System Operation European Stakeholder Committee

System Operation European Stakeholder Committee
12 December, Brussels

1.1 Draft Agenda

No	Subject	Time	Lead
1.	**Opening** - Review of the agenda - Review and approval of minutes from previous meeting - Review of actions	10:00 – 10:05	Uros Gabrijel Jean-Philippe Paul
2.	**Update on the implementation actions at pan-EU level**	10:05-10:15	Jean-Philippe Paul
3.	**System Operation Guideline** 3.1 Dynamic Stability Assessment - Response to open/pending questions from stakeholder workshops 3.2 Reserve Sizing – Approach to implementation of LFC Block Operational Agreements 3.3 CBA LER – Update after Workshop 15th November	10:15-10:55	Rafal Kuczynski Knud Johansen Tarek Fawzy Luca Ortolano
4.	**NC Emergency and Restoration** - Submit information about publication of Terms & Conditions regarding defence and restoration plans approved by NRAs (Active Library) - Overview Implementation of Art. 4(2)	10:55-11:30	Rafal Kuczynski
5.	**CGM Program Implementation Update**	11:45-12:15	Derek Lawler
6.	**Stakeholder topics**	12:15-12:30	TBD
7.	**AOB – 2020 Meeting dates**	12:30-12:35	

1.3 Review of actions

ENTSO-E

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Actions and status

ACTION	ANSWER	STATUS
1. The answers to the questions raised by VGB at the 4th SO ESC meeting regarding interpretation of certain articles in the SO GLs and NCs will be made available on the ENTSO-E website once finalized.	Link to Final set of answers is provided in the Minutes of previous meeting	Closed
2. SOGL: ENTSO-E is invited to provide visibility regarding the numbers and the approaches taken regarding the implementation of the LFC block operational agreements and reserve sizing, for example regarding the probabilistic approaches applied in different areas and how those compare to each other.	ENTSO-E has done an analysis and we bring the outcomes to today's meeting.	Presentation to take place in this meeting Top. 3.2

Actions and status

ACTION	ANSWER	STATUS
3. ENTSO-E should collect information regarding SOGL and NC ER implementation and ensure transparency through the Active Library and the monitoring file.	Active Library has been updated for ER with new inputs. In progress for setting up for SO GL.	In progress
4. NC ER: Relevant TCMs regarding defense and restoration providers as per the ER NC can be made available through the ENTSO-E website, once the NRA decisions have been issued, provided that there are no confidentiality issues.	Documents uploaded to active library and stakeholders informed one week in advance of the ESC.	Closed
5. ENTSO-E to invite TSOs to submit information regarding the publication of Terms and Conditions regarding defense and restoration providers.	Documents uploaded to active library and stakeholders informed one week in advance of the ESC.	Closed

Actions and status

ACTION	ANSWER	STATUS
6. TSOs to be encouraged to organize a Stakeholders workshop per CCR on SO GL Art. 76 proposals.	A workshop took place on 2nd October for ACER and NRAs. Due to tight deadlines and the consultation within each CCR it has been difficult to fit more Workshops within the planning.	Closed
7. ENTSO-E to provide an overview on how implementation took place for the Art. 4(2) articles of NC ER	ENTSO-E has done an analysis on this topic and we bring the outcomes to today's meeting.	Presentation to take place in this meeting Top. 4.2
8. Pending questions concerning DSA to be presented at the December 2019 SO ESC Meeting	ENTSO-E has done an analysis on this topic and we bring the outcomes to today's meeting.	Presentation to take place in this meeting Top. 3.1

2. 2. Update on the implementation actions at pan-EU level

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Pan-European deliverables 2019

CSAm	Adopted by ACER on 21 June 2019, requests all TSOs to develop two amendments (Article 21 and 27) to this methodology within 18 months (ie by 21 December 2020) – Public Consultation to happen in September 2020
LFCR Transparency	ENTSO-E has taken actions to facilitate the publication of LFC data in the Transparency Platform . LFC Block Operational agreements from Austria, Belgium, France, Hungary, Slovenia/Croatia/Bosnia i Herzegovina, Slovak Republic and Nordic are available on the Platform.
System Operation Regions Proposal (SORs)	The public consultation for SOR proposal run from 24 October – 20 November. A webinar to discuss the Proposal with stakeholders was organized on the 7 November. After assessing the feedback from the consultation the next steps are submitting the SOR proposal to ACER by 5 January 2020

Regional deliverables 2019

SAOA	SAOAs for Continental Europe, Nordic and Great Britain are shared in Transparency Platform System Operations Area. The publication of Ireland/Northern Ireland SAOA will follow by 22nd February 2020.
Minimum inertia	October 2019 : reports per SA have been adopted within each SA and TSOs invited to send them to their NRAs.
CBA LER	A Webinar was organized on 15 November. More information provided on Topic 3.3 of this meeting. About April 2020: CBA results suggesting the minimum activation period for FCR

Regional deliverables 2019

Regional coordination proposals (per CCR)	Consultations have taken place on each CCR for the Article 76 proposals. All CCRs are in good progress to meet the deadline of 21 December 2019.

Open consultations relevant for System Operations

Deterministic Frequency Deviations	ENTSO-E has recently finalized a draft report on “Deterministic Frequency Deviation” (DFD) which is now submitted for feedback for a period of two months and until 3 February 2020.

All open consultations can be found in the Consultation hub.

3.1 Dynamic Stability Assessment / Management
- Response to open/pending questions from stakeholder workshops

Knud Johansen

12th December 2019

Pending questions from DSA stakeholder WS's

- Most of the open questions have received an answer at the workshops and some other questions will be progressively addressed in the future.

- Overall the questions are spinning around understanding the various reports / notes / presentations dealing with the dynamic simulation assessment coordination and the inertia topics – the reader seems to be "lost in details" with a a fragmented set of expert reports / document without a clear relationship. This often results in comparing of operational parameter from different system states, e.g. normal operation, alert and emergency. Improved coordination of DSA aspect hopefully reduce this confusion in the future.

- On the next slide is given few of fundamental questions / comments discussed during the DSA stakeholder workshops.

- To see the full set questions and answers - use the link here

Pending questions from DSA stakeholder WS's

Questions/Remarks - examples	Replies
TSO is imposing DSO the collection of info from the grid but overall, I expect this to be ok as far as the system move the emergency. In emergency, maybe communication shall be considered as not available.	Requirements to availability of communication mean are specified in NC ER. In general lack of communication is not a hot issue as deployed predefined schedules could be activated on incidence criteria's.
The intended interpretation of the table on slide 13 to be further explained. Instead of RoCoF threshold value the percentage of RES should be shown.	Comment noted.
Does geographical location of units with inertia make a difference for RG CE? Is it taken into account when developing the scenarios?	Yes, the location is a part of the structural information exchanged and applied the various simulation scenarios.
What is the contribution from demand side to the inertia in Nordic and RG CE? How is this taken into account?	The demand side response model will be considered within the grid models.
If the study for RG CE says that there is no need to define minimum inertia, then why 1 Hz/s RoCoF is the target? Also 2 Hz/s should not be a problem then.	This question to be answered in the scope RfG revision.

To see the full set questions and answers - use the link here

3.2 Reserve Sizing – Approach to implementation of LFC Block Operational Agreements

Tarek Fawzy

12th December 2019

SO ESC expectation (Overview)

- **“SO ESC - Action tracker.xlsx”:**
  - "With SOC decision on 5/12/2018, TSOs of each LFC-Block were asked to share the link to their LFC-Block proposal.
- **ENTSO-E was invited to provide the following information on each LFC-Block**:
  - The actual **percentage** in terms of amount of time in which imbalance has to be covered (SO GL art.157(2)h and i);
  - Result of the **probabilistic** methodology; size of **dimensioning incident**;
  - Resulting FRR capacity; **split** of FRR capacity between mFRR and aFRR.

→Provide **visibility** regarding the **implementation of the LFC-Block agreements** and **reserve sizing**, showing the **approaches** applied and how those **compare to each other** (SOGL Art 157 FRR dimensioning).

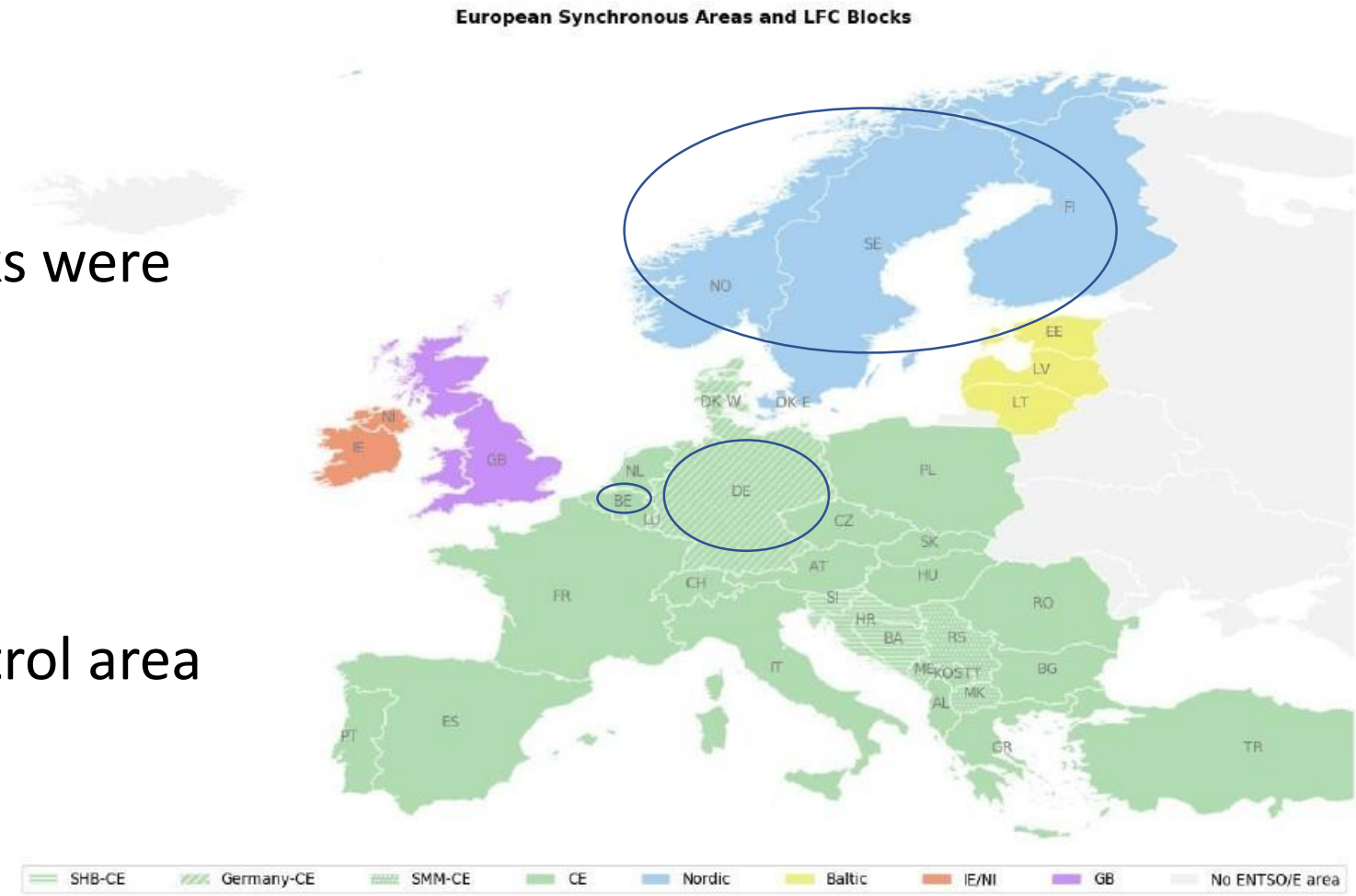
Reserve dimensioning for representative LFC Blocks

- Starting point:

leverage on available knowledge

- First **3** representitive LFC-Blocks were analysed:

1. **Nordic** LFC-Block
   More than 1 country
2. **Germany** LFC-Block
   1 country of more than 1 control area
3. **Belgium** LFC-Block
   1 country and 1 control area



Source: LFC report of 2018

Reserve dimensioning for representative LFC Blocks

LFC-Block Nordic

- The Nordic proposal (SO GL 157(1)) was **approved** on 19th of July 2019 by **NRAs**
- Dimensioning area: **Nordic area**.
- **Imbalance Period**: The FRR capacity **shall be sufficient** to cover **at least 99 %** of **positive** and 99 % of **negative** imbalances.
- In the Nordics today the reserve dimensioning is **deterministic** with the following **split**:
  - **FRR: 1710 MW, mFRR: 1410 MW, aFRR: 300 MW**
  - Reserve dimensioning will be **probabilistic** in the future

The method is described rather on a high level (e.g. at least 99%)

Reserve dimensioning for representative LFC Blocks

LFC-Block Germany

- Based on a Proposal of all TSOs of the LFC Block on SO GL 157(1)) and **approved**
- Dimensioning area: **DKW area** (NR. **1**) and **DE area** (NR. **2**)
- Imbalance Period: The FRR capacity **shall be sufficient** to cover **at least 99 %** of **positive** and 99 % of **negative** imbalances
- The **split** between aFRR and mFRR is determined based on an **evaluation which part of the stochastic imbalances can be covered by aFRR** activation (**at least 90 MW**) and the rest is attributed to mFRR

1. **DKW** (Denmark west)
   - Due to the size of the DKW area, the relevant minimum value is **defined by the dimensioning incident** (**Deterministic and will be probabilistic**)

Reserve dimensioning for representative LFC Blocks

LFC-Block Germany (contd.)

2. DE
   - As the stochastic **imbalances exceed the dimensioning incident** (+1410, -1060 MW) of the LFC block, a **probabilistic** methodology is required
   - The FRR amounts determined will be **checked against the minimum requirements of the SOGL** so that the FRR **will not be lower than this values**.
   - The **Split** between aFRR and mFRR is calculated (as for DKW) based on an estimation **which parts of the imbalances will be covered by mFRR**.
   - E.g. for tendering showing the split within FRR (Last week of October 2019):
     - mFRR: +1080, -1905 MW
     - aFRR: +1800, -1900 MW

The method is described on a rather high level (e.g. split within FRR)

Reserve dimensioning for representative LFC Blocks

LFC Block Belgium (Elia)

- LFC block operational agreement and the LFC were **under public consultation** between 04/10/2019 & 04/11/2019 and have been **approved**.
- Imbalance Period: The FRR capacity shall be sufficient to cover **at least 99 %** of **positive** and 99 % of **negative** imbalances.
- Elia will use D**eterministic & Probabilistic approach in parallel** for the reserve dimensioning with the following **split**:
  - aFRR: **145 MW**
  - mFRR: **the rest**, based on the dimensioning incident (**calculated every day** on 4 hour blocks).

Leverage available knowledge and use synergies

- According to the **LFC report** of 2018 there are **24 LFC blocks**
- A survey was performed by sharing **a questionnaire** to **answer the ESC SO expectations**

LFC Block	LFC Area	LFC Block Monitor	Country
GB	NGESO	NGESO	Great Britain
EirGrid+SONI	EirGrid+SONI	EirGrid	Ireland and Northern Ireland
Nordic	NO1, NO2, NO3, NO4, NO5, SE1, SE2, SE3, SE4, EN, FG	SN	Norway, Sweden, Finland, Denmark-East
Baltic	Baltic	Baltic	Estonia, Latvia, Lithuania

Source: LFC report of 2018

LFC Block	LFC Area	LFC Block Monitor	Country
OST	OST	OST	Albania
APG	APG	APG	Austria
SHB	NOS BIH, HOPS, ELES	ELES	Bosnia and Herzegovina, Croatia, Slovenia
ELIA	ELIA	ELIA	Belgium
ESO	ESO	ESO	Bulgaria
SG	SG	SG	Switzerland
CEPS	CEPS	CEPS	Czech Republic
Germany	TNG+TTG+AMP+50HZT+EN+CREOS	Amprion	Germany, Denmark-West(EN), Luxembourg(CREOS)
REE	REE	REE	Spain
RTE	RTE	RTE	France
IPTO	IPTO	IPTO	Greece
MAVIR	MAVIR	MAVIR	Hungary
TERNA	TERNA	TERNA	Italy
SMM	CGES, MEPSO, EMS	EMS	Montenegro, North Macedonia, Serbia
TTB	TTB	TTB	The Netherlands
PSE	PSE, Western WPS	PSE	Poland
REN	REN	REN	Portugal
TEL	TEL	TEL	Romania
SEPS	SEPS	SEPS	Slovak Republic
TEIAS	TEIAS	TEIAS	Turkey

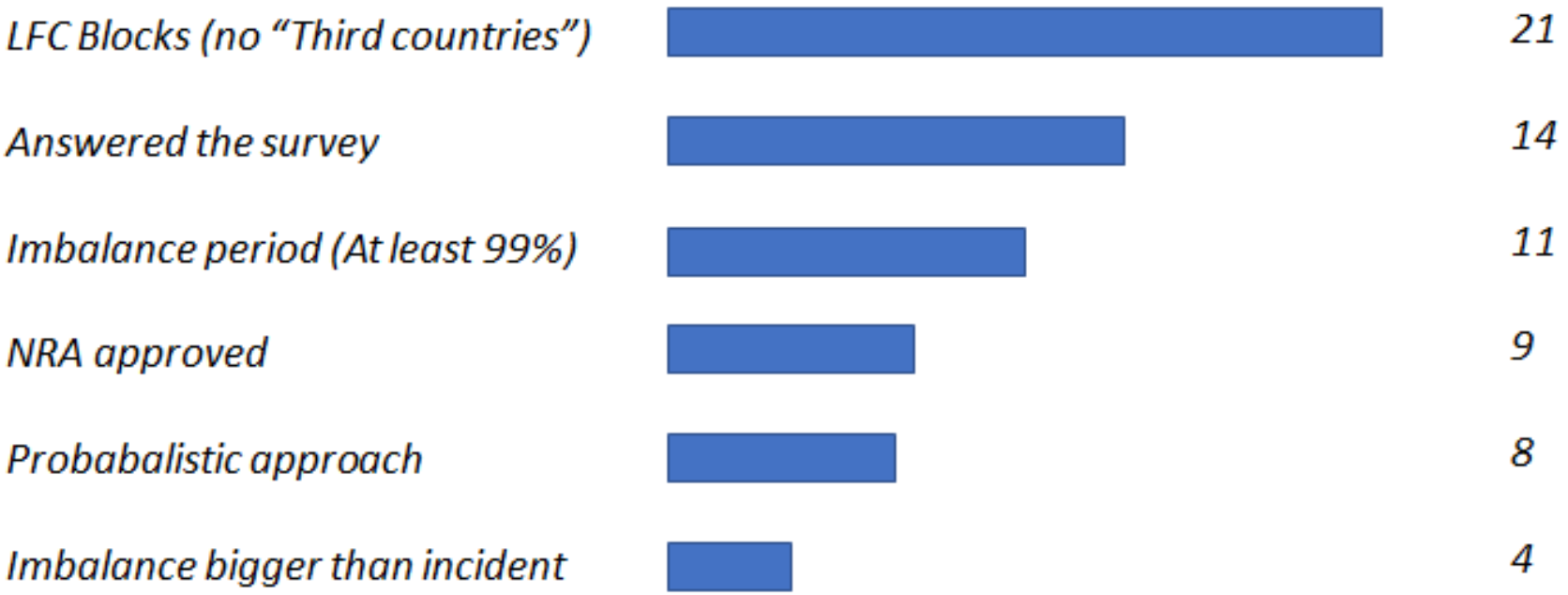
Survey Questions for LFC Blocks

- What is the size of your **dimensioning incident** (+/-)? Is it **bigger than the imbalances** in your block?
- Do you use **probabilistic approach** for FRR dimensioning?
- What is the **percentage** in terms of amount of time in which imbalance has to be covered (SO GL art.157(2)h and i) (+/-)?
- What is the **ratio between aFRR and mFRR** and how is the ratio defined?
- What is the **current state of your proposal** for your NRA? (Under development, under review, approved)
- Do you have any **additional comments** regarding the SOGL requirements from **Art. 157**?

Survey conclusions

Analysis

- **24 LFC-Blocks** (According to LFC Report of 2018), **4 synchronous areas** (CE , Nordic, GB, Baltic), **3** LFC-Blocks designated as „**Third Country TSOs**“



Analysis

- FRR **split**
  - Based on system imbalances, where mFRR=FRR-aFRR (variable)
  - Fixed on largest incident
    - mFRR is bigger than aFR R for positive incidents (Ratio from 1 up to 4.7 times aFRR)
    - aFRR is bigger than mFRR for negative incidents (Ratio from 1 up to 1.44 times mFRR)
  - Some countries don‘t operate an LFC→ all FRR is allocated as mFRR
- Dimensioning **incident**
  - Incidents size differs for positive to negative imbalances
  - Positive incident is mostly determined by the largest unit/Imbalances (from 510 up to 1800 MW)
  - Negative incident is mostly determined by the largest loads/imbalances (from 120 up to 1500 MW)

Conclusion

- *The LFC-Blocks **strive to fulfil the SOGL requirements** and the difference in implementation is normally due to local characteristic of each control block*
- 2 thirds of the LFC-Blocks answered the survey
- Different provisions of reserve dimensioning based on **imbalance size vs. incident size** implemented but both are **in line with SOGL**
- *High-Level information in the **LFC block agreement** (*e.g. **at least** 99%)
- Majority of LFC-Blocks are already using **probabilistic** approach and the rest is working on implementing it.

3.3 CBA LER – Update after Workshop 15th November

Luca Hortolano

12th December 2019

15th November Workshop with Stakeholders

- On the 15/11 a webinar for registered stakeholders took place.
- A comprehensive presentation describing all the input data for the implementation was published 2 weeks in advance on ENTSO-e website, with the possibility for stakeholders to send written comments.
- During the webinar the input data was presented, giving to the attendees the possibility to interact (ask for clarifications, raise comments, give suggestions) with brakes during the presentation and also with a dedicated Q&A session.
- The workshop had a significant attendance, with 38 connected stakeholders.

15th November Workshop: main comments

The **main topics** the stakeholders' comments were about are:

- The use of historical data (e.g. recorded DFD & LL) instead of applying a forward-looking approach for simulating the future system behaviour.
- The significance to use up to 15 years of historical data.
- The suitability of testing the system against the most relevant events actually occurred (2003 Italian B.O., 2006 CE system split) and how this test will be carried out.
- How the CBA should consider the effects of different Minimum Activation Time Period also for LER already qualified (e.g RoR).
- Clarification on the LER costs and a comparison with current costs on the "Regelleistung" market.
- **When/why a re-run of the CBA** will be considered.
- What will be the **actual output of the CBA**.

During the webinar answer has been given to stakeholder and it has been agreed that the presentation is updated in order to answer to the doubt/questions raised.

15th November Workshop: next steps presented

• 15/11/2019	ESC SO - WS on Input data
• Mid November – End of November	Refinement of input data following ESC WS
• End of November – mid-March	Run of the CBA methodology. Analysis of the results by all TSO's of SA CE and Nordic
• Mid-March – mid April	TSOs proposal to NRAs

Together with the proposal of the Minimum Activation Time Period, the rationale behind the chosen value will be included

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Full slide deck from the Workshop on the 15th November

- Visit the link here for the full slide deck of the CBA LER Workshop on the 15th November

4. NC Emergency and Restoration

Rafal Kuczynski

12th December 2019

4.1. - Submit information about publication of Terms & Conditions regarding defence and restoration plans approved by NRAs

Rafal Kuczynski

Article 4(2) of NC ER – links to the approved TCM

- Document on national implementation are available on ENTSO-E public web page :

https://www.entsoe.eu/active-library/codes/er/

4.2. - Overview Implementation of Art. 4(2)

Rafal Kuczynski

12th December 2019

Article 4(2) of NC ER – summary (status on 15.11.2019) - example

	Y	N	NA
Article 4(2)(a) – defence service provider - contract	7	9	14
Article 4(2)(b) – restoration service provide - contract	10	16	4
Article 4(2)(c) – list of SGUs and list of measures	13	12	5
Article 4(2)(d) – list of high priority SGUs	12	10	8
Article 4(2)(e) – suspension and restoration ofmarket activities	11	19	0
Article 4(2)(f) – imbalance settlement	11	19	0
30 EU (TSOs)			
Y - approved by NRA			
N - submitted to NRA			
NA - not applicable			

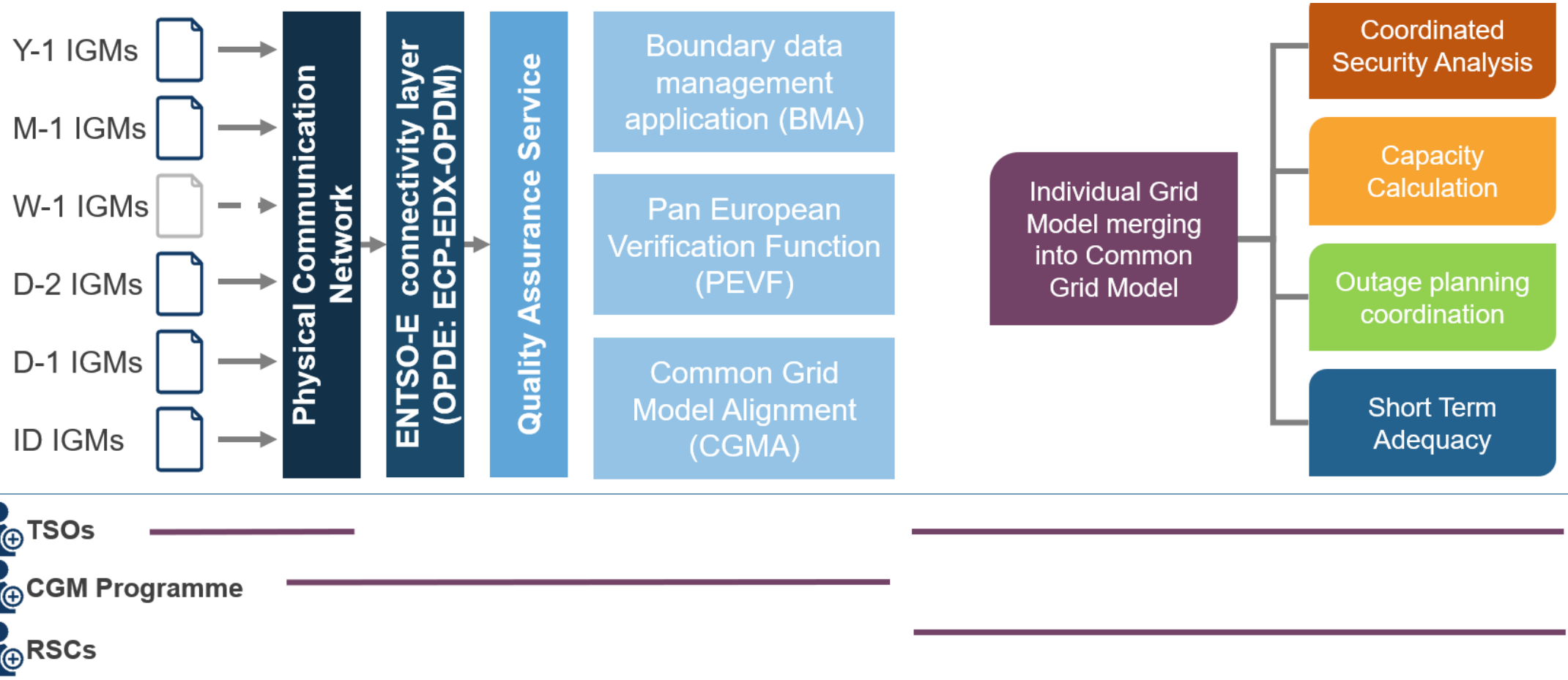
5. 5. CGM Program Implementation Update

Derek Lawler

12th December 2019

CGM Programme

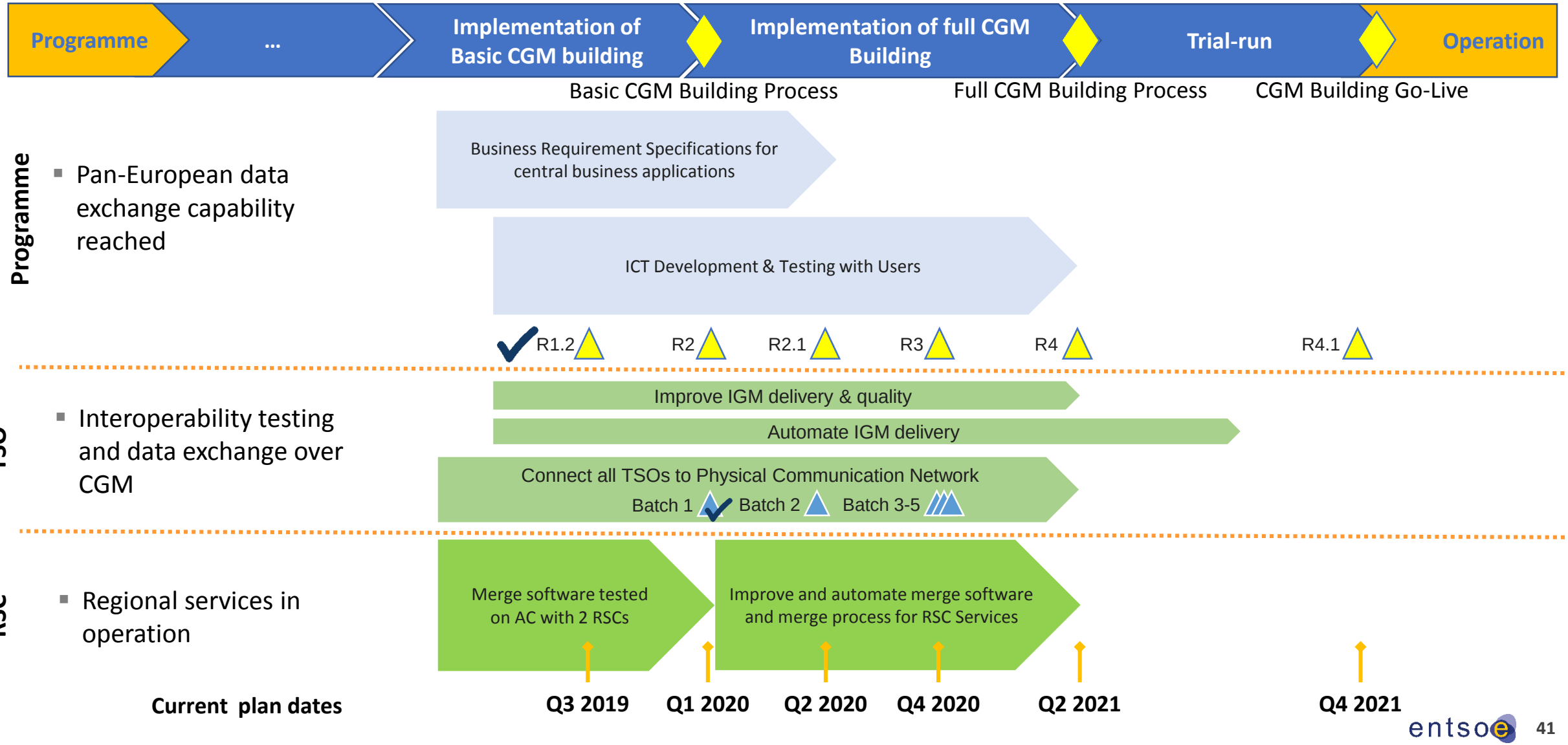
High-level CGM Building Process including RSC Services



Achievements

- Rollout out of Batch 1 of Physical Communication Network (PCN) was completed on time. TSOs for inclusion in Batch 3-5 to be confirmed by SOC in December.
- Consolidated Acceptance Report for Release 1.2 issued in November confirmed successful ICT Delivery.
- Release 1.2 now supports the capability for a first test of the Basic CGM Build Process.
- Strong response from TSOs and RSCs to participate in the Basic CGM Build test scheduled for end of November 2019.
- Successful recruitment of several roles as a result of an intense and accelerated recruitment process.

High-level CGM Programme plan



CGM Programme's milestones

Basic CGM Building

The milestone enables RSCs / TSOs to…

- ✓ up- / download IGMs and to send IGMs / CGMs via stable OPDE environment
- ✓ perform basic processing of IGMs
- ✓ merge IGMs in CGMs and publish CGMs
- ✓ up- / download CGMs with focus on one timeframe (e.g. D-1)
- ✓ align processes and procedures (e.g. CGMES implementation guide, quality specification document)

✓ **"Demonstrate model merge considering AC flows on the largest possible interconnected model used by selected RSC Service"**

Full CGM Building

The milestone enables RSCs / TSOs to…

- publish IGMs (after quality check)
- process IGMs in full extent in CGMES
- publish CGMs for all timeframes and available for RSCs' Services integration
- communicate securely over OPDE
- receive support by the Service Desk
- onboard the operational team
- ensure Business Continuity for CGM building
- align processes and procedures (e.g. pan-European master data procedure, DC implementation guide, HVDC requirements)

CGM Building Go-Live

The milestone enables RSCs / TSOs to…

- communicate via a meshed and secure Physical Communication Network
- fully operate the CGM building process without support of the CGM Programme
- CGM deliverables ready for RSCs' Services including Capacity Calculation

Q4 2019 — **Q2 2021** — **Q4 2021**

Basic CGM Build Process Test

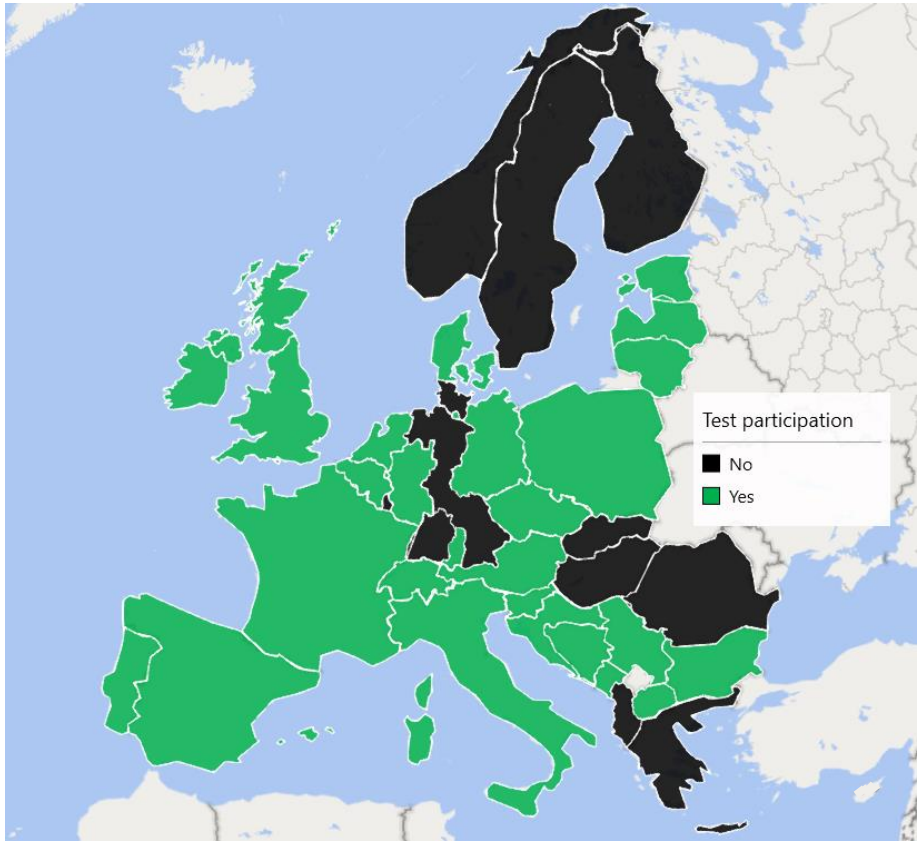
CGM Programme	RSCs / TSOs
• Testing of Basic CGM Building Process and its functionalities • Demonstrate the biggest possible model merge • Improving OPDE Environment and specify further change requests if needed • Demonstrate the progress of CGM Programme and the development of TSOs / RSCs to ENTSO-E SOC / Board / Assembly and EU Commission	• Demonstrate RSC/TSO capabilities to contribute to the 5 RSC Services • TSOs/RSCs support therewith to identify bugs and defects which lead to further improvements • Knowledge spill over and sharing best practices &lessons learned

TSOs, RSCs and the CGM Programme will jointly test the Basic CGM Build Process capability

Basic CGM Build Process Test

- **In total 25 TSOs and 3 RSCs participated during the Basic CGM Build Process Test on three consecutive days end of November 2019**
- **During the test days 22 TSOs were able to provide D-1 IGM files with a sufficient quality level to build a pan-European CGM file**
- **All participating RSCs published CGMs and individual security analysis on the created CGM files were executed**
- Currently the final report and results are being prepared, including the lessons learned

Source: CGM Business | Map Responsible: Raphael Gielen



Overall the results of the Basic CGM Build Test has shown, that a Basic CGM Build Process can be executed by TSOs and RSCs.

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