



Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation

## Project Brochure and other project presentation material

D7.2

Authors:

<b>Distribution Level</b>	PU
<b>Responsible Partner</b>	EUI
<b>Checked by WP leader</b> <b>[name surname]</b>	Date: 21.04.2016 Ilaria Conti
<b>Verified by the appointed</b> <b>Reviewers</b> <b>[name surname,</b> <b>name surname]</b>	Date:
<b>Approved by Project</b> <b>Coordinator</b>	Date: 21.04.2016 Gianluigi Migliavacca



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691405

## Issue Record

<b>Planned delivery date</b>	M3
<b>Actual date of delivery</b>	M4
<b>Status and version</b>	final

<b>Version</b>	<b>Date</b>	<b>Author(s)</b>	<b>Notes</b>
1.0	21.04.2016	Ilaria Conti	

## About SmartNet

The project SmartNet aims at providing architectures for optimized interaction between TSOs and DSOs in managing the exchange of information for monitoring and for the acquisition of ancillary services (reserve and balancing, voltage regulation, congestion management) both at national level and in a cross-border context. Local needs for ancillary services in distribution systems are supposed to co-exist with system needs for balancing and congestion management. Resources located in distribution systems, like demand side management and distributed generation, are supposed to participate to the provision of ancillary services both locally and for the system in the context of competitive ancillary services markets. Through an in-depth and a simulation in a lab-environment, answers are sought for to the following questions:

- Which ancillary services could be provided from distribution to the whole system (via transmission)?
- Which optimized modalities could be adopted for managing the network at the TSO-DSO interface and what monitoring and control signals could be exchanged to carry out a coordinated action?
- How the architectures of the real time markets (in particular the balancing markets) could be consequently revised?
- What information has to be exchanged and how (ICT) for the coordination on the distribution-transmission border, starting from monitoring aspects, to guarantee observability and control of distributed generation, flexible demand and storage systems?
- Which implications could the above issues have on the on-going market coupling process, that is going to be extended to real time markets in the next years, according to the draft Network Code on Electricity Balancing by ENTSOE?

Different TSO-DSO interaction modalities are compared with reference to three selected national cases (Italian, Danish, Spanish) also supposing the possibility of a cross-border exchange of balancing services. Physical pilots are developed for the same national cases.

## Partners



## Table of Contents

1 Introduction.....	5
2 Project Promotional Materials and Templates .....	6

## Executive Summary

As part of the project general communication and dissemination activities (Task 7.1.), the project common corporate identity was designed and the first project promotional materials were created.

## 1 Introduction

As part of task 7.1. General communication and dissemination activities, EUI, together with the other project partners, defined the project corporate identity and produced the first presentation materials. The outputs of this task are: presented in the following orders

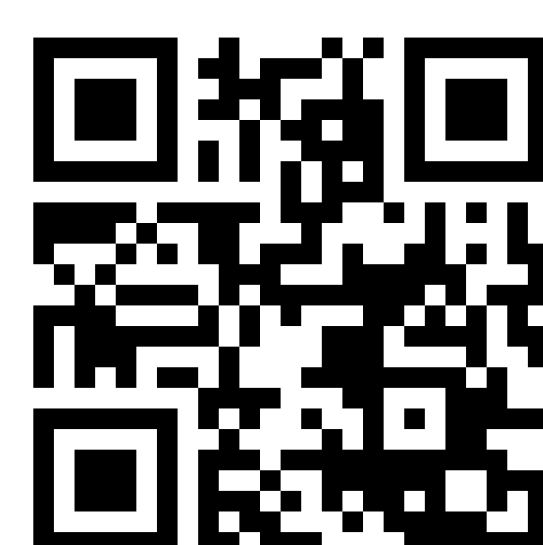
- Project logo
- Project banner (roll-up)
- Project brochure
- Project templates (word and power point)

## 2 Project Promotional Materials and Templates



**SmartNet**

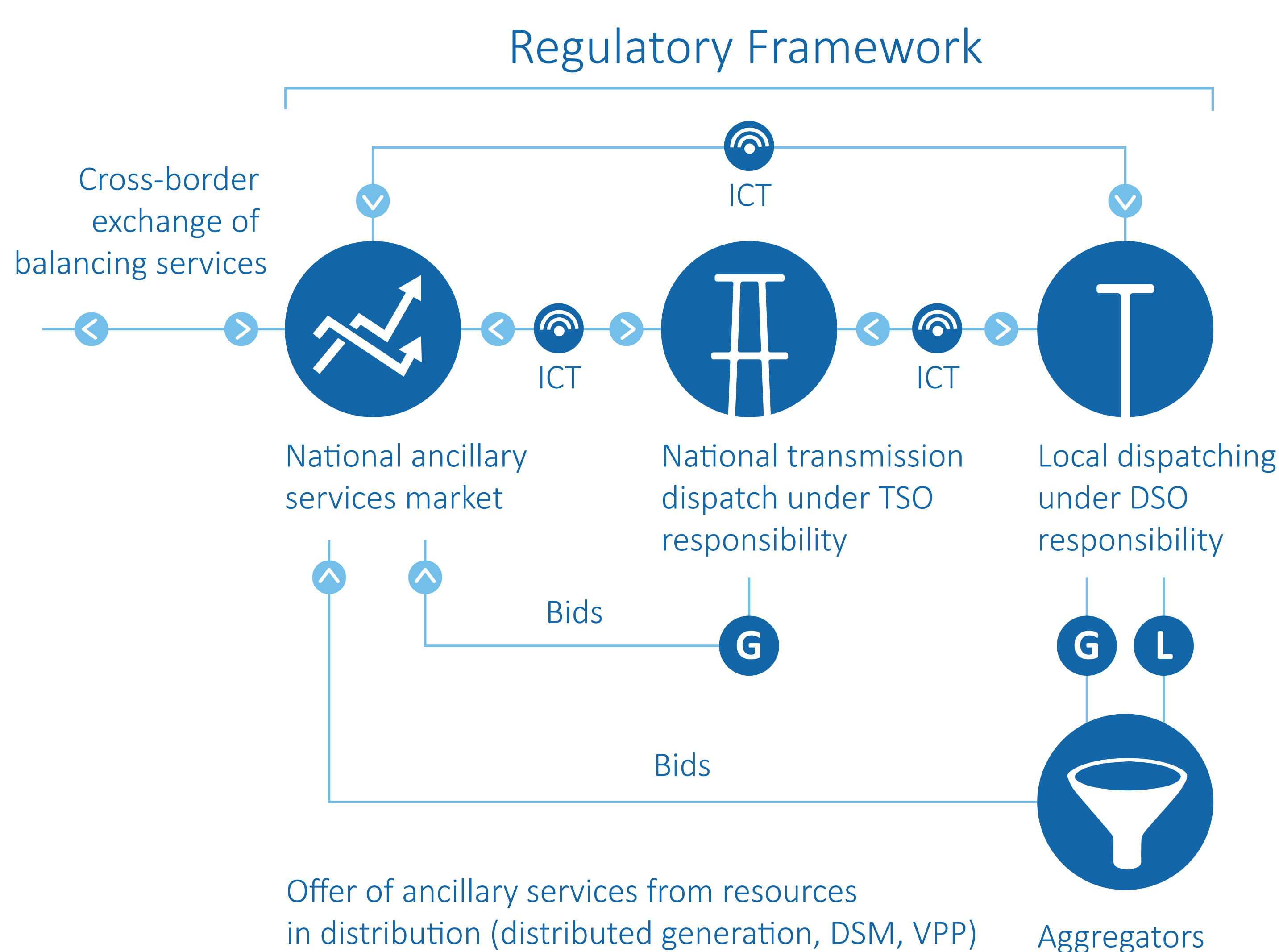




## SmartNet aims at optimising the TSOs - DSOs interaction in the management of information exchange for the acquisition of ancillary services from the distribution network

### The project aims at identifying

- Which **ancillary services** could efficiently be provided from distribution to the whole system.
- Which **optimized modalities** could be adopted for managing the network at the TSO-DSO interface and what **monitoring and control signals** could be exchanged.
- What information are relevant to be exchanged and how ICT could **favour the process**.
- The **regulatory implications** on the European system.



Relationship between main system actors

### Three Pilots

#### DSO area data monitoring

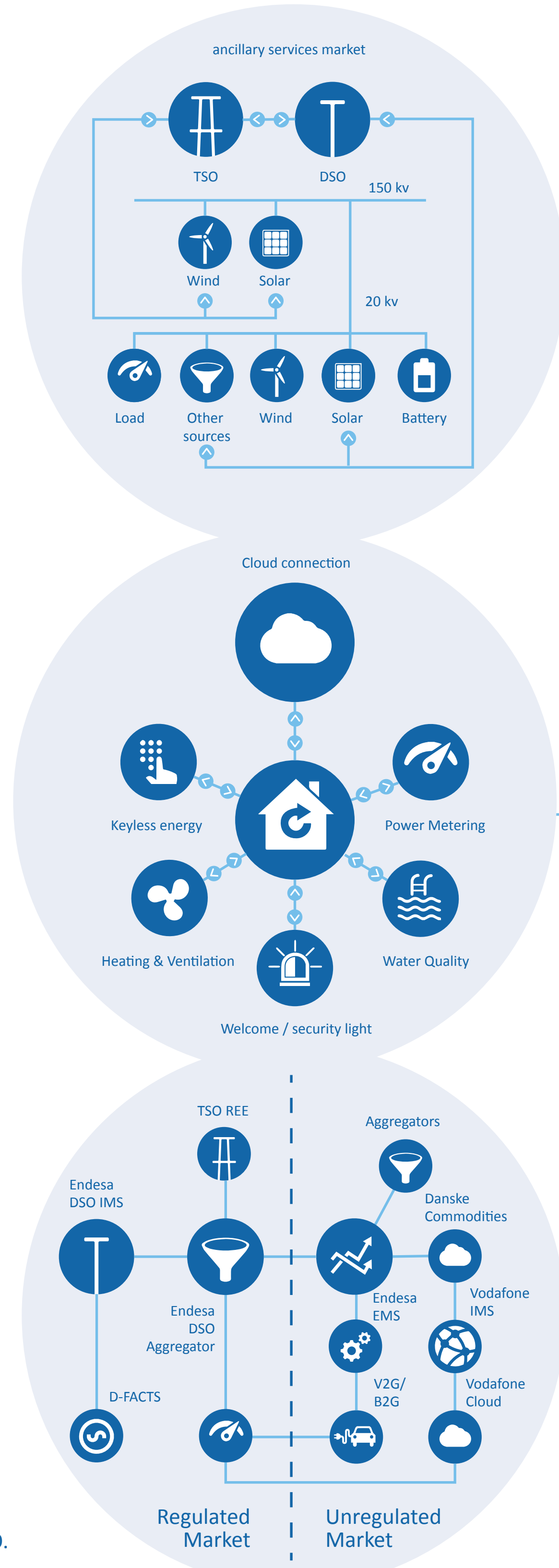
Development of an aggregation system and implementation in field of a device in order to exchange all the data with the TSO.  
Development of an architecture and implementation in field of a system for the voltage regulation.  
Development of an architecture and implementation in field of a system for the power-frequency regulation.

#### Flexibility from thermal inertia

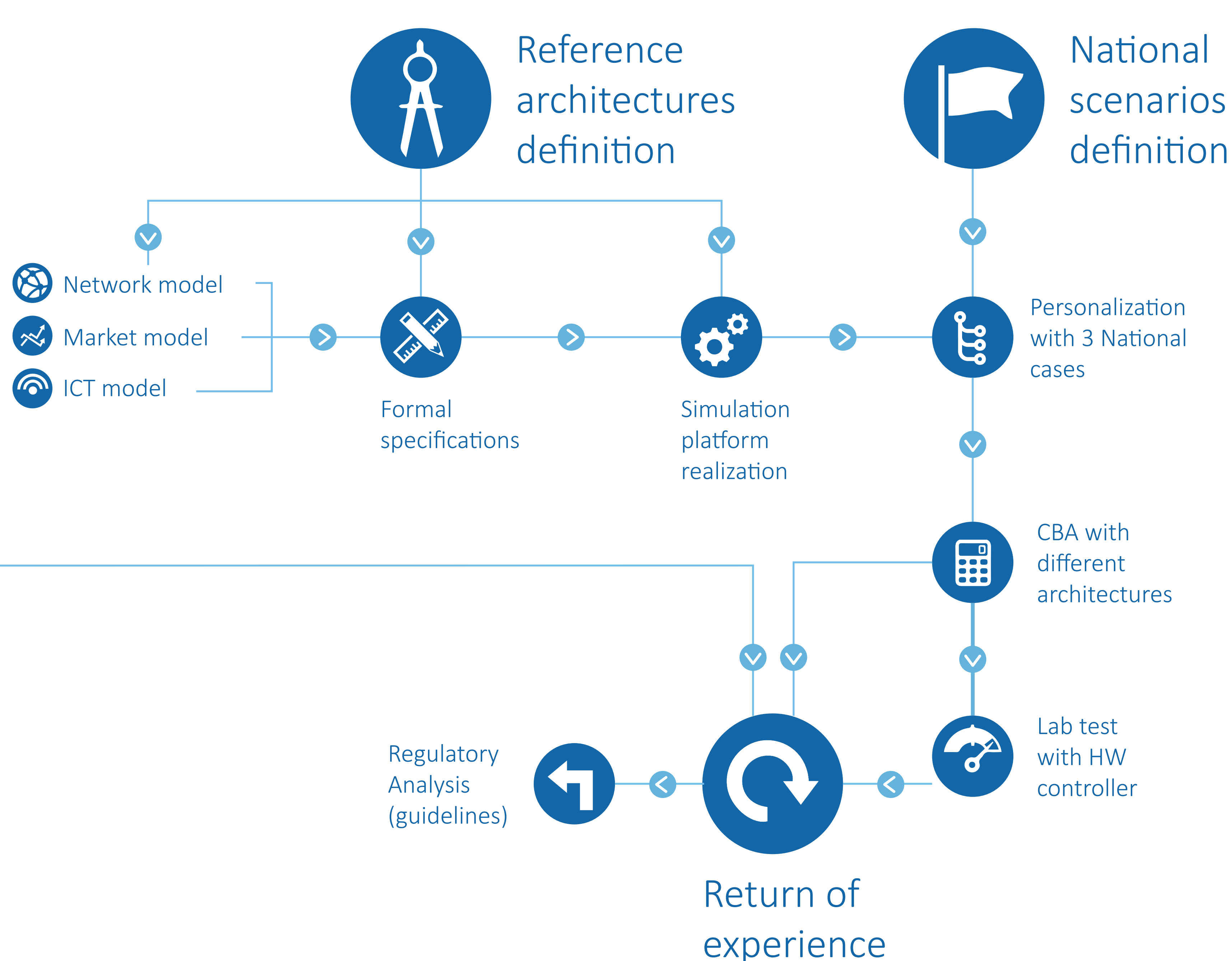
Aggregation of a sample of 16 summer houses.  
Implementation in field of ICT technology to exchange data between TSO, DSO, aggregator and smart houses.  
Development of an architecture and implementation in field of a system for the voltage regulation.  
Development of an architecture and implementation in field of a system for the provision of balancing power.  
Development of an architecture and implementation in field of a system for the provision of congestion management.

#### Flexibility from Radio Base Station

Aggregation of a 10-20 radio base stations to build up about 50 kW of flexible demand.  
Virtual provision of frequency control service by the DSO to the TSO.  
Implementation of the mechanism for DSO-TSO coordination related to the technical validation of flexibility services at the distribution level.  
Development of flexible simulation tools for complementing the 50 kW available in the pilot to reach the minimum 5 kW required by the TSO.



### Overall project layout



### The Consortium

#### Coordinator:

RSE - Ricerca sul Sistema Energetico (Italy)

#### R&D partners

Research Organizations: RSE, AIT, SINTEF, Tecnalia, VITO

Universities: DTU, EUI/FSR, Uni-Strathclyde, KU Leuven

#### Industrial partners

TSO: Energinet.dk, TERNA

DSO: ENDESA, NYFORS, SELNET

Manufacturers: SELTA, SIEMENS Italia

Software developers: Eurisco, N-SIDE

Telecom: VODAFONE

Trader: Danske Commodities

Vacation rental: NOVASOL

#### News and updates

[@SmartNetProject](https://twitter.com/SmartNetProject)

[http://bit.ly/24UZDrS](https://bit.ly/24UZDrS)

[info@SmartNet-Project.eu](mailto:info@SmartNet-Project.eu)







# SmartNet

# The SmartNet Project



"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691405"

# WHY SmartNet?

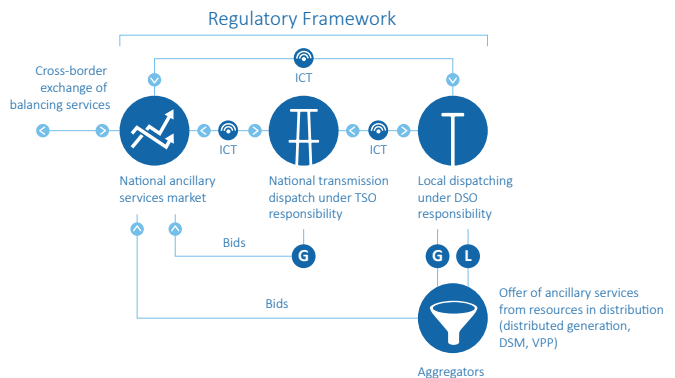
As an effect of the increasing amount of generation produced by Renewable Energy Sources (RES) with variable generation pattern and of the big changes affecting distribution (deployment of distributed generation, local storage and flexible loads), future distribution networks will inject a growing amount of energy into the transmission system. Variable generation located in distribution could be operated together with local storage and active demand in order to provide local services for the distribution grid (voltage regulation, congestion management) as well as services for the entire system through the connection point to the transmission grids.

Till now, distribution networks have been managed with a fit-and-forget philosophy. In the future, strict real-time coordination will be needed between the different actors that are involved in the provision of ancillary services. Optimizing the interface between TSOs and DSOs will prove a crucial factor to ensure the achievement of an overall efficiency target.

## The project in brief

Duration	3 Years
Budget	€ 12.657.928,00
Funding Project	Horizon 2020 - The EU Framework Programme for Research and Innovation
Reference Call	LCE-6-2015, Research and Innovation Actions

## Relationship between main system actors



## The project SmartNet aims at providing an answer to some important open questions:

- Which ancillary services could be provided for distribution to the whole system (via transmission)?
- How to optimise the TSO-DSO interface: which monitoring and control signals could be exchanged?
- How could the architectures of the real time markets be revised?
- Which regulatory implications could the above issues have?

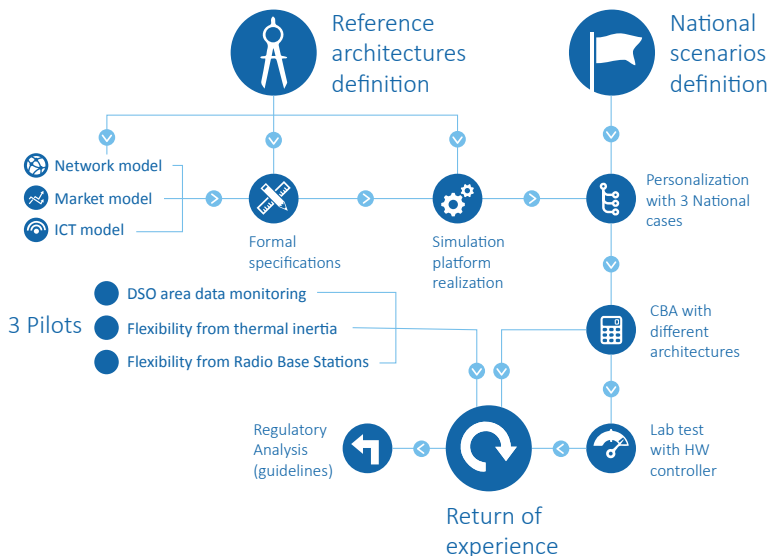
# HOW will we conduct our research?

In three years, SmartNet aims at comparing different architectures for optimized interaction between TSOs and DSOs in managing the purchase of ancillary services (reserve and balancing, voltage regulation, congestion management) from subjects located in the distribution segment.

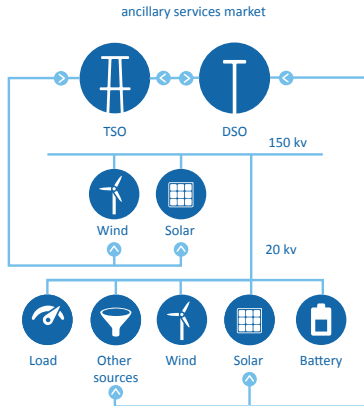
An ad hoc simulation platform will be built up over three layers (physical network, market and ICT) in order to simulate three national cases (Italy, Denmark, Spain); this simulation platform will then be implemented in a full replica lab, where the performance of real controller devices can be tested.

**Three physical pilots** will demonstrate modalities for exchanging monitoring and control signals between transmission and distribution networks and flexibility services that can be offered by entities connected to distribution, by exploiting thermal inertia of indoor swimming pools and distributed storage facilities of radio-base stations used for telecommunication.

## Overall project layout



## The three national pilot projects



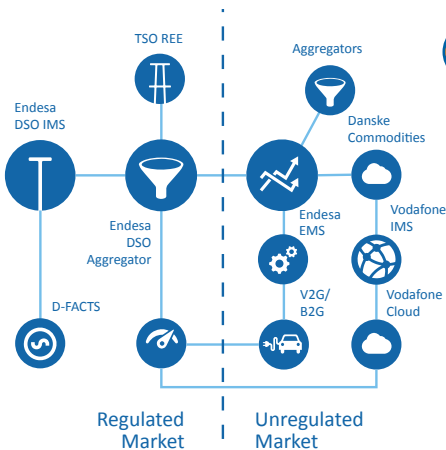
### DSO area data monitoring

- Development of an aggregation system and implementation in field of a device in order to exchange all the data with the TSO.
- Development of an architecture and implementation in field of a system for the voltage regulation.
- Development of an architecture and implementation in field of a system for the power-frequency regulation



### Flexibility from thermal inertia

- Aggregation of a sample of 16 summer houses.
- Implementation in field of ICT technology to exchange data between TSO, DSO, aggregator and smart houses.
- Development of an architecture and implementation in field of a system for the voltage regulation.
- Development of an architecture and implementation in field of a system for the provision of balancing power.
- Development of an architecture and implementation in field of a system for the provision of congestion management.



### Flexibility from Radio Base Station

- Aggregation of a 10-20 radio base stations to build up about 50 kW of flexible demand.
- Virtual provision of frequency control service by the DSO to the TSO.
- Implementation of the mechanism for DSO-TSO coordination related to the technical validation of flexibility services at the distribution level.
- Development of flexible simulation tools for complementing the 50 kW available in the pilot reach the minimum 5 kW required by the TSO.

# Main stakeholders' vision on TSO-DSO interaction needs



**European Commission:** “The Commission will prepare an ambitious legislative proposal to redesign the electricity market and linking wholesale and retail. This will increase security of supply and ensure that the electricity market will be better adapted to the energy transition which will bring in a multitude of new producers, in particular of renewable energy sources, as well as enable full participation of consumers in the market notably through demand response ... enabling the roll-out of new technologies smart grids and demand response for an efficient energy transition”. (From: “A framework strategy for a resilient Energy Union with a forward-looking climate change policy”, part of the Energy Union Package)



**ACER:** “The remit of DSOs is perhaps changing faster than any other single actor in the energy sector. Some networks are beginning to require more active management as significant volumes of small-scale generation connect to distribution grids. The TSO-DSO interface therefore requires careful management, as does the need for efficient information exchange, coordinated congestion management and integrated planning (coordination requirements between TSOs and DSOs introduced, for example, by the Demand Connection Code provide a valuable starting point). NRAs and ACER will work with DSOs and TSOs to assist them in more clearly defining their respective roles and responsibilities so that DSOs may manage their evolving networks in a transparent and reliable way, whilst at the same time supplying system services to TSOs” (From: “European energy regulation. A bridge to 2025”)



**ENTSO-E:** Indicates, among other, the following three policy actions: TSOs and DSOs need to provide consumers access to participate in all markets; TSOs should work with DSOs and regulators in determining requirements around observability and active power management of distributed generation (DG) and demand-side response (DSR); Many aspects of TSO-DSO interaction will be addressed by the Network Codes; The implementation, maintenance and amendment of Network Codes are a priority for TSO-DSO collaboration in the coming years. (From: “Towards smarter grids: Developing TSO and DSO roles and interactions for the benefit of Consumers”)

CEDEC, EDSO4SmartGrids, ENTSO-E, Eurelectric, Geode: To solve their respective challenges in a cost- and resource efficient way, both TSOs and DSOs will rely upon access to a common set of supply and demand side resources. Ensuring coordinated access between TSOs and DSOs to this limited pool of assets is essential for enabling TSOs and DSOs to fulfil their missions in a manner that minimises societal cost and maximises sustainability and security of supply of our power system. (From: “General Guidelines For Reinforcing The Cooperation Between TSOs and DSOs”)

# The consortium

## Project coordinator:

RSE - Ricerca sul Sistema Energetico (Italy)

## R&D partners

- Research Organizations: RSE, AIT, SINTEF, Tecnalia, VITO, VTT
- Universities: DTU, EUI/FSR, Uni-Strathclyde, KU Leuven

## Industrial partners

- TSO: Energinet.dk, TERNA
- DSO: ENDESA, NYFORS, SELNET
- Manufacturers: SELTA, SIEMENS Italia
- Software developers: Eurisco, N-SIDE
- Telecom: VODAFONE
- Trader: Danske Commodities
- Vacation rental: NOVASOL



## Advisory Board:

ACER, AEEGS, CEER, CISCO, Clervergy, Cybergrid, Danskeenergi, EDP Distribuição, EDSO4SmartGrid, EERA JP SmartGrids, ELES, ENEL Distribuzione, ENEL Hydro and DG Research, ENTSO-E, EPRI, EURELECTRIC, EWEA, GE GRID Solutions, GME, IBERDROLA, ISGAN Annex VI, EC-JRC, Norwegian SmartGrids centre, NTUA Athens, OFGEM, RTE, R&D Nester/REN, T&D Europe, Telecom Italia, Université catholique de Louvain

## Project coordinating person

Gianluigi Migliavacca  
Gianluigi.Migliavacca@rse-web.it

Project mailbox: [info@smartnet-project.eu](mailto:info@smartnet-project.eu)  
Project web site: <http://smartnet-project.eu>





Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation

## Title of the Deliverable Report

DX.Y

Authors:

<b>Distribution Level</b>	
<b>Responsible Partner</b>	
<b>Checked by WP leader</b> [name surname]	Date:
<b>Verified by the appointed Reviewers</b> [name surname, name surname]	Date:
<b>Approved by Project Coordinator</b>	Date:



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691405



## Issue Record

<b>Planned delivery date</b>	
<b>Actual date of delivery</b>	
<b>Status and version</b>	

<b>Version</b>	<b>Date</b>	<b>Author(s)</b>	<b>Notes</b>
1.0			

## About SmartNet

The project SmartNet aims at providing architectures for optimized interaction between TSOs and DSOs in managing the exchange of information for monitoring and for the acquisition of ancillary services (reserve and balancing, voltage regulation, congestion management) both at national level and in a cross-border context. Local needs for ancillary services in distribution systems are supposed to co-exist with system needs for balancing and congestion management. Resources located in distribution systems, like demand side management and distributed generation, are supposed to participate to the provision of ancillary services both locally and for the system in the context of competitive ancillary services markets. Through an in-depth and a simulation in a lab-environment, answers are sought for to the following questions:

- Which ancillary services could be provided from distribution to the whole system (via transmission)?
- Which optimized modalities could be adopted for managing the network at the TSO-DSO interface and what monitoring and control signals could be exchanged to carry out a coordinated action?
- How the architectures of the real time markets (in particular the balancing markets) could be consequently revised?
- What information has to be exchanged and how (ICT) for the coordination on the distribution-transmission border, starting from monitoring aspects, to guarantee observability and control of distributed generation, flexible demand and storage systems?
- Which implications could the above issues have on the on-going market coupling process, that is going to be extended to real time markets in the next years, according to the draft Network Code on Electricity Balancing by ENTSOE?

Different TSO-DSO interaction modalities are compared with reference to three selected national cases (Italian, Danish, Spanish) also supposing the possibility of a cross-border exchange of balancing services. Physical pilots are developed for the same national cases.

## Partners



## Table of Contents

About SmartNet.....	1
Partners .....	1
List of Acronyms .....	3
Executive Summary .....	4
1 Introduction.....	5
2 Methodology (optional section) .....	6
3 Content.....	7
3.1    Sub Section 1 .....	7
3.1.1    Sub-sub-section .....	7
4 Conclusions .....	8
5 References .....	9
6 Appendix .....	10
7 Glossary.....	11

## List of Abbreviations and Acronyms

Acronym	Meaning
ENTSO-E	European Network of Transmission System Operators for Electricity

## Executive Summary

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi consectetur magna erat, fermentum commodo ipsum faucibus in. Vestibulum pellentesque elementum augue vitae tempus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Etiam tincidunt lectus vitae nisl semper, ac mattis dui finibus. Praesent eu consectetur nisl. Praesent facilisis gravida commodo. Quisque dignissim dignissim elit sit amet aliquet. Nam non nibh vel enim malesuada ultricies eu ut ex. Donec porta tempus ullamcorper. Maecenas maximus enim quis suscipit interdum. Pellentesque venenatis est at augue dapibus, id vestibulum mi scelerisque. Curabitur tempor bibendum mattis. Sed nec tortor turpis. Morbi maximus turpis eu dolor dapibus, vitae ultrices urna dapibus.

Maecenas interdum, nisl tincidunt semper cursus, ligula nulla accumsan elit, vel vestibulum massa mauris eu arcu. Praesent enim lacus, blandit sed commodo at, imperdiet ac turpis. Nunc ut maximus dui. Phasellus eu nibh sodales, facilisis enim consectetur, malesuada eros. Etiam nisl eros, semper ut lectus id, volutpat malesuada elit. Ut sem arcu, lobortis ut condimentum eget, sagittis id dui. Duis ultrices ex in augue malesuada laoreet. Quisque nisl lorem, laoreet in nulla at, bibendum fringilla purus. Aenean turpis tortor, egestas at odio et, posuere efficitur est. Aenean risus erat, imperdiet ut ante quis, maximus vehicula mauris. Nulla eleifend metus ac nulla lobortis, sed tincidunt quam semper. Nulla non tincidunt lacus.

## 1 Introduction

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi consectetur magna erat, fermentum commodo ipsum faucibus in. Vestibulum pellentesque elementum augue vitae tempus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Etiam tincidunt lectus vitae nisl semper, ac mattis dui finibus. Praesent eu consectetur nisl. Praesent facilisis gravida commodo. Quisque dignissim dignissim elit sit amet aliquet. Nam non nibh vel enim malesuada ultricies eu ut ex. Donec porta tempus ullamcorper. Maecenas maximus enim quis suscipit interdum. Pellentesque venenatis est at augue dapibus, id vestibulum mi scelerisque. Curabitur tempor bibendum mattis. Sed nec tortor turpis. Morbi maximus turpis eu dolor dapibus, vitae ultrices urna dapibus.

Maecenas interdum, nisl tincidunt semper cursus, ligula nulla accumsan elit, vel vestibulum massa mauris eu arcu. Praesent enim lacus, blandit sed commodo at, imperdiet ac turpis. Nunc ut maximus dui. Phasellus eu nibh sodales, facilisis enim consectetur, malesuada eros. Etiam nisl eros, semper ut lectus id, volutpat malesuada elit. Ut sem arcu, lobortis ut condimentum eget, sagittis id dui. Duis ultrices ex in augue malesuada laoreet. Quisque nisl lorem, laoreet in nulla at, bibendum fringilla purus. Aenean turpis tortor, egestas at odio et, posuere efficitur est. Aenean risus erat, imperdiet ut ante quis, maximus vehicula mauris. Nulla eleifend metus ac nulla lobortis, sed tincidunt quam semper. Nulla non tincidunt lacus.

Maecenas pellentesque lacus vitae efficitur aliquet. Suspendisse sodales, augue ac mattis gravida, odio felis fringilla erat, at dignissim lectus mauris id libero. Suspendisse auctor leo rhoncus eros sagittis, sed lacinia sem aliquam. Vestibulum sed porttitor turpis, vel congue tellus. Sed vestibulum, nulla id commodo pharetra, ligula lectus accumsan felis, interdum finibus diam ante at risus. Sed eget fringilla leo. Proin gravida erat mauris, quis porta mi laoreet sit amet. Suspendisse velit tellus, volutpat quis diam sit amet, dignissim lobortis nulla. Mauris commodo leo id pulvinar facilisis. Ut bibendum ultricies lorem in suscipit. Phasellus gravida congue ligula vel facilisis. Nullam lacus turpis, interdum id felis sed, semper egestas augue.

## 2 Methodology (optional section)

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi consectetur magna erat, fermentum commodo ipsum faucibus in. Vestibulum pellentesque elementum augue vitae tempus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Etiam tincidunt lectus vitae nisl semper, ac mattis dui finibus. Praesent eu consectetur nisl. Praesent facilisis gravida commodo. Quisque dignissim dignissim elit sit amet aliquet. Nam non nibh vel enim malesuada ultricies eu ut ex. Donec porta tempus ullamcorper. Maecenas maximus enim quis suscipit interdum. Pellentesque venenatis est at augue dapibus, id vestibulum mi scelerisque. Curabitur tempor bibendum mattis. Sed nec tortor turpis. Morbi maximus turpis eu dolor dapibus, vitae ultrices urna dapibus.

## 3 Content

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi consectetur magna erat, fermentum commodo ipsum faucibus in. Vestibulum pellentesque elementum augue vitae tempus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Etiam tincidunt lectus vitae nisl semper, ac mattis dui finibus. Praesent eu consectetur nisl. Praesent facilisis gravida commodo. Quisque dignissim dignissim elit sit amet aliquet. Nam non nibh vel enim malesuada ultricies eu ut ex. Donec porta tempus ullamcorper. Maecenas maximus enim quis suscipit interdum. Pellentesque venenatis est at augue dapibus, id vestibulum mi scelerisque. Curabitur tempor bibendum mattis. Sed nec tortor turpis. Morbi maximus turpis eu dolor dapibus, vitae ultrices urna dapibus.

### 3.1 Sub Section 1

Maecenas interdum, nisl tincidunt semper cursus, ligula nulla accumsan elit, vel vestibulum massa mauris eu arcu. Praesent enim lacus, blandit sed commodo at, imperdiet ac turpis. Nunc ut maximus dui. Phasellus eu nibh sodales, facilisis enim consectetur, malesuada eros. Etiam nisl eros, semper ut lectus id, volutpat malesuada elit. Ut sem arcu, lobortis ut condimentum eget, sagittis id dui. Duis ultrices ex in augue malesuada laoreet. Quisque nisl lorem, laoreet in nulla at, bibendum fringilla purus. Aenean turpis tortor, egestas at odio et, posuere efficitur est. Aenean risus erat, imperdiet ut ante quis, maximus vehicula mauris. Nulla eleifend metus ac nulla lobortis, sed tincidunt quam semper. Nulla non tincidunt lacus.

#### 3.1.1 Sub-sub-section

Maecenas pellentesque lacus vitae efficitur aliquet. Suspendisse sodales, augue ac mattis gravida, odio felis fringilla erat, at dignissim lectus mauris id libero. Suspendisse auctor leo rhoncus eros sagittis, sed lacinia sem aliquam. Vestibulum sed porttitor turpis, vel congue tellus. Sed vestibulum, nulla id commodo pharetra, ligula lectus accumsan felis, interdum finibus diam ante at risus. Sed eget fringilla leo. Proin gravida erat mauris, quis porta mi laoreet sit amet. Suspendisse velit tellus, volutpat quis diam sit amet, dignissim lobortis nulla. Mauris commodo leo id pulvinar facilisis. Ut bibendum ultricies lorem in suscipit. Phasellus gravida congue ligula vel facilisis. Nullam lacus turpis, interdum id felis sed, semper egestas augue.

Figure 3.1      Sample Figure Caption for Table of Figures

Table 3.1      Sample Table Caption for Table of Tables



## 4 Conclusions

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi consectetur magna erat, fermentum commodo ipsum faucibus in. Vestibulum pellentesque elementum augue vitae tempus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Etiam tincidunt lectus vitae nisl semper, ac mattis dui finibus. Praesent eu consectetur nisl. Praesent facilisis gravida commodo. Quisque dignissim dignissim elit sit amet aliquet. Nam non nibh vel enim malesuada ultricies eu ut ex. Donec porta tempus ullamcorper. Maecenas maximus enim quis suscipit interdum. Pellentesque venenatis est at augue dapibus, id vestibulum mi scelerisque. Curabitur tempor bibendum mattis. Sed nec tortor turpis. Morbi maximus turpis eu dolor dapibus, vitae ultrices urna dapibus.

Maecenas interdum, nisl tincidunt semper cursus, ligula nulla accumsan elit, vel vestibulum massa mauris eu arcu. Praesent enim lacus, blandit sed commodo at, imperdiet ac turpis. Nunc ut maximus dui. Phasellus eu nibh sodales, facilisis enim consectetur, malesuada eros. Etiam nisl eros, semper ut lectus id, volutpat malesuada elit. Ut sem arcu, lobortis ut condimentum eget, sagittis id dui. Duis ultrices ex in augue malesuada laoreet. Quisque nisl lorem, laoreet in nulla at, bibendum fringilla purus. Aenean turpis tortor, egestas at odio et, posuere efficitur est. Aenean risus erat, imperdiet ut ante quis, maximus vehicula mauris. Nulla eleifend metus ac nulla lobortis, sed tincidunt quam semper. Nulla non tincidunt lacus.

Maecenas pellentesque lacus vitae efficitur aliquet. Suspendisse sodales, augue ac mattis gravida, odio felis fringilla erat, at dignissim lectus mauris id libero. Suspendisse auctor leo rhoncus eros sagittis, sed lacinia sem aliquam. Vestibulum sed porttitor turpis, vel congue tellus. Sed vestibulum, nulla id commodo pharetra, ligula lectus accumsan felis, interdum finibus diam ante at risus. Sed eget fringilla leo. Proin gravida erat mauris, quis porta mi laoreet sit amet. Suspendisse velit tellus, volutpat quis diam sit amet, dignissim lobortis nulla. Mauris commodo leo id pulvinar facilisis. Ut bibendum ultricies lorem in suscipit. Phasellus gravida congue ligula vel facilisis. Nullam lacus turpis, interdum id felis sed, semper egestas augue.

## 5 References

- [1] European Commission - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Energy Roadmap 2050 - COM(2011) 885/2 –  
[http://ec.europa.eu/energy/energy2020/roadmap/doc/com\\_2011\\_8852\\_en.pdf](http://ec.europa.eu/energy/energy2020/roadmap/doc/com_2011_8852_en.pdf) (last accessed: DATE)
- [2] FP7 Project REALISEGRID – <http://realisegrid.rse-web.it>
- [3] A. L'Abbate, I. Losa, G. Migliavacca, A.R. Ciupuliga, M. Gibescu, H. Auer, K. Zach, “Possible criteria to assess technical-economic and strategic benefits of specific transmission projects”, REALISEGRID Deliverable D3.3.1, Apr. 2010 - <http://realisegrid.rse-web.it>

## 6 Appendix

## 7 Glossary

*This paper reflects only the author's view and the Innovation and Networks Executive Agency (INEA) is not responsible for any use that may be made of the information it contains.*



Smart TSO-DSO interaction schemes, market architectures and ICT  
Solutions for the integration of ancillary services from demand side  
management and distributed generation

Event Name | Date

Main Presentation title goes here with auto-  
resizing active for very long titles that may run  
over three lines

Author 1, Author 2,  
Author 3



This project has received funding from the European Union's Horizon 2020  
research and innovation programme under grant agreement No 691405

# Agenda

- Item 1: The Template Files
  - Main Content
  - Smart Net Template
  - End Slide
- Item 2: Editing the Master Slides
- Item 3: Bringing in the Extra Column
- Item 4: Further Business

# Titles can run over one or two lines depending on the needs of the slide

- Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
  - Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
    - Text here for sub-point
  - Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
- Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation

## Two-column layout example

- Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
    - Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
      - Sub-sub point
    - Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
  - Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
- Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
    - Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
    - Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation
  - Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation



- How does this work?
  - Smaller size bullet
    - Even smaller bullet



# SmartNet



[SmartNet-Project.eu](http://SmartNet-Project.eu)

This presentation reflects only the author's view and the Innovation and Networks Executive Agency (INEA) is not responsible for any use that may be made of the information it contains.



Thank You

<Presenter's Name Here>

**Contact Information**

Affiliation: RSE

Phone: +39

Email: [john.smith@smartnet-project.eu](mailto:john.smith@smartnet-project.eu)