

ENTSO-E Network Code on Requirements for Generators

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**Integration of renewable energy and shaping the
European renewable energy market**

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Reliable Sustainable Connected

ENTSO-E has significant role in delivering European energy and climate change objectives

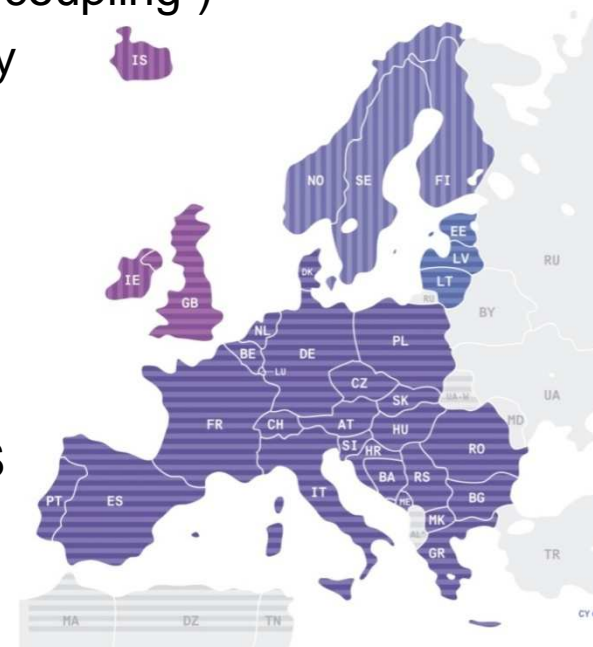
Key activities set out in Regulation 714/2009 (on cross-border electricity trade, part of the 3rd Internal Energy Market Package)

- Deliver **network codes**
- Deliver **network plans** European / regional view of system needs (“TYNDP”)
- Deliver crucial aspects of **market integration** (“market coupling”)
- **R&D Plan** (fully included in EEGI – European Electricity Grid Initiative, part of the SET Plan)

Through its members deliver the **infrastructure** to:

- enable markets to function,
- secure energy supply,
- meet climate change objectives through connecting RES

Represents **41 members from 34 countries**



Why European Network Codes?

The development of *European wide Network Codes* in various domains by

- bringing together the expertise of diverse stakeholders
- in an open and transparent process
- creating a coherent approach on common issues

is a crucial enabler of *Europe's Energy goals* in

- increasing the amount of renewables
- guaranteeing an adequate Security of Supply
- contributing to an Internal Energy Market



Article 8 – Tasks of ENTSO-E

6. “The network codes ... cover the following areas, taking into account, if appropriate, regional specificities:”

Draft
framework
guideline

network security and reliability rules incl. rules for technical transmission reserve capacity for operational network security;

Final
framework
guideline

network connection rules;

- c. *third-party access rules;*
- d. *data exchange and settlement rules;*
- e. *interoperability rules;*

Draft
framework
guideline

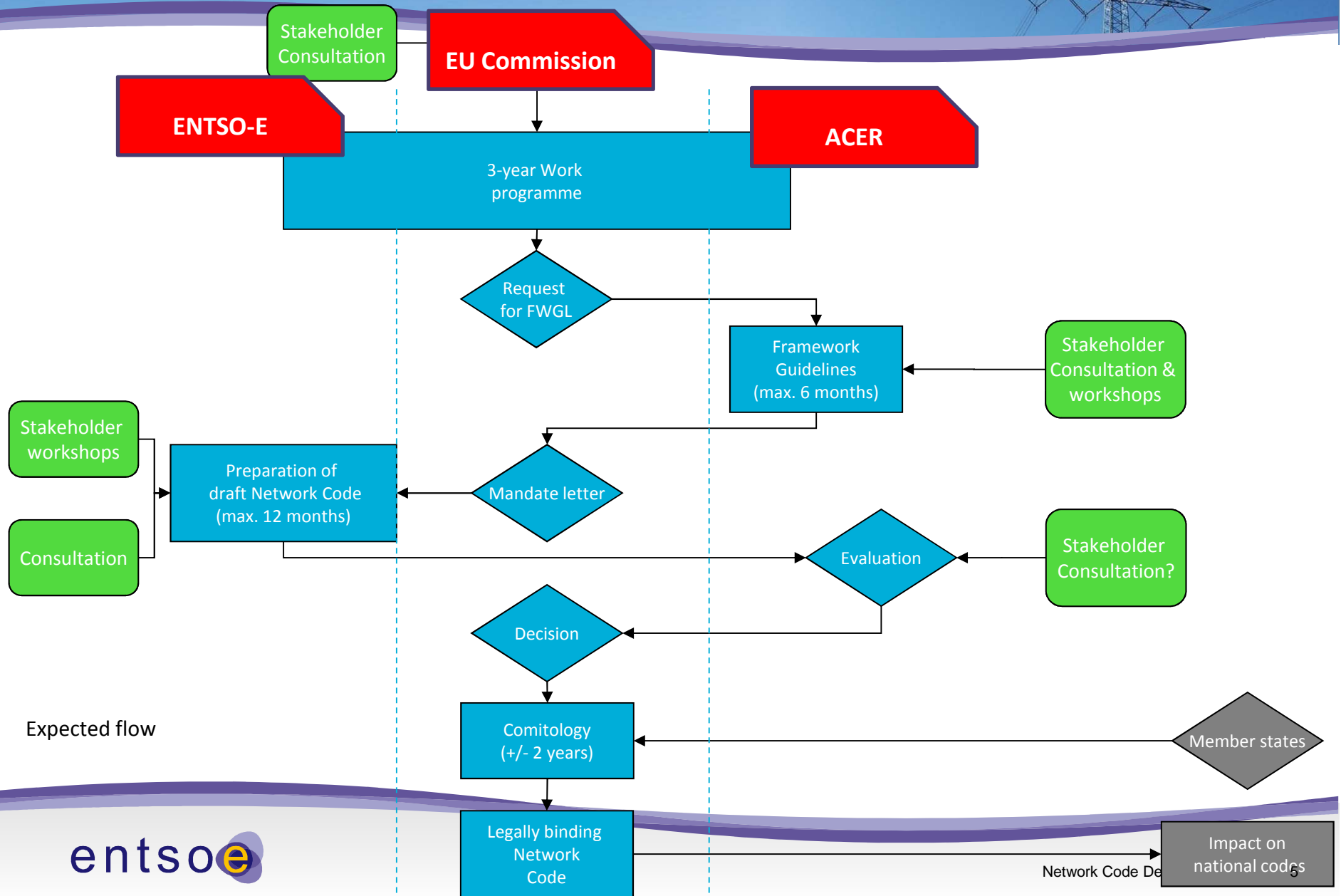
operational procedures in an emergency;

Final
framework
guideline

g. capacity-allocation and congestion-management rules;

- h. *rules for trading related to technical and operational provision of network access services and system balancing;*
- i. *transparency rules;*
- j. *balancing rules incl. network-related reserve power rules;*
- k. *rules regarding harmonised transmission tariff structures incl. locational signals and inter-transmission system operator compensation rules; and*
- l. *energy efficiency regarding electricity networks.*

General Framework - Regulation 714/2009



Starting point

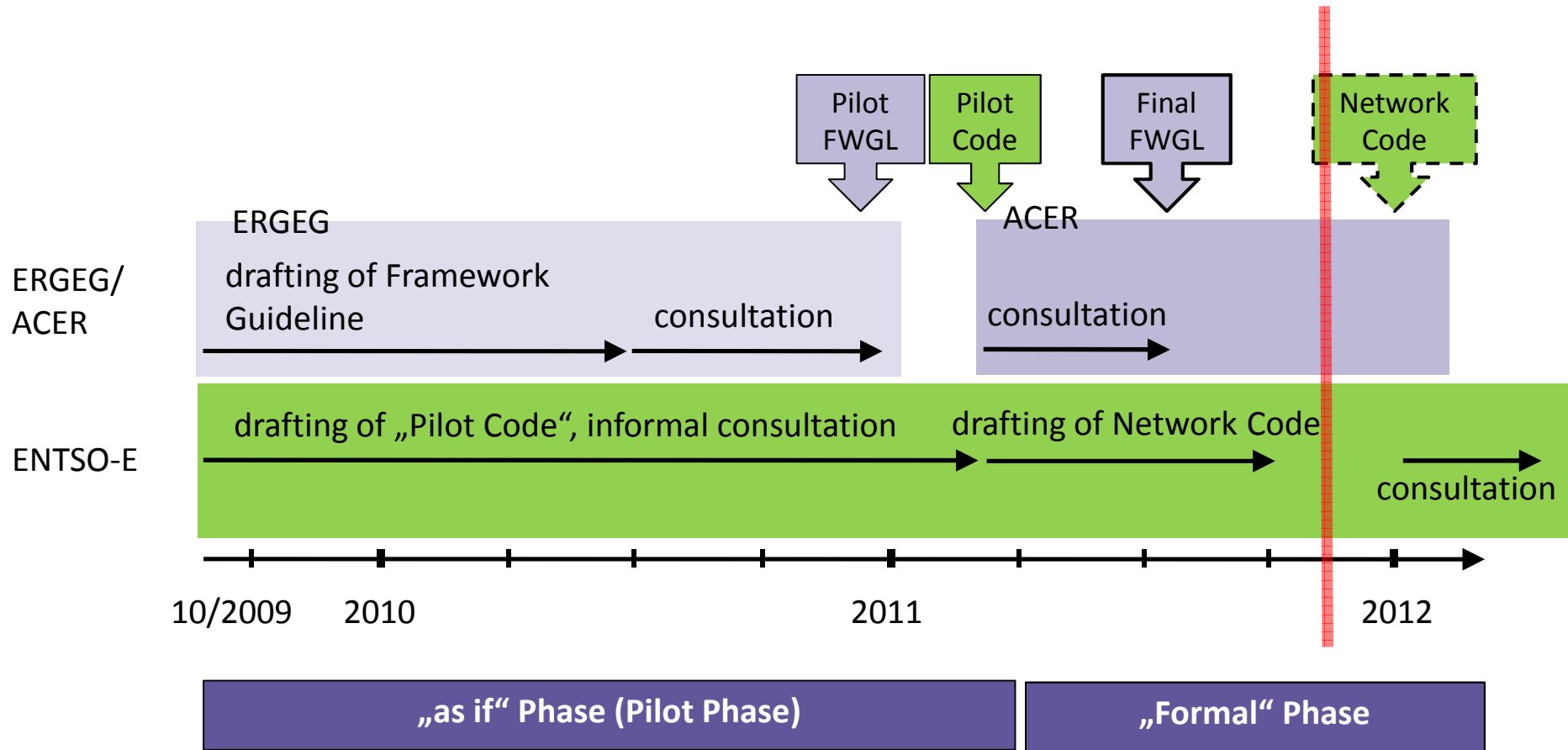
The Florence Forum has identified in 2009 wind connection as the most prominent topic for a rapid introduction of network codes

- Based on ERGEG's framework guideline on grid connection
- With the strong support of the EC and the Florence Forum
- Based on the on-going significant investment efforts on wind generation for achieving EU environmental and security of supply policy goals

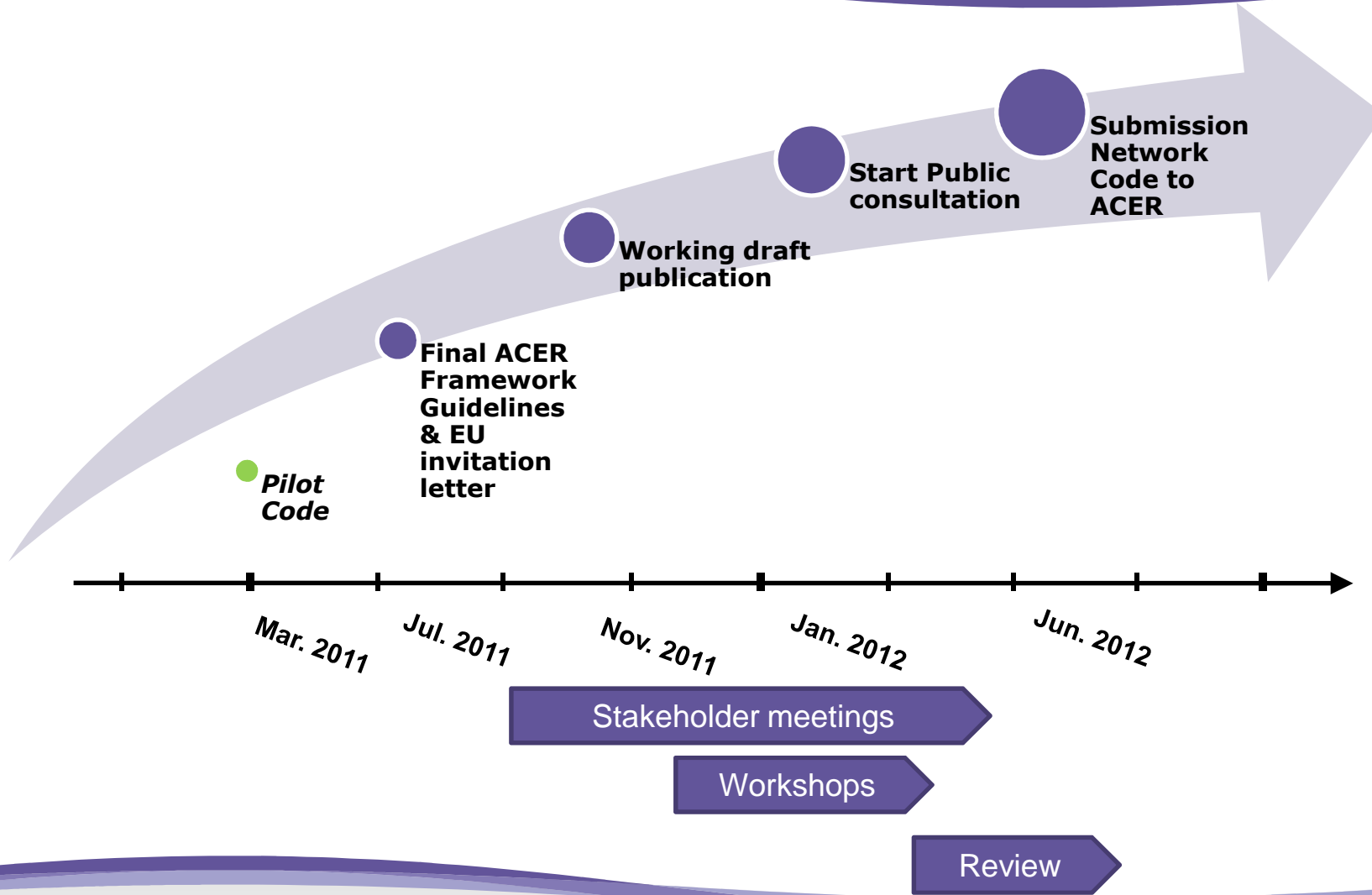
Objectives

- Enable EU **energy and climate policies** ...
- ... while **securing reliability of the power system**
- Facilitate adoption of best practices
- Reduce development and investment costs
- Harmonize structure and technical contents of national codes

Pilot process versus formal proces



Formal Network Code process

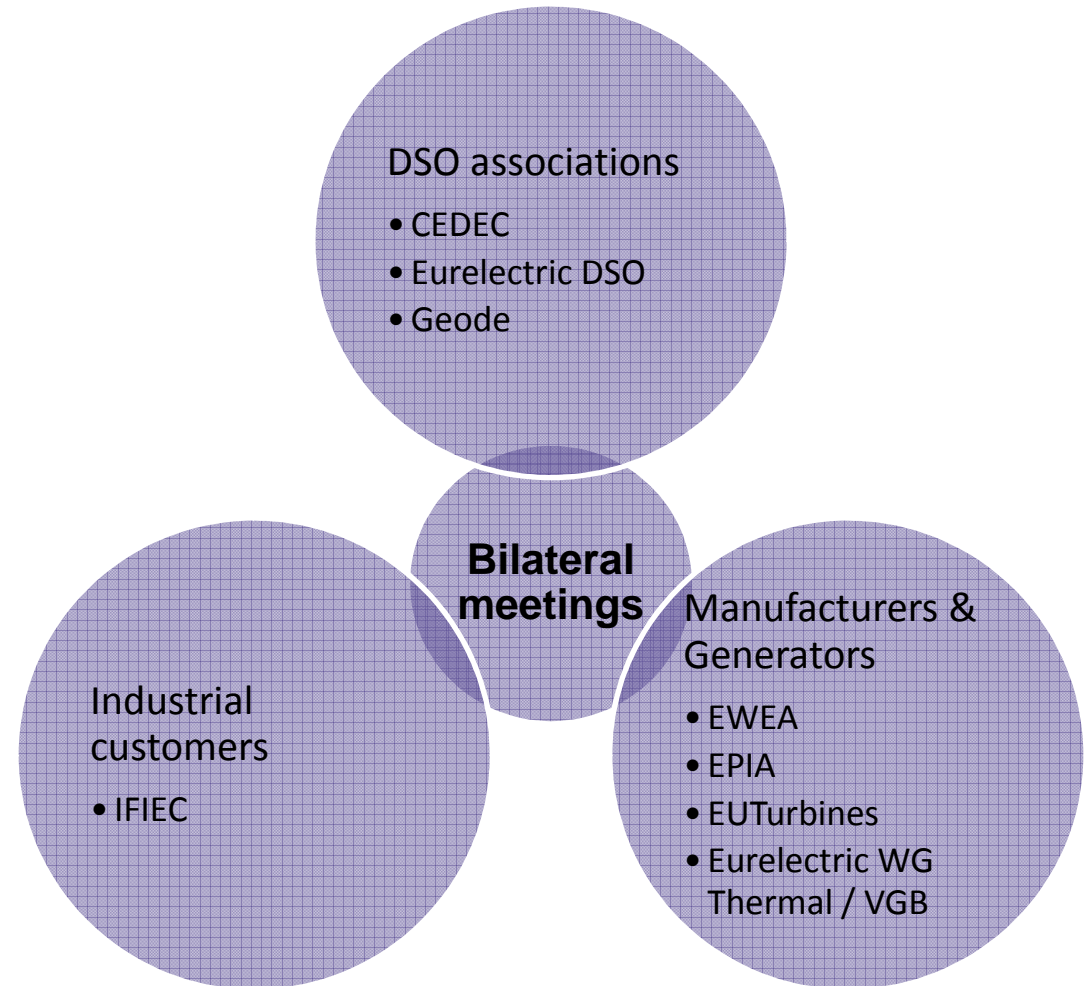


Public ENTSO-E workshops

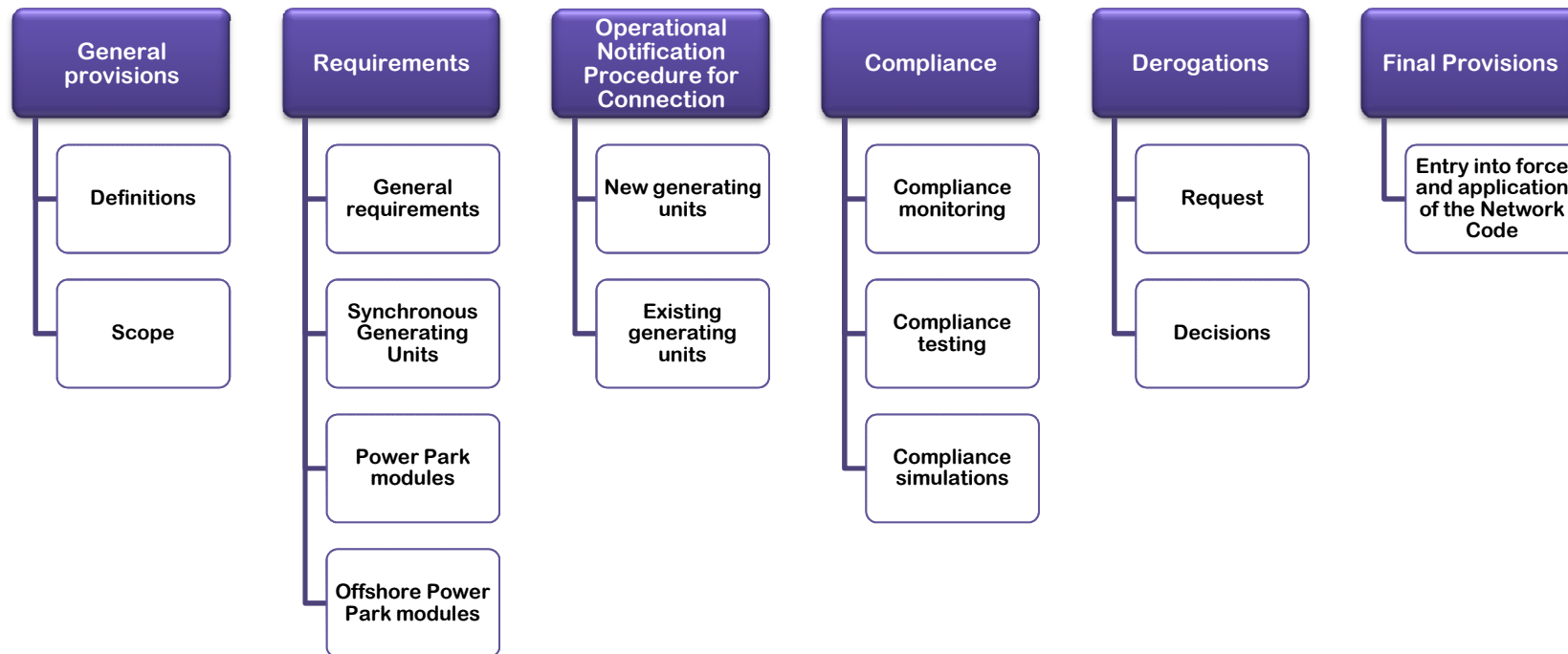
- May 2010
- November 2010
- December 2011 (regional workshops)
- February 2012

National level (TSO initiative)

- User groups
- Seminars, ...



Network Code structure



Prescriptive requirements

- The Network Code lays down requirements and specific parameters
- ***E.g. frequency disconnection***

Framework requirements

- The Network Code gives a coherent approach to formulate requirements
- Avoids divergence of requirements throughout Europe
- Specific setting of parameters based on a given legal framework, e.g. NRA approval, consultation, in mutual agreement, other Network Codes, ...
- ***E.g. reactive power provision***

Principle requirements

- High level requirement on functionality
- Specific implementation prescribed by other agreements, national legislation, Network Codes, ...
- ***E.g. information exchange***

Significant users

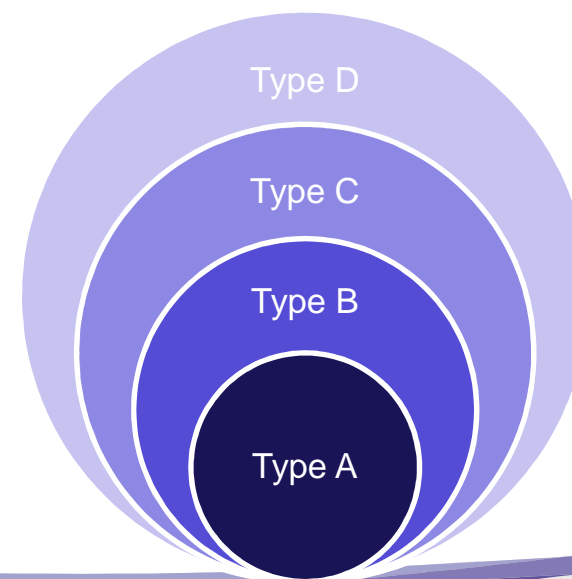
- **Generator capabilities are formulated from a system performance perspective, independent from technology**
- **Need to be able to cope with evolutions in generation mix**
- **Significance is regarded per requirement**

Europe wide balancing services

Refined and controllable dynamic response

Automated response, operator control, information

Common failure mode for all plants (frequency)



- The European power system is **changing fast and significantly** to achieve energy and climate objectives
- Grid connection codes are **urgently needed to enable these policies** in order to maintain security of supply at least cost for European citizens
- ENTSO-E's **neutrality and expertise** guarantees the process
- **Strong involvement of stakeholders**, and in particular DSOs, are absolute prerequisites
- Consultation is ongoing; ENTSO-E is **listening** in pursuit of the best solutions acceptable by all



Questions?

Key documents

- Consultation Process - https://www.entsoe.eu/fileadmin/user_upload/library/consultations/110628_Consultation_Process_Description.pdf
- Web consultation tool - <https://www.entsoe.eu/consultations/>
- ENTSO-E Network Code updates - <https://www.entsoe.eu/resources/consultations/network-codes/>