Load Frequency Control & Reserve:

Scope and main issues

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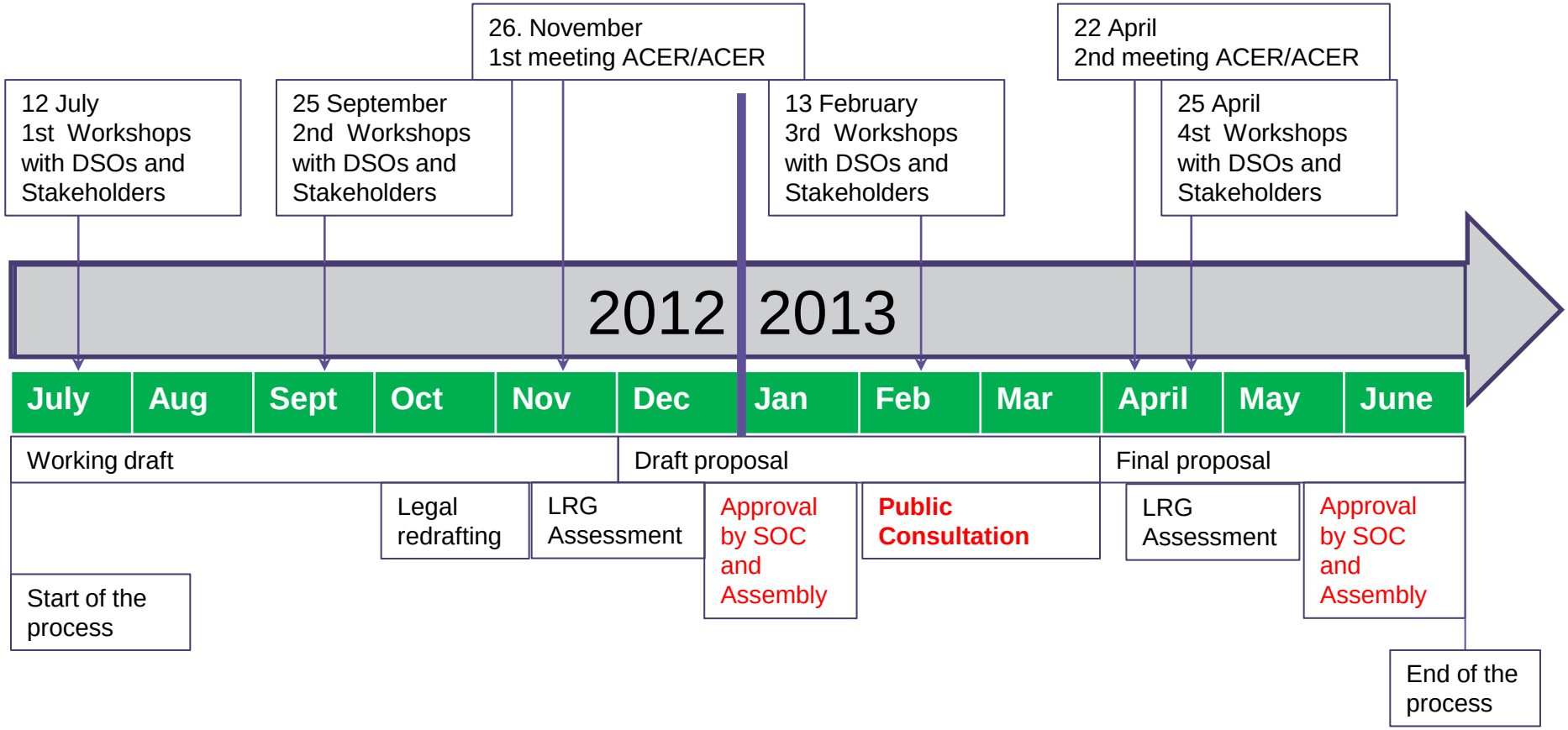
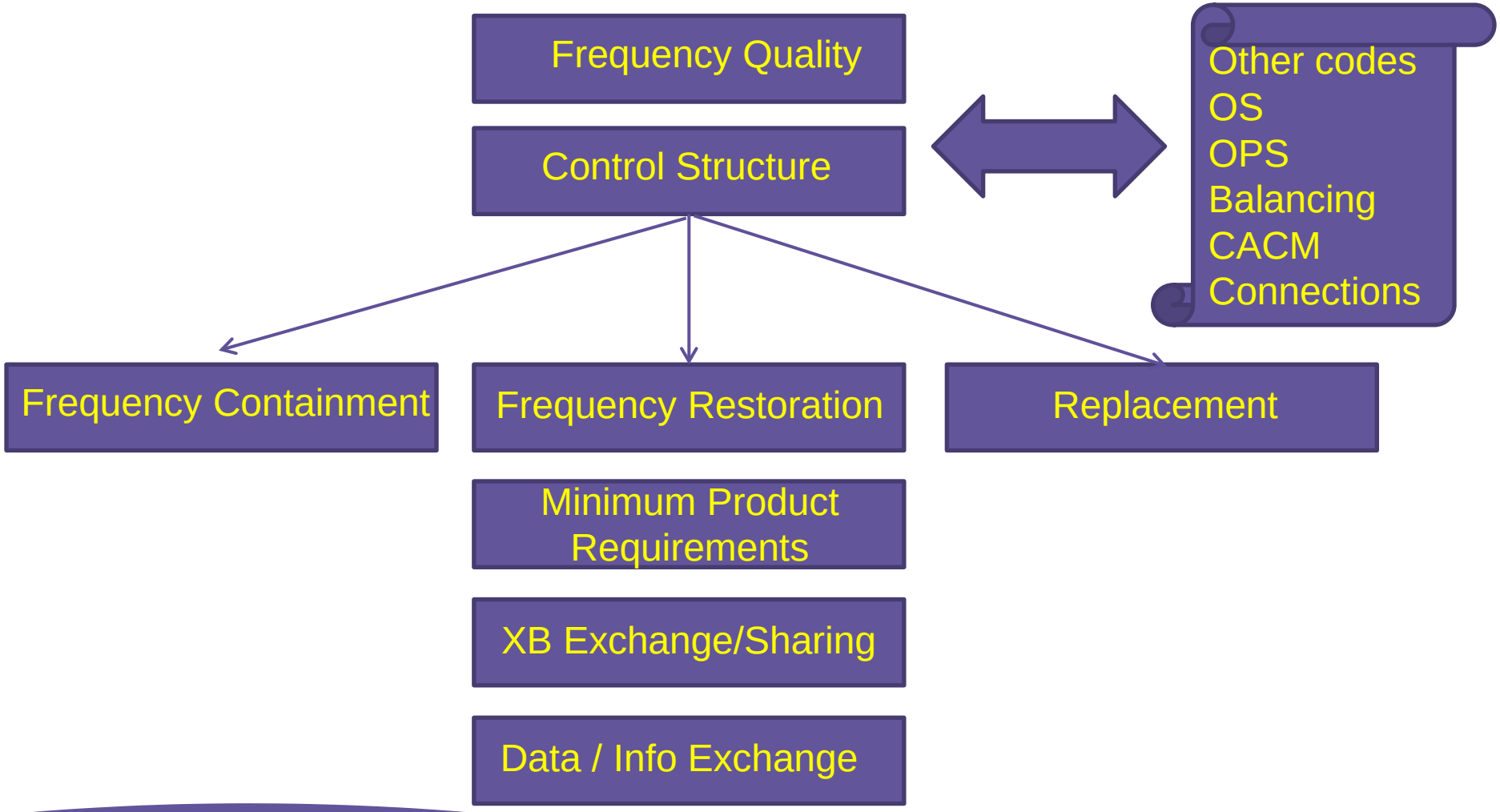
Reliable Sustainable Connected

Main steps for LFC&R NC



DT LFC&R Global Framework



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DT LFC&R Global Framework: “Out of Scope”

Procurement / Products

Emergency Conditions

Market design and resulting imbalances

Capacity for XB Exchange / Sharing

Frequency Quality

- Obligation to define common Frequency Quality Criteria per Synchronous Area (S.A.):
    - Objective
    - Evaluation Purposes
- the Frequency Quality Criteria have to respect the size and generation / load characteristics of the S.A.
- Obligation to co-operate on S.A. level to monitor the quality

Control Structure

- Obligation to define common LFC structure per (S.A.):
  - activation of FCR (mandatory)
  - activation of FRR (mandatory)
  - activation of RR
- Possible Choices:
  - central LFC
  - de-central LFC (Pluralistic, Hierarchical Control Block)
- General Principle of Reserve Activation (FCR => FRR => RR)
- Implementation Details

Frequency Containment

- Definition of the Reference Incident relevant for Dimensioning
- Obligation to perform a risk assessment
- Initial Distribution of FCR within a S.A.
- TSO obligation to organise the provision of required FCR
- Limitations to volume contribution per unit / electrical node
- Connecting TSO obligation to monitor the Reserve Providing Units
- Implementation Details

Frequency Restoration

- TSO obligation to define a FRR performance targets and criteria
- TSO best effort obligation to follow the FRR performance targets
- Basic guidelines for dimensioning
    - Definition of the dimensioning incident (minimum for FRR sizing)
    - TSO obligation to follow the performance criteria
- Connecting TSO obligation to monitor the Reserve Providing Units
- Implementation Details

Replacement

- Basic guidelines for RR dimensioning
- TSO – TSO applications (emergency reserve)
- Connecting TSO obligation to monitor the Reserve Providing Units
- Implementation Details

XB Exchange / Sharing

- Rules for Border – Crossing Exchange
  - Roles and Responsibilities of the Parties involved
  - Congestion Management
  - Processes needed to organise XB Exchange (e.g. Notification)
- Rules for the distribution of reserves: FCR / FRR / RR
- Rules for Reserve Sharing
- XB Exchange between Synchronous Areas

Product Requirements / Data Exchange

Product Requirements

- Definition of technical parameters – framework for reserve products
  - Frequency Containment Reserve
  - Frequency Restoration Reserve
  - Replacement Reserve
- Provider Obligation to fulfil these requirements
- Connecting TSO Obligation to monitor the fulfillment of these requirements

Data Exchange / Information:

- TSO obligation: definition of data to monitor the reserve providing units
- reserve providing units obligation to deliver the requested data