Réseau de transport d'électricité

PRÉSENTATION DU CODE DE RÉSEAU « OPERATIONAL PLANNING AND SCHEDULING »

CAR

14 décembre 2012

PLAN DE LA PRÉSENTATION

- Structure et contenu général
- Détails par chapitre
  - Analyse de sécurité
  - Planification des interventions et arrêts
  - Etudes prévisionnelles d'équilibre offre-demande et services systèmes
  - Programmation
- Prochaines étapes

Structure

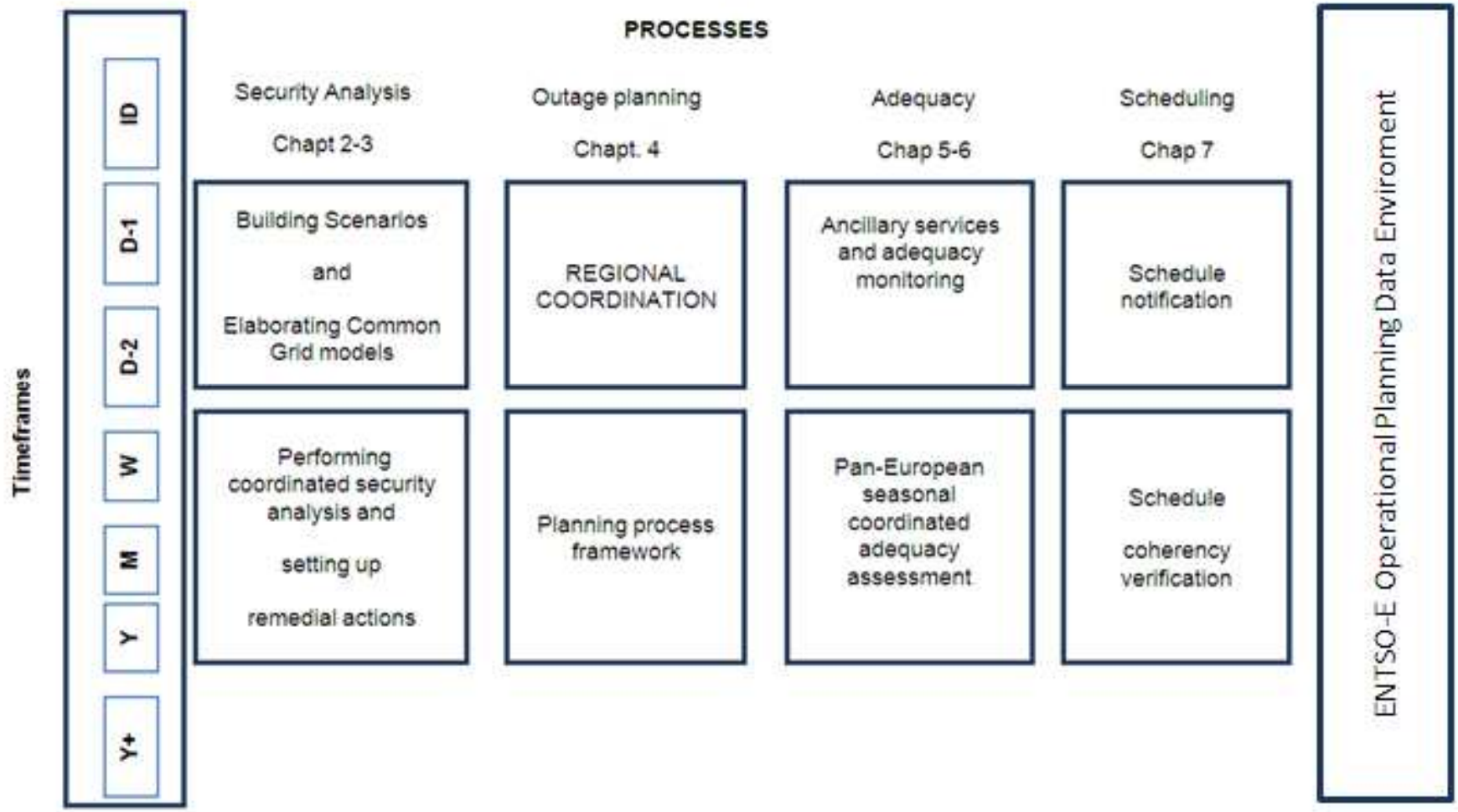
ENTSO-E Network Code on Operational Planning and Scheduling

26 October 2012



Supporting Paper

General Content



Perimeter for application of OP&S NC

- **Requirements of OP&S NC do apply to Significant Grid Users as defined in OS NC:**
  - **Significant Grid Users are grid users that have cross border impact in terms of cross border physical flows *and* in terms of cross border performances (e.g. able to provide ancillary services of any kind).**
- **Significant grid users are concerned by the coordinated outage planning process, only if their individual availability status has an impact on cross border physical flows which need to be taken into account regarding operational security .**

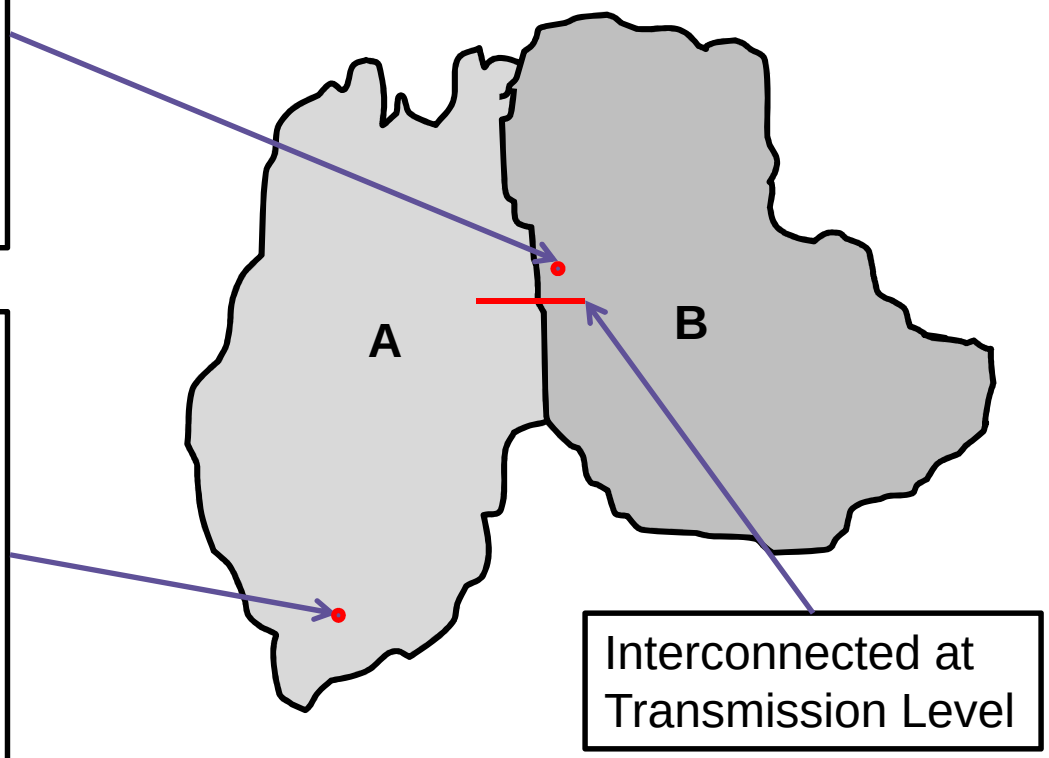
•In that case they are termed as Relevant Grid Users.
•Their relevance is determined by TSOs using a common and public method.
•The list of Relevant Power Generating Modules and Relevant Demand Facilities is made publicly available by each TSO

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Relevant Grid Users for coordinated outage planning

Large Generation Plant close to the border is a Significant Grid User for the TSO in country B and if it has an impact on cross border physical flows it is also a Relevant Grid User for coordinated outage planning.

Large Generation Plant in the South of country A will be a Significant Grid User for the TSO in country A, however it is not likely to have a cross border impact and therefore is not a Relevant Grid User for coordinated outage planning



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Security Analysis

Provisions for Security analysis in operational planning

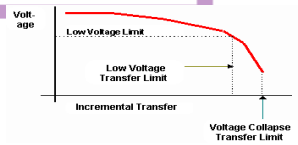
In order to

- ensure normal System operation
- limit incidents and avoid major incidents
- limit the consequences of major incidents

protection must be provided against:

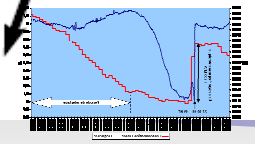


- cascade tripping

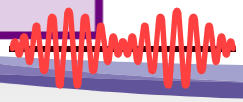


- voltage collapse

- frequency collapse



- loss of synchronism



Needs to simulate the interconnected power system behaviour

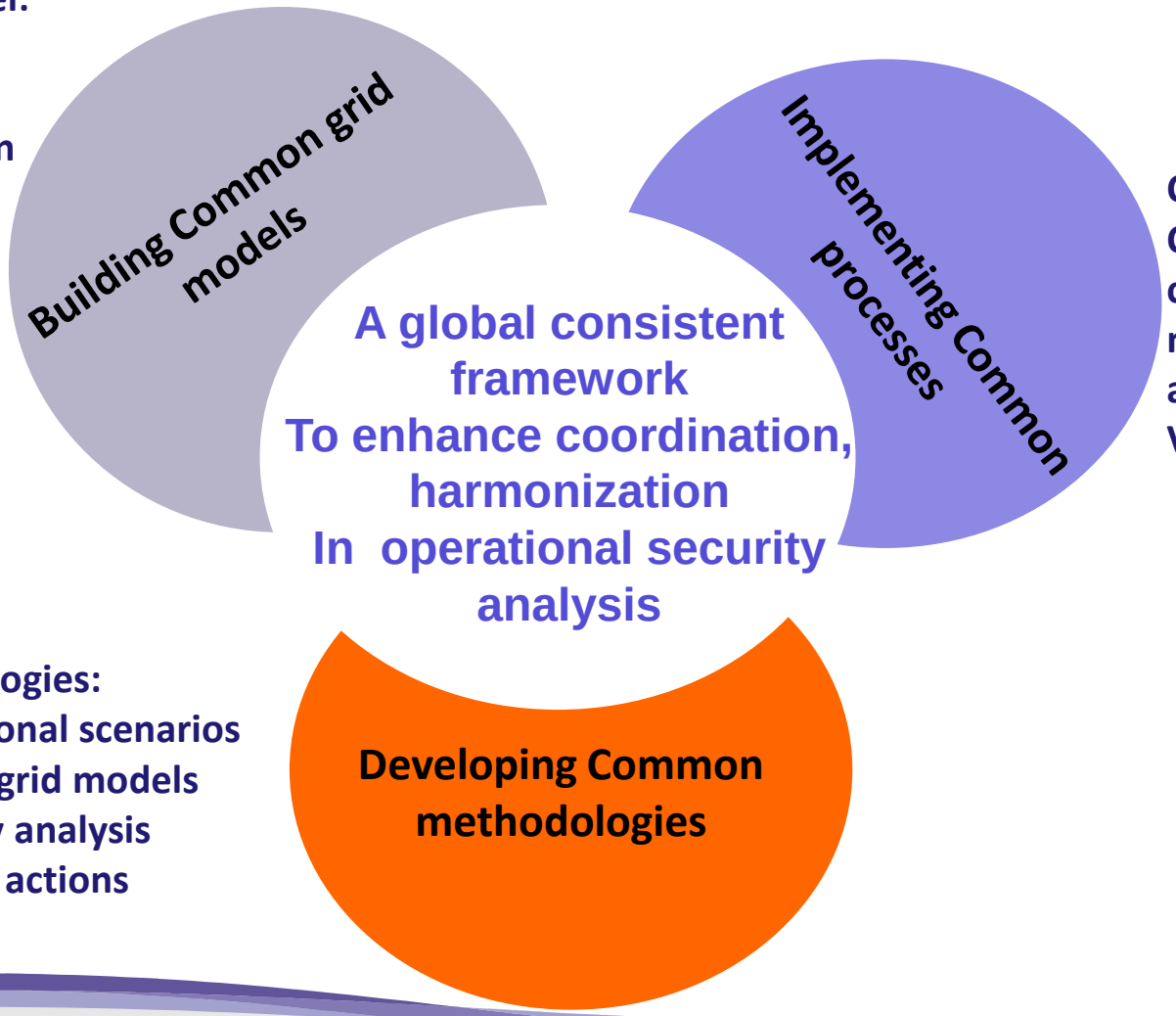
Taking into account

- ❑Scheduled outages
- ❑Forced outages according to OS
- ❑Uncertainties :
  - Load level (temperature)
  - Renewable Level
  - Generation dispatch

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COORDINATED SECURITY ANALYSIS GLOBAL FRAMEWORK

Common grid model:
Backbone of the coordination
Support of Common Security analysis



Common processes
Covered by consistent set of mandatory agreements
Voluntary RSCIs

Common methodologies:
Developing operational scenarios
Building individual grid models
Performing security analysis
Preparing remedial actions

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Input Data
(i) Scenarios and Grid Models



For long term timeframes (Year ahead and updates), scenarios are created and published by TSOs, under their best estimate.

D-2 timeframe is treated in CACM NC

D-1 timeframe and intraday are common for OPS and CACM NC

All data are collected and available to TSOs in accordance with Chapter 8, through the "ENTSOE data environment".

Transparency will be ensured through the REMIT platform, in line with the future "EC Regulation on Transparency" (expected by March 2013)

Input Data
(ii) Exchange of information with stakeholders

- The inclusion of aggregated values of the generation or demand connected to distribution levels is ensured in the OPS NC provisions (Art. 9 and 13), and performed under the national rules in place.

- D-2, D-1 and Intraday input data are created with the stakeholders contribution:
  - as established in CACM NC,
  - for market outputs: as established in National Regulation, in line with Chapter 7 of OPS NC on “Scheduling”, and
  - in general (other that IGMs creation) gathering of data for Operation is established in OS NC

- National Regulation shall rule for the data exchanges between TSOs and DSOs needed for DSOs to perform Operational Security Analysis in the distribution network.

Security Analysis

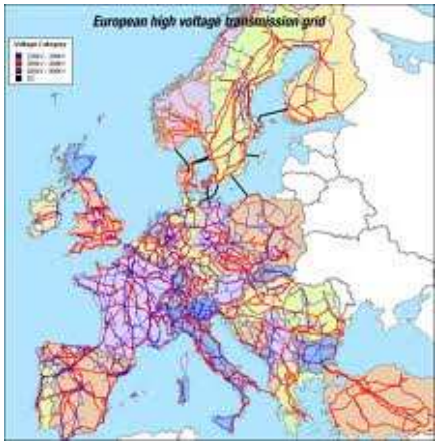
- **OS NC is the umbrella code that establishes the conditions and standards for Operation.**
- **NRA involvement in the designing of the Remedial Actions has been introduced**
  - **R.A. in OPS NC include redispatching or counter-trading (with associated costs)**

- **No later than 24 months after the entry into force of the NC, a methodology standardised per Synchronous Area shall be established for**
  - **assessing interdependency : methodology to assess cross-border impact of events**
  - **defining significant flows thresholds**
  - **designing of common criteria for evaluation of risks and Operational Security Assessment**
  - **detection of coordination cases, operational studies coordination, selection of remedial actions and operational decision making**

  Subject to evolutions under ACER suggestions

RSCIs

❑Regional Security Coordination Initiatives are voluntary coordination schemes , in particular for regions presenting contingencies affecting, when they occur, operational security of multiple TSO's responsibility areas



❑RSCIs could support the following functions :

- ➢building common grid models,
- ➢processing power flow simulations for base case and all contingencies
- ➢checking operational limits overshooting,
- ➢ preparing remedial actions : preventive or curative

❑RSCIs organization are covered by agreements between concerned TSOs covering:

- ➢processes to provide these functions;
- ➢the compatible or common tools
- ➢the services provided to TSOs by common entities, if the case, to support these functions.

RSCIs

- **Art 3 establishes that RSCIs referred to in the NC abide the following requirements:**

  – The RSCI shall only provide services mandated by TSOs; and

  – The RSCI shall be controlled only by TSOs.

- **RSCIs are voluntary coordination schemes established by TSOs under the conditions of Article 18(7)**



Outage Planning

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Outage planning : a coordinated process between TSOs and Grid Users

Creating a **reference outage plan** for the coming year, including relevant generation, load and grid outages

Year ahead

Changes to the reference outage plan can be **requested by TSO or Grid Users**,
These are subject to respect power system security constraints as taking into account economical consequences

Year – Before real time

At this stage, “forced outages” may have to be taken into account

Real Time

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Outage Planning ⇔ Availability

Availability – state of a Power Generating Module, Transmission Line, Ancillary Service, Demand Facility, non-TSO owned Interconnector or another facility which determines if it is capable of providing service, whether or not it actually is in service

Unavailable = Outage = NOT(Available)

Outage Planning Agent



Outage Planning Agent means a legal entity which has the task of planning Availabilities of Relevant Power Generating Modules, Demand Facilities or Interconnectors;

Introduced to cover the wide variety of mechanisms currently installed in Europe

Could be the TSO, a Balance Responsible Party, the facility owner, DSO….

Outage Planning Regions



A (incomplete) list of currently existing Outage Planning Regions is incorporated in the Supporting paper

The instalment of this Network Code (art. 19) gives the opportunity to review these existing Regions to find the most efficient and practical definition of these Regions, which ensure an optimal coordination and security of the European grid

Year-ahead outage plan



The starting point is given by the Outage Planning Agents, which optimally plan the (un)Availability of the assets in their portfolio

In the year-ahead outage planning process, the focus is laid on coordination between TSOs and Outage Planning Agents.

If and only if this coordination fails, the TSO reports to the NRA and establishes a solution to the incompatibilities detected

Changing the outage plans and financial compensation

- **Explanation of the principles can be found in the supporting paper.**
- **The outcome of the coordination step between all parties which are asked to change their outage plan could be that in order to allow accepting the initial change request, already planned outages of other parties are modified.**
- **According to national regulations, bilateral contracts or any other agreed upon mechanism, this could lead to financial compensation from the change initiating party to the changing parties.**
- **This network code does not oblige nor forbid the instalment of this kind of mechanism, and leaves it open to be regionally or nationally decided.**

Coordination between TSO and DSO for outage planning

Elements of the Distribution Network impacting another Control Area can exist and are to be identified by a cooperation between TSO and DSO (art. 22.6)

For planning the outages of these identified elements coordination between TSO and DSO shall be enforced (art. 22.7)

The processes defined for coordinated outage planning shall also be honoured for these DSO elements

For reasons of efficiency, the TSO shall represent the DSO in the inter-TSO coordinated outage planning processes

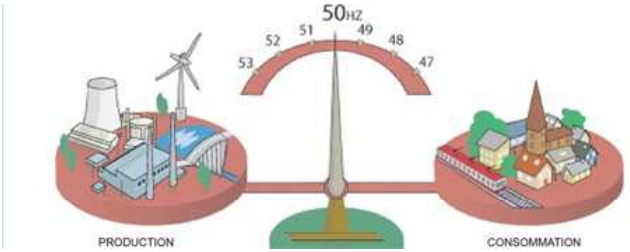


Adequacy and ancillary services

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Adequacy

- **Objective: detecting, in all time frames of operational planning, whether or not sufficient 'products' are available regarding:**
  - **load/export versus generation/import;**
  - **Ancillary Services for balancing, frequency, voltage control…;**
- **Taking into account**
  - **planned outages;**
  - **uncertainties: level of renewable, load…**
  - **capacities of cross border exchanges**



- **Sufficient meaning as defined by operational security standards**

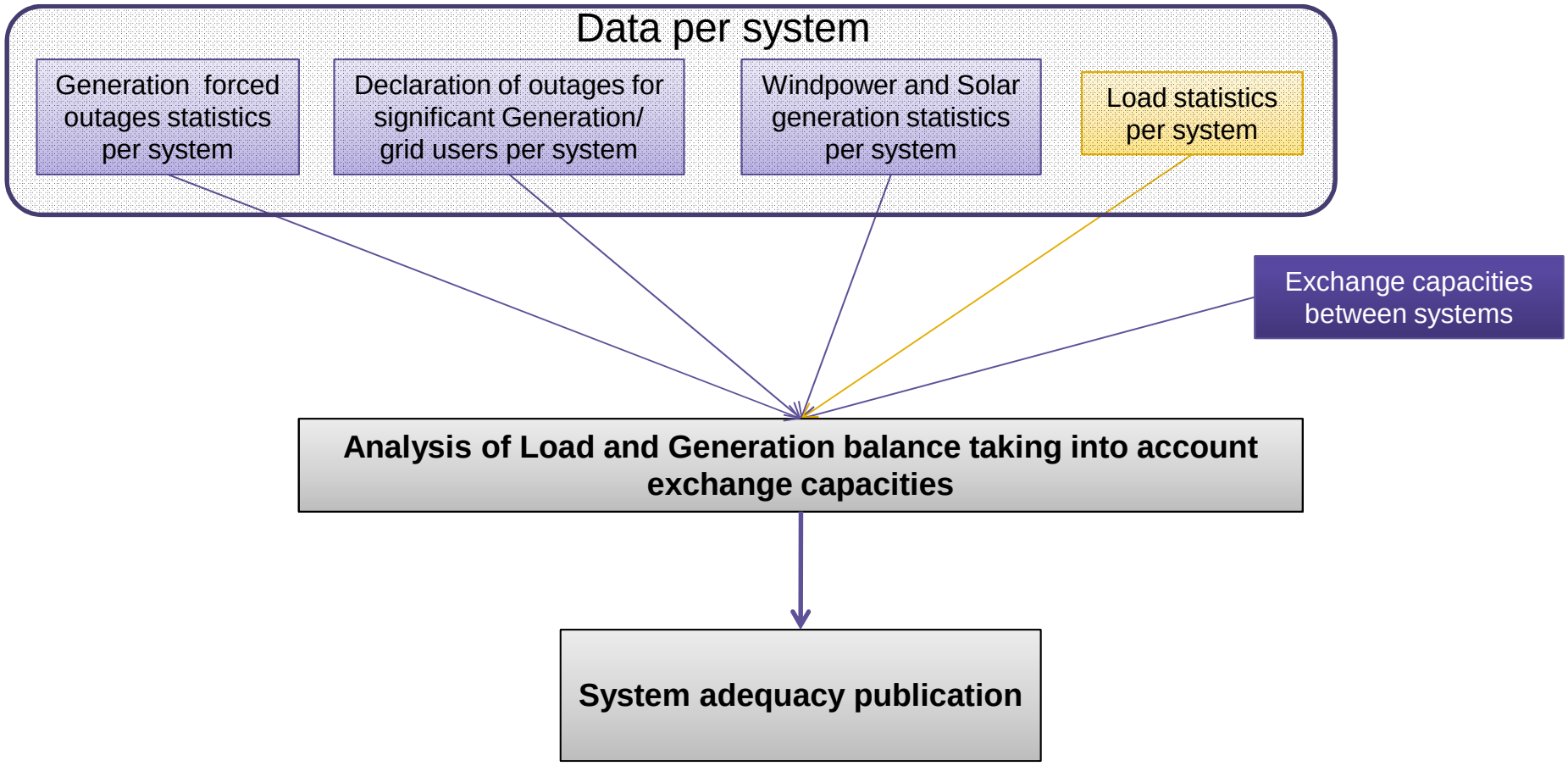
Each TSO shall assess the maximum level of import or export within the exchanges capacity compatible with the national adequacy security criteria.

Use of probabilistic/statistical methodologies

For seasonal analysis, moving towards pan-European analysis

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Assessing seasonal system adequacy of interconnected systems





Scheduling

Scheduling

- **A Schedule defines a set of values related to a time period, representing either energy or power related to :**
  - **an exchange between Market Participants (between areas)**
  - **an input, e.g. for generation units (Production schedule)**
  - **an output, e.g. for consumptions units (Consumption schedule)**
  - **a TSO related exchange (“Balancing Exchanges”…)**

- **Scheduling process begins latest in Day ahead and is updated until real-time**

Exemple : Cross border scheduling



Key Processes related to system security based on the results of scheduling

- **Load Frequency Control**
- **Balancing**
- **Common Grid Model**
- **Security Analysis**

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Scheduling processes

Scheduling chapter structured in two processes

- A **notification process** : the TSO shall be informed of all external schedules going in or out its Control Area

- A **coherency process** : each planned exchange of energy going in or out the borders of a Control Area shall be an external schedule (meaning it shall be agreed : a cross border nomination, as long as it has not been matched by TSOs, is not an external schedule)

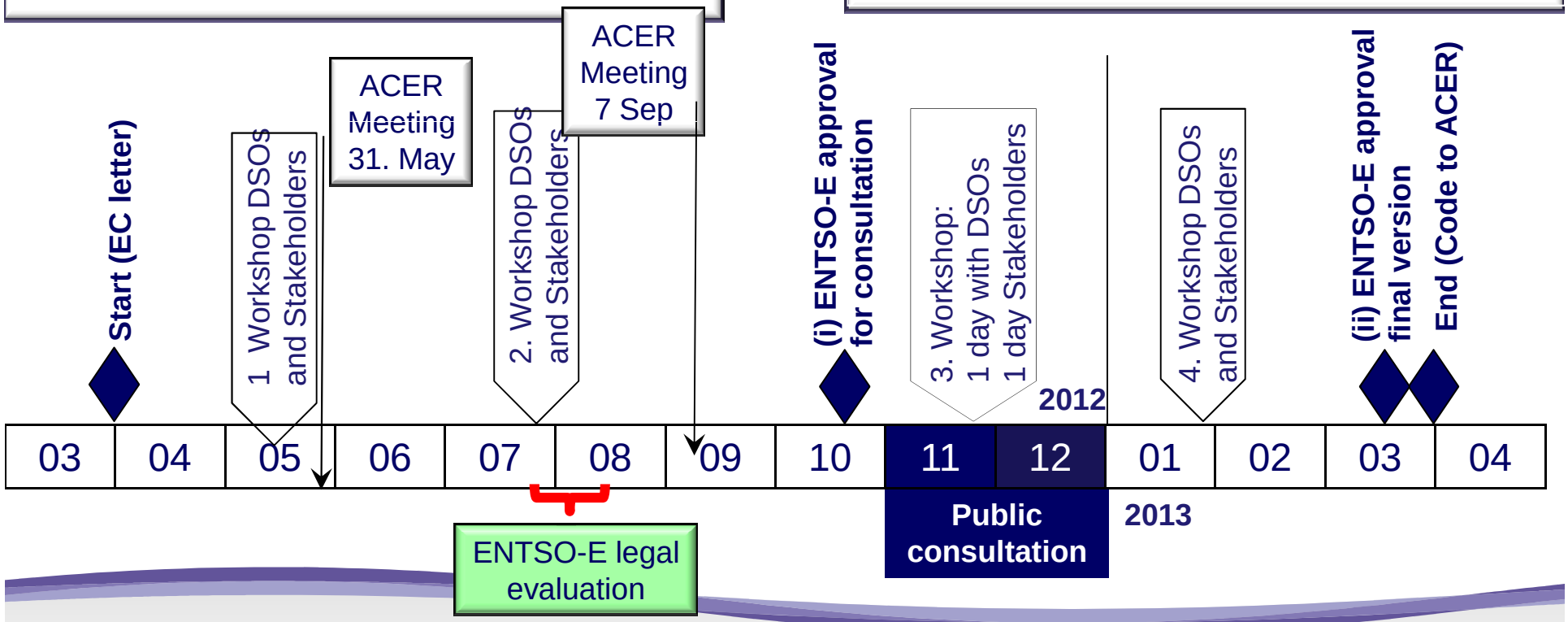


Next Steps

Where do we stand and what‘s next

- **Public consultation**
- **Collecting further inputs / needs for Supporting Paper**

- Processing of results of Public Consultation in
- Finalization of OPS NC and Supporting Paper
- Final version for 4. WS



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