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 Fast Charge

Välkommen  
att ladda din bil!

# Trends in the value chain and Smart Grids

*David Ringmar, Director Network Strategy, Vattenfall Distribution*

# Trends in the future energy landscape demands innovation

Production

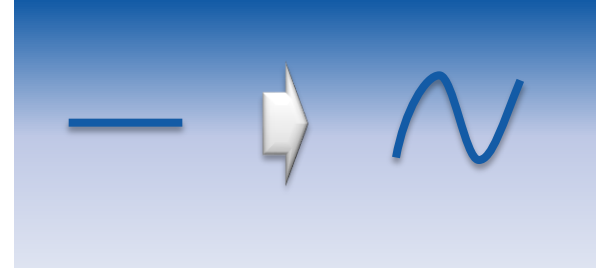
Plannable generation **Intermittent**



Centralized **Decentralized**



Stable **Flexible**



Customer

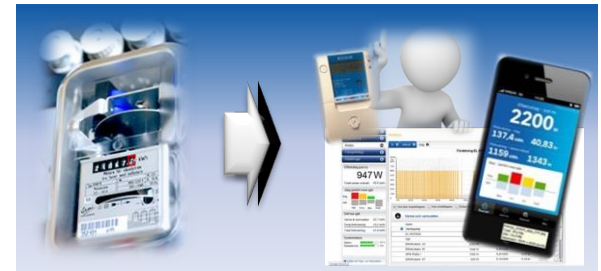
One-way **Bi-directional**



Energy **Demand**

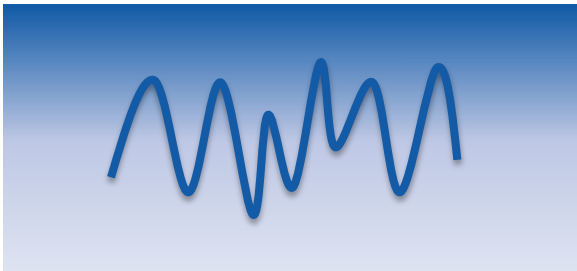


No transparency **Awareness**



Network

**Instability**



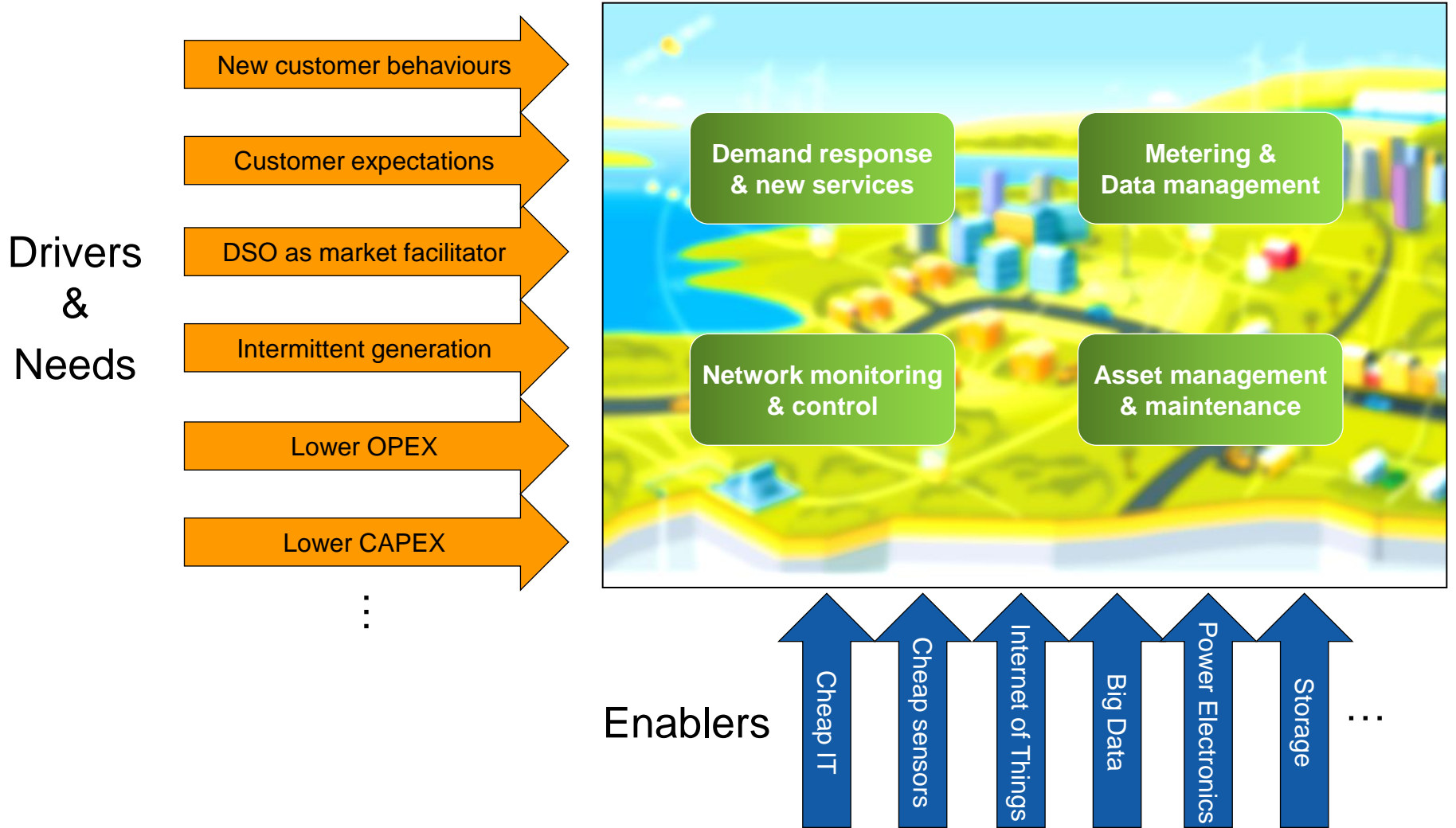
**Congestion**



Fixed prices **Dynamic pricing**



# Market needs and new tech enablers develops the new energy landscape...



# Smart Grids – Focus of ongoing development projects

## How to upgrade an existing network?

Most of the network will not be built from scratch so how to cost efficiently support new functionality and services in existing network is critical

## Advanced SCADA with integrated information

Use all available information (big data) from different systems to ensure resilient system with more secure operation and shorter outages

## Maximize use of existing Smart Meters

Use existing meters for improved outage management, higher safety, efficient network planning and faster connection of small scale generation

## Dynamic rating of assets

Increase capacity of existing assets based on real-time conditions. For example increased capacity of overhead lines based on wind speed and temperature

## Customer transparency & energy services

Provide the customer with information to act in a transparent way towards the market and enable a broad range of energy services from 3<sup>rd</sup> parties

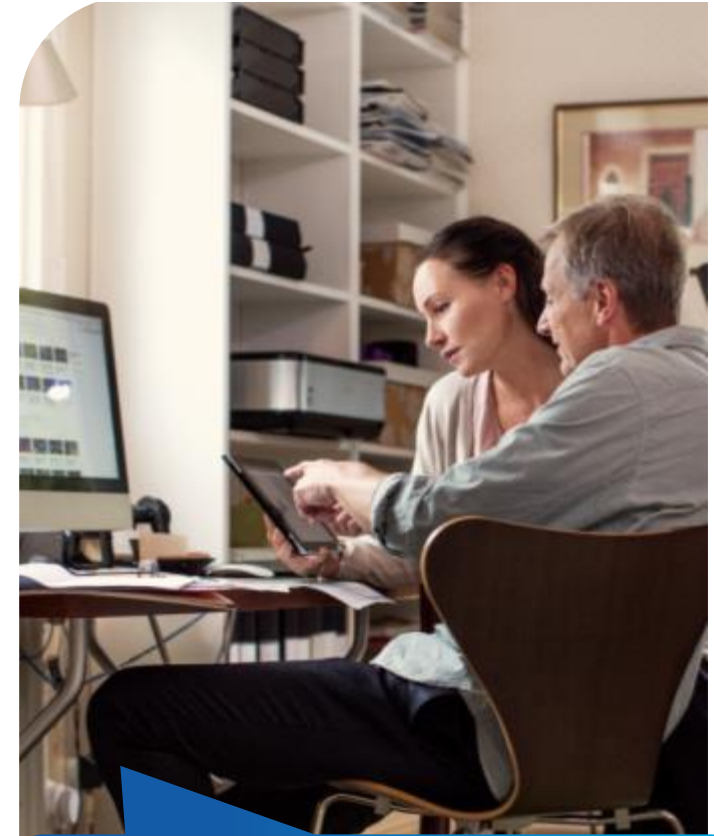
## Monitoring of LV network

Monitor the LV network, which is 50% of our network, in way that outages are minimized, the quality of service secured, flexibility increased and network re-investment optimized



## Case: Why do we need to monitor the low voltage network?

- Increased monitoring of the low voltage network is a necessary next step to improve our customer service
- The low voltage network is 50% of our total network and is not monitored through traditional network operation
- Regulative pressure on reliability requires outage management improvements in the whole network
  - Especially for conditions with multiple (weather related) faults in a limited area



### Monitoring of LV network

Monitor the LV network, which is 50% of our network, in way that outages are minimized, the quality of service secured, flexibility increased and network re-investment optimized

# Case: With Smart Meters and analytics the last 50% of the network can be monitored



Nätstation

Fördelningsstation



Kundanläggningar,  
olika status



Kabel / Ledning



Linje

# Conclusions



Smart Meters are required to **enable market access and transparency for the customer**, and is also an **important tool for process and service improvements** by the DSO



**Millions of events** from individual Smart Meters must be combined with network and customer information to **transform data into information** that can be acted upon



Using Big Data and analytics a **100% monitoring of the network is a reality** enabling clear, efficient and non-ambiguous service to each **individual customer**

An aerial night photograph of a city, likely Stockholm, Sweden, showing a dense network of lights reflecting on the water. The lights are concentrated in the urban areas, creating a bright, glowing pattern against the dark water. The water is dark blue, and the lights are a mix of white and yellow, with some red lights visible in the lower right. The overall scene is a high-contrast, high-angle view of a city at night.

**Tack!**

David Ringmar  
Vattenfall Eldistribution