



The UMBRELLA project

The growing share of electricity generation from intermittent renewable energy sources (RESs) as well as the increasing market-based cross border flows and related physical flows are leading to rising uncertainties in the operation of transmission networks. Hence the zonal structure of the European energy market along with the legal responsibilities of Transmission System Operators (TSOs) for different system areas imposes increasingly complex requirements on the system operators concerning quality and accuracy of cooperation. The system security research and demonstration project UMBRELLA, a FP7 project of the European Union, is dedicated to a further development of common grid security tools. The UMBRELLA toolbox to be developed will enable TSOs to ensure secure transmission network operation also in future power systems with high penetration of intermittent RESs and with new opportunities for network operation.

This newsletter introduces three of our work packages and provides information about the second common iTesla – UMBRELLA workshop as well as about recent activities. It also offers access to our completed and upcoming public deliverables.

Activities during the last 6 months

The UMBRELLA project was awarded the label of the European Electricity Grids Initiative (EEGI):

<http://www.e-umbrella.eu/eegi-label-awarded>
<http://www.gridplus.eu/node/186>

UMBRELLA project participated in IEEE PowerTech Conference, held in Grenoble, France, in June 2013:

http://www.e-umbrella.eu/ieee_powertech_conference

UMBRELLA attended the WIPFOR workshop in Paris, France on June 5-7, 2013:

http://www.e-umbrella.eu/wipfor_workshop

Coming Event

14th of January 2014:
**iTesla – UMBRELLA Second
Common Workshop**

The iTesla and UMBRELLA projects are holding a second common workshop: Innovative tools for the future coordinated operation of the pan-European electricity transmission system. The workshop will take place on 14th of January 2014 at the ENTSO-E premises in Brussels.

For more information and for registration please visit:

<https://www.entsoe.eu/news-events/events/itesla-umbrella-workshop-14-january-2014-brussels/>

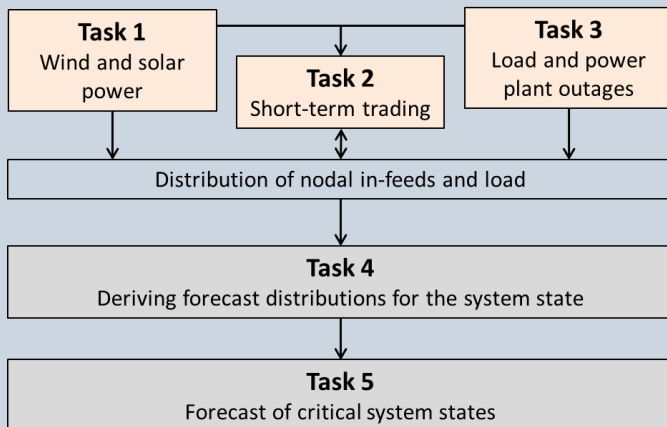


**“A prototype
toolbox
development to
ensure secure grid
operation in the
future electricity
networks”**

Scientific Work Packages of the Project

Modelling uncertainties relevant for the operation of the European transmission grid

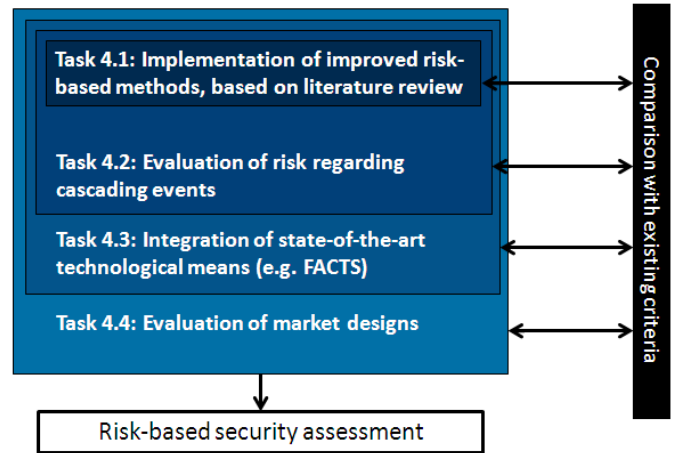
This work package aims at developing a set of methods to describe the key developments influencing the future state of the European electricity grid. This is done through the accomplishment of five tasks as depicted below:



The methodology for modelling the uncertainties in tasks 1 to 3 is completed and described more detailed in the deliverable D2.1 which can be downloaded from our homepage.

Risk-based Security Assessment incorporating Forecast Uncertainty and Cascading Events

This work package focuses on risk-based security assessment. The method includes ways to assess how cascading events, different market design/cooperation rules between TSOs and state-of-the-art technological measures as e.g. FACTS (Flexible Alternating Current Transmission Systems) and PSTs (Phase-shifting Transformers) may influence the overall system risk.



The first two tasks have been successfully completed. Deliverables D4.1 and D4.2 can be downloaded from our website.

The deliverables of these work packages can be found here:

<http://www.e-umbrella.eu/documents>

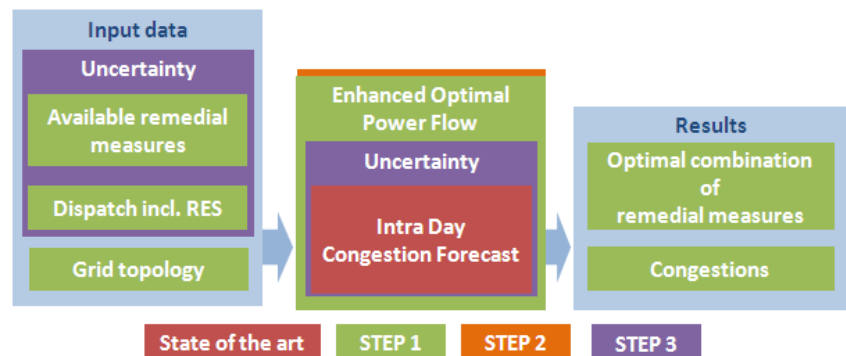
More work packages will be introduced in coming newsletters

Please share this newsletter with others!

<http://www.e-umbrella.eu>

Optimization algorithms for transmission system operation

The objective of this work package is to develop an expert system that is capable of assisting the transmission system operators during the congestion management process. The achievement of this overall goal is divided in three steps as depicted below:



- STEP 1: Optimization Algorithms support the operational planning process**
- STEP 2: Short-term optimization methods for real-time grid operation**
- STEP 3: Optimized uncertainty accounting in operational planning**

In order to achieve the abovementioned objectives, a detailed analysis on current and future challenges in transmission system operation in terms of congestion management has been carried out. Deliverable D3.1 will be available in January 2014.