



# Smart metering is an enabler for a new era in electricity retail

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# Content of presentation

## **Smart metering is an enabler for a new services**

- Presentation of Caruna
- Electricity retail market in Finland
- Smart metering service and system model
- New services based on hourly metering
- DSO role in the modern energy system



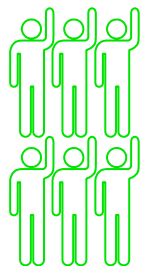
## ”Caruna in a nutshell”

**A new company, over 100 years of experience.**

We started to distribute electricity in a place called Karuna. The year was 1912 and Finland was a dark country, where we started to bring light. In 100 years the world and Finland have changed.

So have we

# Key figures



**650,000** customers

Private and corporate clients in Southern, South-western, Western and Northern Finland, and in Joensuu



**200** M€

Annual investments into a stronger and more reliable grid than ever



**79,000** km

The grid would stretch almost twice around the earth



The reliability of our electricity distribution is over  
**99,98%**



of Finland's distribution business



**270** Employees

**2 000** Indirectly

Distributed electricity

**12.6** TWh

Caruna

**Owners**

First State Investments  
40%

Borealis Infrastructure  
40%

Keva  
12.5%

Elo  
7.5%

Regulated revenue

**300 M€**



# Electricity retail market in Finland

- Over 80 different sized DSOs
- Approximately 70 suppliers (some of the only operate locally)
- 3.4 million metering points
- No regulated end user prices for electricity supply
- Supplier centric market model, but DSO and supplier are responsible for billing
- DSOs are responsible for metering and data reporting
- Smart Meter roll-out was finished in Finland 1.1.2014
- Over 96% coverage of Smart Metering
- Supplier switching rate about 10%

# Smart Metering Legal Framework

## Electricity Market Act and Government Degrees



Example of a DSOs  
online service

- Requirements for metering
  - ✓ remote reading daily (hourly values)
  - ✓ energy balance settled in 14 days
  - ✓ shall register over 3 minute black-out time
  - ✓ remote demand response feature (1 relay)
  - ✓ data storage in DSO systems
  - ✓ security of data (meters and systems)
- Customers have access to their hourly measurements via online service by DSO
- Standard open interface at the meter for real time consumption data has to be provided on customer request

### Tracking

This page shows you your usage of electricity over calendar years, months, weeks and hours. (Use the slider or click the bars to change time resolution.)





# Smart metering service and system model

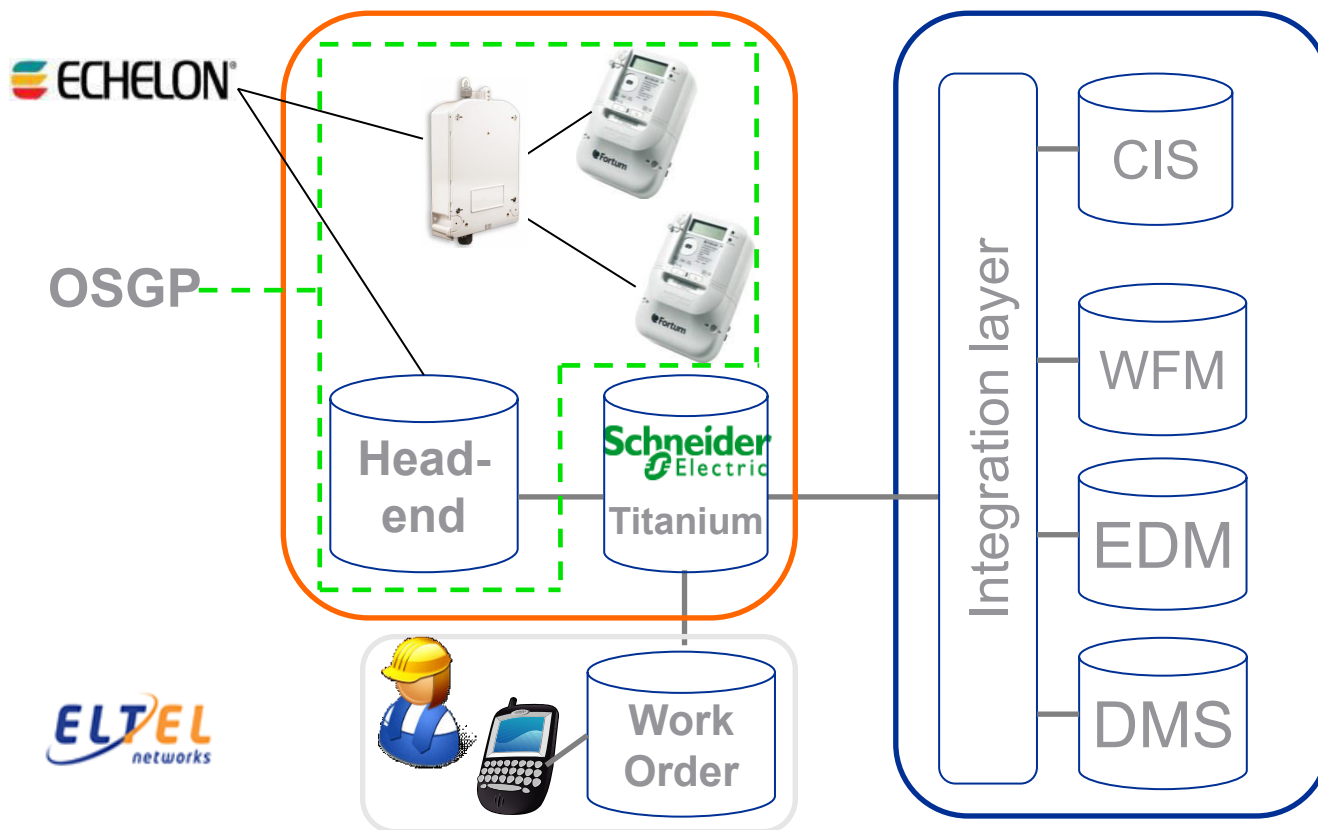




# AMM Service model of Caruna

**Schneider**  
Electric

**caruna**



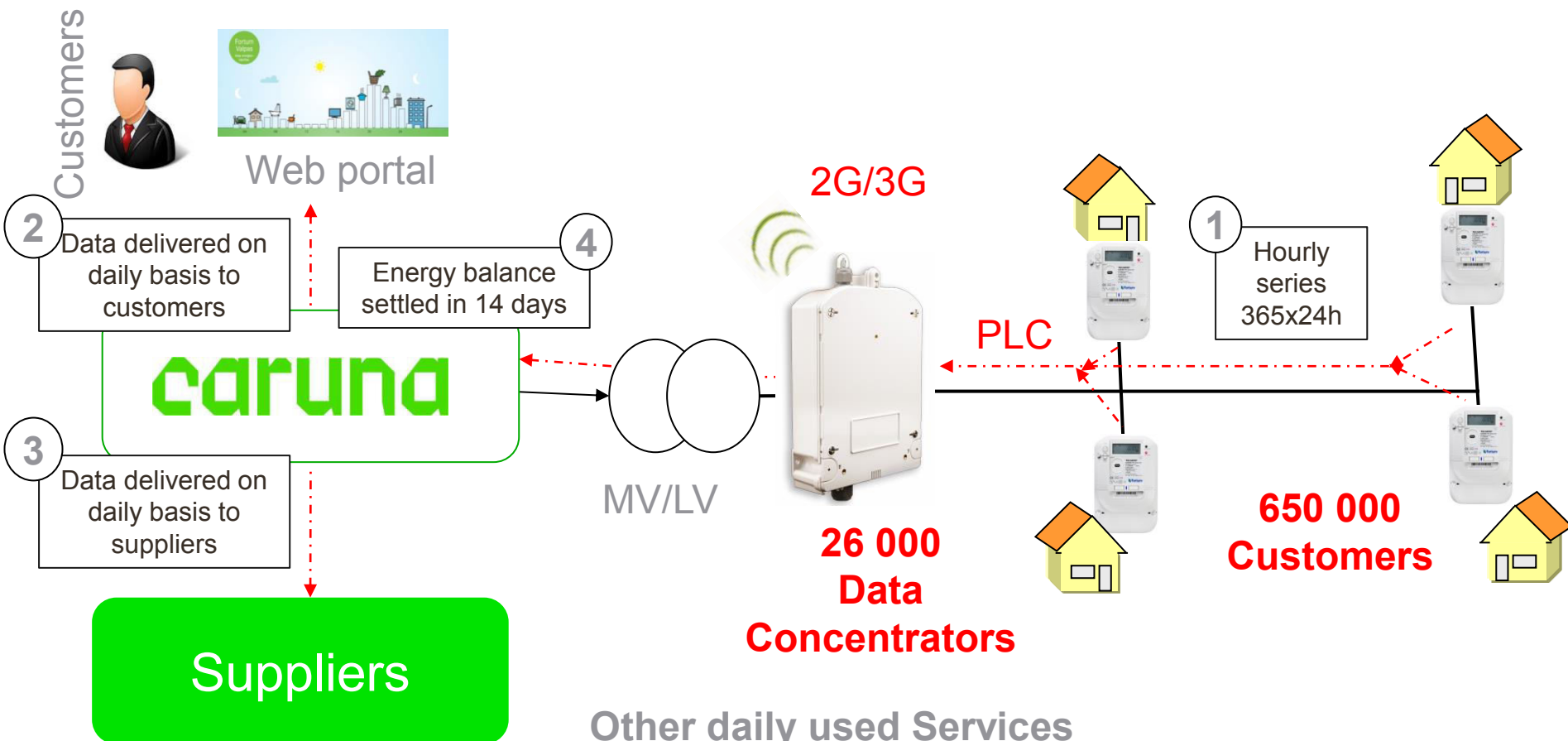
## Main Services

- Delivery of *Hourly data*
- Delivery of *Power Quality data*
- *Remote Re/disconnection*
- Incident handling
- Remote configurations





# Daily Collection and Delivery of Hourly Data



## Other daily used Services

- Collection of *Power Quality data and alarms*
- *Remote Re/disconnection*
- Remote configurations, e.g. tariff



# Benefit of Smart Metering (AMM)

- Invoicing will be based on real electricity consumption
- Energy savings actions will be shown in the next invoice
- Better knowledge about use of energy improves energy efficiency (HMR)
- No manual meter reading nor reporting
- Move in and change of supplier process automation
- Automation of disconnection and reconnection process
- Administrative load control system (TBLC, dynamic LC)
- Easier to operate and manage network capacity when actual electricity consumption is known
- Power failure localization and for informing customers about power failures via SMS
- New platform for new services, IHD, micro production, local connectivity
- Significant step on Smart Grid





# New services based on hourly metering

- Hourly metering allows suppliers to offer the customer various different kinds of electricity supply products
  - Electricity price follows actual whole sale price
    - Hourly, daily, monthly or some other interval
    - Demand side management and home automation services. E.g. turning the water boiler automatically on during the cheapest hours of the day
    - Reporting services and in home displays that use the open interface from the meter
  - Peak time pricing
- Remote metering enables to develop network tariffs towards a more cost reflective and fair tariff structure (e.g. power band tariff)

# Smart metering is an enabler for a new era in electricity retail



- Consumers have the possibility to monitor their own consumption on hourly level
- Hourly priced electricity is available to all consumers
  - Possibility to affect your own energy costs, either via own activity or with the help of automation
- Smart meters form a platform which enables development of new energy and cost saving products and services

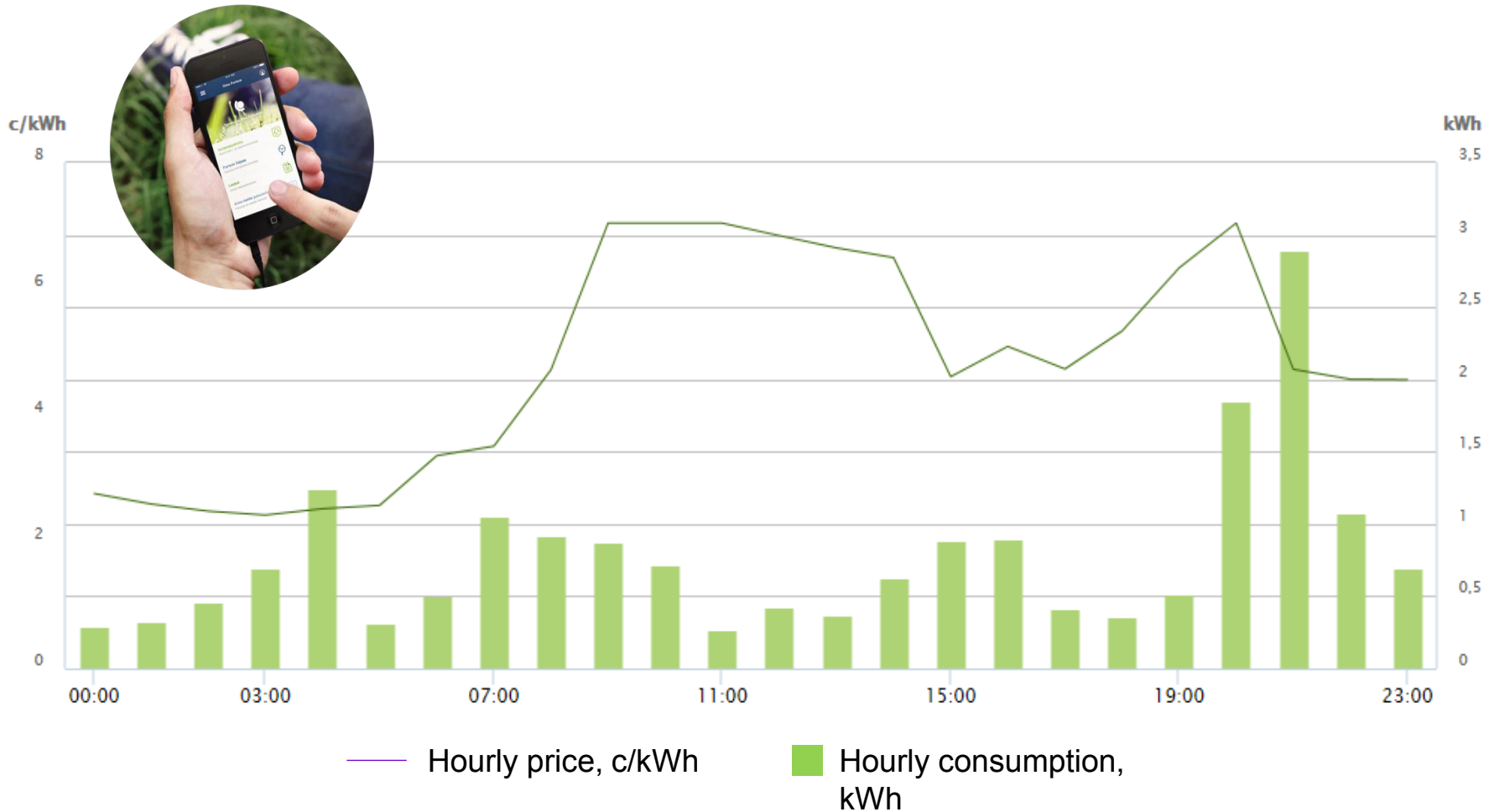
*Better  
awareness of  
your own  
consumption  
and costs !*

*Lower energy  
consumption  
and costs !*



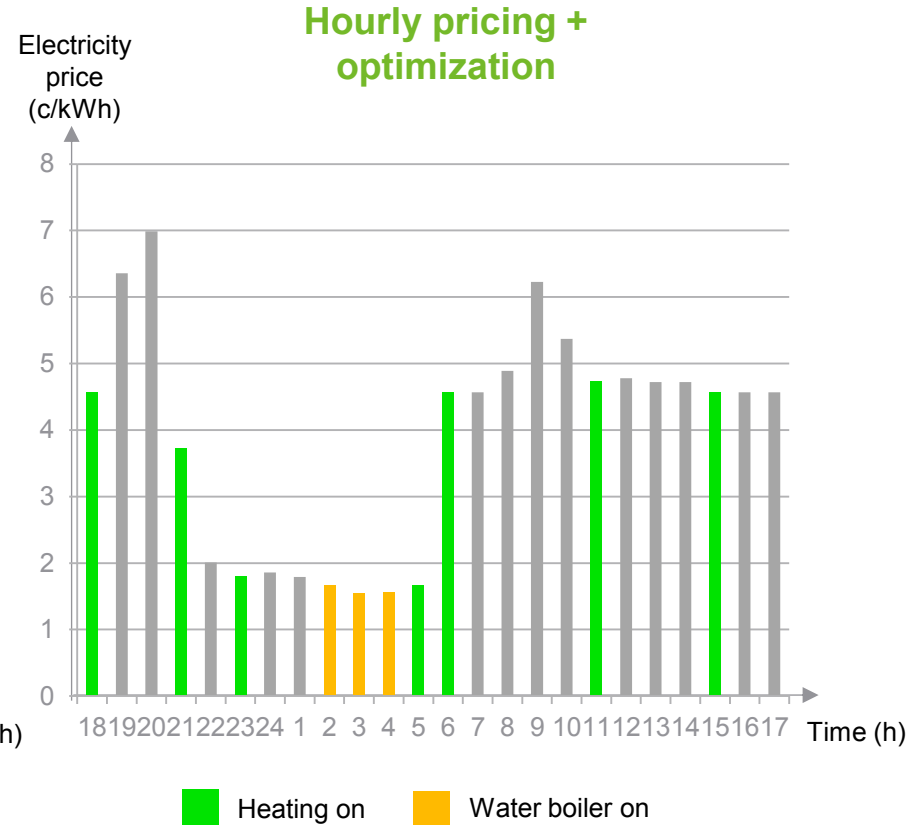
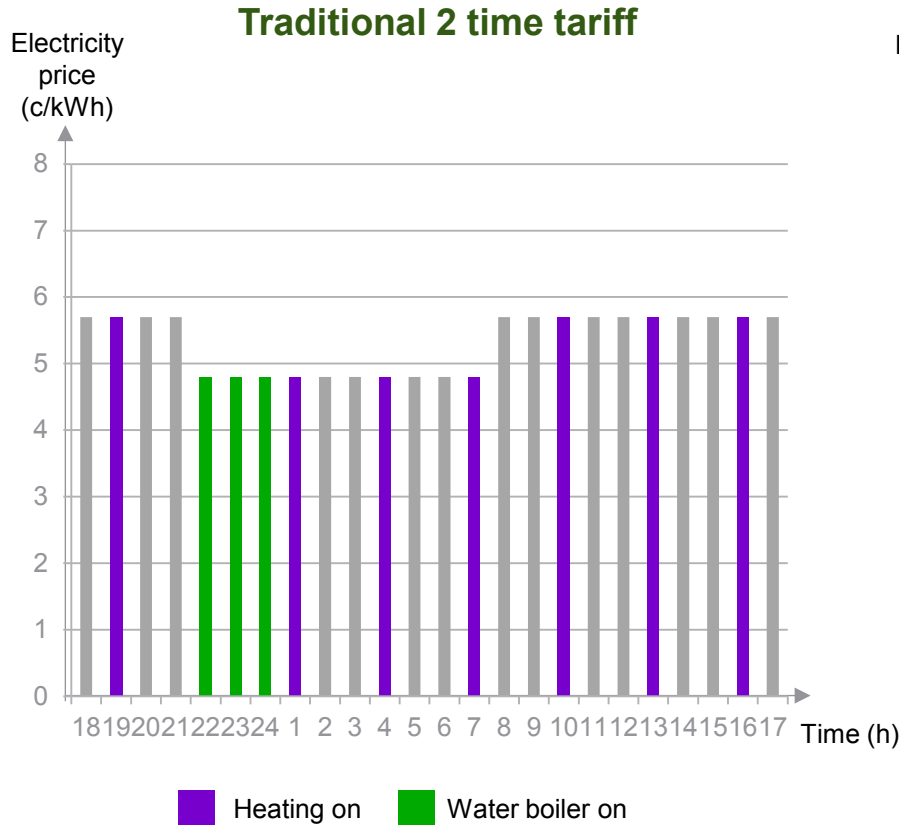
# Example of a household's hourly consumption

## Awareness via easy access to data



# Heating hours and energy price

## Example - Optimizing direct electric heating and water boiler



# DSO could take a much bigger role due to its unique position in the modern energy system



*There are many DSO-enabled services available to customers today...*

## Reporting

- + Customer energy monitoring and detailed reporting
- + Customizable SMS alerts

## Smart metering

- + Software fuse
- + Hourly settlements
- + Advanced consumption analytics
- + Cooperation with aggregators/retailers

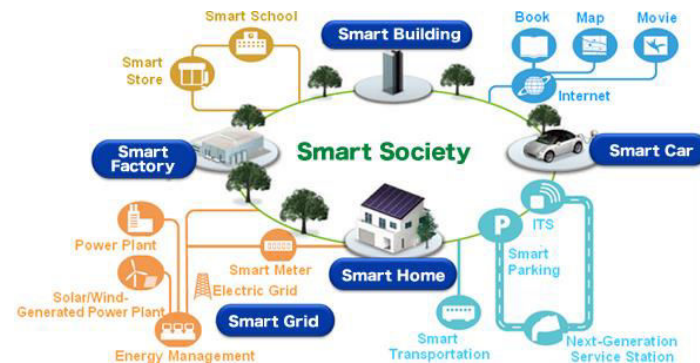
## Data hub

- + Data hubs are critical especially to the 3<sup>rd</sup> party service providers



*...however, DSOs could take a much bigger role*

- + **Opportunity:** DSOs could act as a neutral facilitator providing the platform for the future “smart society”



- **Challenge:** society, regulations and large growth-seeking companies from other industries are actively pushing DSOs to retain the traditional “grid operator” role





## To summarize

- ✓ Hourly metering allows suppliers to offer the customer different kinds of electricity supply products
- ✓ Consumers have the possibility to monitor their own consumption on hourly level
- ✓ Hourly priced electricity is available to all consumers
- ✓ Smart metering enables to develop network tariffs towards a more cost reflective and fair tariff structure (e.g. power band tariff)
- ✓ DSO responsible for metering and power quality
- ✓ DSOs could act as a neutral facilitator providing the platform for the future “smart society”

# Thank you!

