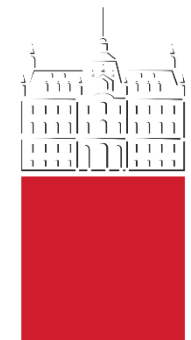




CROSS BOrder management of variable renewable energies  
and storage units enabling a transnational Wholesale market

# CROSSBOW: WHOLESale AND ANCILLARY MARKET TOOLSET



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# ORGANISATIONAL OVERVIEW



- Duration: 19 months (M13 – M31), current M23
- Participation: 19 partners
- 3 deliverables during the period
- 1 demonstration

# CONTENT OVERVIEW



- **Transnational Ancillary and Wholesale market**
  - **Unified types** of balancing services
  - **Standard products**
  - Procurement and settlement of balancing reserves
  - **Cross-border balancing principles**
  - **Exchange** of balancing energy
  - Imbalance netting
- While proposing a **minimum set of harmonized rules** required for participation

# OUTCOME



- **Prototype** of a regional balancing and short-term wholesale market in order to test the implementation of novel market design with new ICT technologies



# PLAN TO ACHIEVE THESE GOALS



1. Study the present structures and principles of national balancing and rules and regulation of wholesale electricity markets and examine cross-border balancing principles for common usage of balancing reserve, exchange of balancing energy and imbalance netting

# PLAN TO ACHIEVE THESE GOALS



2. Make a novel market design with a minimum set of harmonized rules and regulation framework, to boost the integration of the flexibility assets
3. Design and develop a prototype of a novel market platform in order to verify the effects of new ICT technologies, including blockchain, microservices and APIs on market efficiency, transparency, scalability...

# BEFORE



- Building from the lessons learnt in previous parts of the project aimed at the **Legislation and regulatory frameworks** in the SEE countries, we addressed:
  - Implementation of **Third Energy Package for Electricity Markets**
  - **Market Codes** and Electricity Market Development
  - **System Operation**
  - Infrastructure and RES, DR & storage **penetration**

# FIRST STEPS



- Similarly, the current national balancing and wholesale electricity market principles was made:
  - Legislation overview, current state in countries
  - EU legislation and state of the balancing market in EU



# WHAT WAS THE GOAL



- The goal of this task, was to create a **common vocabulary** in line with the latest EU regulation regarding the balancing markets (EBGL, SOGL)
  - **Types** of balancing services
  - **Standard products** and their characteristics
  - Imbalance netting
  - **Cross-border** balancing principles

# SECOND



- Overview of the market timeframes and Cross-Zonal Capacity Allocation
  - Forward, DA, ID, balancing timeframes in EU and SEE
  - Market coupling in EU and SEE
- Functional and technical specification
- Integration API with other solutions of the project

# RELEVANT CHARACTERISTICS



- **Set of harmonized rules**
  - Harmonised timeframes → level playing field → increase efficiency of trading
  - Definition of **standard products** → non-discriminatory and transparent
  - Pricing based on **marginal pricing** (mFRR)
- **Enhanced participation of flexibility assets**
  - Shorter **Full Activation Time** parameters would help units with **faster response times** (storage, demand response...)

# INNOVATION OF THE CROSSBOW TRADING PLATFORM



- **Decentralized** - no single point of failure, resilient to attacks.
  - Big problem if trading platform operator goes out of business (in centralized architecture)
  - Centralized operator dictates the fees.
- **Distributed ledger** – every node in the network has a copy of the ledger.
  - More secure with more parties in the network.
  - Improves trust between participants by having multiple points of verification.
- Create permanent records that cannot be edited or deleted (**temper-proof**).
- Core logic in system is designed to prevent double counting (**spending**) of assets, record ownership and transfers.

# BENEFITS



- Benefits of the platform
  - Increased liquidity on a cross-border level
  - Social welfare could increase, cheapest bids activated first → reduction of the operational costs
  - Improvement of the economic benefits of renewable energy sources and storage units
  - Enhanced participation of flexibility assets → more market actors

# CONCLUSION



- Current stage
  - Functional and technical specification were made
  - First version of the prototype will be developed until the end of October
- All that is left to do is to develop the prototype





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