InnoGrid2020+

The European Research & Development Dissemination Seminar

23 - 24 February 2012

UMBRELLA

Innovative tools for the future coordinated and stable operation of the pan-Europe electricity transmission system

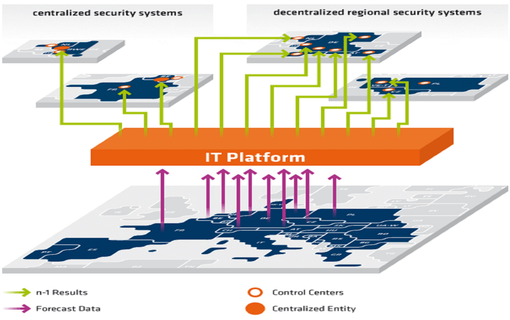
Researchers: EU Top Quality Collaboration TSOs—Universities—Institute

Project Coordinator: TenneT TSO GmbH (TTG)

Introduction

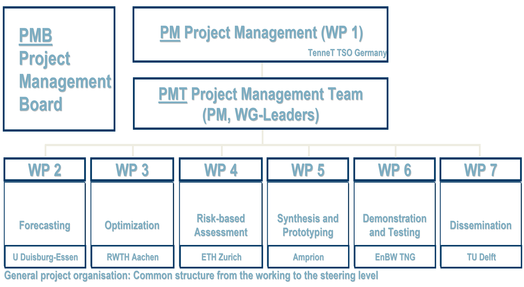
TSOs Challenges:

- Uncertainties in transmission network operation occurring from
  - Increasing participation of intermittent renewable energy sources
  - Increasing market-based cross border flows and related physical flows
- An efficient usage of existing and future transmission capacities to provide a maximum of transportation possibilities
- New interconnections and devices for load flow control in future transmission networks under new operational conditions
- Further development of coordinated grid security tools that take into account all technological measures to enhance flexibility of power system operation



- Zonal structure of the European energy market with legal responsibilities of TSOs increasingly imposes complex requirements to the system operators concerning the quality and accuracy of cooperation.

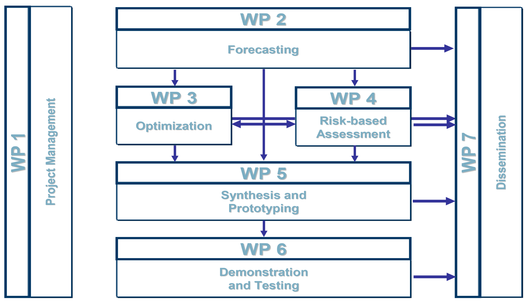
Organization



Key Data:

- Funded by **Seventh European Framework Programme**
- Grand Agreement #: **282775**
- Project Duration: **4 years** Started: **Jan 2012**
- 15 Partners: **TTG, Amprion, CEPS, Eles, EnBW, PSE, Swissgrid, TTB, APG, DUT, ETHZ, TUG, RWTH, UDE, FGH**

Interactions amongst Work Packages



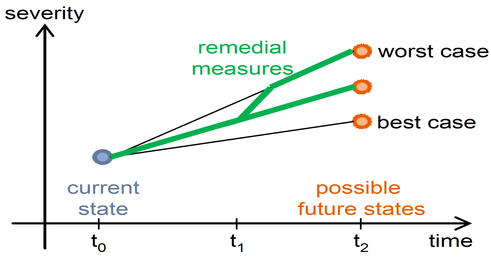
RTD fields:

WP 2: Forecasting

- Integration uncertainty in renewable power forecasts, short term trading, load forecasts and power plant outages
- Derive forecast distribution for the system state
- Forecast of critical system states

WP 3: Optimization

- Proactive Enhanced Optimal Power Flow (EOPF) for anticipated critical system states
- Short term and real time EOPF
- Advanced methods for uncertainty accounting in EOPF



WP 4: Risk-based assessment concepts

- Concept development for system security
- Assessment of risks regarding cascading events
- Technological measures to optimize power transits
- Operation rules for enhancing system security

Practicality:

WP 5: Synthesis and Prototyping

- Results synthesis from WP2, 3, 4
- Prototype development
- Usage / Visualization concept

WP 6: Demonstration and Testing

- Establishment of test cases
- Functionality test of toolbox

WP 7: Dissemination

- Project website online (Month 3)
- External collaboration: workshops with iTESLA (Month 6, 15, 21, 33)
- Final Conference (Month 45)