

An Open simulation Platform to Test Integration in Market design of massive intermittent Energy

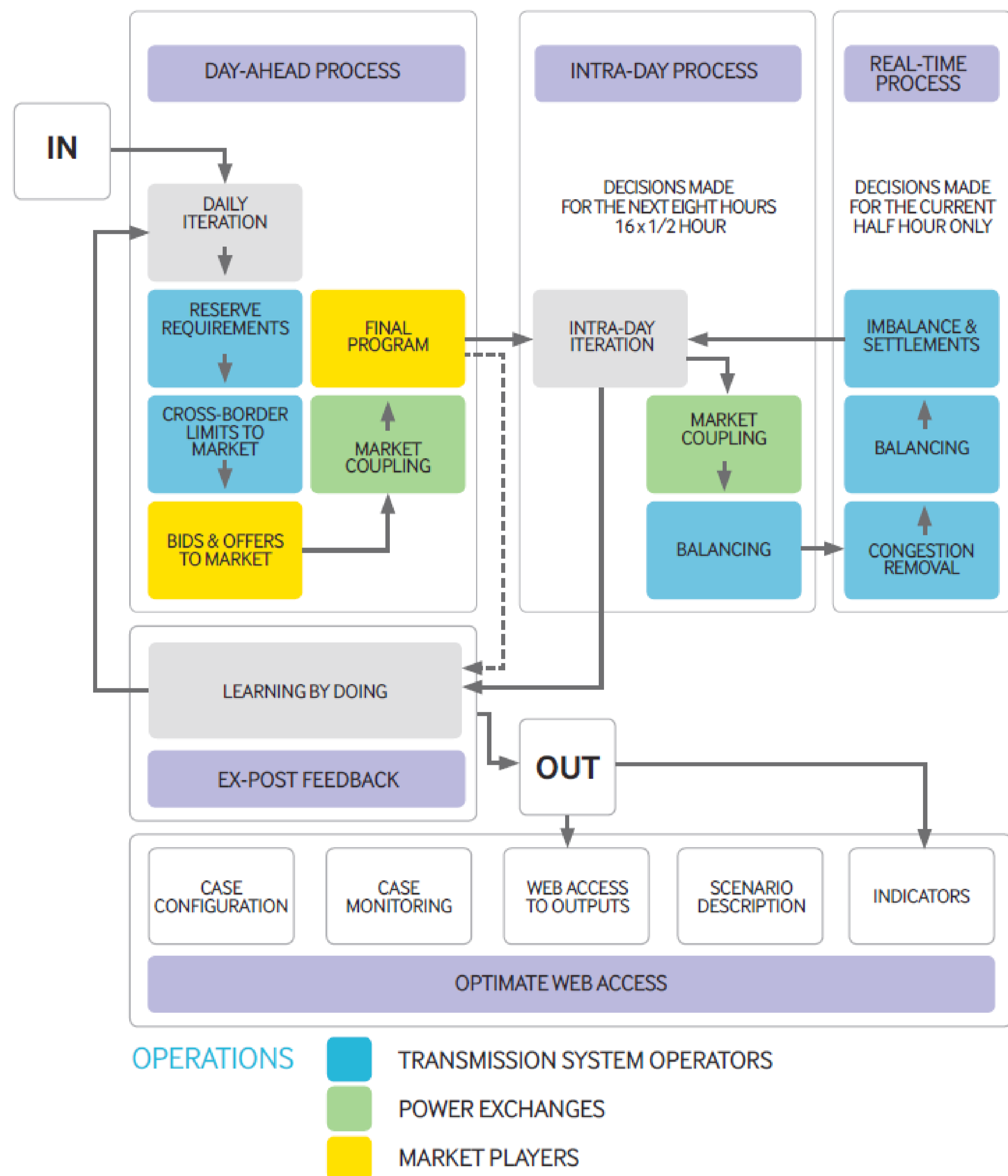
Platform available from spring 2013 for ENTSO-E members, Energy Regulators, Academics, Public entities:

- Assessing and comparing existing and innovative electricity market designs
- Measuring the impacts of the market design options studied on the three pillars of the EU energy policy

Simulation platform architecture

→ Modelling European electricity markets and systems from Day-Ahead to Real-Time

- ⇒ Market mechanisms (Market coupling, bilateral exchanges, continuous markets)
- ⇒ TSOs' operations (Balancing, congestion removal, reserve constitution)
- ⇒ Market players' behaviour
 - o Large range of actions: bids creation, perimeter balancing, profit maximization
 - o Agent-based: Improved market players' strategy modelling (including market power)



Validation of results during the OPTIMATE project

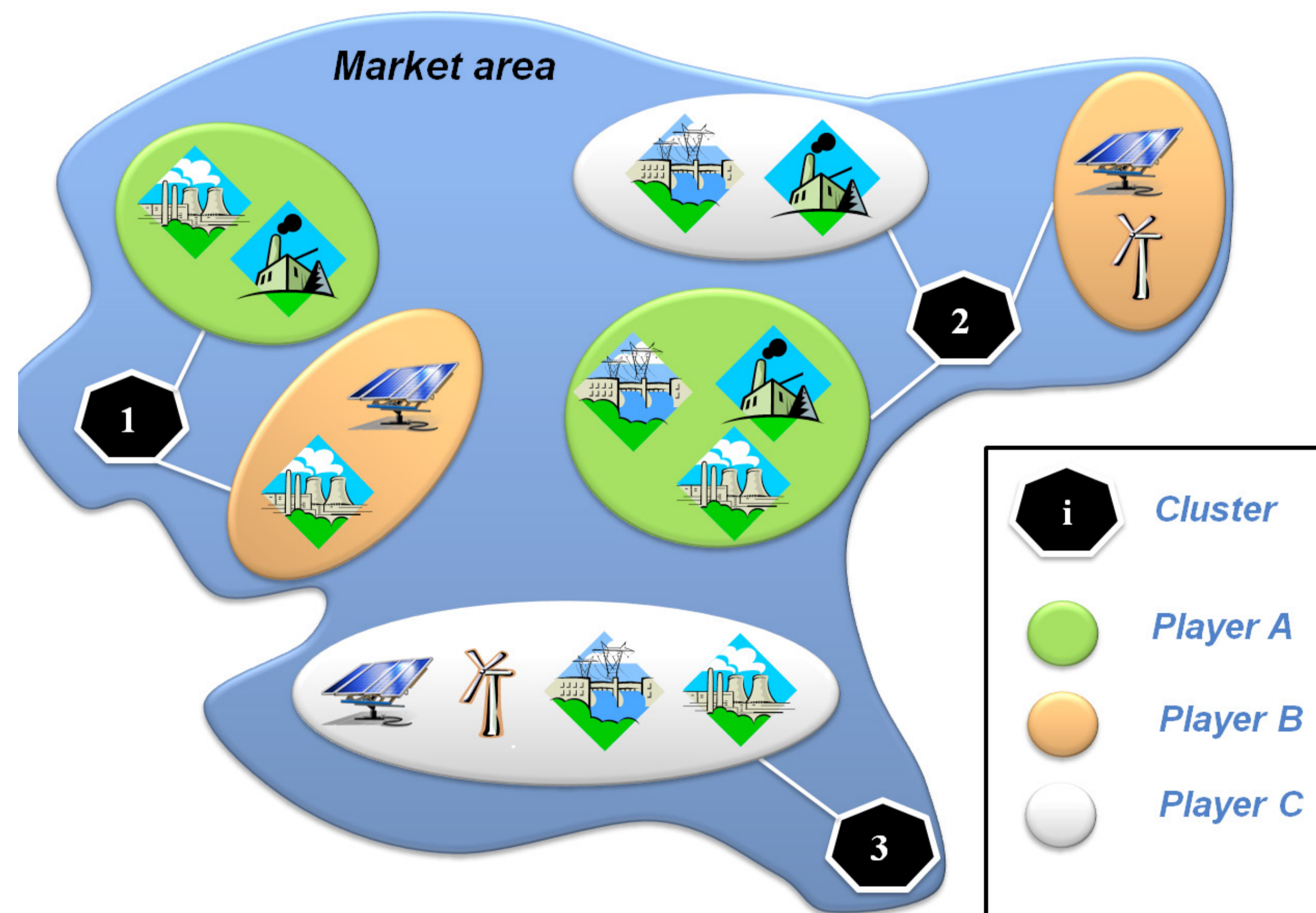
- Variable renewables support schemes
 - ⇒ Feed-in tariff
 - ⇒ Price premium
- Day-ahead and balancing designs
 - ⇒ Load flexibility
 - ⇒ Day-market gate closure time
- Cross-border capacity management
 - ⇒ ATC/NTC
 - ⇒ Flow-based

New studies within the Market4RES project!

- OPTIMATE will be used as a market design assessment tool to quantify the options studied by the project
- Market4RES project in a nutshell
 - ⇒ An EU-supported project (2014-2017)
 - ⇒ Focused on electricity market design in order to study a more efficient integration of renewable electricity into the pan-EU system, in line with the 2020 objectives and beyond
 - ⇒ Consortium: SINTEF (coordinator), 3E, APX, EEG-TUW, EPIA, EWEA, FOSG, IBERDROLA, IIT-COMILLAS, RTE, TECHNOFI
 - ⇒ Public Kick-Off planned on 28 April 2014

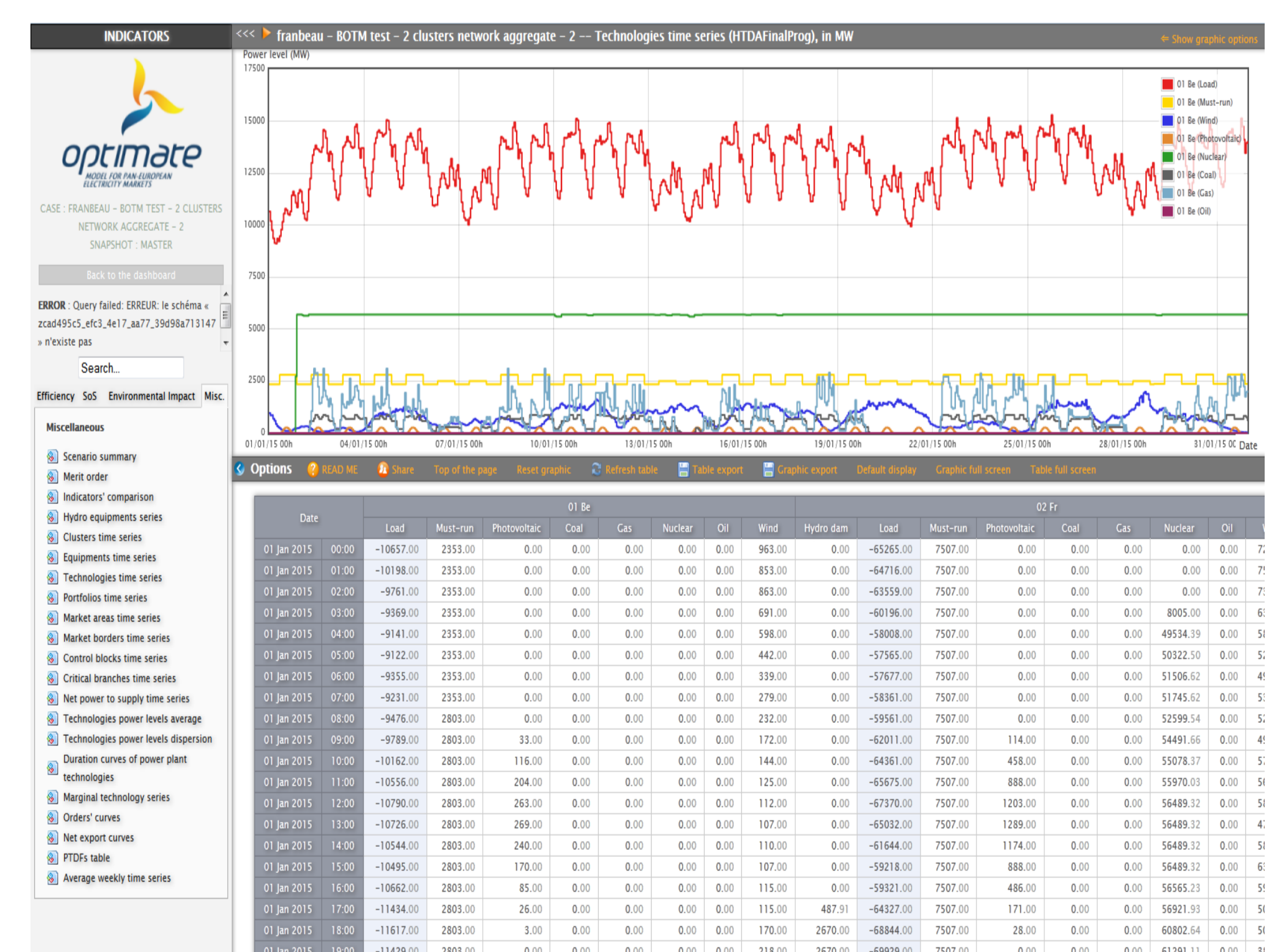
Representative scenario building

- Aggregate network definition
 - ⇒ Clusters
 - ⇒ Critical branches, NTCs
- Market players and assets
 - ⇒ Generation and load capacities
- Generation, exchange and load initialization
 - ⇒ Derived from long-term optimum
 - ⇒ Based on forecast/realized time series



Continuous Platform Update

- New developments and industrialization led by RTE and by users' feedback
 - ⇒ Real-Time process: simplified Imbalance and Settlement and Balancing modules
 - ⇒ Day-Ahead process: portfolio bidding, flow-based and learning improvements, management of data confidentiality by users
 - ⇒ Reduction of computation time
- Current platform users will be granted access to new releases free of charge



The OPTIMATE consortium (2009-2012) included a technical director (RTE), a coordinator (TECHNOFI), European TSOs (50 Hertz Transmission, Elia, Red Eléctrica de España, RTE, TransnetBW GmbH), and Research Units (ARMINES, DTU, European University Institute, KU Leuven, University of Manchester, Universidad Pontificia Comillas)

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