

Report from the Expert Group : Advanced capabilities for Grids with a High Share of Power Park Modules

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[GC ESC] 27th meeting - Hybrid (Ljubljana & MS Teams)
ACER premises
21 Sept 2022

Topics after 26th ACER meeting



- Concluded 3 Meetings after the last ACER report
- No meeting in August (Summer Holidays)
- No F2F meeting as of now planned (only online meeting)



- Creation of skeleton template for documentation
- Agreement for Template for comments, observations
- Repository management and document merging



- Analysis and discussion of works from VDE FNN
- Analysis and discussion of works from CENELEC TC8X WG03
- Quotes and references discussion based on German TSO papers, ENTSO-E Project Inertia

Summary

- ❑ Dependency of **grid stability** is increasing due to replacement of synchronous generators by inverter based generation
- ❑ Complexity of power system is significantly increasing (HVDC, STATCOM, Inverters etc.,)
- ❑ Defining connection point based grid codes to ensure a stable system is challenging.
- ❑ **Critical scenarios** which must be manageable needs to be defined clearly (eg : System split)
- ❑ Non Synchronous PGM (Power Generation modules) are presently not Grid forming.
- ❑ Presently **Stability** of Non Synchronous PGM depends on the existence of synchronous PGM

Summary

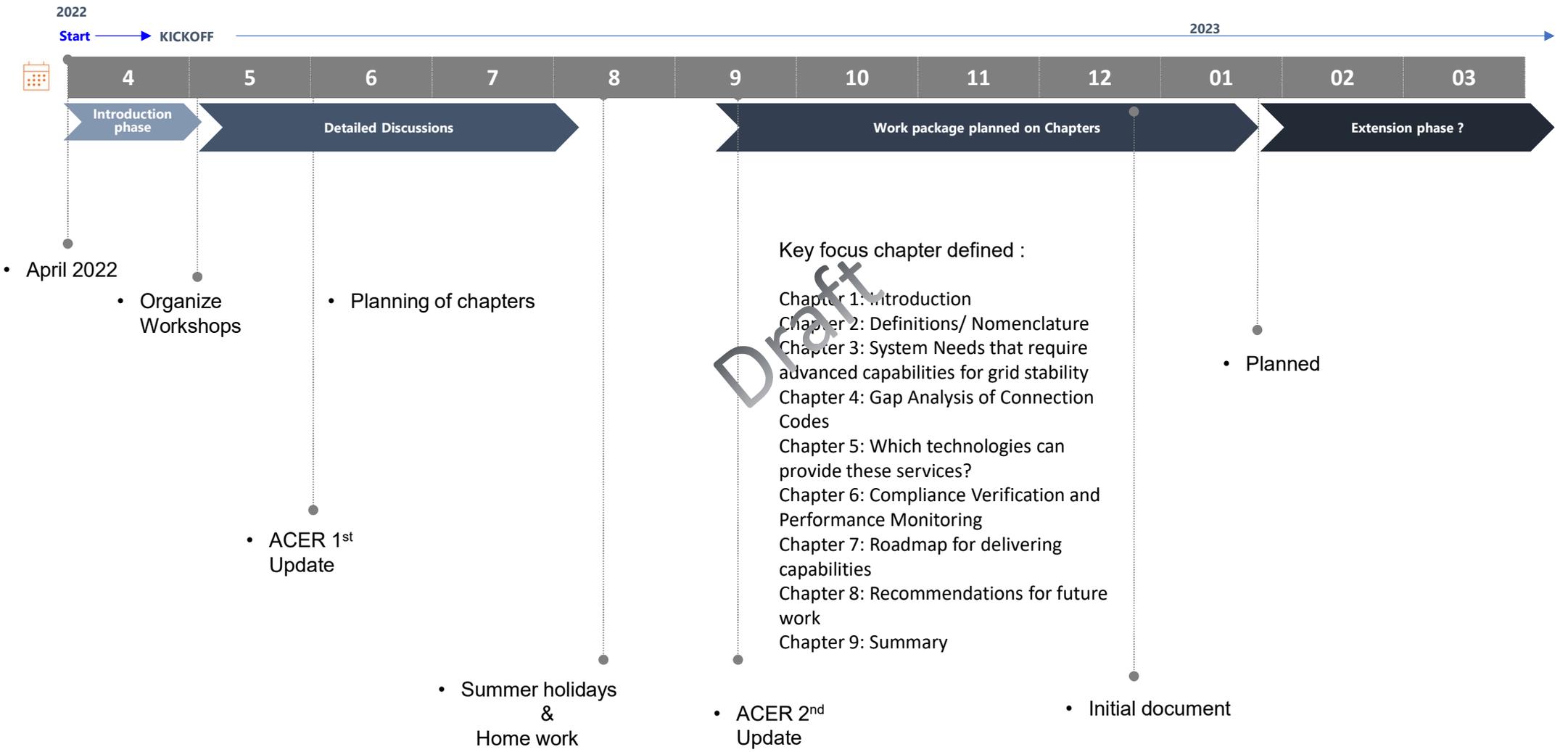
- ❑ Work ongoing to create recommendation for the sub chapters.
- ❑ Separate expert team leading sub chapters
- ❑ Integration of sub chapters as an when its ready

Chapters Under Planning

- Chapter 1: Introduction
- Chapter 2: Definitions/ Nomenclature (preliminary documentation and work in progress for chapter 2)
- Chapter 3: System Needs that require advanced capabilities for grid stability (preliminary documentation and work in progress for chapter 3)
- Chapter 4: Gap Analysis of Connection Codes
- Chapter 5: Which technologies can provide these services?
- Chapter 6: Compliance Verification and Performance Monitoring
- Chapter 7: Roadmap for delivering capabilities (preliminary documentation and work in progress for chapter 7)
- Chapter 8: Recommendations for future work
- Chapter 9: Summary

Sub-groups are dedicated for each chapters and presently discussions inside the sub-groups are very active

Proposal timeline (rough indicator)



CENELEC TC8X WG03 Outcome

GFM technology for DSO grid from CENELEC TC8X WG03

Questions raised :

1. Stability of voltage source generators connected to the distribution network
2. Interaction with the transmission system for voltage source generators
3. Interaction with online tap changers
4. Line protections on the distribution system
5. Islanding on the distribution system

Conclusion : GFC converters on the distribution system, should be done at the **substation at the MV or HV busbar or on dedicated MV feeders connected** directly to the substation, this is electrically connected to the transmission system and not to the distribution system.

Phase 2 : Technical Pending Points

Key Chapter : Chapter 3 - System Needs that require advanced capabilities for grid stability

1. Stability based approach

- **SPGM/PPM capabilities and assessment to overcome system instabilities**

- Uncluttering various opinions and publication to have clear understanding of the systematic view on grid stability
- Understanding “severe system splits” between collapse on missing inertia and on voltage control deficits
 - a) moving with the interconnected / or split system into the frequency region outside the typical frequency band of $\pm 200\text{mHz}$ by whatever reason triggering LFSM-O/U
 - b) moving the system (by grid developments and specific dispatch) into situations where the SCR in front of a PPM falls below a critical limit

2. Classification of Types

- Harmonizing the naming and the Types (different EU projects work groups and countries comes up with different name of the types)
 - Consensus required and being discussed on the type classifications

Phase 2 : Effort drivers for documentation

- Convergence of ideas into documentation (due to the nature of topic with various works, research, studies and similar working group outcome =
- Merging of various documentation into readable format
- Change management and task tracing
- Proof reading and agreement inside the working group for final documentation
- Deliverables and recommendation
- Various ideas presently and moving towards challenge to get unanimity

Next Steps

- Project timeline planned and will be circulated
- Small working groups for various chapters (smaller meeting groups)
- Three more meetings before December
- Proof reading and agreement inside the working group for final documentation
- Deliverables and recommendation by beginning of next year

Question to ACER

- Deadline
- Possibility of Extension if Required
 - If so – how much ?

Thank you