



A cost-benefit analysis approach for analysing TSO-DSO coordination schemes

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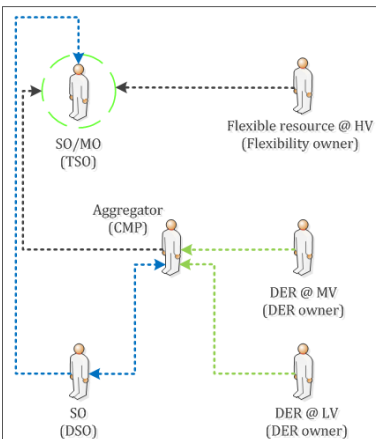
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Agenda

- Objective of SmartNet CBA
- CBA link to other SmartNet activities
- Structure of the analysis: Macro + Micro
- Macro-level analysis
- Micro-level analysis

Objective of SmartNet CBA

Centralized AS market model

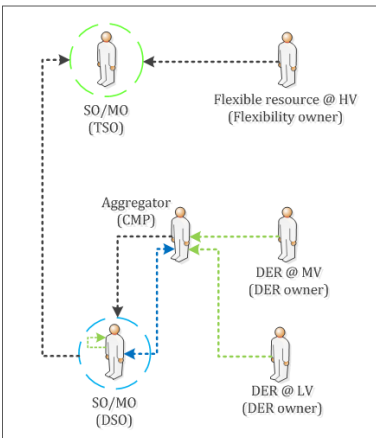


Assessment of different coordination schemes in the three countries

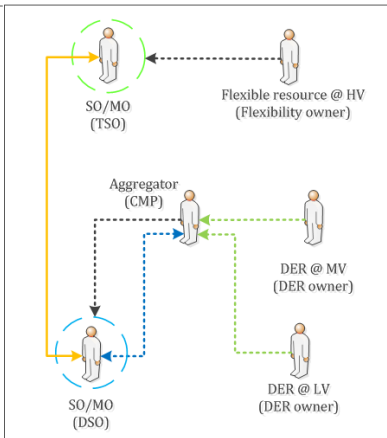


Cost Benefit Analysis

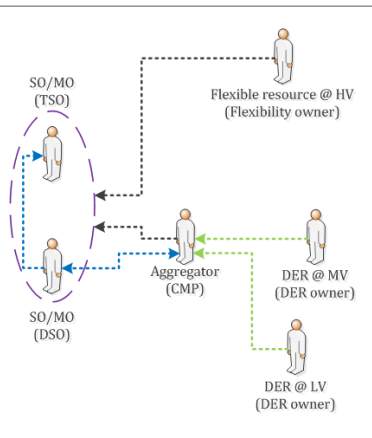
Local AS market model



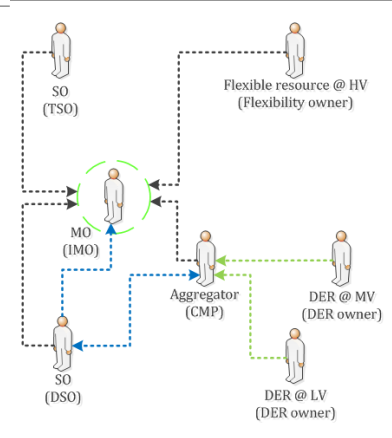
Shared balancing responsibility model



Common TSO-DSO AS market model



Integrated flexibility market model



Legend

Role (Actor)



Centralized market



Local market



Coordinated market



Pre-defined profile exchange



Aggregation



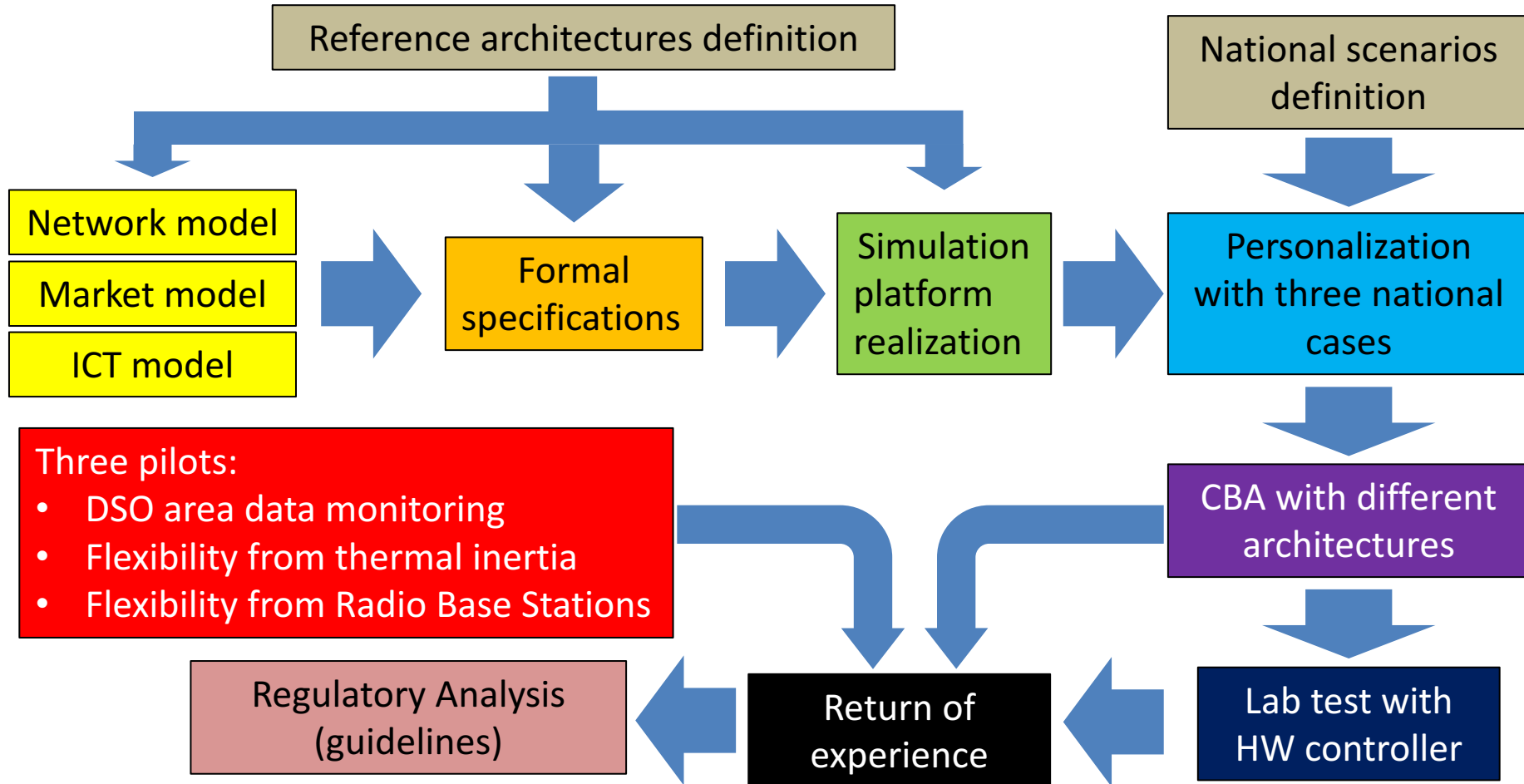
Market bids



Pre-qualification



CBA link to other SmartNet activities



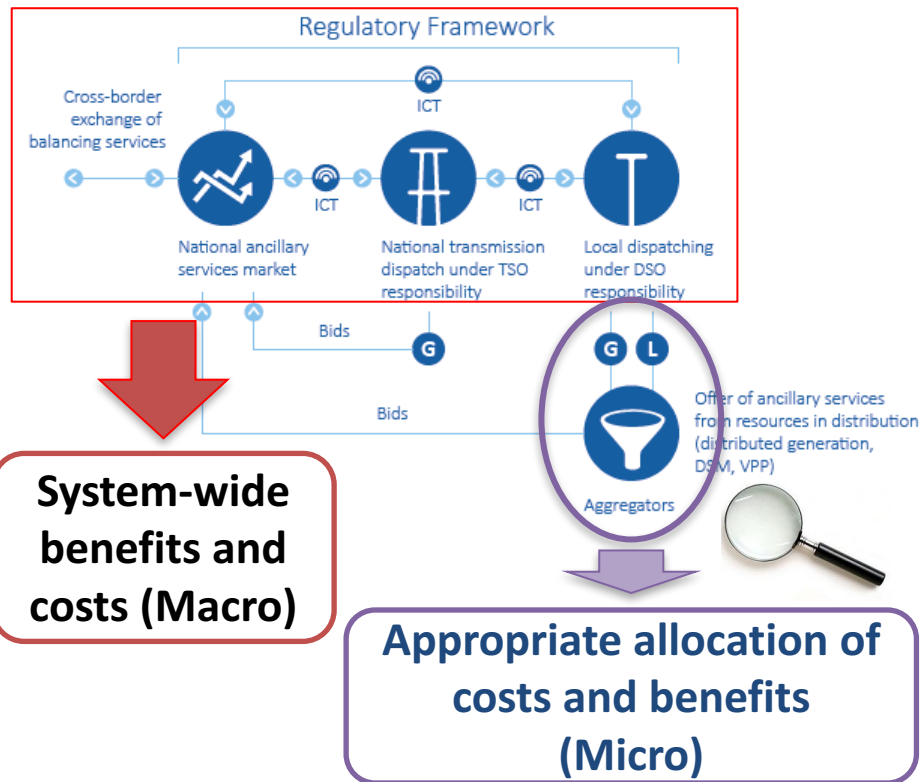
Relationship between main system actors

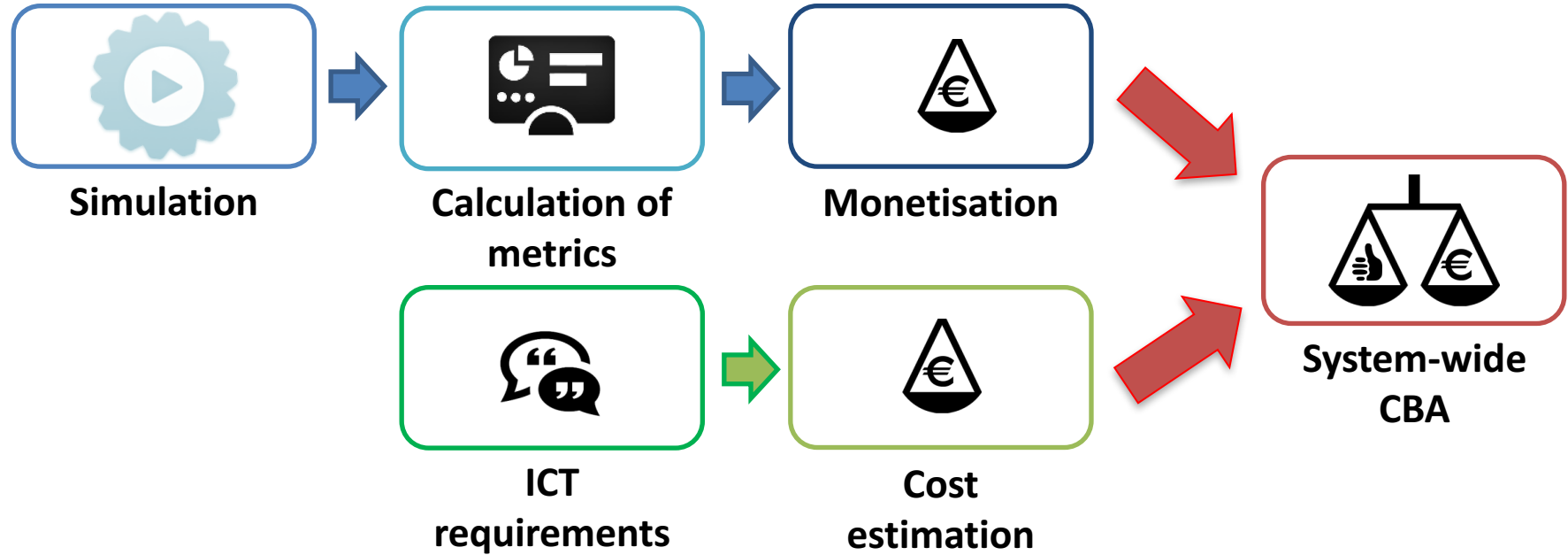


Analysis of TSO-DSO coordination schemes

Country-specific aspects and regulation

ICT specification and planning





Macro-level analysis. Metrics



Calculation
of metrics



Proposed indicators

- **Enhanced provision of ancillary services:** total balancing cost (vs social welfare)
- **Cost due to network limitations:** comparing costs taking network into account with ideal situation (busbar)
- **Reduction of unwanted measures:** unexpected congestions solved with curtailment of load/generation, etc. Monetized at imbalance price or associated resource costs
- **Reduced network losses**
- **Emissions savings:** with standard emission rates for each generation technology and CO₂ prices forecasted at studied horizon

Complete

Objective

Non-overlapping

Realistic

Applicable

Reproducible
& documentable

Simple

System-oriented



EPRI/JRC
REALISEGRID
e-Highway2050

**Literature
review**

Macro-level analysis. ICT costs



ICT costs



ICT costs include communication, market clearing software)....

Steps:

1. Comparison of the coordination schemes in terms of functionalities and ICT
2. Convert each ICT system into a cost at target year

Main focus on issues that can differ between coordination schemes.



**Running consultation with the
Advisory Board on the topic**

smartnet-project.eu/consultations/consultation-3/



Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation

**Ideas and alternatives for the cost-benefit
analysis performance**

Document for consultation

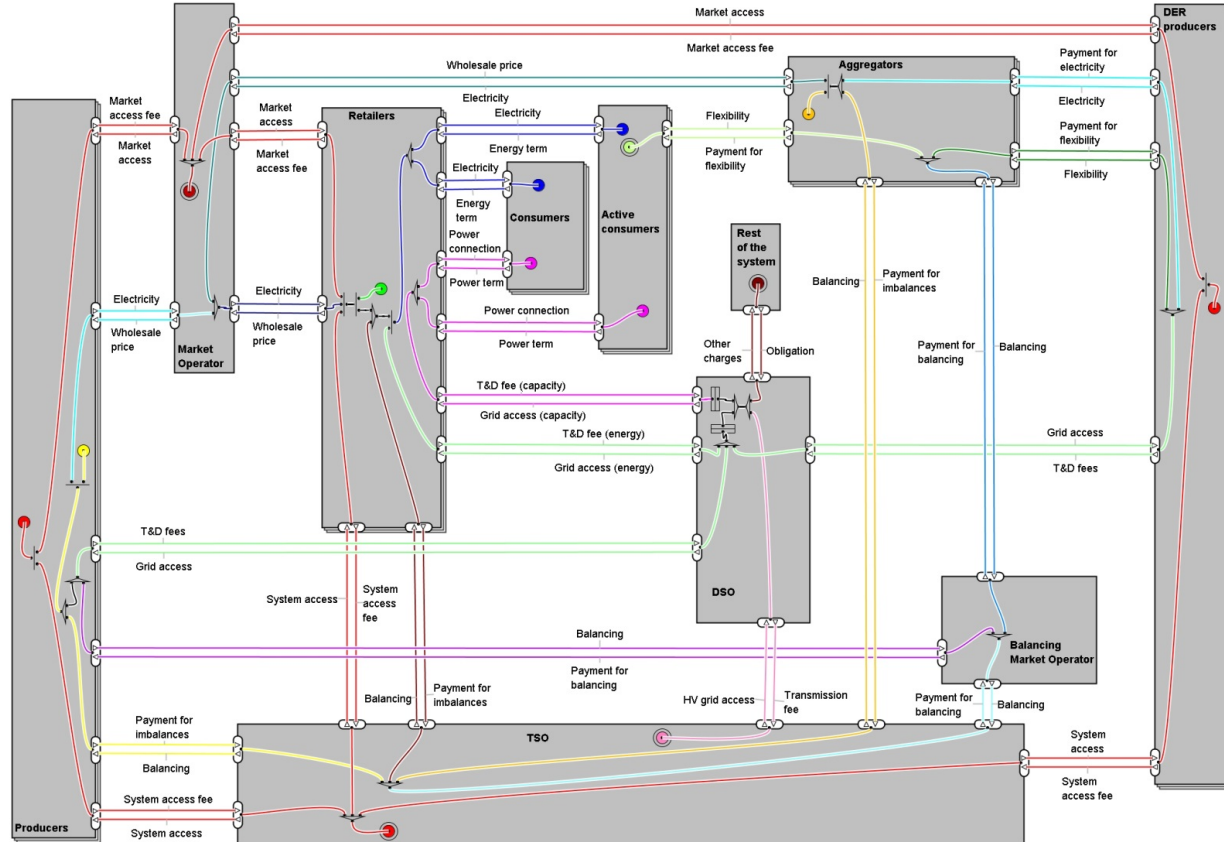
Micro-level analysis

System-wide CBA



Micro-level CBA

- Identification of the value chain
- Allocation of cost and benefits for each stakeholder
- Sensitivity analysis





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This presentation reflects only the author's view and the Innovation and Networks Executive Agency (INEA) is not responsible for any use that may be made of the information it contains.



Thank You

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