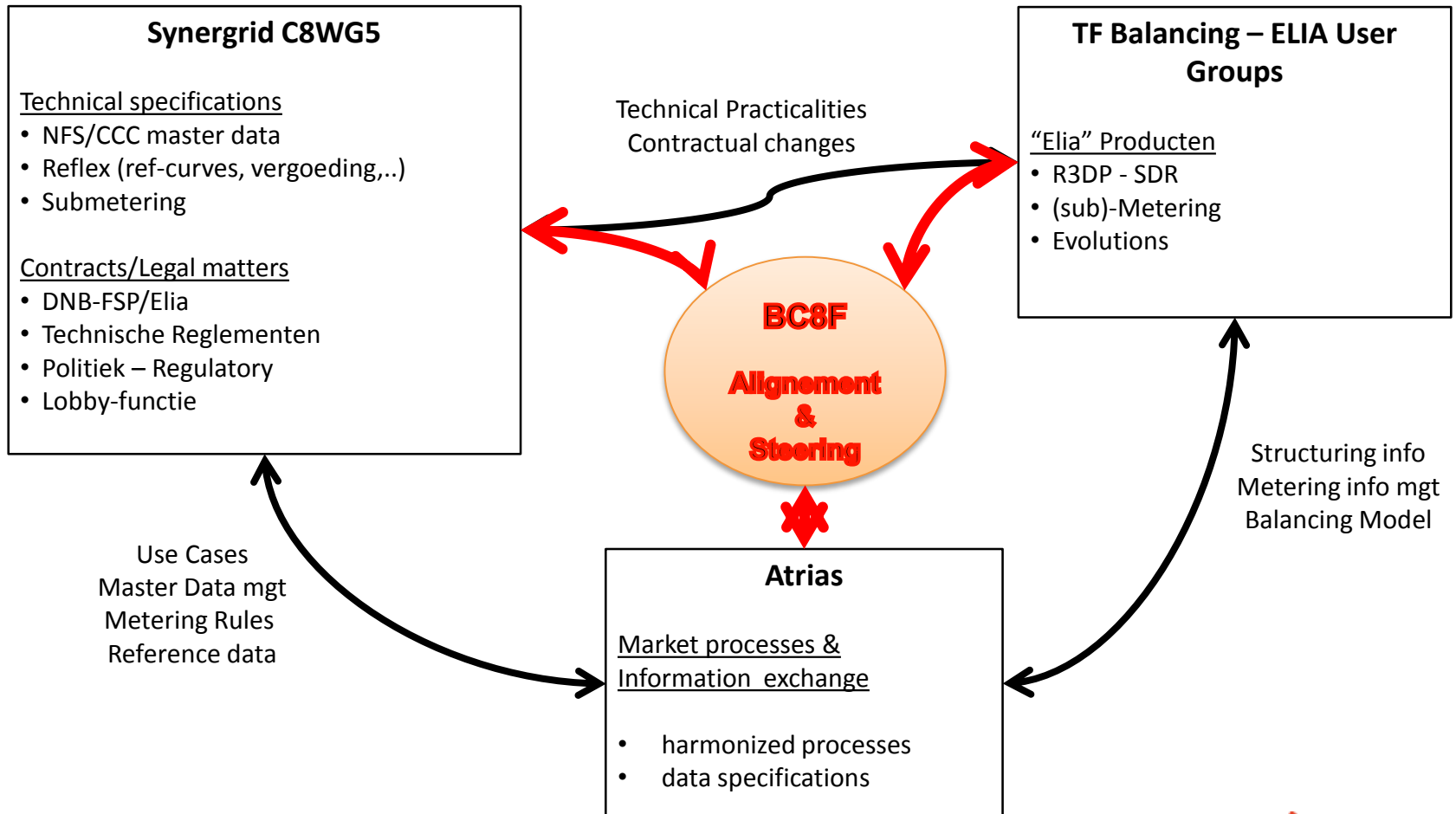


Role of the DSO in providing flexibility

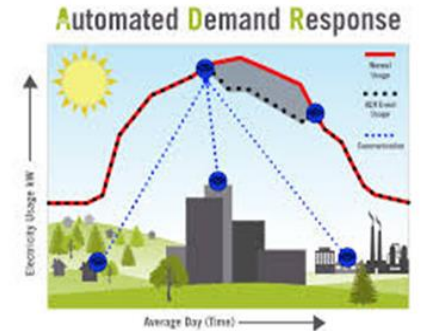
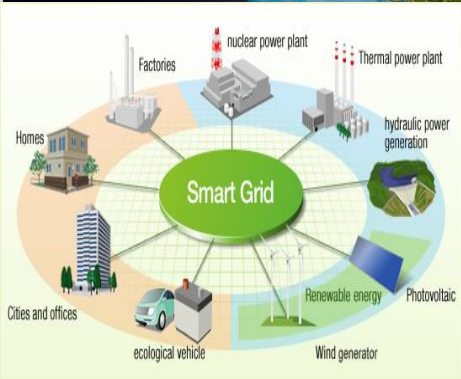
Febeliec Workshop Demand Response

15/6/2015

Introduction: Synergrid, the flexibility ballpark



The evolving energy system



Introduction

Key objectives of European Energy Policy

- Security of supply
- Efficient market functioning
- Durability & integration of renewable sources

Flexibility is key to contribute to these objectives in a cost efficient way

Introduction

CEER → **Competitive, sustainable and secure Internal Energy Market**

- **Consumers and retail markets**
 - Increasing the active involvement/participation and developing services
 - Remove market barriers
- **New legislative/policy development**
 - Developing the need for greater quantities of flexible response
 - Appropriate levels of consumer protection
- **The changing role of the DSO**
 - **DSO as a market facilitator**

Introduction

CEER → DSO as a market facilitator

- Create a regulatory tool box for the **DSO as a market facilitator** in areas which are not within the core of the regulated DSO activities
 - Allow DSO access to information essential to efficient operation of the network
 - Provide access to commercial information to market players and allow development of new markets based on services to consumers
 - Protect the rights of the customers to own and control access to their data
 - Address technical issues relating to data management
 - Examine interactions between TSO and DSO

Agenda

- Flexibility as a system service
- How does DSO contribute to flexibility today
- Regulatory framework today
- Future evolutions

Flexibility as a system service

Flexibility = (*)

the **modification** of generation injection and/or consumption patterns in reaction to an **external signal (price signal or activation)** in order to provide **a service within the energy system** .

Service for example delivered to

Balance Responsible Party / Supplier

Transmission System Operator

(Future?) Distribution System Operator

Existing examples with flexibility for TSO, from distribution grid:

- *R3DP (balancing power) and SDR (strategic demand reserves)*
- *In most cases: through an aggregator (no direct relation between DGU and TSO)*

(*) See definition in EG3 Report: Regulatory Recommendations for the Deployment of Flexibility. January 2015

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How does the DSO contribute to flex market products ?

Active participation by DSO in market processes related to Elia products R3DP and SDR

- Pre-contractual^(*) phase
- During the execution of the contract

() With reference to the contract between aggregator and Elia*

Timings & processes by DSO aligned with Elia product timing *(call for tender etc)*

How does the DSO contribute to flex market products ?

Pre-contractual phase

1) Provision of relevant information to DGU and aggregator about the grid connection

- **By means of document “CCC”** (*customer contract check*)
- **To enable/facilitate aggregator and DGU to**
 - ensure consistency between offered flexibility and connection contract, for example
 - Relation contracted connection capacity and offered flex capacity
 - DSO metering devices allow calculating flexibility
 - Correct and safe use of emergency generators
 - Presence of necessary DSO metering devices
 - easily find all required data when making the “pool list” (*EAN, installation ID, ...*)

How does the DSO contribute to flex market products ?

Pre-contractual phase

2) Study and reservation of necessary grid capacity

■ By means of network flex study “NFS”

Why perform a grid study for already existing connections ?

External signals may lead to higher simultaneous behaviour of multiple grid users, leading to aggregated peak loads :

- *that were estimated highly unlikely in the past when performing the connection study (based on statistical analyses & experiences)*
- *and for which the grid is not dimensioned.*

→ **Network Flex Study takes potential higher simultaneous behaviour into account and reserves necessary grid capacity**

→ **Positive NFS guarantees continuous operational security & quality when activating / deactivating flexibility**

How does the DSO contribute to flex market products ?

Pre-contractual phase

3) *(if requested)* installing extra metering equipment for the “settlement” of provided flexibility

- Submetering for cases where only part of the installations of the DGO are flexible
- For the moment only for R3DP2016
- Why submetering by DSO ?
 - DSO is familiar with metering & data handling for market processes
 - DSO guarantees confidential and independent data treatment → prevent “vendor lock in”
 - If submetering is regulated: clear rules & delays for validation, rectification procedures etc → ensures reliable market processes
- **New! See ongoing consultation Synergrid**

How does the DSO contribute to flex market products ?

Pre-contractual phase

4) *(dependent of product)* Providing data for the “certification” of flexible pools

- Requested by SDR product specifications to allow verification *(by Elia)* whether pool is suitable as a SDR provider.
- Data transfer
 - *from DSO to Elia*
 - confidential data treatment guaranteed by regulation
 - *from DSO to aggregator on request*
 - mandate by grid user

How does the DSO contribute to flex market products ?

Pre-contractual phase

5) Signing contract DSO – aggregator

- **Will be mandatory by Flemish regulation (“TRDE”)** *(for flexibility sourced from distribution grid)*
- **Contract contains terms and conditions with regard to**
 - Data transfer
 - Procedure for qualification & pool changes
 - Liability & confidentiality
- **Contract model = equal for all Belgian DSOs (Synergrid)**
- **Pool lists as annexes of the contract: master data**
- **Relevance for market? → The signed contract proves to Elia that the DSO**
 - has verified compliancy and capacity reservation of the concerned EANs
 - will include the concerned access points in data handling for settlement of flexibility

How does the DSO contribute to flex market products ?

During the execution of the contract

1) Management of pool master data

- Keep track of flexible grid users entering / leaving the pool of an aggregator (*wrt distribution grid*)
- Link with access register to keep track of actual relations:

DGU – aggregator – BRP

- Allows to inform the impacted BRP in case of flex activation without infringing confidentiality

= precursor of *flex register* comparable to *access register* in regular electricity market

How does the DSO contribute to flex market products ?

During the execution of the contract

2) Measurement & data handling

- **Calculation & reporting of delivered service**
 - to allow payment and/or verification of contractual compliances between aggregator and user of flexibility
 - Includes measurement & processing (aggregation, baseline calculation...) of data
 - Structural dataflow DSO → Elia for settlement of flexibility
- **Comparable to *settlement* in regular electricity market**

It works!

- TSO and DSO processes, timings & procedures are aligned
- Market is functioning for products at DSO-level
 - 678,7 MW (371 DGUs) was pre-qualified by DSOs for R3DP2015
- Stepwise improvements in market processes
- Ready to tackle new challenges

Agenda

- **Flexibility as a system service**
- **How does DSO contribute to flexibility today**
- **Regulatory framework & prescriptions today**
- **Future evolutions**

Regulatory Framework (1)

❑ **Design & tendering of Elia products → Federal legislation**

❑ **But also regional legislation applies**

- When flexibility is sourced from distribution grid
- Example: Flanders
 - New version technical regulation (“TRDE”) 2015
 - Sets the regulatory framework for the delivery of flexibility services to DSO or TSO
 - Obligation of contract between DSO & aggregator
 - DSO must maintain operational security : may impose limitations if necessary & after motivation

Regulatory Framework (2)

DSO-contract templates & prescriptions elaborated by Synergrid

- Synergrid C8-1: Procedure for qualification
- Synergrid C8-2: submetering by DSO
- Model contract DSO – aggregator for R3DP & SDR

currently consultation of revised documents

(revision for consistency with R3DP2016)

& new document w.r.t. submetering

<http://www.synergrid.be/index.cfm?PageID=20693>

Agenda

- Flexibility as a system service
- How does DSO contribute to flexibility today
- Regulatory framework today
- Future evolutions & vision

Future evolutions for DSO (1)

□ Increasing maturity in **capacity management & market processes**

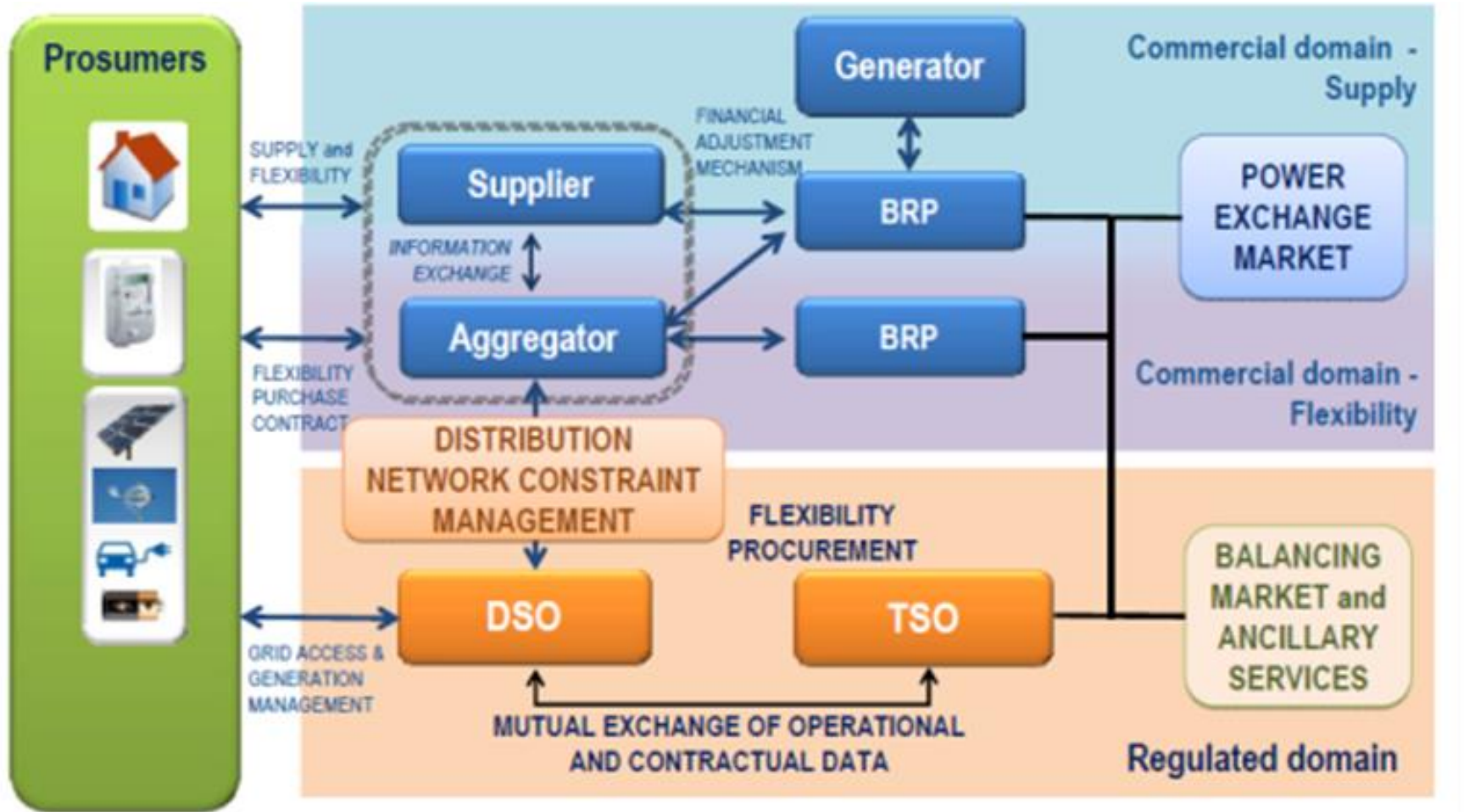
- Smarter approach of flexible capacity management
- Flex register and activation register for better structure & automatisisation of data handling

→ **Stepwise improvements in market processes for reliable products**

□ DSOs plead to confirm their role as **neutral market facilitator in upcoming regulation**

- for guaranteeing **equal access** to flex market for various types & users of flexibility
- while maintaining **operational security & quality of supply**
- and having the possibility to manage own grid in the **most efficient way for society**
- future-proof regulation: compliant to **European Framework**

European Framework



Future evolutions for DSO (2)

□ Active netmanagement for efficient use of infrastructure

→ Pilot projects to test Smart Grid concepts at MV-level

- Extend the conventional grid capacity by better knowledge of system state & actively managing power flows
- **Example : smart wind turbines @ port of Antwerp**
 - Technical possibility to curtail (*in exceptional cases*)
 - to avoid larger & unused infrastructure investments & to allow faster grid access
 - “Dynamic Line Rating” for temporarily allow higher electrical flows and thus maximizing available grid capacity *even at deteriorated grid conditions*

The full package of flexibility...

Flexibility relation between DGU and... ↓	Type of signal	
	Price signal <i>DGU decides whether to react on signal</i>	Activation signal <i>DGU has an contractual agreement to react on signal</i>
Market player	<ul style="list-style-type: none"> • Active response on instantenous prices <i>(eg supply contracts based on instananeous BELPEX-price)</i> 	<ul style="list-style-type: none"> • Optimization of BRP position • Participation to a TSO product <i>(balancing / strat reserves)</i>
	<ul style="list-style-type: none"> • Congestion management services to a DSO or TSO 	<ul style="list-style-type: none"> • Congestion management services to a DSO or TSO
DSO	<ul style="list-style-type: none"> • New grid tariffs <i>(eg Time of Use, fix/flex tariff....)</i> 	<ul style="list-style-type: none"> • Limitation set by DSO at regulated conditions <i>(ultimate & exceptional means for congestion management)</i>

Conclusions

The Role of the DSO in providing flexibility:

Maximise the level playing field of flexibility for the market while maintaining operational security

- Efficient use of infrastructure
- Introduce active netmanagement
- Facilitate the market to unlock the full potential of flexibility