



S M A R T G R I D S

Strategic Research Agenda Working Group 2: WG2 Network Operations

Will there be any grid to operate?

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q *Network Operation Vision and how to get there.*

q *WHAT WE OBSERVE IN DAY BY DAY OPERATION*

q *WHAT WE TOUCH EVERYDAY*

q *WHAT CANNOT BE IGNORED*



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What we observe now

Effects

<ul style="list-style-type: none">• New / old users asking for<ul style="list-style-type: none">• more flexibility• more energy• cost reduction	<ul style="list-style-type: none">• adequacy and security at risk
<ul style="list-style-type: none">• New / old users asking for more availability and quality	<ul style="list-style-type: none">• Scarce sensitivity to cooperation in emergency
<ul style="list-style-type: none">• Competition	<ul style="list-style-type: none">• adequacy and security at risk for lack of information
<ul style="list-style-type: none">• Interconnection is changing from mutual support among integrated systems to a structure for international trading only	<ul style="list-style-type: none">• Parallel flows hardly to be controlled

**More
Transmission
and
distribution
demand**



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Tangible in operation

But

<ul style="list-style-type: none">• Active Distribution networks	<ul style="list-style-type: none">• Same interface
<ul style="list-style-type: none">• Effects of large interconnections	<ul style="list-style-type: none">• Parallel flows are known ex post
<ul style="list-style-type: none">• Trading obligations	<ul style="list-style-type: none">• Not coordinated Markets
<ul style="list-style-type: none">• Renewable intermittent Resources influence congestions on the bulk system	<ul style="list-style-type: none">• Prediction is difficult

- More stress, congestions

- More demand for balancing and reserve services



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•FACTS

- Planning slowly follows the needs and it is done on a bilateral approach
- By Reinforcing inter ties, TSOs import more energy but export congestions and vice versa
- Operation is not supported by an efficient information/data exchange to evaluate security state
- Long reaction times in alert conditions. Operators receive weak signals instead of being assisted by automatic systems
- Primary distribution systems still coordinated by the TSO in hierarchical way.

•Effects

- Recursive congestions
- More complex to solve
- Shift the problem.
- Lack of accuracy in security assessment
- Security at risk
- Confusion of roles and difficulty in getting authomous



SMARTGRIDS

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? develop models, tools for TSOs/ DSOs to continue to guarantee

- a. Load coverage?
- b. The same security of supply?

OR

- a. Just to re distribute responsibilities

? needed to change radically

- a. the structure of the distribution systems
- b. the operation of the distribution systems

? end users asked to be more active in the management of the system (e.g. not only free load shedding, but remunerated interruptible customer)

? harmonise

- Dispersed with concentrated
- Flexible with secure
- competitive with secure

? super impose a multi national coordination centre, in such a huge synchronous system

? sufficient

a co-operative defence plans in common among TSOs

OR

an automatic defence plans

? enlarging interconnections would be helpful



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Thank You for your kind attention

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