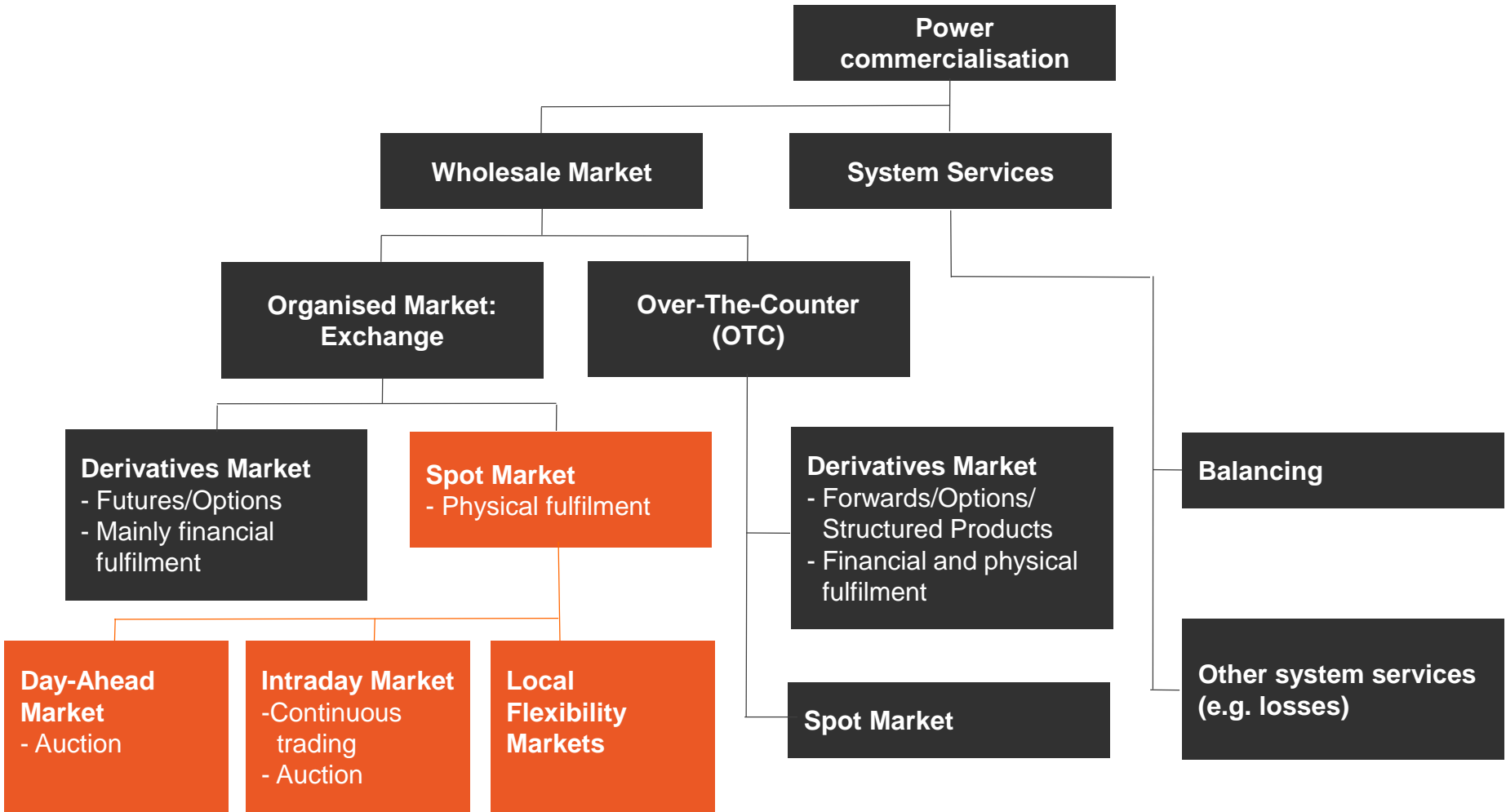


# EPEX SPOT markets: focus on flexibility

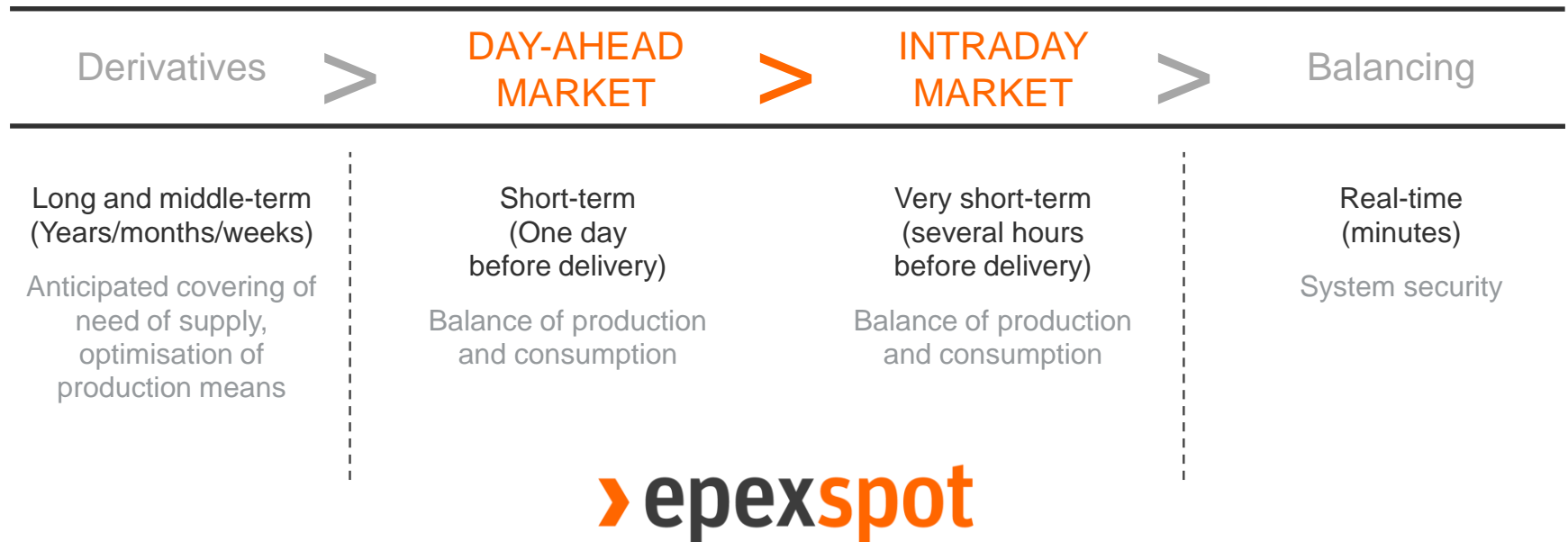
23/01/2019

# 1. The Current Wholesale Market

# Ways of commercialising power



# The role of the Exchange in the timeline of the market



## DAY-AHEAD AUCTION

- Optimisation of liquidity via an auction
- Market areas: Germany/Austria/Luxembourg, France, Great Britain, the Netherlands, Switzerland and Belgium

## CONTINUOUS INTRADAY

- Flexibility through continuous trading
- Market areas: Germany/Luxemburg, France, Great Britain, the Netherlands, Switzerland, Belgium and Austria

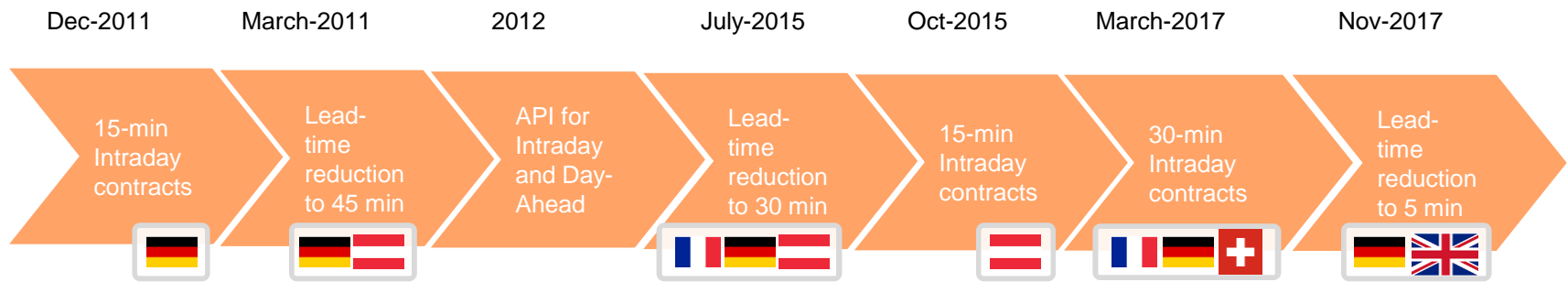
# The evolution of the European Power Markets...

Markets



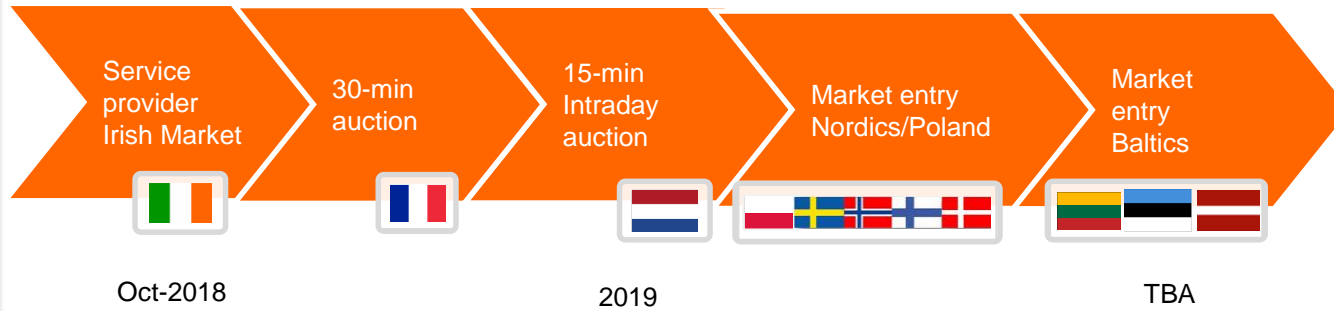
2010 - 2018

Products & services



# ...and further developments

Markets

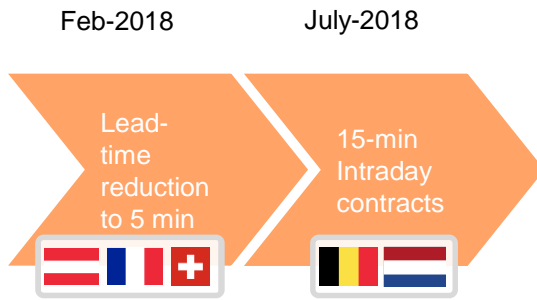


Demonstrator local orderbooks for congestion management (DE)

enera

2018 - 2020

Products & services

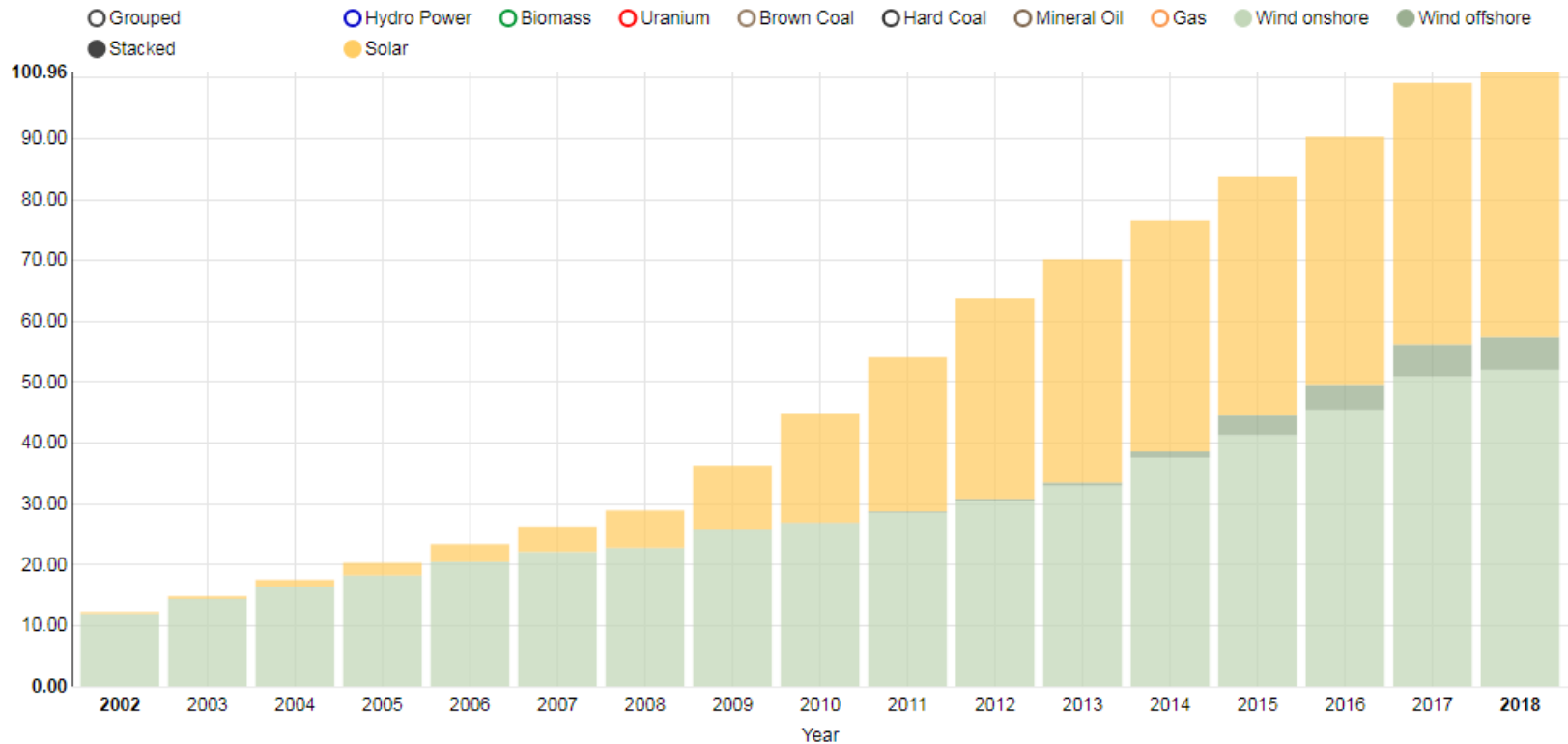


LO3 ENERGY

Connection of micro-grid to power market

## 2. Local Flexibility Markets: rationale & design elements

# Strong development of renewable energy resources



Datasource: AGEE, BMWi, Bundesnetzagentur  
 Last update: 02 May 2018 21:38



# High-level perspective

The current power system is expected to be **facing significant challenges in the future**, regarding the integration of much more decentralized intermittent energy resources.

- How to make the power system more efficient and able to deal with foreseen challenges?

## Current wholesale market

- Considering very large price zones
- Intra-zonal grid topology not considered at the moment (study on zone splitting carried out by Entso-e)

## Future challenges

- Adapt the power system to the integration of much more decentralized intermittent energy (wind and solar power)
  - o Find a way to handle congestions

## New technologies

- The development of new technologies (Internet of Energy, smart grids, demand response, blockchain, smart metering, etc.) has the potential to meet our future challenges.

## New paradigm for the future power system

- Design a new way of functioning for the power system that will overcome the foreseen challenges
- The use of new technologies will need to be integrated and organized such that the whole system remains efficient

# The main objectives

## The concept in a few words:

Implementation of a market-based congestion management platform efficiently centralizing local flexibility offers to allow System Operators to reliably and economically relieve physical congestions and bottlenecks from the grid.

### A clear and transparent market mechanism

- **Clear and transparent market rules** for actors participating in the market-based congestion management
  - Asset Certification by the SOs, Verification of the physical impact, Strict Compliance
- Definition as an addition to all existing wholesale markets to solve specific local issues.

### Development of distributed flexibility

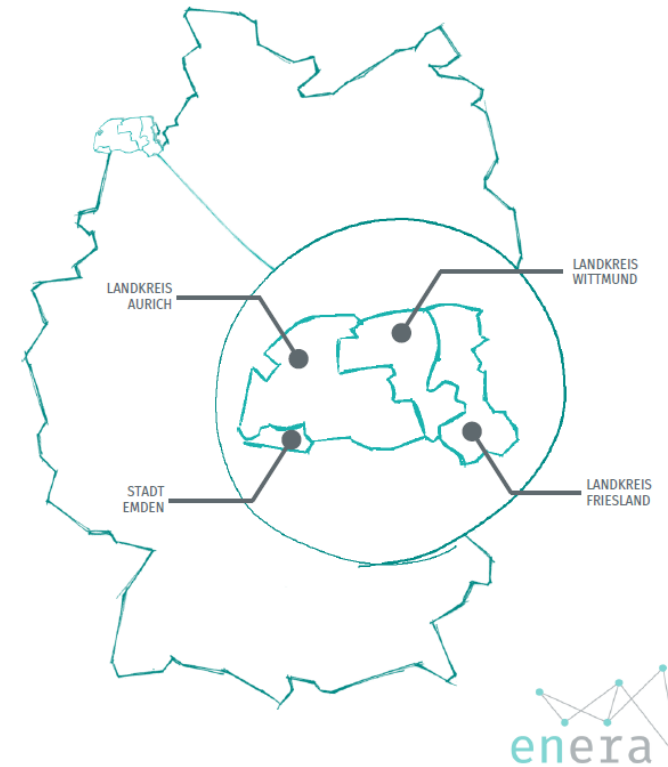
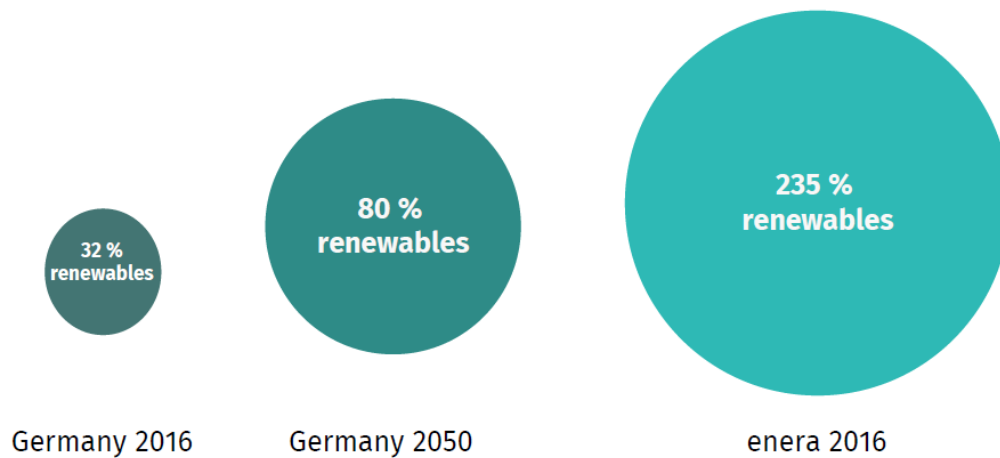
- **Unveil the potential of distributed flexibility**
  - Provide transparent locational flexibility prices and foster the development of distributed flexibility (demand-side management, renewables, aggregators, batteries...).
- The platform can become **the short-term activation mechanism of long-term local flexibility contracts** if there are any, but also **be open to any other flexibility provider**.

### Coordination between System Operators

- **Clear guidelines and communication protocols to increase and develop the cooperation between TSOs and DSOs**. It is a key element to reach optimality in the congestion management solution and avoid inefficiencies.
- **EPEX SPOT is a neutral and objective third party** that will be able to efficiently run the platform, adapt to current System Operator processes and Grid management rules, and ensure compatibility with the current European zonal markets

### 3. The enera Initiative (SINTEG)

# enera region: a significant wind production



Source: enera project

# Presentation of the enera project

## The challenge



- The increasing share of installed renewable capacity is creating new challenges for system operators to manage the grid efficiently and economically

## The enera Project

- The German ministry of Economic Affairs and Energy is funding the enera project to explore new smart market mechanism to allow for more renewable energies in the future
- The 3 pillars of the project are: Network, Market and Data

# Presentation of the enera project

## The challenge



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A project to experiment a new kind of market to solve growing grid congestions, as a complement to grid reinforcements (software vs hardware)

# Presentation of the enera project

## The challenge



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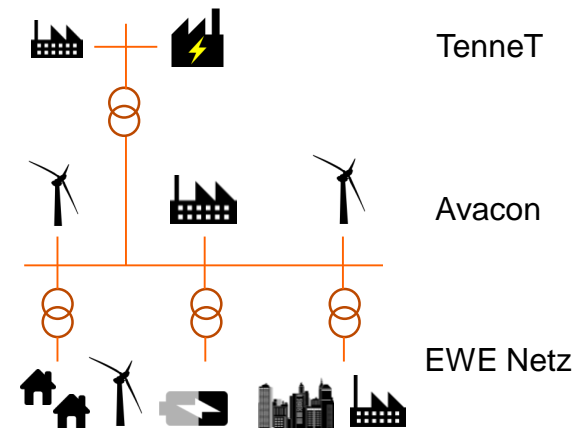
### Flexibility supply

#### Flexibility providers:

- Power plants
- Aggregators
- VPPs
- Storage
- Renewables



### Flexibility demand from system operators



# Presentation of the enera project

## The challenge



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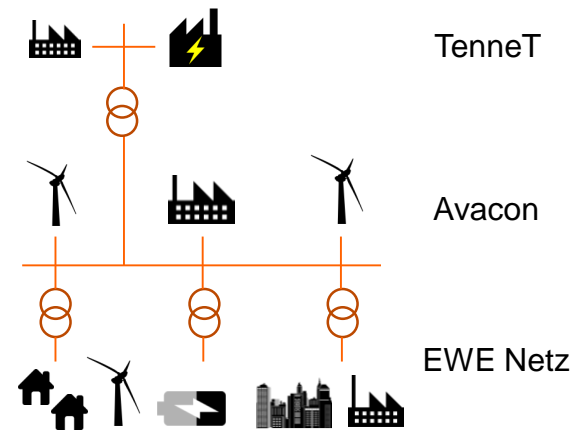
### Flexibility market platform



#### Market-based congestion management

- Trading systems
- Standards
- Transparency
- Coordination
- Neutrality

### Flexibility demand from system operators





# Locational OBKs

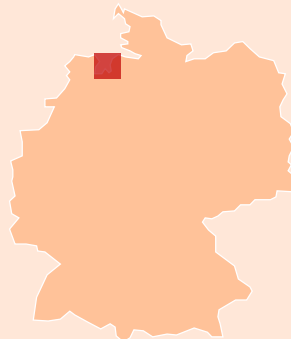
A global market...

EU XBID   EPEX		Bid		Ask	
Product	Qty	Price	Price	Qty	Qty
DE 03:00	10	32	33	25	
DE 03:00	3	31	34	5	
DE 03:00	8	30	35	1	
DE 03:00	7	29	38	4	



In parallel with...

Local Market 4		Bid		Ask	
Product	Qty	Price	Price	Qty	Qty
DE 03:00 Local 3	3	31	34	5	
DE 03:00 Local 2	3	32	34	5	
DE 03:00 Local 1	3	10	31	42	43
DE 03:00 Local 1	8	3	30	30	35
DE 03:00 Local 1	7	8	29	27	38
DE 03:00 Local 1	7	7	21	58	4



“On-demand” local markets

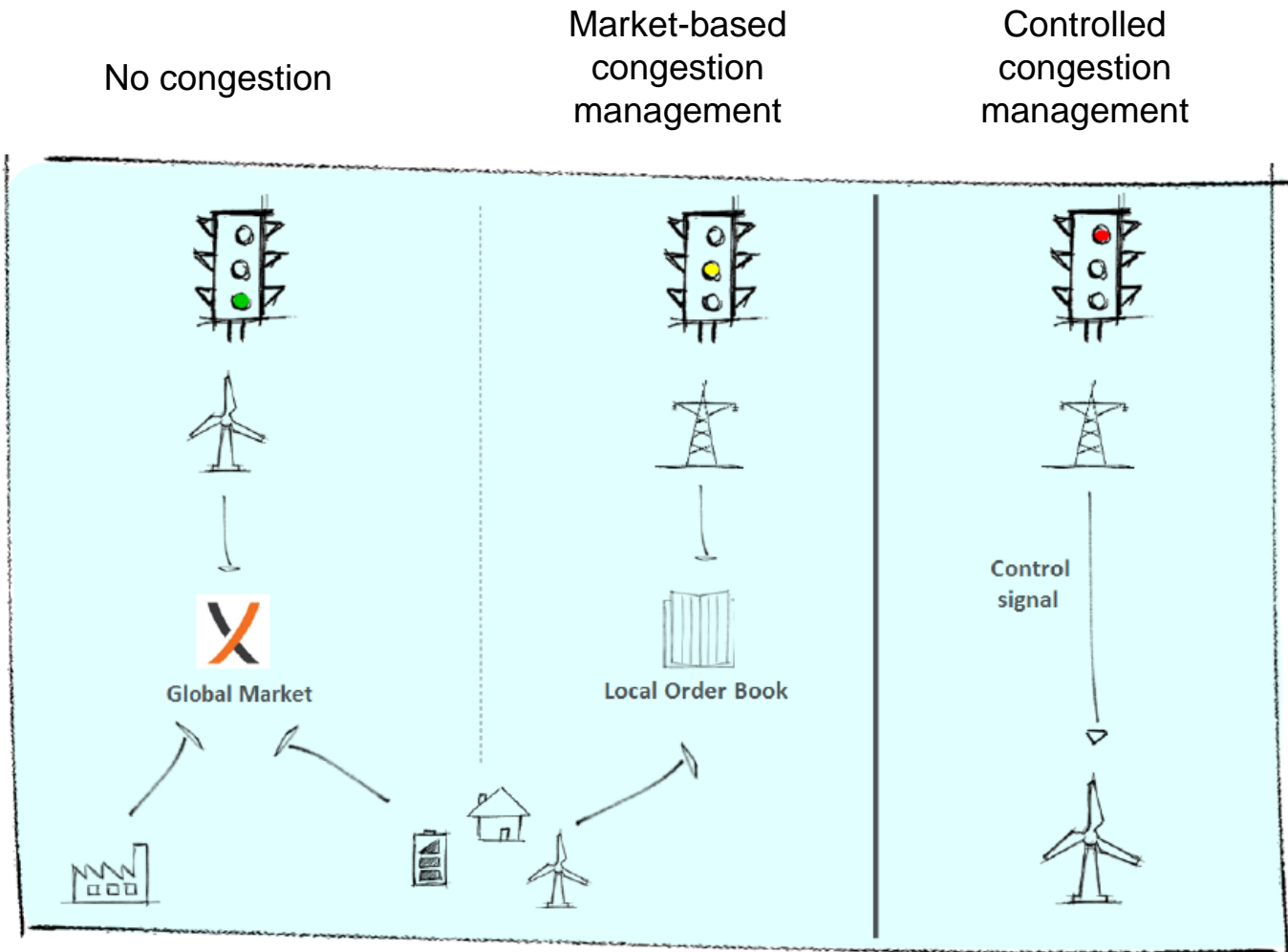
Main principle:

- ➔ Opening of “on-demand” locational order books in the intraday timeframe to solve local congestion issues

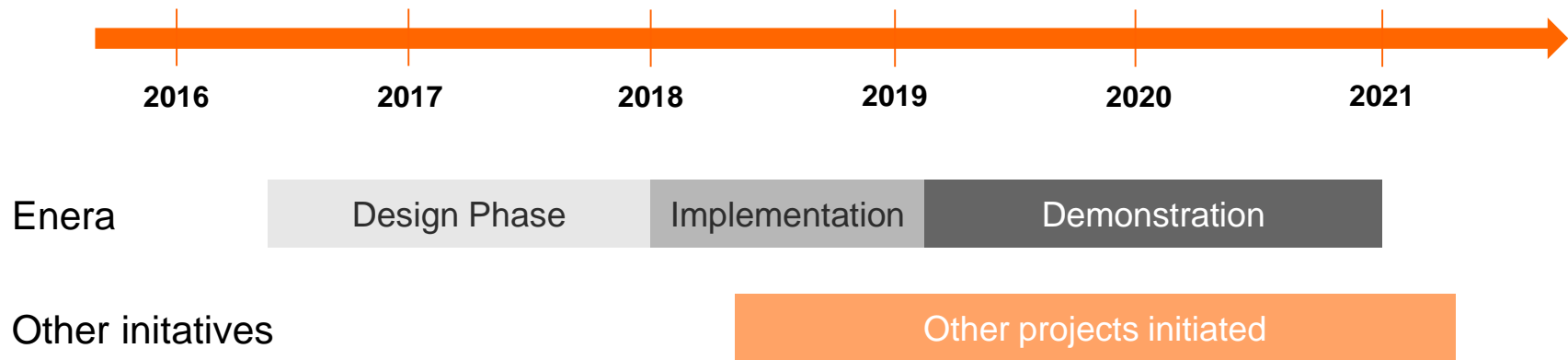
*Important elements:*

- ✓ Local trading certifications delivered by System Operators to market participants
- ✓ “2 C’s rule” ➔ need of Congestion AND Competition to open a locational order book
- ✓ Strict compliance rules for local trading
- ✓ Cooperation between transmission and distribution over locational trading

# The process



# EPEX SPOT project



EPEX SPOT is designing the solutions to **address power system challenges** by:

- congestion management;
- enhancing the current design of liquid and large bidding zones.

This will create **new opportunities** for:

- the members to value their flexibility;
- for system operators to defer/complement costly grid expansion.

➔ The design can serve as a **blueprint for a much larger implementation.**

# Thank you for your attention!

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