of energy efficiency in households
- Since 2016 expansion in Europe

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# Hard- and Software have been developed ...

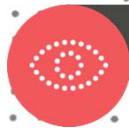
...inhouse in Switzerland



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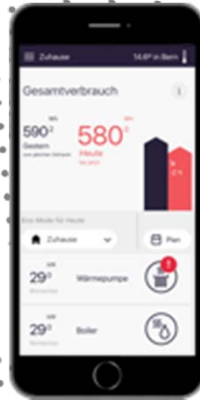
# tiko power sustainable customer loyalty

tiko can be free for the members. It enables savings of up to 60% per day



## Monitoring

Detailed analysis of energy consumption and comparison with neighbour



## Comfort & Savings

Ecomode for energy savings



## Security

Alarming: Reporting of faulty behaviour and malfunctions



## Energy efficiency for households with electrical heating systems

Energy fluctuations in the electrical mains can be balanced by the contribution of every member: for the energy transition, reliable supply of electricity and protection of the environment

# Characteristics of tiko power

Different characteristics make tiko particular

1

**Control of small loads**

- Focus on households
- Loads of SMEs

2

**Proven Concept**

- First aggregator to deliver primary balancing energy with households
- Secondary control power since 2014
- Regular symmetrical offers of control power

3

**House development Hardware/Software**

- Full parametrization possibilities
- Adaptations and further developments can easily be integrated
- Full technical control allows further functionalities to be easily developed

4

**Control on basis of a second**

- Increasing and reducing the loads in a mains at any time
- Easy use of the pools for primary and secondary control power
- Possibility for use for Intra-day, Peak-Shaving, tertiary control power

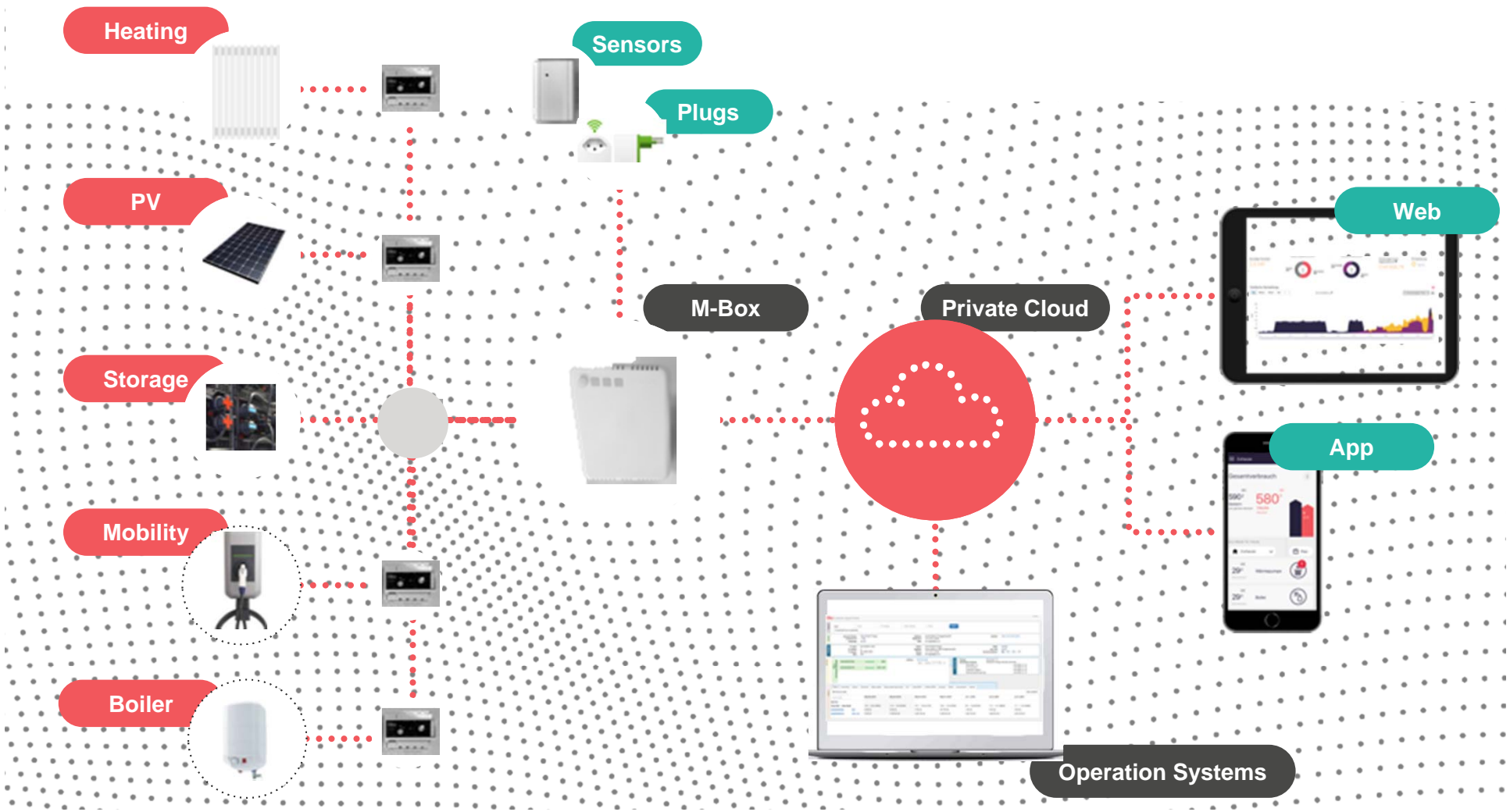
5

**central and decentral intelligence**

- Depending on the product and the use, the intelligence is central or decentral
- combinations are possible

# tiko is an open platform for flexibility and more

for energy efficiency and energy services in households



# There are different forms of demand response

The regulatory framework has to embrace the different forms of demand response

	Frequency	Energy Balance	For whom?	Benefit	By whom?	How?
Demand response	In-frequent	~ 0 (because in-frequent)	DSO	Network stability	DSO	Ripple control; pricing
			TSO	Network stability	TSO	Switching off DSOs
	frequent	significant	Supplier	Max. of Margin	Supplier	End-user load shifting
			End-user	Cost reduction	End-user*	End-user load shifting
			TSO (tertiary reserve)	Network stability	Aggregator	End-user load shifting
	ongoing	~ 0 (because symmetrical)	TSO	Network stability	Aggregator**	End-user load shifting / load modulation

\*End-user can mandate aggregator  
 \*\*suppliers can also act as aggregator



# Regulatory recommendations...

...focusing on demand modulation

1

## Innovation

- Innovation will come from players outside the electricity sector
- Regulation should therefore be cautious not to favour the existing players.

2

## Pooling concepts

- Virtual plants that are pooling loads of households – as a new concept – are not noticeable in the local networks
- Therefore regulation has to differentiate between pooling of industry users vs. the pooling of households dispersed over a country.

3

## Information flows

- The information flows between aggregators and BRPs/suppliers are not necessary for aggregators of households.
- Information of the DSO on each household participating impacts BC

4

## Financial adjustment mechanisms

- The financial adjustment mechanisms do not make sense for pools of households that provide symmetrical secondary frequency control as the « production » is stochastic and leads to a zero-sum game with the BRP

5

## Merit order for the right to use the flexibility of the user

- On a long-term basis there is a need to establish rules concerning a merit order for the right to use the flexibility of the consumer (priority should be given to the ones that stabilise the networks - locally and nationally)

# Thank you

for your attention !

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