

Operational Planning and Scheduling Code

1st Workshop

23 MAY 2012

Highlights

- **Operational Planning and Scheduling: „What is it?“**
- **Roadmap**
- **Operational Planning and Scheduling Code contents**
- **Discussion**

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Operational Planning and Scheduling: „What is it?“

Activities and processes to prepare power system operation, aiming at:

- *ensuring power system security in accordance with operational security principles;*
- *enabling electricity markets in accordance with CACM;*
- *integrating conventional and renewable generation.*

Activities covering multiple timeframes from more than year ahead until close to real time.

Requiring coordination between TSO's and interactions with grid users.

Scope and interactions



Grid Connection
(FG & Codes)



Operational Planning
(FG & code)

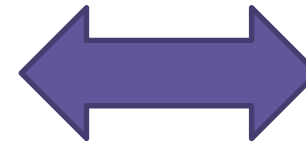
Outage planning

Security analysis

Adequacy monitoring

Scheduling

Operational
Security
Principles
Umbrella
(FG & code)



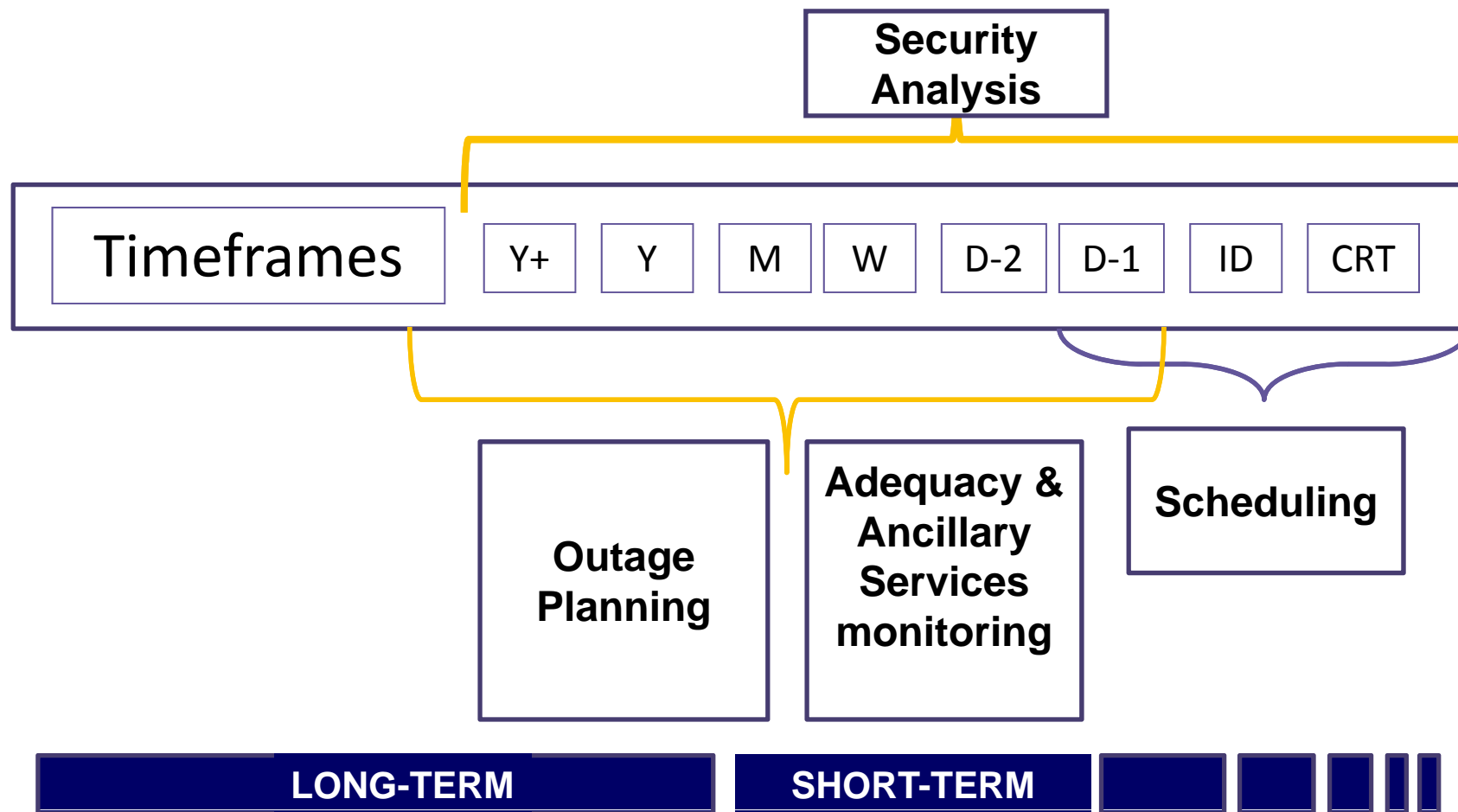
Capacity Allocation &
Congestion Management
(FG & Codes)

Electricity Balancing
Markets Integration
(FG & Codes)

LFC
(FG & code)

Timeframes

Scenarios → Forecasts → Schedules → State Estimation

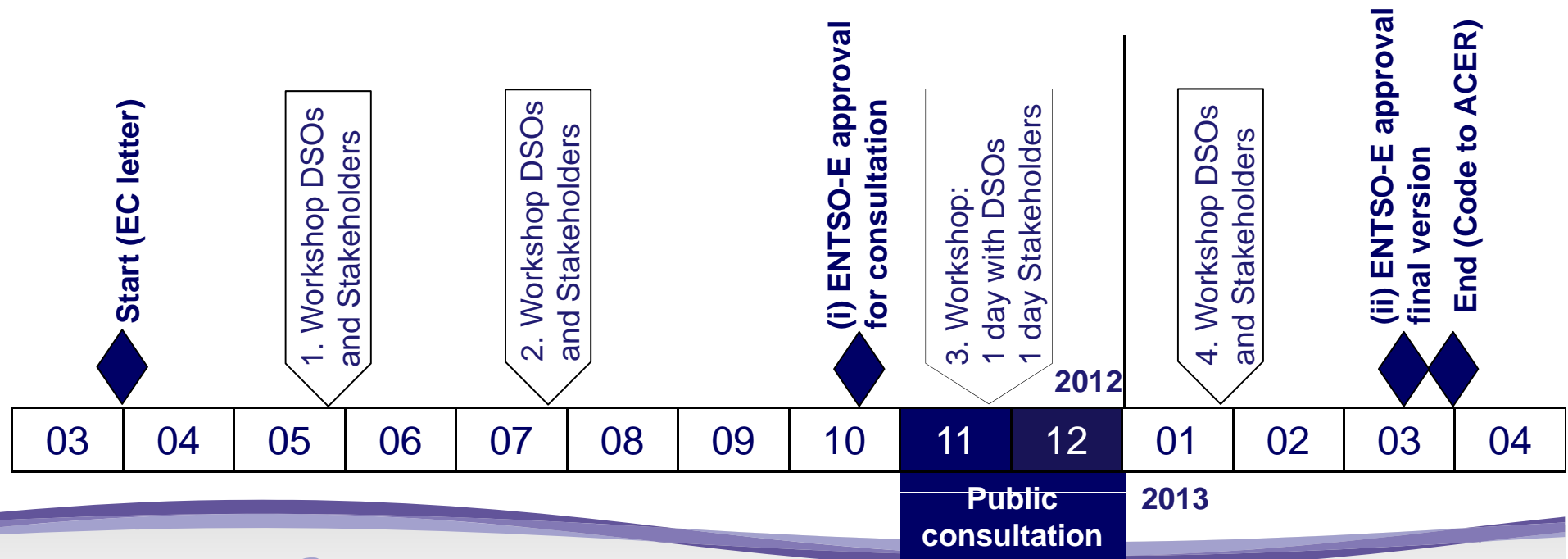


Highlights

- Operational Security: „What is it? “
- **Roadmap**
- Operational Planning and Scheduling Code contents
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Operational Planning and Scheduling Code Roadmap

- Start 04/2012, End 04/2013
- 2 approvals by ENTSO-E: (i) consultation, (ii) final
- 4 Workshops, public consultation, active discussion



Highlights



- Operational Security: „What is it? “
- Roadmap
- **Operational Planning and Scheduling Code contents**
- Discussion

Operational Planning and Scheduling Code Structure

Articles 1-6

General Provisions: Subject matter, Definitions, Scope,
Regulatory aspects, Confidentiality, Relation with National Law

Security assessment
Articles 8-14

Outage planning
Articles 15-25

Adequacy
Articles 26-33

Scheduling
Articles 34-37

Requirements
In all timeframes

Building Scenarios
and
Elaborating Common
Grid models

REGIONAL
COORDINATION

Pan-European
seasonal
coordinated
adequacy
assessment

Schedule
notification

Performing
coordinated security
analysis and
setting up
remedial actions

Planning process
framework

Adequacy and
ancillary services
monitoring

Schedule
coherency
verification

Articles 31-41

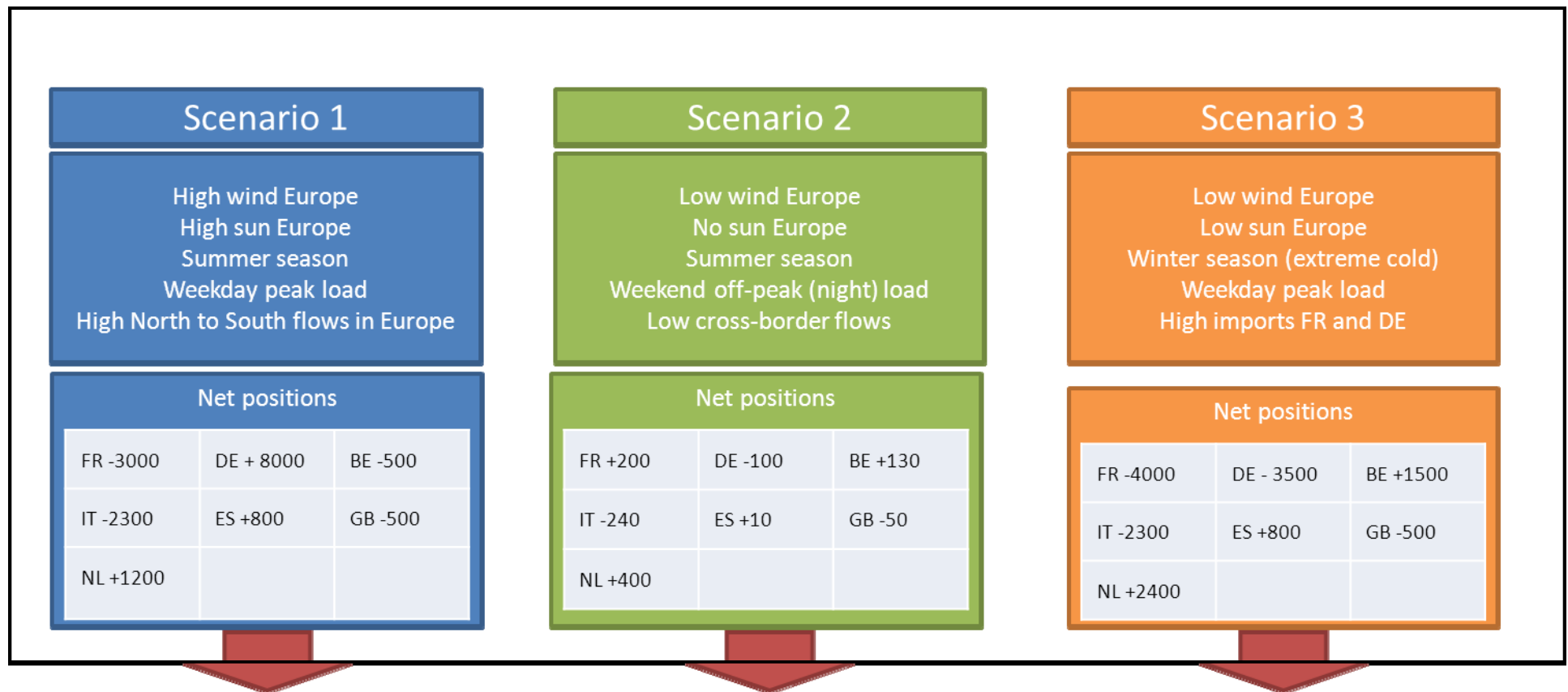
Compliance

Derogations

Final provisions

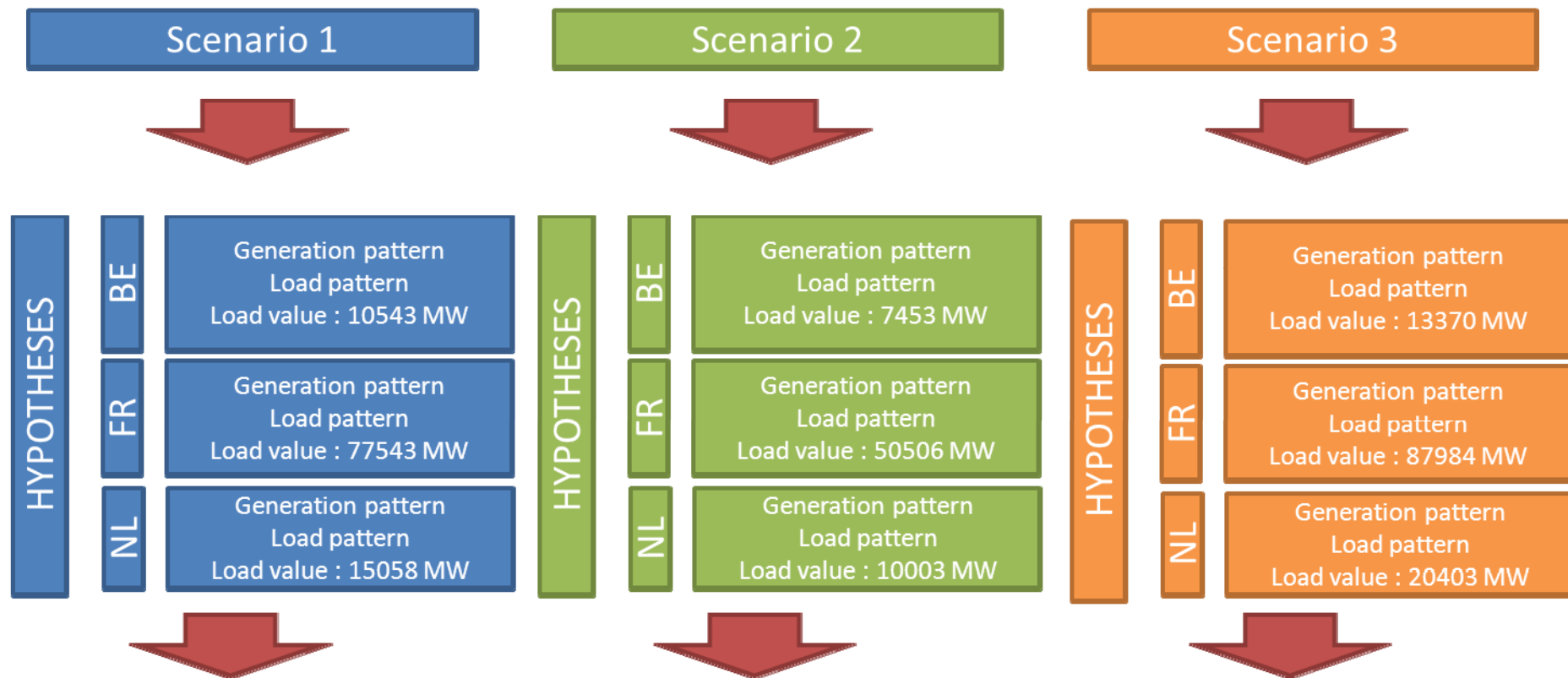
Year-ahead Common Grid Models: Scenarios

Development of scenarios: coordinated task for all TSO's together



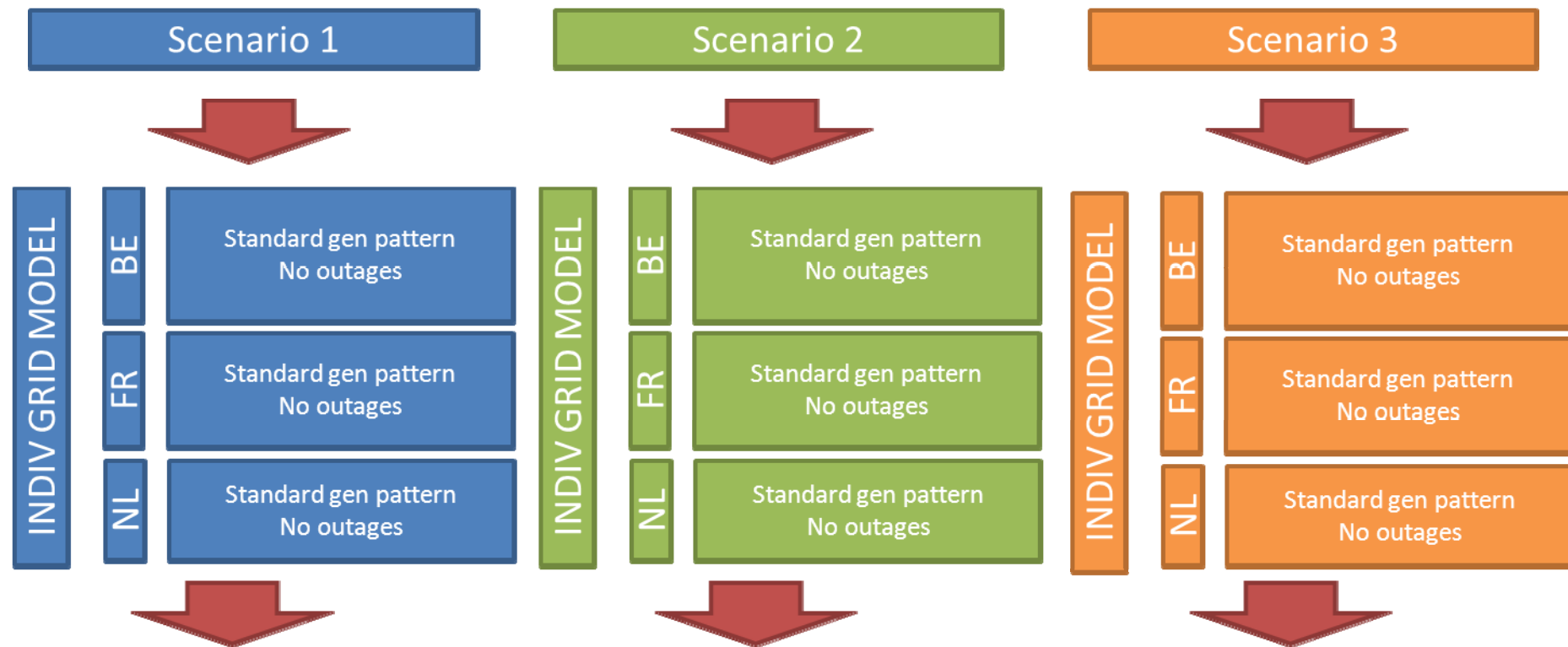
Year-ahead Common Grid Models: Hypotheses

Development of hypotheses: individual task for each TSO

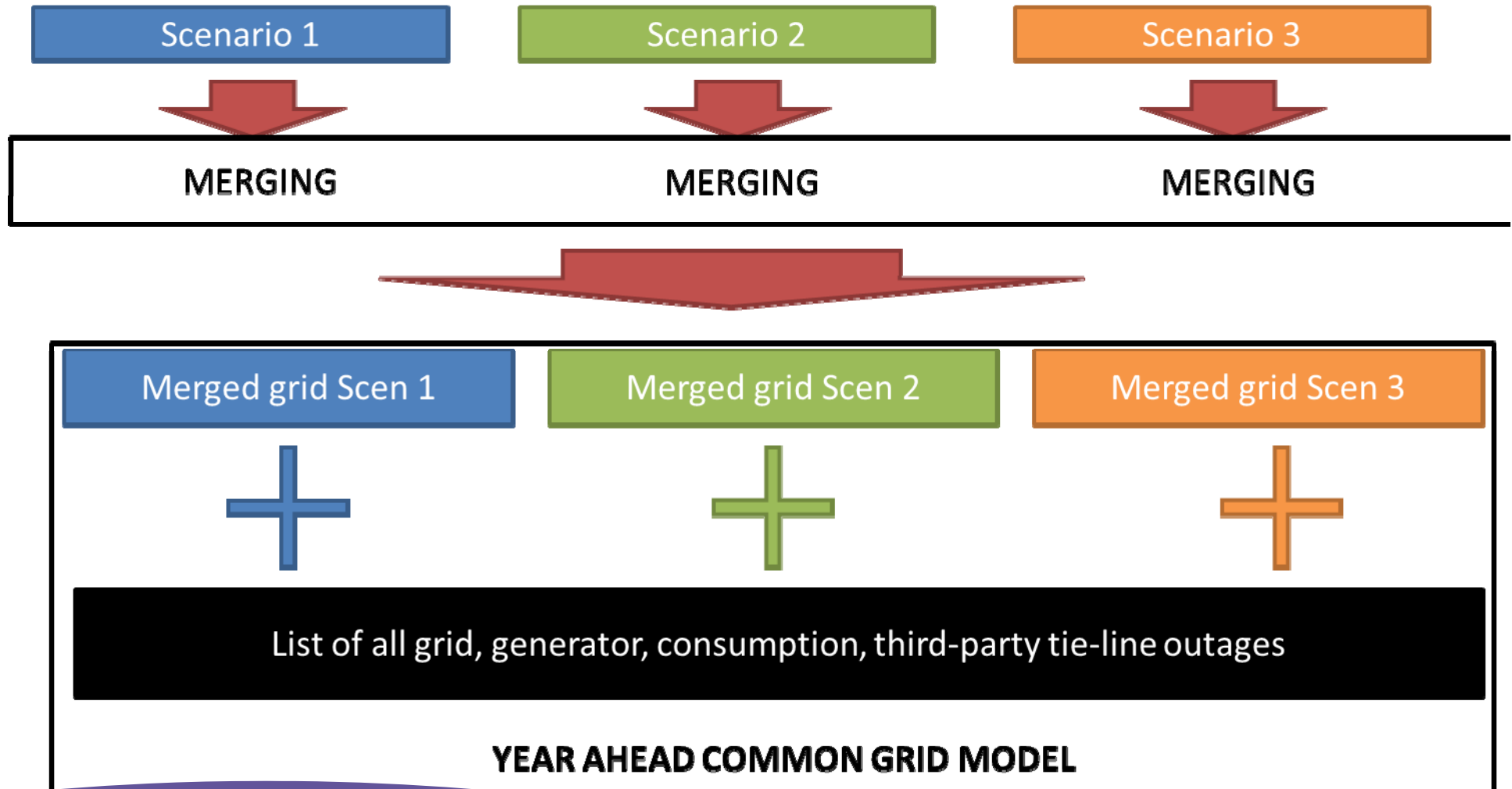


Year-ahead Common Grid Models: Individual Grid Models

Development of Individual Grid Models: individual task for each TSO



Year-ahead Common Grid Models: Merging



Security Analysis: content

DATA FOR SECURITY ANALYSIS

Article 8 YEAR-AHEAD SCENARIOS AND COMMON GRID MODEL

Article 8.1 DEFINITION OF YEAR-AHEAD SCENARIOS

Article 8.2 CONSTRUCTION OF YEAR-AHEAD INDIVIDUAL GRID MODELS

Article 8.3 CONSTRUCTION OF YEAR-AHEAD COMMON GRID MODELS

Article 8.4 UPDATES OF YEAR-AHEAD COMMON GRID MODELS

Article 9 WEEK-AHEAD GRID MODELS

Article 10 DAY-AHEAD AND INTRADAY GRID MODELS

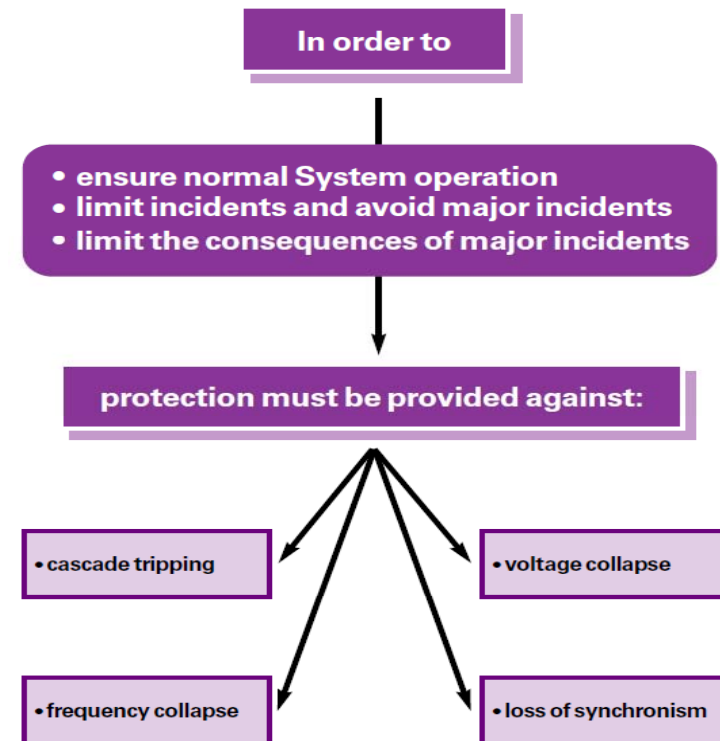
REQUIREMENTS AND COORDINATION FOR SECURITY ANALYSIS

Article 11 GENERAL PROVISIONS FOR SECURITY ANALYSIS

Article 12 PROVISIONS FOR YEAR-AHEAD AND UPDATED SECURITY ANALYSIS

Article 13 PROVISIONS FOR DAY-AHEAD, INTRADAY AND CLOSE TO REAL-TIME SECURITY ANALYSIS

Article 14 COORDINATION, INCLUDING PREVENTION AND REMEDIAL ACTIONS



Outage Planning : A coordinated process between TSO's and Grid Users

Coordination between all parties for specific projects:
Focus on sharing available information, on a **best effort** basis,
without a firmness obligation
*building of new power plant, main substation works, large power plant
maintenance works*

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

Changes to the reference outage plan can be **requested by TSO's or
Grid Users;**

These are subject to respect power system security constraints while
taking into account economical consequences

At this stage, "forced events" have to be taken into account

> Year ahead

Year ahead

Year →
before real time

Real Time

Outage Planning: content



REQUIREMENTS FOR OUTAGE PLANNING: CO-ORDINATION

Article 15 DETERMINATION OF OUTAGE PLANNING REGIONS

Article 16 REQUIREMENTS FOR REGIONAL COORDINATION

Article 17 LIST OF RELEVANT THIRD-PARTY OWNED TIE-LINES, GENERATION AND CONSUMPTION UNITS

Article 18 LIST OF RELEVANT GRID ELEMENTS WITH IMPACT ACROSS BORDERS

Article 19 COMMON TSO PLATFORM FOR COORDINATED OUTAGE PLANNING

REQUIREMENTS FOR OUTAGE PLANNING: PROCESSES

Article 20 REQUIREMENTS FOR MORE THAN YEAR-AHEAD OUTAGE PLANNING

Article 21 REQUIREMENTS FOR YEAR AHEAD OUTAGE PLANNING

Article 22 REQUIREMENTS FOR PLANNED UPDATES TO THE YEAR-AHEAD OUTAGE PLANNING

Article 23 REQUIREMENTS FOR UNPLANNED UPDATES TO THE YEAR-AHEAD OUTAGE PLANNING

Article 24 REQUIREMENTS FOR REAL-TIME EXECUTION OF THE OUTAGE PLANNING

Article 25 COMPLIANCE TO DEADLINES AND REVISION

Adequacy and Ancillary Services: content

REQUIREMENTS FOR ADEQUACY

Article 26 REQUIREMENTS FOR ADEQUACY IN GENERAL

Article 27 REQUIREMENTS FOR PAN-EUROPEAN ADEQUACY SEASON-AHEAD

Article 28 REQUIREMENTS FOR ADEQUACY FROM SEASON AHEAD TO WEEK AHEAD

Article 29 REQUIREMENTS FOR ADEQUACY WEEK AHEAD

Article 30 REQUIREMENTS FOR ADEQUACY DAY AHEAD AND INTRADAY

REQUIREMENTS FOR ANCILLARY SERVICES

Article 31 REQUIREMENTS ANCILLARY SERVICES IN GENERAL

Article 32 REQUIREMENTS ANCILLARY SERVICES DAY AHEAD AND INTRADAY

Article 33 REQUIREMENTS FOR ANCILLARY SERVICES BEFORE REALTIME

Scheduling: content

Article 34 GENERAL PROVISIONS

Article 35 REQUIREMENTS FOR NOTIFICATION OF SCHEDULES BETWEEN MARKET PARTICIPANTS AND SCHEDULING OPERATORS

Article 36 REQUIREMENTS FOR COHERENCY OF SCHEDULES

Article 37 REQUIREMENTS FOR PROVIDING INFORMATION TO OTHER TSOs, REQUIRED FOR FURTHER PROCESSING

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

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



Thank you for your attention !

Questions for the discussion

- 1. Is anything critical for Operational Planning and Scheduling missing ?**
- 2. How do you address the provisions on Operational Planning and Scheduling processes concerning interaction with TSO's ?**
- 3. How do you see the fulfilment and implementation of provisions specifically addressing your organisation ?**