InnoGrid2020+

The European Research & Development Dissemination Seminar
23 - 24 February 2012

iTESLA

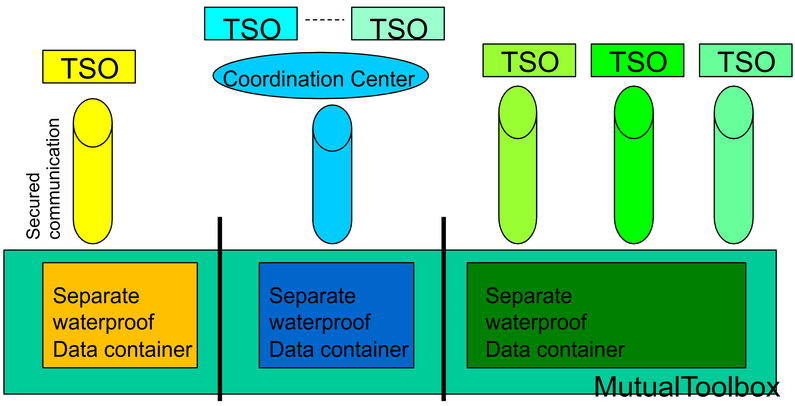
Innovative Tools for Electrical System Security within Large Areas

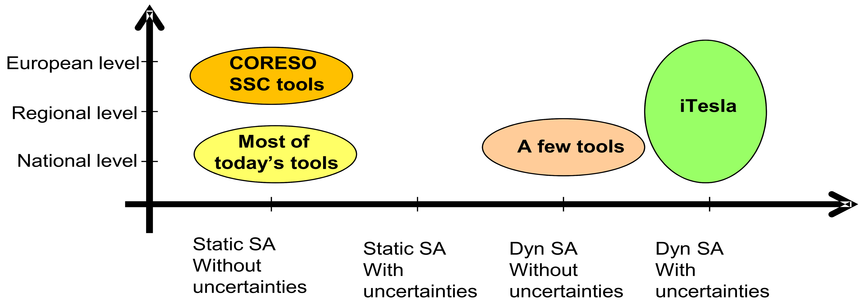
EC GA n° 283012

Main Objectives

→ **To develop and validate a toolbox able to support the future operation of the pan-European power system**

→ **This toolbox must be flexible and allow different kinds of use**





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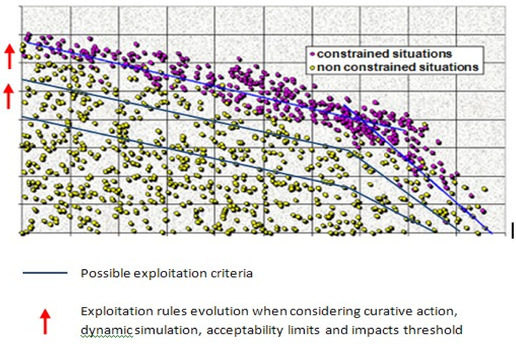
Main Challenges

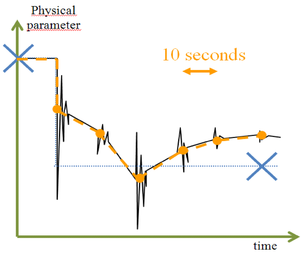
1. To model the increasing amount of uncertainties in the decision process

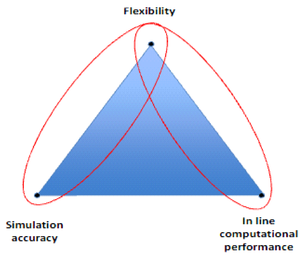


→ Risk-based assessment instead of deterministic analyses of today (which are based on the « N-1 » security rule)

→ The challenge consists in modeling many sources of uncertainties (renewable power infeeds, load consumption, external network, etc.)

2. To perform an accurate security assessment taking into account system dynamics instead of static analysis



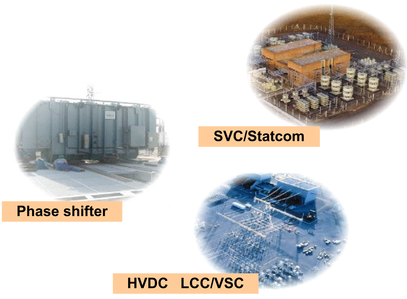


→ Powerful simulation tools are required (10 000 nodes)

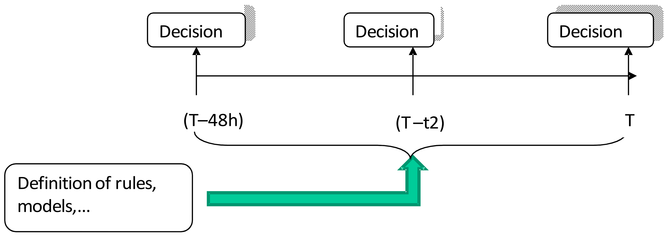
→ Accuracy of components modeling (DC link, new power electronic devices, PV and wind farms) and time domain simulations must be assessed and improved

→ Issue of exchange of dynamic data among partners must be tackled

3. To take into account possible corrective actions in the decision process



→ As far as possible, costly preventive actions must be avoided

→ The toolbox must take into account not only the probability of each contingency but also the probability of failure of each associated corrective action

4. To handle a continuous multi-period optimization problem from 2 days ahead to real time under uncertainties