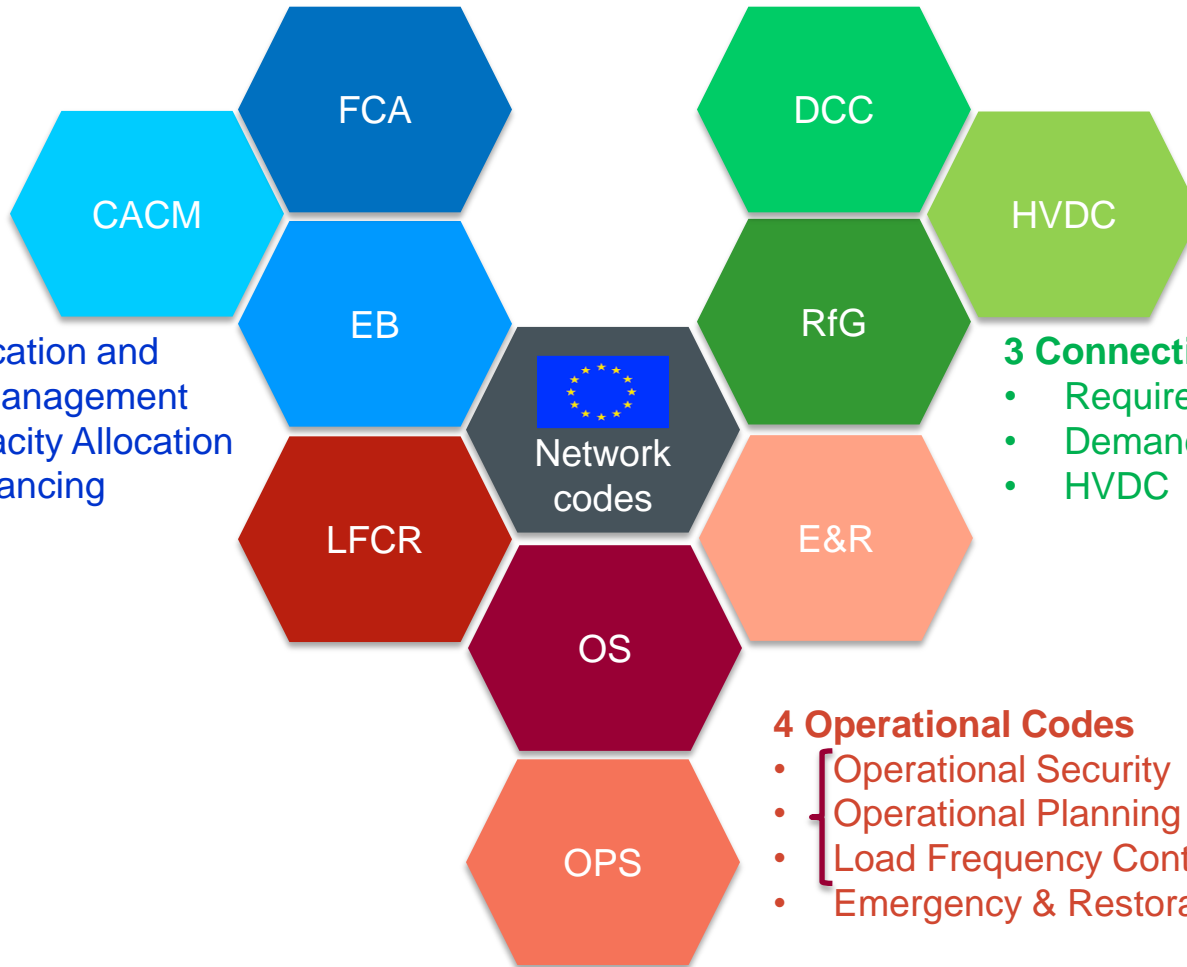# Febeliec Workshop

Implementation EU Network Codes and adaptation Federal Grid Code

BluePoint Brussels

13th December 2017

Planning and agenda of the workshop

Planning	Agenda	Presentation
9:00	Welcome and coffee	
9:15	Introduction by Febeliec	• Febeliec
9:30	Introduction to Network Codes and Federal Grid Code, followed by 3 rotating break-out sessions • Connection • Market • Operational (data exchange/iCAROS)	• D. Zenner • J. Moelans / M. Wouters • A. Tsiokanos • H. Vandenbroucke
10:45	Q&A Session	
11:00	Coffee break	
11:15	Focus on Closed Distribution Systems: Network Codes requirements and adaptation Federal Grid Code	• I. Gerkens / H. Vandenbroucke
12:00	Q&A Session	
12:30	End	

Introduction to EU Network Codes

3 Market Codes
- Capacity Allocation and Congestion Management
- Forward Capacity Allocation
- Electricity Balancing

3 Connection Codes
- Requirements for generators
- Demand Connection Code
- HVDC

4 Operational Codes
- Operational Security
- Operational Planning & Scheduling
- Load Frequency Control & Reserves
- Emergency & Restoration

SO GL

FCA · CACM · EB · LFCR · OS · OPS · Network codes · DCC · HVDC · RfG · E&R

EU Network codes & guidelines cover a large scope to which all concerned parties (TSOs, market parties, …) have to comply.
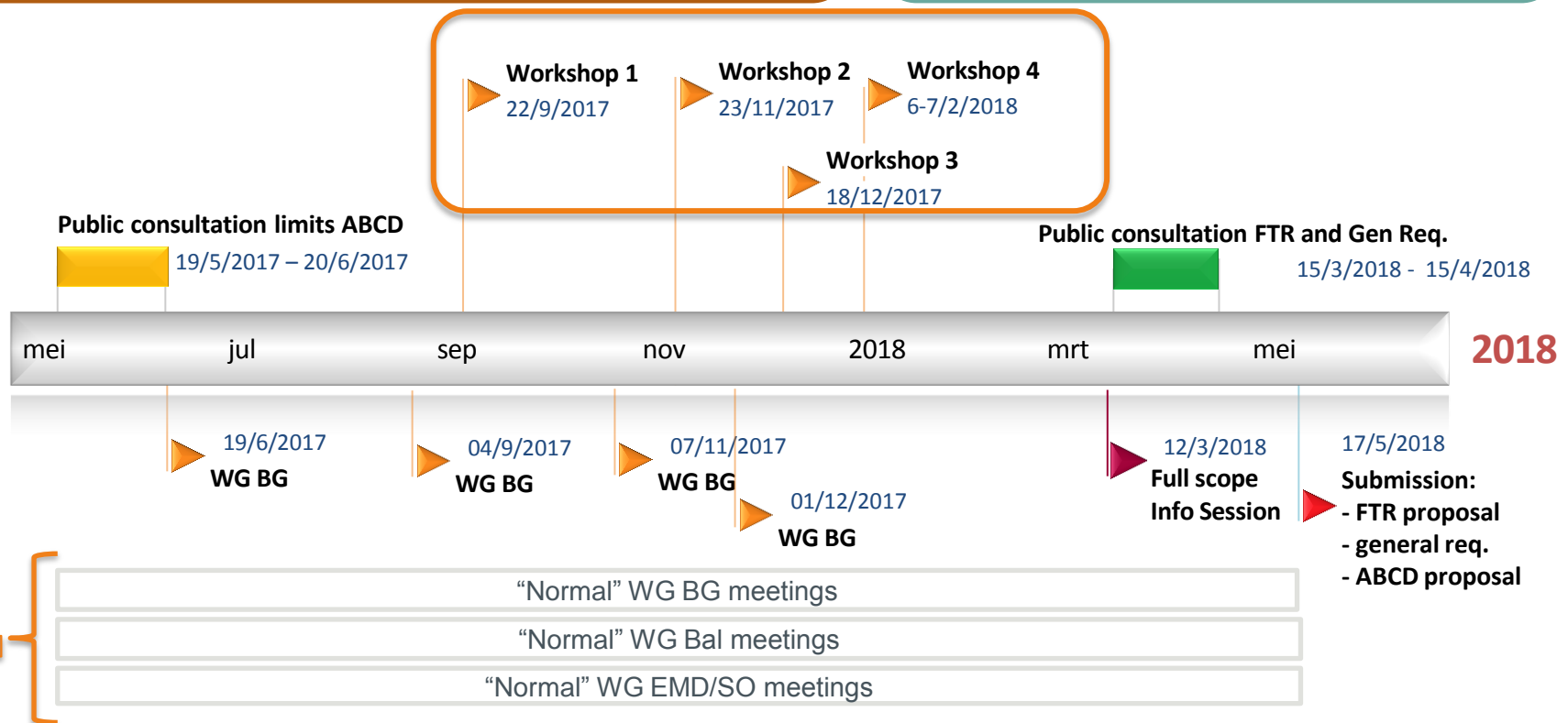
Status NC adoption – Summary

Network Code	Status	Best guess(!) for "entry into force"
Market codes:		
Capacity Allocation and Congestion Management (CACM)	**Entered into force**	14/08/2015
Forward Capacity Allocation (FCA)	**Entered into force**	16/10/2016
Electricity balancing (EB)	**Will enter into force (publication in Official Journal of the EU on 28/11/17)**	**18/12/2017**
Connection codes:		
Requirements for generators (RfG)	**Entered into force**	17/05/2016
Demand Connection Code (DCC)	**Entered into force**	07/09/2016
HVDC (HVDC)	**Entered into force**	28/09/2016
Operational codes:		
Operational Security (OS)		
Operational Planning & Scheduling (OPS)	**Entered into force**	14/09/2017
Load Frequency Control & Reserve (LFCR)		
Emergency & Restoration (E&R)	**Will enter into force (publication in Official Journal of the EU on 28/11/17)**	**18/12/2017**

Merged in one guideline

Planning and agenda workshops
with focus on Federal Grid Code and general requirements

- Task Force "Implementation Network Codes" has ended.
- 4 dedicated workshops for discussing:
  - Federal Grid Code impact and amendment proposals
  - Progress on general requirements
- All interested parties are welcome.

- **All workshop material** will be distributed prior to the workshop allowing preparation by all parties + everything will be published on elia.be

Workshop 1
22/9/2017

Workshop 2
23/11/2017

Workshop 4
6-7/2/2018

Workshop 3
18/12/2017

Public consultation limits ABCD
19/5/2017 – 20/6/2017

Public consultation FTR and Gen Req.
15/3/2018 - 15/4/2018

mei | jul | sep | nov | 2018 | mrt | mei

2018

19/6/2017
WG BG

04/9/2017
WG BG

07/11/2017
WG BG

01/12/2017
WG BG

12/3/2018
Full scope Info Session

17/5/2018
Submission:
- FTR proposal
- general req.
- ABCD proposal

"Normal" WG BG meetings

"Normal" WG Bal meetings

"Normal" WG EMD/SO meetings

The normal UG Working Groups can work in support of the FTR workshops, e.g. for discussing topics for which it is too early to discuss concrete amendment proposals (e.g. non-NC "wish-list").

Agenda 1st Workshop (21/09/2017)

Topics	Presentation
Introduction	
• Planning and context	• Hans Vandenbroucke
General Requirements	
• Introduction to General Requirements • Presentation draft General Requirements proposal for NC RfG	• Hans Vandenbroucke • Fortunato Villella
Federal Grid Code	

• Connection aspects
   • Thresholds ABCD: categories of grid users
   • Notion of new installation
   • Derogation principle
   • Embedded generation
   • Capacity reservation
   • Connection requirements : global approach for non-exhaustive requirements for new grid users
   • Connection requirements : Short-Circuit Power, Robustness & Fault Ride Through, Protection and Control (incl. appendix 2)
• Offshore (limited to connection aspects)
• Generalities (without definitions)
	• Isabelle Gerkens
	
	• Thierry D'hoore
	• Thierry D'hoore and Michaël Hunt

Agenda 2nd Workshop (23/11/2017)

Topics	Presentation
1. Introduction	
1. Planning and feedback previous workshop	• David Zenner • Hans Vandenbroucke
2. Federal Grid Code	

1.   Market aspects
      • Balancing, BRP, ancillary services, access
      • CACM/FCA
   2.   CDS (based on position paper CDS)
   3.   Definitions
	• Anna Tsiokanos
	
	• Isabelle Gerkens
	• Thierry D'hoore and Michaël Hunt

3. General Requirements	

1.   Wrap-up General Requirements
   2.   Information on derogation process
   3.   Presentation draft General Requirements proposal for NC DCC
   4.   Presentation draft General Requirements proposal for NC RfG
	• Hans Vandenbroucke
	
	• Marnix Wouters
	
	• Fortunato Villella

Agenda 3rd Workshop (18/12/2017)

Topics	Presentation
1. Introduction	
1. Planning and feedback previous workshop	• David Zenner • Hans Vandenbroucke
2. Federal Grid Code	

1.   HVDC
   2.   DSO aspects
   3.   Connection-related aspects
       • Frequency
       • Connection procedures, compliance and testing
	• Alexia Sohet
	• Thierry D'hoore
	• Isabelle Gerkens

3. General Requirements	
1. Technical requirements on storage 2. Presentation draft General Requirements proposal for NC RfG and NC HVDC	• Aymen Chaouachi • Fortunato Villella
4. Stakeholder feedback on Workshop 1	

Draft agenda 4th Workshop (6 & 7/2/2018)

Topics	Presentation
1. Introduction	
1. Planning and feedback previous workshop	• David Zenner • Hans Vandenbroucke
2. Federal Grid Code	
1. Connection aspects 2. Market aspects 3. Offshore 4. Metering 5. Defintions 6. Transitory articles	• Isabelle Gerkens • Anna Tsiokanos • Thierry D'hoore
3. General Requirements	
1. Presentation final General Requirements RfG, DCC and HVDC 2. Presentation draft CBA and derogation proposal	• Fortunato Villella / Marnix Wouters • Kristof Sleurs
4. Stakeholder feedback on previous Workshops	

Exact agenda for 6th and 7th February 2017 to be determined (will be communicated in the 3rd Workshop on 18 December 2017)

Network Code content on Elia website

Elia | Products & Services | Grid data | Projects | Safety & environment | Suppliers | Users' group | Customers

Publications

Public consultation
Public consultation webpage relating to the proposal for maximum capacity thresholds for types B, C and D power-generating modules containing:
- Consultation document (consultation ran from 19 May till 20 June)
- Consultation report
- Original stakeholder feedback received

EU NC publications
- Publication of all terms and conditions or proposals, established (partly) by Elia as part of the EU network codes
- An overview of the documents that will be published in the future (including estimated publication date), will be added soon
- The publication of these documents is a NC requirement

WG Belgian Grid

Task Force Implementation NC
- Presentations, minutes and documentation of the Task Force that started in 2015 and continued till the end of Q1 2017
- Structured per topic (e.g. Significant Grid Users)
- Overview of all Task Force sessions that have taken place

Workshops 'Federal Grid Code and General Requirements'
- Presentations, minutes and documentation of the stakeholder workshops that will soon take place (cfr. previous slide)

Implementation EU Network Code

- General information on the EU Network Codes
- Status on the adoption and description of the content of each Network Code
- Information on the Task Force Implementation NC and on the stakeholder workshops

In addition, ENTSO-E launched a new Network Codes webpage with all information about codes, timelines, implementation projects, upcoming consultations, latest news, etc. → ENTSO-E link

AOB

- Questions related to Network Codes implementation

- Comments on the Elia Federal Grid Code proposals (preferably also in track change format)
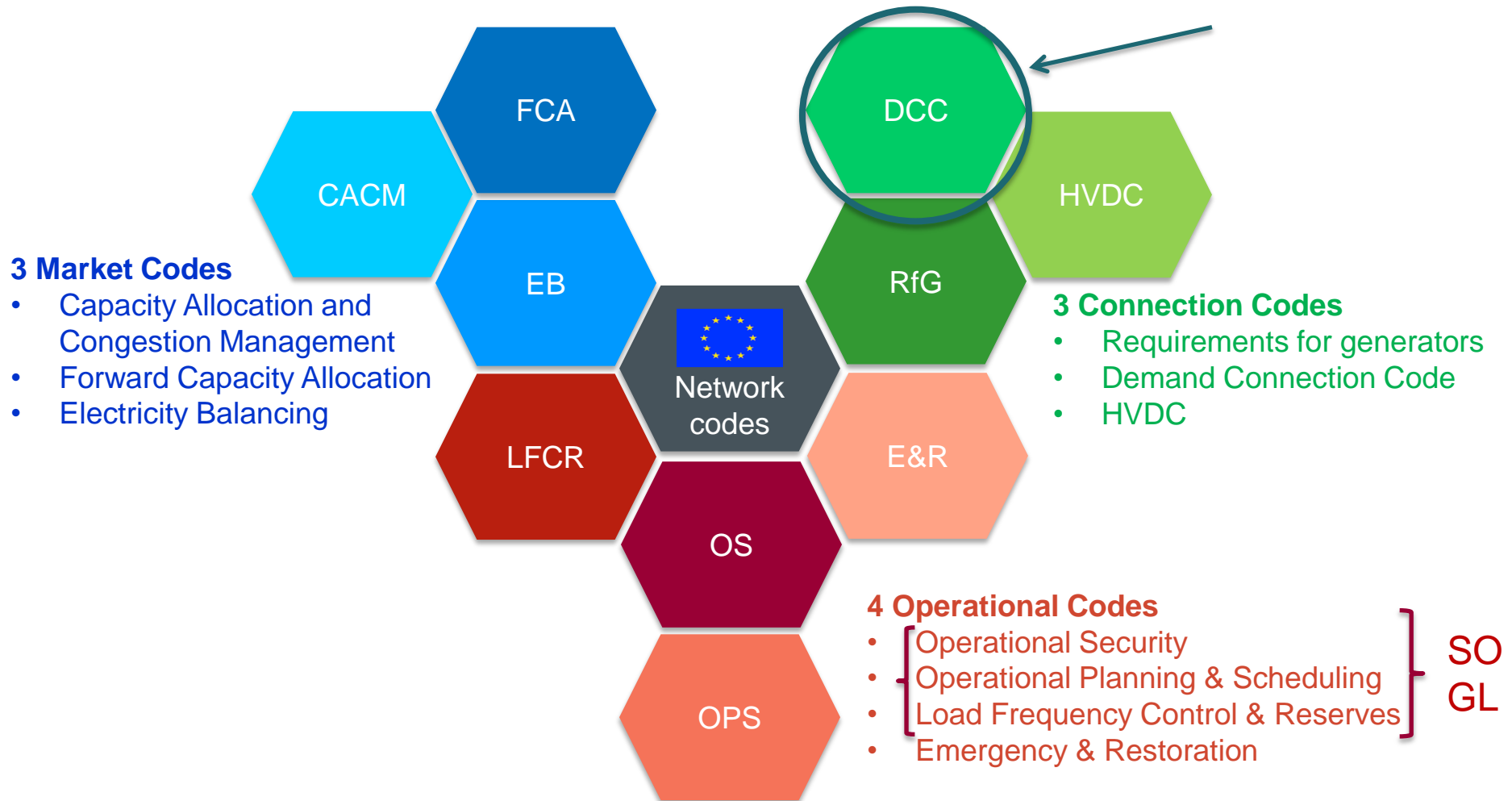
- Etc.

Can all be sent to:

networkcodes@elia.be

Connection Network Codes

Jessie Moelans & Marnix Wouters

A new set of EU regulation - the network codes

3 Market Codes
- Capacity Allocation and Congestion Management
- Forward Capacity Allocation
- Electricity Balancing

Hexagons: FCA, CACM, EB, DCC, HVDC, RfG, Network codes, LFCR, E&R, OS, OPS

3 Connection Codes
- Requirements for generators
- Demand Connection Code
- HVDC

4 Operational Codes
- Operational Security
- Operational Planning & Scheduling
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- Emergency & Restoration

SO GL

EU Network codes & guidelines cover a large scope to which all concerned parties (TSOs, market parties, …) have to comply.

Demand Connection Code – DCC
scope of application

The connection requirements set out in this Regulation shall apply to:

(a) <u>new</u> transmission-connected demand facilities;

(b) <u>new</u> transmission-connected distribution facilities;

(c) <u>new</u> distribution systems, including new closed distribution systems;

(d) <u>new</u> demand units used by a demand facility or a closed distribution system to provide demand response services to relevant system operators and relevant TSOs.

Existing vs new (transmission connected) facility
the principle of modernisation

Apply only for new 'systems'

**Not apply to existing 'systems'
Except in case of:**

**Retro-active effect
with CBA** (Cost-
Benefit Analysis)

**Or in case of substantial
modernisation or
replacement** of equipment
impacting the technical
capabilities of the systems

Existing vs new (transmission connected) facility
the principle of modernisation (2/2)

Principles:

In case of EXTENSION:

 * RSO needs to be informed prior to execution
 * The new unit in the facility has to be able to comply with the new regulations
 * The entire facility has to comply with the current regulation (unless otherwise agreed in the past)

  Check based on simulations and, if judged necessary, tests

 * Compliance at CP – based on a study

In case of REPLACEMENT

 * RSO needs to be informed prior to execution
 * The new elements in the facility has to be able to comply with the new regulations.
 * The entire facility has to comply with the current regulation (unless otherwise agreed in the past)

  Check based on simulations and, if judged necessary, tests

 * Compliance at CP –based on a study

Compliance verification and testing

Important:
- Tests and simulations are performed by the owner of the installation. This task may be outsourced to a third party
- In certain circumstances a certificate is allowed to prove conformity

When are tests and simulations necessary:
- In case of commissionning of a new installation/unit (operational notification procedure)
- In case of a new connection to the transmission system
- In case of doubt (for example after an incident)
- In case of extension/replacement/modernisation of an installation or unit
- Tests - on demand simulations - recurrent confirmation asked

Procedure:
- In case of new installation, new connection, extension/replacement/modernisation
  - Described in detailed study (chfr simulations voor generators currently already is)
- In case of doubt:
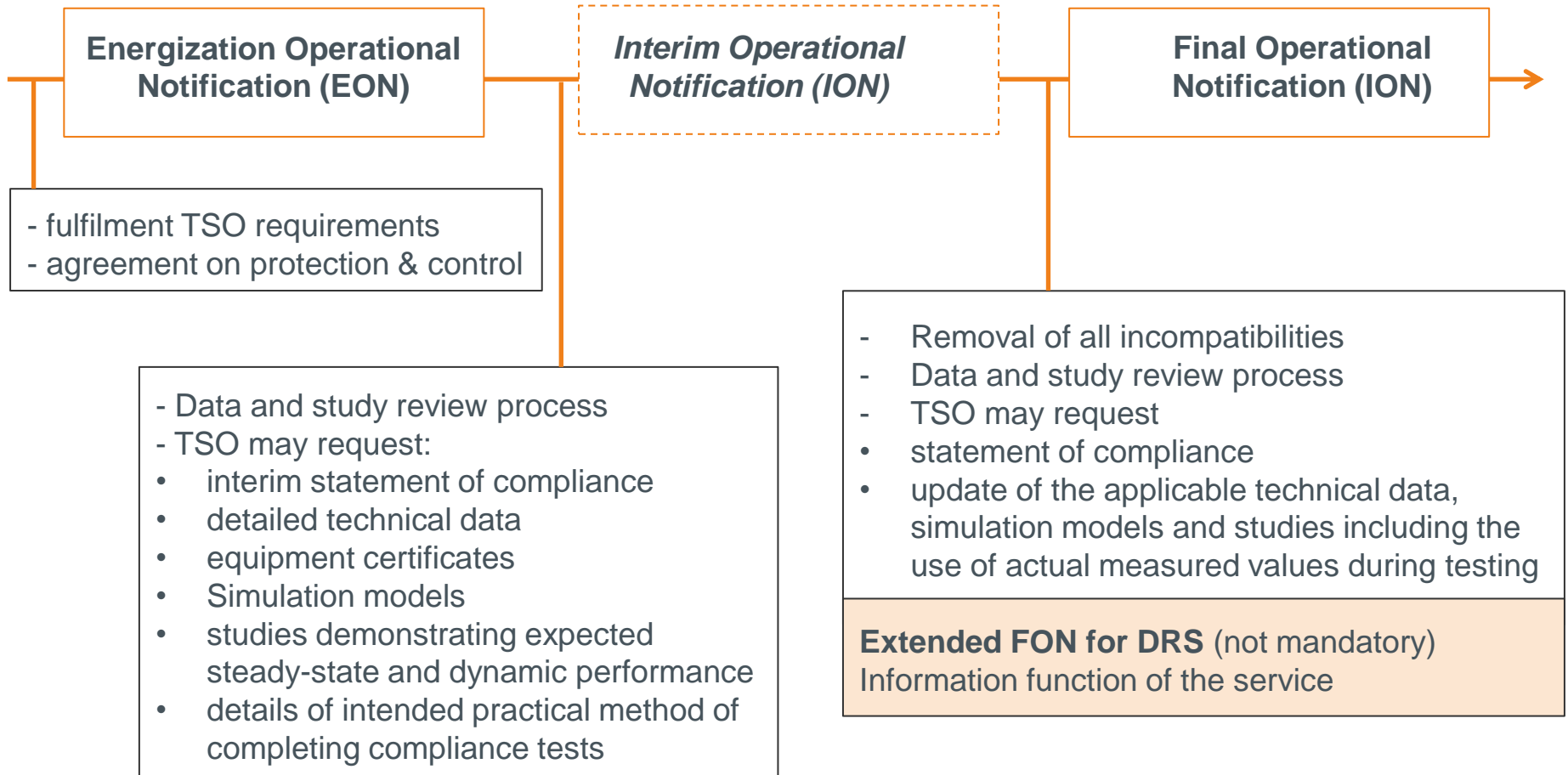 - Test and simulations can be demanded (a set or a full scope – case per case)

Follow up:
- Proposal – in the connection contract

Praktisch:
- Content/format simulation models: RfG: Art. 15, lid 6 c)
                                      DCC: Art. 21, lid 1 and2
- The codes describe what the tests need to prove, not how they need to be → the test proces = defined by the RSO, the execution by the owner of the installation
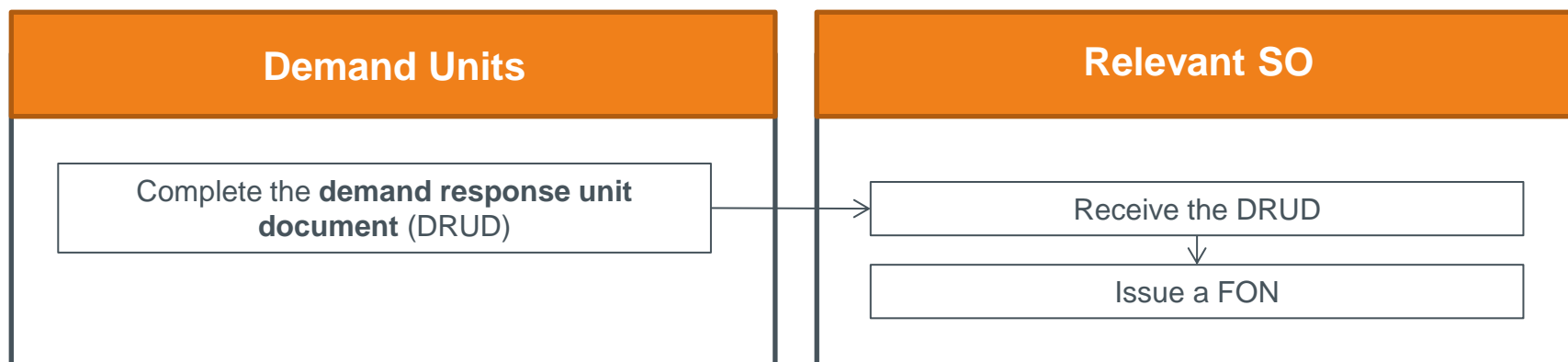
Full operational notification procedure

| Energization Operational Notification (EON) | *Interim Operational Notification (ION)* | Final Operational Notification (ION) |

- fulfilment TSO requirements
- agreement on protection & control

- Data and study review process
- TSO may request:
  - interim statement of compliance
  - detailed technical data
  - equipment certificates
  - Simulation models
  - studies demonstrating expected steady-state and dynamic performance
  - details of intended practical method of completing compliance tests

- Removal of all incompatibilities
- Data and study review process
- TSO may request
- statement of compliance
- update of the applicable technical data, simulation models and studies including the use of actual measured values during testing

Extended FON for DRS (not mandatory)
Information function of the service

The requested information will contain at least what is asked currently

Procedure for demand units offering DR
within a demand facility or a CDS connected at a voltage level above 1000V

Demand Units	Relevant SO
Complete the **demand response unit document** (DRUD)	Receive the DRUD → Issue a FON

DRUD : document, issued either by the demand facility owner or the CDSO to the relevant system operator for demand units with demand response and connected at a voltage level above 1000V, which **confirms the compliance of the demand unit with the technical requirements** *set out in this Regulation and* **provides the necessary data and statements***, including a statement of compliance*

The relevant system operator, in coordination with the relevant TSO, shall specify the content required for the DRUD. The content of the DRUD shall require a statement of compliance which contains the information in Articles 36 to 47 for demand facilities and closed distribution systems.

General Requirements - overview

Scope of application	Requirements
Transmission-Connected Demand Facilities (DF)	Remain connected for Frequency Ranges
	Remain connected for Voltage Ranges
	Short-circuit requirements
	Reactive power requirements
	Protection requirements to protect TS
	Control requirements
	Information exchange
	(Demand disconnection and demand reconnection)
	Power Quality
	(Simulation models)
Demand Units providing DR active & reactive power control and transmission constraint management	Remain connected for Frequency & Voltage Ranges, Information exchange, time to respond, …
Demand Units providing DR system frequency control	Remain connected for Frequency & Voltage Ranges, …
Demand Units providing DR very fast active power control	

General Requirements – Frequency and voltage requirements [Art. 12 & 13]

- Capability of remaining connected to the network and operating…

  - at general <u>frequency</u> ranges

Frequency Range	Duration
47,5 Hz – 48,5 Hz	30 minutes
48,5 Hz – 49,0 Hz	30 minutes
49,0 Hz – 51,0 Hz	Unlimited
51,0 Hz – 51,5 Hz	30 minutes

  - at general <u>voltage</u> ranges at the connection point

Voltage base is from 300 kV to 400 kV (including)

Voltage range	Duration
0,90 pu – 1,05 pu	Unlimited
1,05 pu – 1,10 pu	20 minutes

Voltage base is at or above 110 kV and up to (not including) 300 kV

Voltage range	Duration
0,90 pu – 1,118 pu	Unlimited
1,118 pu – 1,15 pu	20 minutes

General Requirements – Reactive power exchange [Art. 15]

- Capability of maintaining stationary operation at the connection point within reactive power range:
  - Limit for the import of reactive power towards TC DF @ 33% of P_{PAD}
  - Limit for the export of reactive power from TC DF @ 15% of P_{PAD}
  - Exceptions can be allowed in specific cases, but technical or financial benefits should be demonstrated
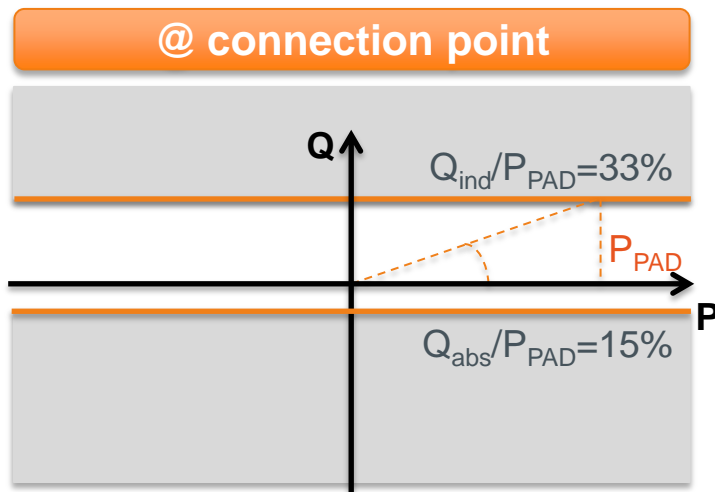
@ connection point

Transformer Q losses included in load @ connection point

→ Generally, reactive power consumption (inductive behavior)

→ Compensation for long connection cables is requested

Q_{ind}/P_{PAD}=33% → cos φ = 0.95

PAD = Power Put at Disposal

General Requirements – Demand Response Active & Reactive power control [Art. 28]

- Demand Units with Demand Response shall comply with following requirements:

  - be capable of operating across the specified frequency ranges

  - be capable of operating across the specified voltage ranges at the connection point

  - have the withstand capability to not disconnect from the system due to the rate-of-change-of-frequency up to a value specified by the relevant TSO

  - be capable of controlling power consumption from the network in a range equal to the range contracted, directly or indirectly through a third party, by the relevant TSO

  - be equipped to receive instructions, directly or indirectly through a third party, from the relevant system operator or the relevant TSO to modify their demand

  - be capable of adjusting its power consumption within a time period specified by the relevant system operator or the relevant TSO

  - once a modification to power consumption has taken place and for the duration of the requested modification, only modify the demand used to provide the service if required by the relevant system operator or relevant TSO to the limits of the electrical protection safeguards […]

  - notify the relevant system operator or relevant TSO of the modification of demand response capacity

  - …

Febeliec Workshop:

Balancing & access aspects

Implementation EU Network Codes and adaptation Federal Grid Code

BluePoint Brussels

13th December 2017

Anna Tsiokanos

As is : observations on title IV

Title 4 Access		
CH.	article	content
1	142-155	How to become BRP/ACH
2	156-160	Balancing responsibilities (BRP/TSO)
2	161-162	Grid Losses
3; 4	163-175	Access to the Grid +subscription
5	176-184	Interconnections
6; 7; 8	185-204	BFU (+ signes CIPU)
9; 10	204-209	Reactif & secours
11; 12	210-230	Nominations(+CIPU)
13	231-266	A.S. (Rx,Mvar,BS,conj)
14	267-297	CIPU
15	297-311	Conduite du réseau
16	312-315	Emergency + Restoration
17	317-319	renewable

- Currently the title IV covers 3 topics:
  1. Balancing
  2. Access to the grid
  3. Grid operations

- All articles are closely linked to the BRP

  - BRP = ACH called ARP
  - BRP of units is implicitly the producer
  - A.S. are provided by the BRP-producer
  - BRP is counterparty for operational planning and congestion management by signing the CIPU contract
  - …

- Clarify by separating topics
  1. Balancing
  2. Access to the grid
  3. Grid operations

- Create new & clarify existing roles in order to be conform to EBGL and SOGL
  - Separate BRP and ACH and BRP and producer
  - Create role of BSP
  - Open ancillary services to all technologies
  - Separate BRP from other new roles which are introducesd by Icaros project
  - …

New Structure

Title 4 Access

CH.	article	content
1	142-155	How to become BRP/ACH
2	156-160	Balancing responsibilities (BRP/TSO)
2	161-162	Grid Losses
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17	317-319	renewable

Title 4.1 Balancing ~55%

Ch.	article	content
2	157-160	• Impacted mainly by EBGL and CACM/FCA ⇨ Avoid redundancies with those EU NCs ⇨ Maintain Belgian specificities (ex: 2 BRPs per access point…) ⇨ Make access to balancing technology neutral
2	156	
2	161-162	
6; 7; 8	185-204	
11; 12	210-230	
1	142-155	
5	176-184	
13	231-266	

Title 4.3 Grid operation ~35%

Ch.	article	content
13	231-266	• Impacted by SOGL & E&R ⇨ Take into account evolutions of Icaros project ⇨ Take into account potential evolutions on AS
14	267-297	
15	297-311	
17	317-319	
16	312-315	

Title 4.2 Access ~10%

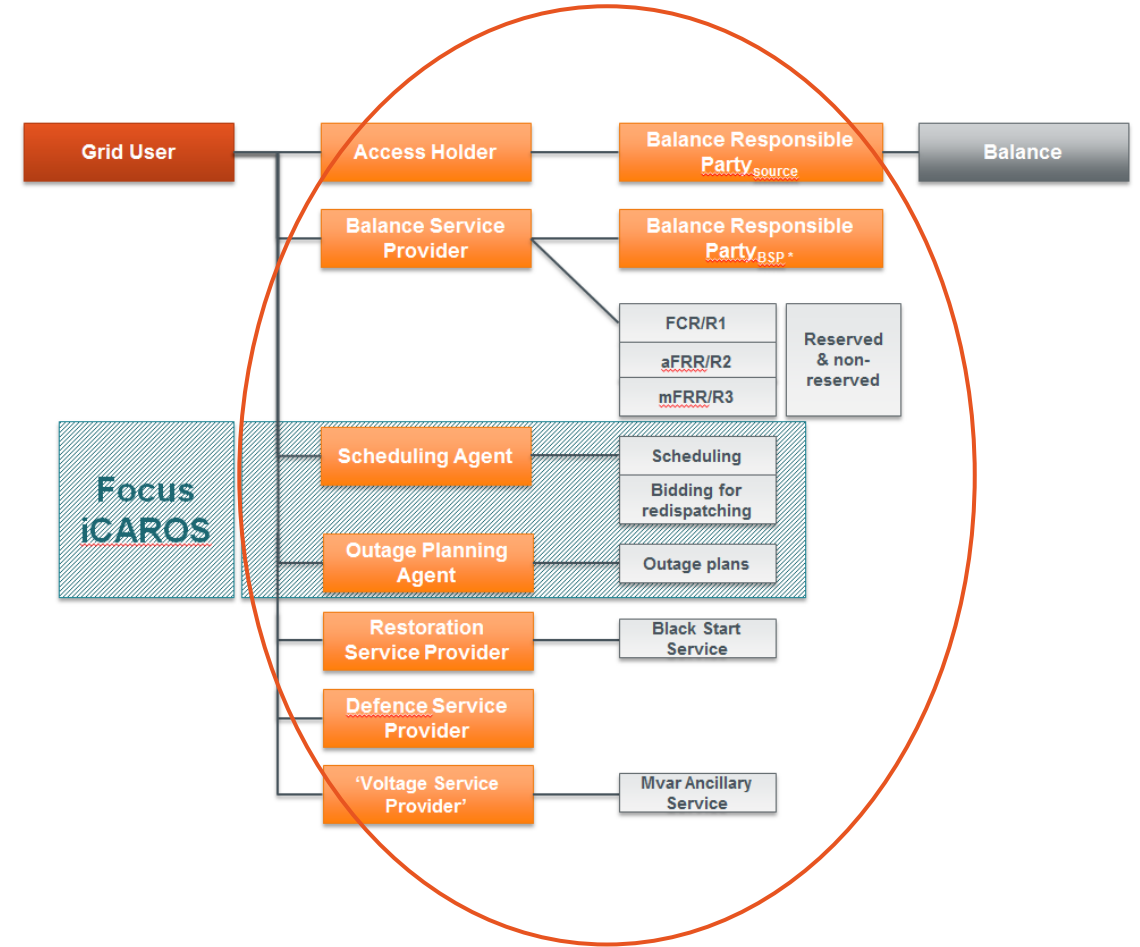| Ch.	article	content
New 1		• Not impacted by EU NC ⇨ Align FGC to reality and to potential future evolutions
3	163-173	
4	174-175	
9; 10	204-209	

Future roles and responsibilities for the delivery of ancillary services

AS IS → **TO BE**
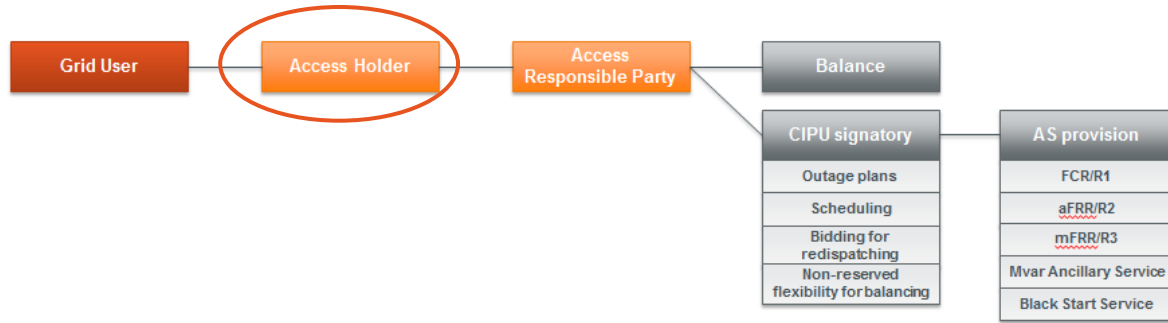
CIPU = Coordination of the Injection of Production Units / AS = Ancillary Services

Identified interdependencies

Impact on →	Outage Planning Agent	Scheduling Agent	BRPsource	BSP
Outage Planning Agent		Availability	Availability	Availability
Scheduling Agent			BRP perimeter correction / schedules vs nominations	Availability of free balancing bids & baselining
BRPsource				
BSP			BRP perimeter correction	

BRP role - adaptations

Title 4.1 Balancing		
Ch.	**article**	**content**
2	157-160	Balancing (BRP/TSO + BSP)
2	156	**BRP responsibilities**
2	161-162	**Grid Losses**
6; 7; 8	185-204	**BFU (** +temp signes CIPU)
11; 12	210-230	**Nominations**(+BFU+ CIPU)
1	142-155	**How to become BRP/ACH**
5	176-184	Interconnections
13	231-266	balancing A.S.

- The main modifications brought are :

  - **Balancing**: BRP has to be balanced but may help the zone

  - **BFU**: simplification to avoid repetitions and confusions

  - **BRP designation**:
    - harmonisation of rules for offtake and or injection points
    - clarification of procedure when BRP designation ends (cf recent consultation on ACH contract changes)

  - **Nominations**: wording is being adapted to fit to EBGL :
    - *daily balancing program = sum of nominations* (net inj/offtake@ access point) + *internal/external commercial trade schedules*
    - Reminder: (already in current FGC under art 14) : Daily balancing program has to be balanced

  - **CIPU**:
    - obligation to sign a CIPU becomes temporary (still obligation to sign a CIPU till this is taken over by other agents /contracts)
    - BRP nominated @ acces points ➔ articles 222 and 223 (asset related) are deleted

  - **Ancillary services:**
    - Distinguish balancing AS from others
    - Clean up overlaps with SOGL/EBGL (description of product specs, tender) and align with reality (volume R1)
    - Avoid to block future EU harmonisations
    - Content of LFCBA has been completed

Access

Title 4.2 Access		
Ch.	**article**	**content**
New 1		**ACH responsibilities & How to become ACH**
3	163-173	**New AP to a ACH contract**
4	174-175	~~**Subscription**~~ "Puissance mise à disposition"
~~9; 10~~	~~204-209~~	~~**Reactif & secours**~~

- The modifications brought are mainly :

  - New chapter explaining who can become ACH and how

  - Process describing how an access to the grid is created for a grid user, and how this access point is added on the ACH contract of the designated ACH BRP designation:

  - The word subscription is replaces by "*Puissance mise à disposition*" to be aligned with the new tariff structure

  - Some articles are deleted because they are obsolete and don't need a framework in the Federal grid code

Proposal is aligned with ACH contract changes proposed to consultation in S1 2017

Gris Operations

Title 4.3 Grid operation		
Ch.	**article**	**content**
13	231-266	**Non balancing A.S. (Mvar,BS,conj)**
14	267-297	**CIPU operational procedures**
15	297-311	**Conduite du réseau**
17	~~317~~-319	**Renewable**
16	312-315	**Emergency + Restoration**

- The modifications brought are mainly :

  - Make those § more future proof (ex: for evolutions in Mvar/BS design)

  - Introduce Gflex concept

  - **CIPU replaced by several T&C**

    - Most Important evolution of this title!

    - linked to design of Icaros project (under public consultation since yesterday)

  - Adapt contradictions and complete NC E&R

Planning

Regulated
- T&C Outage Planning Agent
- T&C Scheduling Agent
- Coordination rules

Non-Regulated?
- Outage Planning Procedures
- Scheduling & Redispatching Procedures

European Regulation — Federal Grid Code*

2017 | **2018**

| Dec | Jan | Feb | Mar | Apr | May |

- 11/12 — Public consultation of market design note — Overview of **principles** to include in the Federal Grid Code
- 15/01
- 7/2 — Workshop Federal Grid Code — New **text proposals** for the Federal Grid Code
- 17/5 — Submission Proposal for New Federal Grid Code by May 2018 preceded by a public consultation

* Impact on Regional Grid Codes to be assessed and discussed with regulators and DSO

Regulatory approach

Current FGC
- content of the CIPU contract in an elaborated way: list of procedures and modalities

EU GL (SO GL & KORRR, EB GL)
- Introduction of Outage Planning Agent and Scheduling Agent
- Responsibilities
- Scope of data exchange:
  - Imposed requirements without exemptions
  - Imposed requirements with exemption possibility
  - Proposed requirements & processes

New FGC
- **Focus on fundamental principles**
- Formalize exemptions
- Confirm use

Terms & Conditions
- Elaboration of design principles

i. TSO-connected PGM type B/C/D: outage planning & scheduling obligation

a. Demand facilities are exempted from scheduling obligations in DA and ID

a. TSO-connected demand facilities; TSO-connected CDS and B/C/D storage devices are subject to the requirements for outage planning

iCAROS project

Integrated Coordination of Assets for Redispatching and Operational Security

Febeliec Workshop Dec 13th, 2017

Elia

Web page: http://www.elia.be/en/users-group/Working-Group_Balancing/Task-Force-CIPU-Redesign

Public consultation: new EU Guideline compliant approach for the coordination of assets for system operations and market procedures
from **11 December 2017 until 15 January 2018**

http://www.elia.be/en/about-elia/publications/Public-Consultation/New-eu-guideline-compliant-approach-for-the-coordination

"Future roles and responsibilities for the delivery of ancillary service"
1. **Historical roles & responsibilities**
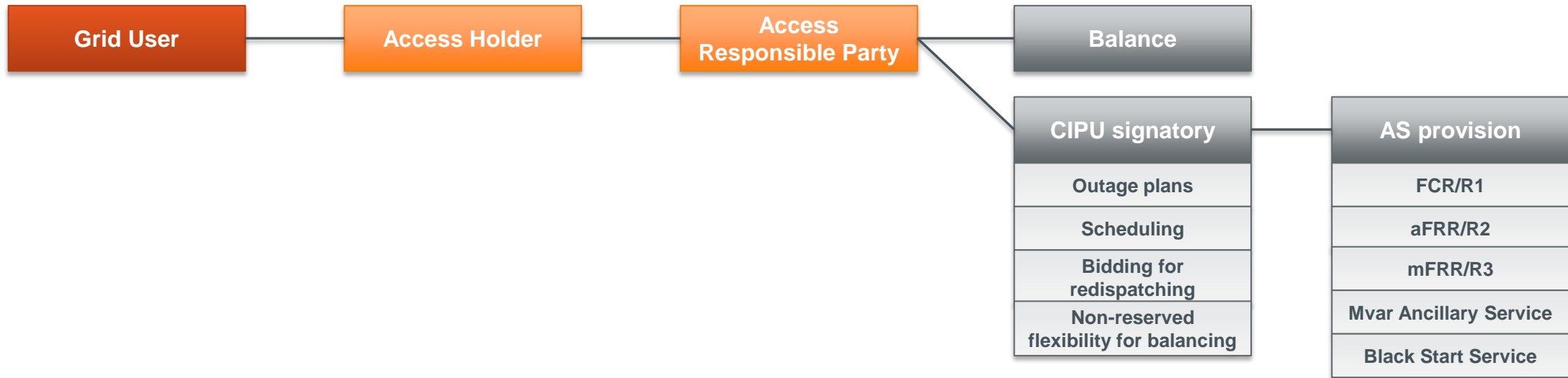
CIPU = Coordination of the Injection of Production Units   /   AS = Ancillary Services

"Future roles and responsibilities for the delivery of ancillary service"
2. **Current roles & responsibilities**
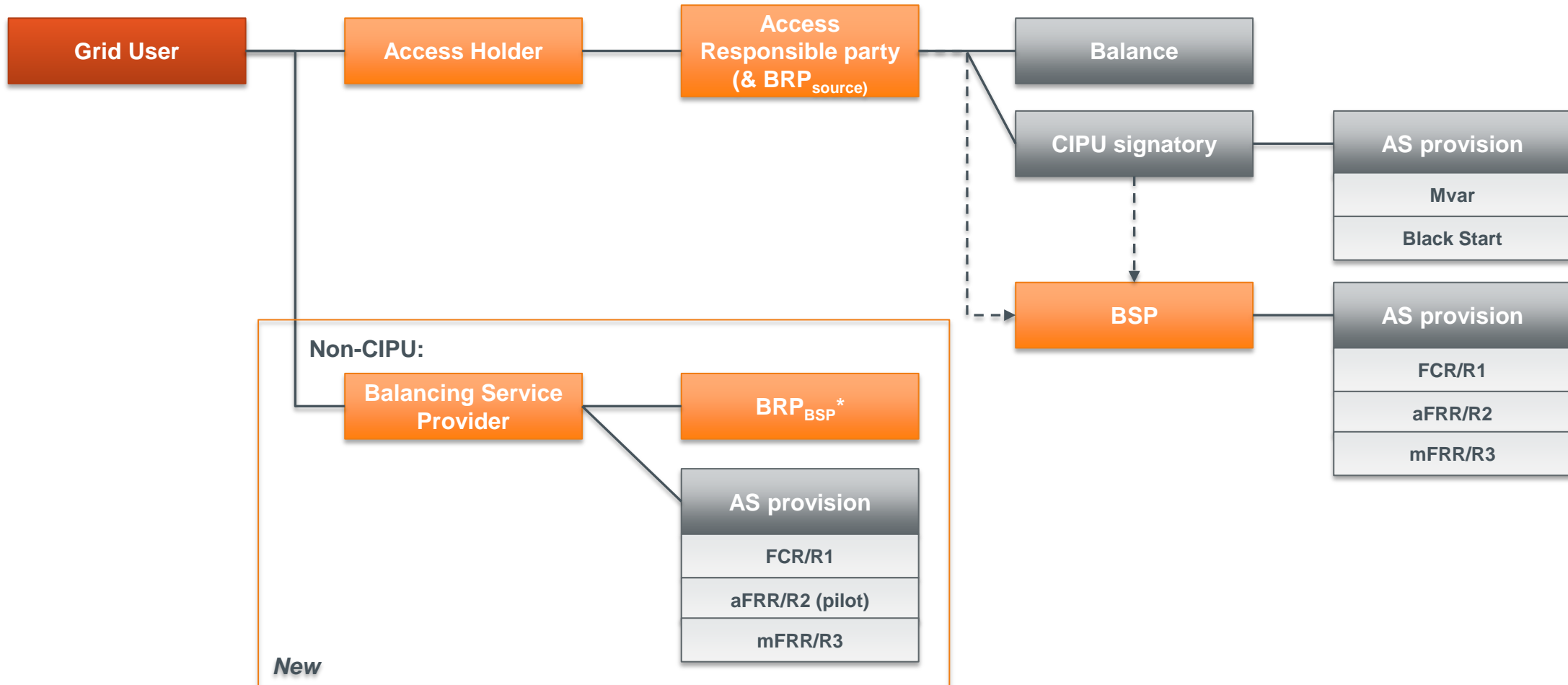
ARP = Access Responsible Party / BRP = Balance Responsible Party / CIPU = Coordination of the Injection of Production Units / AS = Ancillary Services
BSP = Balancing Service Provider / Rx = reserved balancing capacity

* Only as soon as there is ToE applied

"Future roles and responsibilities for the delivery of ancillary service"
3. Future roles & responsibilities
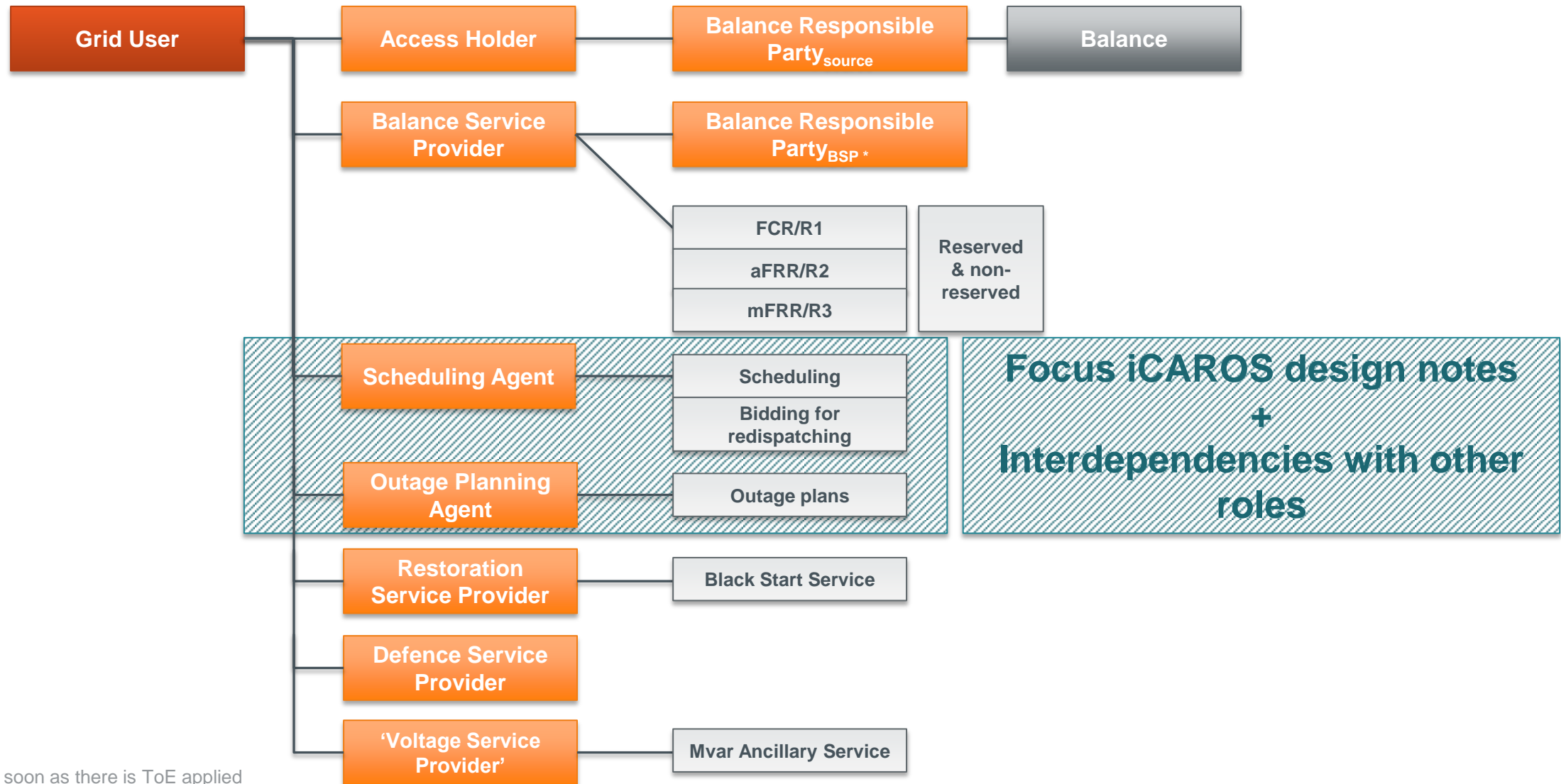
* Only as soon as there is ToE applied

14

4. Interdependencies

Impact on →	Outage Planning Agent	Scheduling Agent	BSP	BRP$_{source}$
Outage Planning Agent		Availability	Availability	Availability
Scheduling Agent			Availability of free balancing bids & baselining	BRP perimeter correction / schedules vs nominations
BSP		Schedule modification		BRP perimeter correction
BRP$_{source}$				
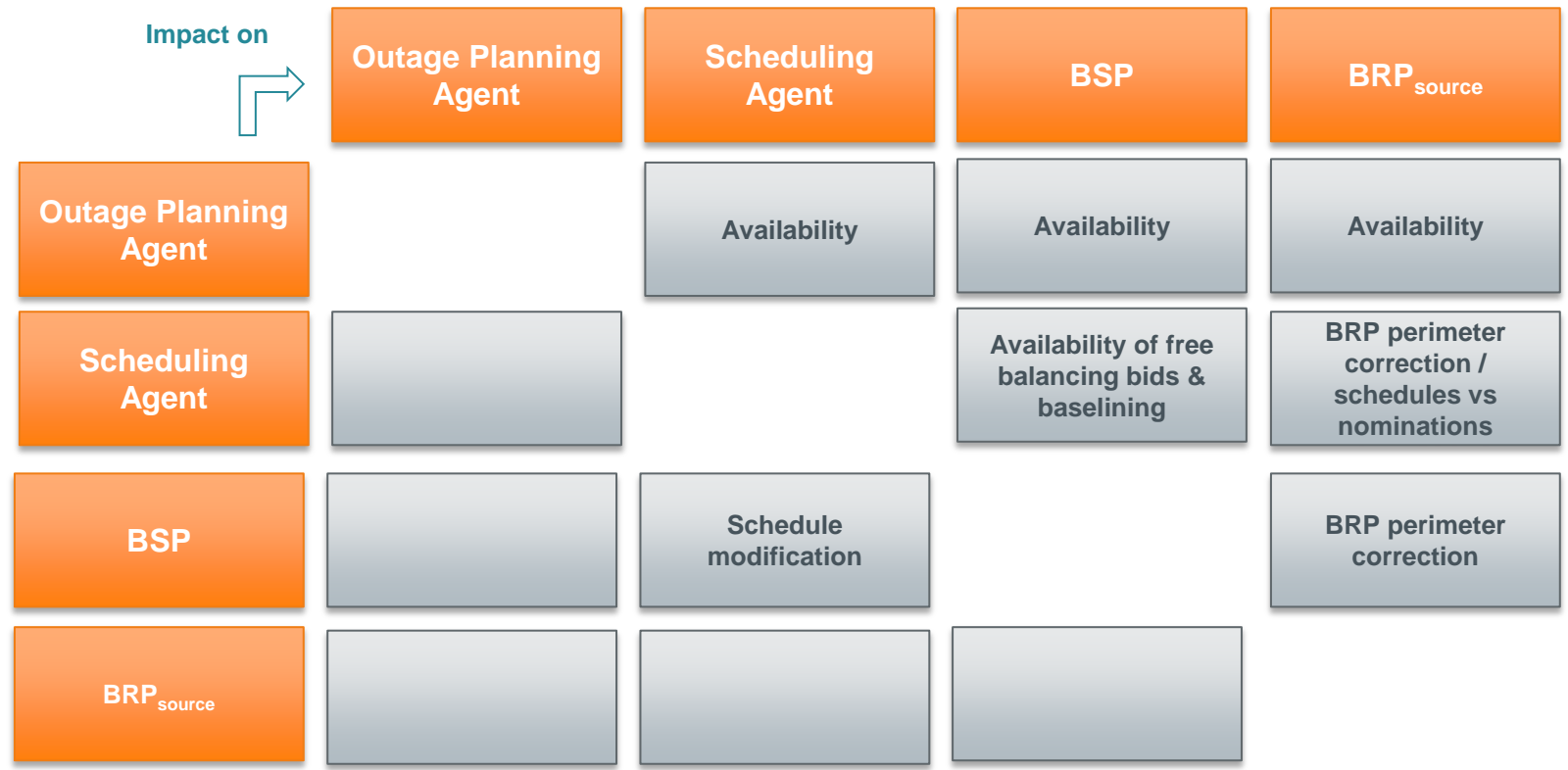
Principle:
- Elia may signal that submitted data is not consistent with previous received/agreed data.
- If so, the concerned market role needs to contact the Grid User for more information in order submit new correct data

Roles & Responsibilities

Outage Planning Agent

Who and What?

- the **owner or a third party** appointed by the owner
- the **task of planning the availability status** of a relevant power generating module, a relevant demand facility or a relevant grid element
- The **task of delivery active power capacity restrictions,** i.e., temporary deviations from the structural Pmax & Pmin
- The statuses and active power capabilities are given **per day before Week-ahead,** and afterwards **per quarter-hour**.

Interdependencies: Impact on other roles

Outage Planning determines **availability of an asset/flexibility for delivering electricity or ancillary services.** The 'availability status' (available / unavailable / testing) determines

- the schedules (**Scheduling Agent**) and nominations (**BRP**) resulting from DA/ID markets
- the flexibility bid for congestion (**Scheduling Agent**)
- the flexibility bid for balancing (**BSP**)
- the flexibility available for the portfolio management of the **BRP**
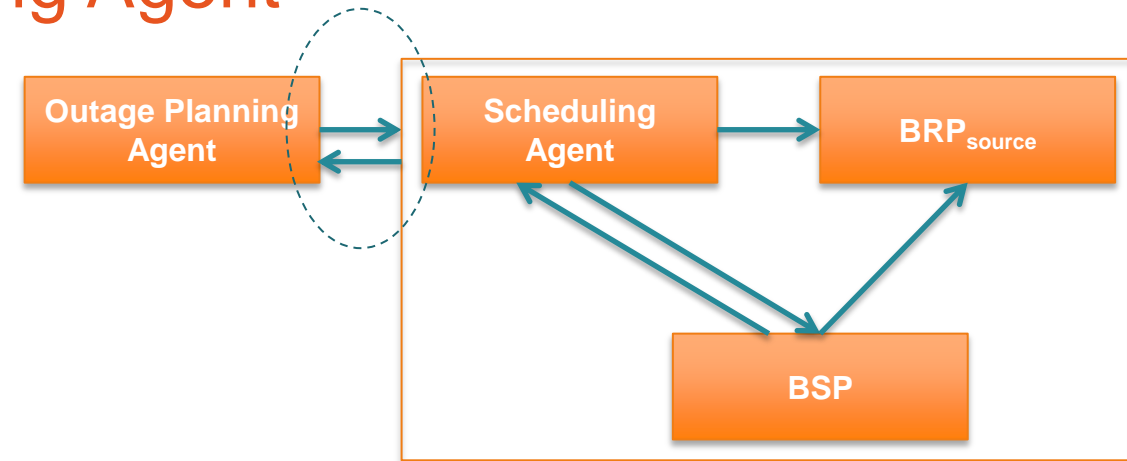
Interdependencies: Impact by other roles

- Coherent level for data exchange needed across outage plans, schedules (**Scheduling Agent**), bid for congestion (**Scheduling Agent**) or for balancing (**BSP**)
- In case of Intraday scheduling obligation (applicable on Power-Generating Modules and Energy Storage) the outage planning and schedules must also be coherent with the level at which flexibility is bid for redispatching or balancing purposes.

> The procedure is mandatory for **Power-Generating Modules and Energy Storage Devices type B/C/D** and for **Demand Facilities**.

Scheduling Agent

Who and What?

- *the **owner or a third party BSP/FSP** appointed by the owner*

- *the **task of providing schedules** in Day-ahead and intraday from market participants to ELIA*

- *The **task of bidding flexibility for congestion management** in Day-ahead and Intraday to the ELIA*

- *schedules equally **determine the operational margins** of the other roles to deliver ancillary services on the concerned asset*
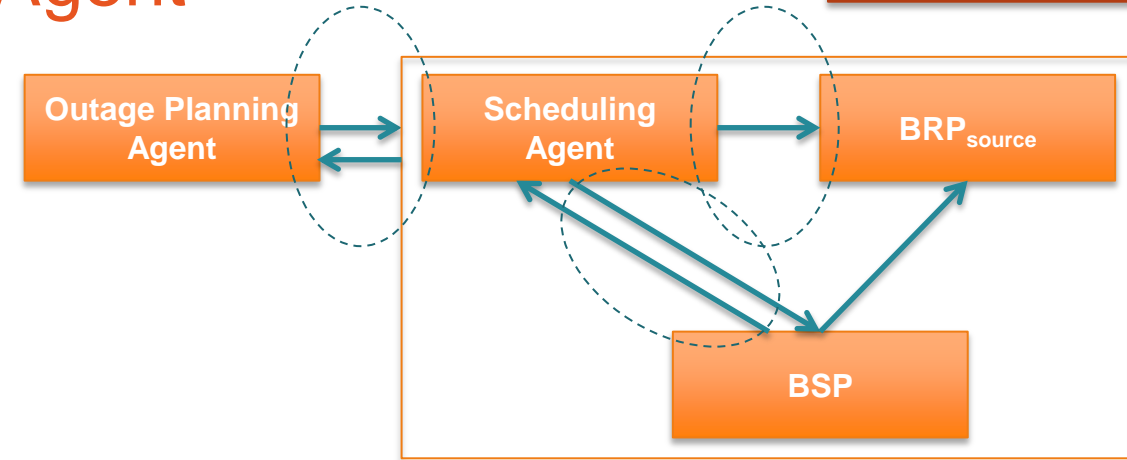
Interdependencies: Impact on other roles

- **BSP:** MW schedules as baselines for congestion and balancing activations

- **BSP/BRP:** May-Not-Run schedules reduce the marketability of flexibility on an asset on day D

- **BSP:** Activation of redispatching bids affects availability for balancing bids

- **BRP** perimeter correction when activating flexibility for redispatching *(no Transfer of Energy applicable) – correction with delivered energy*

- Firmness of schedules enforced by ELIA in case of congestion: limitation on use of flexibility by **BRP**

Interdependencies: Impact by other roles

- Availability of assets for electricity markets and ancillary services determined in outage planning **(Outage Planning Agent)**

- Coherent level for data exchange needed across outage plans, schedules (**Scheduling Agent**), bid for congestion (**Scheduling Agent**) or for balancing (**BSP**)
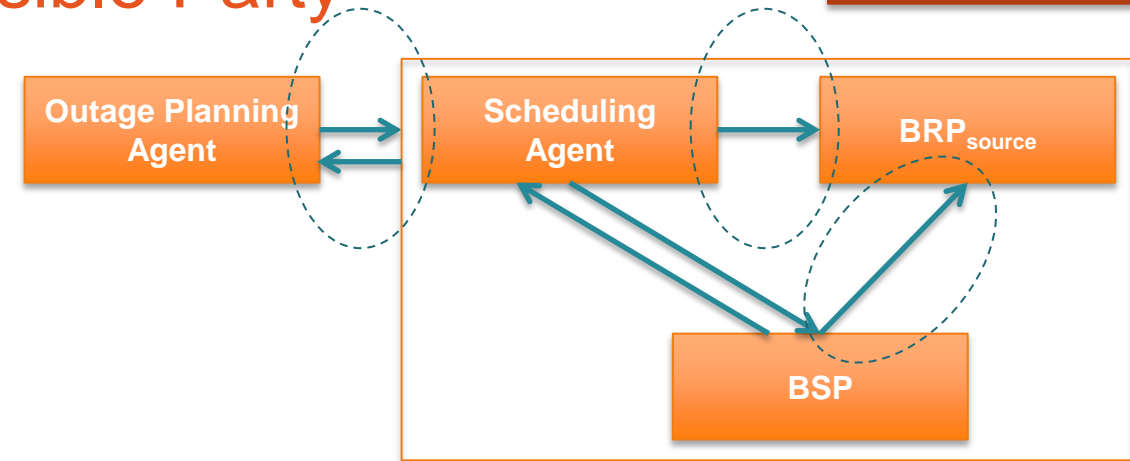
Power-Generating Modules and Energy Storage Devices types B/C/D must also **bid the available flexibility on the asset.**

Balance Responsible Party

Who and What?

- *Responsible for **imbalances***

Interdependencies: Impact on other roles
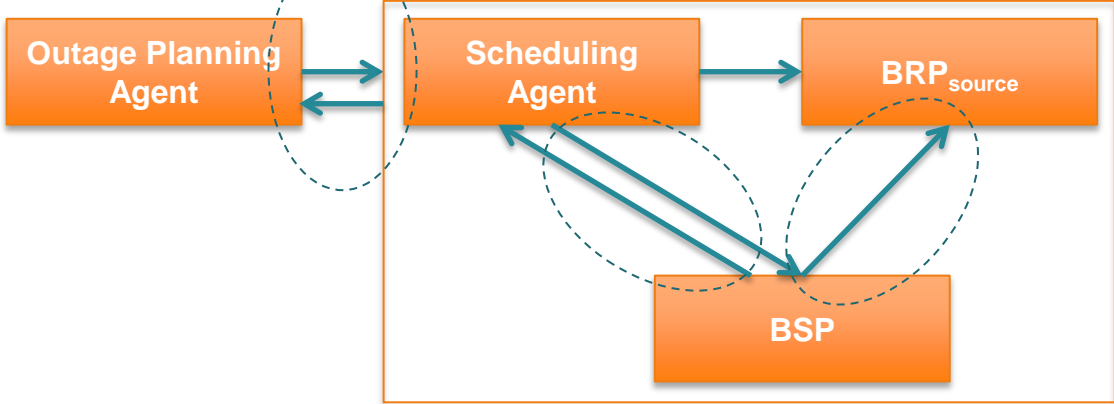
/

Interdependencies: Impact by other roles

- Availability of assets for electricity markets and balancing management determined in scheduling & outage planning **(Outage Planning Agent & scheduling agent)**

- Nominations on Day ahead basis: availability of assets **(Outage planning agent)**

- **BRP** perimeter correction when activating flexibility for redispatching (**Scheduling Agent**) or for balancing (**BSP**)

Balancing Service Provider

Who and What?

- *a market participant with reserve-providing units or reserve-providing groups able to **provide balancing services to TSOs**;*

- *Balancing services refer to 'balancing energy' ('free bids') or 'balancing capacity' ('reserves')*

Interdependencies: Impact on other roles

- **BRP** perimeter correction when activating flexibility for balancing
  (Transfer of Energy applicable)

- Modification of MW schedules applicable for **Scheduling Agent** in case of Bid activation

ELIA has proposed that Scheduling agent role is performed by Grid user or BSP

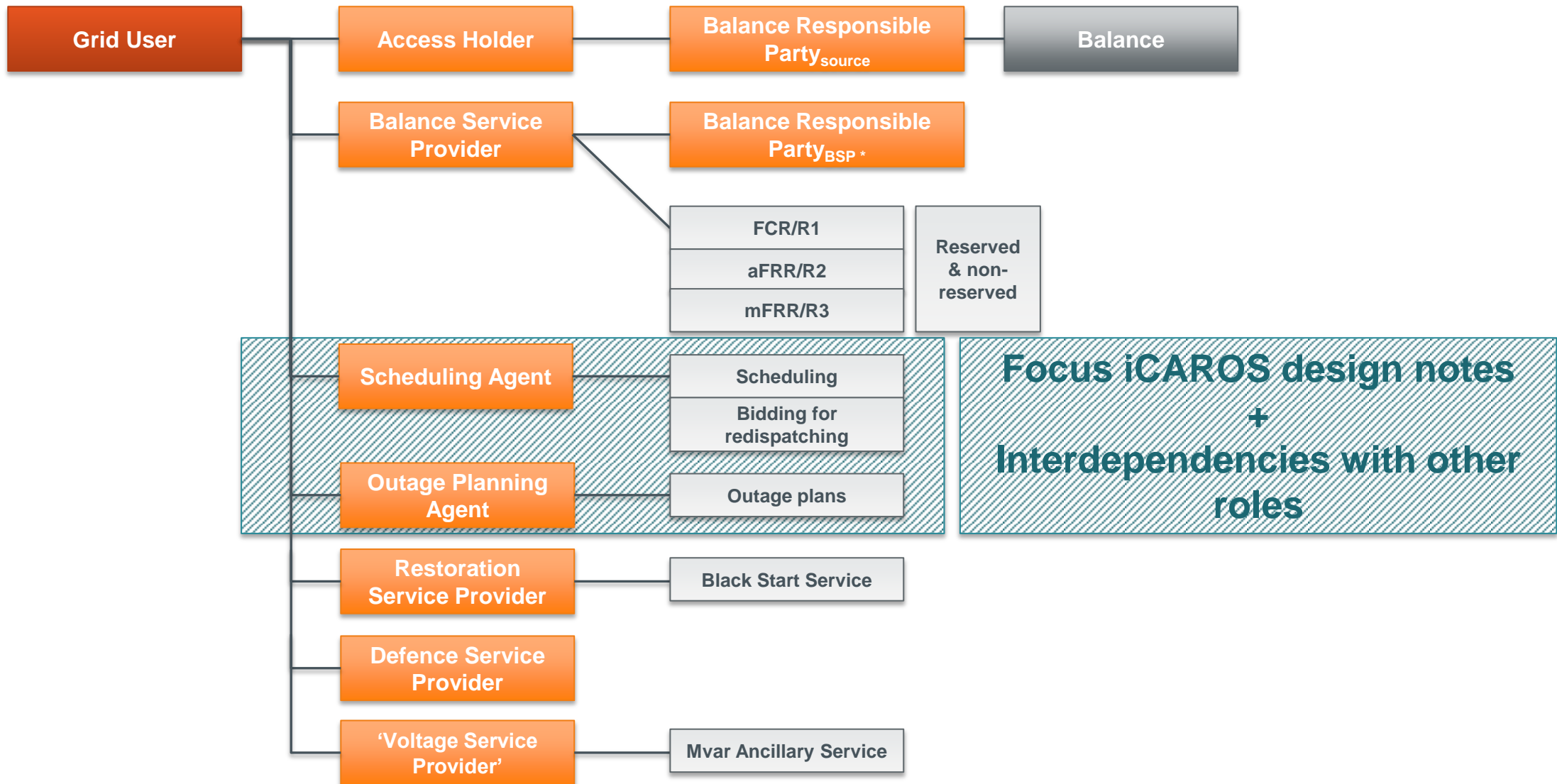## Interdependencies: Impact by other roles

- Availability of assets for delivery of contracted reserves and ancillary services determined in outage planning **(Outage Planning Agent)**

- Coherent level for data exchange needed across outage plans, schedules (**Scheduling Agent**), bid for congestion (**Scheduling Agent**) or for balancing (**BSP**)

- MW schedules from the **Scheduling Agent** as baselines for balancing activations

- May-Not-Run schedules (**Scheduling Agent**) reduce the marketability of flexibility on an asset on day D

- Non-reserved flexibility can be used by ELIA for redispatching **(Scheduling Agent)**

Transfer of CIPU content to new framework – Proposed design

= **Package proposal**, i.e., discussions on one topic may influence the proposal of another topic

In scope of the proposed design	Not yet in scope of proposed design but to be discussed in ICAROS project	Out of ICAROS scope
Coordination of assets and congestion management		Review of the balancing part of the CIPU contract (cfr. BidLadder & R3 roadmap)
Design for: - TSO-connected assets - Assets in TSO-connected CDS Assumption to apply the <u>same design for storage as for PGM</u> ~~to verify after finalization of design proposal for PGM~~	Design for: - DSO-connected assets - Assets in DSO-connected CDS	
	BRP perimeter correction	
	Activation controls	

. Future roles & responsibilities

Grid User			

- **Access Holder** — **Balance Responsible Party**$_{source}$ — **Balance**

- **Balance Service Provider** — **Balance Responsible Party**$_{BSP\ *}$
  - FCR/R1
  - aFRR/R2
  - mFRR/R3
  - Reserved & non-reserved

- **Scheduling Agent**
  - Scheduling
  - Bidding for redispatching

- **Outage Planning Agent**
  - Outage plans

Focus iCAROS design notes
+
Interdependencies with other roles

- **Restoration Service Provider** — Black Start Service

- **Defence Service Provider**

- **'Voltage Service Provider'** — Mvar Ancillary Service

Disclaimer: The slides are informative. The new market design is under development and still under discussion.

Insert slide op PGM ABCD

The Power-Generating Modules are classified in four types: PGM type A/B/C/D.

- PGM type D:

- All PGM connected to 110kV or higher

- All PGM ≥ 75MW

- PGM type C:

- PGM between 25 – 75 MW and connected below 110kV

- PGM type B:

- PGM between minimum threshold – 25 MW and connected below 110kV

- The minimum threshold is between 0.25 – 1 MW (to be confirmed)

- PGM type A:

- PGM smaller than PGM type B minimum threshold and connected below 110kV

PGM type B/C/D are defined as **Significant Grid Users (SGU)** in the European Guideline for Transmission System Operations, therefore the **requirements for operational data exchange in the framework of the coordination of assets are applicable.**

Procedures for PGM & Storage

PGM & Pumped storage type C & D	PGM & Pumped storage type B
Outage Planning – Mandatory – PU level	**Outage Planning – Mandatory – PU level**
• Outage planning procedure starting in summer of Y-1 (process described in GL SO)	• Outage planning procedure (process described in GL SO; different deadlines possible for non-cross border relevant assets)
- Delivery of **availability status**	- Delivery of **availability status**
- Delivery of active power capability restrictions	- Delivery of active power capability restrictions
Scheduling – Mandatory – PU level	**Scheduling – Mandatory – PU level**
• Possibility for Elia to request **Must-Run / May-Not-Run**	• Possibility for Elia to request **Must-Run / May-Not-Run**
• Delivery of **MW schedules per quarter-hour in Day-Ahead**	• Delivery of **schedules per quarter-hour in Day-Ahead: either MW or ON/OFF** (choice of Scheduling Agent)
• Updates of **MW schedules per quarter-hour in Intraday** (to be validated by Elia in certain cases)	• Updates of **schedules per quarter-hour in Intraday** (to be validated by Elia in certain cases)
• Follow-up via real-time metering - **Subject to Return-to-Schedule Requests**	• Follow-up via real-time metering - **Subject to Return-to-Schedule Requests**
Bidding for Redispatching – Mandatory – PU level	**Bidding for Redispatching – Mandatory – PU level**
Bidding of full available flexibility in Day-Ahead & update in Intraday	Bidding of full available flexibility in Day-Ahead & update in Intraday
• **Unit-based bidding**	**Unit-based bidding**
⇒ Coordinable & Limited Coordinable units	⇒ Coordinable & Limited Coordinable units
⇒ Energy block bids	⇒ Choice block bids or scheduling limits (choice of Scheduling Agent)
⇒ MW schedule used as baseline	⇒ MW schedule used as baseline; other baseline needed for ON/OFF schedules

Procedures for Demand facilities (direct or via CDS connected to the TSO)

Outage Planning – Mandatory
process described in GL SO (ENTSO-e methodology for definition on "cross-border relevance" needed within 12 months after entry into force of the Guideline System Operations.)

Scheduling – Exempted
→ **Demand Facilities and CDS connected to the ELIA grid** are exempted from delivering schedules in Day-ahead and in Intraday (According to article 52 of the European Guideline on Electricity Transmission System Operation ELIA-connected demand facilities are by default obliged to deliver active power schedules to ELIA in Day-ahead and Intraday, unless ELIA is providing exemptions)

Bidding for Redispatching – Voluntary
• Delivery point • Location-bound bids

Summary – Bidding for redispatching

Scheduling Agent

Grasping ID market opportunities + Cost-based redispatching

- **Remuneration: cost+ philosophy***

  Paid-as-bid:
  $$Remuneration = Erequested \times bid\ price$$

- **Same level as schedule (unit-based/facility-based)**

  PGM/storage B and demand can be part of portfolio for balancing.

- **PGM/storage C&D: block bids**

  Other: block bids or schedule limits

- MW schedules on assets with ID scheduling obligation used as **baseline**

- Redispatching activation = adaptation of the schedule by Elia

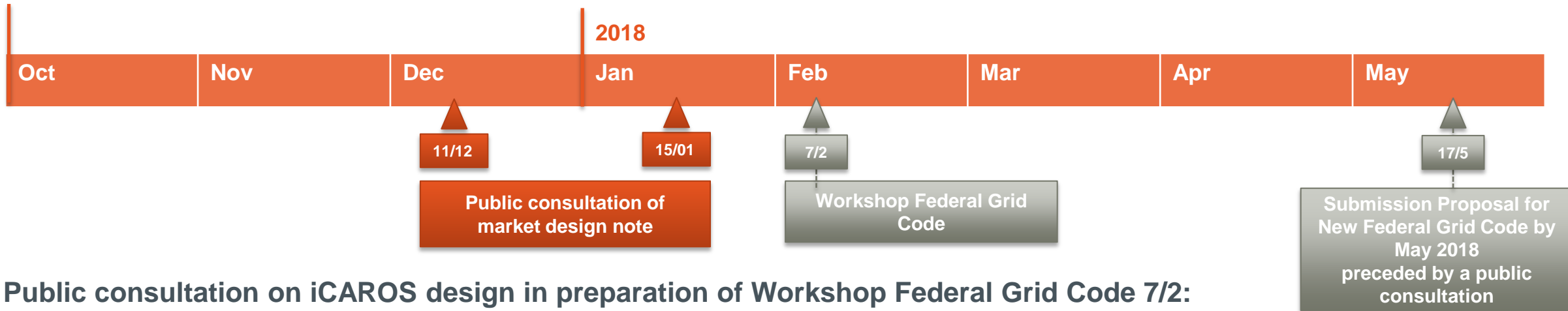|	Redispatching	Balancing (for information – out of scope ICAROS)
PGM/ storage C & D	Unit-based block bid	Unit-based block bid
	Unit-based block bid (e.g. slow flex)	
PGM/ storage B	Unit-based bid (block or limit)	
	Unit-based bid (block or limit)	Unit-based block bid
	Unit-based bid (block or limit)	Portfolio block bid
	If redispatching activation …	… portfolio is blocked for balancing. Portfolio bid must be updated by BSP without the redispatched unit.
Demand	Demand facility-based bid (block or limit)	
	Demand facility-based bid (block or limit)	Demand facility-based block bid
	Demand facility-based bid (block or limit)	

Choice between explicit (block) bids and scheduling limits

Explicit (block) bids (EU Standardized products for Balancing)

*exception: PGM - decremental bid under Gflex contract: regulated price (regional regulation)

Planning

Design note for the coordination of assets: Part I-III
(Outage planning, scheduling & redispatching, CRI)

2018

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May

11/12

15/01

7/2

17/5

Public consultation of market design note

Workshop Federal Grid Code

Submission Proposal for New Federal Grid Code by May 2018 preceded by a public consultation

Public consultation on iCAROS design in preparation of Workshop Federal Grid Code 7/2:

➢ Design notes include a list of design principles which ELIA proposes to prescribe in the Federal Grid Code

➢ Key principles prescribed in the **European Guideline** on Electricity Transmission System Operation (**GL SO**) or Key Organizational Roles, Responsibilities and Requirements (**KORRR**, draft version) **do not require repetition in the Federal Grid Code**: a list of these key principles will also be given in the design notes
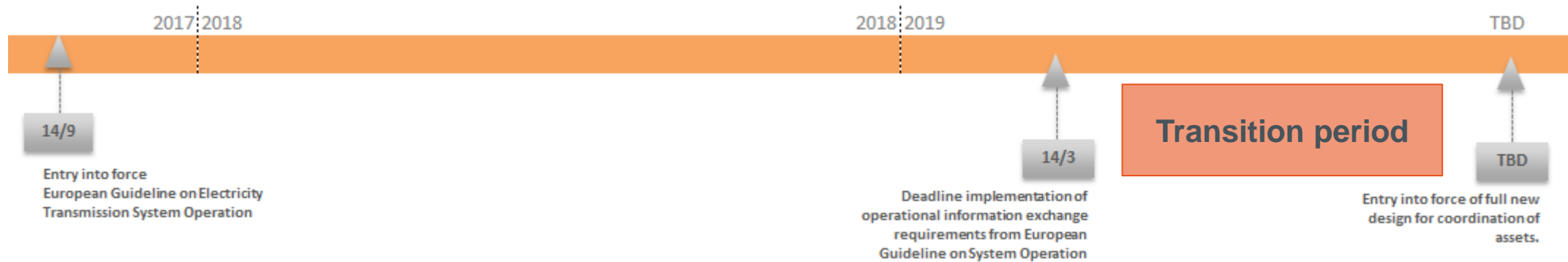
CIPU PGM: largely compliant to GL SO obligations regarding delivery of operational information

Transition period: BRP as Outage Planning Agent & Scheduling Agent

[Transition from implicit => explicit bidding: GL EB, linked to creation of European platforms]

Non-CIPU units with outage planning & scheduling obligation: => PGM type B

Transition period: default status at "available" and default schedule at "ON"

Create pragmatic communication to inform ELIA of unavailability or OFF schedules

Demand: exempted from scheduling obligation - BRP nominations remain

Storage: no GL SO obligations

Implementation Network Codes: specific topics (CDS)

Febeliec Workshop – Implementation EU Network Codes and Adaptation Federal Grid Code

BluePoint Brussels

13th December 2017

I. Gerkens and H. Vandenbroucke

Agenda

1. General approach – The various rules applicable to a CDS

2. European NCs rules : NC requirements for CDSO as RSO (relevant system operator)

3. How to refer to CDS requirements in the Federal Grid Code ?

4. Proposal : New Title VI Bis "CDS" in the Federal Grid Code

5. The Technical General Requirements from the CNCs

6. EU Derogations process & actors

Specific CDS topics related to iCAROS are out-of-scope of this meeting but will be discussed on Thursday 16th February in another bilateral Febeliec-Elia bilateral meeting

1. General approach – The various rules applicable to a CDS

General approach – The various rules applicable to a CDS

1. **European NCs rules** :

   a) **CDSO = grid user connected to Elia grid**
      ➢ To follow Title III's requirements at connection point (between 2 grids – Art 41§3, c)
      ➢ Specific technical requirements for demand (based on DCC requirements)

   b) **CDSO = 'relevant system operator'**
      ➢ Respect of requirements fixed by FGC for every PGM in control area (Elia =TSO)
      ➢ When requirement is 'site specific': to be taken in connection contract between CDSO & its grid users (relative freedom within respect to NCs)
      ➢ CDSO's requirements (as RSO) have to be compatible with the requirements the CDSO has to respect <> Elia (as grid user connected to Elia grid)

   PRINCIPLE: technical requirements fixed as "RSO rules", except otherwise mentioned
   ⇒ Only applicable as grid user connected to Elia grid
   ⇒ Mention [@RSO]: rule to be taken also into regional grid codes at least for local transmission (as RSO at regional level) ; other RSOs (CDSOs and DSOs) have to develop their own specifications

2. **Belgian rules for operating a CDS at federal level** :

   • Market issues, general rules & responsibilities of federal CDSO

   • Position Paper CDS approved in Users' Group 22/9

2. European NCs rules

NC Requirements for CDSO as RSO (relevant system operator)

Rules for CDSO in the NCs as RSO

- General principle = "When text refers to DSO in general, it has to be read as to refer to CDSO"
- Some specific references to CDSO
- When reference to SGU, applicable to every industrial connected to Elia-grid, even if also having status of CDSO

Subsidiarity principle : to allow Member State to specify relevant rules applicable to CDSO as SGU or as specific type of DSO (what and how obligations have to apply to CDSO?)
- Provisions GL SO or NCs = general framework
- Possibility to be more detailed and deepened if needed (rules between CDSO & TSO)
- Not compulsory to implement detailed, additional rules at MS level (if not needed)

Market NCs (CACM, FCA): no references to CDSO, nor DSO

NC RfG: frequent explicit references to CDSO (= classified as DSO)

General Requirements

✓ To agree on conditions for disconnection of PGM embedded in networks of industrial sites + exceptions (art. 6)
✓ In coordination with the relevant TSO, to specify general requirements for types B, C, D PGM (art. 14-16); to specify requirements for types B, C, D synchronous PGM (art. 17-19); to specify requirements for types B, C, D PPM (art. 20-22)
✓ Cost-benefit analysis: assist and contribute to CBA or assessment of potential derogation (provide data requested)(art. 39)
✓ Compliance monitoring: to assess compliance of PGM throughout its lifetime, notably establishing public list of information to be provided (art. 41); compliance testing & simulation (art. 42-73)
✓ Derogations : to assess request for derogation by a PG facility or for classes of PGM (art. 62-63)

Derogations

Rules for CDSO in the NCs as RSO

NC DCC: frequent explicit references to CDSO

General Requirements

- ✓ To agree on conditions for disconnection of PGM embedded in industrial sites (art. 5)
- ✓ List of requirements for transmission connected-CDS (art. 12-21)
- ✓ List of requirements for connection of CDS providing demand response services to TSO (art. 27-30)
- ✓ To confirm respect of operational notification procedure (art. 31-33)
- ✓ Compliance monitoring: to ensure respect of requirements (obligation of notification…)(art. 34-35)
- ✓ Compliance testing & simulation: to demonstrate respect of requirements (obligation to carry tests & simulations, record, exchange information…)(art. 36-41; 42-46)
- ✓ Cost-benefit analysis: assist and contribute to CBA or assessment of potential derogation (provide data requested)(art. 49)
- ✓ Derogations : CDSO may request derogation for a demand facility providing demand response to the NRA (art. 52)

NC HVDC: few explicit references to CDSO

Derogations

- ✓ 'Cost-benefit analysis' (art. 66): assist and contribute to CBA for applicability to existing HVDC systems or PPM (provide data requested)
- ✓ Derogations : request derogation by an HVDC system owner or DC-connected PPM owner situated in a CDS (art. 79) & request derogation by a CDSO (art. 80)

Conclusion - CNCs:
Some topics interesting for CDSO (already identified)
- **Connection & compliance processes (DRUDs, FONs) for the relevant system operator**
- **Robustness (Islanding); Voltage Control & Reactive Power Management; Short-circuit current contribution**

Rules for CDSO in the NCs as RSO

E&R NC: few explicit references to CDSO, but reading to be done for both SGU/DSO

- ✓ Scope (art.1.7 &1.8): SGU including "all Existing and New Transmission-CDS"; CDS when <u>qualified as Defence Service Provider</u> (art9.8) and/or <u>Restoration Service Provider</u> (art 21.11); CDS <u>providing Demand Side Response</u>
- ✓ <u>Identification by TSO</u> of SGU/DSO which have to implement measures for both defence and restoration plans (art 9.7 and 21.8)

Conclusion - E&R NC:
- **Notion of 'impacted' / 'relevant' / 'identified' SGU or DSO => CDSOs indirectly included**
- **Defence & Restoration Plans : « as is » situation in Belgium seems sufficient**

Guideline SO: CDS classified as 'SGU' (but general definition as DSO); few explicit references to CDSO
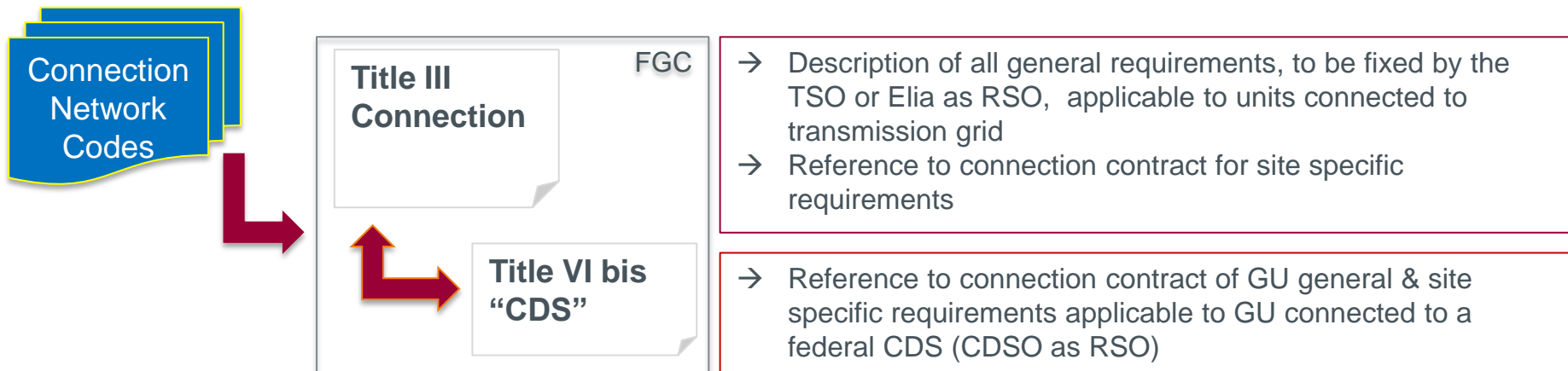
- ✓ Remedial actions (art. 23)
- ✓ Performing short-circuit calculations: done by TSO (art. 31)
- ✓ Coordination of special protection schemes with CDSO (art. 37)
- ✓ Obligations and rules set on GSU (when notion used in general) (art. 53-59, 73-74)
- ✓ Outage coordination (art. 83-90): communication of infrastructure projects or assets or PGM… having impacts on CDSO, to coordinate the outage planning with CDSO
- ✓ Year-ahead availability plan proposals: cooperation with CDSO (art. 94-100)
- ✓ Execution of availability plans, including forced outage (art. 101-103)

Conclusion – Guideline SO:
- **Part II (Operational security): « as is » situation in Belgium seems sufficient; no need to develop new/extra set of rules**
- **Part III (Operational planning): explicit references to CDS and SGU**

3. How to refer to CDS requirements in the Federal Grid Code ?

Connection Network Codes

Title III Connection

FGC
→ Description of all general requirements, to be fixed by the TSO or Elia as RSO, applicable to units connected to transmission grid
→ Reference to connection contract for site specific requirements

Title VI bis "CDS"

→ Reference to connection contract of GU general & site specific requirements applicable to GU connected to a federal CDS (CDSO as RSO)

How to make reference to these requirements applicable within the CDS's in Federal Grid Code (Title VI bis)?

"The CDSO has to specify the following requirements for units within his CDS grid: …"

Option chosen (WS 23/11): Specifying the topics to be addressed in contractual documentation (connection contract) between the CDSO and CDS grid user. Might be written in a similar way as art. 112 in FGC. "*Het aansluitingscontract bevat tenminste de volgende elementen: …*"

Current texte : one generic sentence remembering the RSO role of CDSO for drafting contractual documentation & technical requirements + context of NC & Title III

Current Art 8

Chosen option might be completed with a non-binding IGD proposing CDSO CNC's requirements, written by Febeliec

4. Proposal : New Title VI Bis "CDS" in the Federal Grid Code

New Title VI Bis "CDS"

Proposed general structure

- Chapitre 1. Règles générales et relations entre le gestionnaire du réseau de transport et les gestionnaires des réseaux

- Chapitre 2. Règles relatives au raccordement des utilisateurs de réseau fermé industriel

- Chapitre 3. Règles relatives à l'accès des utilisateurs de réseau fermé industriel à ce réseau fermé industriel

- Chapitre 4: Règles relatives à la participation au marché de l'électricité par les utilisateurs de réseau fermé industriel et à l'équilibre des responsables d'équilibre actifs dans les closed distribution system, en ce compris les réseaux fermés industriels

  - Section 1: Désignation du fournisseur et du responsable d'équilibre correspondant pour un ou plusieurs points d'accès

  - Section 2: Processus d'allocation de l'énergie entre responsables d'équilibre actifs dans les closed distribution system raccordés au réseau de transport ou de transport local, en ce compris tout réseau fermé industriel - Communication aux acteurs de marché et au gestionnaire de réseau

- Chapitre 5. Echanges de données entre le gestionnaire du réseau et les gestionnaires des réseaux fermés industriels

- Chapitre 6. Mesures et comptages

To add definitions related to CDS: only the ones not in E-Law, nor in NCs :
« CDS-access point », « closed distribution system » (in a generic sense and not only federal notion)

The new Title VI Bis "CDS" in practice

Content - Chapitre 1. Règles générales et relations entre le gestionnaire du réseau de transport et les gestionnaires des réseaux fermés industriels

- Relations between this Title and other parts of FGC (art. 1)
- CDSO is a grid user with connection & access contracts with the TSO (art. 1, 3)
- General roles & responsibilities of CDSO (art. 2)
- Elements for collaboration CDSO – TSO (art. 3 §3)
- Relationship TSO – grid users of the CDS (art. 4)

Main highlights

- **CDSO de traction ferroviaire** and all its grid elements is subject to federal competence
- **CDS is not only a RSO but also a grid user** :
  - Connection & access of the CDS has to respect all requirements stated in Titles III & IV
  - Notion of Elia access & connection point (and not 'koppelpunt')
  - Proposal to refer explicitly to Title III "requirements for grid users", in a similar way that current Art 369, as a way to let remind that CDS are a kind of grid user and no specificities are detected so far (// Art III.7.1.6 TRPVN)
- **Collaboration CDSO – TSO :** through several collaboration conventions
  - Actions to taken in case of incidents, urgent situations (noodsituaties) or operation problems : impact NC E&R => to have a very broad reference
  - Structural information regarding planification issues
- **Relationship TSO – grid users of the CDS** : None except
  - Delivery of services
  - Icaros
  - Some data exchange (based SOGL art 48-50)

The new Title VI Bis "CDS" in practice

Content – Chapitre 2. Règles relatives au raccordement des utilisateurs de réseau fermé industriel

- Elements to be set up by CDSO related to connection (art. 5)
- Possibility to adapt minimal technical requirements, even with a connection contract (art. 6)
- Application of legal & technical regarding security of persons (art. 7)
- CDSO as RSO : CDSO's requirements (as RSO) compatible with Elia requirements the CDSO has to respect (as grid user connected to Elia grid)(art. 8)

Main highlights

- **No detailed content for connection contract** : to be added ?
- **Role of RSO for technical requirements :**
    - Respect of all general requirements fixed by Elia on PGM and demand (as TSO) + Elia has a right of access to control
    - Respect of requirements applicable to the CDSO as grid user connected to Elia grid
    - How far to be described in the text ?

The new Title VI Bis "CDS" in practice

Content – Chapitre 3. Règles relatives à l'accès des utilisateurs de réseau fermé industriel à ce réseau fermé industriel

- Elements to be set up by CDSO related to access (art. 9)
- Access registrer – finality vision & no details (art. 10)
- Access to the CDS-grid when contractual set of CDS-grid user is ready (art. 11)
- Notion of aggregated (virtual) access point + ex-ante OK of Elia if services delivered (art. 12)
- Suspension of access within the grid : information obligation (art. 13)

Main Highlights

- **Rules limited to necessary aspects for granting access within a CDS-grid**:
  - Based on the philosophy of the Position Paper (and not of the TRPVN)
  - To keep maximal freedom for CDSOs
- **No detail on access contract content** : to be added ?
- **No detail on access & flexibility register (SA/DR delivery) content** : to be added ?
- **Access holder** : **no current reference to this role** and only to the supplier / BRP
  - Some CDS impose that CDS-grid user is its own access holder => general rule to be added ?
  - Supplier is designated by the CDS-grid user or the access holder ?

The new Title VI Bis "CDS" in practice

Content – Chapitre 4: Règles relatives à la participation au marché de l'électricité par les utilisateurs de réseau fermé industriel et à l'équilibre des responsables d'équilibre actifs dans les closed distribution system, en ce compris les réseaux fermés industriels

Section 1:

- Principle of TPA & timing ; obligation of CDSO to inform supplier & BRP (art. 14)
- Obligation of ex-ante set-up of the mechanisms required for TPA (with Elia) ; CDSO has to become its own access holder regarding its access to Elia-grid (art. 14 §3)
- Role & responsibilities of active BRPs <> CDSO and <> to Elia (art. 15)
- Designation of the BRP PBO done by CDSO (art. 16)
- Set-up with Elia of the mechanisms required for TPA & for SA/DR delivery, as described in access contract concluded by CDSO with Elia (art. 17)
- Allocation of energy to BRP PBO when there is no more supplier at an CDS-grid user access point (art. 18)
- Possibility to request a daily access program or to ex-ante information in case of substantial modification of the grid user profile (art. 19)
- Nominations done by active BRP's follow the rules of Title IV and of the BRP convention (art. 20)

Section 2:

- Role and responsibilities of CDSO for allocation process – Main specificities of allocation process (art. 21)
- Communication of allocation results to Elia, based on decided rules – process in case of divergences in allocation results and infeed to the CDS (art. 22 §1)
- Communication of allocation results to market actors (art. 22 §2)
- Ex-ante information to the CDSO on willingness of a CDS-grid user to deliver SA/DR (that has the right to refuse) ; obligation to conclude a convention with Elia on data exchanges when delivery of SA/DR + flex register (art. 23)

The new Title VI Bis "CDS" in practice

Main Highlights

- **Some rules are applicable at FEDERAL and at REGIONAL level :**
  - Residual competence of the federal : limited to balancing issues
    - Roles and responsibilities of BRP active in the CDS
    - Realisation of the allocation (not not its communication)
  - Applicable to all CDSO connected to Elia (TSO and PVN) : all « closed distribution system » and not only « réseau fermé industriel » => OK with wording proposed ?
- **Access holder** : **no current reference to this role** : Some CDS impose that CDS-grid user is its own access holder => general rule to be added ?
- **Elements to be set up by CDSO related to designation of BRP** : details to be added ?
- **BRP PBO** : to precise its deisgnatipon is done according the 'classic' rules of designation of a BRP
- **No supplier by default** : use of BRP PBO (and possibility to limit it in the time)
- **Communication of the allocation** :
  - Exchanges rules are defined in contracts bewteen the CDSO and Elia
  - No timing fixed
  - Potential impact of SOGL on data exchange

The new Title VI Bis "CDS" in practice

Content – Chapitre 5. Echanges de données entre le gestionnaire du réseau et les gestionnaires des réseaux fermés industriels

- Communication of structural, scheduled and real-time data according to SOGL (art. 24)
  - Aggregated data for Type A PGM until ≥1MW of global aggregated volume (art 48-50 SOGL)
  - When ≥1MW of global aggregated volume : the TSO may ask more detailed information to the CDSO or the PGM itself (use of art 51.1 – 51.3 SOGL)

- **No detailed rule on data exchange regarding AS/ DR delivery** :
  - Specifications & details are in Title IV and in related agreements
  - Only references to obligations of CDSO in order to allow this delivery

The new Title VI Bis "CDS" in practice

Content – Chapitre 6. Mesures et comptages

- Roles and responsibilities of the CDSO regarding metering ; obligation to communicate metering data to market actors following the UMIG rules or agreed rules (art. 25 § 1-2)

- If Elia is owner of metering situated in the CDS, rules of Title V are applicable ; requirements regarding metering at the connection point between the CDS and Elia grid (art. 25 § 3)

- As soon as the metering devices are adapted or used for SA/DR delivery, same rules for metering quality than the ones applicable to the TSO + power units specific meters in order to comply with SOGL requirements + specific requirements might be set by Elia in case of SA/DR delivery (art. 26)

- Procedure for giving historical data to new suppliers and to CDS-grid users (art. 27)

- Potential control of metering equipment's ; full procedure in case of imprecision, default and error <> concerned market actors, CDS-grid users (art. 28)

5. The Technical General Requirements from the CNCs

Wrap-up Stakeholder Workshop n°1 (21/9/17)

General Requirements: scope

- General Requirements need to be submitted for the connection codes only (RfG, DCC and HVDC)

- The (similar) regulatory aspects are described in NC RfG (Art. 7), NC DCC (Art. 6) and NC HVDC (Art. 5). More specifically:

RfG Art. 7(4)
DCC Art. 6(4)
HVDC Art. 5(4)

"The relevant system operator or TSO shall submit a proposal for requirements of general application, or the methodology to calculate or establish them, for approval by the competent entity within two years of entry into force of this Regulation"

- The term 'general requirements' is often used while 'a proposal for requirements of general application, or the methodology used to calculate them' is meant

- Submitting a **proposal for general requirements** is a Network Code requirement to be met by each relevant system operator

"The relevant system operator or TSO shall submit…

<u>Who</u> is relevant system operator or TSO?

→ ENTSO-E has published in November 2016 an <u>Implementation Guidance Document for national implementation for NCs on grid connection</u> containing parameters of non-exhaustive requirements:

- o List of all non-exhaustive requirements for the 3 connection codes together with their parameters + indication who shall make a proposal as relevant system operator
- o Elia uses this document as reference to draft the General Requirements proposal

→ **Relevant system operators** are (depending on the requirement):

- o **Elia** as relevant TSO

- o **DSOs** (including **CDSOs** as these are considered as DSOs in the Network Codes)

…a proposal for requirements of general application, or the methodology to calculate or establish them, …

What should this proposal contain?

- The connection Network Codes contain both exhaustive (fix value) and non-exhaustive (range or degrees of freedom) requirements

- Elia refers to the ENTSO-E IGD for a list of all non-exhaustive requirements per CNC

- Proposal for General Requirements = proposal for implementation of non-exhaustive requirements

For example (NC RfG Art. 13(1)(a.), Tabel 2):

Table 2

Minimum time periods for which a power-generating module has to be capable of operating on different frequencies, deviating from a nominal value, without disconnecting from the network.

Synchronous area	Frequency range	Time period for operation
Continental Europe	47,5 Hz-48,5 Hz	To be specified by each TSO, but not less than 30 minutes
	48,5 Hz-49,0 Hz	To be specified by each TSO, but not less than the period for 47,5 Hz-48,5 Hz
	49,0 Hz-51,0 Hz	Unlimited
	51,0 Hz-51,5 Hz	30 minutes

…for approval by the competent entity…

Who is the competent entity?

▪ The federal and regional competences have to be respected when submitting the proposal for General Requirements

   o **Federal**: FOD/SPF or CREG (to be determined by them who is the competent entity/authority)

   o **Regional**: regulators/governments

   → See next slide for the federal and regional competences in Belgium

• According to the NC, competent entities shall take decisions within 6 months following the receipt of general requirements proposals (RfG 7(6); DCC 6(6); HVDC 5(6))

…for approval by the competent entity…
→ *federal and regional competences in Belgium*

	Regulation		Regulators	TSO
🇪🇺	European Directives	Network Codes (Regulation)	(ACER)	ENTSO-E

🇧🇪	Electricity Act	Federal Technical Regulation (grid code)	CREG	**380 kV 150 kV**
	Royal Decrees			

Elia

Flanders	Regional Decrees	Technical regulation for DSO/PVN grid (grid code)	VREG	**70 kV 30 kV**
Brussels	Regional reglementation	Technical regulation for managing regional/DSO grid (grid code)	BRUGEL	**15 kV 230 V**
Wallonia		Technical regulation for managing local/DSO grid (grid code)	CWAPE	

…for approval by the competent entity…
→ Requirement for relevant system operator

Federal competent entity:

FOD/CREG

Proposal for General Requirements:

Relevant System Operator:

Elia

DSO

CDSO

NC RfG

NC DCC

NC HVDC

Regional competent entity:

Regional regulators/governments
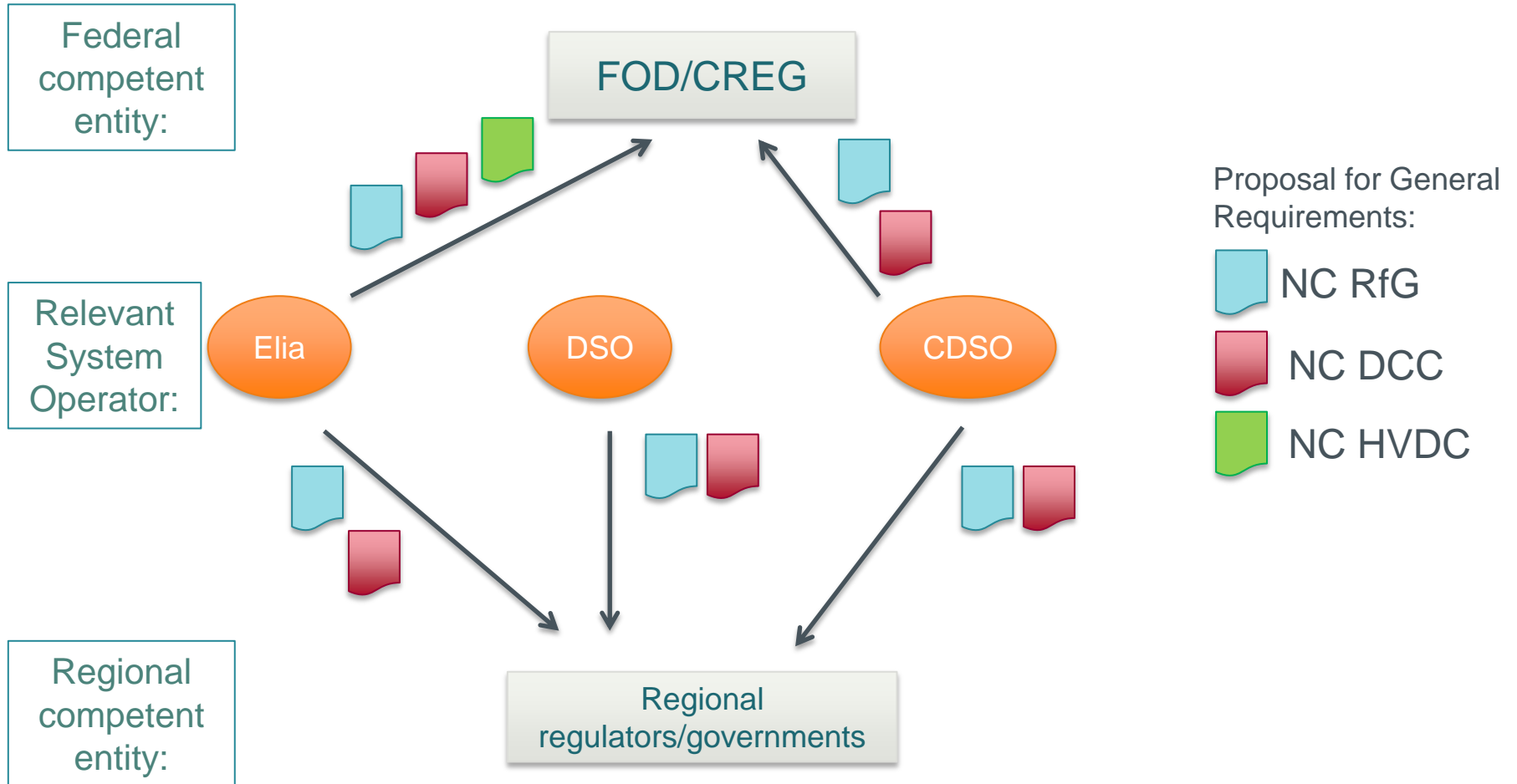
…within two years of entry into force of this Regulation."

When to submit the proposal for general requirements?

	Entry into force of the NC	+ 2 years after entry into force
NC RfG	17 May 2016	17 May 2018
NC DCC	7 Sept 2016	7 Sept 2018
NC HVDC	28 Sept 2016	28 Sept 2018

Elia will submit on **17 May 2018**:
- Adaptation proposal FGC
- Proposal on limits ABCD
- General requirements RfG + DCC + HVDC

The deadline of 17 May 2018 is in line with the vision of the FOD/SPF on the process and next steps for implementing the Network Codes and adapting the Federal grid Code, as presented in the WG Belgian Grid on 7 March 2017.

General Requirements: to-the-point

Concept and structure of the <u>document</u>

- The General Requirements are not part of or are not identical to the adapted Federal Grid Code proposal.

- General Requirements is an **exhaustive, technical and explanatory document** (different from a legal text) containing at least the implementation proposal of the non-exhaustive requirements but may also contain some extra information (such as exhaustive requirements) to increase the understanding of the document

- The structure of the GR is similar to the technical summary that was sent earlier. The documents are **structured per Significant Grid User** (e.g. Types A, B, C and D) and **per requirement** (e.g. Reactive Power).

- The document serves as input for the adaptation of regional grid codes, contracts and other regulatory documents

General Requirements: to-the-point

Cooperation with DSOs and CDSOs

- With different competent authorities, different submission dates and links with many different grid codes and contracts **an alignment with DSOs and CDSOs is aimed for**

- Objective: to avoid complexity, to simplify the regulatory structure for grid users

General Requirements: to-the-point

Planning towards 17 May 2018

A public consultation on the general requirements proposal is not required by the NC, but system operators shall consult with relevant DSOs. (RfG 7(3)(e); DCC 6(3)(e); HVDC (3)(e))

Elia will organise a public consultation for the adapted Federal Grid Code proposal and General Requirements proposals

	NC RfG	NC DCC	NC HVDC
1st Workshop 22/09/2017	Presentation draft GR document	N/A	N/A
2nd Workshop 23/11/2017	Presentation update draft GR document	Presentation draft GR document	N/A
3rd Workshop 18/12/2017	Presentation update draft GR document	Presentation update draft GR document	Presentation draft GR document
4th Workshop 6-7/02/2018	Presentation final (draft) GR document	Presentation final (draft) GR document	Presentation final (draft) GR document

General Requirements: summary

**RfG Art. 7(4)
DCC Art. 6(4)
HVDC Art. 5(4)**

"The relevant system operator or TSO shall submit a proposal for requirements of general application, or the methodology to calculate or establish them, for approval by the competent entity within two years of entry into force of this Regulation"

- **Relevant system operator or TSO =** Elia refers to the <u>ENTSO-E IGD for network codes on grid connection</u> → In this document all non-exhaustive requirements are mentioned together with the parameters to be defined and the proposing relevant system oprator. An alignment with (C)DSOs is aimed for

- **Proposal for General Requirements =** proposal for federal/regional implementation of the non-exhaustive requirements in the Network Codes

- **Approval by competent authority** = FOD or CREG or regional regulators/governments (dependent on competency)

- **With 2 years of entry into force of the connection code**:

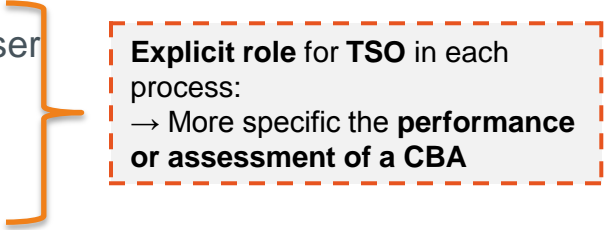|	Entry into force	+ 2 years
NC RfG	17 May 2016	17 May 2018
NC DCC	7 Sept 2016	7 Sept 2018
NC HVDC	28 Sept 2016	28 Sept 2018

Elia will submit on **17 May 2018**:
- Adaptation proposal FTR
- Proposal on limits ABCD
- General requirements RfG + DCC + HVDC

6. EU Derogations process & actors

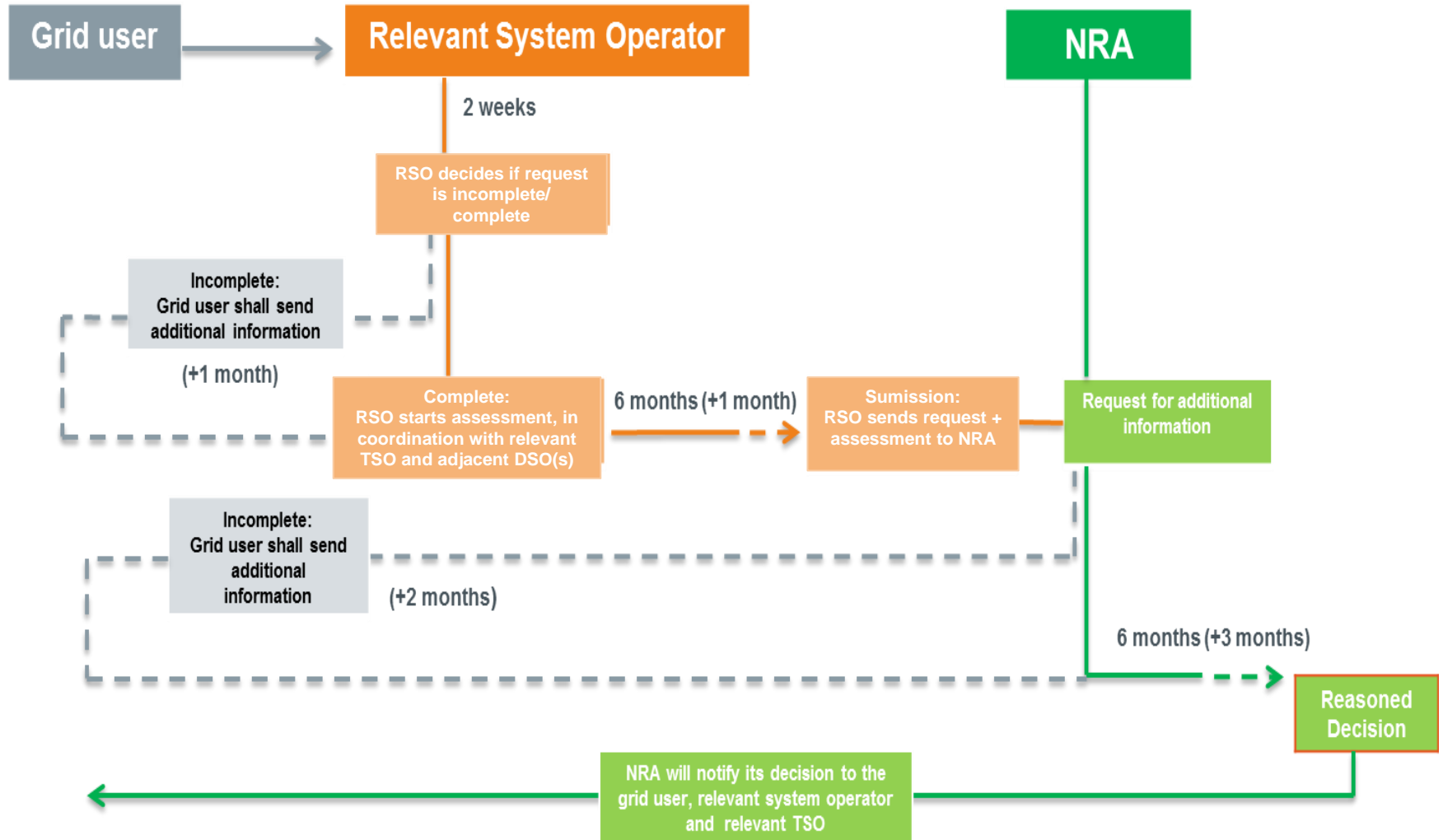# Derogations & CBA: Recap' provision in EU network codes

- Possibility for requesting and granting derogations is only foreseen in the <u>connection codes</u>

- <u>Responsibility</u>: The Regulatory authorities (NRAs) or where applicable in a Member State another authority may grant derogations from one or more provisions of the relevant Regulation for new and existing entities

    - In a joint action, the regulators (CREG, VREG, BRUGEL and CWAPE) defined the criteria for granting derogations for requirements in NC RfG, DCC and/or HVDC. Final decision since 20 April 2017: <u>http://www.creg.be/nl/publicaties/andere-div-170420</u>

- 3 different <u>derogation procedures</u>:

    - ➢ When a individual request for derogation is launched by a grid user
    - ➢ When a request for derogation is launched by a DSO/CDSO
    - ➢ When a request for derogation is launched by a TSO

> **Explicit role** for **TSO** in each process:
> → More specific the **performance or assessment of a CBA**

- <u>CBA: part of the derogation request (for new and existing grid users):</u>

    - ➢ When a derogation request is submitted by the market parties (grid user, DSO/CDSO and TSO), this request should be supported with (among others) a CBA → legal obligation

Request for derogations by a grid user

Art. 62 of NC RfG
Art. 52 of NC DCC
Art. 79 of HVDC

Grid user → **Relevant System Operator**

2 weeks

RSO decides if request is incomplete/ complete

Incomplete:
Grid user shall send additional information

(+1 month)

Complete:
RSO starts assessment, in coordination with relevant TSO and adjacent DSO(s)

6 months (+1 month)

Sumission:
RSO sends request + assessment to NRA

NRA

Request for additional information

Incomplete:
Grid user shall send additional information

(+2 months)

6 months (+3 months)

Reasoned Decision

NRA will notify its decision to the grid user, relevant system operator and relevant TSO

* NRA or Competent Authority (where relevant)

Request for derogations by a relevant system operator (DSO/CDSO)

Relevant system operator (DSO/CDSO) → **NRA**

Relevant TSO
- Requests TSO to assess the request — 2 weeks
- 2 weeks: TSO decides if request is incomplete/ complete
  - Incomplete: DSO/CDSO shall send additional information (+1 month)
  - Complete: TSO starts assessment → 6 months (+1 month) → Submission TSO sends assessment to NRA

Request for additional information
- Incomplete: DSO/CDSO shall send additional information (+2 months)

Art. 63 of NC RfG
Art. 53 of NC DCC
Art. 80 of NC HVDC

6 months (+3 months) → **Reasoned Decision**

NRA will notify its decision to the relevant system operator, relevant TSO and ACER

* NRA or Competent Authority (where relevant)

Request for derogations by Elia (the relevant TSO)

Art. 63 of NC RfG
Art. 53 of NC DCC
Art. 80 of NC HVDC

Relevant TSO → **NRA**

Request for additional information

TSO shall send additional information

(+2 months)

6 months (+3 months)

Reasoned Decision

NRA will notify its decision to the relevant TSO and ACER
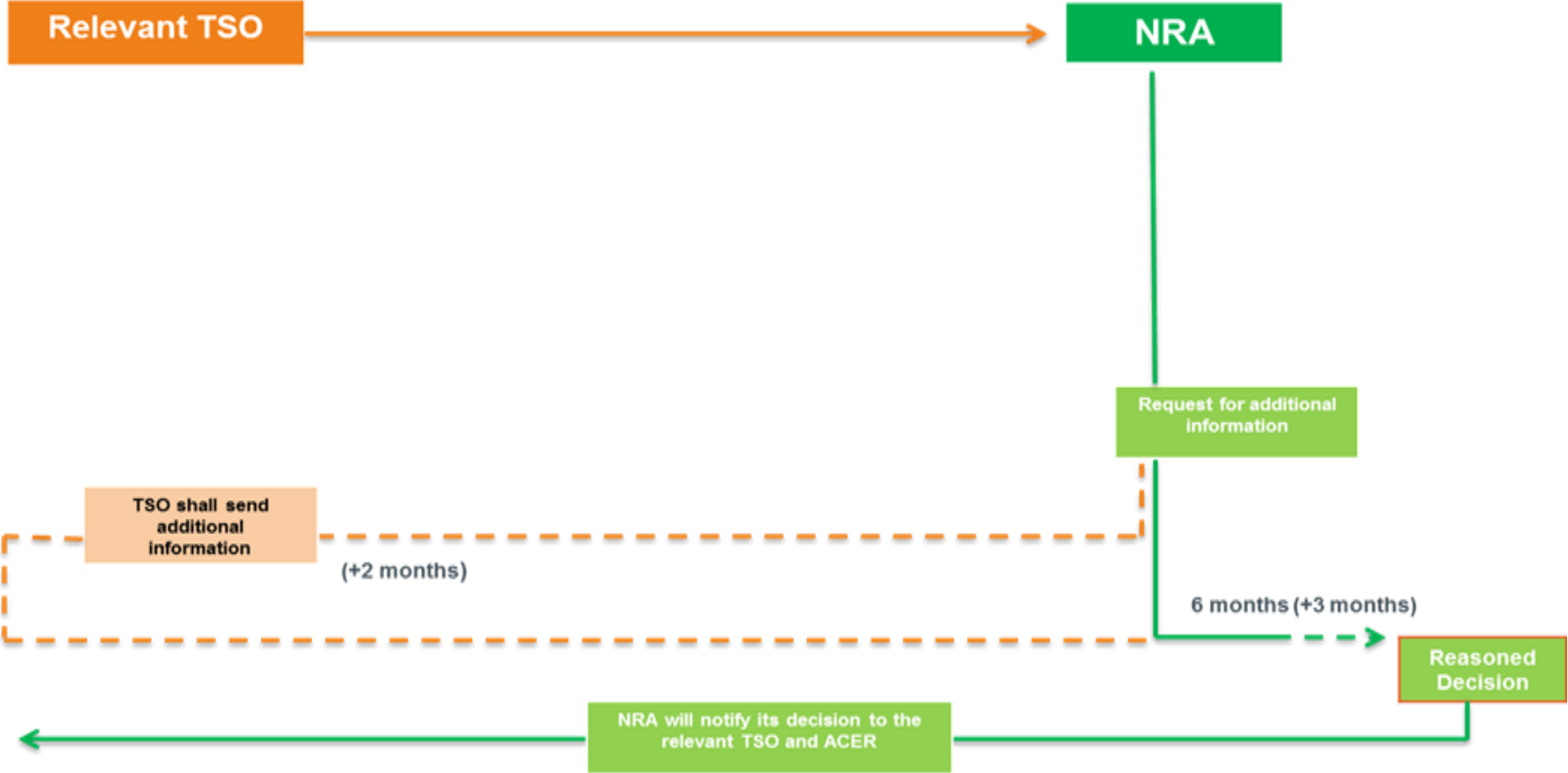
* NRA or Competent Authority (where relevant)

Classification of derogation options

Green = requested by
Blue = assessed by
Red = granted by

Art. 62 of NC RfG
Art. 52 of NC DCC
Art. 79 of NC HVDC

Art. 63 of NC RfG
Art. 53 of NC DCC
Art. 80 of NC HVDC

		Individual derogation (for a unit…)					Class derogation (for all units…)			
Voltage level		> 70kV		≤70kV			> 70kV		≤70kV	
Connection		Elia grid	Within CDS	Elia Grid	DSO grid	Within CDS	Elia	CDSO	Elia	(C/)DSO
NC requirements (**)	Relevant SO	indiv. unit Elia CREG	Indiv. unit CDSO CREG	Indiv. unit Elia VREG CWaPE Brugel	Indiv. unit DSO (*) VREG CWaPE Brugel	Indiv. unit CDSO (*) VREG CWaPE Brugel	Elia N/A CREG	CDSO Elia CREG	Elia N/A VREG CWaPE Brugel	(C/)DSO Elia VREG CWaPE Brugel
	Relevant TSO	Indiv. unit Elia CREG	Indiv. unit Elia CREG	Indiv. unit Elia VREG CWaPE Brugel	Indiv. unit Elia VREG CWaPE Brugel	Indiv. unit Elia VREG CWaPE Brugel	Elia N/A CREG	//////	Elia N/A VREG CWaPE Brugel	/////

- **Individual derogation:** assessment by relevant system operator in coordination with the relevant TSO and any affected adjacent DSO or DSOs
- (*) if the derogation <u>for RfG requirements</u> concerns a type C or D PGM connected to a (closed) distribution system, the relevant SO's assessment must be accompanied by an assessment of the request for derogation by the relevant TSO. (art. 62(5) RfG)
- (**) the Connection Network Codes consist of exhaustive and non-exhaustive requirements. These requirements are to be determined by the relevant SO or relevant TSO.

"granted by" is determined based on known competencies.
However, as mentioned in the derogations criteria, defined by all regulators, each derogation request should be sent (via the relevant SO) to CREG **and** relevant regional regulator (if the latter is applicable)

Classification of derogation options

Green = requested by
Blue = assessed by
Red = granted by

Derogation 1: Type A or B requirements for units <25 MW installed ≥ 110 kV (usually considered as type D)

Derogation 2: Type A requirements for units 250kW – 1 MW (usually considered type B) for some robustness topics:

- 14(3)a&b - Fault Ride Through (FRT).
- 17(3) - Providing post-fault active power recovery (SPGM)
- 20(3). - Providing post-fault active power recovery (PPM)

Non-exhaustive req.: Defined by Relevant TSO

- 20(2)b&c. - Providing fast fault current (PPM)

Non-Exhaustive req.: Defined by Relevant SO, in coordination with TSO

		Class derogation (for all units…)			
Voltage level		**> 70kV**		**≤70kV**	
Connection		**Elia**	**CDSO**	**Elia**	**(C/)DSO**
NC requirements	**Relevant SO**	Elia N/A CREG	CDSO Elia CREG	Elia N/A VREG CWaPE Brugel	(C/)DSO Elia VREG CWaPE Brugel
	Relevant TSO	Elia N/A CREG	//////	Elia N/A VREG CWaPE Brugel	/////

Based on ENTSO-E IGD document: 'Parameters of Non-exhaustive requirements':
https://www.entsoe.eu/Documents/Network%20codes%20documents/NC%20RfG/161116_IGD_General%20guidance%20on%20parameters_for%20publication.pdf

FAQ: CDS General Requirements & Derogations

As relevant system operator, CDSOs are obliged to submit proposals for general requirements RfG and DCC + have the option to submit class derogations:

	Proposal for General Requirements	Proposal for derogations
	→ **Requirement**	→ **Option**
For which articles is a CDSO required (or has the option) to submit a proposal	For those non-exhaustive articles where CDSO is identified as relevant SO (*)	In principle for all articles where CDSO is identified as relevant SO, a CDSO can submit a **class derogation** proposal; An **individual derogation** request is in principle possible for each NC requirement
What in case a proposal is not submitted?	Violation of NC requirement	Derogations will not be granted. Note that the class derogations, submitted by Elia (as relevant TSO), and if granted, will be applicable
How will these proposals be approved by the competent authorities?	Proposals for General Requirements will not directly be approved by the competent authorities. Instead the competent authorities will approve the regulatory documents wherein these general requirements are included	If assessed valid, derogation proposals are directly granted by the competent authorities before they apply
In which regulatory documents will these proposals be described?	The FGC will make reference to the topics of the GR proposals for CDS (Cfr. Title VI bis 'CDSO'). The actual CDS GR propsosals will be included in the contract between the CDSO and its CDS grid users	The approved derogations will not be repeated in the regulatory documents, must be read in conjunction with FGC. FGC might contain additional info on the process, in completion of the NC

(*) Based on ENTSO-E IGD document: 'Parameters of Non-exhaustive requirements':
https://www.entsoe.eu/Documents/Network%20codes%20documents/NC%20RfG/161116_IGD_General%20guidance%20on%20parameters_for%20publication.pdf

Many thanks for your attention!

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